

INTEGRATED LANDSCAPE MANAGEMENT IN FOREST DEPENDENT  
LANDSCAPES:  
LEARNING FROM THE MODEL FOREST NETWORK TO STRENGTHEN THE  
THEORY AND PRACTICE OF INTEGRATED LANDSCAPE MANAGEMENT

A Thesis

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## ABSTRACT

Forests play a critical role in supporting biodiversity by serving as home to 65% of terrestrial taxa and hosting the highest concentration of bird, invertebrate and microbe species. Many early efforts to protect biodiversity at forest frontiers focused on meeting demands for wildlife and biodiversity conservation to the exclusion of the other goods and services demanded of landscapes. The widespread failure of these single sector approaches has led to a renaissance of integrated management approaches in forest landscapes. This thesis explores one such approach, integrated landscape management (ILM), through the lens of the Model Forest Network. In particular, I use a case study approach to assess the roles that landscape initiatives play in their landscapes, the social, political and historical contexts in which they emerge, and how their activities influence stakeholders' ability to adapt to change. I find that while landscape initiatives are successful in establishing new partnerships and engaging a diversity of stakeholders, they are limited in on-the-ground outcomes and the degree to which they can affect systemic change.

## BIOGRAPHICAL SKETCH

Abigail (Abby) Hart currently leads The Nature Conservancy's work on agriculture in California. For over a decade, Abby has championed farmers and the environment as a researcher and project manager for Cornell University, the USDA-ARS, and leading non-profit organizations. She has experience working with farmers and foresters in the United States, Canada, Chile, Nicaragua, Vietnam, Tanzania, and Honduras. She received a B.S. in Environmental Studies from Wheaton University, and is completing her M.S. in Natural Resources at Cornell University. In her spare time, she likes to get her hands dirty in her garden and go hiking with her husband, Rodrigo, and her dog, Laika.

Dedicated to the staff and members of the Model Forest Network

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## PREFACE

As a non-traditional student who came to this research through an unusual pathway, I want to give you a sense of how I arrived at being interested in landscape approaches and the Model Forest network, two topics that you will become familiar with in the course of this thesis. I began working in the Department of Natural Resources of Cornell University in 2009 as part of the EcoAgriculture Working Group, under Louise Buck and Jeff Milder. During the five years that I worked at Cornell, I worked closely with a Washington, D.C.-based non-profit, EcoAgriculture Partners, who funded my position and allowed me to be a primary contributor to a set of studies that we conducted on the state of, what they called, integrated landscape management. I played an integral role in surveying participants and analyzing the data for the series of continental reviews that you will see referenced throughout this thesis (Milder et al. 2014, Estrada-Carmona et al. 2014, Zanzanaini et al. 2017, García et al. 2016). As I sought to understand the basic characteristics of integrated landscape initiatives in Africa, Latin America, Asia, and Europe, I was simultaneously interested in learning more about them and concerned that such initiatives were overly optimistic in the outcomes they were reporting. Throughout the course of these studies, a group of landscape initiatives stood out to me in terms of their level of organization, the clarity with which their staff spoke of their experiences, and the types of outcomes they reported. These initiatives were the Model Forests. I was curious to learn more about these organizations and interested in finding a way to study landscape initiatives through a more critical lens than I felt that my job allowed.

As an employee, I was allowed to pursue a degree part-time, while continuing to work full time through the Employee Degree Program. I saw this as an opportunity to answer some of the questions that I had about the veracity of ILM and its potential to lead to real change on the ground, as well as quench my growing curiosity in the Model Forest Network. So, I embarked on this Master's degree with the support of my supervisor, Louise, and Rich Stedman, who became my major advisor.

I was fortunate to receive funding to conduct fieldwork from the Atkinson Center for a Sustainable Future's Sustainable Biodiversity Fund, and was able to put a pause on my day job to spend one month in north-central Saskatchewan, and one month in south-central Chile, with two different Model Forests. I had a wonderful experience learning from the members of these two Model Forests, and fell in love with two far-flung landscapes that I never anticipated getting to know.

As much as I personally benefitted from the Employee Degree Program, it also placed constraints on the type of research project that I was able to do. Ideally, I would have spent more time in each of the research sites. Undoubtedly, the brevity of my time in those locations limited the extent to which I was able to understand stakeholder interactions, the impacts of policy, and the achievements of the Model Forests in their landscapes. It also came with a distinct bias in that the very work that was making it possible for me to acquire my degree also took a very favorable and uncritical view of landscape initiatives like the Model Forests. I have tried to bring a critical lens to this work, but came to it as a proponent of landscape initiatives.

Before I was able to finish writing this thesis, a new opportunity presented itself. I was offered a position with The Nature Conservancy in California. This job presented me with the opportunity, not to study a landscape initiative, but to be a part of one as a stakeholder. As someone who has always been more drawn to implementation than study, and to work rather than academia, I enthusiastically embraced the chance to embed myself in a new landscape and set of stakeholders.

Over the last two years, I have returned to this research and these chapters with the intention of finishing my thesis. I have now nearly arrived at a goal that I set out for myself several years ago. Although I took longer than I should have to finish this thesis, I believe the experiences that I have had in the interim have given me a new lens through which to view this research. For that reason, I have written Chapter 3 to be more appropriate for a practitioner audience, for someone who is in my own shoes. I am glad to be finishing this research, and I look forward to sharing it with all of the stakeholders who so generously gave of their time to support this project. I provide you with this background so that you are aware of my personal bias in researching and writing on this topic, as well as the journey that brought me to this point. Enjoy!

## CHAPTER 1

### INTRODUCTION

Forests play a critical role in supporting biodiversity by serving as home to 65% of terrestrial taxa (World Commission on Forests and Sustainable Development, 1999) and hosting the highest concentration of bird, invertebrate and microbe species (Lindenmayer, Franklin & Fischer 2006). However, less than half of the world's forested biodiversity hotspots are currently meeting the Convention for Biological Diversity's (CBD) goal for 10% forest cover (Schmitt et al. 2009). Although protected areas offer one option for conserving forest biodiversity, 92% of global forests are currently outside protected areas (Schmitt et al. 2009). Society increasingly demands that forests also provide viable livelihoods, food security, timber and non-timber forest products (NTFPs), alongside other ecosystem services. In particular, forests in human-dominated landscapes face the greatest pressures for deforestation and threats to biodiversity conservation as sites where key anthropogenic drivers – agricultural production, economic development, and tourism – and increasingly, climate change, are rapidly changing land use patterns and the ecological composition of forests (Foley et al. 2005, Phalan et al. 2011).

Many early efforts to protect biodiversity at forest frontiers focused on meeting demands for wildlife and biodiversity conservation to the exclusion of the other goods and services demanded of landscapes. The widespread failure of these single sector approaches has prompted groups of stakeholders from landscapes in developing and developed countries alike to adopt integrated management approaches (Milder et al. 2014, LPFN 2012). Such approaches

to “integrated landscape management” (ILM) explicitly engage multiple stakeholder groups and seek to manage synergies and tradeoffs by planning and implementing land management decisions in concert with efforts to learn and address stakeholder needs (Sayer et al. 2013).

Integrated landscape management has been practiced and studied under many names, including “whole landscape” management (DeFries & Rosenzweig 2010), “ecoagriculture” (Scherr & McNeely 2008), “bioregional planning” (Brunckhorst 2000), and “multifunctional landscapes” (Fry 2001, Naveh 2001), to name a few. Proponents of integrated landscape management argue that it is more successful at reducing tradeoffs than previous attempts to integrate conservation and development outcomes (Nelson et al. 2009, De Groot et al. 2010).

This level of integration requires a certain degree of decentralization of management and engagement of stakeholders in the landscape itself (Persha, Agrawal & Chhatre 2011).

However, it may intentionally or unintentionally involve many new stakeholders in the management process, including government ministries, international donors, and private sector stakeholders who often come with power, financial resources and their own set of objectives.

These new claims may in fact challenge rather than facilitate the prioritization of local knowledge and perspectives in management decisions, particularly for indigenous peoples and less powerful stakeholders that integrated approaches explicitly aim to involve (Nadasdy 2005).

This study uses a case study approach to build off of a recent series of “continental reviews” that surveyed and interviewed leaders and representatives of key stakeholder groups in more than 400 integrated management initiatives in Asia (Zanzanaini et al. 2017), Latin America

(Estrada-Carmona et al. 2014), Africa (Milder et al. 2014) and Europe (Garcia et al. 2016).

Despite the growing prevalence of integrated management initiatives and growing support for such approaches by governments and international development agencies, little is known about the success of these initiatives in reconciling competing demands and achieving key outcomes more equitably than their alternatives. A host of scholars are attempting to understand how these approaches may be different than previous ones and to quantify their benefits over and against other approaches (Minang et al. 2014, Reed et al. 2015, Sayer et al. 2013, Sayer et al. 2015). Most of these efforts, however, have focused on the theory and process of landscape approaches rather than documenting the practical experiences of landscape-scale initiatives (e.g. Minang et al. 2014, Reed et al. 2015).

This thesis aims to address the lack of on-the-ground examples through in-depth case studies (Yin 2009) of two landscape initiatives. The two cases are part of a particular network of forest-based landscape initiatives called the Model Forest Network, and demonstrate how landscape approaches on opposite sides of the world have been linked as a result of the sustainable development agenda. Their experiences as partners in a network of initiatives also provides a rich example of how landscapes in diverse social, ecological, political and cultural contexts can learn a great deal from one another about multi-stakeholder models of governance. It also touches on the role of cross-landscape partnerships in sparking innovation to address common challenges while grounding efforts in place-based experiences and knowledge.

## Literature review of landscape approaches

The term landscape, as used in landscape approaches, has evolved from multiple meanings associated with the German word, *landschaft*, and traditional English understandings of landscape (Cosgrove 2004). While landscape was often associated with the visible and scenic landscape, *landschaft* tended to describe areas under the control of a particular people, although these were not inherently administrative areas. While the term continues to evolve and its meanings are still varied across disciplines, landscapes are often described as spaces in which nature and culture act upon one another (Antrop 2006). Landscape approaches include elements of all these concepts, and are notably distinct from territorial definitions of space<sup>1</sup> in that they tend to refer to “relative, rather than absolute space” (Cosgrove 2004, 65).

Discussions on space and spatial relationships have influenced the development of landscape approaches in important ways. Over the past century and even more intensely in the past several decades, scholars in the social sciences and humanities have paid increasing attention to space and place in what has been documented as the “spatial turn” (Withers 2009, Warf & Arias 2009). This spatial turn coincided with a rejection of the idea that the nation-state is the most logical and appropriate frame of reference for understanding and implementing development (Middell & Naumann 2010). This shift opened space for the concept of global

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<sup>1</sup> One exception is the case of Latin America where *territorio* (territory) is more often used in the literature on landscape approaches than *paisaje* (landscape). This difference has less to do with relative versus absolute containers of space than it does with the fact that *paisaje* has not evolved to include all of the same meanings that landscape now carries in English.

governance, which gained traction during 1970s and 1980s. However, global governance quickly failed to provide a more compelling frame for understanding development and patterns of globalization. Instead, it was suggested that relationships between scales (i.e., local, national, regional and global) were just as critical, if not more, for understanding globalization and meeting development objectives (Middell & Naumann 2010). Therefore, not only space and place, but scale became central to scholarly discussions on development and global change (Gibson et al. 2000).

The natural sciences have also moved toward placing increasing importance on space and scale, particularly through links between geology and physical geography, the integration of spatial and ecological relationships in biogeography (Cox & Moore 1993, Nelson 1978) and landscape ecology (Levin 1992), and the increasing application of geographic information systems across the natural sciences. The development of the field of landscape ecology since the 1970s has been especially important for shaping integrated approaches to resource management and landscape approaches. Landscape ecology examines spatial relationships between populations and ecosystems to explain patterns of structure and function over large areas, and has sparked important scholarly debates on anthropogenic causes of landscape fragmentation and land degradation (Turner 1989, Haila 2002, Nagendra et al. 2004). These discussions often attribute land degradation and fragmentation in the context of developing (Skole & Tucker 1993) and developed countries (Barrett & Peles 1994, Hobbs 1993) to agricultural expansion, particularly at forest frontiers (Gascon et al. 2000, Morton et al. 2006).

The nexus of production (e.g., agriculture or forestry) and conservation highlighted in these debates has proved to be a highly contested space for exploring questions of scale related to development interventions. It has divided the academic community, and consequently proposals for simultaneously achieving development and conservation objectives (Barrett 1992, Scherr & McNeely 2007). One key debate has been around whether sparing land for nature via traditional conservation or protectionist approaches (Balmford et al 2005, Phalan et al 2011) is more effective than “land sharing” approaches, which promote diversity at plot and landscape scales (Perfecto et al. 2009, Kremen et al. 2012, Tscharntke et al. 2012). In this debate, the degree of fragmentation has practical implications for maintaining biodiversity but also for the profitability and productivity of agriculture and forestry. Both perspectives have contributed to our understanding of the impact of anthropogenic drivers on the ability of landscapes to contribute to global objectives for protecting biodiversity, sequestering carbon, improving food security, and reducing poverty. In the context of international development, these debates have been important because they often reflect competing pressures not only from different sectors (e.g., agriculture and conservation), but also from developed and developing country perspectives.

The interconnected fields of territorial, regional and landscape planning have also contributed to the development of landscape approaches. For example, in Latin America, territorial planning (*gestión territorial* or *desarrollo territorial rural*) was initially posed as a framework for economic development that would capitalize on unique ecological and cultural qualities, and provide more direct benefits to local populations (Schejtman & Berdegúe 2003, Sepúlveda et al 2003, Vallarino & Orea 2013). Such frameworks have provided a springboard for

integrating conservation into development planning in these contexts. As discussions of landscape have emerged globally, in Latin America, *territorio* continues to be used interchangeably with landscape, primarily because the word *paisaje* has not undergone the same evolution as the word landscape – away from a scenic, visual expression (Cosgrove 2004, Thrift 2002). In contrast to the development of territorial approaches in Latin America, a rich body of landscape planning literature from Europe has focused on preserving cultural and heritage landscapes (de Groot et al. 2010, Palang & Fry 2003). This literature has served as the primary entry point for the incorporation of discussions on landscape multi-functionality (Fry 2001, Naveh 2001) and the role of ecosystem services in supporting multi-functional landscapes (Raudsepp-Hearne et al. 2010). Current thinking on landscape approaches also borrows from the *gestion de terroir* (village land use planning) approach used for centuries in West Africa but championed as a participatory approach to sustainable land management during the 1980s and 1990s (Ballet 2007, Toulmin 1993). The adoption of this approach by development agencies was part of the turn away from development projects oriented to the nation-state and the emphasis on local and participatory modes of development (De Haan 1998).

Finally, landscape approaches to sustainable development also draw on concepts from complex systems and adaptive management. Advocates of landscape approaches typically consider landscapes to be comprised of social and natural features (Scherr 2008). They are also considered a type of complex, adaptive system that is characterized by nonlinear trajectories and surprise (Holling 2001). As a result, complex adaptive systems theory has been influential in shaping current thinking on landscape approaches (Olsson et al 2004, Levin 1998, Holland

1992). Similarly, scholars have discussed landscapes as coupled human and natural systems (two interconnected systems in the same space) (Liu et al. 2007) and social-ecological systems (one system with human and natural dimensions) (Folke 2006, Matthews and Selman 2006).

As landscape approaches have borrowed ideas from complex adaptive systems and resilience thinking, particularly in the context of sustainable development, concepts like resilience have taken on new and varied meanings (Brand and Jax 2007). Most notably, within sustainable development resilience is often referenced as a positive attribute of a system and increasingly, an explicit management objective, particularly in relation to climate change. The case studies included in this thesis highlight the tension between the way that resilience is treated within the literature, i.e., general resilience, and resilience as a management objective, i.e., normative resilience, and remind us that interpretations of resilience and transformations are inherently subjective (Brand and Jax 2007, Tidball et al. 2016, Stedman 2016).

### **Linking landscape approaches to the sustainable development agenda**

The United Nations Conference on the Human Environment and the establishment of the United Nations Environment Programme in 1972 marked the merging of conservation objectives with development objectives at the level of international policy, a path that culminated in the Rio Summit in 1992. However, the search for solutions to reduce competition between economic development and conservation, particularly in areas with potential for intensive agricultural production, began before these international policy discussions. The inception of programs like UNESCO's Man and Biosphere Programme, founded in 1968, is one such example. From the conservation side, the establishment of the

International Union for the Conservation of Nature (IUCN) and its related fund, the World Wildlife Fund (WWF), were evidence of increasing global concern for what the research community perceived as a critical decline in global biodiversity. However, the failure of early conservation programs and the subsequent critique that such programs aimed to protect biodiversity at the expense of human lives led to a partnership between the IUCN, WWF and UNEP to create the World Conservation Strategy (Prescott-Allen 1980). This strategy exemplified a shift from the view of conservation and development, especially agricultural development, as competing priorities for land, toward a view that conservation and development could occur simultaneously.

It is also important to highlight the establishment of the CGIAR Consortium of agricultural research centres in 1971 under the leadership of World Bank president, Robert MacNamara. The centres were widely supported by development agencies and foundations, and were the backbone of the Green Revolution research championed by Norman Borlaug and others. However, in recent years, the mandate of the Consortium has shifted from promoting strictly Green Revolution-style agricultural development to investigations of diverse strategies to improve the productivity of agriculture while contributing to resource conservation and human livelihoods (Ozgediz 2012). The Consortium, which now directs more than 1 billion dollars of funding, includes several research centres that have served as incubators for scholars exploring, testing and promoting landscape approaches (namely the World Agroforestry Centre [ICRAF], CIFOR, Bioversity, CATIE). The Consortium now uses landscape framing to shape their work on sustainable development and advance an agenda for sustainable intensification (International Innovation 2014, 128).

Although interest in sustainable development grew throughout the 1980s and 1990s, landscapes did not appear as a frame or scale for development interventions until around the turn of the 21<sup>st</sup> century. At that time, development practice tended to emphasize the local and traditional, often neglecting global or regional systems and relationships (Hart 2001, Escobar 2000). However, projects and programs focusing on local and community scales failed to meet development and conservation goals for several reasons. First, as landscape ecology has strived to demonstrate, certain ecological patterns and relationships are only visible and intelligible at larger scales. Some development projects had unintended consequences outside of the communities they were implemented in, as a result of ignoring these relationships (Berkes 2006). Secondly, as both critics and proponents of community-based natural resource management (CBNRM) and community forest management (CFM) have pointed out, the policies that shape private and state land management decisions and the governance systems that enforce them are often organized at scales above the community level, therefore development interventions needed to be designed to be able to address and influence decisions at larger scales.

**What do landscape approaches offer that is new or different than previous frameworks for conceptualizing and implementing sustainable development?**

These related trajectories of theory and practice have led to the current discourse on landscape approaches. Recently, landscape approaches have been defined in many ways (for some examples, see Reed et al. 2015, Scherr et al. 2014, Minang et al. 2014, Estrada-Carmona et al. 2014, Milder et al. 2014, Sayer et al. 2013, Axelsson et al. 2011). These definitions vary in complexity and length but share many common elements. See Table 1 for a comparison of a

few of these definitions. They all require interactions across scales and sectors, multi-stakeholder process, adaptive management, and a shared sense of purpose or objectives.

*Table 1. Current definitions of a landscape approach from recent publications by Scherr et al. 2013, Sayer et al. 2013, and Axelsson et al. 2011.*

<b>Scherr et al. 2013</b>	<b>Sayer et al. 2013</b>	<b>Axelsson et al. 2011</b>
<ol style="list-style-type: none"> <li>1. Shared or agreed management objectives that encompass multiple benefits from the landscape</li> <li>2. Field, farm and forest practices are designed to contribute to multiple objectives</li> <li>3. Ecological, social, and economic interactions are managed to realize synergies and mitigate trade-offs among interests and actors</li> <li>4. Collaborative, community-engaged processes for dialogue, planning, negotiating and monitoring decisions</li> <li>5. Markets and public policies are shaped to achieve the diverse set of objectives</li> </ol>	<ol style="list-style-type: none"> <li>1. Continual learning and adaptive management</li> <li>2. Common concern entry point</li> <li>3. Multiple scales</li> <li>4. Multi-functionality</li> <li>5. Multiple stakeholders</li> <li>6. Negotiated and transparent change logic</li> <li>7. Clarification of rights and responsibilities</li> <li>8. Participatory and user-friendly monitoring</li> <li>9. Resilience</li> <li>10. Strengthened stakeholder capacity</li> </ol>	<ol style="list-style-type: none"> <li>1. A sufficiently large area that matches management requirements and challenges to deliver desired goods, services and values</li> <li>2. Multi-level and multi-sector stakeholder collaboration that promotes sustainable development as a social process</li> <li>3. Commitment to and understanding of sustainability as an aim among stakeholders</li> <li>4. Integrative knowledge production</li> <li>5. Sharing of experience, results and information, to develop local or tacit to general or explicit knowledge</li> </ol>

At their root, landscape approaches to sustainable development emerge from the understanding that “grand designs” for sustainability are nearly impossible to achieve given the complexity of social-ecological systems, and that “muddling through” toward sustainability objectives is both more reflective of what is happening on the ground and a more feasible pathway for

development (Sayer et al. 2014, Sayer et al. 2008). Landscape approaches also bring the concept of place into the center of discussions on sustainability and development, which “provides the context in which problems can be recognized and articulated, and within which different values can be understood, conflicts resolved and choices made” (Potschin & Haines-Young 2013). In this way, landscape approaches have moved away from landscape planning and technical approaches associated with early models for development (Scott 1998), and are increasingly considered a useful framework for managing trade-offs in complex resource management problems and furthering discussions on common-pool resources (Estrada-Carmona et al. 2014).

