



# **Examining the Social Component of Sustainable Forest Management in Prince Albert and Vilhelmina Model Forests**

**Julia Carlsson**

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**Handledare:  
Gun Lidestav**

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Sveriges lantbruksuniversitet  
Institutionen för skoglig resurshushållning  
901 83 UMEÅ  
[www.slu.se/srh](http://www.slu.se/srh)  
Tfn: 090-786 81 00



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**Julia Carlsson**

Examensarbete i Skogshushållning vid institutionen för skoglig resurshushållning, 30 hp  
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Handledare: Gun Lidestav, SLU, Institutionen för skoglig resurshushållning, resursanalys  
Examinator: Tomas Lämås, SLU, Institutionen för skoglig resurshushållning, planering  
Extern handledare: Maureen Reed, School of Environment and Sustainability, University of  
Saskatchewan, Canada.

## **Preface**

The master thesis at the Swedish University of Agricultural Sciences is given as a program course of 20 full time weeks of work. This thesis is a result of a research collaboration between Dr. Maureen Reed, School of Environment and Sustainability at the University of Saskatchewan, Canada, and Dr. Gun Lidestav, Department of Forest resource management, Swedish University of Agricultural Sciences (SLU), Umeå, Sweden. It is also a result of the partnership and collaboration between the Model Forests of Prince Albert (PAMF), Saskatchewan, Canada, and Vilhelmina (VMF), Västerbotten, Sweden.

Thus, this thesis will serve as a link between the Vilhelmina and Prince Albert Model Forests, the University of Saskatchewan and Swedish University of Agricultural Sciences. Hopefully, the results can help and provide opportunities for new research projects and analysis around the activities within the PAMF and VMF. Parts of the thesis are also made within the Baltic Landscape project.

Acknowledgement is sent to the Forest Faculty Funds of SLU, Umeå, Sweden, that enabled my travel to Canada during the autumn 2011 with a student scholarship. The interview study of 2010 was funded by Bröderna Edlunds Donations Fond at the Faculty of Forest Sciences, SLU, and a grant to Dr. Maureen Reed from the Social Sciences and Humanities Research Council of Canada, also gratefully acknowledged.

The most grateful thanks to Dr. Nicole Klenk, who designed the pilot study from which data is used in this thesis, and who provided training in how to conduct interviews. Thank you for suggesting research questions and supervising me with valuable comments and support during the process. It has been a privilege for me to meet and work with you.

I also appreciate the participants in the interviews conducted in Canada and Sweden during 2010 and 2011. Thank you for sharing your valuable time, knowledge and experience with me. Special thanks to Susan Carr and Leif Jougda for facilitating interviews at PAMF and VMF, sharing advice and giving warm welcomes.

Warm regards and thanks are also given to Brian and Karen Ross, for being such wonderful hosts, letting me stay with you during my time in Saskatoon 2011. Love is also sent to my Canadian friends and guides Chantelle Johnston and Colleen George.

Last, but not least, thanks to my supportive family and friends at home, student fellows, and the beloved pearl in my life.

Julia, May 3<sup>rd</sup>, 2012

## **Abstract**

Due to the forest industry downsizing, many communities in rural forest regions in Canada and Sweden are facing problems to survive. In order to create community sustainability, resilience and well-being in remote forest regions, the view on the forest resources has shifted towards multiple use, through the concept of sustainable forest management (SFM). Beside the economic and ecological elements of sustainability, the social forest values are needed, contributing to the human well-being, local participation, stakeholder collaboration, human rights and cultural connection.

In this thesis the embodiment of the social component of SFM within Prince Albert Model Forest (Canada), and Vilhelmina Model Forest (Sweden) will be examined. Being partners and facing similar challenges as rural boreal forest regions, the two model forests are compared through analysis of projects and activities, conducted interviews and organization documents.

Looking at projects mentioned as successful by the interviewees, they all have elements from the social values of SFM. The direction can be explained by the introduction of the Forest Communities Program in Canada, demanding the Model Forests to work towards community stability and resilience, the Model Forest organization concept itself and the way global focus are increasing around social forest values. In the future, it may be important that the role of the MFs enable some kind of political authorization and legitimacy in order to improve conflict solving and indigenous rights equality. Funding is crucial to run a Model Forest organization, enabling coordination and administration staff, representative participation and travel possibilities to meetings.

Keywords: rural development, sustainable development, public participation, governance, indigenous people, First Nations, Saamí people, stakeholders.

## Sammanfattning

Den ansträngda ekonomiska utvecklingen inom skogsindustrin de senaste decennierna har försvårat situationen för många skogsberoende orter på landsbygden i Kanada och Sverige. För att skapa hållbara, motståndskraftiga och välmående landsbygder har synen på skogens resurser vidgats mot hållbart mångbruk. Förutom de ekonomiska och ekologiska hörnstenarna av hållbar utveckling, är skogens sociala värden viktiga för ett vidgat nyttjande av skogens resurser, människans välbefinnande, lokalt deltagande, samarbeten mellan intressenter, urbefolkningars rättigheter och kulturella kopplingar till skogen.

I detta examensarbete undersöks den sociala komponenten av hållbart skogsbruk i Prince Albert Model Forest, Kanada, och Vilhelmina Model Forest, Sverige. Dessa organisationer ligger båda i boreala skogsregioner och har haft ett samarbete med varandra sedan 2004. Deras aktiviteter och projekt analyseras tillsammans med utförda intervjuer och dokument i modellskogarna.

Av de projekt som omnämns som betydelsefulla i intervjuerna, berör samtliga skogens sociala värden på något sätt. Detta kan förklaras genom introduktionen av Forest Communities Program i Kanada, som gav modellskogarna i uppdrag att inrikta sin verksamhet mot socialt hållbar landsbygdsutveckling. Modellskogskonceptet som sådant och det ökande globala intresset för skogens sociala värden har också bidragit.

I framtiden kan modellskogens roll behöva förstärkas genom att ges politisk legitimitet för att förbättra konfliktlösning och jämlikhet mellan olika intressenter och urbefolkningars rättigheter. Finansiering är nödvändig för att kunna driva en modellskog vad gäller administration och möjligheter till deltagande för alla intressenter i regionen.

Nyckelord: landsbygdsutveckling, hållbar utveckling, lokalt deltagande, styrelsesätt, urbefolkning, First Nations, samer, intressent.

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## **Abbreviations**

CCFM	Canadian Council of Forestry Ministers
CFS	Canadian forest services
C&I	Criteria and Indicators
FCP	Forest Communities Program
FN	First Nations
MF(s)	Model Forest(s)
NAFA	National Aboriginal Forest Association
PAMF	Prince Albert Model Forest
SFM	Sustainable forest management
SRPBS	Sturgeon River Plains Bison Stewardship
VMF	Vilhelmina Model Forest

# 1. Introduction

## *1.1. Forest dependent communities struggling for sustainability and well-being*

More than ever, rural communities understand the risks and opportunities associated with forest-dependency and are trying to find new ways of measuring progress toward community well-being (CCFM 2010, Reed 2003). Due to the downsizing of timber-, pulp- and paper industry, many communities in forest regions in Canada and Sweden are facing problems with unemployment, depopulation, skewed age distribution in remaining inhabitants and high tax levels (CCFM 2010, Almered Olsson & Bladh 2004, Lindgren et al 2000, Hytönen 1995).

To understand specific trends affecting communities, multiple indicators like local employment opportunities, demography, human capital, income distribution, housing and poverty rates can be used (Parkins 1999). Not only can the forest provide timber and employment, subsistence goods and ecological functioning of natural systems. Forest ecosystems also stimulate tourism-based economic development, provide spiritual connections, retain heritage values and aesthetic values, and host a range of social meanings (Sherry et al 2005).

Kaufman and Kaufman (1946) were pioneers in the research on the development of stable timber-dependent communities, public participation in forest policy and diversification of the local economy (CCFM 2008). Today, the studies on forest-based communities have shifted from focusing on fiber supply and employment as measures of stability, to issues of community adaptability, where responsiveness to changing local conditions is the primary focus. Resilience is a complex concept, especially at the community level (Parkins et al 2001). Pierce Colfer and Byron (2001) describe community well-being as having secure and sufficient access to resources now and in the future, providing livelihood and economic opportunities, ensuring decision making and participation opportunities, respecting heritage and identity values, and promoting land uses, justice, health and safety. As John Parkins expressed it (pers com 2011-10-11):

*“Sustained yield of timber supply does not equal a stable community. There are some other forces that create change, like global competition and changing markets and so on, so now the focus has shifted from stability to adaptation. When we talk about sustainable communities, we talk about adaptive resilience, focus on indications of adaptation and resilience.”*

Finding a balance of all dimensions of forest values on a given land area and maintaining resilience are challenges for forest dependent communities. To this end, the concept of sustainable forest management is a useful framework for monitoring progress and development (Burton et al 2006).

## ***1.2. Sustainable forest management***

Sustainable forest management (SFM) refers to management and conservation of all types of forests around the world. The concept integrates present and long-term needs from local, regional and global levels (UN 2004). Forests are an essential part of the landscape with a multifunctional role in the environmental, ecological, economic and socio-cultural well-being of a society. The forest fills many functions, where four primary elements are described by Beese and Ludwig (2001): regulation of matter and energy, habitat conservation, production and use of resources, cultural and social values. It is believed that working with the goals and visions of SFM promotes a high level of elasticity, stability and resilience in forests and communities (Beese & Ludwig 2001).

The prescribed view on SFM originates from the Forest principles and Agenda 21 of the World Summit in 1992 (UN 1992a, 1992 b). The concept has been further developed by the Montréal and the Helsinki processes and collaboration among international actors (Montréal process 1995, MCPFE 1993). Forest certification organizations, the Model Forest program, the Canadian Forest Community Program and Biosphere Reserves are some examples of international concepts that function as frameworks, tools and channels for implementing and elaborating SFM locally (Axelsson 2009, IMFN 2008).

### **1.2.1. Definition of social sustainability**

Social sustainability can be defined as a system where fairness in distribution of and opportunity to resources should be achieved, as well as social services including health and education, gender equity and political accountability and participation (Harris & Goodwin 2001). It concerns “policies and institutions that have an overall effect of integrating diverse groups and cultural practices in a just and equitable fashion” (Polese & Stren 2000, page 229). Social institutions facilitate environmental and economic sustainability now and in the future. According to Dillard et al (2009), one important aspect of social sustainability is the way governments, organizations and citizens address accountability of stakeholders regarding social and environmental impact of individuals and institutions.

### **1.2.2. Canadian definition of SFM**

In Canada, the Canadian Council of Forest Ministers<sup>1</sup> (CCFM) defines SFM as “management that maintains and enhances the long-term health of forest ecosystems for benefit of all living things while providing environmental, economic, social and cultural opportunities for present and future generations” (CCFM 2010 page 1).

According to the National Forest Strategy 2003-2008, the goal is to maintain the health of Canada’s forests so that their functions, biodiversity, resilience and productivity are maintained over the long term. The strategy embraces many parts: profitable forest-based businesses, conservation of biological diversity, Aboriginal People’s rights, the well-being of rural and forest dependent communities, employment, private land ownership, international trade, environmental protection and uses for non-timber forest products (CCFM 2010, CCFM 2008).

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<sup>1</sup>Canada’s federal, provincial and territorial ministers responsible for forests are called the Canadian Council of Forest Ministers (CCFM). Established in 1985, the CCFM is a voluntary organization with a mission to coordinate and facilitate cooperative measures for sustainable management of Canada’s forests (National Forest Strategy 2008).

### **1.2.3. European and Swedish definition of SFM**

In Europe, SFM and multiple-use forestry was defined in a resolution of the Ministerial Conference on the Protection of Forests in Europe of Helsinki in 1993, as “the stewardship and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfill, now and in the future, relevant ecological, economic, and social functions at local, national, and global levels, and that does not cause damage to other ecosystems” (Elbakidze et al 2010 page 1, MCPFE 1993).

The first paragraph of the Swedish Forestry Act (Swedish Code of Statutes 1979:429) reflects on SFM by having two main goals; a production goal to ensure that forest land is used efficient and responsibly in order to provide sustainable return, and an environmental goal to secure biodiversity and genetic variety. Threatened species and ecosystems are to be protected. The cultural forest values and the aesthetic and social values should be preserved (prop 2007/08). However, the social dimension of SFM is not made equivalent with the environmental and production goals by law.

In the action plan “Skogsriket” (Forest Kingdom) from 2011, the Swedish Ministry of Rural Affairs lists four key branches based on forest values: Sustainable use, Refining and innovation, Experiences and recreation, and Sweden in the global world. The vision is to increase forest raw material, protect biodiversity, preserve social values and have a gender equalized forest sector. The importance of the profitable forest industry is stressed in addition to increasing the potential of raised production and higher employment rate (Ministry of Rural Affairs 2011).

### **1.2.4. Differences in Canadian and Swedish definitions on SFM**

According to Johan Svensson (pers com 2012-02-21), Sweden has generally applied SFM and multiple use forestry by dividing the forest landscape into areas with general consideration, formal protection and voluntary protection. Thus, the landscape has been divided into parts where some values are given higher priority in some areas or contexts, rather than trying to balance several values of SFM on the same landbase. In addition, there are some specific levels of consideration for forestry close to urban areas, where municipalities are the primary forest owners. Looking at good practical examples of SFM, the forest company Sveaskog has a concept of eco-parks.

There are some differences in the definition provided in their respective documents, but as Svensson (pers com 2012-02-21) concludes, it seems like Canada and Sweden are implementing sustainable forest management similarly in practice. The difference seems to be of semantic character, as the concepts of sustainable development and sustainable forest management originate from the same international agendas, the Rio Conference in 1992 and the Brundtland Commission report “*Our Common Future*”, and the Montréal Process in 1993 on sustainable development of boreal and temperate forests (Duinker 2011). As the two countries have the same kind of boreal forest landscapes and being world leader in forestry production, more similarities than differences are expected in their approaches to and implementation of SFM. Latterly, a debate has started on the “Swedish model”, where nature regards are included in forest production on all land areas except reserves. The debate is discussing its sustainability and comparing its results to a forest management model where some areas are reserved for nature protection and others are managed for intensive forest production (Future Forests news 2011).

One difference between the countries, observed during the present work, is in the view and acknowledgement of indigenous people as part of sustainable forest management, a point which will be examined below.

### ***1.3. The Model Forest concept***

In light of a downturn in Canadian forestry, a demand arose for action from political systems to foster rural development of forest dependent communities towards sustainable, resilient and innovative alternatives. The Federal Government of Canada answered this demand by establishing the Model Forest (MF) Program in 1992, aiming to promote new ideas and policy directions for achieving SFM and to identify new ways for stakeholders with diverse interests to work together to reach consensus on forest management issues (CMFP 2003).

The program was administered by the Canadian Forest Service<sup>2</sup> (CFS) of the federal department Natural Resources Canada, who funded the program in five-year cycles. The MFs are non-political, non-biased, non-profit organizations. Each MF has a defined territory and a substantial budget but no direct management responsibilities for the land or forest cover (Duinker et al 2003) or decision-making authority regarding the use of forest resource. Jurisdiction over the land and forest covered area typically belongs to provincial governments; although in some provinces some forest lands are privately owned. Nevertheless, MF programs are guided by participants (including representatives from government agencies, Aboriginal organizations, user groups) who seek to identify common goals and objectives for the region and seek to demonstrate research and management activities that support them (Ryan 2003).

According to the MF development guide (Natural Resources Canada 2006), a MF has six key attributes. These are: (1) a landscape large enough to address an area's diverse forest uses and values, (2) an inclusive and representative partnership, (3) a commitment to sustainability, (4) a governance system that is representative, transparent, and accountable, (5) a program of activities that reflects the values, needs, and management challenges of the partners, in the local community, and on regional to national levels, and (6) a commitment to knowledge sharing, capacity building, and networking, from local to international levels. Two attributes are of a more basic character (1, 3) whereas attributes 2 and 4–6 can be considered as indicators of a multi-stakeholder collaboration approach (Elbakidze et al 2010).

After three funding cycles in the Model Forest Program (MFP), the federal government of Canada changed from liberal to conservative in 2006. The MFP was ended, replaced by a new funding program, the Forest Communities Program (FCP). The FCP was initiated in order to use the MFs as tools for handling the emergent need of forest dependent communities to become more resilient and sustainable. Indeed, as the Canadian forest industry sector became severely impacted by global economic crisis and communities were increasingly unable to rely on the local forest industry for employment (FCP 2008). The MFs

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<sup>2</sup>The Canadian Forest Service (CFS) is a part of the federal Department, Natural Resources Canada. CFS is charged with promoting sustainable development of Canada's forests. Despite the fact that forests are managed by provincial governments, CFS serves as the agency for national-level research and national policy coordination in Canada, aiming to build consensus on key forest issues in shaping the national and international forest agendas (NRCan 2009).

newly constituted FCs, were given the task to investigate how to support communities, in facilitating a transition of community direction, as well as understanding the transition, with tools such as Criteria & Indicators and other kinds of support. The introduction of the Forest Communities Program 2007 resulted in a clear shift in the organization and work of the Canadian MFs, directing them toward sustainable communities, from more narrow forest management focus and technical approach of SFM in earlier funding programs. Some of the MFs from the original program were not approved to become funded by the FCP and some were reorganized. At that time, some new MFs were also created.

### 1.3.1. The Model Forest concept as applied at Prince Albert

The Prince Albert Model Forest (PAMF) was established in 1992 when boundaries and partners were set. It has received continuous federal funding to conduct its activities under the Model Forest Program and the Forest Communities Program, although funding levels have declined since the MF Program was first established. It covers an area of approximately 360,000 hectares in the aspen parkland and the boreal transition ecoregions of central Saskatchewan, which encompasses the Prince Albert National Park. The PAMF region has a population of 49,754, of which 39% are Aboriginal people (Statistics Canada Census 2006). Forestry, mining, tourism and agriculture have become the dominant sectors in this region, but in the last decade pulp and paper mill closures have severely reduced the economic revenues related to the forest sector (Klenk et al 2012).



