Governance for Sustainability in Forest Communities: Case Study of the Antoine-Labelle Regional County Municipality in Quebec

by

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Author's declaration

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

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ABSTRACT

Significant progress towards sustainability has been made in recent decades. However, persistent and deepening unsustainable trajectories underline that mere continuation of current strategies will not suffice in reversing unsustainable trends. Governance for sustainability emerged as a field of inquiry aiming at prescribing decision-making structures and processes to support progress towards sustainability. Governance for sustainability in a complex and dynamic world poses a perplexing challenge. Goals are ambiguous; uncertainty is inherent; power is distributed and knowledge is incomplete (Leach, Scoones, & Stirling, 2010; Newig, Voß, & Monstadt, 2008). In this emerging context, the objective of governance is not to steer society towards perspicuous preferences but to iteratively and collectively negotiate and redefine actions and goals (Leach, Scoones, & Stirling, 2010; Meadowcroft, 2008) in order to influence and better cope with social-ecological system change. Core principles of sustainability serve as an ethical compass for deliberations and decision-making and need to be specified according to the different contexts, needs and options available. Sustainability assessment overlaps with, and plays a role in governance for sustainability.

In the field of sustainability, different approaches such as transition management, resilience and transformation in social-ecological systems, and future studies are directing attention towards understanding change (and resistance to change) and how it can be influenced intentionally in a complex and dynamic world. This dissertation integrates lessons on how to generate intentional change into Gibson's (2017, 2005) sustainability assessment framework and specifies sustainability requirements for their application to forest communities. Forest communities in Canada and in many parts of the world are faced with the challenge of responding to a recent forestry crisis that has revealed their vulnerability to narrow economic dependence on global paper and lumber markets while also taking part in the broader quest to reverse deepening unsustainable societal trajectories that are common to many rural and remote communities. Two recent local governance initiatives in the Antoine-Labelle region in Quebec – a Vision exercise and The Bourdon project, a forest community part of the Canadian Forest Communities Program – serve as ground for exploration and application. The Antoine-Labelle region was greatly impacted by the Canadian forestry crisis that struck most dramatically early in this century. Employment within the forest sector was reduced by more than 50 percent between 2004 and 2007 and the industrial structure was significantly modified. A qualitative approach assessing results according to three categories (i.e., significant and minor contributions to sustainability, and unmet criteria) was used to gain insights into the areas of strengths and weaknesses of the initiatives and identifying routes for improvement in sustainability contributions.

The assessment led to three major findings. First, the assessment uncovered a need for increased capacities for environmental stewardship and for local governance actors and

citizens to be involved in forest governance. This finding responds to a long-standing problem, identified in the historical account of the evolution of forest management policies in Canada, which illustrates that forest communities, including First Nation communities, were repeatedly excluded from forest management decision-making.

The second major finding concerns path dependence and the marginalization of forest communities by provincial policies. While both initiatives were disruptive in opening-up forest governance and local governance to other stakeholders and First Nation communities, progress remains tentative. Findings indicate that while the forestry crisis brought reasons to examine broader options for forest community futures, it also increased the pressure to narrow considerations and prioritize economic imperatives.

The third finding relates to the importance of lack of political will as a significant impasse to governance for sustainability. Gaining political support in a time of crisis and when funds are available is a relatively simple task. Moving beyond ad hoc initiatives and following through with organizational and institutional change is where the real challenge lies. Lasting contributions towards sustainability remain tentative and highly dependent upon the willingness of local actors to continue building on acquired capacities, knowledge and experience.

This dissertation contributes to sustainability assessment literature and recent attempts to integrate resilience and transition management lessons into sustainability assessment criteria. Further insights into future studies were drawn by putting forward key requirements for scenario building and vision exercises and by highlighting the differences in how different approaches frame the use of future studies. Another contribution pertains to the originality of the specified assessment framework for forest communities and its complementarity to other assessment frameworks. In addition, the case study of the Antoine-Labelle region and the assessment of two local governance initiatives that were put forward represent a substantive contribution to understanding possible pathways forward as well as the region’s strengths and weaknesses based on a sustainability perspective.