Landscape approaches also are supposed to provide a new model for participatory and collaborative governance that deviates from the participatory approaches promoted in the 1990s (Hickey & Mohan 2005, Chambers 1984). They attempt to address power and politics by creating or supporting stakeholder platforms that level the playing field and provide a neutral space for dialogue (Warner 2006). Although similar participatory and adaptive models for resource governance have been critiqued for their failure to seriously consider and include marginalized perspectives (Nadasdy 2007, Castro & Nielsen 2001), landscape approaches appear to have departed from the strictly expert- or locally-driven approaches promoted before them (Elbakidze 2010). Who participates in landscape initiatives and how they engage is a product of the social and political systems in which these initiatives are embedded. While landscape initiatives may claim to provide neutral spaces for dialogue, they may actually reinforce existing power dynamics. Furthermore, marginalized groups may choose not to

engage for fear that participation implies consent to an existing system or the activities of the initiative.

### **The Model Forests as a landscape approach**

Initially established as a model for sustainable forest management, the Model Forest approach fits within this broader set of definitions for landscape approaches. Its principles align with the elements of landscape approaches presented in Table 1, particularly those outlined by Sayer et al. (2013) (see Table 2), and many individual Model Forests have been included in assessments of landscape-scale initiatives in the tropics (Milder et al. 2014, Estrada-Carmona et al. 2014, Zanzanaini et al. 2017). As mentioned in the case studies, despite the wide range of contexts in which Model Forests have formed, stakeholders have found the principles to be a useful framework for establishing multi-stakeholder processes to support sustainable resource management and community development. The Network has been a resource for individual Model Forests to exchange knowledge and share resources on common issues, particularly through the regional networks and strategic initiatives between Model Forests. From the inception of the Network, the Model Forests have offered research opportunities for natural and social scientists to analyze forests, forest communities, and sustainable development (Elbakidze et al. 2010, Parkins et al. 2001, Bouman et al. 1996). They offer the opportunity for social scientists, in particular, to analyze the relationships between Model Forest stakeholders, as well as the nested networks that compose the Model Forest, thereby informing the theory and practice of landscape approaches.

Table 2. Guiding principles of the Model Forest approach compared to the ten principles for landscape approaches.

<b>Guiding principles of the Model Forest approach (IMFN 2008), see more details on these principles in Table 1.</b>	<b>Ten principles for landscape approaches (Sayer et al. 2013)</b>
<ul style="list-style-type: none"> <li>– Partnership</li> <li>– Landscape</li> <li>– Commitment to sustainability</li> <li>– Governance</li> <li>– Program of activities</li> <li>– Knowledge sharing, capacity building and networking</li> </ul>	<ul style="list-style-type: none"> <li>– Continual learning and adaptive management</li> <li>– Common concern entry point</li> <li>– Multiple scales</li> <li>– Multi-functionality</li> <li>– Multiple stakeholders</li> <li>– Negotiated and transparent change logic</li> <li>– Clarification of rights and responsibilities</li> <li>– Participatory and user-friendly monitoring</li> <li>– Resilience</li> <li>– Strengthened stakeholder capacity</li> </ul>

### **Roots of the Model Forest in Canadian forest policy**

Canada was an early proponent of establishing a global forest convention, in part due to competition with tropical forest landscapes for market access (Bernstein & Cashore 2001). However, Canada played a key role at the Stockholm United Nations Conference on the Environment and, Maurice Strong, a Canadian diplomat was named the first Director General of the United Nations Environment Programme (UNEP). Strong’s leadership positioned Canada as a world leader in integrating emerging global environmental goals into national resource management and development policies. He was also a member of the Brundtland Commission whose influential 1987 report, *Our Common Future*, set in motion the plans for a global conference on sustainable development. The influence of the Brundtland report was felt across the Canadian nation as the New Democratic Party (NDP), elected to office in 1991,

placed the agenda for sustainable resource management and development at the centre of their policymaking. Central to the NDP's new policies were ecosystem management approaches to sustainable forestry management that explicitly aim to “enhance forest governance, conserve ecosystem integrity, protect representative forested areas and promote society's sustainable use of forest resources” (NRC 2014). The ecosystem management approach and related concepts like integrated environmental management that gained popularity during the 1990s in Canada and the United States brought issues of public participation to the fore in discussions on resource management (Margerum 1995, Brand *et al.* 1996, Grumbine 1994).

As well conceived as ecosystem management might have been, land use conflicts between forest communities, the forestry industry, government and activist groups were a major stumbling block to advancing ecosystem management. This was particularly the case where conflicts, like the conflict over the spotted owl in British Columbia, stirred public opinion and made conventional forestry nearly impossible for industry actors (Wilson 2001). Furthering efforts to integrate resource management under an ecosystem management approach would require reformation of stakeholder processes for decision-making and consensus building. Therefore, the Canadian government established the Model Forest program in 1992 as a competitive grant program to fund new partnerships in forest landscapes across Canada. These partnerships were required to include industry and non-industry partners, and to promote stakeholder decision-making processes that would serve as models for negotiating stakeholder interests and managing forests for multiple objectives. Canada had committed more than \$90 million of funding for the 20-year program that would become the model of sustainable forest management in Canada.

The hallmarks of the program were 1) to build partnerships between industry, government and forest communities to support the sustainable development of forest landscapes through dialogue, and 2) to serve as living laboratories to pilot innovative research on and implementation of the best forestry management practices in landscapes with diverse ecological and cultural characteristics. Of the 50 applications received, eleven were selected to become the first Model Forests (LaPierre 2003). Convinced that the Model Forests would provide successful examples of sustainable forest management, Canada presented the approach as a model for sustainable development in forest landscapes at the conference of the United Nations Commission on Environment and Development (UNCED) in Rio de Janeiro.

### **The Rio Summit and the growth of the International Model Forest Network**

As Bernstein and Cashore have pointed out (2001), Canada's interests in promoting a binding agreement between forested nations in the north and south was not only related to the country's growing interest in sustainability. Competing with tropical countries for access to timber markets would be extremely challenging for Canada if tropical countries did not establish similarly restrictive timber harvesting policies in support of sustainable development.

Therefore, the launch of the International Model Forest Network (IMFN) at the conference in Rio de Janeiro in 1992 not only demonstrated Canada's commitment to promoting the science and practice of sustainable forest development, it offered an incentive for tropical countries to make similar public commitments to sustainable forest development. Although Canada's efforts to create a legally binding agreement on forest management fell flat, the opportunity to

establish Model Forests with Canadian funding gained the interest of many countries, particularly countries with major forest areas.

The first Model Forests outside of Canada were in Mexico and Russia. They quickly demonstrated their ability to put the Model Forest approach into practice and adapt the basic principles of Model Forest management to their social, political and ecological contexts. As Besseau and colleagues have commented, these principles are not particularly unique. Even at the time that the International Model Forest Network was created, they could be found to some extent in the policies and management strategies already being employed in many forest landscapes around the world (Besseau et al. 2002). However, in comparison with existing approaches, the Model Forest approach “proposed a systematic approach to institutionalize participation organized around actual field-level projects that reflected local values and needs and which had high demonstration and learning opportunities” (Besseau et al. 2002: 650).

Within a decade, the IMFN had expanded from three Model Forests outside of Canada to 19 Model Forests in 11 countries across Latin America, Asia and the United States. During these early years of the IMFN, forestry industry stakeholders in developing countries faced many of the same pressures as industry stakeholders in Canada. Pressure was mounting from international conservation and development organizations to reduce deforestation and observe the rights of forest communities to access and use forest resources. In many cases, conflicts between industry representatives, local communities and government agencies appeared intractable. Representatives from several countries also saw the Model Forest approach as a

new way to ameliorate the intense conflicts that characterized forested landscapes in many countries.

The neutral platform for stakeholder dialogue that the Model Forest approach espouses has often been seen by Model Forest participants and leaders as its greatest contribution to resource management, particularly in Model Forests outside of Canada and the United States (Besseau et al. 2002, LaPierre 2003). This fundamental element of the approach has contributed to the adoption of the Model Forest approach in many contexts where forests are only one of many important land uses. Stakeholders in fact used the principles of the Model Forest approach to advance a wide range of objectives for land management and local development. As a result, the INFM has shifted its guiding principles to suit an even broader set of contexts, while maintaining the fundamental elements of the approach (see Table 3).

*Table 3. Guiding principles of the Model Forest approach.*

<b>Guiding principles and attributes (IMFN 2008)</b>
<ul style="list-style-type: none"> <li>– Partnership - Each Model Forest is a neutral forum that welcomes voluntary participation by representatives of stakeholder interests and values on the landscape</li> <li>– Landscape - A large-scale biophysical area representing the full range of forest values, including social, cultural, economic and environmental concerns</li> <li>– Commitment to sustainability - Stakeholders are committed to the conservation and sustainable management of natural resources and the forested landscape</li> <li>– Governance - The Model Forest management process is representative, participative, transparent and accountable, and promotes collaborative work among stakeholders</li> <li>– Program of activities - The activities undertaken by a Model Forest are reflective of the Model Forest’s vision and stakeholders needs, values and management challenges</li> <li>– Knowledge sharing, capacity building and networking - Model Forests build stakeholder capacity to engage in the sustainable management of natural resources, and collaborative and share results and lessons learned through networking</li> </ul>

As Model Forests were created, their stakeholders incorporated these basic principles into other existing models for land, water and resource management, and development strategies. For example, many Model Forests have formed within and around the boundaries of biological corridors, biosphere reserves, national and provincial parks, and indigenous peoples' traditional territories and reservations.

### **Establishment of regional networks and links with landscape approaches to sustainable development**

Since the early 2000s, the IMFN has continued to grow to its current size of more than 60 model forests in 30 countries around the world. One of the most significant shifts in their structure has been to develop regional Model Forest networks nested within the IMFN. These regional networks have been especially valuable in linking Model Forests to regional hubs for research, capacity building, technical expertise, funding, and volunteer labor. Some of the networks are relatively small, with fewer than five participating Model Forests, while others, like the Ibero-American Model Forest Network, are comprised of nearly half of all Model Forests.

The regional networks have also connected the Model Forest approach to the ongoing development and pursuit of integrated approaches to land and resource management across the world. The directors and other leaders of the regional networks play an influential role, since many of them have been or currently are affiliated with major research or development organizations like CIFOR, CATIE, Bioversity, and others. As in the early years, where collaboration between Model Forests in Canada and Latin America facilitated the exchange of

information and practices on ecosystem management approaches, these networks act as hubs where information, funding and practices promoted by research and development organizations are incorporated into the strategic plans and activities of Model Forests.

## **Conclusions**

Landscape approaches for sustainable development are receiving more attention now than ever, but there remains a limited exchange of knowledge and experiences between landscapes in different parts of the world. The International Model Forest Network provides a system for studying cross-landscape learning, and an example of how landscape initiatives can collaborate in nested scales (e.g., local, regional, and global) through multi-stakeholder processes. This thesis explores the cases of two Model Forests – Prince Albert Model Forest in north central Saskatchewan, Canada, and Bosque Modelo Araucarias del Alto Malleco, in the Araucanía region of south central Chile. I chose these two Model Forests in part because Model Forests, in general, featured prominently in previous research I conducted on landscape initiatives (Milder *et al.* 2014, Estrada-Carmona *et al.* 2014, Garcia *et al.* 2016, Zanzanaini *et al.* 2017). Additionally, these two Model Forests have more than fifteen years of experience to learn from, and they collaborate with one another on research and stakeholder exchange. Their relationships to one another and with other Model Forests in the broader International Model Forest Network provided a unique opportunity to build on my previous research, and deepen understanding of landscape initiatives through the history, relationships, experiences and achievements of these Model Forests. In particular, I use the case studies to answer the following questions:

- What role(s) do landscape initiatives in general, and Model Forests in particular, play in relation to other processes and organizations in their landscapes?
- How do the social, political, and historical contexts in which these landscape initiatives form influence who participates and how the initiatives function?
- How do the actions of landscape initiatives and the relationships between their stakeholders influence their members' ability to adapt to change?
- How do relationships between landscape initiatives, both through one-on-one interaction and through relationships within a larger network, influence their actions and outcomes?

The two cases allow us to look at these questions from a few different perspectives. The case of Prince Albert Model Forest provides the opportunity to analyze the experience of one of the original Canadian Model Forests. In Chapter 2, I use this case to explore how the Model Forest process and stakeholders responded to a particularly volatile period in the Canadian forestry industry. The case of Bosque Modelo Araucarias del Alto Malleco presents a different opportunity to explore the experience of a landscape initiative that adopted the Model Forest approach as part of the sustainable development agenda for Chile. In Chapter 3, I use this case to explore how and why stakeholders adopted a landscape approach, and the role that Bosque Modelo Araucarias del Alto Malleco plays in its landscape. A final chapter offers conclusions and lessons learned for practitioners, and some future directions for research based on the findings of the two case studies.

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## CHAPTER 2

# GOVERNING FOR SUSTAINABILITY TRANSFORMATIONS: THE PRINCE ALBERT MODEL FOREST AND THE TRANSFORMATION OF SASKATCHEWAN'S BOREAL FOREST LANDSCAPE

### **Introduction**

In 2008, coinciding with the global financial crisis, the forestry industry in Saskatchewan experienced a dramatic slowdown, nearly leading to the collapse of the industry. The reverberations of the crash were felt throughout the communities in and around Prince Albert, a small city of 35,000 at the fringe of Saskatchewan's boreal forest. The event triggered a series of changes in the forestry industry and in provincial government priorities for economic development in the boreal forest. It also influenced interest in collaborative work and partnerships within the forestry industry, like those already established through the Prince Albert Model Forest (PAMF) – a multi-stakeholder organization that works toward sustainable forest management in the greater Prince Albert landscape. As an organization that has connected actors and provided fertile ground for collaborative partnerships and programs over the last 20 years, PAMF provides an opportunity to explore the role of collaborative, network organizations in navigating crises like the crash of the forestry industry.

The recent push for more integrated and participatory approaches to resource management (Pahl-Wostl 2007, Walker et al. 2002, Holling & Meffe 1996) has led to global interest in creating and supporting multi-stakeholder organizations like PAMF. Proponents of integrated, multi-stakeholder approaches argue that such approaches are better suited to adaptively managing complex systems because of the diversity of interests represented by stakeholders

and their ability to coordinate financial and human resources to achieve multiple objectives (Sayer et al. 2013). However, the relationship between multi-stakeholder network organizations and crisis, particularly in forest landscapes, is poorly documented and understood. As sustainable forest management becomes increasingly challenging, in light of changing climate, market conditions, and demographics in forest communities, it is important to understand if and how such organizations contribute positive outcomes of various types (e.g., social, economic, and ecological) to forest management. This paper begins to answer that question in the context of the Canadian boreal forest. I hope that this analysis can inform an ongoing dialogue on the design of forest management models that prepare forest communities not only for the present, but for an uncertain future.

The experiences of PAMF and the greater Prince Albert landscape during this crisis and throughout the recovery period provides an interesting opportunity to examine the role of network organizations in the transformation of landscapes following a crisis. I use a previously established framework for understanding sustainability transitions from resilience thinking (Olsson et al. 2004, Moore et al. 2014) – as well as literature from transition management (Geels 2002) and relational systems (Walsh 2007, Kahn et al. 2013) – as heuristic tools to analyze the transformation of the Prince Albert landscape. The analysis describes the trigger, the window of opportunity that opened, and the subsequent impacts of the crisis on the trajectory of the Prince Albert landscape and the potential for sustainable forest management. This work builds on previous work to explore the role of multi-stakeholder initiatives in supporting multi-stakeholder management at landscape scales (Milder et al. 2014, Estrada-Carmona et al. 2014, Sayer et al. 2015).

## **Literature review**

### ***Transition toward integrated approaches and public participation in Canadian forest policy***

Canadian forestry and forest policy has evolved over the last several centuries. Confederation and industrialization, particularly the building of railroads, hastened the mechanization and development of the Canadian forest sector in the mid-late 19<sup>th</sup> century (Drushka 2003).

Canadian forests were quickly razed to feed a growing lumber market in the U.S. and, in the prairie provinces, to make space for agricultural expansion (Drushka 2003). By the turn of the century, Canada, like the United States, began incorporating the first elements of conservationism into its industrial forest management model, following the lead of environmentalists like Muir, Pinchot and Leopold (Parkins 2006). These early attempts to integrate forestry and conservation led to the opening of forestry schools, forest fire suppression programs, and the creation of forest reserves (Beyers & Sandberg 1998).

Throughout the 20<sup>th</sup> century, new waves of environmentalism in the 1960s, 70s and 80s placed pressure on the industry and on provincial and federal governments to account for multiple uses and facilitate the participation of forest communities in forest management planning processes (Howlett 2001, Parkins 2006). Co-management models (Armitage et al. 2008, Berkes 2009), which began appearing in Canada in the 1970s, and Sustainable Forest Management (SFM), the approach espoused by the Canadian government since 1992 (Natural Resources Canada 2015), were direct outcomes of these shifts in public opinion, perspectives within the scientific community, and conflicts between forest stakeholders. Similarly, the intersection of the planning community with environmental movements stimulated interest in ecosystem-scale management that would better account for ecological and social diversity in

management plans (Slocombe 1993). An additional hallmark of such approaches was that, by linking with more agile, local actors, forest management plans could be implemented adaptively to address new and unpredictable challenges like climate change (Folke et al. 2005).

Canada was not alone in this transition. In recent decades, SFM (Slocombe 1998), ecosystem-based management, integrated natural resource management (INRM) (Campbell & Sayer 2003, Frost et al. 2006), and similar approaches to integrating resource management with other objectives (Sayer et al. 2013, Ho et al. 2013, Reed et al. 2014, LPFN 2014) have gained popularity around the world. While programs for public participation in forest management have increased, they have also been critiqued for failing to move beyond consultation of forest communities, often reinforcing the positions of powerful actors (Nadasdy 2007, Gondo 2009). As a result, some stakeholders have convened civic sector platforms to discuss and influence forest management. The Model Forest Program, initially funded by the Canadian federal government, was one such attempt to bring together forest stakeholder groups at the local level to change forest research and practice (Besseau et al. 2002).

### **Managing for transformation in the midst of uncertainty and surprise**

Beginning with seminal works by Holling (1973), Gunderson (Gunderson and Holling 2002), Levin (1998), an increasing number of studies emphasize the importance of understanding how non-linear system dynamics, uncertainty and surprise shape social-ecological systems (SES) (Levin 1999, Scheffer et al. 2001). Within this body of literature on SES, adaptive co-management has been presented as an approach to managing SES under changing ecological and political conditions in northern contexts in general and the Canadian context in particular

(Armitage et al. 2010, Berkes 2009, Natcher 2005, Hahn et al. 2006). Some of these studies have focused on how surprise events can push systems into new states unexpectedly, while others have pointed out that the same events can present windows of opportunity for transforming governance and management of social-ecological systems, particularly when stakeholders are equipped to navigate change (Olsson et al. 2004). In reality, organizations must also be prepared to navigate multiple uncertainties simultaneously, such as the long-term, slow and highly uncertain transformation of the Prince Albert landscape occurring under climate change, as well as rapid and sudden system “shocks,” like the global financial crisis.