Picture 1. Map over Prince Albert Model Forest (PAMF online)

### 1.3.2. The Model Forest concept applied on Vilhelmina

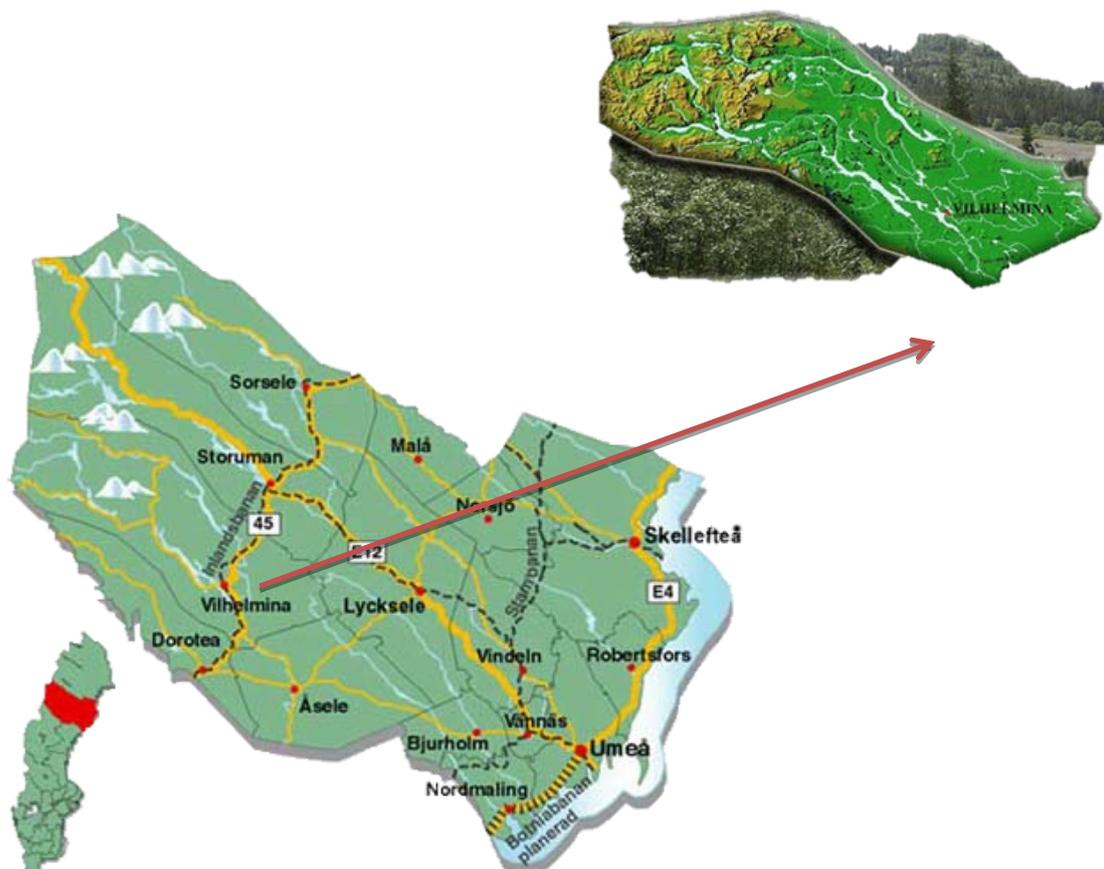
The Vilhelmina Model Forest was established in 2004, covering an area of 850,000 hectares in the transition zone between the boreal and the alpine zones, situated in the Vilhelmina Municipality, County of Västerbotten in northwestern Sweden. There is 350,000 ha productive forest land and 180,000 ha protected forest area. Landowners are in majority private family owners (in contrast to the PAMF), private forest companies and state forest companies (IMFN 2012). Forest companies such as SCA and Sveaskog, National Property Board Sweden and the Vilhelmina Forest Common, share the stakeholder interest in the area, as well as the native Saamí people in Vilhelmina North and South Saamí villages with traditional land use interests and reindeer husbandry, tourism, hydro-electrical power plants, fishing and hunting. About 100 Saamí people have the exclusive right to herd reindeers on private and public land in VMF (Sandström et al 2003). Other land uses include hunting, berry and mushroom picking, and recreational activities (Elbakidze et al 2010).

In Vilhelmina, there was a conflict during the 1980s and early 1990s concerning forest harvest operations in the old-growth forests of Njakafjäll (Svensson et al 2004). This was strongly opposed by Greenpeace and other environmental organizations, resulting in a government decision to transform the area into nature reserves. In 1995, the Vilhelmina

project was established, considering diverse forest utilization in a landscape perspective, as an outcome of the conflict to assemble stakeholders around forest management decisions. The County Board of Forestry in Västerbotten (coordinator), universities, WWF, satellite companies, forest and environment governmental agencies, private land owners, forest companies, local Saamí groups and voluntary organizations was represented. From this collaboration, an initiative was taken to create a Model Forest in the Vilhelmina municipality, which was established in 2004. There was a common interest among the stakeholders to implement VMF (Svensson et al 2004). The main purpose was to create a partnership among the stakeholder and a forum for where to meet and conduct the MF work. A list of Criteria and Indicators for enhancing the progress towards SFM was developed (Svensson et al 2004).

The Vilhelmina Model Forest (VMF) was also initiated in line with an international collaboration, the Barents Model Forest Network, established in 1993. There is one more Model Forest in Sweden, Bergslagen Model Forest, established in 2006 (IMFN 2012).

After this introduction, describing the challenges for many forest dependent communities, definitions of sustainable forest management and the model forest concept, and then the study objects, VMF and PAMF, the objective will be presented next.



Picture 2. Map over Vilhelmina Model Forest, situated in the county of Västerbotten, in northern Sweden. (VMF online, Länsstyrelsen Västerbotten)

## ***1.4. Objective***

The overall aim with this thesis is to examine how the social component of SFM is embodied within Prince Albert Model Forest (PAMF), Saskatchewan, Canada, and Vilhelmina Model Forest (VMF), Västerbotten, Sweden.

As PAMF and VMF have a partnership and exchange with each other since 2004, this thesis will try to compare the two and investigate what lessons learned can be exchanged around forest community sustainability, resilience and wellbeing.

In Canada, the Federal Government directed MFs to be facilitators of community sustainability, especially with forest dependent communities (CCFM), by introducing the Forest Communities Program in 2006. The same direction can be seen in the activity and role that VMF has developed, though without any governmental initiative. This development in the two MFs will be examined in this thesis by:

- 1) Describing and comparing the situations for the forest dependent communities in Canada and Sweden, including the situation of the indigenous peoples. The history and development of the Model Forest concept will then be studied.
- 2) Analyzing the development of the social component of SFM, in VMF and PAMF, as expressed and embodied in their ongoing or finished projects and activities.
- 3) Discussing the reasons behind the importance of the social sustainability element in both of the MFs.
  - In which way does the MF arena contribute as a facilitator of community well-being and sustainability in the studied regions?
  - Has the social dimension earlier been suppressed or under-prioritized in the society and forestry and other arenas in the society?
  - How important is funding to support the MF, to implement visions and to function as an active organization?

## **2. Material and method**

### ***2.1. Choice of case study areas***

The Prince Albert and Vilhelmina Model Forests in this study were selected because they had an ongoing collaboration and partnership since 2004. The two MFs share a number of important ecological, socio-economic and cultural characteristics, which will be described later. They are both situated in the boreal forest and therefore face similar ecological and operational forest management planning issues. The MF regions both include indigenous populations; 12 First Nations have reservation lands in the PAMF, and two Saamí villages are located in VMF.

### ***2.2. Interview material and methods***

Most of the interview material for this masters research was collected in May-June and October 2010, within the context of a broader comparative study of MF governance, designed by Dr Nicole Klenk. Together, we conducted semi-structured key. Twelve individuals who serve on the board of directors and subcommittees of the PAMF were interviewed. At the VMF, all members of the steering committee were invited; eight persons agreed and were interviewed. Three of these eight interviews were conducted in Swedish and quotations presented in the text were translated into English. The interviews lasted from 30 to 90 minutes each. The interview procedure was approved by the Research Ethics Board of the University of Saskatchewan.

The interview questions concerned:

- governance processes and structures,
- problems or challenges with governance,
- the roles of indigenous people in the governance of PAMF and VMF, and whether innovations had been developed to address these issues,
- the role of indigenous people in the Model Forest, and
- norms of good governance

The governance study resulted in a research paper where issues of representation and policies are discussed (Klenk et al 2012).

In addition, in September-October 2011, three other semi-structured interviews were held in Saskatoon and Fredericton, and one by phone, with researchers on Canadian criteria and indicators, the Model Forest Program, the Forest Communities Program, and social science research climate in Canada. In total, 24 interviews were completed in Canada and Sweden.

### ***2.3. Literature material and research method***

The concept of SFM has been examined and defined through Canadian and Swedish literature studies and the complementary interviews during the fall 2011. Information and history behind the Model Forest Program, the forest communities' current situation in Canada, the development and the ongoing activity of the PAMF and VMF, have been studied with help from governmental reports, Model Forest documentation, on accurate websites, scientific journals and university library databases. The documents and literature were chosen on the basis of immediacy, being important main documents or as provided by supervisors, key persons, or key references in the scientific discipline. As the activity of VMF has not

been as regular, there are not as many VMF documents to use as there are for the PAMF. Therefore, information about present board members and activity descriptions and VMF history and organization was provided by Leif Jougda, Swedish Forest Agency, by interviewees, and by reports from Swedish Forest Agency (Jougda et al 2006, Svensson et al 2004) and applications for funding and proposal documents when becoming a Model Forest.

The literature search took off from different starting points. Scientific papers were studied, written by the interviewees 2011, relying on their expertise on the subjects of SFM, Criteria & Indicators, and progress and politics of Canada's forestry policy development. Those articles gave ideas for keywords and references. The websites on government departments in Sweden and Canada has been utilized, as well as library data bases at the University of Saskatchewan and the Swedish University of Agricultural Sciences. The literature review provided historical background and information on processes of SFM and C&I development. Scientific papers were reviewed with regards to future needs concerning the social component of SFM and forest community development and sustainability. The large amount of reviewed material confirmed that credible references have been used, as authors and researchers are used frequently, also indicating which formal reports and documents on statistics, C&I and policies.

#### ***2.4. Data selection and analysis***

Quoted data have been chosen from coding the interviews, emphasizing relevance, accuracy and descriptiveness, concerning the PAMF and VMF organizations, governance and activities, the understanding of MF and FCP concepts, developments and visions, and finally, conducted projects and activities mentioned as successful by the interviewees. Methods for choosing projects were initially discussed with social scientists, deciding what factors<sup>3</sup> should be selected for in-depth analysis.

The interviews and document data were subjected to content analysis (Graham 2005, Auerbach & Silverstein 2003, Miles & Huberman 1994). Analytical categories from literature were related to the interview data. Substantial statements were organized into themes and categories associated with the research questions. Data were differentiated, coded and then combined in themes in order to select the most accurate quotations.

The quotations used in the thesis are numbered with index code and date of interview. The interviews with researchers on the complementary interviews all agreed to be named. Boards members of VMF and PAMF interviewed in 2010 are quoted anonymously.

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<sup>3</sup>Examples of factors: number of projects, economy, project design, impact, successfulness, time

### **3. Results**

The first part of the results will describe and compare the situations for the forest dependent communities in Canada and Sweden, including the situation of the indigenous peoples, i.e. issues related to the first objective (page 13). Thereafter, the development of the Model Forest concept will be presented.

The second part will present the work and organization of the two Model Forests of focus in this study, Vilhelmina MF and Prince Albert MF, based on interviews from 2010 and literature. This part will conclude in analyzing the development towards the social component of SFM in VMF and PAMF, as expressed in their ongoing or finished projects and activities, i.e. issues related to the second objective (page 13).

The third objective will be the focus of the discussion section.

#### ***3.1. Forest dependent communities in Canada***

The forest sector in Canada is undergoing significant changes. After a history focused on improvements in extraction of tree products, productivity and technology, forest companies must shift focus towards customer demands for innovative and certified products and process development, to manage the competition of the global market (Emmett 2006). Changes have been taken place because of competition from lower-cost forest producers, market differentiation, global restructuring and technological innovations. It has concerned mechanized harvesting and transport, efficient and large tenure allocations reducing the number of jobs per unit of wood harvested i.e. labor saving technologies (CCFM 2006). According to one PAMF interviewee, overharvesting in some Canadian provinces, and the way the financial systems are arranged appear to have “gambled with people’s potential future behavior, buying houses and properties with fictitious money”, which may also be significant factors affecting forest communities.

These factors have changed the economic circumstances for many forest dependent communities. These communities are situated in rural and remote areas, close to the fiber source. Results have been seen in mill closures, loss of traditional ways of life and employment opportunities. A search for substitutes to the forest industry with alternative forest uses such as recreation and tourism needs to be regarded, as well as identifying shifting values among residents (those who remain and those who move in). Climate change effects, wild fires, forest pests, insects and diseases also impact the forestry severely. The heavy dependency has caused big economic challenges: recent trends clearly indicating that forest industry jobs do not necessarily lead to community sustainability and meaningful participation in the forest economy. Governments are considering the development of new forest policies that would enable forest dependent communities to adapt to changing economies within the context of sustainable forest management. Forest-based communities have a history of higher personal incomes, but on average the economic diversity is generally low, which is also the case with degrees of education, employment and income outside the forestry sector (Natural Resources Canada 2009; Thorpe and Sandberg 2007, CCFM 2006, Emmett 2006, Parkins 1999).

However, the relationship between a community and its surrounding natural resources goes far beyond economic dependency (Schindler et al 2003). The suggested need of new forest policy challenged the Canadian Forest Service (CFS) “to show that forestry is not doomed, not dying industry” for people who are not foresters (Solange Nadeau, pers com 2011-10-19). She continued: “The forestry will not provide the same products, from the same shape

and form of industry. The community will not see the big mills with a couple of hundreds of jobs paying really high wages coming back, but there is still a lot to do with timber, other solutions and options.”

When the forest sector is larger than 50 % of the economic base, a community is classified as forest dependent (NRCan 2011). In 2006, there were fewer than 200 forest dependent communities in Canada, a decrease from approximately 300 in 2001 (NRCan 2012). Their vulnerability and often remote locations raise need to diversify their local economies to incorporate other than forest sectors or firms (Tom Beckley, pers com 2011-10-18).

In addition, another interviewee (2011) stressed the need to stop thinking of forest communities in such a narrow way as only useful for industrial forestry. Instead of measuring forest dependence by the number of people employed in the forest industry, he suggested monitoring the communities that are embedded within forest landscapes, and observe how those communities are evolving and how they find local livelihoods to sustain themselves, looking at the diversity of ways communities survive. People have very different kinds of dependencies from the forest. This corresponds with Parkins’ et al (2011) research, who described responsiveness or resilience in forest dependent communities as complex concepts, especially at the community level. According to Beckley et al (2002) community sustainability is determined by the ability to deal with change to recombine financial capital, local skills and natural resources in ways that create sustainable livelihoods. If the locally available resources define the local development potential, it also concerns the local communities’ ability to use the resources aiming to reach the set development goals (Lundberg & Karlsson 2002).

### **3.1.1. Aboriginal peoples and forestry in Canada**

More than 80 % of the Aboriginal communities are located within Canada’s productive forest regions (NRCan 2011, Emmett 2006), with their own forest-based enterprises such as sawmills, logging companies, eco-tourism activities and non-timber forest products ventures, as well as traditional, non-economic uses. Aboriginal peoples have a unique perspective on forests and forest lands, as being central to Aboriginal culture, spirituality, lifestyle and income.

The Canadian Aboriginal people have been given constitutional rights to land and resources as hunting, fishing, cultural and religious purposes among others. These rights now offer some influence over management decisions. There is a Supreme Court constitutionally-protected policy doctrine, declaring that Canadian governments (Federal, Provincial and Municipal) have duty to consult Aboriginal Peoples when making decisions or actions which may adversely impact Treaty and Aboriginal Rights (Government Saskatchewan 2010, Klenk et al 2012). Aboriginal Peoples and governments in Canada have still different views on the scope and nature of Aboriginal and Treaty rights, and how they should be applied generally to forest management policies and practices. This difference in perspectives creates a sense of economic and legal uncertainty in the forest sector (CCFM 2006, NAFA 1995). Issues of land ownership, tenure, and the reconciliation of overlapping rights in public land are ongoing topics of debate and negotiation throughout much of boreal Canada (Burton et al 2006), as the area of forest available for First Nations<sup>4</sup> increases to use for their own purposes. Innovative ways to derive value from the forest resource, either

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<sup>4</sup>Canadian aboriginal people are commonly ascribed to three different groups: First Nation, Inuit and Métis, the last group referring to people of mixed European-First Nations ancestry.

through traditional or non-traditional products and services, will be a key to their success (Emmett 2006). Understanding Aboriginal rights, how they can be accommodated in forest management and how this affects roles and responsibilities is relevant for community sustainability. Other important purposes are to reduce conflicts, frame the social and environmental elements of SFM and maintain traditional knowledge (NAFA 2000, Fast & Berkes 1994). Effective participation will also need to include women and youth (CCFM 2006, Reed 2003). Thus, SFM must address the impact of forest practices on the rights and interests of Aboriginal peoples, enabling them to participate in and benefit from the economic wealth generated by forest related activities in their traditional territories (Adam & Kneeshaw 2011, Sherry et al 2005, NAFA 1995).