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LIST OF ABBREVIATIONS

ACC	Annual Allowable Cut
ACCORD	Action concertée de coopération régionale de développement
AHL	Association des Intervenants Forestiers des Hautes-Laurentides
ALRCM	Antoine-Labelle Regional County Municipality
ALSADC	Antoine-Labelle's Community Futures Development Corporation (Société d'aide au développement des collectivités d'Antoine-Labelle)
APEHL	Association de protection de l'environnement des Hautes-Laurentides
CAAF	Timber Supply and Forest Management Agreements (contrat d'approvisionnement et d'aménagement forestier)
CCFM	Canadian Council of Forest Ministers
CDCHL	Corporation de développement communautaire des Hautes-Larentides
CLD	Local Development Center (Centre local de développement)
CMFN	Canadian Model Forest Network
CRÉL	Regional Conferences of Representatives (Conseil regional des élus)
CRNTL	Commission des ressources naturelles et du territoire des Laurentides
CSA	Canadian Standards Association
CSSS	Health and Social Services Centres (Centre de santé et de services sociaux)
FCP	Forest Communities Program
FEMAT	Forest Ecosystem Management Assessment Team
FTQ	Fédérations des travailleurs et travailleuses du Québec
GHG	Greenhouse Gases
ICBEMP	Interior Columbia Basin Ecosystem Management Project
IMFN	International Model Forest Network
IPCC	Intergovernmental Panel on Climate Change
IPSÉ	Institut pour le progrès socio-économique
MDDEIE	Ministry of Economic Development, Innovation, and Export Trade
MFP	Model Forest Program
MIZ	Metropolitan influence zone
NTFP	Non-timber-forest-products
RCM	Regional County Municipality
RIL	Reduce-impact Logging
SADC	Community Futures Development Corporation (Société d'aide au développement des collectivités)
SES	Social-ecological system
SFM	Sustainable forest management
SNEP	Sierra Nevada Ecosystem Project
TNO	Unorganized territories (territoire non organisé)
SEPAQ	Société des établissements de plein air du Québec

STS	Socio-technical system
UNCED	United Nations Conference on Environment and Development
UQAT	Université du Québec en Abitibi-Témiscamingue
ZEC	Controlled harvesting zone (zone d'exploitation contrôlée)

CHAPTER 1 – INTRODUCTION

1.1 Research content and problem

Concerns related to the deterioration of the world's situation, expressed in reports such as the Millennium Ecosystem Assessment (2005) and reiterated in Rio +20 debates (Leach et al., 2012) as well as at the recent United Nations Climate Change Conference in Paris (2015), illustrate well the general consensus that we are on an unsustainable path and in need of more significant change.

Sustainability is about change while preserving or sustaining desired qualities in a constantly changing environment. Furthermore, the substance and processes of pursuing sustainability are indubitably related to how change occurs and is understood in the present context. What we think of change guides how we organize discussions and actions, hence influences, to a certain degree, its very course and prospect (Sztompka, 1993).

Today's world is complex and dynamic. Change is happening at an increased pace, highlighting interdependencies among actors, institutions, and the environment, as well as inherent uncertainties. Dominant assumptions of stability, linearity, and predictability related to the myth of rational decision making based on traditional approaches to science are increasingly called into question (Leach, Scoones & Stirling, 2010; Newig, Voß & Monstadt, 2008; Walker & Salt, 2012). Within such a context, precaution and innovation are at the forefront. However, "lack of disaster does not suffice to project a future that is truly hopeful" (Innerarity, 2012, p. 110) nor is innovation necessarily likely to deliver a future that is sustainable. Caught in the tyranny of the present (Innerarity, 2012) and its idiosyncratic views of progress through technological innovation (Nowotny, 2006; Stirling, 2009) and narrowly defined economic gain underline the need to critically think ways forward in democratic terms.

The pursuit of societal goals is increasingly perceived through the lens of governance rather than government as the sole and main actor recognized for public action. Governance is identified as a crucial element for progress towards sustainability (Farrel et al., 2005; Lange et al., 2013) and unsustainability is often related to a crisis in governance (Adger & Jordan, 2009; van Zeijl-Rozema et al. 2008). Governance for sustainability emerged as a field of inquiry aiming at prescribing decision-making structures and processes to support progress towards sustainability (Adger & Jordan, 2009; Gibson, 2017).

Governance for sustainability in a complex and dynamic world poses a perplexing challenge. Goals are ambiguous, uncertainty is inherent, power is distributed and knowledge is incomplete (Leach, Scoones & Stirling, 2010; Newig, Voß & Monstadt, 2008). In this emerging context, the goal of governance is not to steer society towards a defined ideal but to

iteratively and collectively negotiate and redefine actions and goals (Leach, Scoones & Stirling, 2010; Meadowcroft, 2008) in order to influence and better cope with societal change. In the field of sustainability, different approaches such as transition management, resilience and transformation in social-ecological systems (SES), and future studies are directing attention towards understanding change (and resistance to change) and how it can be influenced intentionally. Therefore, valuable insights on ways to generate intentional change in a complex and dynamic world based on extensive case applications are put forward in the literature. However, the challenge of linking intentional change to the substance and process requirements of sustainability remains.