### ***Multi-stakeholder networks and bridging organizations for natural resource management***

The recent impetus for participatory natural resource management has contributed to an understanding of how relationships between stakeholders and the social networks in which they are embedded influence management processes and can support the transformation to more sustainable resource governance (Crona & Hubacek 2010, Reed et al. 2009, Prell et al. 2009). In Prell and colleagues’ (2009) analysis of the relationships between social networks and natural resources management, they found that the strength of ties between network members, the number of connections each member has, and the similarities or differences between stakeholders affect a network’s ability to 1) engage and communicate complex issues, 2) establish trust between its members, and 3) incorporate new and diverse perspectives on natural resource management. These characteristics also influence resources that may help the network and its members recover from a crisis or surprise event, like diversity (whether cultural, political, ethnic, or other form) of stakeholders, redundancy of information, and decentralization of power or authority. In addition, networks can play important roles in

fostering social learning (Reed et al. 2010, Leys & Vanclay 2011) and collective action, which in turn can support adaptive management systems that are better equipped to evolve alongside changing ecological, social, and institutional dynamics (Olsson, Folke & Berkes 2004, Hahn et al. 2008, Adger 2010, Berkes 2009). Related research on networks has demonstrated that informal networks can influence stakeholders' actions even more than formally established multi-stakeholder structures for collaborative management (Crona & Hubacek 2010, Hahn 2011). PAMF's experience, as we describe later in the case, supports such findings despite having been established before network analysis became more central to understanding natural resource governance regimes.

As part of social networks, "bridging organizations" are considered important spaces for actors to build the capacity to deal with abrupt change by redirecting human and financial resources, knowledge and innovation (Hahn et al. 2006). Bridging organizations like PAMF not only bridge levels of governance (e.g., community, provincial, national levels), but also "provide an arena for trust building, sense making, learning, vertical and horizontal collaboration, and conflict resolution" (Olsson et al. 2007). In essence, bridging organizations directly or indirectly link managers, organizations and stakeholders in a landscape that would otherwise remain disconnected. In doing so, bridging organizations can lower the cost of collaboration and reduce conflict during periods of abrupt change or crisis (Folke 2005).

When faced with surprise or crisis, SES and the social networks within them may adapt to new conditions or transform into new systems and networks with different characteristics and functions (Walker et al. 2004, Olsson et al. 2004, Olsson et al. 2007). Whether a system adapts

or transforms is governed not only by the thresholds and capacities of social and ecological components of the system, but also (and perhaps even more so) by the cross-scale interactions between the system of interest and those at scales above or below it (Folke 2010). Also, how transformations or system trajectories are defined, and whether or not they are perceived as good or bad, are inherently subjective and normative questions (Stedman 2016). It is unlikely that stakeholders agree on normative characterizations of the system itself, or possible pathways that a system might change.

One framework for describing transformation, originally prepared by Olsson and colleagues (2004) and recently revised by Moore and colleagues (2014), explores the temporal dynamics of transformation from the moment of a crisis (or trigger) through the process of preparing for and navigating change, until the institutionalization of the transformed system. This transformation framework provides a useful foundation for examining how organizations like PAMF and the landscape in which it operates might respond to a crisis.

A number of existing case studies have explored the roles of networks and bridging organizations in governance and transformation (Crona & Parker 2012, Elbakidze et al. 2010). The case of PAMF is a valuable addition to these cases in that it highlights an example from the forestry industry. The case also allows us to investigate the opportunities and limitations for bridging organizations to contribute to recovery processes.

## **A framework for landscape transformation in the wake of a crisis**

Abrupt change and crises present unique challenges to social-ecological systems. While Olsson et al.'s (2004) framework is helpful for thinking about pathways of transformation, it does not speak specifically to post-crisis transformation. As some studies have pointed out, frameworks for post-trauma recovery and growth from relational systems, family systems and disaster relief literatures can be very helpful for thinking about post-traumatic transformation processes in social-ecological systems (Masten and Obradovic 2008, Kahn et al. 2013, Tidball and Krasny 2013). Such studies emphasize the importance of the context in which the system is embedded, and the influence that relational shifts between members of a network can have on the trajectory of the system following a crisis (Kahn et al. 2013, Schlossberg 2005). It is also important to note that the literature on human development tends to take a normative view on resilience as a positive attribute of an individual or system that allows it to return to a similar level of function, or even an improved level of function, following a crisis (Masten and Obradovic 2008).

These frameworks are also transparent about the multiple possible trajectories post-trauma, and the potential for maladaptation (Walsh 2007, Masten and Obradovic 2008). Goldstein's (2011) analysis explores the relationship between crises and windows of opportunity, and argues that collective energy following a crisis can be harnessed to open windows of opportunity and put social-ecological systems on a trajectory of recovery and growth. We explore the utility of these concepts for interpreting the experience of the greater Prince Albert landscape following the crash of the forestry industry. Our framework integrates ideas from these literatures with the temporal framework proposed by Olsson et al. (2004).

## **Methodology**

This research aimed to answer the following questions:

- What was role or roles did PAMF play leading up to, during, and following the crash of the forestry industry?
- How does the model developed by Olsson et al. (2004) and refined by Moore et al. (2014) help us to understand this(these) role(s) over time?
- What is the role of network organizations in the context of forestry in navigating periods of transformation resulting from a crisis or abrupt change?

## **Data collection and analysis**

This study followed a case study methodology based on collection of primary data, following a thorough review of literature and previously gathered primary data (Stake 2006). Prior to developing the interview questions, we reviewed literature on the historical context of forestry policy and practice in Saskatchewan as well as the history of the Model Forest Network. The primary data was gathered during a month of fieldwork that included semi-structured, in-depth interviews, in addition to participant observation at board meetings and field activities. The interviewees were selected through purposive and snowball sampling to identify actors that were affiliated and unaffiliated with PAMF, as well as actors that represented various sectors, to understand and assess the perspectives of multiple stakeholder groups that did and did not participate in the PAMF network. Interviews were conducted with representatives of provincial government agencies, federal government agencies, federal policymakers, legal representatives, First Nations, public service providers, civic education organizations, and

forest industry companies. A total of 27 interviews and 2 focus groups were conducted and transcribed (see Table 1 for a list of the institutional affiliations of the interviewees). Interview data were iteratively coded for emerging themes (Charmaz 2001, Stake 2006), roles played by PAMF and others, and key moments in the crisis and transformation process. Representatives of PAMF reviewed the analysis. The initial coding scheme for this research focused on concepts of collaboration and conflict. Through the interview and then the coding process, the magnitude of the crash of the forest industry emerged as a central theme. This theme caused me to return to the literature and explore models from resilience thinking and complex adaptive systems that might help me understand and analyze the primary data. I re-coded the data with a scheme that focused on the components of the models described in the previous section to arrive at the analysis used in this paper.

*Table 1. Institutional affiliation of interviewees*

Aboriginal Affairs and Northern Development Council
Aboriginal Ministry of Justice
Canadian Forest Service
First Nation Island Forest Management
FP Innovations
Meadow Lake OSB / Tolko Industries
Ministry of Environment, Saskatchewan – Forest Service Branch
Ministry of Agriculture, Saskatchewan
Ministry of Economy, Saskatchewan

Mistik Management Inc.
Parliament of Canada
Prince Albert Model Forest
Prince Albert Public Library
Prince Albert Tribal Council
Sakâw Askiy Management Inc.
Saskatchewan Forestry Association
Saskatchewan Research Council (SRC)
Sturgeon River Plains Bison Stewards
Sturgeon River Ranch
University of Saskatchewan
<i>Some interviewees in the following categories were not affiliated with any particular institution</i>
Private landowners
PAMF board members

## **Prince Albert Model Forest and network organizations in Canadian forest landscapes**

### ***Overview of the boreal forest and the Saskatchewan forestry industry***

The Canadian boreal forest represents nearly one tenth of all forests on earth and one of the largest remaining forest and wetland ecosystems (NRCan 2013). These forests play a crucial role in the health of the planet and the well-being of forest communities by providing a wide range of ecosystem goods and services including carbon sequestration, regulation of water quality, timber and non-timber forest products, habitat and recreation (Patriquin et al. 2009,

NRCan 2013). The boreal forest contributes nearly \$20 billion to national gross domestic product (GDP). Forestry is the second largest industry in northern Saskatchewan, after mining (Ministry of Economy 2015). More than half of Saskatchewan is boreal forest, 90% of which has been managed by the provincial government since the 1930s when the federal government passed along the rights to manage crown forests to the provinces through the Natural Resources Management Act. In Saskatchewan, the boreal forest is used for wildlife habitat, recreation, hunting, and most notably for timber and pulp production in the 11.7 million hectares that compose the commercial forest belt. Because of the historical importance of timber and pulp production, the management of the crown forest is primarily shaped by management agreements between the provincial government and forest product companies. The current models for these partnerships are forest management agreements (FMAs) and term service licenses (TSLs) that permit companies to conduct commercial forestry and regulate their activities (Ministry of Environment 2013) (for a map of current timber supply areas see: <http://bit.ly/1BIzAbT>). In the past, primarily large international forest products companies conducted forest management. However, increasingly, First Nations and Métis communities jointly hold FMAs as owners and shareholders in forest companies. This is an important shift given the complicated and often conflicted relationships between aboriginal and Métis communities and the forestry industry (Wyatt 2008, Natural Resources Canada 2009, National Aboriginal Forestry Association 2000, 2010).

### ***The Canadian Model Forest Program***

The Model Forest Program (MFP) was established in 1991. Initially the program provided funding for eleven proposed multi-stakeholder partnerships between research institutions and

actors interested in sustainable forest management of large forest landscapes (100,000 ha or more). PAMF was among this first set of Model Forests funded (Figure 1). At the time, the MFP established an unprecedented approach to sustainable forest management that Canada presented to the world at the United Nations Convention on Sustainable Development in Rio de Janeiro in 1992. While the first several years presented substantial challenges to establishing partnerships between some stakeholders with distinct organizational cultures and approaches to cooperation, several the Model Forests quickly became examples of management partnerships rooted in networks of local stakeholders - provincial and federal governments, first nations, industry, research organizations and others - with unique potential for influencing and implementing SFM (LaPierre 2003). As a result of Canada's presentation of the MFP in Rio de Janeiro, and the perceived early successes of the Canadian Model Forests, many other Model Forests formed around the world, leading to the establishment of national and regional (i.e., supra-national) networks. Therefore, Model Forests, like PAMF, not only represent a multi-stakeholder organization of local actors, they are simultaneously embedded in national, regional and global Model Forest Networks. They are a long-standing example of bridging organizations in forest landscapes and, as such, provide an interesting context for exploring the role of bridging organizations in navigating crisis and transformation in these landscapes.

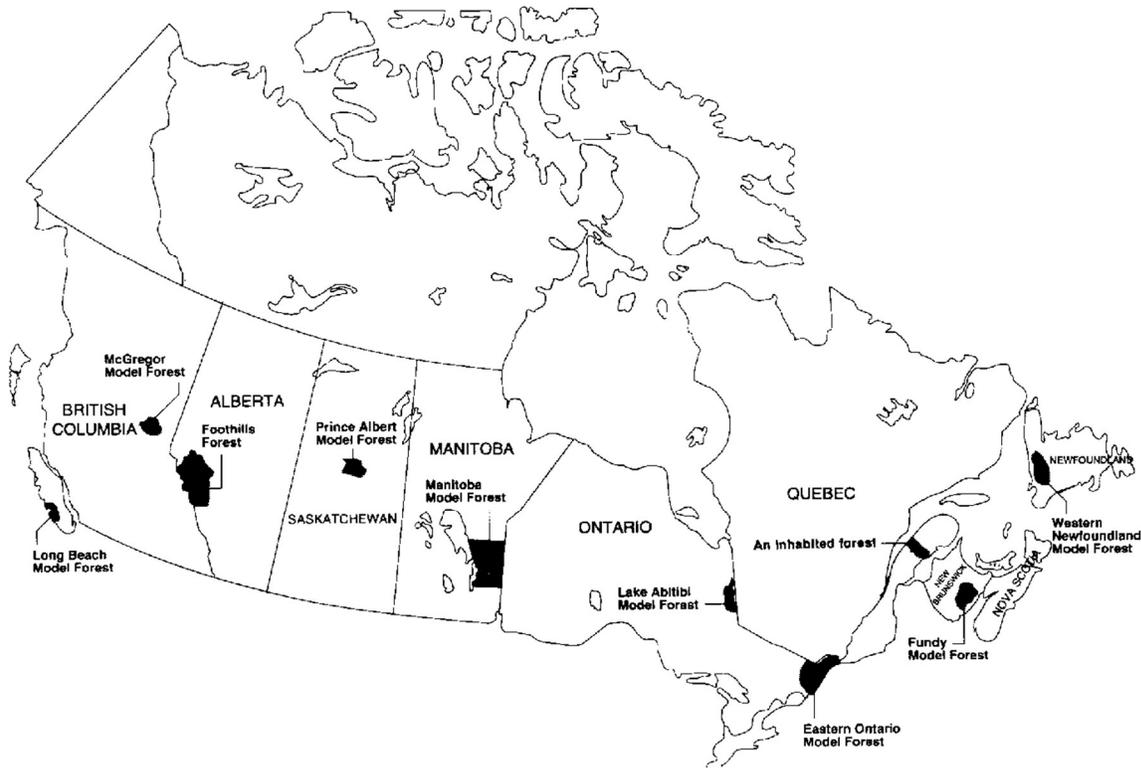


Figure 1. The first eleven Canadian Model Forests (Brand & LeClaire 1994).

### ***The Prince Albert Model Forest organization***

PAMF was selected as one of the eleven original Model Forests. Each Model Forest was supposed to include representatives of diverse stakeholder groups in the landscape. At the inception of the Model Forest Program, there was a particular emphasis on partnerships between the forestry industry and research organizations. In the case of PAMF, Weyerhaeuser, which managed the largest FMA in Saskatchewan, was the original industry partner, and Saskatchewan Research Council (SRC) was the lead research organization. Since then the composition of PAMF's stakeholders has evolved but has continued to include a blend of representatives from provincial and federal agencies, First Nations, industry, and civil society organizations.

The boundaries of the PAMF landscape also have changed since the program began. Initially, PAMF's work focused on a clearly delineated area of approximately 400,000 ha closely linked to the Weyerhaeuser FMA. Since then, the area of interest has expanded to a loosely bounded area of 4.4 million ha, spanning most of Saskatchewan's boreal forest (Figure 2). PAMF is named after the largest population center in this area, Prince Albert, a small city of approximately 35,000 people located about 140 kilometers north of Saskatoon. The southern end of the greater Prince Albert landscape begins in the boreal transition zone where the vast pale gold of the Canadian prairies become dotted with aspen bluffs, eventually reaching the deep green of the boreal forest, until its northern limit near the Churchill River system and the beginning of the Canadian shield.

The southern end of PAMF's area of interest is dominated by agriculture, which is Saskatchewan's largest industry overall. Agriculture is relatively less important, however, than forestry and mining in the PAMF landscape. The mining industry is the largest industry in northern Saskatchewan, centered on extensive uranium deposits in the Lake Athabasca Basin. Communities in the PAMF area of interest are highly dependent on the mining and forestry industries. The dynamics of resource dependent communities, particularly those dependent on timber and pulp mills have been well documented (Beckley 1998, Parkins et al. 2001). An increasing number of Saskatchewan residents are joining the more than 40,000 "fly in, fly out" mobile workers employed in the Alberta oil sands (Wittmeier 2014). The communities that live south of the edge of the boreal forest depend primarily on agriculture, although a large percentage of the city of Prince Albert works at one of its five correctional centers. Other

industries include hunting, tourism and recreation related to the many lakes and parks, including Prince Albert National Park.

The majority of people living in the boreal forest are part of First Nations or Métis<sup>2</sup> communities that live on reserve land and in the small population centers spread out across the landscape (Elliot 2014, Statistics Canada 2011). However, apart from the reserves, the forest is all Crown land and managed by the province of Saskatchewan. The complex history and dynamics of land tenure, resource management policies, and treaty rights in the region has resulted in real or at least perceived competition between aboriginal communities, the provincial government, and forestry companies for the rights to access and manage forest areas. Because of the strict interpretation of many treaties and boundaries on official dialogue between the federal and provincial governments and aboriginal communities, many forest communities are seeking alternatives to government-led mechanisms for public participation in the forestry industry and forest management. PAMF has provided one such alternative forum for these communities to bring their interests to the table, and to participate in planning and management. However, it is important to note that not all First Nations and Métis communities find this type of forum as valid or valuable due to concerns that their participation might imply their consent with the current political and forest management regimes, as well as their opposition to current definitions of land rights and ownership in Canada.

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<sup>2</sup> Métis people consider themselves to have mixed ancestry from First Nations and Europeans.

*Table 2. Timeline of important events in the history of the Canadian Model Forest Network and the Prince Albert Model Forest.*

1991	– The Government of Canada announces the Model Forest Program
1992	– Eleven Model Forests are launched across the country, one of which is Prince Albert Model Forest – Canada launches the International Model Forest Program at the United Nations Conference on Environment and Development, Rio de Janeiro, invites other countries to join Canada in establishing Model Forests
1993	– The Canadian Forest Service establishes the Canadian Model Forest Network Secretariat
1995	– International Model Forest Network Secretariat is established
2000	– PAMF develops its Integrated Resource Management Plan
2006	– Canadian Model Forest Network becomes an independent NGO with a Board of Directors
2007	– The Canadian federal government discontinues the Model Forest Program and instates the Forest Communities Program – Prince Albert Model Forest discontinues use of its original boundaries, expanding its area of interest to ten times its original size
2008	– The Great Recession sets in, linked to the crash of the U.S. housing market – Weyerhaeuser officially closes its two mills in Saskatchewan that had been idled since January of 2007
2012	– Final year of Forest Communities funding
2013	– Prince Albert Model Forest transitions from a government funded program to a registered non-profit – Forestry market begins to rebound

Since its inception, PAMF’s priorities have shifted significantly from research to supporting sustainable forestry to economic development for forest communities. This shift echoes a shift in the priorities of International Model Forest Network at a global scale and resonates with the changing economic realities surrounding the recession and crash of the Canadian forestry industry. Recently, the end of the Canadian federal funding for the Forest Communities Program has pushed PAMF to find a new identity as a non-profit organization.

Over the years, PAMF has established a network of local stakeholders committed to the concept of sustainable forest management, and who benefit from engaging in the partnerships they find at the Model Forest table. In turn, this local stakeholder network is nested in the national and international Model Forest Networks that add dimensions to PAMF's resource base, capacity and knowledge. Of the many changes that PAMF has faced over its more than twenty years of existence, the crash of the forestry industry is arguably the most severe and abrupt, and it has had a dramatic impact on the social-ecological system. The next section dives deeply into the series of events that contributed to and resulted from the crash, and the impacts that it had on PAMF and forest communities in the area.

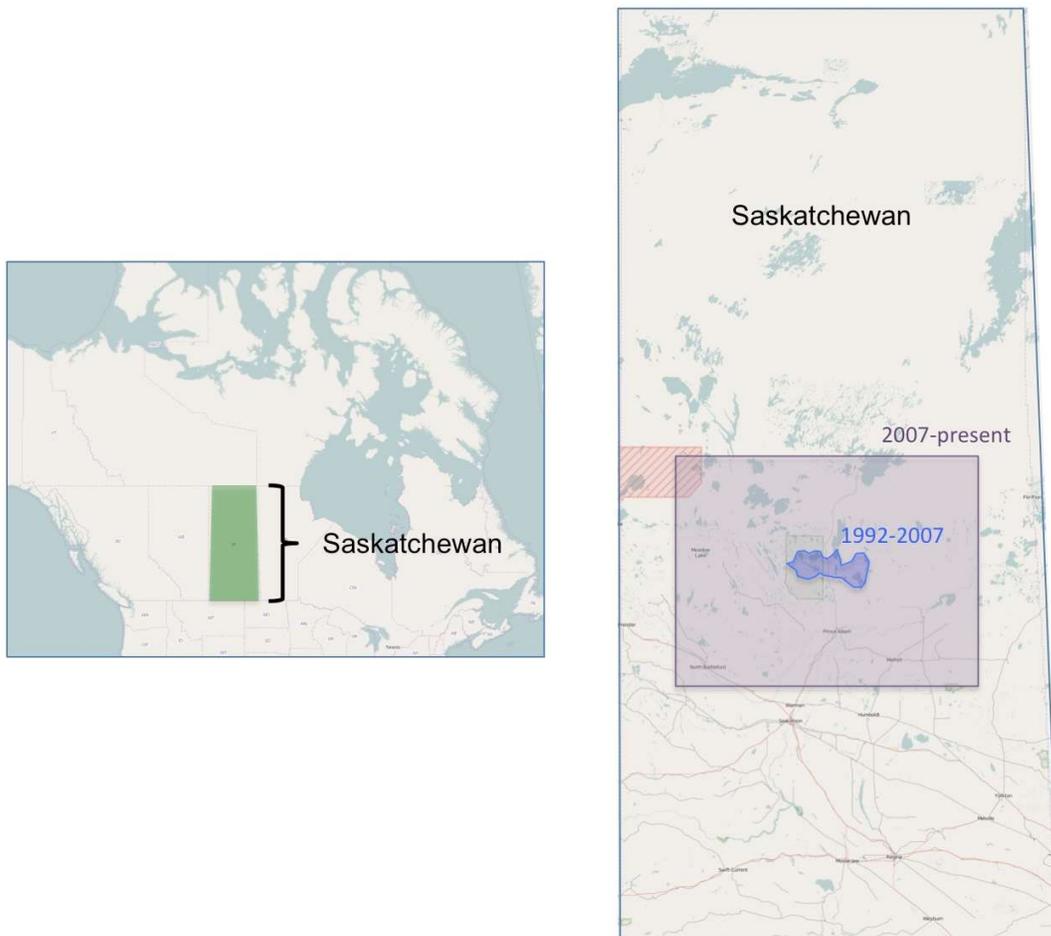


Figure 2. Prince Albert Model Forest area of interest from 1992 to 2007 and from 2007 to present.