### ***3.2. Forest dependent communities in Sweden***

A minority of the Swedish population lives in rural forest areas, a small proportion of whom are employed in forestry and forest industry. The public sector of healthcare, school and eldercare are rather the main sources of employment in rural communities. Also, people living in rural forest areas work outside their own surrounding environment to a greater extent (Karlsson 2007, Logue 2006, Nyberg et al 2004, SOU 2001:38, Lindgren et al 2000). An increasing part of the Swedish forest owners are living in municipalities or places other than where their forest estate is situated. The same pattern is seen with forest owners (living north of 60° latitude) depending on or using forest outcomes for their livelihood. As the tax on profits in the private forestry mainly considers state tax, the local importance of forestry decreases. The profit made by the private forest owners living outside the municipality in which the forest property is situated, is therefore mainly not consumed in the municipality (Holmgren 2006, Logue 2006, Lindgren et al 2000). The local community development is dependent on who the land resources is empowered by, and where the revenues generated from the resources are invested or consumed (Karlsson 2007, Ronnby 1992).

Looking at Vilhelmina municipality, the employment within the forest sector has decreased during the last decades (Lindgren et al 2000). Employment periods are shorter and often season based. The employment rates are also affected by retirements and out-migration. Young people are leaving the forest industry, and moving away from the municipality.

Industry- and service production in forestry and agriculture is still incorporated as an essential part in society. However, wood processing industries are situated along the coast in order to lower costs and raise efficiency, but with deteriorating effects for rural communities. Not only the forest owners, but a majority of the people working in the forest sector lives in urban areas (Karlsson 2007). The industrial move to coastal areas can also be explained by an increased part of nature reserves in the interior part of Northern Sweden, and the timber volumes per hectare being higher in the coastal area. In addition, the forest ownership has moved to resource-strong international corporations, a few strong actors on a global market. The legislation has implicated the ownership not being as related to land use as it used to be (Karlsson 2007).

### **3.2.1. Social values in Swedish forestry**

Svedrup and Stjernquist (2002 p. 25) summarize four social sustainability paradigms concerning Sweden:

- 1. The Swedish public considers free access to all extensively used forest land to be a civil right.*
- 2. Forests are expected to be open for hunting each year that is open to a broad segment of the population.*
- 3. The public expectations that forests have an aesthetically appearance.*
- 4. Forests are expected to provide opportunities for jobs and raw material for the forest industry.*

Such paradigms are not constant over time, and may change significantly in the future.

The cultural identity and livelihood opportunities are experienced differently for people living in urban versus rural areas (Hytönen 1995). The municipalities have a given responsibility for managing the forests sustainably with the social dimension and the public needs in mind, as they are responsible for the physical community planning by law. They often own the areas close to urban areas, which are the parts most used by the public for recreational activities. The Swedish Forest Agency should, based on the governmental Rural development program (Landsbygdsprogrammet), support land owners whose land has a special interest for ecological, cultural and social values, to be offered compensation and consultancy when making suitable arrangements fostering recreational values (SOU 2006:81, Thellbro 2006).

Since 1993, the Swedish forest policy gives the forest owner freedom to manage the forest towards different goals that provide opportunities for multiple forest values, with less focus on forest production than it used to be (SOU 2006:81). Some of the interviewees in Rydberg's report on forest social values (2001) identified a risk with upgrading the social values to the same priority as productivity and environmental goals in the Swedish Forestry Act, as it would cause new and harder demands restricting forest economic interests. This consideration would be appropriate to apply to the publicly owned forests; usually areas close to densely populated areas where the major part of forest recreation activities take place (Rydberg 2001). Private forest owners are not obliged to adapt their forest management for recreational purposes. There is a discussion around developing the social forest values processed in the Swedish Forestry Act (SVL §30) on other land areas than those close to conurbation. It is suggested that social regards beyond the Public access rights should generate financial compensation, which was generally agreed on by different stakeholders. However, opponents stressed that social values of the forest should consider to make people use the forest area already available for recreation and outdoor activities through the Public access rights, rather than forestry managers making adaptations for these social forest uses (SOU 2006:81).

### **3.2.2. Saamí people and forestry in Sweden**

The Saamí people lives all over the northern parts of Sweden, Norway, Finland and Russia, having their own parliaments and languages respectively. The Saamí people were stated as indigenous people in Sweden in 1977. The Saamí Parliament was established in Sweden in 1993, with decision rights over issues of cultural, language and education interest, but not over land use. There are 20 000 Saamí people in Sweden today, of whom a fifth are reindeer herders (Samiskt Informationscentrum 2012).

The reindeer husbandry jurisdiction, i.e. the Saamí people rights to use land for reindeer grazing lands, hunting and fishing, is grounded by Swedish Constitutional Act, almost to be seen as owner rights, though restricted to reindeer herding Saamís only (Kardell 2004). Big parts of the Swedish northern interior areas are used as winter grazing land for reindeers, where the ground lichens are a main food source. During the migration periods between summer- and winter grazing areas, forests with tree lichens are important, and also the limiting factor (SOU 2006:81, Kardell 2004). The reindeer positively impact the land by stamping when searching for food and thereby making scarification as well as providing to the economic aspects from meat production for the local community and inhabitants. On the other hand, conflicts arise when tree plants are damaged (Kardell 2004).

Until the end of the World War II, forestry and reindeer husbandry seemed to have cooperated well without larger conflicts (Kardell 2004), bearing in mind that the Saamí people were silenced and forced back from the nineteenth century and forwards (Samiskt Informationscentrum 2009). As the forest industry developed and mechanized after the War, traffic roads, machinery and large burned forest areas changed the forest landscape severely within the reindeer herding areas, destroying the lichens and humus layers. Large cutting areas also destroyed the grazing values for a long period of time, making the land impassable and affecting the migration trails for the herds. Herbicides, nitrogen fertilization, introduction of *Pinus contorta* and plowed cutting areas also impact the reindeer grazing sites negatively (Kardell 2004).

To solve conflicts over land use, consultations were initiated in legislation in 1982 (Kardell 2004), but the institutional arrangement could not be considered working properly, as disputes still occur (Widmark et al 2011).

The purpose of the International Labour Organization (ILO) convention No. 169, concerning indigenous and tribal peoples in independent countries (SOU 2006:81), is to strengthen the socio-economic and cultural rights of the indigenous people, i.e. to protect their rights to participate in use, management and protection of nature resources connected to their land area. Sweden has so far not signed and ratified the convention. One reason for this is the requirement to clearly delineate land rights of Saamí people and to identify the borders of this land (SOU 2006:81). Another reason is that a majority of land owners, representatives from municipalities and state agencies argue that practical solutions can be made at the local level through consultations with the Saamís (SOU 1999:25).

### **3.3. *Summarizing the differences***

Comparing the conditions and states of the Canadian and Swedish forest dependent communities, some differences have been identified. The forest ownership is one, where the Canadian forests are mainly state owned (93 %), whereas in Sweden the majority of forest land is owned by private owners and corporations (75 %) (Swedish Forest Agency 2011, NRCan 2006). Tenure affects the way forest politics is directed and implemented in practice, which impacts the power to lead forest management into multiple forest values integration. In Canada, policies are established within provinces, not being nationally coordinated. In Sweden, there are difficulties to influence all the private owners in Sweden into the same direction and management goals. However, in Canada provinces have jurisdiction over public forests and the issue of managing forest across jurisdictional boundaries is significant.

Another difference is the history of paying attention and giving constitutional rights to the indigenous people, where the constituted Aboriginal rights in Canada are older than the Saami rights in Sweden, which has not yet ratified the ILO Convention No. 169 on indigenous rights in line with international consensus.

Thirdly the forest legislation differs between the two countries. Sweden has a long tradition of strict regulation through the Swedish Forestry Act, existing since 1903, whereas Canadian forest regulations are authorized by the provinces and territories (Natural Resources Canada 2011, Enander 2000). In Sweden, the legislation is nationally overviewed and directed, whereas the Canadian legislations vary across provinces, which have had more or less strict regulations.

### ***3.4. Purpose and partners of the Model Forest Program***

The Model Forest Program combines social, cultural, ecological and economic needs of local communities towards long-term sustainable landscapes, of which forests are an important part. The original purpose of the MFs was to develop, implement and support local level partnerships to test, demonstrate and share innovative SFM practices and new ideas with the latest scientific and technological discoveries, as well as non-traditional approaches (NRCan 2006, Ryan 2003, Raison et al 2001, Sinclair & Smith 1999). One interviewee describes the initial MF program “created as Canada’s largest outdoor laboratory for experimenting on SFM, so research, techniques and tools that we could share with forest managers for better sustainability in forest industry. Basically, the first 5 years were dedicated to research.” (IP. 1. 2010-06-07)

The Model Forests was meant to work towards developing the adaptive capacity of the local social–ecological conditions to deal with uncertainty and change in regions and local communities (Schindler et al 2003, LaPierre 2002). By developing and directing projects and activity programs, the MF engages in public participation, creating awareness and understanding of SFM (Svensson et al 2004). By solidifying working relationships and enhancing local and traditional knowledge in forest resource management, partners can reach consensus on programs, policies and approaches to achieve SFM (Sinclair & Smith 1999).

In each Model Forest, participants represent diverse groups of individuals and organizations that have different perspectives on the social, economic and environmental dynamics on land use within their forest. Such broad representation intends to ensure that all perspectives are incorporated into informed and fair decisions for developing approaches to SFM, not treating one interest higher than another (NRCan 2006). The board structure is determined by each individual MF for appropriate representation of each area (Ryan 2003). Partners include (NRCan 2006):

- Federal and provincial governments, departments and agencies, municipalities and First Nation governments.
- Aboriginal communities
- Communities - members of recreational, youth and outdoors associations, business people and local politicians,
- Forest industry companies also including industrial partners as mining and energy.
- Non-governmental organizations - environmental organizations, economic development councils, recreation and tourism associations and labor groups.
- Food producers, private forest owners, parks, hunters.
- Academia – universities and research institutions

Most Model Forests have a small administrative staff, which supports local partners, stakeholders and organizations at the board with time, expertise and additional financial support (CMFP 2003). There is also a General Manager who reports directly to its Model Forest Board of Directors, and oversees all activities within the model forest, including preparation of annual work plans and reports. Model Forest Boards of Directors are accountable for delivering on the terms and conditions of the contribution agreement with the Canadian Forest Service, and are responsible to their partners and others funding providers (NRCan 2006).

There are today 14 MFs in the major forest regions in Canada, where of 11 are funded through the Forest Communities Program. In 2012, the Federal government of Canada decided to phase out the FCP for the coming funding period, why the MFs will need to find new sources for funding during the coming years.

In 1995 the International Model Forest Network was created, joining model forest partnerships globally for collaboration on SFM. The major forest ecosystems around the world are represented. In Sweden, the VMF and the Bergslagen MF are members of IMFN.

### ***3.5. The introduction of the Forest Communities Program (FCP)***

As described in the introduction, the FCP is a funding program for Model Forests in Canada, being initiated by the new conservative federal government when the forest industry started to recover from the severe downturn of the first decade of the 21<sup>st</sup> century. The FCP assists community-based partnerships to develop and share knowledge, strategies and tools to adjust to forest sector transition and to take advantage of emerging forest-based opportunities (FCP 2008). Mark Johnston (pers com 2011-10-04) described the FCP introduction as follows:

“The federal government saw an opportunity to put the MFP to work to help deal with this issue. So rather than doing research and developing new ways of silviculture and all the stuff we had done before, they actually saw a larger social value in reorienting the program and basically take all the resources that the Model Forest Network has, which when we think about it is over thousands of partners and organizations, it’s huge! And the idea was to take those resources and reorient the effort in a way that would help to deal with this forest industry leaving all the rural communities on their own to sink, basically. If you read the original call for proposal, that’s essentially what it says: these communities are in trouble, forest sector is going through a very bad time, we need some very innovative solutions to secure community sustainability while this industry is going through this big transition.”

The social dimension of forestry was given focus in the FCP, instead of the economic and ecological views having had the main access to forest research, developments and investment earlier through the MF organizations. The forest economy was making a transition to other economic uses of forests, exploring new fields like bioenergy, non-timber-forest-products and building community capacity so that people can still have an income from the forest.

The FCP is the largest funding source of PAMF (325 000 CAD annually), but not the only one. As the first 5-year period of FCP ends in March 2012, the Federal Government of

Canada has decided to not continue the program for another funding period, but phasing it out during the three coming years.

The shift following from the change to the FCP, influenced the representation of partners in the PAMF Board of Directors. The people from forestry research still remain, but forest technicians and other science focused partners involved in the earlier days were replaced with partners with sociological perspectives were added as the vision broadened. This can be seen below in Table 1 over board members before and after 2007. The proportion of board members who are Aboriginal has diminished from one-third of the board, to one-fifth. But at the same time the total number of board members has increased, as well as the Aboriginal partners outside the Board of Directors.

**Table 1.** List of Board of Directors and project partners in Prince Albert Model Forest before and after the shift into Forest Communities Program (from Annual Reports PAMF 2010 and PAMF 2006). Indigenous groups are marked in *italics*

<b>Board of Directors 2003-2007:</b>	<b>Board of Directors 2007-2012</b>
1. Canadian Institute of Forestry	1. Association of Saskatchewan Forestry Professionals
2. <i>Federation of Saskatchewan Indian Nations</i>	2. <i>Beardy's and Okemasis First Nation</i>
3. <i>First Nation Island Forests Management Inc (2006)</i>	3. Canadian Institute of Forestry
4. <i>Lac La Ronge Indian Band</i>	4. <i>Federation of Saskatchewan Indian Nations (2010)</i>
5. <i>Montreal Lake Cree Nation</i>	5. <i>First Nation Island Forest Management Inc.</i>
6. Prince Albert Grand Council	6. Independent Forest Operators of Saskatchewan
7. Prince Albert National Park	7. <i>Lac La Ronge Indian Band</i>
8. Resort Village of Candle Lake	8. North Central Enterprise Region
9. Saskatchewan Environment	9. Prince Albert Grand Council
10. Saskatchewan Forest Centre	10. Prince Albert National Park
11. Saskatchewan Forestry Association (2006)	11. Resort Village of Candle Lake
12. Saskatchewan Research Council	12. Saskatchewan Forestry Association
13. Weyerhaeuser	13. Saskatchewan Ministry of Energy & Resources
14. Canada Forest Service (observer, non-voting)	14. Saskatchewan Ministry of Environment
	15. Saskatchewan Research Council
	16. Sturgeon River Plains Bison Stewards
	17. Conservation Learning Center
	18. Canada Forest Service (observer, non-voting)
	19. <i>Montreal Lake Cree Nation (observer, non-voting)</i>

Other groups involved as partners (not officially represented on the board) in 2003-2007 were e.g. sawmills, the Soil Science Department of University of Saskatchewan, Saskatchewan Forest Centre Forest Development Fund, National Water Research Institute, Saskatchewan Wildlife Federation and several First Nation groups (PAMF 2006). The number of project partners in 2007-2012 is more concentrated, as a result of fewer projects and changed direction (PAMF 2010). On the other hand, aboriginal groups are well represented in the list over partners. Why they are not part of the Board of Directors in a wider extent should be discussed in another thesis, since the Model Forest work is focused around community and social values of forest stakeholders. Groups of partners with Aboriginal background are e.g. the Department of Indian and Northern Affairs, Métis Heartland Forest, Mistik Management, Montréal Lake Cree Nation, National Aboriginal Council on Species at risk, Paspiwin Cultural Heritage Site Committee and Urban Aboriginal Strategy.

### **3.6. Criteria and Indicators**

The need to define and measure the progress toward SFM resulted in the science-based tools of Criteria and Indicators (C&I). Their purpose is to provide a framework for reporting on the state of forests, forest management, changing forest land uses, and sustainability achievements (Duinker 2011, SME 2009, CCFM 2005, Svensson et al 2004). The C&I initiative also aims to raise awareness of and political commitment to SFM, so that governments support the implementation of C&I, facilitate data collection and take responsibility for international reporting, enabling a common understanding of SFM (Montréal process 2007, Raison et al 2001).

According to the Montréal Process (1995 online) a criterion is “a category of conditions or processes by which sustainable forest management can be assessed.” Indicators measure various aspects (quantitative/measurable or qualitative/descriptive) of each criterion and thus enable the effects of policy decisions and forest management practices on the state of forests and trends to be monitored and reported. Thus, the C&I framework is key, fostering the practice of SFM a reality and enabling evidence-based decision-making processes (CCFM 2008, Raison et al 2001). The criteria represent a top-down approach in the MF program, whereas the indicators give the bottom-up perspective (Svensson et al 2004). One challenge with the selection of indicators that was mentioned by several interviewees is that a lot of indicators are difficult to measure. One example is the aboriginal participation. It might be determined how often they attend to meetings (quantative) but being there would not imply effective participation, as it can best be described in case studies rather than quantitative data. Linking data with C&I and measure changes over time and between subgroups, enable communities to determine its progress toward a community-defined goal (Parkins et al 2001). As the interviewees stated; qualitative information is really important to give a complete picture.

#### **3.6.1. Canadian C&I**

The sustainability of forest communities was identified as a key component of SFM by the Canadian Council of Forest Ministers (CCFM 2000), who gave the federal and provincial agencies and Model Forest associations the task to measure community sustainability in various ways by consulting officials and scientists, academic experts, industry representatives and non-governmental organizations (Sherry et al 2005).