## **Landscape transformation following the crash of Saskatchewan's forestry industry**

### ***The trigger***

Important changes in Canadian forest management and timber markets that occurred over several decades set the stage for the crash of the Saskatchewan forestry industry. For example, the softwood lumber dispute beginning in the 1980s, which led to the softwood lumber agreement (SLA) of 2006, initiated a decline in U.S. imports of Canadian softwood (Nagubadi & Zhang 2013). However, the crash of the forestry industry was most immediately precipitated by the sub-prime mortgage crisis and collapse of the United States housing market. *“That was really what precipitated the drop on a global basis,”* said one interviewee, *“because once that started, then there was a ripple effect globally, in terms of forest products.”* As a landlocked province, Saskatchewan's primary timber market was the US construction industry, particularly the upper Midwest, consuming 98% of Saskatchewan's wood product exports. Dependent on the United States' housing market, Saskatchewan's forestry industry faltered. Of the eleven timber, pulp and OSB<sup>3</sup> mills operating in Saskatchewan in 2006, only two mills remained open by 2012. Saskatchewan's forest product exports declined from 443 million CAD in 2005 to 58 million CAD in 2008, and the province's relative share of Canada's total forest product exports fell below 1% (FP Innovations 2009). The abruptness of the crash is seen in the rapid decrease in area harvested in Saskatchewan from 41,800 ha in 2005 to 15,400 ha in 2006 (FP Innovations 2009). As the second most important industry in northern Saskatchewan after mining, the crash of the industry and the loss of jobs at local mills had a

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<sup>3</sup> OSB stands for oriented strand board, a high-quality wood product that has replaced plywood in most countries.

dramatic impact on the city of Prince Albert and small forest communities across the PAMF landscape.

Weyerhaeuser, looking to cut its losses in Saskatchewan, put its operations on hold indefinitely in 2005 (Weyerhaeuser 2005). As a final blow, the two mills that remained open were reduced to part-time operations in 2008. At the time, Weyerhaeuser held the largest FMA in Saskatchewan and had been a central partner in PAMF. Its representatives had helped to draft the original proposal and supported a range of research activities on the lands it managed. By 2008, the large FMA held by Weyerhaeuser was opened for bid by others and the Model Forest lost its primary industry representative.

### ***A window of opportunity for reorganization and renewal***

The forest industry crash, despite its extensive impacts, opened up space for rethinking the logic behind the forest management model that had been in place in Saskatchewan since the mid-1900s. One interviewee from the provincial government noted, *“If there’s a silver lining in any cloud, this was a silver lining for the forest industry, because it forced the industry in Canada to stop, step back, and look at what it really was. It had an opportunity to make itself leaner, and more technically efficient.”*

The shock to the industry also gave the federal government a reason to shift its focus from sustainable production of commodity products (wood and paper) to more robust vision for the industry that placed greater emphasis on economic development for forest communities and diversification of forest products. In its *Vision for Canada’s Forests* (2008), the Canadian

Council of Forest Ministers (CCFM) highlighted the need for transformation in the forest sector (CCFM 2008). An interviewee echoed this message. *“The forest industry had gone down the toilet, and forest based communities were hurting pretty badly across the country. The federal government saw the Model Forest program as a way of trying to work with communities on enhancing economic sustainability in this phase of down turn in the industry.”*

In response, the federal government changed the Model Forest Program to the Forest Communities Program (FCP), recognizing the severe impact that the crisis was having on forest communities. The Model Forests would continue to receive funding through the new FCP. However, the program called for a shift in the mandate of the Model Forests away from an emphasis on partnerships between research agencies and the forest industry, to a focus on bringing other resource sectors into forest management and diversifying economic opportunities for forest communities (NRCan 2011). While these priorities were part of the broader Model Forest Program prior to the FCP, the Model Forest took this shift as an opportunity to reorganize, engage new partners and work with forest communities in new ways. In its proposal for funding under the FCP, PAMF calls out the impact of mill closures in the area and commits to strengthening development of economic opportunities for forest communities. The shift in PAMF’s boundaries from a distinct area around Prince Albert National Park, to a much larger and fuzzily bounded area that included many forest communities is one concrete outcome of this change in PAMF’s strategies (Figure 2).

***Navigating the transition – coping with and understanding the impacts of the crisis***

*Exploring new governance structures and strategies for forest management*

In the wake of Weyerhaeuser's exodus, the large FMA that it held was dissolved. The weakened state of the forest sector opened a space for new actors to step into management roles. The federal and provincial governments, recognizing the severity of the situation also actively invited new or under-represented parties to participate in defining priorities and managing resources. One of the interviewees from the forestry industry gave one example of a new partnership that resulted from this shift. *"It was at that point in time that the government basically said enough is enough,"* he explained. *"We've got to get this wood in the mix and incentivize the creation of a consortium of companies."* Sakâw Askiy, a corporation composed of six forestry companies and two First Nations, is one such partnership that took over the majority of what was once the Weyerhaeuser FMA. A mix of cooperative and single-shareholder corporations took over management of the remaining area under a variety of smaller FMAs and TSLs. As the industry began to rebound, new companies purchased the mills and restored them to activity. These companies represented diverse interests – some, like Sakâw Askiy, were new Canadian partnerships between First Nations and industry companies aiming to lead the way in restructuring the forest sector. Others were foreign investors from countries with emerging forest product markets who were looking to bring outside expertise to revive the industry, like the Sinar Mas group from Indonesia that purchased two pulp mills in Saskatchewan (and three elsewhere in Canada) (McCubbin n.d.).

The federal government also made advances in implementing policies to back its commitment to improving the well-being of forest communities. For example, in 2010, the province finally

created a written framework in order to more consistently carry out its duty to consult<sup>4</sup> with aboriginal communities (Government of Saskatchewan 2010). Previously, aboriginal communities' constitutional right to being consulted was interpreted differently by the various provincial ministries, agencies and Crown corporations. The federal and provincial governments also encouraged PAMF to seek partners that represented a broad suite of sectors.

As a stakeholder-based organization, PAMF was called upon to help facilitate negotiations between some of these new partnerships organizations, particularly Sakâw Askiy. In addition to facilitating new partnerships, PAMF was seen by its members as a neutral space for dialogue and innovation that would spur diversification of the sector in a way that would bring the most benefit to forest communities. The renewed emphasis on forest community sustainability and provincial funding for training northern workforces to adapt to industry changes (CCFM 2008) provided an opportunity for PAMF to engage in cultural exchanges on non-timber forest products, tourism and caribou management with Model Forests from its international network in Sweden and Chile. As a result of its changing mandate, the boundaries of PAMF's area of interest changed from a clearly defined area that exactly overlapped the Weyerhaeuser FMA to a much larger area with less discrete boundaries that encompassed many forest communities.

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<sup>4</sup> Duty to consult has been a de facto policy resulting from the Canadian constitution and the Natural Resources Transfer Agreement 1920. Only in 2010 did Saskatchewan develop an official written policy and protocol for how its "duty to consult" should be carried out with First Nations and Métis communities. This policy obligates the province to inform communities on crown lands of any activities, licenses or permits that might impact or infringe upon their treaty rights.

However, this change in the mandate and the physical area of interest of PAMF resulted in some of the major corporate representatives no longer seeing the value in participating in the Model Forest. “*Weyerhaeuser was really active in the beginning,*” explained a former Weyerhaeuser employee. “*I actually remember, it was right in my job performance. There were measureables on what I did with the Model Forest.*” However, Weyerhaeuser ceased participating when they closed their operations in Saskatchewan. In recent years, some of the larger corporations with a presence in Saskatchewan have not seen the shift toward alternative forest uses and forest community sustainability as compatible with the priorities of a recovering industry. “*They literally go down a path of alternative forest uses, or alternate forest products in First Nations... There is no tangible benefit that the industry has seen.*”

Another Model Forest partner described the shift in a slightly different way: “*Back then there was a big interest to have input on some of the forest management work and to learn more about sustainable forest management because it affected [forestry] operations directly and [industry] could access a lot of expertise at the table. Now industry is coming to [PAMF] because they recognize that [it] provides a neutral forum for things like community engagement.*” However, several interviewees mentioned that human and financial resources for community engagement were scarce or non-existent during the most difficult years. Even though PAMF may provide a neutral forum for community engagement, industry interest in expending resources to participate in PAMF appears limited and not clearly linked to the industry’s indicators of success. The government’s attempt to rebuild the forest sector to support diversification of the sector may have encouraged PAMF to broaden its mandate, but this does not appear to be the case for some of the individual stakeholders that previously partnered with the Model Forest. Similarly, this transition, while leading to some shifts in

forest governance, did not lead to a dramatic transformation of the power dynamics that govern forest ownership or management, but instead re-established the dominant model of provincial partnership with forest companies.

### *Technological transitions and reestablishing Canada's leadership in wood products*

The crash of the industry increased awareness among Saskatchewan's forestry companies of their dependence on a single market, the United States, for their timber products. However, outside of the U.S., Canada faced increasingly steep competition in the timber market from countries like Australia, Chile and Brazil. In order to survive, the forest sector in Saskatchewan would need to improve the efficiency of the industry, produce qualitatively different products than its competitors, and gain access to other export markets. *"We've got to compete in the world market. And to do that, we have to become more technologically efficient... You hear the first parts of it about 2007, 2008, and now, it is the statement of reality. And any industry representative will tell you that. This is a whole new world today,"* explained an interviewee. In the years following the crash, Saskatchewan made significant strides to reduce its dependence on the US housing and paper markets. For example, in 2005, 47% and 24% of pulp production was sold in US and Canadian markets, respectively. By 2013, Saskatchewan was selling 70% of its pulp to China and 25% to Indonesia (Ministry of Economy 2014). Another interviewee highlighted a different dimension of the technological shift: *"Canada has always operated in the mass market because there really hasn't been a competitor. There's been so much wood here, they just keep pumping it out the door, and not thinking too much about the quality of the material. Well, that's part of what this technological shift has done. It's allowed the Canadian forest industry... to be able to shift from a mass commodity production market and refining it*

*quality-wise, to go to more of a niche market.”* One of PAMF’s key roles, coming out of this crisis, has been to assist leaders in northern communities with industry partners interested in experimenting with the production of differentiated forest products.

New investors and old industry survivors invested in new technology for planning, logging and milling. In the words of one interviewee, *“Whereas in a traditional mill like this one, you would've seen a work force of about 250 people in the mill. Now you're seeing a work force of about 20 people wandering around in the mill checking gauges, making sure things are working and what not. Everything else is automated. Two people in the control room run the entire mill.”* However, these increase in demand for skilled labor to operate new logging, hauling and milling machines had a serious impact on forest communities. Technology transformation alone would cut the number of jobs available, but the government proposed that diversification into value-added products would lead to an overall increase in direct and indirect jobs in the sector. Unlike other provinces that are harvesting at or in excess of their annual allowable cut (AAC), Saskatchewan currently harvests less than 50% of its AAC (Ministry of Economy 2014).

### *Ecological impacts*

When the industry crashed, few workers remained and companies could not afford to carry out many of their management functions. For example, trees that were mature and ready for harvest were left standing, and wood scraps that would previously have been turned over to the pulp mills were left in piles throughout the forest. Although forest fires are a normal part of the boreal forest lifecycle, the unharvested mature forests and piles of wood scraps increased the

potential for fires. While some stakeholders welcomed the return to what they considered a more natural state, many communities, cabin owners, hunters and trappers were concerned by the increased risk they faced.

The creation of new management agreements, industry partnerships, and strategies for managing the forest also had an indirect impact on forest ecology. The various FMAs in place as of 2014 use different methods for planning cuts and place different levels of emphasis on non-timber objectives for forest management. Ecological impacts were closely linked to the social and technological impacts; the leaner forestry industry had less money to invest in public education and engagement. Therefore, while technology would allow companies to plan cuts that mimic natural disturbance events, the lack of public education on forest ecology and limited funds for stakeholder engagement made justifying the use of such strategies and technology to stakeholders a challenge. *“It’s just starting to build back up again,”* one of the industry interviewees explained. *“So there will be more effort on public education. But for a long time, there was just no time or money for that kind of work.”* Relatedly, the new technology used for planning, cutting and hauling allowed younger and previously underutilized parts of trees to be used for new processed wood products that were part of the industry’s efforts to diversify the forestry sector.

#### *Impacts on the northern labor force and community life*

The most obvious social impact of the downturn of the forest industry was on employment opportunities for residents of Prince Albert and communities to the north. The model of forestry practiced prior to the crash was based on access to a large and unspecialized labor

force. Relatively little training was needed prior to taking a job as a logger, hauler or mill worker. This provided abundant opportunities for residents of forest communities who wanted to live and work near home without leaving to gain higher education or specialized skills. As an interviewee described, the transformation of the forestry industry means that workers now need “*grade 12, general education equivalent. It means post-secondary training and skills training...whereas before it was brawn, now it's brain. And so [they've] gotta make that transition in [the] workforce.*” Even after the market rebounds, “*that means less people employed per unit of production.*” As the forestry industry hit its lowest point, job opportunities in the uranium mines in northern Saskatchewan and the Alberta oil sands were growing rapidly. Much of the unskilled labor force that had been working in forestry took jobs in these fields, changing the rhythm of forest community life. The workers, primarily young men, work on site for a week or two and then return home for a week (Kryzanowski 2009). Some of the few programs that exist for training workers from northern communities to reenter forestry are sponsored by members of PAMF and promoted through its network of stakeholders, particularly participating bands and tribal councils.

The impact on skilled, white color workers in the forestry sector was different. Provincial government agencies, like the Ministry of Environment, were less immediately impacted by the downturn and were able to absorb some of the industry’s planners, foresters and administrators (Figure 3). Although the forestry sector is growing again and jobs are abundant, it has been challenging to attract the skilled labor it once had. “*The downturn pulled people away from forestry,*” explained an interviewee. “*They are good jobs. It’s a good career... but there are not a lot of folks looking to do it anymore.*”

*Network reorganization – exploring new modes of multi-stakeholder collaboration*

The composition of PAMF’s board of directors and participating members changed during and after the crash of the forestry industry. Today, no industry representatives are present on the board and few participate in other activities. At the same time, the current members expressed that PAMF had particularly high value to them because of the opportunity to form new partnerships, including ones that would lead help them access new revenue streams. For example, one of the First Nations representative’s notes, “*the relationship that we’ve developed within that Model Forest gives us access to all those resources that we otherwise wouldn’t have. The Tribal Council might put some money in, plus Canada might put some money in. In a lot of cases [the Tribal Council] can access federal dollars, where Prince Albert Model Forest incorporated cannot do that. It’s a benefit for the organization to have... different ways of accessing dollars.*”

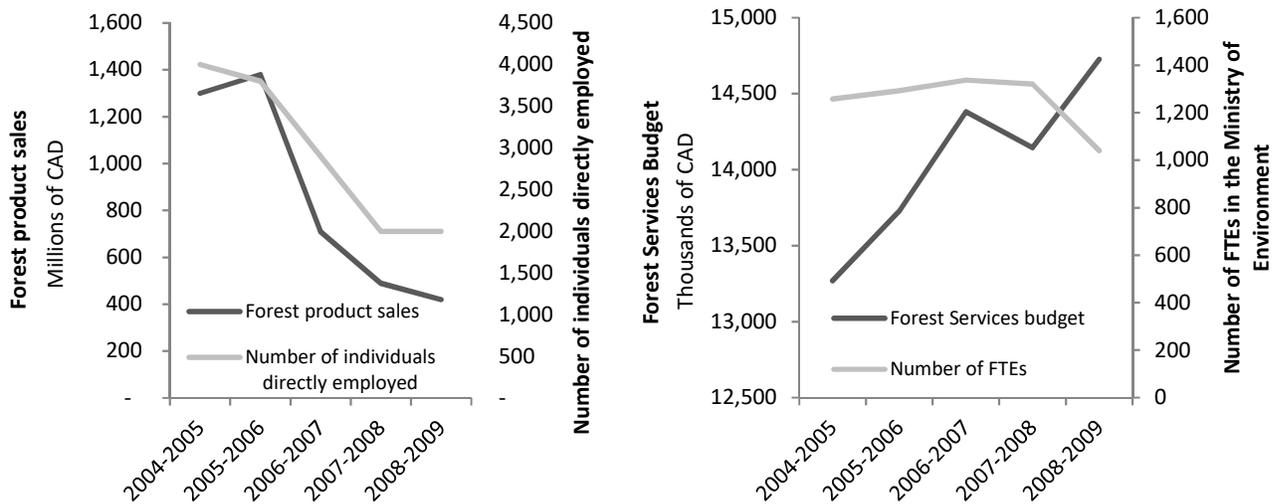


Figure 3. Forest product sales and number of individuals employed in timber and pulp compared to the Ministry of Environment’s Forest Services budget and number of full-time equivalents (FTEs) employed by the Ministry of Environment from 2004-2009. Based on the Saskatchewan Ministry of Environment Annual Reports for 2004-2009.

The leaner, more efficient industry model has relatively little room for collaborative activities, while forest communities and representatives from other sectors have a heightened awareness of their dependence on the forestry industry and the need to diversify economic opportunities. This, in turn, has resulted in a shift away from perceptions of sustainability as limited to sustainable forestry, to an exploration of other dimensions of sustainability. These include, for example, more transparent consultation processes for working with forest communities (formalized in 2010), development of new programs that focus on developing economic opportunities, and increasing access to education and social services, expansion of research on biodiversity and ecosystem health, and adaptive capacity for dealing with climate change. Many of these issues were recognized by PAMF and others prior to the crash, particularly in research endeavors. However, they have since become higher priorities in efforts to expand the scope of sustainable forest management.

In contrast, the government has continued to engage and taken advantage of the relationships within PAMF, particularly in its efforts to diversify economic opportunities for forest community. A provincial employee explained that his ministry continued to participate *“because of [PAMF’s] broad connections and much more diverse connections within the forestry community, and also because they have connections we just simply don’t have.”*

At another level, PAMF’s connections to national and international Model Forest networks have helped sustain them. PAMF now has more reason and opportunity to partner with other Model Forests around the world to access international funding that aims to support sustainable forestry management globally. In many cases the international development community has

continued to fund activities that promote community sustainability, while the Canadian federal government has ceased funding the Model Forest Program and has returned to focusing on more traditional economic development strategies, like support for forest product diversification.

### *Institutionalizing the new trajectory*

By many standards the forest industry has recovered from the crisis in ways that residents and participants frame in a positive way, but forest management in the greater Prince Albert landscape did not bounce back quickly. The industry has invested its resources in a new path that focuses on efficient, technically-advanced and diversified production, and has, at least in the short term, reduced the amount of resources for participating in community development and stakeholder engagement. Ecologically, the Prince Albert landscape is considered to be sustainably managed, and even allows for expansion of timber harvesting. However, in terms of the social and governance dimensions of the greater Prince Albert landscape, it is not at all clear that the new trajectory is beneficial to a majority of stakeholders or residents, or that that PAMF had sufficient influence to steer the system toward any agreed upon definition of sustainability. The break in relationships caused by Weyerhaeuser's flight from the province and PAMF, may have impacted the potential for a sustainable path for industry and forest communities.

Several stakeholders mentioned that the natural resource governance regime in Saskatchewan is not at all stable. First Nations are placing more and more pressure on the provincial and federal government to have greater access to natural resources and contribute to forest

management. This has been going on since before the crisis. The break in relationships caused by the crash of the forestry industry opened space for First Nations to demand more, but the crash alone did not lead to fundamental shifts in forest ownership, access and governance. The provincial government has since elaborated its de facto duty to consult into an explicit written protocol for consulting with First Nations and Métis communities on management plans and activities that might impact their treaty rights. The discussions at the PAMF table fall outside the formal consultation requirement but often encompass a broader set of issues than treaty rights alone. Similarly, the relationships between members at the table create space for holding the province accountable and critiquing consultation processes that the government would not be likely to provide. These changes notwithstanding, there is little evidence from the case that PAMF was able to substantially change power dynamics, or engage powerful actors throughout a period of transformation in a way that would lead them to share, devolve or relinquish power to marginalized stakeholders.