The CCFM’s first national Criteria and Indicators (C&I) framework was released in 1995 and included 6 criteria and 83 indicators. A revision was made in 2002 with 6 criteria (Table 2) and 46 indicators (presented in Appendix 1), in order to remove weak indicators (Duinker 2011). The revision process included several stakeholders, all levels of government and Aboriginal communities, industry members, woodlot owners, environmentalists and other stakeholder groups. Many provinces and territories use C&I in varying degrees to evaluate policies and regulations related to SFM (CCFM 2008). The C&I serve to:

- Evaluate the effectiveness of existing regulations;
- Orient future policies;
- Identify and prioritize information and research;
- Guide forest practices; and
- Clarify expectations of sustainable forest management in Canada (CCFM 2008).

Social and economic indicators need to be understandable and related to local communities (Raison et al 2001). Since 1997, each Model Forest in Canada has been involved in selecting, measuring and reporting on *local level indicators* of SFM, suiting the local and regional conditions of each model forest, framework for monitoring changes (CMFP 2003).

Criteria often reflect management decisions at national, regional or global scales, whereas a local level indicators needs to be more precise going from global levels to site- or specific study-level, identifying the need and questions within the local partnership and among the local stakeholders (Svensson et al 2004). It is difficult to strategically integrate local level indicators between MFs to see what could be exchanged in knowledge and experiences, as the quality of the indicators might differ (John Parkins, pers com 2011-10-11).

### **3.6.2. European C&I**

Forest Europe<sup>5</sup> (2011 online) developed and adopted six criteria for sustainable forest management and a set of associated indicators. The criteria describe the different elements and goals of SFM:

1. Maintenance and appropriate enhancement of forest resources and their contribution to global carbon cycles;
2. Maintenance of forest ecosystems' health and vitality;
3. Maintenance and encouragement of productive functions of forests (wood and non-wood);
4. Maintenance, conservation and appropriate enhancement of biological diversity in forest ecosystems;
5. Maintenance, conservation and appropriate enhancement of protective functions in forest management (notably soil and water); and
6. Maintenance of other socio-economic functions and conditions.

### **3.6.3. C&I used in VMF**

The six criteria for SFM defined by Canadian Council of Forest Ministers (CCFM), are also used in VMF, to be applied on local as well as regional levels within the boreal zone (Svensson et al 2004). The indicators and programs for VMF were chosen to:

- address the six criteria for sustainable management of natural resources;
- reflect current questions with respect to ecology and management of natural resources in the boreal zone of the northern hemisphere;
- emphasize specific conditions in the Barents region; and
- suit local prerequisites in the VMF area and nearby surroundings (Svensson et al 2004 page 30).

## **3.7. *Social criteria and indicators***

A social indicator can be defined as any social, economic or environmental indicator that is identified by society (i.e. socially constructed) as a factor in achieving a desired condition or state (Parkins et al 2001). The social indicators address local interests and concerns in both subjective and objective ways. Subjective indicators reflect the input and needs of local residents, for example emphasizing people's perceptions of their own well-being and the factors that influence it, which is rather difficult to measure. Objective indicators are

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<sup>5</sup>Ministerial Conference on the protection of Forests in Europe

usually measured through e.g. prevalence of low income, level of education attainment and average housing prices (Parkins et al 2001).

There is a strong and increasing recognition that social impact assessment needs to be more widely applied in forestry planning for SFM (Sherry et al 2005, Raison et al 2001). Social values change over time, and indicators must be capable of accommodating these changes (Raison et al 2001). The three major concerns of social C&I are access to resources, rights and means to manage forest cooperatively and equitably, and health and culture of the stakeholders (CIFOR 1999). Pierce Colfer and Byron (2001) stress the strong interdependence between those social concerns. Culture can be regarded as a dynamic mode of adaptation, communication patterns, labor, inheritance patterns, engagement of young people and insurance of traditional values.

### 3.7.1. Social values incorporations in Swedish legislation

The expression “other public interests” in the Swedish Forestry Law 1§ refers to the social values of forests, such as hunting, fishing and reindeer herding (Swedish Code of Statutes 1979:429). The forest should be reachable and useable for people living in its surroundings. The opportunity to live close to nature is an important reason for many people in rural areas, despite the fact that such areas offer few employment opportunities and experience decreasing service supply. Forests close to densely populated areas and nature tourism are important factors for public health, as well as represent cultural values. Within the frames of the Swedish right of public access to forest and nature, consideration must be given to peoples’ use of social and cultural forest values (SOU 2006:81). Forest values contributing to human well-being, such as nature experiences, cultural connection, recreation, aesthetics, public health, berries, mushrooms, hunting, employment and infrastructure, have climbed higher on the forest policy agenda (Swedish Governmental Proposition 2007/08:108, Rydberg 2001).

### 3.7.2. Differences in social value content of Canadian and European C&I

Criteria and Indicators have been developed in both Canada and Europe, but not on a national level in Sweden. Thus, a comparison is made between Canada and Europe on differences regarding the Criteria in their respectively C&I framework, in table 2. The European approach ought to have implication on the Swedish framework on SFM. On the other hand, VMF are using the C&I made by Canadian Council of Forest Ministers.

**Table 2.** A comparison between the European and Canadian Criteria are summarized. Numbers in brackets on the European Criteria are the original criteria number, here sorted after similarity with Canadian Council of Forest Ministers Criteria (CCFM 2006)

<b>Canadian Criteria</b>	<b>European Criteria</b>
1. Biological Diversity	Biological Diversity (4)
2. Ecosystem condition and productivity	Forest ecosystem health and vitality (2)
3. Soil and water	Soil and water (5)
4. Role in global ecological cycles	Forest resources and global carbon cycles (1)
5. Economic and social benefits	Productive functions of forests (3)
6. Society’s responsibility	Other socio-economic functions and conditions (6)

From reading these criteria, the differences are not striking. The European Criteria are more focused on forest management issues as five of them concern production and ecological values, putting *Other social-economic functions and conditions* together in one final

segment, where the Canadian C&I have two separate criteria, *Society's responsibility* and *Economic and social Benefits*. The Canadian criteria for SFM are also dominated by ecological concerns, as four of them have ecological directions. The 5<sup>th</sup> criterion entitled *Economic and social Benefits*, aims to ensure economic and social in a long term provision of goods and services from the forests through SFM. The 6<sup>th</sup> criterion, *Society's responsibility*, focuses on the social values of SFM, since forest practices and operations often take place on publicly owned lands, and many rural communities depend on the forest for their economic, social and cultural well-being (CCFM 2006, CIFOR 1999).

Since the sustainable development concept is divided into three main dimensions - economic, ecologic and social - how did it turn out that four of the six CCFM criteria were ecological and five of six European Criteria? Ecological foundations underpin economic and social activity. However, Duinker (2001) believes that the prevailing moods of the day, plus the personal and professional orientations of the participants in the C&I-SFM design process had a big impact when deciding the final outline of the C&I. If the group of people working on C&I-SFM was dominated by "traditional" foresters, then the outcome is likely to be weighed toward ecological concerns rather than social (Duinker 2001).

In order to examine if there are other more evident differences around the social component of the C&I, the Table 3 focuses on the indicators used to describe those criteria concerning the social element of SFM.

**Table 3.** Canadian Criterion no. 6 in the revised version of 2003 (CCFM 2005) and European Criterion no. 6 from Vienna Improved Indicators (2002)

<b>Canadian Criterion No 6. Society's responsibility</b>		<b>European Criterion No 6. Maintenance of other socioeconomic functions and conditions</b>	
Indicator		Indicator	
6.1. Aboriginal and Treaty Rights	6.1.1. Extent of consultation with Aboriginals in forest management planning and in the development of policies and legislation related to forest management	6.1. Forest holdings	Number of forest holdings, classified by ownership categories and size classes
	6.1.2. Area of forest land owned by Aboriginal peoples.	6.2. Contribution of forest sector to GDP	Contribution of forestry and manufacturing of wood and paper products to gross domestic product
6.2. Aboriginal Traditional Land Use and Forest-based Ecological knowledge	6.2.1. Area of crown forest land with traditional land use studies.	6.3. Net revenue	Net revenue of forest enterprises
6.3. Forest community well-being and Resilience	6.3.1. Economic diversity index of forest-based communities	6.4. Expenditures for services	Total expenditures for long-term sustainable services from forests
	6.3.2. Education attainment levels in forest-based communities.	6.5. Forest sector workforce	Number of persons employed and labor input in the forest sector, classified by gender

			er and age group, education and job characteristics
	6.3.3. Employment rate in forest-based communities	6.6. Occupational safety and health	Frequency of occupational accidents and occupational diseases in forestry
	6.3.4. Incidence of low income in forest-based communities	6.7. Wood consumption	Consumption per head of wood and products derived from wood
6.4. Fair and Effective Decision Making	6.4.1. Proportion of participants who are satisfied with public involvement processes in forest management in Canada	6.8. Trade in wood	Imports and exports of wood and products derived from wood
	6.4.2. Rate of compliance with SFM laws and regulations	6.9. Energy from wood resources	Share of wood energy in total energy consumption, classified by origin of wood
6.5. Informed Decision Making	6.5.1. Coverage, attributes, frequency, and statistical reliability of forest inventories	6.10. Accessibility for recreation	Area of forest and other wooded land where public has a right of access for recreational purposes and indication of intensity of use
	6.5.2. Availability of forest inventory information to the public	6.11. Cultural and spiritual values	Number of sites within forest and other wooded land designated as having cultural or spiritual value
	6.5.3. Investment in forest research, timber products industry research and development, and education		
	6.5.4. Status of new or updated forest management guidelines and standards related to ecological issues.		

Summarizing, the European Criteria incorporate both economic and social values in this 6<sup>th</sup> criterion. Actually, the social values are only given attention in two of eleven indicators. The Canadian Criteria raise the social values to another level, giving more acknowledgment and recognition to their importance and wide content. The indicators include Aboriginal and Treaty Rights and land use knowledge, forest community well-being, governance issues as decision making procedures. Where Europe is lacking attention to social values overall, the critical discussion from researchers and indigenous people organization in Canada is focused on the lack of indigenous people share in the C&I framework.

### 3.7.3. Critics to C&I lacking of focus on indigenous people

According to the National Aboriginal Forest Association (NAFA 1995), forest management planning practices often do not take into account the need for balance in planning for fish and wildlife habitat, medicinal plants, traditional food-plants, good water quality, recreational, spiritual and cultural pursuits, and the use of timber to provide shelter and heat, as

well as for economic gain. Areas for traditional uses tend to decrease where one type of forest use suffers damage as a result of another activity.

With close relationship and early occupancy of the land, Aboriginal peoples in Canada could play leadership role in Canadian forest management, decision-making and monitoring (Adam & Kneeshaw 2011, CCFM 2006, Sherry et al 2005, NAFA 2000). Aboriginal political organizations demand to be treated as a third level of government, in addition to the federal and provincial governments (NAFA 2000), not just being another “stakeholder” or one interest group, having one single vote in most of the established management structures and processes. As culture and community are closely connected to management of forest resources in Aboriginal communities, the importance of social and economic C&I increases (Sherry et al 2005). The CCFM indicator 6.2, *Aboriginal Traditional Land Use and Forest-based Ecological Knowledge* does not specifically address respect for traditional land tenure systems.

Looking at the earlier C&I framework from The Montréal Process (1995), there was a 7<sup>th</sup> criterion titled *Legal institutional and policy framework for forest conservation and sustainable management*. The indicators concern e.g. property rights, traditional rights of indigenous people, public participation and the capacity to develop public involvement activities, education, awareness and human resource skills.

Being an original member of the C&I Task Force, making the first version of Canadian C&I 1995, the National Aboriginal Forest Association (NAFA) proposed a 7<sup>th</sup> criterion with six indicators, entitled “Respect and Provision for Aboriginal and Treaty Rights”. This suggestion was based on Strategic Direction Seven (on Aboriginal Peoples) of Canada’s National Forest Strategy, UNCED’s Guiding Principles on Forests, the UN Conventions on Climate Change and Biodiversity, and Chapter 26 of Agenda 21 from UNCED (NAFA 2000). The criterion was supported by the C&I Steering Committee level, but was not incorporated in the first draft of C&I, nor the revised set in 2003, decided by the reviewing jury. Interviewing some of the members of the revision committee, who supported the NAFA idea for Aboriginal C&I, they explained the decision not to incorporate them in the final version, as the indicators were too difficult to measure in practice. Solange Nadeau (pers com 19-10-2011) argued that the Aboriginal peoples should be involved in all levels and aspects of decision-making in their traditional territories (which includes lands outside existing Indian reserves). They should be able to continue cultural and traditional harvesting activities. She said:

“We once again had the 7<sup>th</sup> criteria with First Nations, building it in a different way, as people on the table like First Nations, everybody agreed it would be better that they [the Aboriginal people] get their own criteria. /.../ That’s a failure what the Aboriginals saw in the first C&I process, they were not visible anywhere, disappeared in the community.”

### **3.8. Prince Albert Model Forest**

#### **3.8.1. Goals and objectives**

During its history, PAMF has developed and stimulated strong partnerships with industry, governmental organizations, Aboriginal groups, communities and researchers (Johnston & Carr 2006). With the MF as a neutral forum, ideas, concerns, problems and solutions can

be shared and discussed respectfully. The main purpose of the PAMF is expressed as having a facilitator role for developing and strengthening relations between the different stakeholders towards the common goals of stimulating the development of sustainable communities. Inclusiveness, transparency, accountability, integrity, fairness and effective governance are important essential principles in that work. Decisions should favor multiple partners rather than just one. The MF work should be vibrant and relevant to the local forest communities, the national and the international networks (Johnston & Carr 2006).

The goals of the PAMF are:

- to work with forest communities to develop governance models for creating new resource-based opportunities;
- to build capacity among local people including Aboriginal communities, and to manage those resources and new opportunities coming out from that;
- to provide the tools and the forum that brings diverse groups together to integrate land management, develop ideas and find solutions that lead to community sustainability; and
- to remain resilient to the ever-changing forest sector, finding new opportunities to diversify and expand (Johnston & Carr 2006).

Identifying needs and work with vulnerable communities located between the southern boreal forest and agricultural areas of Saskatchewan, to facilitate cross-sector relationships is a focus issue. Some main activities of the PAMF relate to integrated land management, climate change mitigation, economic diversification, capacity building in resource-based communities, and a shift from a single to a multiple industry focus (Johnston & Carr 2006, PAMF 2007). As expressed by Mark Johnston (pers com 2011-10-04):

“The purpose [of PAMF] is to provide an opportunity for different partners to come together, to discuss issues and to solve problem and to develop joint initiatives and all that kind of things. So it’s really about the partnership, it’s not so much about the forest. That’s important to understand. /.../ We try to facilitate the other organizations to do a better job through their normal activities. So that might take the form of developing a partnership, e.g. the provincial government and Prince Albert National Park have a common interest in that part of the landscape. So maybe we can help them work better together, so that the larger ecosystem, which includes both the managed forest and the park, benefits from that collaboration. So I think that’s how we promote SFM is the way about the relationships among the partners ...not so much the landscape itself.”

### **3.8.2. PAMF activity and work**

Following the funding cycle periods, the PAMF makes a strategic plan over every 5 years, which sets up the criteria and themes from the strategic direction for projects to be conducted during this period. When discussing new projects, several things are considered: how the project meet the strategic direction; how it benefits or meets the demands of the region and the funding agency; whether it achieves listed areas, or whether it benefit many of the partners. Does the project fall in the scope geographically? Is the proposal of the new project achievable and how will that be measured? The three elements of sustainability (economical, ecological and social) are also reflected upon in the decision process. Is there ability and resources to fund something and what are the intended results? How does it benefit the participators in the MF projects and society in general? A research project

might be good, but not appropriate if it does not benefit several partner organizations. When the resources of PAMF are to be used, they must provide benefits and feed back to the public.

Since the proposal to become part of the Forest Communities Program was accepted, it formed a mandate to determine what could be done within PAMF. The proposal is described as a living document, but not strictly framing what can be done. Since the Canadian Forest Service (CFS) representatives observe the board meetings, the CFS continuously provide with advice and good communication of what to do and prioritize. The annual work plan gets formally approved by the CFS at the end of February. The board members confirm that it includes what the PAMF wants to do during the year and which partners are to be engaged, funding levels and work methods. There seems to be a good and open atmosphere around the table. All decisions about projects and also about voting for new board members are taken unanimously. Solid partnership is hence an important criterion for the MF work. When it comes to make decisions, there is a “good partnership with the board members.” (IP. 1. 2010-06-07)

The decision making process has changed a bit during the PAMF years, described by one interviewee as more operational than strategic. With a smaller budget, keeping the discussion at the board level it is easier. Mark Johnston (pers com 2011-10-04) continues:

“Under the old MFP we used to have a science- and technician committee and a communication committee, with rules and regulations that was used to value the projects. We haven’t been as strict at things. Because in the old days we had a million dollars and a lot of projects. The science and tech-program was why we existed. Now program in dollars are 50% of what we are doing. /.../ The MF is a coordinating agency, a facilitator, and not a funding agency. From the annual funding of 325 000 CAD, the biggest part covers costs for staff and administration, leaving a smaller amount to distribute as ‘seed money’. Sometimes members know where to find funding for something and suggest a new project with the MF as facilitator, finding funding from other sources, presenting the project idea and discuss it with the board.”

### **3.8.3. Activities during the current funding period in PAMF 2007-2012**

Some main activities mentioned in the strategic plan for the present funding period (2007-2012) have been to develop agroforestry, markets and profitability and to reestablish forest cover in the Aspen Parkland eco-region, develop ethanol production, establish a northern Inter-Provincial Trade and Travel Corridor to encompass the western Canadian provinces, and to support the Sturgeon River Plains Bison Stewardship Committee (PAMF 2007). A large part of the PAMF work has been education- and capacity-building among Aboriginal communities, conduct research on afforestation, agroforestry and bio-products that will foster community sustainability through diversification; continue the JFR program, stimulate cultural Paspiwin traditional cultural site initiative, career training in forestry, mining and energy in the northern community schools, among other things (PAMF 2007).

During 2011-2012, the PAMF faced the final year of the present five-year phase of the FCP, with uncertain funding future beyond March 2012. According to some of the Board members, there are enough savings to continue the work for couple of years ahead, if the new proposal for FCP funding will be rejected, or if the federal government decides to cut

the program entirely. Most of the funding is used to cover costs for administration and the two employees at the office. Future activity must in that case be held back when it comes to expenses, not starting new projects.

In the following pages, some of the most successful projects of PAMF, highlighted by the board members, will be described.

#### **3.8.4. Sturgeon River Plains Bison Stewardship**

A population of 400 pure Plains bison (the only of its kind in the country) roams freely through the area in and around the southwest corner of Prince Albert National Park, Saskatchewan. Conversion to agriculture and urbanization has resulted in lack of habitats for the bison, also threatened by domestic cattle disease and risk of genetic pollution from escaped ranched bison.

Yet, as the population is growing, farmers, cattle ranchers and bison ranchers living on agricultural lands adjacent to the park are impacted. The bison cause crop and infrastructure damage which is why the acceptance by local landowners for supporting the herd to sustainability cannot be taken for granted. For many years, the national park has been working cooperatively with local landowners to prepare a management strategy for the growing population of bison.

The Sturgeon River Plains Bison Stewards (SRPBS), which were founded in 2006, are working with local landowners to identify opportunities, threats, issues, and knowledge gaps related with the wild Plains bison. Solutions need to be found that protect the livelihood of farmers who share lands with the nationally significant, growing population of free-ranging Plains Bison, to exist mutually and benefit from each other. In order to create a management plan, PANP and Saskatchewan Ministry of Environment (MOE) have been monitoring the plains bison grazing behaviors and movement patterns while the herd resides on agriculture land, and continuously worked with other local farmers and ranchers to gather information and help mitigate issues caused by bison. The SRPBS have provided fencing materials for affected land owners so they can construct diversionary fence along the Sturgeon River to help prevent the bison from entering their land, moving them back into PANP. So far, the tolerance level of local stakeholders has been high (Forest times 2011).

The interviewees from the PAMF board described this project as innovative and successful, management issue, allowing local people to be involved and lead projects, assembling different stakeholders, with support from PAMF. That kind of partnership had not been performed in the region before (interviewees 2010).

In June 2010, the SRPBS, along with PANP and the MOE, hosted the “Bison on the edge” conference in Big River, SK. Bringing together local landowners and wildlife managers from around the world, a long-term management plan was developed for the plain bison. The event was nominated for “Event of the year” at the Tourism Saskatchewan Awards of Excellence (PAMF communities program).

### **3.8.5. Junior Forest Ranger Program**

Saskatchewan Junior Forest Ranger Program (JFR) is one of the biggest projects of PAMF, and highly valued among the board members. Spread over the country, the PAMF coordinates the program for the province of Saskatchewan.

JFR is a six-week summer work experience program that provides skill development for youth between the ages of 16-18 in the field of natural resources, being paid a small wage. The JFR program gives youth an opportunity to earn certificates and gain knowledge of forestry fire-management, environment, health & safety, mining and cultural awareness along with the teachings of traditional ecological knowledge (TEK). Traditional practices in teachings from elders are combined with science and technology, developing partnerships between Aboriginal people, government and industry. From a forest dependent community-aspect, where young people tend to move away from the rural areas to bigger towns, and having the forest industry downturn and community resilience and stability in mind, this project has an important role as encouraging youth to remain in high school and complete their education by promoting confidence, culture and leadership. Engaging parents and members of the community help to build a stronger healthier and more sustainable future.

The initial JFR program started in the FN community of Sturgeon Lake in 2006. It is now spread across central and northern Saskatchewan to 8 other communities. PAMF acts as coordinator together with representatives from the Prince Albert Grand Council, Canadian Forest Service, SIAST woodland campus: the Federal Department of Natural Resources and Saskatchewan Environment.

The participants graduate with the possibilities to pursue a career in the field of natural resources, which is already seen as previous graduates from the program now enter higher education in natural resources nursing and administration. This past year, 95 “students” from nine camps graduated, and since 2006, 301 participants have graduated.

Summing up some of the mentioned characteristics of the program, the interviewees highlighted the way JFR sends a good message to a lot of kids, reaching out, helping youth with possible career decisions, being a substantial program. “The opportunity for youth to come together and learn all about nature, forestry safety training, among much more, they come back changed and mature and confident, seeing the range of careers could be for them, realizing the need to stay in school.” (IP. 1. 2010-060-07) So far the participants have been Aboriginal youth. As the camps are arranged in their home communities, the JRP helps them to see the opportunities in their home community and culture, meeting community experts, and having elders camps as evening activities. The youth earn better self-respect and confidence as well as awareness of their own culture.

Even though all those positive gains, the JFR demands a lot of paperwork, which PAMF put much effort in helping the communities with, putting up training schedules and templates. A guidebook has also been done, listing funders, all the forms, details of each activity and what to come out from it. It is up to each community to find the funding and training activities. The interviewees are really proud about how much the communities are able to pull together and what success they reach.

### ***3.9. The importance of the social dimension in PAMF work***

Studying the PAMF work and activities today and back in time, there are several reasons to explain the focus on social sustainability. First, the Forest Communities Program is a major contributor specifically directing MF work into social sustainability of forest dependent communities. Looking at the list of the activities and projects, the shift is visible from bio-physical science to a more economical and social science, following this funding program objectives.

Secondly, the PAMF has been community-based with broader visions, with the partnerships with indigenous people groups and rural communities. Prince Albert Model Forest has always been very closely linked with the aboriginal people in the Prince Albert region; some of the other MF has not been as much involved. Some of the most successful projects have been centered around the Aboriginal participation. This has not been the situation for all the Canadian MFs, as every MF has different partners and stakeholders, different visions of what to accomplish. Other MFs than PAMF have been more focused on silviculture, recreation and other traditional forestry indicators.

Being able to measure the progress of SFM and study what impact the forest management has on the community, helps to convert the forest sector from focusing on pulp and paper industry towards the forest objectives of recreation groups and First Nation people, etc.

One thing that does indicate a significant change is the way the board members and partners have changed in the PAMF board of Directors during the years. Working on the Forest Communities Program proposal, Mark Johnston (pers com 2011-10-04) stated: “One interesting thing that happened was that we started to talk to different stakeholders, because the program had changed, so now we were talking to economic development agencies, the city government of PA and other communities like that and organizations that were more about economic development, whereas before it was all about forest industry and things like that. So the nature of our stakeholder group has changed. It’s not only the program itself, but the people who work with us are different.”

The indicated direction into social themes of the successful projects conducted in PAMF was also explained by Mark Johnston (pers com 2011-10-04):

“The bison Stewards, that’s essentially a social program, trying to reduce conflict between the landowners and the park, and the bison have been the mechanism, but it’s truly about reducing conflict between the land owners. It’s really obvious that Junior Ranger Program is about capacity building which is a social issue. Number of the other programs that we have is really social or economic or both, so I think it is fair to say that we really have changed direction and trying to address that. Doing what we’re told.”

### **3.10. Vilhelmina Model Forest**

#### **3.10.1. Goals and objectives**

The key opportunities when establishing the Vilhelmina Model Forest (VMF) was “to face ethical and moral responsibilities; increase knowledge on the use of natural resources; to provide prerequisites for natural species to survive in vital ecosystems; to acknowledge market-economic circumstances; and to interact actively in political decisions, conventions and laws” (Svensson et al 2004 pp. 22-23). An important part of the work has been to build networks and gain knowledge exchange on local, regional, national and global levels (VMF online).

Being an arena for developing, testing and demonstrating ideas around forest production and environmental management, the initial goals were:

- To ensure possibilities for long-term economic-sound forestry and liberty of action with respect to forest products;
- To safeguard survival and vitality among all species that naturally belong within the focal ecosystems; and
- To encourage innovative ideas on how to maintain natural ecological functions and processes during forest management regimes (Svensson et al 2004 page 24).

In a report from 2006, a list of projects in Vilhelmina Model Forest was published, shown below in Table 4, which has served as a visionary work plan while waiting for funding to get about with the activity. Projects involved in the development programs have been driven as parts of research projects at the universities in Umeå. As noticeable, they have an ecological main direction but the two last programs are incorporating social values too.

**Table 4.** List of projects in Vilhelmina Model Forest summarized from the suggested work plan for VMF (Jougda et al 2006)

<b>Six development programs:</b>	<b>Study parts:</b>
1. Nature protection in a landscape perspective	Mapping over where to avoid clear-cutting, forests with continuity values and their change in different forest history phases, alternative forest management methods, classification of forest goals with nature protection, history and forestry methods impact on biodiversity.
2. Forestry in balance between production and environmental goals.	Revision of production experiment- and demonstration areas, epiphytic lichens, strategies in land areas with high nature and landscape values, analysis of human colonization history, fire regimes and tree species dynamic, ditching, intensive forestry.
3. Forest management near water courses	Analyze effects on water environments and biodiversity of historical and present forestry, goal classification along water courses, lakes and wetlands. Biotope conservation in Laxbäcken. Impacts of water power development in Ångermanälven.
4. Impact by climate change on the sub-alpine tree border and the mountain forest areas.	Climate scenarios effects on the alpine tree line and species dynamic, production capacity close to mountains, on functionality on nature reserves, and on vegetation types important for reindeers and moose.
5. Combination Forestry – Reindeer herding	Evaluation of herding lands and forest management effects on reindeer herding use, the use of GIS for consultation processes. Methods for lichen inventory, optimize the operative benefits of GIS-necklaces for Saamí villages, traditional and local knowledge related to forest use.
6. Participatory planning in the forest landscape	Create a local group for stakeholder collaboration, arrange demonstration areas, education of forest owners and public around VMF and these 6 development programs, follow, document and improve consultation processes between reindeer sector and forestry.

### 3.10.2. VMF activity and work

The governance work of the VMF has been focused on how to get money and to survive. The activities have been in form of networking, in research areas and international activities with other MFs, and not “working on the ground” in Vilhelmina. Comparing with Canadian MF Network, which is a federally funded program, VMF has not been settled as a state initiated and supported project.

Funding is the prerequisite criterion for establishing a project. For the establishment and development of VMF projects, funding from different sources has been the basis since the start. The only continuous resource at place have been an exhibition room provided by the Model Forest lead partner (Vilhelmina Municipality) and about 20 working days/year assigned by Swedish Forest Agency for the VMF coordinator. In addition, some financial support has been provided annually by the Canadian Model Forest Network and the Canadian Embassy in Sweden. Temporary funding from the European Union, as part of the Baltic Landscapes Project has been in place since January 2012.

One interviewee formulated some urgent concerns about the VMF existence:

“Are we a MF or not? We are still dealing with that issue. The problem with the MF concept in Sweden is that it was quite late acknowledged by the Swedish Forest Agency, and they have never provided any money to the MF, so we have applied for money in research funds or alike.” (IP. 2, 2010-10-04)

A wish frequently expressed for VMF, was to have one person working as administrator some days every month, updating the webpage, overview communication channels, keep track of things going on, what to participate in or to discuss, which direction to choose and keep following. “A budget of a couple of 100 000 SEK every year, or like a million SEK for five years, that would be enough to have this role, then we can arrange something easier, now it’s hard work every time because you have to ask people for acting on voluntary basis.” (IP. 5, 2010-10-08) In conclusion, funding is crucial for running a Model Forest organization.

The municipality of Vilhelmina has the head responsibility over the VMF, though the informal coordinator is the representative from the Swedish Forest Agency. The municipality provides locales for the VMF show room, but is not initiating activities. As one interviewee describes it:

“In Sweden it is very natural to have the municipality board strongly involved, because they have the authority on landscape planning, which no other authorities that come into that process has, and if you accept the hypothesis that the MF as basically a planning exercise you have to have the decision-making body as part of the process. And then you could always wish that the municipality board had a stronger capacity to be more actively involved. But this is not the case in VMF as it is a very small municipality, so they have to rely on persons that come in, like [the person from the SFA].” (IP 6, 2010-10-11)

Interesting from this quotation is that the interviewee does not see the Model Forest as a process, but a planning exercise. Another description of the VMF governance was:

“The VMF sits under the municipality board formally, so formally the municipality board is responsible. But in practice it comes back to a few persons that have the engagement, more or less one person. The Swedish Forest Agency therefore has a role, since he [the VMF coordinator] is working for them. And then there is a steering committee that meets once or twice a year.” (IP. 2, 2010-10-04)

The board members of VMF are listed in Table 5.

**Table 5.** List of Board Members in Vilhelmina Model Forest 2007. A new revised list will be presented in the end of March 2012, after this thesis completion

<b>Namn</b>	<b>English name</b>
Vilhelmina kommun	Vilhelmina Municipality
Skogsstyrelsen	Swedish Forest Agency
SCA Skog AB	SCA Forest and Timber
Statens Fastighetsverk	National Property Board Sweden
Norrskog	Norrskog (Forest Owner Association)
Vilhelmina Övre Sockenallmänning	Vilhelmina Common Forest
Vilhelmina Norra Sameby	Vilhelmina Northern Saamí village
Vilhelmina Södra Sameby	Vilhelmina Southern Saamí village
Sveriges Lantbruksuniversitet	Swedish University of Agricultural Sciences
Umeå Universitet	Umeå University
Länsstyrelsen i Västerbottens län	County Administration of Västerbotten
Naturskyddsföreningen	Swedish Society for Nature Conservation

Following part describes some of the successful projects attached to VMF.

### **3.10.3. Reindeer husbandry plan (RHP)**

The RHP project is not initiated or driven under the VMF, though the board members of the VMF are all involved in the RHP, and the reindeer herding management is an important part of the VMF activity. The VMF has the ambition to work with mapping and documentation on cultural conditions and technological solutions to improve the integration between the reindeer management and forestry (VMF online).

There are 15 reindeer herding families in the southern Vilhelmina Saamí village and 20 in northern (County Administration Board of Västerbotten 2006). The land where reindeer husbandry is taking place is used by many stakeholders, impacting each other in different ways. The dialogue between forestry and reindeer management has intensified lately years. Gaining knowledge about the conditions and limitations for the different partners is important in establishing a good consultation atmosphere and common understanding to support mutual adaptations for all participants.

Because of the large areas of lands used for reindeer grazing, the needs of the reindeer husbandry at times come into conflict with the needs of other land users. Partly it is due to genuine conflicting demands on the same resource, and partly due to lack of overview and understanding of the land-use pattern of reindeer herding. The effects of forestry activities seldom influence reindeer husbandry only at the local scale. Planning of forestry activities with regard to the availability of lichen and forest cover needs to be carried out at the landscape or regional scale as well. Remote sensing and Geographical Information System (GIS) become valuable tools in attempting to identify, map and communicate essential resources for reindeer, in relation to the needs and activities of other land users (Sandström et al 2003).

Data from satellite pictures, local knowledge, field inventory providing documents and photos, has been assembled in a GIS to illustrate values for the reindeer herding sector. Especially the ability to detect ground lichens (vegetation and grazing types) in the satellite data is very useful for the reindeer herders. Knowledge of the winter grazing lands, grazing access, disturbance from other land uses, forest age, snow conditions and other issues makes the GIS tool a highly valued support tool in practical reindeer herding management

as well as an important educational tool for communication. The RHP can also be used by wind mill and mining industry when constituting Environmental Impact Assessment etc, but most of all, being a plan for a sustainable reindeer management that uses the grazing land efficiently, to help herders adapt to other stakeholders and the surroundings (Sandström et al 2003).

The GIS tool allows the consultation processes and consequent descriptions to be more based on published knowledge, presented with better overview. This leads to faster handling by authorities, forestry and Saamí villages. Areas being the most important for grazing are pointed out, showing how reindeers actually use the land including seasonal variation, which enables adapted forest management actions (Sandström et al 2003).

This project is relevant also from another important perspective. If Sweden is to fulfill the demands from the ILO Convention No. 169, the Saamí rights to winter grazing lands needs to be increased protecting the reindeer herding interest. Concerning land use claims, the convention requires that indigenous people can have them tested in court. The indigenous people should have influence over use, administration and protection of nature resources when such activities concern them. A formal owner right is not a necessary the goal, but at least the tenure rights must reach a minimum level, which is higher than the present Saamí rights. As it is today, the Saamí people must accept evident intrusion on the reindeer herding rights, which is not supported by private land owners (Eriksson 2003). Property rights and any changes to them, could significantly affect the natural resources utilization and directly affect the economic and social structures of a local society (Bengtsson2010).

The importance of the RHP, raising awareness, communication and collaboration with the Saamí people, was stated by several interviewees, e.g;

“The Saamís were one really strong part of the discussion [through this project] that they haven’t done before. Now they are getting stronger and stronger/.../Now, for the first time they have the possibility to describe what is on their mind, and how they use the land.”

“It has always been difficult for the reindeer herders to prove why they need so much land. The RHP provides “a tool to use in discussions on land use. To understand why they need the whole area, even though they [forest owners] don’t see reindeers there all the time, all the year around.” (IP. 2, 2010-10-04)

Project partners are the Swedish Forest Agency (initiator), universities, the County Board of Västerbotten, the Agricultural Ministry, the Space Board, forest companies (Holmen Skog, SCA Skog, National Property Board, Stora Enso, Sveaskog), working with several Saamí villages. The first version of Reindeer herding plans (RHP) have been developed for 26 of the 51 Saamí villages in Sweden, the rest will be done within 2012 (Leif Jougda, pers com 2012-02-08).