## **Conclusions**

The crash of the forestry industry provided a window of opportunity for change in forest management in Canada. In the case of Saskatchewan and the greater Prince Albert landscape, in particular, this window of opportunity led to different changes in the mandates of stakeholders and their relationships with one another. For example, the forest industry seized the opportunity to reorganize itself into a leaner, more efficient and diverse model of forestry. While the industry increased the diversity of partnerships and relationships within the industry itself, as exemplified by Sakaw Askiy, it has limited investment in participatory strategies that put industry members in close partnerships with non-industry stakeholders.

As a bridging organization, PAMF has changed the primary communities of practice that it seeks to bridge from the forest industry and research communities, to forest communities with the province and other actors that can support the diversification of economic opportunities for forest communities in a way that increases their access to and management of forest resources. This crisis also opened a window of opportunity for PAMF to strengthen its role in bridging aboriginal communities in the greater Prince Albert landscape with aboriginal communities elsewhere in the world.

This case, however, does not suggest that the window of opportunity provided by the crisis led to more sustainable management of the Prince Albert landscape. Rather, the new trajectories that PAMF, the provincial government and the forestry industry took following the crisis highlight the shortcomings of previous definitions of sustainability that shaped management practices. While technological efficiency may be required for long-term success or meeting new definitions of sustainability in the forest sector, it is not clear that this regime will lead to more positive outcomes for forest communities in terms of increased access to natural resources or economic opportunities in the landscape.

The financial pressure resulting from the crisis has caused several stakeholders, particularly industry representatives, to reduce their participation in collaborative management through PAMF. This suggests the limitation of mechanisms like social learning, adaptation and reorganization to function throughout periods of transition. Welsh (2007) and Kahn et al. (2013) emphasize the importance of cohesion following a crisis. The lack of cohesion and high

degree of reconfiguration of PAMF's memberships during the depths of the recovery process may have negatively impacted the potential for PAMF to steer stakeholders toward a different governing regime with more positive outcomes for forest communities in the Prince Albert landscape. However, it is reasonable to conclude from the case that maintaining cohesion during a crisis may present a challenge in other similar cases, depending on the defensive strategies that different stakeholder groups may take to survive a period of crisis.

The case also highlights the importance of considering scale when analyzing the sustainability of new trajectories. While the trajectory of the greater Prince Albert landscape may not be headed toward sustainability. Individual stakeholder groups, operating in response to a crisis, chose strategies that improved the immediate well-being of their particular group or aligned most closely with their core interests. In other words, their strategies seem to be effective for maintaining or increasing system function at smaller geospatial or sociopolitical scales (e.g., at the level of the Saskatchewan forest sector, or First Nations communities).

When managing for transitions, particularly when responding to a crisis, network organizations will need to identify strategies and resources not only for reorganizing stakeholders and relationships, but also for redefining common goals. It may be the case that crises push individual stakeholder groups, and often entire networks, toward a threshold of change in such a way that competition for political, financial, and human resources presents a trade-off with cohesion and collaboration. This is an area in which governments or other institutions at higher levels may be able to step in and provide strategic resources to promote cohesion and collaboration during and after a crisis. In the case of both PAMF and the forest sector,

establishing new international connections played an important role in increasing their likelihood of survival. This suggests that cross-scale bridging between networks at different levels (e.g., national and international) may also be an important resource for networks at the landscape level to maintain their core functions during transitions.

The experience of PAMF and the crash of the forestry industry in Saskatchewan provides a unique case for exploring sustainability transitions in the context of an abrupt change or crisis. While the model for sustainability transitions set forth by Moore et al. (2014) offers a compelling perspective, it appears that it does not fully capture the dynamics of responding to and recovering from a crisis. I have outlined several important ways in which the experience of PAMF deviates from this model, highlighting particularly the importance of definitions of sustainability and cross-scale relationships. This work would benefit from comparison with other cases of network organizations responding to crises in distinct contexts from that of the Canadian forest sector. It also opens space for ongoing research to explore how networks can support processes that redefine sustainability and bridge scales to improve the potential for more sustainable transitions out of periods of crisis.

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## CHAPTER 3

### INTEGRATED LANDSCAPE MANAGEMENT IN PRACTICE: A CASE STUDY OF BOSQUE MODELO ARAUCARIAS DEL ALTO MALLECO

#### **Introduction**

Forests play a critical role in supporting biodiversity, hosting the highest concentration of bird, invertebrate and microbe species (Lindenmayer, Franklin & Fischer 2006). However, biodiversity protection is only one of several competing priorities for forest landscapes. People depend on forest-dominated landscapes for employment, timber and non-timber forest products, recreation, and food security. Unfortunately, these needs often compete, driving deforestation and threatening forest biodiversity. Between 2000-2012 global forest loss outpaced forest gain by 1.5 M square kilometers (Hansen et al. 2013). Forests frontiers, in particular, often face the greatest biodiversity and forest loss as a result of anthropogenic drivers like urban or peri-urban development and agricultural expansion, in combination with climate change (Foley et al. 2005, Phalan et al. 2011).

The magnitude of pressures facing forest frontier landscapes has brought renewed interest in exploring approaches that would balance competing demands, while protecting forests as strongholds of biodiversity. Recent research has documented an increasing number of initiatives in the past twenty to thirty years that have rejected single sector approaches in favor of multi-objective, integrated management approaches (Milder et al. 2014, LPFN 2012). A body of research emerging from the conservation and international development community refers to such approaches as “integrated landscape management” (ILM) (Milder et al. 2014).

These efforts focus on multi-stakeholder processes that aim to maximize synergies and reduce tradeoffs by planning and implementing land management decisions in concert with efforts to learn and address stakeholder needs (Sayer et al. 2013). Proponents of ILM do not consider it to be an entirely new approach, but rather argue that it encompasses a variety of management approaches, including “whole landscape” management (DeFries & Rosenzweig 2010), “ecoagriculture” (Scherr & McNeely 2008), “bioregional planning” (Brunckhorst 2000), and “multifunctional landscapes” (Fry 2001; Naveh 2001), to name a few. However, more skeptical scholars, like Warner (2006), point out that the voluntary nature of the type of multi-stakeholder processes that ILM supports, often means that stakeholders will only participate when they can see clear benefits for themselves. When ILM does not provide a direct benefit, they will often choose to engage in another process or platform that places them in a more powerful position. Faul (2015) argues that the voluntary and informal nature of multi-stakeholder platforms can, in fact, exacerbate existing power asymmetries rather than neutralizing them. While processes like ILM enthusiastically embrace dialogue, Warner argues that they often fall short on producing results when there is no obligation to act on the outcomes of dialogue (2007).

The Landscapes for People, Food and Nature Initiative ([www.peoplefoodandnature.org](http://www.peoplefoodandnature.org)) and the Global Landscape Forum ([www.landscapes.org](http://www.landscapes.org)) have been two important venues for gathering researchers and practitioners interested in understanding and implementing ILM. These fora have spurred a body of research on ILM and integrated landscape initiatives (ILIs). Champions of ILM argue that it is more successful at reducing tradeoffs and realizing synergies in management actions than previous attempts to integrate conservation and

development outcomes (Nelson et al. 2009, De Groot et al. 2010). Moreover, by engaging stakeholders and setting objectives across multiple dimensions, proponents of ILM suggest that it leads to a more diverse set of outcomes (Kusters et al. 2016, Freeman et al. 2015), particularly across the dimensions that are central to conservation and development professionals, such as biodiversity conservation, income generation, food security. Others argue that the value of ILM is in making trade-offs between management objectives explicit in decision-making processes (Sayer et al. 2013, Reed et al. 2015, Reed et al. 2017).

To begin testing these hypotheses, Buck et al. (2006) developed the Landscape Measure Framework, which was designed to help stakeholders within a landscape assess and monitor the outcomes of management activities across four key dimensions: 1) production (typically agricultural or forestry), 2) biodiversity conservation and ecosystem services, 3) livelihoods, and 4) institutional planning and coordination. Using the dimensions of Buck et al.'s framework, a series of studies (referred to as the Continental Reviews) by Milder et al. (2014), Estrada-Carmona et al. (2014), García-Martín et al. (2016), Zanzanaini et al. (2017) surveyed more than 400 Integrated Landscape Initiatives (ILIs) around the world on their objectives, areas of investment, and outcomes. While these studies were the first to characterize the achievements and outcomes of landscape initiatives at a continental scale, we have a poor understanding of why stakeholders in these contexts chose to form ILIs, or the pathways by which the activities of ILIs lead to particular outcomes.

This study uses a case study approach to provide an additional lens through which to interpret the findings of the Continental Reviews by diving deeply into the experiences of one such

landscape initiative. For this study, I chose the case of Bosque Modelo Araucarias del Alto Malleco (BMAAM), which was one of the respondents to the Latin America Continental Review (Estrada-Carmona et al. 2014). BMAAM is one of the oldest functioning initiatives in the Model Forest Network outside of Canada (where the program began). As an example of ILM, it is relatively older than other initiatives that participated in the Continental Review survey, allowing us to draw from its more than fifteen years of experience. While this case is not representative of all ILIs, it is a member of a large group of initiatives, called the Model Forests, that apply a similar set of principles in more than 60 landscapes around the world. We are using the experiences of this particular Model Forest, as representative of this type of landscape approach, to answer the following questions:

- What is the historical and political context in which the landscape initiative emerged?
- How does the initiative's structure and function in the landscape influence stakeholders' ability to access knowledge, power or funding?
- How do the initiative's primary functions or roles compare to other multi-stakeholder platforms in the region?
- What outcomes is the initiative achieving across the four dimensions of landscape performance (Buck et al., 2006), and how does BMAAM's history, structure and function help explain those outcomes?

BMAAM is an example of a non-governmental multi-stakeholder platform based on the principles of the Model Forest Network. It is located on the forest frontier in south-central Chile. Its experiences help us understand how stakeholders in forest frontier landscapes are attempting to implement ILM, in this case through the framework of the Model Forest, to

protect biodiversity while pursuing a range of outcomes for forest production and local livelihoods. The case study format allows us to explore the degree to which BMAAM's experience supports or challenges the claims of ILM proponents and the findings of the Continental Reviews, that suggest that ILM helps to identify synergies and reduce trade-offs among stakeholders (LPFN, 2012).

## **Methodology**

This study followed a case study methodology based on collection primary data, following a thorough review of literature and previously gathered primary data (Stake 2006). Prior to developing the interview questions, we reviewed literature on the historical context of forestry policy, indigenous land claims, resource conflicts, Chile's major political transitions, engagement in international development, and the history of the Model Forest Network. The primary data were gathered through an initial set of four scoping interviews with members of the International Model Forest Network (IMFN) and the Ibero-American Model Forest Network (RIABM), and a month of fieldwork in Curacautin and Lonquimay, two *comunas* (similar to the American jurisdiction of a county) in the Araucanía Region in June of 2014.

The fieldwork portion of this case study included semi-structured, in-depth interviews, in addition to participant observation at board meetings, community meetings, site visits, and field activities. The interviewees were selected through purposive and snowball sampling to identify actors that were affiliated and unaffiliated with BMAAM, as well as actors that represented various sectors, to understand and assess the perspectives of multiple stakeholder groups that did and did not participate in the BMAAM network. Interviews were conducted

with local and national representatives of national forestry and agricultural agencies, commercial and economic development agencies, former and current Model Forest staff, municipal governments, Mapuche and Mapuche Pehuenche community leaders, legal representatives, tourism operators, rural landowners (*colonos*), forestry industry representative, livestock operators, small business owners, social and religious non-profit organizations, and elected officials. The interview questions were designed to answer the research questions, particularly how and why the Model Forest formed, how its structure impacted stakeholders' access to resources, its function relative to other multi-stakeholder platforms in the region, and how any outcomes it achieved are related to its history, structure, and role in the landscape. To that end, the interview questions covered themes of the management objectives of BMAAM, participating stakeholder groups, the history of participation in the IMFN or other integrated management efforts, cultural perspectives on management, the perceived benefits and risks of integrated management, power relationships between stakeholder groups, and individuals' perceptions of short- and long-term outcomes. A total of 31 interviews were conducted and transcribed. Interview data were first coded for themes of cooperation and conflict, and in future iterations were coded for the four dimensions of the Landscape Measures Framework (Buck et al. 2006), (i) agricultural and forest production, (ii) biodiversity conservation and ecosystem services, (iii) livelihoods and economic well-being, and (iv) institutional planning and coordination. In order to expand beyond the characterization done by the Continental Reviews, I also coded for emerging themes on BMAAM's structure, function, stakeholder composition and funding (Gibbs 2012). By assessing BMAAM's activities and outcomes across the four dimensions of the Landscape Measures Framework alongside emerging themes,

I anticipated being able to assess how differences across these dimensions might be explained by BMAAM's history, structure and function in the landscape.

## **Bosque Modelo Araucarias del Alto Malleco – A case study**

### ***Background on the case study region***

The Araucanía region of Chile, where BMAAM is located, is part of a biodiversity hotspot that spans central Chile (CEPF 2016). It is home to a rare and endangered tree species, *Araucaria araucana*, also known as the Monkey Puzzle tree (IUCN 2013). Since the conquest of the region by the Chilean government in the late 19<sup>th</sup> century, over exploitation of the region's forests for timber, and in recent years, hydroelectric development of its rivers, have led to tension and a legacy of conflict between many different stakeholders, particularly between Mapuche communities, the Chilean government, and large timber and water companies.

The Araucanía region in south-central Chile has played an important role historically as a frontier landscape between Mapuche territory, *Wallmapu*, and the Chilean state. It was incorporated into the nation at the end of the 19<sup>th</sup> century through a violent process called the Pacification of the Araucanía (Salinas-Torres et al. 2016, Klubock 2014). Following the conquest of the Araucanía, the Chilean government granted land titles to Chilean national settlers and European immigrants, predominantly immigrants from Germany and Switzerland. These settlers became the rural landowning class now known as *colonos*. Between 1883-1927,

Mapuche and Mapuche Pehuenche<sup>5</sup> families were systematically removed from their lands and placed in communally-owned reservations under the *Titulos de Merced* (The Mercy Titles) (Salinas-Torres et al. 2016, Herrera n.d.). Despite the Chilean government's efforts at agrarian reform and devolution of land to Mapuche communities and individuals during the years 1962-1973, it was not until 1993 that the national government passed legislation to legally support and protect the rights of indigenous people (the *Ley Indígena*, Law N° 19.253 CONADI). Since then, the Chilean government has been buying land from willing private sellers and returning it to Mapuche communities that have ancestral claims in the Araucanía. In BMAAM's area of focus, devolutions of land titles to Mapuche and Mapuche Pehuenche communities began only recently, in the early 2000s, and continue to this day.

The temperate rainforests of the Araucanía region are composed of *roble*, *raulí*, and *coigüe*, three native species of *Nothofagus* that are highly prized for the quality of their timber. Settlers and forest companies cleared much of this forest type for timber harvest and to make way for agriculture. Today only small areas of this forest type remain (Salas et al. 2016). *Lenga* and *araucaria* dominated forests are found higher up in the cordillera. These species have narrow ranges and support unique forest communities. The *araucaria* (or Monkey Puzzle tree), which the government designated as a national monument, has deep cultural significance for the

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<sup>5</sup> Mapuche Pehuenche (or Pewenche) people consider the *araucaria* forests their home. Their name, Pehuenche (*Pehuen* means *araucaria* and *che* means people), means people of the *araucaria* and describes the close ancestral relationship between these people and the native forest of the region.

Mapuche Pehuenche people (Hermann 2005, Klubock 2014). It produces large, edible seeds, called *piñones*, that have traditionally been a staple food of the Pehuenche people.

In the 1970s, Decree Law 701 made the logging of several of these increasingly rare forest types illegal without an approved forest management plan. DL 701 simultaneously subsidized the planting of non-native species of eucalyptus and Monterey pine, leading to a boom in Chile's forestry industry (Reyes & Nelson 2014). Between 1975-2007, plantations increased in area from 5% to 42% of the south-central Chilean landscape (Nahuelhual et al. 2012). Despite laws protecting native forests, 22% of new plantations between 1990-2007 were established by clearing native forest (Nahuelhual et al. 2012). While Chile is one of few countries where forest cover is increasing, plantation forestry is criticized for its negative impact on biodiversity and poor delivery of cultural ecosystem services.

BMAAM's geographic area of focus is distinct from other parts of the Araucanía (Map 1). The *comunas* of Curacautín and Lonquimay are remote and ringed by volcanoes: Llaima, Lonquimay, and Tolhuaca. To this day, there is only one route to Lonquimay during the winter months, which includes a single lane 5km tunnel. These physical barriers limit the extent to which forest companies exploited native forests in the past and today. With ~45% of the area still in native forest cover, the area is considered critical for the conservation of these unique forest types. For the same reason, eucalyptus and pine plantations cover only 2% of the land area of these two *comunas* (CONAF 2016).

Extensive livestock grazing is a central part of the region's economy and culture. The majority of livestock production is done by small scale family operators that rely on a combination of natural and improved pasture. Many *colonos* and Mapuche Pehuenche families continue to practice a form of seasonal migration typical to the Andean cordillera, moving their cattle, sheep and goats from their winter grounds in the foothills to natural pastures high in the cordillera, called *veranadas*, during the summer months.



*Figure 1. Map of the Bosque Modelo Araucarias del Alto Malleco geographic area of focus within the Chile's Araucanía region. BMAAM is situated in the upper Andean cordillera in south-central Chile.*

### ***The historical and political context for the establishment of BMAAM***

The introduction of the Model Forest approach in Chile is closely tied to the expansion of the international development agenda in South America. Beginning at the United Nations Conference on Environment and Development (UNCED), also called the Earth Summit, in Rio de Janeiro in January of 1992, the Canadian government promoted the Model Forest concept as

an example of integrated management of forest landscapes that could be done in partnership with forest communities. In Chile, important changes to forest legislation, and indigenous rights and land claims between 1970 and 1993, drove the attention of Chilean officials to the degradation of native forests and lack of processes for involving local communities in decision-making on forest management. However, these issues were being brought to light during a period of intense political transition, particularly Chile's return to democracy in 1989 and, along with that, the neoliberalization of its economy and resources, and the centralization of programs and policies regarding natural resource management (Klubock 2014, Salas et al. 2016). As Chile was becoming a direct competitor with Canada in the global forest products market, it was also being criticized for the destruction of its native forests. Some leaders within the National Forestry Corporation (CONAF) saw this opportunity to test Canada's Model Forest approach in Chile. In 1998, six years after the Earth Summit, the first Chilean Model Forest was established at Chiloé Island.

The Model Forest at Chiloé Island experienced varied success and eventually ended when stakeholders reached an impasse over resource management. Despite the challenges that this first Chilean Model Forest faced, four years later, in 2002, a group of local politicians from Curacautín and Lonquimay proposed BMAAM as a Model Forest that would span the *comunas* of Curacautín and Lonquimay. They saw the Model Forest approach as an opportunity to resolve conflicts between large forest corporations, the Chilean government, and local communities. The motivation to establish BMAAM, according to its founders, was two-fold. On one hand, government at local and federal levels did not have a way of gathering stakeholder input on government programs and investments in a way that allowed those

activities to be adapted to local conditions. On the other hand, they believed that poverty was leading to over-exploitation of the region's diminishing forest resources. One of BMAAM's founding members and the Model Forest's first president described BMAAM as a way to “*take care of environmental through development, but a type of development that is done in conversation with the people.*”

When officials in Curacautín and Lonquimay decided to establish BMAAM, it was partially in response to the significant changes made to legislation on forest management and indigenous peoples. In 1993, the Chilean government passed the *Ley Indígena* (Law N° 19.252), which was the first law to legally recognize the rights of Chile's indigenous peoples and established the National Corporation for Indigenous Development (CONADI). Then in 1998, forestry law, DL 701, was extended for 15 years, with the addition of a new law that extended the subsidies established under DL 701 to small- and medium-sized plantation owners (Law N° 19.561). Local leaders wanted to take advantage of the space that was opened by these new laws to create a model for development that Llancaqueo (2006) describes as “development with identity.” BMAAM, in words of its current director, provided “*a nexus between the territory and the State.*” This nexus was valuable to participants and the government because the BMAAM landscape is a challenging place for the government to provide services. Another participant remarked that the physical remoteness of Curacautín, and even moreso, Lonquimay, resulted in the government being generally unaware and uninformed about the challenges that Chile's extremely rural residents face. Additionally, BMAAM was a way for the government to subsidize the testing of a new model for participatory resource management and development, and attract international funding to support rural development. With the support

of local stakeholders, and funding from the National Forestry Corporation (CONAF), BMAAM began, but not without debate. It took two years for the local leaders that were negotiating the formation of BMAAM with CONAF to decide on its geographic boundaries, and on the initial set of participants who would form the board of directors. These early debates highlighted that who ended up participating and how in the Model Forest was not purely voluntary but also subject to the interests of those who contributed financially and politically to the formation of the Model Forest.