#### **3.10.4. Demonstration sites**

In order to meet different interests of the forest land use, information and participation is important. Consultation and information about national forest goals are claimed for the public and private owners. An early project in the VMF was establishing demonstration sites in a 14 locations, with information paths and signs. The demonstration sites show

forest management in practice and can be used as public field lecture hall on different management methods (VMF online 2011). For example, the site in *Njakaffjäll* shows an old growth spruce forest, *Laxbäcken*: forest management close to watercourse, *Krontjärn*: urban forest management, *Statsås*: fire management, *Klitvallen*: mountain area selection cutting. These demonstration sites have been popular, according to some interviewees:

“[The demonstration sites] have been good to visit for people not engaged in forestry, to involve the local people, showing different ways of managing forests. People really like to visit them. Though it is another project that didn’t get enough money to be kept running.” (IP. 4, 2010-10-07)

“[The demonstration sites] make it possible to go out in the forest and in the landscape, instead of sitting on the hotel or ‘Folkets Hus’ for meetings. Making it free for the people to participate. Discuss the Model forest questions together. To show the people a practical thing, that’s a good idea.” (IP 5, 2010-10-08)

### ***3.11. VMF and PAMF exchange and collaboration***

Vilhelmina and Prince Albert are communities facing similar challenges as remote forest communities. By documenting and describing land-use patterns, management plans, and legal and political systems at work in each Model Forest (MF) a collaborative learning process is possible. Collaboration activities are established between both the Model Forests, and academic researchers from universities in the areas.

PAMF has made a list of long-term future collaboration projects to be continued in the partnership with VMF (PAMF 2007):

- To develop a cross-cultural cookbook of traditional methods and recipes of the Saami peoples of Vilhelmina and the Aboriginal people of PAMF;
- To create a collaborative climate change research program;
- To share linkages and experience in the areas of governance and community sustainability;
- To share knowledge in managing aquatic resources;
- To continue our cross-cultural youth exchange between the two model forests;
- To share methodology of mapping traditional and biological knowledge;
- To develop a direct communications platform for sharing knowledge and experiences between the two Model Forests.

As PAMF have an uncertain funding future, and VMF have been struggling to get funding during the past years, the future of the collaboration between PAMF and VMF was discussed in the interviews. All interviewees, both Swedish and Canadian, stressed the exchange between the MFs as highly valuable, motivating and important. Mentioning predictions for the future, the project with Learning from Elders (described in the next section) will most certainly continue. Ideas on new research projects are continually discussed among the researchers from both Sweden and Canada.

The pilot study interviews conducted for this thesis are also an outcome of the collaboration between VMF and PAMF.

### **3.11.1. Learning from our Elders**

Another successful project collaboration, highlighted in the interviews in both PAMF and VMF, is “Learning from our Elders”. In this project, students have been trained to use traditional and formal knowledge to document the location, movement and behavior of woodland caribou in disturbed forested ecosystems in Saskatchewan. In Sweden, interviews have been held with reindeer herders to address the direct and indirect impacts of large-scale societal and ecological changes on reindeer herding communities. Elders have been interviewed for sharing traditional knowledge with students and researchers from University of Saskatchewan, Umeå University and University of the Arctic in the circumpolar network, resulting in a completed report by lead researchers. Teaching modules are being developed in 2011-2012 to be used in a variety of circumboreal universities and other educational institutions. By sharing in knowledge creation, the project seeks to improve understanding of indigenous perspectives, and help residents, researchers, and resource managers learn from one another on issues of common concern, proposing adaptive strategies that are appropriate for regional circumstances and traditions (PAMF 2011).

The project has gained attention of the whole Vilhelmina municipality, being written about in the local newspapers, and in a newsletter delivered to all households. The international partnership between the communities and universities have been very important emphasizing social dimensions of SFM, resulting in *Learning from Elders* as a successful and concrete activity. In Sweden, the exchange between youths from PAMF and VMF was expressed by one interviewee:

“so highly meaningful that it overshadows most things. The project has been very important to the young persons, strengthening them as individuals, making them proud over their Saamí heritage. It has been an exchange program supporting gender equality, and for young women that do not see any future in the community. Their interests usually meet resistance, cultural and traditional interests, wanting to have an own business. The MF makes an important arena for finding new ways on how their interests can be met.” (IP. 3, 2010-10-06)

### **3.12. International Model Forest Network**

Both PAMF and VMF are members of the International Model Forest Network (IMFN). In March 2011, VMF met with PAMF and Alto Malleco Model Forest in Chile to draft a trilateral collaboration agreement which will link the three Model Forests on projects related to key project themes as Indigenous peoples and Ecosystem Goods and Services and how each of these interrelates to landscape planning and governance.

There is also a Circumboreal Initiative in the IMFN, bringing together indigenous people from Canada, Russia, and Sweden to identify common issues related to community sustainability and the impacts of resource development. In 2011, a workshop on Networked Research in Circumboreal MFs was held in Spain, where 28 participants from circumboreal MFs in Canada, Russia, Sweden and Poland were represented. The purpose was to develop a research framework for MF researchers and communities that could help structure and advance community-based research for community sustainability. Applied research to better anticipate and understand changes affecting boreal communities and ecosystems and help to develop systematic adaptation approaches (PAMF 2011).

### **3.12.1. The importance of VMF in international networks**

The Vilhelmina Model Forest has been struggling since the start to get funding to build up the activity and organization. Discussing the importance of the MF arena, the interviewees in Canada indicated how highly valued the partnership with VMF is for PAMF. When PAMF was applying to the Forest Communities Program, having an international component in the proposal was mandatory. Being able to demonstrate the long, solid and ongoing collaboration and existing relationships for years back with VMF was an important reason why the federal government accepted the proposal (Mark Johnston, pers com 2011-10-04). He stressed the importance of this collaboration:

“We would never walk away from that [partnership]. This idea has come up several times ‘what could we do to try to help out Vilhelmina’. We can’t give them some dollar, but are there other things that we could do for them to have a better chance to survival. That would be a discussion to have. We very much want to maintain that relationship, and everybody involved on both sides recognize the values of it, and everybody hopes that it will continue. There’s no doubt that it is an important part of our program, but we, again, it’s often not exactly clear what it is we need to do to go further, that’s the question.”

### **3.13. Saamí people participation in VMF**

One of the things found in the interviews in PAMF was a bit of a frustration that the MF concept is not a political arena (Klenk et al 2012). For aboriginal people in Canada that try to assert their rights and gain more power, there is a disappointment over the PAMF not being able to push on issues of political character. The same thing was seen in VMF. Some of the interviewees in VMF believe the question to be too sensitive, not being discussed in VMF, though it is recognized. The Saamí people use their own organization of interest, The Saamí Parliament, to raise and represent their political issues. The MFs are not being an arena for discussing or representing indigenous political matters, and was not intended to be that either. The Saamí issues are not expected to be raised in the VMF, since they are not general public interests, with the Reindeer Herding Plans as an exception as it closely related to forest management. “If the VMF had had a continuous activity, the involvement among the stakeholders had been higher, finding things in common to discuss. As it is now, it doesn’t feel meaningful to bring it up in VMF board. We [the Saamí people] have many battles to fight, taking them where it feels most efficient.” (IP. 3, 2010-10-06)

“The Swedish government says that yes, they are a native people, their rights should be maintained, but on the other hand there’s nothing concrete coming out of that, and there is not any economic compensation to the landowners that supports this vision from the Swedish government. The Saamí people do feel a bit left behind and neglected by the government. /.../ This has helped the MF in a way the Saamí people become interested in being active, they see the possibility to be able to bring up their problems on the agenda. This is also a constraint, the fact that the government says something and don’t do it, limits them [the Saamí people] to become active in the process.” (IP. 2, 2010-10-04)

Discussing the role of the Saamí people in the VMF, its governance and activities, positive outputs have been recognized: “The Saamí influence has been good, through the engagement from [Saamí representative].” /.../ “Important that the Saamí people are visible.” (IP. 4, 2010-10-07)

The activities arranged with the PAMF and with elders have been very beneficial for the Saamí forest values, being highlighted and visualized. In the VMF history, the conducted projects have mainly been result of the interest from SLU, Umeå University and of Swedish Forest Agency, who bring in the Saamí people in the beginning of the project and communicate it with them, to secure that their interest is elevated to appropriate level. As the resources for the Saamí people are restricted in money, time and rights, together with the fact that VMF has not been very active the recent years, the engagement from the Saamí people have been limited. This was also discussed further by some of the interviewees, e.g.:

“Limitation for Saamí people are all meetings, involved and connected to so much. Haven’t had time for all meetings: with the forest people, people working with wind mills, the mining companies, about the Swedish Forestry Act, in obligatory consultation processes. So they [the Saamís] have to leave their practical work for attending meetings. There are too few people who are keen and good at discussing this.” /.../ “The people who will be involved in this and also the VMF on the steering committee level, they work with so many other consultations and discussions and meets so many other people.” (IP. 5, 2010-10-08)

### ***3.14. Analyzing the role of the VMF arena***

As the PAMF is an acknowledged and well established organization on a Canadian national and regional level, the role of their arena is not more secured than when it comes to VMF. As mentioned earlier, VMF are recognized among researchers concerned in the topic, but not so well on a governmental or public level. Hence, the role of VMF and opinions around that, captured in the interviews, will be presented and discussed.

All of the interviewees are positive to the VMF existence, as something that can attract resources, research and more people to Vilhelmina, to open up the collaboration between different business interests, being a neutral communication arena. The way of working in this type of organization is important, having a bottom-up-perspective. According to one interviewee, the role of the MF is to facilitate dialogue between partners through the politically ‘acceptable’ devices of research, educational and demonstration projects. At the same time, some interviewees express a sadness that the VMF has not become more, which also might be impacting the public opinion of the municipality “once more a project that didn’t get enough money, that fizzles out”. (IP 4, 2010-10-07) This fosters a reticence, as the public are not involved and don’t understand the MF objectives. The people living in Vilhelmina are not connected to the VMF in their daily work. “The activity in itself is not as extensive to impact the Vilhelmina inhabitants in general, lacking of resources. The VMF takes the opportunity to do something when occasion and possibilities are given.” (IP. 5, 2010-10-08)

The MF is filling a gap in the municipality, but could be improved by more information to and communication with the community. Not being entirely rooted in the community or having enough public awareness and understanding about the VMF concept, is a problem for the organization.

“People don’t know exactly what the MF concept is. The people in the lead of Vilhelmina, they don’t understand that we had the opportunity to do something in Vil-

helmina, we were the first in Europe with this, now we had in a way built up something and people around here don't really understand the meaning of the MF, how they can use the MF as a concept to get people to coming here to visit Vilhelmina.“ (IP. 5, 2010-10-08)

The issue of public participation also faces constraints:

“Involving people in participatory processes is difficult without money. You need to rely on people participating in their spare time, which some will do but not forever.” /.../ “You can't expect people to drive 200 km for just one meeting, paying for it themselves.” (IP. 5, 2010-10-08)

On the other hand, the MF has gained a lot of publicity through research projects and activities, and through visitors from abroad and from board member partners, visiting the demonstration sites. When asked about objectives and purposes of the VMF, several things came up:

“The most important thing that the VMF has is as part of the IMFN.” /.../ “Most important project is to keep trying to give the VMF life.” /.../ “It is fair to say that even though if Vilhelmina model doesn't have power in itself, it has a voice and an impact in a way things are done on the landscape.” (IP. 7, 2010-01-04)

“The main direction [of VMF] is the same now as it was intended to be in 2003-2004, and that is to work about the balance about forest management and reindeer herding, as far as I understand.” (IP. 7, 2010-01-04)

The projects have to some extent been responded to the political debate, for example the reindeer husbandry conflict, the water management debate and fishing issues, which was shared with a lot of peoples' interest.

Another part of the problem of VMF is that it “hasn't succeeded to reach the persons [non-reindeer herder Saamis, private forest owners] that are not currently members of the board. Which the board is aware of.” (IP. 4, 2010-10-07) The interviewee continues: “The purpose is good, but the methods have not always been working fully. Which is due to, by my personal opinion, that I as a private forest owner, haven't had any direct channel in, I go through the Forest Commons.”

## 4. Discussion

The most recent forest industry downturn in Canada in 2008 and earlier, and similar occurrences in Sweden, have had severe impacts on remote forest dependent communities, as the need of labor force has diminished substantially when mills shut down during the past decades or moved from rural regions. Effects of this have been high unemployment rates, out migration, ageing population and a weakened source of local tax returns to support public spending for local well fare and service (CCFM 2010, Almered Olsson & Bladh 2004, Lindgren et al 2000). People are not only employees, producers and consumers in a society. Physical and psychological health and wellbeing, life qualities in social manors, family history and enjoying nature are important factors giving a perspective of the whole interaction between the essential parts in a human life. When the daily life becomes too complicated in access to service, health care, infrastructure, or negative landscape changes due to environmental disturbance are observed, personal well-being is threatened (Nyberg et al 2004, Reed 2003, Ronnby 1992). These factors show the importance of the social-related values of sustainable forest management.

Changing into new livelihoods is hard but necessary, finding new roles and positions in the globalized and post-industrialized economy (Lundberg & Karlsson 2002). Business such as bioenergy, water resource management, nature tourism, attractive housing and traditional ecological knowledge provide new employment possibilities from the enriched and varied forest resources (Nyberg et al 2004). One of the key solutions to reach sustainable development of forest dependent communities is the work of creating resilience (Parkins et al 2001), another to explore multiple forest use, where the Model Forests in Canada concept has been pioneer organizations in developing research, activities and work programs. The Criteria and Indicators framework for SFM has provided tools to gain data and knowledge. In Sweden, several governmental initiatives illustrate the direction towards multiple forest use, as the national environmental goal “Sustainable forests” and the initiative “Forest Kingdom” (Ministry of Rural Affairs 2011).

By gaining access to the local resources, an ability to develop competence for decision-making and by including the local and indigenous people through wide-ranging participation in development projects, progress towards forest community resilience and well-being can be realized. Enhancing social and cultural issues, communication and collaboration, creating self-trust and encourage the local strengths are some important keys identified in literature and interviews (e.g. Schindler et al 2003, Parkins et al 2001, Ronnby 1992). Instead of letting a few communities remain heavily forest dependent, the forestry as an economic sector can be diversified to comprise other communities. In case a downturn comes, the risks are spread and perhaps not affecting hard on a few communities, but less severe on a larger number of communities, not endangering the whole future of the communities.

The importance of the MF arena on local, national and global levels, as facilitator of community well-being and sustainability has been confirmed from the interviews and literature research. The key attributes of the MF work are crucial when working with rural development and sustainable forest communities. The MFs highlight the important implementation of inclusiveness and representative partnership, knowledge sharing, networking and capacity building. Their work strives to embody a high representativeness, transparency and accountability and to support activities that serve the needs, values and management challenges of the partners and inhabitants on local, regional and national levels.

With the long history of conflicts between stakeholders in the studied regions, the representation and participatory planning for consensus-based decisions make complex governance situations in the MFs. The competition between different interests, status and traditions of the involved board members, as representing different parts of the society (e.g. government, industry, private land-owners, indigenous groups) and different cultural backgrounds are true challenges (Klenk et al 2012). The way PAMF and VMF are dealing with these challenges differs, though the characters of being boreal forest landscapes, having indigenous people participation and the same kind of historical forest dependency challenges are shared.

As VMF has been struggling with obtaining funding, it is hard to make a proper comparison, as that kind of main prerequisite impacts the ability of keeping up work and activities in an organization. The performed research projects in VMF have received funded from other sources. PAMF is also limited in budget but has the organization running on deeper level than VMF, with regular monthly board meetings, employed staff and a voluminous list of ongoing projects. Three other big differences between the MFs are firstly the federal government funding program and incentives to the MF network in Canada, which is completely absent in Sweden where the MF existence is not a result from a governmental initiative. Secondly, the forest owner stakeholders are having different backgrounds, where the majority of the forest land owners in Sweden are private, but Crown owners in Canada. Thirdly, the forest legislation is older and perhaps more restricted in Sweden than in Canada.

Given the emphasis interviewees placed on the success of socially-related recent projects in PAMF and VMF one question that arises is what this “social” focus means for SFM? Thus, this thesis aimed to examine the social dimension of SFM in the PAMF and VMF projects and activities, to see if the given observations could be confirmed - that the social element of SFM was having an essential place in the MF activities.

#### ***4.1. Importance of social sustainability element towards sustainable forest communities in both MFs***

Social values have always had significance in human life, being taken for granted and therefore not identified as an urgent need in rural life, until the urbanization and industrialized world changed all the historically well-known conditions. The importance of the social values should not be neglected, no matter how obvious they may seem, but yet unprioritized in the modern world of living. The environmental and human rights and well-being have been suppressed by the hardly driven economic interests. Hopefully, that tendency in society have reached the peak, now advancing the recognition of ecological and social values as the multiple use forestry is gaining acceptance for future sustainability in both forestry and society.

Model Forests in Canada were given the task by the government in 2006 to investigate how to support communities, in helping the transition of community direction, as well as understanding the transition, with tools as C&I and other kinds of support. The introduction of the Forest Communities Program 2007 resulted in a clear shift in the organization and work in the MFs of Canada, directing them into community use and community stability, from the forestry-focused approach of SFM in earlier funding programs.

On the other hand, the significance of the observation that the Model Forests' focus has increased into the social sustainability dimension, can be discussed. Is it recognized from an objective point of view? It seems to depend on who was asked and timing for the interviews. Mark Johnston (pers com 2011-10-04) did not "think it changed all that much in the actual management activities or in the way companies behaved vis-a-vis communities, since the FCP shift. People got to know one another, have a deeper value of conversation about, interpretations and vision about what SFM was. I think it is definitely value there."

Looking at projects mentioned as successful by the interviewees and which they are most proud of in the MF activities, they all have elements from the social part of SFM. Beginning with PAMF, the Sturgeon River Plains Bison Stewardship framing collaboration between farmers and bison preservation stakeholders involve both community and environmental goals. The project has also been awarded, confirming its success. The Junior Forest Ranger Program engage the whole community as event creator, educating youth, sharing traditional forest use and encourage to higher education, in order to keep the forest dependent communities to survive. Learning from our Elders also considers knowledge sharing around traditional forestry and reindeer/caribou issues, framing exchange between both elders and youth, as well as internationally between VMF and PAMF.

In VMF, the reindeer herding plans will act as a knowledge base and tool to use for both forestry and reindeer herders, in order to communicate and share important data on reindeer movement, enabling conflict solving with reality based facts and argumentation. The demonstration sites have shown the public examples of alternative forest management methods, inviting to education, reflections and new meetings. All the projects have been educational in character.

An important part of the MF way to success and progress is to keep conducting projects with a strong local connection. Preferably the initiatives should come from the local people, being trusted by the other inhabitants (Ronny 1992, IP. 1, 2, 3, 5). The trust by the local population is essential. Lacking hope for the future, it is hard to create engagement and successful work. To develop survival strategies, experiences, competence, collaboration skills, self-trust, traditions of the local people and society must be highlighted (Ronny 1992). The municipalities may provide significant support as enabling external support and impulses from the outer world, and also as head of local planning responsibility.

#### ***4.2. The Model Forest Arena***

The interviewees confirm that the Model Forest arena can attract resources, research and more people to rural regions, to open up the collaboration between different sectors. The way of working in this type of organization is important, having a bottom-up-perspective. Studying both VMF and PAMF indicates the importance of funding. Money is crucial, enabling coordination, an administrative staff, representative participation and travel possibilities to meetings. The input of voluntary resources is common in rural communities, but nevertheless limited. There are not many things possible to do without money these days, especially not in such a big and complex issue as resolving conflict and working to achieve sustainability. Entrepreneur initiatives, research projects, marketing and communication need both monetary and other resources. As VMF has now received funding through the Baltic Sea Region Program, formulating visions and strategic documents can be established and basic administrative functions can be initiated. PAMF faces a breaking point as

the current funding cycle ends with March 2012, and the federal government has decided to not continue the program but phasing it out.

Being able to demonstrate the long, solid and ongoing international collaboration is highly beneficial for all partners, and enabled PAMF funding 2007-2012 through the Forest Communities Program in Canada. As VMF are struggling to keep the organization on feet, the collaboration between PAMF and VMF is exceedingly valued by both Canadian and Swedish interviewees, strengthening the MF concept, and hopefully soon receive acknowledgement from the local inhabitants and politicians in Sweden.

On the other hand, modes of representation and participation in PAMF and VMF organizations have not offered a forum in which long-standing conflicts over the political dimensions of SFM can be effectively deliberated. Indeed, “participants of PAMF and VMF are empowered to take part in networked forms of natural resource governance that simply take for granted existing political and economic relations. Ongoing conflicts over the rights of indigenous peoples is a political issue that cannot be easily sidestepped without resulting in challenges to the legitimacy of networked forms of governance such as PAMF and VMF. However, the MF program was not intended to be a forum for public debate, but might gain from having ability to question customary power distributions” (Klenk et al 2012).

Shindler et al (2003) also recognize the mandate constraint for the MF role as giving advisory power but not decision-making authority. The way they have contributed successfully in building partnerships and facilitating education and communication is therefore a first important step, to be followed by deepened management authority. Indigenous peoples have inherent and legal rights to use and manage land and resources, based on an extensive history of building cultures, religions and resource management systems founded on an intimate relationship with land (NAFA 1995). Raising the rights and equality among stakeholders is a prerequisite for success, reaching sustainable relations. Human rights are such a basal core in the society, not to be neglected, but respected and understood on individual as well as governmental level.

An “Aboriginal dilemma” occurs whereby either aboriginal representatives act as equal partners in the board, or they advance their interests as a self-governing body, given higher jurisdictional mandate as constitutionally-guaranteed governing rights (Klenk et al 2012). The Swedish interviewees in VMF expressed the same kind of problem. The Saamí people can make a more efficient voice for their own people’s interest in the Saamí Parliament, where the organization functions and resources are better established than in VMF. The role of VMF is rather more of enabling an additionally forum for the Saamís. However, the complex conflict between private forest owners and reindeer herders may be addressed by efficient and decentralized forms of governance as from the MF. The solution is often found in the interrelated fields of biological/physical and political/social sciences as well as the local community (Sandström et al 2003). But as long as the VMF does not have wider support and recognition from the Swedish authorities, the ability to achieve results is limited. Having an undiminished meaning internationally, the MF role in facilitating the Saamí people part of and visibility in the society is also crucial, as the ILO convention No. 169 is not ratified in Sweden.

In situations where the ability to reach local goals is dependent on the relations to the outer world, the acting space is defined within the frames of economic or political characters. Legitimacy and acceptance of local goals and actions from surrounding world and power holders are important for the resulting actions. Without legitimacy, the own strength in resources and acting effort is remains to be hold against superior powers and give acceptance for local ambitions. A strong legitimacy justifies the local community goals to raise hearing for local opinions and support for local actions. The acceptance of local goals and actions are also dependent on what value the surrounding world actors are giving them, the superior economy (Lundberg & Karlsson 2002).

### ***4.3. Discussing the future of C&I***

The Criteria and Indicators have helped raise awareness, particularly among forest managers, to see the importance of multiple forest values (Duinker 2011). They have also acquired valuable information, addressed specific concerns or given recognition and respect to different forest stakeholders (von Mirbach 2002).

Good indicators should be measurable, relevant and responsive to management activities. However, the desire for better indicators is hard to fulfill, the available data is limited, often needing to rely on secondary sources. But monitoring some indicators and reporting on the development of others might be more doable, instead of revising the whole C&I set, which would demand a lot of resources. The ability to interpret data in sustainability terms is also limited (Schindler et al 2003). Improving of data-collection programs, linking C&I-SFM more directly into forest policy development, take on prospective sustainability analysis and applying C&I-SFM to protected forest areas and urban forest, are concluded by Duinker (2011) to be necessary improvements on the Canadian C&I. The need for both qualitative and quantitative indicators is also recognized, not the least from an aboriginal perspective, whose connection to multiple forest values and SFM is best measured with qualitative data, to strengthen their authority and place in society. "Difficult" indicators should not be avoided even if data are not available for the moment, or investments in monitoring systems are lacking. Even so, Duinker (2011) welcomes interactions among indicators.

If the C&I are not being monitored in the future, how can SFM be claimed? As in all evaluation, it is better to do some evaluation than none, always providing some sort of knowledge for improvements. According to one interviewee, indicators are a kind of educational adaption but not always contributing to understanding of adaptation and resilience. Defining the meaning of resilience and how to measure that will make positive adaptive changes. As Raison et al (2001) states, social and economic indicators need to be understandable and related to local communities. The C&I should be regarded as a dynamic document, needed to be continuously updated. The interviewees of 2011 could not see a progress or action going on in the Canadian federal government concerning C&I evaluation at the moment, but identifies a need to go through the 5<sup>th</sup> and 6<sup>th</sup> criteria again, to make some necessary changes, concerning representation and power of indigenous people. Regarding the European Criteria & Indicators framework, the content of social sustainability elements needs improvement and recognition.

## 5. Conclusions

Sustainability of social forest values concerns human rights, access to resources, and forest management built on stakeholder collaboration, equitability, ecological health and culture. The aim of this thesis was to examine the reason behind, and in what way, the social component of SFM is embodied within Prince Albert Model Forest (PAMF), Saskatchewan, Canada, and Vilhelmina Model Forest (VMF), Västerbotten, Sweden. Another objective was to investigate how the MF arena contribute as a facilitator of forest community sustainability, resilience and wellbeing, and what experiences can be exchanged between the two MFs. The importance of funding was also examined.

The social component of sustainable forest management is incorporated in the majority of the conducted projects in Vilhelmina Model Forest (VMF) and Prince Albert Model Forest (PAMF). Analyzing the projects mentioned as successful by the interviewees, and which they are most proud of in the MF activities, they all have elements from the social part of SFM. This direction towards the social dimension in the PAMF and VMF activities can be explained by several things. In Canada, the introduction of the Forest Communities Program in 2007 demanded the MFs to concentrate their work towards community stability and resilience, as the forest industry downturn severely and negatively impacted the forest dependent communities considering employment rates, community services and community future. Other reasons are the global focus towards multiple forest use and an increased interest around social values of the forests and their importance for human and community well-being. Also, there has been a lack in society of prioritizing that kind of question, where the MF can provide good forums for gathering stakeholders with different backgrounds and interests, open up for public participation, improving dialogue environments and raise the community self-trust to achieve results for sustainable community development, resilience and well-being.

The Model Forest arena can attract resources, research and more people to rural regions, to open up the collaboration between different sectors. Model forests could be given even larger roles promoting sustainability, if given political authorization and in Sweden, recognition from governmental institutions. Improving and evaluating the socially directed Criteria and Indicators of sustainable forest management, would strengthen the public and indigenous rights and representation in forest dependent communities. In the future, it may be important that the role of the MFs enable some kind of political authorization and legitimacy, to be able to deal with politically constrained issues, in order to improve conflict solving and human rights equality.

The PAMF has through its well managed and well established work with sustainable forest management in a wide range of projects provided with inspiration, progress and innovative development in forest dependent communities in the region. In Sweden, the Model Forest concept is rather unknown. The Vilhelmina Model Forest is the only established MF so far, but with a strong position in the international collaboration with PAMF and Baltic Model Forest Network. VMF has been struggling with lack of funding, limiting the organization activity. However, the projects conducted under the VMF “umbrella” have had social elements of sustainable forest management, connecting local and indigenous people with politicians, forest management stakeholders and environmental organizations.

Funding is crucial to run a Model Forest organization, enabling coordination and administration staff, representative participation and travel possibilities to meetings. The input of voluntary resources is common in rural communities, but nevertheless limited. The future of VMF is bright as they finally have received funding through the Baltic Sea Region Program. PAMF faces a more insecure future, depending on a renewed funding cycle of Forest Communities Program or new funding sources.

## References

- Adam, M.-C. & Kneeshaw, D. (2011) *Expert opinion on the criteria and indicator process and Aboriginal communities: Are objectives being met?* The Forestry Chronicle vol 87 (3) pp. 358-366
- Almered Olsson, G. & Bladh, G. (2004) Människan i skogen, in Almered Olsson, G. (red.) 2004. *Inte bara träd – hållbart mångbruk av skogslandskapet*. Stockholm: Carlssons.
- Auerbach, C.F. & Silverstein, L.B. (2003) *Qualitative data – an introduction to coding and analysis*. New York: University Press.
- Axelsson, R. (2009) *Landscape approach for sustainable development. From applied research to transdisciplinary knowledge production*. Doctoral Thesis. Faculty of Forest Sciences, School of Forest Engineers, Swedish University of Agricultural Sciences, Skinnskatteberg.
- BEAC Barents Euro-Arctic Region (2011) [online] 2012-02-03  
[http://www.beac.st/in\\_English/Barents\\_Euro-Arctic\\_Council/Facts\\_and\\_maps.iw3](http://www.beac.st/in_English/Barents_Euro-Arctic_Council/Facts_and_maps.iw3)
- Beckley, T; Parkins, J; Stedman, R. (2002) *Indicators of forest-dependent community sustainability: The evolution of research* The Forestry Chronicle vol 78(5) 2002.
- Beckley, T.M. (2003) Forests, paradigms and policies through ten centuries, chapter 2 in Schindler, B.A; Beckley, T.M; Carmel Finley, M. 2003. *Two paths toward sustainable forests. Public values in Canada and the United States*. Corvallis: Oregon State University Press.
- Beese, F.O.& Ludwig, B. (2001) Indicators to Guide Management for multiple forest use, in Raison, R.J; Brown, A.G; Flinn, D.W. 2001. *Criteria and indicators for sustainable forest management*. CABI publishing and IUFRO issues.
- Bengtsson, B. (2010) *Speciell fastighetsrätt: miljöbalken*. Uppsala: Iustus.
- Burton P; Messier, C; Adamowicz, W; Kuuluvainen, T (2006) *Sustainable management of Canada's boreal forests: Progress and prospects*. Écoscience, vol 13(2) 2006.
- CCFM Canadian Council of Forest Ministers (2000) *Criteria and indicators of sustainable forest management in Canada. National status 2000*. Ottawa, ON: Canadian Council of Forest Ministers. [online] 2011-09-26  
<http://cfs.nrcan.gc.ca/pubwarehouse/pdfs/18104.pdf>
- CCFM Canadian Council of Forest Ministers (2003) *Defining Sustainable Management in Canada*. Ottawa, ON: Canadian Council of Forest Ministers. [online] 2011-09-26  
[http://www.ccfm.org/pdf/CI\\_Booklet\\_e.pdf](http://www.ccfm.org/pdf/CI_Booklet_e.pdf)
- CCFM Canadian Council of Forest Ministers (2006) *Criteria and indicators of sustainable forest management in Canada. Key trends and conditions 2005*. Ottawa, ON: Canadian Council of Forest Ministers. [online] 2011-09-26  
[http://www.ccfm.org/pdf/C&ISummary\\_e.pdf](http://www.ccfm.org/pdf/C&ISummary_e.pdf)

- CCFM Canadian Council of Forest Ministers (2008) *Measuring our progress: putting sustainable forest management into practice across Canada and beyond*. Ottawa, ON: Canadian Council of Forest Ministers. [online] 2011-09-26 [http://www.ccfm.org/pdf/CCFM\\_Measuring\\_our\\_progress.pdf](http://www.ccfm.org/pdf/CCFM_Measuring_our_progress.pdf)
- CCFM Canadian Council of Forest Ministers (2010) *Marking Canada's Progress in Sustainable Forest Management*. Ottawa, ON: Canadian Council of Forest Ministers. [online] 2011-09-26 [http://www.ccfm.org/pdf/MarkingCanadasProgressInSFM\\_EN.pdf](http://www.ccfm.org/pdf/MarkingCanadasProgressInSFM_EN.pdf)
- CIFOR Center for International Forestry Research. C&I Team (1999) *The CIFOR Criteria and Indicators generic template*. C&I Toolbox Series no 2. Jakarta, Indonesia: CIFOR 53 pp. [online] 2011-10-15 <http://www.cbd.int/doc/case-studies/ttcc/ttcc-00143-en.pdf>
- CMFP Canada's Model Forest Program (2003) *Advancing sustainable forest management from the ground up*. Model Forest Network, Natural Resources Canada [online] 2011-09-30 [www.modelforest.net](http://www.modelforest.net)
- County Administration Board of Västerbotten (2011) Statistics over Saamí villages. [online] 2012-03-02 [http://www.lansstyrelsen.se/vasterbotten/SiteCollectionDocuments/Sv/naringsliv-och-foreningar/rennaring/samebyar\\_Vilhelmina-sodra.pdf](http://www.lansstyrelsen.se/vasterbotten/SiteCollectionDocuments/Sv/naringsliv-och-foreningar/rennaring/samebyar_Vilhelmina-sodra.pdf)
- Dillard, J; Dujon, V; King, M.C. (2009) *Understanding the Social Dimension of Sustainability*. New York: Taylor & Francis.
- Duinker, P.N. (2001) Criteria and indicators of sustainable forest management in Canada: progress and problems in integrating science and politics at the local level. In: Franc, A; Laroussinie, O; Karjalainen, T. 2001. *Criteria and indicators of sustainable forest management at the forest management unit level*. Proceedings no. 38. European Forest Institute, Joensuu, Finland. pp 7– 27.
- Duinker, P; Bull, G; Schindler, B. (2003) Sustainable forestry in Canada and United States: developments and prospects, chapter 3 in Schindler, B. A; Beckley, T.M; Carmel Finley, M. 2003. *Two paths toward sustainable forests. Public values in Canada and the United States*. Corvallis: Oregon State University Press.
- Duinker, P.N. (2011) *Advancing the cause? Contributions of criteria and indicators to sustainable forest management in Canada*. The Forestry Chronicle, vol 87 (4).
- Elbakidze, M; Angelstam, P.K; Sandström, C. and Axelsson, R. (2010) *Multi-stakeholder collaboration in Russian and Swedish Model Forest initiatives: Adaptive governance toward sustainable management?* Ecology and Society vol 15(2):14.
- Emmett, B. (2006) *Perspectives on sustainable development and sustainability in the Canadian forest sector* The Forestry Chronicle, vol 82 (1).