***The relationship between BMAAM's structure and stakeholders' access to knowledge, power, and financial resources***

BMAAM began with fourteen members representing government agencies, non-profit organizations, business owners, *colonos* and indigenous communities. The founding members prioritized strong representation from rural landowners of both Mapuche Pehuenche and *colono* backgrounds. This stakeholder composition was intentional. According to one of the Model Forest's founding members, positioning the Model Forest in a region where indigenous communities represented the majority of the population, and where indigenous leadership was strong, increased the likelihood that BMAAM could attract international and national development funding. Beyond these two major stakeholder groups, most members consider themselves representatives of two or more stakeholder groups. For example, several members represent Mapuche Pehuenche communities and small businesses or entrepreneurs. Non-government organizations (e.g., DAS, SEPADE) and universities also participate in BMAAM's board and activities. Local governments, particularly the *alcaldes* of Lonquimay and Curacautín (elected officials who hold offices similar to that of a Mayor), participated

strongly at BMAAM's inception, but now engage via the representatives of local government agencies for development, agriculture and indigenous peoples (i.e., PRODER, INDAP, and PDTI, respectively). The number of BMAAM members has increased over time to approximately 20 members in 2014, with stakeholder composition evolving as the activities and themes change to address new challenges.

Over time, BMAAM has transitioned from an informal association of its members, what interviewees referred to as a social organization, to a non-profit corporation. Prior to incorporation, all members participated as members of the Board of Directors. Now the association elects a President, Vice President, Secretary, Treasurer and Director every two years to carry out business functions. The Board of Directors is responsible for hiring technical staff, which currently include an Executive Director and Technician.

BMAAM was the second Model Forest to form in Chile and one of three functioning in the country as of 2014. These three Model Forests formed a national network that identified common objectives and together receive funding from CONAF to implement activities across the Chilean Model Forests. Each of the Chilean Model Forests is also embedded in the [Ibero-American Model Forest Network \(RIABM\)](#), which brings together Model Forests throughout Latin America and Spain (RIABM 2015). Leaders of the Model Forests in this network come together periodically for training and capacity building activities, to discuss common challenges or opportunities, and, at times, to conduct collaborative research activities. Additionally, the [International Model Forest Network \(IMFN\)](#), facilitates exchange visits between Model Forests, and manages the process by which groups at the landscape can form a

new Model Forest (IMFN 2017). The IMFN brings leaders from the more than sixty Model Forests around the world together to identify joint priorities, share lessons learned, and create space for partnership, similarly to how each of the Model Forests bring individual stakeholders together at the landscape level.

The structure of BMAAM at the landscape level influenced stakeholders access to knowledge and power in important ways. Participants stressed that voluntary participation, and the freedom to represent their interests and express their unique perspectives were key aspects of BMAAM that attracted members to the network and keep them involved in Model Forest activities. Members expressed that, within the Model Forest, they have equal standing and freedom to propose projects, share information, and make decisions with other members. One of the *colono* participants, who is also a female small business owner in one of the most remote sectors of the landscape, described the Model Forest this way: “[BMAAM] is a diverse but committed platform. In terms of diversity, it has everyone from the smallest campesino to the owner of large cattle operation... it has someone who sells firewood by the meter to someone who sells firewood by the ton... We all have the right to share our opinions, we respect the opinions of others, and in the end we arrived at consensus.” Another member, who is a Mapuche leader and entrepreneur, described the value of BMAAM in the following way: “The value that the Model Forest has is as an organization that has been able to articulate distinct actors in this part of the comuna – public institutions, NGOs, campesino leaders, Pehuenches, colonos, entrepreneurs, business people... to date, there has not been discrimination, we can share perfectly well and discuss perfectly well. [In BMAAM] there has been tolerance, as much from the Mapuche world as from the non-Mapuche world.” However, these characteristics of

BMAAM may be what led it to be, ultimately, unattractive to elected officials like the *alcaldes* of Curacautín and Lonquimay, who relied on the public attributing positive activities, partnerships, and funding directly to them and their political parties, rather than a diverse set of stakeholders.

The voluntary nature of BMAAM, combined with the type of activities it implemented in order to engage participants, resulted in a trust and cooperation among those who continued to participate. This trust, in turn, resulted in new partnerships and programs that fit the shared priorities of BMAAM's members. For example, one of BMAAM's Mapuche Pehuenche members said, "*When the Model Forest started, I started working with the Model Forest. I learned a lot, and got to know many people, I got to know my own people and I rediscovered myself. It was a tremendous learning experience to work with the Model Forest... I have stayed connected through a supply chain project... formed by seven entrepreneurs from Lonquimay, both Pehuenches and colonos.*" Another participant and NGO representative said that the value of the Model Forest was that "*it provides a table and the chairs for a conversation, and all of the chairs are the same, everyone sits at the same height. This allows a business person to sit next to a campesino community leader, and a representative of an NGO to sit next to a representative of the State on equal terms.*" A former member of BMAAM and Mapuche community leader concurred with these other reports, but noted that BMAAM did not attract sufficient funding for projects, and without funding, consensus and trust did not provide enough incentive for his continued involvement.

BMAAM's members also saw the change in the Model Forest's legal structure, from a social organization or association to a legally recognized non-profit corporation, as a critical change for gaining credibility and legitimacy as an organization, as well as access to international grant funding programs. One participant, a community leader who ran a tourism business, summed up the importance of the new legal structure in this way: “[BMAAM] has to be a trustworthy platform in order to attract funding and to compete for project grants. That is very important – that respectability and trustworthiness.” The later was an important pre-requisite for being able to engage in partnerships with other Model Forests in the International and Ibero-American Model Forest Networks. These larger networks also gave stakeholders that would otherwise have had relatively local spheres of influence, access to funding and partnerships to address challenges that they shared with other landscapes. For example, they established partnerships with Prince Albert Model Forest in Canada and Vilhemina Model Forest in Sweden to explore ways to improve economic opportunities for indigenous communities and celebrate their regions' cultural heritage. The results of this collaboration have been several exchange visits that have focused on sharing of experiences, tools and programs for indigenous participation and leadership in the Model Forest, as well as workshops on shared interests like agroforestry and NTFP production. Participants described the experience of learning how indigenous people in other Model Forests, countries and cultures were leading or partnering with other stakeholder groups to be helpful for generating news ideas for advocacy and action in their own context. Another similar collaboration between Model Forests resulted in a proposal and funding to develop climate change adaptation plans in three Model Forests. This research program, EcoADAPT, provided funding to gather data on the impacts of climate change on water resources, and to gather stakeholders

to set new goals for local water management and the formation of community water associations.

***Evaluating the function and role of BMAAM with other multi-stakeholder platforms in the Alto Malleco landscape***

Stakeholders described BMAAM's functions in a number of ways. These functions were most often characterized as (i) a table around which stakeholders could dialogue as peers, (ii) a long-term process to align stakeholder interests, and (iii) a funder for specific activities defined by its members. Participants also described roles played uniquely by BMAAM that would otherwise be absent in the region. For example, several interviewees compared BMAAM to a convening called the *Mesa Forestal* (Forest Table), which was organized by the national government. The *Mesa Forestal* gathered stakeholder input on public policies related to forest management at the regional or national level, and functioned primarily as a unidirectional process where stakeholder knowledge flowed to the government. In contrast, they described BMAAM as a dialogue between stakeholders where all participants sat as peers with the expectation of bringing something to the table and taking something away from the table, e.g., partnership, funding, influence, or knowledge. The sense was that BMAAM allowed for exchange of knowledge, influence and funding between participants, but did not necessarily do a better job than the *Mesa Forestal* at engaging the national government in local activities or holding them accountable to address local development objectives.

They also highlighted the importance of BMAAM as an entity that was better suited to adapt to changing priorities over time and space than other organizations in the landscape. They saw

this ability to adapt as important for bringing continuity to research and economic development programs. By way of comparison, many interviewees felt that the government ought to be a protagonist of collaborative, long-term development efforts, but that the centralization of Chilean policy for resource management and development made it hard for government programs to adapt to local conditions. Similarly, many interviewees felt that government programs often stopped or started suddenly at the end or beginning of a new administration, particularly when there was a change in the ruling party. This created space for a different type of organization like the Model Forest to establish continuity in local development efforts. Participants felt that the Model Forest could resolve some of these challenges inherent to political processes by continuously supporting projects that remained valuable to members for more than a decade, like small business development for NTFPs. Notably, this emphasis has led to an ongoing focus on projects that improved local livelihoods. Similarly, BMAAM could respond to emerging issues and opportunities, like water security or tourism, as stakeholder interest or opportunities to attract international funding increased. However, the variability in government participation was a challenge, as municipal government leaders have chosen not to participate in recent years. In one member's words, *“the whims of politics are dangerous. We know that every time the mayor changes so do all of his functionaries... for that reason, participation of the municipality in an organization like the Model Forest is not sustainable. Because in four years, everything will change again and there is no continuity of work.”*

Participants valued the role BMAAM played in bringing together diverse stakeholder representatives to identify joint priorities. According to interviewees, no other group in the area brought stakeholders together to coordinate activities and identify a common vision for the

region. Former and current members tended to describe this vision as one of economic development, but one that was defined by the local residents and BMAAM's participants, rather than the national government or international development agencies. BMAAM's former director and current employee of CONAF noted that this was "*not imposed development, but inclusive development that is about the socio-cultural themes that are relevant to the territory.*" Another leader of a local NGO described the vision as stakeholders from the region asking themselves, "*What does Lonquimay need or want, from the perspective of Lonquimay?*" The answer to this question was redefined through dialogue, meetings and projects over the course of BMAAM's existence, and is best captured in the Strategic Plans that they board develops every three years through a formal process. This plan includes an evaluation of the previous Strategic Plan and planning workshops to develop adapt and redefine the vision of the organization (BMAAM 2009). The risk, however, is that the boiled down or consolidated perspective presented by BMAAM in the Strategic Plan smooths over or flattens the diversity of interests or the orientation of stakeholders to particular challenges in the landscape.

Some interviewees also felt that they had, a more direct line of communication with influential local leaders and government officials. "*When can a common person speak to someone in a position of authority? You see people in Lonquimay who want to speak with the mayor, the same as in [Curacautín], and months go by and the mayor will not speak with them. In contrast, in the Model Forest the mayor sits right here at the table next to the community leader. It's different and it's positive.*" However, the voluntary nature of BMAAM meant that, while someone in a position of power might listen, they were under no obligation to act in a way that benefitted others or reduced their own power.

While few could quantify the benefits of participating in BMAAM, they felt that learning what others were working on and finding where they had common ground allowed them to operate more efficiently, partner when appropriate, and increase their credibility, legitimacy and access to political power. For example, one government agency representative described the increased efficiency of participating in the Model Forest this way: *“We can coordinate verbally without having documentation, because during the time it takes to sign a document in Santiago between one institution and another, or between one national leader and another, a year goes by and we don’t do anything. So, what we do is coordinate here and that’s it, like I’ll send you this and you help me with that.”*

### ***Activities and outcomes across the four dimensions of Landscape Measures Framework***

#### *Agricultural and forestry production dimension*

In this particular landscape, forestry and livestock rearing are both important productive uses of the land. Most forestry is conducted by small landowners who periodically harvest wood for timber, with a small number of landowners owning parcels dedicated eucalyptus plantations. Residents practice extensive livestock production, using the seasonal migration patterns described in a previous section. There are a few large forestry or livestock operators in the region, some of whom are members of BMAAM, with the majority of producers operating at the household level for personal consumption, in addition to a small amount of production that is sold in local or regional markets.

Rather than focusing on technical assistance to improve production practices for agriculture or forestry, BMAAM has focused on providing training and capacity building for value-adding activities for agricultural and non-timber forest products (NTFPs), like *piñon*, *morchella* (a wild mushroom) and *rosa mosqueta* (wild rose hips). Individual BMAAM member organizations, like the Institute for Agricultural Development (INDAP), Program for Rural Development (PRODER), and the National Forestry Corporation (CONAF) have extension and technical assistance programs that aid in funding and supplies for capital projects and the development of management plans. BMAAM helps these organizations coordinate their activities for more efficient implementation, but does not directly fund activities that fall under the mandates of these agencies.

According to representatives of these agencies and Model Forest Staff, BMAAM has not directly improved agricultural or forestry production in the region, in fact some believed the condition of the forest and agricultural production had worsened since the Model Forest began. For example, one of the NGO representatives said, “*When you see the exploitation, primarily in the zone close to Lonquimay... the over-exploitation of the forest is brutal. But when you look across the board, in general, the forests between Curacautín and Lonquimay have improved in quality and volume, principally due to the impossibility of being allowed to harvest araucaria and lleuque. Moreso than for good management, [the improvement] is due to the restrictions [on harvest].*” A business person described the exponential increase in plantation forestry, as encouraging over-exploitation of remaining native forests. When coupled with environmental regulations that restrict harvest of native timber, good management can no longer compete with industrial plantation forestry.

Others saw the worsening quality of the forests as a systemic problem related to a shift in CONAF's role in that landscape from an agency that provided some technical assistance to an agency whose primary role was to regulate the use of the forest. A CONAF regional director agreed that the agency's primary role was to administer forest laws through regulation and that at times enforcement of forest laws was in conflict with economic development, particularly in the case of indigenous communities that received land for resettlement. *"We are faced with the fact that a large portion of native forest harvest is out of control. At this point in time we don't even have the power to control it or regulate it, much less help these communities manage the forest... the forest will pay, and we cannot simply respond to these infractions by fining the communities."* Agricultural production, on the other hand, according to a government representative had increased in recent years due to *"greater application of herbicides and fungicides,"* which she saw as *"good and bad. The good being increased production and the bad being increased presence of chemicals in the soil."* Interviewees did not attribute the negative outcomes for forest management or agricultural production to the failing of the Model Forest, but rather to systemic issues related to forest regulation and the provision of agricultural subsidies, as well as factors beyond the control of BMAAM participants, like international commodity markets and national policies.

#### *Natural resource and biodiversity conservation dimension*

Native forest conservation was one of the drivers for establishing the Model Forest. Similar to BMAAM's investments in agricultural and forestry activities, the Model Forest's approach to improving conservation outcomes has been to explore alternatives for income generation.

Local communities see their forested parcels as assets that can be rapidly liquidated when emergencies, or unexpected or very large expenses arise. For example, a family might harvest timber to pay for university tuition for a child or purchase a vehicle. Several interviewees, including ones from resettled Mapuche communities and CONAF, mentioned that conservation of native forest on resettlement lands was particularly challenging. “*Land is bought and its turned over just as it is, without any support that is required for the habitability of a house – electricity, streets, water.*” Timber sales are one of the few ways that these communities can generate funding to install water systems and bring electricity to the resettlement areas. “*Let’s just say that the forest is the first resource that a family resorts to when it is in the process of moving from one location to another.*”

As a result, BMAAM’s early efforts focused on identifying other ways that rural residents could generate income from forested areas, like production of NTFPs and development of eco- and agro-tourism businesses. For example, BMAAM connected members of the indigenous community who harvested *piñon* and made basic *piñon* products, like flour, with other members of the community looking to start small businesses making value-added products out of *piñon* like wine and pastries. This has led to a long-standing partnership of 9 years between a small group of BMAAM participants. Another emerging area of interest that participants hope will bring addition income is tourism. At least 5 members already participate in the tourism industry in some capacity, and others are contemplating transitioning their businesses to work in the hospitality sector. Another participant and large business owner noted that he is transitioning a large property that he formerly managed for native timber into what he hopes will be an ideal forest setting to attract tourists. “*I took cattle off of 500 hectares that I was*

*using to rear livestock... You realize that it works, not commercially from the perspective of a forester, but the forest is more beautiful, more vigorous... I see that land is too expensive now for livestock or forestry, but there are people that attribute a higher value to that land now for [tourism].”*

Recently, BMAAM has framed its efforts on native forest conservation in the context of climate change and water security. For example, the Model Forest participated in a collaborative research project with two other Latin American Model Forests to assess the impacts of climate change on water scarcity. Stakeholders argue that climate change is exacerbating tensions around water scarcity, tensions that initially resulted from the privatization of Chile’s water rights in 1981. Rural communities face significant legal barriers to accessing water for human consumption, due to volume of water rights devoted to hydroelectric generation. As a result, local communities are focused on protecting springs of water, which belong to the owners of the land where the spring is found, and preserving the spring water for human consumption before it reaches the major rivers in the region, the Curacautín and Bío Bío rivers. As a direct result of the joint priorities defined in the collaborative research project, BMAAM members chose to invest in reforestation around springs and erosion control in native forests in order to protect water quantity and quality in the upper watershed. With the exception of these site-specific outcomes, there is also little evidence that the Model Forest had sufficient power through its members and resources to influence the systems that lead to ongoing degradation of native forests or increasing water scarcity in the region.

### *Livelihoods and well-being dimension*

The majority of BMAAM's projects aimed to increase opportunities for income generation, preserve Mapuche Pehuenche and *colono* cultural heritage, and expand opportunities for training and education. As described in previous sections, an early project funded the construction of a processing plant and provided training on small business development for NTFP producers. Training on entrepreneurship and business development has continued, and BMAAM is broadening its training programs on NTFPs to include training for the tourism industry. An increasing number of stakeholders are involved in the budding tourism industry. Interviewees from Mapuche Pehuenche communities expressed differing views on developing cultural tourism in the area. On the one hand, they expressed interest in celebrating their traditions and raising public awareness about Mapuche culture and values. On the other hand, others expressed concerns about selling their culture, or worried that tourism at a large scale would overwhelm the area and undermine the ecological and cultural values that make the area unique. As one participant described, "*...sustainable development, sure, but let's not construct tall buildings, let's stick to parameters that are compatible with the countryside.*" Another noted that local people would not necessarily benefit from the tourism industry without specific training opportunities for local residents. "*The people here are just steps from Conguillío,*" a national park in the area, "*but the business owner who builds a cabin, the one that developed the ski resort at Corralco, the one that is there in Conguillío – that tourism is not leaving money in the local community. So how does the local government begin to prepare professionals or our youth to be tour guides... or establish restaurants for our traditional foods?*"

Many interviewees mentioned a cycle of dependence on government subsidies, and described the efforts of the Model Forest as, in part, aiming to break that cycle. *“There is no other place in Chile that has received as many subsidies or given money directly to people than Lonquimay. And yet the people continue on without development, therefore, that must not be what the people need.”* Interviewees from all perspectives – *colono*, Pehuenche, NGOs, and BMAAM founders – agreed that local people should define what development looks like for the region. One member described the Model Forest as *“giving people the tools for their own development”* and part of a broader effort to break the cycle of dependence and ineffective government support. *“I am completely against these policies that are like bandages, and don’t fix anything,”* said one participant. *“Providing family food subsidies meets an immediate need, but it doesn’t resolve the deeper problem... Projects that are linked to development, at a certain point need to be autonomous in order to function.”* For these reasons, the Model Forest engaged in specific activities to increase alternative income streams: *“for example, we helped plant forests, through INDAP we supported pasture production, improved livestock through better quality animals, installed silos for storing the hay that residents produced.”*

Education at local schools and workshops for community members in Curacautín and Lonquimay is another dimension of BMAAM’s efforts to improve local livelihoods. School programs focused on educating students on the qualities and values of native forests, and often included planting of native forests around schools or student participation in forest restoration around water sources. Recently, in relation to the climate change action plan, BMAAM supported the formation of local water associations that could train residents on their legal water rights and advocate for access to water and protection of local springs on behalf of their

members. Education and activism around water rights and access in the region have become central themes across BMAAM's work on conservation, production and livelihoods, via protection of forests around springs, advocacy against high water-demanding land uses like eucalyptus plantations, and advocacy for water use for human consumption and livestock in local communities to take priority over private water rights held by investors in the region's major rivers, respectively.