- Enander, K-G. (2000) *Skogsvårdslagen 1903: dess förhistoria och några huvuddrag i utvecklingen*. Arbetsrapport 46, Sveriges Lantbruksuniversitet, Institutionen för skogsskötsel, Umeå.
- Eriksson, P.(2003) *Renskötseln i Skandinavien – förutsättningar för sambruk och konflikt-hantering*. Arbetsrapport 113:2003, Department of Forest Resources and Geomatics, SLU, Umeå.
- FCP Forest Communities Program (2008) *Site Fact Sheets November2008*. Natural Resources Canada. [online] 2011-12-18  
<http://cfs.nrcan.gc.ca/pubwarehouse/pdfs/29340.pdf>
- Forest Europe (2011) *Forest Europe tools for implementation of sustainable forest management*. [online] 2011-11-24  
[http://www.foresteurope.org/eng/What\\_we\\_work\\_for/Sustainable\\_Forest\\_Management](http://www.foresteurope.org/eng/What_we_work_for/Sustainable_Forest_Management)
- Forest Times (2011). *A newsletter of the PAMF* [online] 2011-10-13  
[http://www.pamodelforest.sk.ca/pubs/forestnews\\_2011.pdf](http://www.pamodelforest.sk.ca/pubs/forestnews_2011.pdf)
- Fredriksson, C. (1997) ”Ursäkta, var är skogen?” Konsumtionslandskapets kulturella konstruktion, in Saltzman, K. & Svensson, B. (red.) 1997. *Moderna landskap*. Stockholm: Natur och Kultur.
- Future Forest News (2011) *Hur står sig svensk naturhänsyn i en internationell jämförelse?* [online] last update 2011-05-11.  
<http://www.futureforests.se/program/futureforests/hem/nyhetsarkiv/nyheter/hurstarsigsvensknaturhansynieninternationelljamforelse.5.4bb0052912fd16044aa80003408.html>
- Government of Saskatchewan (2000) *First Nation and Métis Consultation Policy Framework* [online] 2012-03-09 <http://www.fnmr.gov.sk.ca/Consult-Policy-Framework.pdf>
- Graham, B. (2005) *Research interviewing, the range of techniques*. Meadenhead, England: Open University Press.
- Harris, J.M and Goodwin, N.R. (2001) Volume Introduction. In Harris, J.M; Wise, T.A; Gallagher K.P; Goodwin, N.R. (editors) 2001. *A Survey of Sustainable development: Social and Economic Dimensions* Washington, DC: Island Press.
- Holmgren, L. (2006) *Forest Ownership and Taxation in a Swedish Boreal Municipality Context* Doctoral Thesis, Department of Forest Resource Management and Geomatics, Swedish University of Agricultural Sciences, Umeå.
- Hytönen, M (ed) (1995) *Multiple-use forestry in the Nordic countries* Vantaa: METLA, The Finnish forest research Institute.
- IMFN (2008) *Model Forest development guide*. International Model Forest Network Secretariat, Natural Resources Canada–Canadian Forest Service, Ottawa.  
 [online] 2012-03-08  
[http://www.imfn.net/?q=system/files/Model\\_Forest\\_Development\\_Guide\\_en.pdf](http://www.imfn.net/?q=system/files/Model_Forest_Development_Guide_en.pdf)

- IMFN International Model Forest Network (2012) *Vilhelmina Model Forest*. [online] 2012-03-08. <http://www.imfn.net/northern-europe?q=node/288>
- IMFN (2012) *Bergslagen Model Forest*. [online] 2012-03-08. <http://imfn.net/bergslagen-model-forest>
- Johnston, M. & Carr, S (2006) *Prince Albert Model Forest. Proposal submission, prepared for Canadian Forest Service. Forest Communities Program*. Prince Albert, Saskatchewan: PAMF. [online] <http://www.pamodelforest.sk.ca/pub.html>
- Jougda, L; Svensson, J; Angelstam, P; Axelsson, R; Liedholm, H; Ederlöf, E; Myhrman, L; Sandström, P; Törnblom, J. (2006) *Arenor för hållbart brukande av landskapets alla värden – begreppet Model Forest som ett exempel*. Skogsstyrelsen: Rapport 7/2006
- Jougda, L; Näsholm, B; Sandström, P; Sjöström, Å. (2011) *Upprättade renbruksplaner 2005-2010*. Skogsstyrelsen: Rapport 6/2011.
- Kardell, L.(2004) *Svenskarna och skogen del 2, från baggböleri till naturvård*. Jönköping: Skogsstyrelsens förlag.
- Karlsson, S. (2007) *Att äga rum - En undersökning av skogsägande och lokal utveckling i tre värmländska församlingar*. Doctoral Thesis. Karlstad University Studies 2007:21.
- Kaufman, H.F; Kaufman, L.C. (1946) *Toward the stabilization and enrichment of a forest community: the Montana study*. Univ. Montana and US Dep. Agric. For. Serv., Region One, Missoula, MT.
- Klenk, N; Reed, M.G; Lidestav G; Carlsson J. (submitted 2012) *Modes of representation and participation in model forests: dilemmas and implications for networked forms of environmental governance involving indigenous people*. Environmental Policy and Governance 2012.
- LaPierre, L. (2002). Canada's Model Forest program. *The Forestry Chronicle* 78, 613-617.
- Lindgren, U; Pettersson, Ö; Jansson, B; Nilsagård, H. (2004) *Skogsbruket i den lokala ekonomin* Rapport 2000:4 Jönköping: Skogsstyrelsen.
- Logue, J. (2006) Arbete och pengar måste förankras lokalt, in NUTEKB 2006:1 *Lokal ekonomi för hållbar tillväxt*. NUTEK ISBN:91-7318-368-7.
- Lundberg, B. & Karlsson, S. (2002) Lokala utvecklingsstrategier – perspektiv, resurser och beroenden, in Lundberg, B. (m.fl.) (red.) 2002. *Arvegods och nyodlingar*. Karlstad University Studies 2002:47. ISSN: 1403-8099
- MCPFE - Ministerial Conference on the Protection of Forests in Europe (1993). *General declaration of the second ministerial conference on the protection of forests in Europe 16-17 June 1993*, Helsinki/Finland, MCPFE, Oslo.

- Miles, M.B & Huberman, A.M. (1994) *Qualitative Data Analysis, an expanded source book*. 2<sup>nd</sup> edition. Thousand Oaks, California: SAGE publications.
- Ministry of Rural Affairs. (2011) *Skogsriket – med värden för världen. Handlingsplan*. Landsbygdsdepartementet. Regeringskansliet [online] 2012-01-20  
<http://www.regeringen.se/content/1/c6/17/31/15/e4075fc1.pdf>
- Mirbach von, M. (2002) *Model forests and local level indicators: Facing common challenges* [online] 2011-12-12 [www.imfn.net/?q=node/655](http://www.imfn.net/?q=node/655).
- The Montréal Process (1995) *Criteria and indicators for the conservation and sustainable management of temperate and boreal forests*. First Edition [online] 2011-11-23  
[http://www.rinya.maff.go.jp/mpci/rep-pub/1995/santiago\\_e.html](http://www.rinya.maff.go.jp/mpci/rep-pub/1995/santiago_e.html)
- The Montréal Process (2007) *Criteria and indicators for the conservation and sustainable management of temperate and boreal forests*. Third edition [online] 2011-11-23  
<http://www.rinya.maff.go.jp/mpci/meetings/an-6.pdf>
- NAFA National Aboriginal Forestry Association Position Paper (1995) *An aboriginal criterion for sustainable forest management*. [online] 2011-12-04  
<http://nafeforestry.org/publications.php>
- NAFA National Aboriginal Forestry Association Position Paper (2000) *Aboriginal participation in forest management: Not just another stakeholder*. [online] 2011-12-04  
<http://nafeforestry.org/publications.php>
- National Forest strategy 2003-2008. *National Forest Strategy Coalition*, [online] 2011-09-26 <http://nfsc.forest.ca>
- NRCan Natural Resources Canada (2006) *Canada's Model Forest Program – Follow-up and Mid-Term Evaluation, May 2006* [online] 2011-09-26  
<http://www.nrcan.gc.ca/evaluation/reports/2006/2753>
- NRCan (2009) *Sustainable development strategy 2007-2009: Achieving results*. National Resources Canada, Ottawa. ISBN: 0-662-44600-3. [online] 2011-09-26.  
<http://www.mcan-nrcan.gc.ca/sd-dd>
- NRCan (2011) *The state of Canada's forests. Annual report 2011*. Natural resources Canada: Ottawa. [online] 2012-01-18 <http://cfs.nrcan.gc.ca/pubwarehouse/pdfs/32683.pdf>
- NrCan (2012) *Forest-dependent communities in Canada* [online] 2012-03-07, updated 2012-02-23. [http://cfs.nrcan.gc.ca/pages/283?lang=en\\_CA](http://cfs.nrcan.gc.ca/pages/283?lang=en_CA)
- Nyberg L; Almered Olsson, G; Månsson, B; Bladh, G. (2004) Skogslandskap för hållbar utveckling. Kapitel 18 in Almered Olsson, G; Bladh G; Månsson, B; Nyberg, L. (red) 2004. *Inte bara träd – hållbart mångbruk av skogslandskapet*. Falun: Carlssons bokförlag.
- PAMF (2011) *PAMF Communities Program Workplan April 2010-March 2011. August 2011 Working Version*, provided by Susan Carr, PAMF, Prince Albert, Saskatchewan.

- PAMF (2007) *Prince Albert Model Forest, Forest Communities Program Strategic plan. Prepared for CFS Nov 28<sup>th</sup> 2007* [online] <http://www.pamodelforest.sk.ca/pub.html>
- PAMF (2006) *Prince Albert Model Forest, Annual report, Prepared for CFS 2005/2006.* [online] <http://www.pamodelforest.sk.ca/pub.html>
- PAMF (2010) *Prince Albert Model Forest, Annual report, Prepared for CFS 2009/2010.* [online] <http://www.pamodelforest.sk.ca/pub.html>
- PAMF (2007) *Prince Albert Model Forest, Forest Communities Program Strategic plan. Prepared for CFS Nov 28<sup>th</sup> 2007* [online] <http://www.pamodelforest.sk.ca/pub.html>
- Parkins, J.(1999) *Enhancing social indicators research in a forest-dependent community.* The Forestry Chronicle vol 75 (5) 1999.
- Parkins, J; Varghese, J; Stedman, R. (2001) *Locally defined indicators of community sustainability in the Prince Albert Model Forest.* National Resources Canada, Canadian Forest Service, Northern Forestry Centre, Edmonton, Alberta and Prince Albert Model Forest, Prince Albert, Saskatchewan. Information report; NOR-X-379
- Pierce Colfer, C.J; & Byron, Y. (editors) (2001) *People managing forests. The links between human well-being and sustainability. Introduction.* Washington, USA: Resources for the future.
- Polese, M and Stren, R. (2000). *The Social Sustainability of Cities: Diversity and the Management of Change.* Toronto: University of Toronto Press.
- Swedish Governmental Proposition 2007/08:108 *En skogspolitik i takt med tiden* Landsbygdsdepartementet. [online] <http://www.regeringen.se/sb/d/9700/a/101011>
- Raison, R.J; Brown A,G; Flinn D,W. (editors) (2001) *Criteria and indicators for sustainable forest management.* Chapter 1: Application of Criteria and Indicators to Support SFM: some key issues. CABI publishing and IUFRO.
- Reed, M.G. (2003) *Taking stands. Gender and the sustainability of rural communities.* Vancouver: UBC Press.
- Ronby, A. (1992) *Samhällsarbete i glesbygd, in Sundh, K. & Turunen, P. 1992 Social mobilisering. Om samhällsarbete i Sverige.* Stockholm: Publica.
- Ryan, C. (2003) *The ecosystem experiment in British Columbia and Washington state, chapter 11, in Schindler, B. A; Beckley, T.M; Carmel Finley, M. 2003. Two paths toward sustainable forests. Public values in Canada and the United States.* Corvallis: Oregon State University Press.
- Rydberg, D. (2001) *Skogens sociala värden.* Rapport 2001:8J, SUS 2001. Jönköping: Skogsstyrelsen

- Samiskt Informationscentrum (2009) *Samer – ett ursprungsfolk i Sverige*. Västerås: Edita Västra Aros. ISBN: 91-974667-9-4. [online] 2012-02-21  
<http://regeringen.se/content/1/c6/03/78/17/fcba361f.pdf>
- Samiskt Informationscentrum (2012) [online] 2012-03-09 <http://www.samer.se>
- Schindler, B. A; Beckley, T.M; Carmel Finley, M. 2003. *Two paths toward sustainable forests. Public values in Canada and the United States*. Chapter 1: Seeking sustainable forests in North America, and Introduction text to part 4. Corvallis: Oregon State University Press.
- Sandström, P; Granqvist Pahlén, T; Edenius, L; Tømmervik, H; Hagner, O; Hemberg, L; Olsson, H; Baer, K; Stenlund, T; Brandt, L; and Egberth, M. (2003) *Conflict resolution by participatory management: remote sensing and GIS as tools for communicating land-use needs for reindeer herding in northern Sweden*. *Ambio* 32(8): 557-567.
- Sherry, E; Halseth, R; Fondahl, G; Melanie, K. and Leon, B. (2005) *Local-level criteria and indicators: an Aboriginal perspective on sustainable forest management*. *Forestry* 78: 513-539.
- Sinclair, A.J. & D.L. Smith. (1999) *The Model Forest program in Canada: Building consensus on sustainable forest management?* *Society and Natural Resources* 12(2): 121-138.
- Skogsindustrierna 2011 *Skogsindustrin - en faktasamling. 2010 års branschstatistik*. [online] 2012-01-03 [http://www.skogsindustrierna.org/web/Utgivningsar\\_2011.aspx](http://www.skogsindustrierna.org/web/Utgivningsar_2011.aspx)
- Skogsstyrelsen (2011) *Skogsstatistisk årsbok 2011 Swedish Statistical Yearbook 2011*. Jönköping: Skogsstyrelsen
- SOU Swedish Government Official Reports / Statens offentliga utredningar (1999) *Samer - ett ursprungsfolk i Sverige. Frågan om Sveriges anslutning till ILO:s konvention nr 169* SOU 1999:25.
- SOU Swedish Government Official Reports / Statens offentliga utredningar (2001) *Ägande och struktur inom jord och skog* SOU 2001:38.
- SOU Swedish Government Official Reports / Statens offentliga utredningar (2006) *Mer-värdesskog Del 2 Slutbetänkande av Skogsutredningen 2004* SOU 2006:81
- Statistics Canada Census (2006) *Aboriginal Population Profile*. [online] 2011-12-02  
[http://www12.statcan.ca/census-recensement/2006/dp-pd/prof/92-594/search-recherche/frm\\_res.cfm?Lang=E](http://www12.statcan.ca/census-recensement/2006/dp-pd/prof/92-594/search-recherche/frm_res.cfm?Lang=E)
- Svedrup, S.& Stjernquist, I. (2002) *Developing Principles and Models for Sustainable Forestry in Sweden*. Managing forest ecosystems vol 5. Dordrecht Netherlands: Kluwer Academic Publishers.

- Svensson, J; Fries, C; Jougda, L. (2004) *Synthesis of the model forest concept and its application to Vilhelmina model forest and Barents model forest network*. Rapport 2004:6. Jönköping: Skogsstyrelsen.
- Swedish Code of Statutes / Svensk författningssamling *Skogsvårdslagen / Swedish Forestry Act SVL 1979:429*
- Thellbro, C. (2006) *Local natural resource dependency in a Swedish boreal municipality*. Licentiate thesis, Swedish University of Agricultural Sciences, Umeå, Sweden.
- Thorpe, J and Sandberg, L A. (2007) in McFarlane B; Beckley T; Huddart-Kennedy E; Nadeau S; Wyatt S. 2011. *Public views on forest management: value orientation and forest dependency as indicators of diversity*. Canadian Journal of Forest Research No. 41(4): 740-749.
- UN United Nations (1992a) *Report of the United Nations conference on environment and development*, United Nations, New York.
- UN (1992b) *The Rio Declaration and Agenda 21*, United Nations, New York.
- UN (2004) *Report of the World Summit on Sustainable Development*, Johannesburg, South Africa, 26 August- 4 September 2002. United Nations, New York.
- Westholm, E. (1992) *Mark, människor och moderna skiftesreformer i Dalarna*. Geografiska regionstudier Nr 25. Uppsala universitet.
- Vienna Improved Indicators (2002) *Improved Pan-European Indicators for sustainable management*. Ministerial Conference on the protection of forests in Europe. [online] [http://www.foresteurope.org/filestore/foresteurope/Conferences/Vienna/Vienna\\_Improved\\_Indicators.pdf](http://www.foresteurope.org/filestore/foresteurope/Conferences/Vienna/Vienna_Improved_Indicators.pdf)
- Widmark, C; Bostedt, G; Andersson, M; Sandström, C.(2011) *Measuring transaction costs incurred by landowners in multiple land-use situations*. Working report 376, Umeå 2011, Department for forest economics, Swedish university of Agricultural Sciences.
- VMF Vilhelmina Model Forest (2011) [online] [www.vilhelminamodelforest.se](http://www.vilhelminamodelforest.se)

### *Interview Persons 2010*

<b>Prince Albert Model Forest</b>	<b>Date</b>
IP. 1.	2010-06-07

<b>Vilhelmina Model Forest</b>	<b>Date</b>
IP. 2.	2010-10-04
IP. 3.	2010-10-06
IP. 4.	2010-10-07
IP. 5.	2010-10-08
IP. 6.	2010-10-11
IP. 7.	2010-10-04

### *Interview Persons 2011*

**Mark Johnston**, 2011-10-04  
President of Prince Albert Model Forest, Saskatchewan, Canada.

**John Parkins**, 2011-10-11  
Associate Professor, Department of Resource Economics and Environmental Sociology.  
University of Alberta, Edmonton, Canada.

**Tom Beckley**, 2011-10-18  
Ph. D, Environment and Sustainable development Research Centre. University of New  
Brunswick, Fredericton, Canada.

**Solange Nadeau**, 2011-10-19  
Senior Forest Sociologist, Canadian Forest Service. Fredericton, Canada.

### *Personal communication 2012*

Johan Svensson, 2012-02-21  
Program director, Landscape Analysis, Department of Forest Resource Management, SLU,  
Umeå. Sweden.

Leif Jougda, 2012-03-08  
Coordinator, Vilhelmina Model Forest, Sweden.

### *Pictures*

Prince Albert Model Forest (2012) [online] <http://www.pamodelforest.sk.ca/map.html>

Vilhelmina Model Forest (2012) [online] <http://www.vilhelminamodelforest.se/>

Länsstyrelsen Västerbotten (2012) Fakta om Västerbottens län. [online]  
<http://www.lansstyrelsen.se/vasterbotten/Sv/om-lansstyrelsen/om-lanet/Pages/fakta-om-vasterbotten.aspx>

# Appendix

## CRITERIA AND INDICATORS FRAMEWORK 2005