### *Institutional planning and coordination dimension*

The BMAAM members that were interviewed unanimously identified stakeholder alignment and coordination as the Model Forest's top priority and most valuable benefit to participants. First, BMAAM made investments in establishing a structure and process that would bring diverse stakeholders. Participation is voluntary and open dialogue is encouraged. Members and the Board of Directors develop the Model Forest's priorities iteratively, through discussions and voting, where each member's vote and opinion has equal weight. Although BMAAM aimed to be politically neutral, its former director clarified that it was not a neutral forum. *"The Model Forest is not going to be a neutral entity. It can't be because of the sum of interests that are present... but that doesn't take away its value. Rather it reflects what society and the distinct interests that it represents demand of it. I describe it this way: [the Model Forest] is always a disputed territory... but what matters to me is governance, and that the interests of those present improve the governance of the Model Forest and the territory, making development possible – and development done together, not imposed."* That being said, the Model Forest, therefore, attracts participants that agree with the underlying assumption that development would bring positive change to the region. I also will never include the full suite

of perspectives held by stakeholders in the region, but rather most likely represents the dominant set of values held by a variety of stakeholders in the region.

BMAAM led members through strategic planning to develop a list of priorities that reflected what some described as “*a shared vision*” for local economic development and resource conservation that was based on what participants referred to as “*consensus*”, “*the least common denominator*”, and “*a common understanding of the needs of the territory.*” The Model Forest functioned as a forum in which stakeholders could share a common set of priorities with local government officials and others who implement economic development and conservation activities in the landscape. One of the NGO representatives described the importance of translating stakeholders vision the following way: “*Once we agree on what is needed, the next major effort must be the political positioning of this idea. We can hold a great workshop with all of the actors, we can have a good development plan that everyone agrees on, but if we don’t have the political capacity to transform this idea into reality, we’re lost. So, having political capacity to influence and to implement our development plan is key. If we don’t have this capacity, we don’t even spend our energy or time in writing the plan.*”

Several participants reported new partnerships that they had formed as a result of participating in BMAAM. It also acted as a springboard for collective action, as in the case of the formation of the Community Water Associations, where coordination led to broader access to legal information on water rights, and increased political and legal power, visibility and credibility.

Beyond formal partnerships and alliances, interviewees indicated that participation in BMAAM increased their efficiency and effectiveness through informal coordination. This was particularly the case for local representatives of national government agencies. They reported that Chile's centralized policies for forestry, agricultural development and indigenous territorial development, defined at the national level, are challenging to adapt to local conditions. Similarly, formal coordination between their organizations can take years, meanwhile coordination within the territory could be improved through the Model Forest by making communication on priorities and activities more frequent and convenient. BMAAM's coordination helped representatives avoid duplicating efforts and enabled them to make subtle and acceptable adjustments to their programs, such as sharing transportation when traveling to remote sites, ensuring project beneficiaries did not overlap, or coordinating timing of investments for increased efficiency and impact.

***How does BMAAM's history, structure and function explain its outcomes across the four dimensions of landscape performance?***

The dimension over which BMAAM had the most direct control and, according to the stakeholders, the greatest success was in institutional planning and coordination. In a remote territory embedded in a political context where many decisions are made at the national level, this allowed participants to define their own vision for the landscape and coordinate activities across their organizations. BMAAM did not appear to lead to significant change or outcomes for agricultural or forestry production, or environmental conservation. They saw activities related to increasing economic opportunities and improving community well-being as the crucial first step in addressing either improved production or conservation. In general,

stakeholders did not consider the Model Forest ineffective, despite the lack of outcomes in these areas. Rather, they considered a wide range of drivers, including major shifts in the global market for forest products, the international development and biodiversity conservation agendas, and Chile's political transformation, to have greater influence over the trajectory of these dimensions of their landscape than the Model Forest's activities.

It is clear that BMAAM's membership within the broader International and Ibero-American Model Forest Networks served as a conduit for importing ideas and funding tied to international conservation and development programs. Its current director noted that "*BMAAM is part of the Model Forest Network and that relationship has been positive. On one hand the networks has allowed the Model Forest and those of us who work with it to stay informed and prepared in areas of national and international importance. Thanks to the network, some of our professionals have received training in Costa Rica on biochar, governance, participation, mapping and GIS. Supporting the training and development of local professionals has been fundamental to our work. As well as the ability to be aware of funding opportunities for new projects. That has been a very positive outcome, as well as exchanges that bring new perspectives from outside that are hard to see when you are always in the same territory.*"

Apart from the positive view of these relationships from the Model Forest's leadership, participants harness funding to develop climate change adaptation plans, participate in exchange programs with other Model Forests, and engage in international research projects.

The direct impact of BMAAM on local livelihoods, agricultural production or conservation was limited, with the greatest impacts occurring in the livelihoods dimension. In fact, the

majority of activities that the Model Forest organized or supported in agriculture or forestry, such as pasture or livestock improvement projects, or development of smallholder forestry plantations, were linked to desired outcomes for local livelihoods. These efforts were primarily focused on three areas: 1) education and access to information, as in the case of the Water Committees and workshops to increase knowledge of the relevant water law; 2) alternative income generation that would relieve pressure on native forest resources and build potential for new industries like tourism, as in the case of the NTFP supply chain development project; and 3) intervening in cycles of government dependence and support that many saw as necessary in the short run but circumventing long-term improvements to local livelihoods. From the perspective of the CONAF, even the limited programs that BMAAM was able to lead, in relation to improving native forest management and income generation, relieved pressure on the organization at the local level. In this way, BMAAM brought funding to bear to address issues that organizations like CONAF did not have capacity to address, despite these issues being within their mandate. CONAF's interest in getting BMAAM's support in working with the Indigenous Territorial Development Program (PDTI) to address deforestation in Mapuche resettlement areas is a prime example of this relationship.

The relationships and new partnerships established as a result of the Model Forest served as a catalyst for new activities that have potential for broader impact. For example, a research partnership with CATIE in Costa Rica led to the development of local climate change adaptation plans that indicated local priorities that were translated into activities that could be embedded in member organizations work plans. In another instance, stakeholders partnered to provide funding and legal counsel for establishing the first Community Water Committee in

the region, which allowed local communities to advocate for the primacy of residents' rights to access water for household consumption and community use over the rights of the private corporations that held the region's water rights. Similarly, at least nine entrepreneurs that participated in the original NTFP supply chain development program now continue to work together, sourcing products or materials for one another. The catalyst role can be seen as synergy in participants' interests, knowledge and capacity. However, given the limited staff capacity, the Model Forest itself was not well-suited for maintaining such programs in perpetuity. Long-term support would fall into the hands of BMAAM's members, or the new partnerships that formed between a sub-set of its members.

Many of the member organizations of BMAAM have mandates that relate to the first three dimensions of landscape performance (i.e., enhancing production, increasing environmental conservation, and improving local livelihoods). Therefore, as proponents of landscape approaches have suggested, BMAAM's primary purpose was to coordinate the actions of those organizations so that they are more effective, reduce redundancies and minimize trade-offs between their areas of work. As participants mentioned, informal coordination was often more efficient, and therefore, more immediately valuable at the local level, than national-scale coordination between their agencies or organizations. However, in contrast to theory on integrated landscape initiatives, the voluntary nature of BMAAM led to stakeholders stepping down from participation when their objectives no longer aligned with the majority of stakeholders. This suggests that trade-offs will continue to occur as there is no requirement or accountability for stakeholders to pursue mutually beneficial outcomes, and also suggests that stakeholders with conflicting views are more likely to leave these initiatives than continue to

engage. In particular, government officials, which represented a large portion of BMAAM members at its inception are now, for the most part, absent from the Model Forest. Given the importance of positioning the objectives and activities of BMAAM in the broader political landscape, having these authorities outside the immediate environment of BMAAM membership increases the time and energy of gaining political support. This also means that major financial interests, like large hydroelectric energy project developments or owners of the main water resources (e.g, the Cautín and Bío Bío rivers) have never participated and likely have no incentive to participate in BMAAM.

## **Conclusions**

The Model Forest prioritized stakeholder coordination as the vehicle for achieving its objective of environmentally conscious economic development. The majority of activities focused on identifying common goals for the landscape and activities that members could implement either independently or in partnership to contribute to those shared goals. When BMAAM invested its organizational resources in conservation, agriculture or forestry production, or local livelihoods, its activities typically built on investments being made by others in the landscape (e.g., CONAF, INDAP, PDTI, DAS, Sepade, the various municipalities), for example, contributing funding for a processing plant to expand opportunities for small businesses working with NTFPs, or supporting INDAP in identifying participants and distributing funding for a pasture improvement program. Despite limited outcomes for production, conservation or local livelihoods, the relationships at the table and the political power and influence of BMAAM's members made it possible to translate some of the Model

Forest's objectives into the agendas and activities of various local, national and international organizations.

The interest in improving stakeholder coordination appeared to be a response to a sense that national and regional government programs were poorly suited to address the challenges stakeholders faced in their landscape. The Model Forest provided a unique function of distilling some stakeholders' perspectives into set of shared priorities. However, these priorities do not include the interests of some of the most powerful actors in the landscape, like local elected officials or large corporations. These priorities are captured every three years in a Strategic Plan, and evolve over time in response to transitions in the composition of BMAAM's stakeholder and issues in the landscape. By framing these shared priorities in terms of issues or themes that could gain political traction at national or international levels, BMAAM generated credibility and legitimacy for its stakeholders, increased awareness of the issues in their landscape, and attracted public and private funding to support their agenda.

Being independent of the government allowed for continuity in BMAAM's activities during changes in political administrations. Similarly, BMAAM was free to adapt its programming at any point to address emerging issues, like climate-change driven water scarcity. However, this flexibility also led to difficulty and even lack of resources for monitoring outcomes. Outside of the Strategic Plan evaluation process in which stakeholders reflected on the outcomes achieved under the previous Strategic Plan, BMAAM did not invest significantly in tracking progress. Rather, the organization adjusts its activities according to the interests of its participants and the funding available from granting organizations and government agencies. The limited

resources of staff members were directed at advancing current or emerging priorities. As suggested by Milder *et al.* (2014), outcomes across conservation, production and livelihoods can be achieved at different timescales, and BMAAM's monitoring activities are organized in strategic planning cycles of three to five years. This timeframe may be insufficient for documenting changes in native forest health, for example, or changes in water availability in the upper watershed. Also, it is difficult to untangle the outcomes attributable to BMAAM apart from any of its members. Splicing out BMAAM's contribution from its members may not be helpful. Reporting joint outcomes increased political and social support for the shared priorities of BMAAM. Recent research by Plummer *et al.* (2017) attempted to evaluate causal links between stakeholder relationships, process and outcomes in collaborative management. Like the Continental Reviews (Milder *et al.* 2014, Estrada-Carmona *et al.* 2014), although the research supports a positive connection between stakeholder relationships and a wide range of outcomes, there is still a significant gap in our ability to quantify the impact of coordination on outcomes, particularly when funders may be trying to determine whether or not to invest in landscape approaches.

### **Lessons learned for landscape practitioners**

- 1. The design of BMAAM emphasized peer-to-peer relationships, in some cases giving less powerful stakeholders access to political and financial power*

The Model Forest platform gave representatives of stakeholder groups with less political and economic power a more direct line of communication with representatives of some other powerful stakeholder groups, particularly national and regional government officials. This served, at times, as a short-cut to political and financial resources to support stakeholder

interests. While informal relationships can increase trust between stakeholders, the Model Forest's voluntary format could not ensure accountability or even continued engagement on the part of powerful stakeholders.

### *2. Networks at nested scales increased opportunities research and knowledge exchange*

Through its position in international networks of Model Forests, BMAAM was able to attract research and funding that would otherwise have been unavailable to local stakeholders.

Whereas BMAAM stakeholders often felt isolated and different from other parts of the Araucanía and Chile, they had commonalities with other Model Forests in Latin America, Canada and Sweden that led to productive partnerships on promotion of cultural heritage, NTFPs, and climate change adaptation.

### *3. Organizational structure needed to adapt to serve perform functions*

BMAAM changed from an informal association of stakeholders to a legally recognized non-profit association. Although funding was not its primary role, the initial structure prohibited BMAAM from applying for and managing most grant funding. The change allowed BMAAM to continue its primary function of stakeholder coordination while increasing its ability to apply for and acquire financial resources to support its members' shared priorities.

## **Lessons learned for policy makers and ILM funders**

### *1. Investments in coordination increased efficiency and impact*

Coordination increased members' ability to design projects that leveraged existing programs or planning activities across the landscape. Beyond formal activities, informal coordination

resulting from the relationships established within the Model Forest led to untracked efficiencies in the day to day operations of organizations. Coordination was both voluntary and by design, as Model Forest participants drew from the experiences of other Model Forests in the network and had access to training to improve coordination among stakeholders.

2. *Government participation, not government leadership, allowed for broader stakeholder participation*

Government participation was integral at the beginning of BMAAM and continues to be important. Like other stakeholders, government officials and agencies could opt in or out of participation in BMAAM. However, BMAAM's role as a civil society forum attracts a wide variety of stakeholders and sets a different tone than government run processes, like the *Mesa Forestal*. The Model Forest has the support and recognition of the national government, but is not bound by federal budgets, tenure of political officials or public programs. This gives local stakeholders more flexibility in defining an agenda that is complimentary to existing government programs.

3. *Number, type and diversity of new partnerships as a measure of success*

BMAAM lacked rigorous monitoring of outcomes across the four dimensions of landscape performance over long time scales. Finding the funding and time for continuous monitoring is an ongoing challenge for ILIs. Even if ILIs gather this data, causality between the activities of a given ILI, like BMAAM, and landscape-scale changes is inherently difficult given the number of variables that influence a landscape. However, ILIs can use network analysis and monitor indicators of stakeholder coordination as a proxy for direct outcomes, enhanced

synergies, and reduced trade-offs (Plummer et al. 2017). Indicators of coordination, such as the number, type and diversity of new partnerships and projects, would be appropriate fit for the objectives, time-scale and scope of BMAAM activities.

The case of BMAAM provided an opportunity to answer new questions about how and why stakeholders established an integrated landscape initiative and continue to stay involved in a multi-stakeholder process. As one stakeholder mentioned, this type of democratic approach to setting local development priorities can only work in a setting where democracy is valued. Chile's return to democracy, the influence of global forest markets, and the international development and conservation agendas all created an environment in which stakeholders could leverage the Model Forest approach to address issues of local importance. By the same token, Model Forests typically fit within or add to, rather than radically oppose the dominant governance regime. Their voluntary nature and small size limits the degree to which they can hold stakeholders accountable or influence power dynamics in the landscape. BMAAM's structure and function in the landscape, as well as its position in international networks, both constrain and create opportunities for establishing new partnerships, attracting resources, and exchanging knowledge among stakeholders. While BMAAM's experience is unique, it is representative of the type of stakeholder platform and coordination that is promoted by the Model Forest. In terms of the range of objectives and activities, BMAAM is comparable to other landscape initiatives in Latin America (Estrada-Carmona et al. 2014) and therefore, suggests that some of the same outcomes of coordination – increased efficiency, locally defined program priorities, access to new external funding sources – hold true for other Model Forests in particular, and landscape initiatives in general. Exploring BMAAM's outcomes

across the four dimensions of landscape performance also provides a perspective from which to interpret the results of earlier research on integrated landscape initiatives that found that ILIs achieve more in institutional planning and coordination than in other dimensions (Estrada-Carmona et al. 2014, Milder et al. 2014). In this case, stakeholders perceived a lack of coordination and a shared vision as one of the greatest threats to managing resources and improving local livelihoods.

This case supports the theory that integrated landscape management can make trade-offs among stakeholders' objectives clear (Sayer et al. 2013, Reed et al. 2015), thereby facilitating partnerships. But it also suggests that the opposite effect may be true, that clarifying tradeoffs may lead some stakeholders to discontinue their participation. The theory that ILM reduces trade-offs is only supported to the extent that participants were willing to adapt their actions to reduce trade-offs when doing so would not jeopardize their position, authority or access to resources.

This case also supports the conclusion of the Continental Reviews (Milder et al. 2014, Estrada-Carmona et al. 2014, García-Martín et al. 2016, Zanzanaini et al. 2017) that the primary role of ILIs is to drive stakeholder coordination at the landscape level. However, the experience of BMAAM differs from their conclusion that landscape initiatives form around a diversity of issues. In this case, stakeholders represented various interests but formed the Model Forest specifically to address issues related to local economic development. All activities across the four dimensions of the Landscape Measures Framework were in service of this multi-faceted objective. Therefore, stakeholders tended to view the impacts or successes across dimensions

of conservation, agricultural and forestry production and livelihoods in relation to the goal of local development. Despite the finding of the Continental Reviews that initiatives with diverse stakeholder representation and a diverse set of activities achieve a more diverse set of outcomes, this case is more supportive of Warner's conclusion that stakeholders who are more interested in "food on the table", i.e., results, may not be content with a process-heavy initiative that primarily delivers dialogue and knowledge exchange (2017).

Given these findings, future research should build on this study, as well as on Plummer et al.'s (2017) initial attempts to quantify the impacts of coordination, collaboration and networks, to evaluate the pathways by which ILIs may catalyze action, mitigate trade-offs and produce synergies. This work should move toward determining the degree to which landscape initiatives catalyze action and if their contributions merit the investment of funders looking to improve outcomes for social and ecological outcomes in forest landscapes. This further research would advance the field of research on ILM and provide ILI practitioners at the landscape-level with actionable information to help them achieve their shared objectives.

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## CHAPTER 4

### CONCLUSIONS: COMPARING THE EXPERIENCES OF PRINCE ALBERT MODEL FOREST AND BOSQUE MODELO ARAUCARIAS DEL ALTO MALLECO

#### **Introduction**

Integrated landscape management (ILM) is gaining attention from governments, international NGOs, and even the private sector actors, as their agencies and organizations seek to integrate a wide range of objectives into managing rural landscapes (Milder *et al.* 2014, LPFN 2012, Scherr *et al.* 2012). An accompanying body of literature is focused on documenting the theory and process of landscape approaches (Kusters *et al.* 2016, Freeman *et al.* 2015, Sayer *et al.* 2013, Reed *et al.* 2015, Reed *et al.* 2017). However, this literature lacks on-the-ground examples of integrated landscape management that describe why and how stakeholders adopt ILM practices in a particular context, and provide practical guidance for practitioners (Reed *et al.* 2015). This thesis aimed to provide two such examples by presenting case studies of two integrated landscape initiatives, Prince Albert Model Forest (PAMF) and Bosque Modelo Araucarias del Alto Malleco (BMAAM). This final chapter explores the contextual factors that prompted the formation of and stakeholder participation in these two Model Forests, as well as the outcomes of their investments in multi-stakeholder planning and coordination.

#### **Why and how the cases were selected**

This study builds directly off of a series of reviews that sought to characterize integrated landscape initiatives at a continental scale (Milder *et al.* 2014, Estrada-Carmona *et al.* 2014,

García-Martín *et al.* 2016, Zanzanaini *et al.* 2017). Those reviews laid an important foundation for understanding where ILM is happening, and the general types of investment and activities that such initiatives are achieving across four dimensions of landscape performance (Buck *et al.* 2006, Milder *et al.* 2012): 1) agricultural or forestry production, 2) environmental conservation, 3) livelihoods, and 4) institutional planning and coordination. However, they fell short of providing information on the context in which such initiatives have formed and a detailed account of why and how they achieve outcomes across the four dimensions of landscape performance.

Model Forest initiatives were a notable sub-set of the participants in the Continental Review studies. They are early examples of ILM, with the first forming in Canada in the early 1990s. Since then more than 60 Model Forests have formed in more than 30 countries around the world. I chose to use two Model Forests as case studies because they offered an interesting opportunity to: 1) gain in-depth knowledge on how and why integrated landscape initiatives developed in particular contexts, 2) had a relatively long history to draw on, and 3) allowed me to explore the role of regional and global networks in supporting integrated landscape initiatives.

The selection of Prince Albert Model Forest and Bosque Modelo Araucarias del Alto Malleco was also somewhat opportunistic. PAMF and BMAAM had a partnership agreement for exchange and collaborative research, and I had professional ties to these two Model Forests that made organizing extended field visits possible.

## **Objective**

Chapters 2 and 3 of this thesis explored the individual cases through the lens of sustainability transformations (Chapter 2) and practical guidance for landscape practitioners (Chapter 3). The cases support one of the primary conclusions of the continental reviews – that landscape initiatives are investing relatively more time and economic resources in institutional planning and coordination than in directly improving environmental conservation, agricultural or forest productivity, or livelihoods (Milder *et al.* 2014). In this final chapter I analyze why stakeholders (which includes stakeholders within and beyond the local landscape context, for this study) chose to invest time and economic resources in institutional planning and coordination, and what the outcomes of those investments have been.

## **Key Findings**

### ***What prompted stakeholders to form the Model Forests and invest in institutional planning and coordination?***

#### *Changes to forest policy and the forest sector*

#### 1. The environmental movement, sustainable development, and major political transitions

The beginning of the Model Forest Program in Canada and its roots in Chile were closely linked to the birth of the Sustainable Development movement (Bonnell et al. 2012). In Canada, forest companies and the government were facing growing pressure from environmental organizations not only to manage forests in a way that is ecologically sustainable, but that addresses the concerns of forest communities (Howlett 2001). Examples include grassroots initiatives, like the protests in Clayoquot Sound in 1993 (Goetze 2005, Mabee & Hoberg 2006), as well as international initiatives to protect threatened species and ecosystems like the

Convention on Biological Diversity (CBD), which was introduced at the Earth Summit in 1992 and adopted in 1993.

These major influences on the governance and use of forests globally occurred at the same time Chile's return to democracy. The national turn to democracy opened space for stakeholders at local levels to advocate for and pursue what they saw as more democratic approaches to resource management (P. Sola, personal communication, June 2014). Along with the return to democracy came a new recognition on the part of the government of indigenous rights in the form of the *Ley Indígena* (Law N° 19.253) in 1993. The environmental movement, sustainable development agenda, and return to democracy all were external forces on stakeholders in PAMF and BMAAM that pushed for new priorities and greater integration of stakeholder interests into forest management. They also prioritized development and imported external perspectives on development, forest management and governance in order to pursue that objective.

## 2. Transition to plantation forestry

Beginning in the 1970s, plantation forests began to expand rapidly, largely due to subsidies for planting exotic species provided by the Chilean government in a series of laws (DL 701, Law N° 19.561) (Reyes & Nelson 2014). While Canada continued to lead paper and pulp production through the 1990s, the boom in plantation forests marked a major transition for the forestry sectors in both countries (Howlett 2001). For PAMF, the transition that began in the 1990s came to a head during the 2008-2009 recession, when falling demand for paper combined with a downturn in the housing industry, led to multiple mill closures in the landscape (L. Stanley,

personal communication, September 2014). In Chile, the pressures, although related, were quite different. The growth of plantation forests simultaneously relieved logging pressure on native forests as investors put plantations primarily on agricultural land. Their growth also coincided with revisions to DL 701 that made it increasingly difficult to harvest timber from native forests. Today, the Araucanía region, the region in which BMAAM is located, has more than 20% of Chile's plantation forests (Torres-Salinas 2016). However, the growth of plantation forests in the lowlands of the Araucanía and restrictions on timber extraction in the upper regions, led to a lack of economic opportunity for communities in Alto Malleco, the portion of the Araucanía that is in the upper cordillera, and that has remained dominated by native forests.

This transition prompted multi-stakeholder collaboration in a few ways. First, as the rules of forestry were changing in Canada and Chile, forest corporations were looking for way to attract a work force with higher education and more specialized skills than those required for traditional forestry (Huq 2007). New technology allowed companies to operate with greater efficiency, at great capacity, and required skilled labor that had been trained in new equipment and procedures. Secondly, the transition brought a suite of new forestry companies to these landscapes (A. Balisky, personal communication, September 2014). In many cases, international investors planted plantations and bought mills. In some cases, collaborative processes like the Model Forests created positive press and increased public opinion of companies whose reputations were weak or damaged from previous interactions with forest communities. However, it was also the case that stakeholders were looking for ways to gain

access to these new companies and ensure that these new companies understood the interests of local communities (SEPADE 2012).

### ***Greater autonomy in decision-making on resource management***

#### *1. Tenure, regulation and decision-making power*

As the global dialogue on forest management was shifting toward one that advocated for a stronger role for local communities in forest management (Howlett 2001, Charnley & Poe 2007), that same sentiment was expressed by stakeholders in the Model Forests. In the case of PAMF, less than 1% of the forests in Saskatchewan are privately owned, although management is delegated primarily to private companies that hold licenses to operate on public lands. In particular, aboriginal people (First Nations and Métis), who comprise the majority of the population in forest communities, have limited ownership of forestry firms, joint ventures and forest management partnerships (Parsons & Prest 2003). The number of firms and degree of economic participation has increased over time. However, many local stakeholders in PAMF still feel that the power to make decisions on forest management lies primarily in the hands of large forest corporations or the provincial government. While some stakeholders see the Model Forests as an appropriate venue to try and influence land rights and ownership, others have abstained to avoid the perception that they support the current system or land rights or are willing to compromise with other stakeholders matters of tenure and ownership.

In the case of BMAAM, some local communities feel that increased regulation of native forests, albeit privately owned, limits their ability to make decisions regarding the management of those forests to such a degree that forest quality is declining. Also, in Chile, the privatization

of water resources and growing concerns over water scarcity, which stakeholders argue is exacerbated by climate change and water use by plantation forests, have sparked collective action to increase stakeholder access and opportunity to manage those resources (Veloso & Donoso 2011). In fact, organizing local water associations and securing access to water has become one of BMAAM's priorities in recent years.

## 2. Dissatisfaction with existing platforms for stakeholder engagement

In both cases, the provincial or federal governments have established processes for engaging forest communities and local stakeholders in natural resource management: the *Mesa Forestal* in Alto Malleco, and in Saskatchewan, the consultation process required by the Constitution Act, 1982. However, these processes focus primarily on a one-way exchange of information where stakeholders can raise issues or concerns with the state, and the state agrees to take them into consideration when making resource management decisions. In both cases, decision-making authority remains with the state and the degree to which stakeholder concerns are accommodated varies widely from project to project. The Model Forest approach offered a parallel path with distinct differences from the existing platforms for stakeholder participation – namely voluntary participation, a non-government sponsored space, and peer-to-peer interaction. This approach increased what Stern & Coleman (2015) call procedural trust (in which participants agree with and trust a process, even if not the intentions of other participants), thereby opening a space for more equitable, transparent negotiation of interests.

### ***Access to new knowledge and funding to support stakeholder interests***

#### ***1. Increasing interaction between local stakeholder groups***

At its inception, the Canadian Model Forest program awarded grant funding only to those multi-stakeholder initiatives that brought together research organizations, companies and local stakeholders. The assumption was that bringing together those with tenure and decision-making authority with those who lived in forest communities, and agreeing on criteria and indicators to track, would lead to more sustainable forest management (Sinclair & Smith 1999, LaPierre 2003). In practice, stakeholder participation may have been more often motivated by the opportunity to interact informally with others in the landscape, opening the door to influence and negotiation. The Model Forests brought together stakeholders that had no formal mandate to collaborate but could potentially benefit from coordinated efforts. For example, in PAMF, local communities and companies looked to the Model Forest to help them articulate shared goals and develop programs that would lead to jobs for community members and give companies access to a trained work force. Partnerships with local university and government researchers also attracted participants, in the hopes that they would be able to help shape research agendas in a way that would benefit their communities. In BMAAM, local stakeholders looked to the Model Forest to familiarize representatives of national agencies, like the National Forestry Corporation (CONAF), with local challenges, and serve as a space in which they might be able to adapt national programs to be more suitable to local conditions.

## 2. National and international networks for research and sustainable development

At the time PAMF was formed, stakeholders could count on being able to exchange experiences and ideas within a set of 11 Canadian Model Forests. Today there are more than 60 Model Forests in over 30 countries. The International Model Forest Network facilitates participant exchange programs and organizes opportunities for the leaders of the Model Forest

to come together, partner on common interests, and learn from one another. Similarly, BMAAM is a part of a national network of three Model Forests in Chile, the Ibero-American Model Forest Network (RIABM) and the International Model Forest Network. Through these networks stakeholders within the Model Forests can access researchers and experts in process management, forest management, sustainable development and a host of other resources. They can pool funding to invest in particular trainings for local stakeholders to attract funding through international partnerships. Several of the participants in PAMF and BMAAM mentioned that they joined in order to understand what other stakeholder groups like them were doing in other parts of the world. For some stakeholders, the wealth of knowledge available in the network alone drove their engagement.

The nested networks that support the Model Forest also provided a blend of stability and flexibility, which Pahl-Wostl (2007) identified as one of the critical functions of multi-stakeholder platforms. This mix led to increased stability in periods of transition. For example, the Canadian Model Forest Program's has formally come to an end, due to a lack of funding and political will on the part of the Canadian government. However, other members of the International Model Forest Network have stepped up as leaders within the International Model Forest Network, including members of the Chilean Model Forest Network (W. Alvarado, personal communication, June 2014). The ability to rely a broader network of organizations, particularly beyond the national government, means that the International Model Forest Network continues to function and that several of the Canadian Model Forests will continue despite a lack of support from the Canadian government. In some cases, the international network has provided stakeholders fertile ground for new alliances with international

organizations, which may give stakeholders access to more or different types of political power and financial capital. In other cases, the international network has given stakeholders the freedom to define programs outside the interest of regional or national government agencies by finding partners with similar interests in other landscapes around the world.

**What were the outcomes of the Model Forests' investment in multi-stakeholder planning and coordination?**

Institutional planning and stakeholder coordination was the primary emphasis of the Model Forests according to their own objectives, and reflected in the relative amount of time and financial resources that they dedicated to that end. The cases pointed to three main areas of outcome from those investments: 1) expanded social networks and increased social learning, 2) increased ability to adapt to shifting market and political conditions, and 3) influence broader efforts to affect systemic change.

***Expanded social networks and social learning***

The primary outcome of the Model Forests has been the establishment of a new network for stakeholders engaged in natural resource management and community development. As mentioned in the previous section, the Model Forest was intentionally designed to be voluntary and politically neutral. While the Model Forest leaders recognized that their organizations were not politically neutral, they saw the potential of the Model Forests to provide capacity to establish new and different relationships among stakeholders in their landscapes. Facilitation, for example, is considered a key part of collaborative processes (Pahl-Wostl et al. 2007, Sandstrom et al. 2014) and was used by the Model Forests to increase trust between

participants. In Stern & Coleman's framework on trust (2015), a transparent process with clear criteria can lead to procedural trust. Both Model Forests invested in facilitation, hiring managers that were not affiliated with any one stakeholder group. In the cases of PAMF and BMAAM, this most likely increased stakeholders' trust in the Model Forest process and fostered a positive environment in which informal interactions could lead to what Stern & Coleman define as affinitive trust. Affinitive trust can cause cognitive dissonance in participants that feel affinity to other participants and may even begin to think of another as part of their reference group, while disagreeing with a point of view held by the other participant. They note that agreement is not a prerequisite for trust, rather the opposite that trust increases participants' comfort in exposing themselves to risk, opening themselves up to influence. While trust doesn't erase power differentials and vulnerability, it can create a basis for mutual respect and negotiation. In general, the Model Forests followed this pattern, increasing stakeholders' exposure to one another, developing informal relationships that led in time to formal partnerships and in some cases legally binding agreements. For example, in PAMF, participants joined forces to develop training programs for Island Forest Management Inc. and the Peter Ballantyne First Nation's Amisk-Atik Forest Management Inc. However, in other cases, the Model Forests did not have enough influence or provide enough benefit to maintain the engagement of certain stakeholder groups. In some cases, these were the very groups that lacked the trust of local communities, like forest companies, or major segments of the population, in the case of local elected officials.

The Model Forests served as a social network that linked participants to others in their landscape, as well as others in the Canadian, Chilean and International Model Forest Networks.

These larger networks in turn led to research collaborations with Model Forests in Sweden and Chile, in the case of PAMF; and collaborations with Model Forests in Argentina, Bolivia, Costa Rica, Sweden and Canada in the case of BMAAM. The research conducted through these partnerships led to the development of climate adaptation strategies (Gonzalez & Vignola 2015), and visits that focused on exchanging information particularly on engaging indigenous or aboriginal youth in traditional activities as well as natural resource management. These outcomes suggest that the Model Forest platforms in both cases were successful at increasing opportunities for collaboration, potentially building collaborative capacity, particularly in two of the six arenas of collaborative action identified by Cheng & Sturtevant (2012): organizing stakeholders and fostering learning.

The departure of several key participants highlights the limitations of these outcomes. For example, the original private sector partner in PAMF, Weyerhaeuser, no longer participates in the Model Forest, and when consulted, its employees see little value in engaging with other stakeholders outside of their formal mandate. Similarly, in BMAAM, local municipal governments played an important role early on, and now do not see the Model Forest providing value that furthers their interests. Economic and political transitions sparked the departure of these participants from Model Forest activities, and the trust that was built during participation seems to have dissipated. This suggests that, while important for influence and negotiation, affinitive trust developed through informal interactions remains primarily a type of interpersonal trust and may not transfer to the institutional level. In the absence of the individuals that formed the bond, the institutions they represent may not have any affinity toward one another and partnerships can collapse.

### ***Increased ability to adapt to shifting market and political conditions***

Research on collaborative governance suggests that collaborative capacities, like networking, organizing and learning led by the Model Forests, generate adaptive capacities (Emerson & Gerlak 2014, Brown 2009). Pahl-Wostl et al. (2007) argue that stakeholder networks increase adaptive capacity and lead to a “sustained process of attitudinal and behavioral change... through interaction and deliberation.” The Model Forests’ experiences highlight the generation of adaptive capacity and institutional adaptation in a couple of ways. Despite changes in financial and political support in Chile and Canada, BMAAM and PAMF have continued to function as local networks and within a larger network for more than 20 years. In the case of BMAAM, the Model Forest provides continuity for initiatives in the landscape, as changes in governing parties often cause dramatic shifts in government sponsored programs and agency personnel. In the case of PAMF, the Model Forest was able gain government and industry support to explore new economic opportunities like biofuels and alternative forest products much sooner than a new public program could be developed.

These networks have provided a measure of stability in volatile situations and allowed for greater flexibility to act and respond in others. Another example is the current transition in the International Model Forest Network. The Canadian Model Forest Program, which was supported by the federal government has formally closed. However, the International and regional networks of Model Forests have taken on leadership and provided financial resources in order for several of the Canadian Model Forests to remain active. By continuing to sustain partnerships across the network, it has even opened up opportunities for Model Forests in other

parts of the world to take leadership in organizing activities, administering the business functions, and connecting stakeholders across the Model Forests.

***Influence broader efforts to affect systemic change***

While the political and historical context influenced stakeholders' interest in participating in the Model Forests, these networks also influenced the natural resource management regimes and the broader governance context. Pahl-Wostl et al. (2007) highlight both of these interactions (i.e., the influence of the governance context on collaborative platforms, and vice versa) in their analysis of change in governance structures. The influence that these networks had on the broader context are often limited, however they may support broader efforts for systemic change. For example, the outcomes of the Chilean Model Forests and BMAAM in particular, led to the creation of a new program within CONAF that aimed to expand the use of Model Forest platforms throughout Chile. In this way, BMAAM's influence led to long-term programmatic changes in CONAF's structure and operations. In PAMF, efforts to build capacity for forest management in First Nations and Métis communities strengthened existing aboriginal owned companies and aboriginal managed land, supporting the case for increasing the role of forest communities in forest management. These outcomes, though notable were limited. The experiences of the Model Forests do not suggest that these initiatives are successful in influencing widespread change or transformation in the dominant political regime.

The Model Forests did not typically use tools of resistance, protest or dispute that have been effective at influencing transformations in governance structures. Notable examples of

resistance movements and protests have occurred in both the PAMF and BMAAM landscape during the course of their operation (Wyatt 2008, Latta 2007). For example, both of the Model Forests studied were in operation at the same time as larger scale efforts to establish indigenous land claims. Rather than being directly involved in land claims, the Model Forests developed capacity building programs and built a network of partnerships that could support the communities that successfully established land claims. In the case of BMAAM, the Model Forest worked on providing alternatives to timber harvesting and sale for newly established communities to fund installation of basic services (e.g., water and electricity) on their land. In the case of PAMF, Model Forest participants developed training programs to train the work force in new skills and forestry technologies. As aboriginal communities gained forest licenses and co-ownership of mills, this program helped ensure the rural, predominantly aboriginal work force would be prepared for the available jobs. Although this has been an important change, Wyatt (2008) call this current regime “forestry by First Nations” and a far cry from a transformation to what he calls Aboriginal Forestry in which First Nations interests are given primacy, and they have full authority to select practices, technologies, and goals for forestry. The collaborative action of the Model Forests operates in parallel to these social movements, resistance and protest, and typically, do not raise the same challenges against dominant regimes of land tenure or management as these other movements. It may also be that the goal to arrive at consensus within the Model Forest could dampen the legitimate claims of less powerful or marginalized stakeholders. In these cases, collaborative action will not be effective in achieving a complete transformation in the governance regime. It may, however, be helpful in other circumstances for bringing additional resources to those communities, increasing their

access to decision-makers, and increasing awareness on the importance of forest communities to sustainable forest management.

### **Implications for policy and practice**

PAMF and BMAAM expanded opportunities for forest communities to participate in natural resource management by providing an alternative venue for influencing and negotiating, and even advocating for decision-making authority. In both cases, the Model Forests provided specific services in terms of facilitation and stakeholder networking that were lacking in public process. Particularly when forest resources are managed by those in more powerful positions (e.g., strong tenure, political power, economic resources), facilitation can be crucial for attracting a diverse set of stakeholders (Leys & Vanclay 2011). That diversity, in turn, strengthens the network overall by bringing a wider array of knowledge and resources to bear on the common goals of participants, and increases adaptive capacity (Cosens 2013).

Multi-stakeholder platforms may provide beneficial functions to stakeholders, but likely need to be accompanied by other strategies or modes of engagement in order to affect systemic change in dominant governing regimes. Collaborative platforms played an important role in providing stability and flexibility in the cases of BMAAM and PAMF. In the same way that it is important to diversify an investment portfolio with uncorrelated investments, multi-stakeholder platforms that operate parallel to government programs and social movements may be able to support and strengthen those efforts, while allowing stakeholders to be nimble in the face of emerging challenges. In fact, these platforms may be at the forefront of identifying new challenges as knowledge and ideas are frequently and readily exchanged.

## **Conclusions**

The Model Forests formed and gained stakeholder participation for a variety of factors, primarily filling a gap in public engagement related to the management of forest resources and economic development in their respective contexts. The outcomes of their investments in multi-stakeholder planning and capacity building, although hard to quantify, suggest that the Model Forests can enhance the collaborative capacity of actors in the landscape, mainly through information interactions, organization, facilitation and learning. These collaborative capacities can, in turn, increase stakeholders' adaptive capacity. The Model Forests have provided stability and continuity to the pursuit of a common vision among participants, while adapting to dramatic changes in the forest sector and policy. The outcomes also suggest that while informal interaction is the basis of many of the outcomes of the Model Forests, at the local level, as well as at the level of the International Model Forest Network, the trust established in those interactions can be fragile. Trust between institutions can be hard to maintain outside of formal partnerships and agreement. Finally, the Model Forest networks, while emphasizing collaborative action, did not appear to be able to influence systemic changes in the governance structure for natural resources. Depending on the participants and the context, the types of collaborative platforms may be able to support broader efforts to affect systemic change, or they may undermine them by reinforcing dominant perspectives and paradigms as consensus.

The experiences of PAMF and BMAAM support existing theories on the relationship between collaborative capacity and adaptive capacity (Emerson & Gerlak 2014), as well as theories of building and transferring trust in collaborative natural resource management (Stern & Coleman

2015). These cases also demonstrate how local stakeholders responded to national and international pressures to incorporate stakeholder values and interests into decision-making. In both cases, the Model Forests fall short of having strong decision-making power, which has remained in the hands of the most powerful stakeholders in their landscapes – government agencies and private companies. While the Model Forests have played important roles in influencing those actors through informal and formal interactions, there is much more work to do. These organizations have been more effective in allowing stakeholders to adapt to change than they have been at instituting systemic change.

This thesis examines the cases of two Model Forests as ripe examples of ILM and collaborative governance. This final chapter has attempted to provide greater resolution on the formation, activities and outcomes of two landscape initiatives that what was previously available in the Continental Reviews. While my analysis confirms that ILIs are investing relatively more resources in stakeholder coordination than in direct management of natural resources, it goes beyond this finding to suggest that building trust and a network of relationships through informal interactions are necessary antecedents of the formal partnerships that may support local stakeholders in responding to change and implementing sustainable forest management. Despite these benefits, both initiatives struggled to consistently engage key stakeholders, thereby limiting their influence in their respective landscapes. I also found that they lack quantified evidence of their benefits, which limits the strength of this analysis, but defines a clear opportunity for future research.

The two Model Forests that I studied in this thesis were full of members that cared deeply for the places that they lived and worked, and shared a passion for shaping the future of those places. On a personal level, I came away from this research with a deep appreciation for those who invest in bringing stakeholders together, as the excitement over the new partnerships they had formed and the activities were leading was contagious. Despite the optimism that I inherited from the Model Forest members, less powerful stakeholders continue to have limited access to forest resources and legal processes to gain access to those resources. Therefore, approaches like the Model Forests are one of many strategies that stakeholders, particularly less powerful stakeholders, will need to use in order to influence power dynamics, policy regimes, and access to resources. Future research could explore these alternatives side by side, to examine the relative benefits of ILM and its alternatives for achieving sustainability objectives and adaptive management of forest landscapes.

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