To address this challenge and build on existing knowledge on intentional change, intentional change insights are integrated within Gibson's (2017, 2005) sustainability assessment framework which sets forward generic sustainability requirements and provides guidance for criteria specification to meet particular contexts of application. Sustainability assessment overlaps with, and plays a role in governance for sustainability (Gibson, 2017). Sustainability assessment criteria allows for open critical observation of underlying reasoning, guides comparative evaluation between options and pathways, and provides discernment from prevailing practices (Gibson, 2017). Sustainability assessment is not a blueprint towards a sustainable future. It highlights areas that are worth considering based on specified requirements for sustainability for concrete case applications.

1.2 Specific research context: sustainability in forest communities

Forest-dependent communities are doubly in need of change towards sustainability. They face the local challenge of addressing their vulnerability to narrow economic dependence on global paper and lumber markets while also taking part in the broader quest to reverse deepening unsustainable societal trajectories.

The recent forestry crisis and enduring stresses in the forest sector have greatly affected forest communities. The forest sector is one of the largest employers in Canada. The total number of forest related jobs[1] has significantly decreased in the last decade and a half, declining from 903,600 in 2002 to 599,600 in 2012 and this economic transition is expected to continue (Natural Resources Canada, 2013b).

Forests, through the lasting socio-economic benefits and ecological services they provide to communities, have a significant potential to contribute to sustainability. They also have a key role to play in the fight against the global problem of climate change (Food and Agriculture

[1] These include direct employment (jobs directly related to the production of forest products), indirect employment (jobs that occur outside of the industry such as truckers or manufacturers) and induced employment (jobs created by the forest industry employees when they use their wages to purchase consumer goods and services) (Natural Resources Canada, 2013).

Organization of the United Nations, 2015). However, as underlined in the latest *State of the World's Forests* (Food and Agriculture Organization of the United Nations, 2014), there is still much to be done in order to address persistent unsustainable forest practices and evidence is critical to better inform forest policies.

Forest communities have been repeatedly excluded from influence over what happens in their surrounding forests due to forest management policy regimes favouring allocation of large-scale forest tenure rights to forest industries and forest management goals focused on timber production. The forestry crisis is depicted as a political crisis centred on how to govern our forest activities (Chiasson, 2013). This situation points to a need for renewed governance in forest communities.

Historical perspectives on Canadian forest policies often describe them as having remained very stable and closed over the years (Howlett, Rayner & Tollefson, 2009; Howlett & Rayner, 2001) or even fixed (Fréchette, 2009) due to their persistent objective of assuring a steady timber supply for the mills. Despite such interpretations, some significant changes have been made in the last few decades, most notably in increasingly recognizing multiple uses of forests, diverse concerns, environmental protection as well as constitutionally entrenched rights of First Nations (Teitelbaum, 2015). These changes are slowly paving the way towards a more sustainable relationship between people and forests. Sustainability in forest management policies and in forest communities is not completely uncharted territory.

The need and potential for change in forest communities in a complex interlinked global restructuring of the forest industry as well as the noted resistance to change justifies forest communities as a case application for governance for sustainability understood as combining intentional change criteria to sustainability substance and process requirements using Gibson's (2017, 2005) sustainability assessment framework.

1.3 Research question, objectives and case application

The core questions this thesis aims to address are:
What are the key sustainability considerations for forest communities in need for intentional change towards sustainability? What lessons can be learned from the case of the Antoine-Labelle Regional County Municipality (ALRCM) about best governance for sustainability approaches?

The research objectives are as follows:

- Understand how interpretations of change and sustainability in a complex and dynamic world are interlinked, or in other words, how our understanding of change in a complex

and dynamic world influences the substance and process requirements of governance for sustainability (chapter 2);
- Construct an interpretation of governance for sustainability that integrates the notion of intentional change into the substance and process requirements for sustainability assessment (chapter 3);
- Specify the sustainability assessment framework for the case of forest communities (chapters 5, 6, 7);
- Test the sustainability assessment framework on two sustainability initiatives in the ALRCM and highlight theoretical, policy and practical implications (chapters 8 and 9)

These objectives were pursued through an in-depth single case study of a forest community in Quebec and the inquiry of two embedded sub-cases or initiatives striving for sustainability within the forest community. Quebec is the province that has been mostly affected by layoffs in the forest sector (Smith & Parkins, 2011). In addition, in 2010, Quebec was undergoing a significant forest management policy change offering potential openings for gains towards sustainability.

The ALRCM has been greatly affected by the forestry crisis, losing over 1400 jobs in the forest sector between 2004 and 2007 (Ecotec Consultants, 2007). This represents more than 50 percent of the employment in the forest sector in the region (Ecotec Consultants, 2007). However, in response to the forestry crisis and the need to address persistent enduring stresses, two local governance initiatives were put forward in the region: The Bourdon project (2007-2014) and a Vision exercise (2007-2015). The Bourdon project was the initiative of a forest community that participated in the Canadian Forest Communities Program (FCP) which aimed to support communities in adjusting to the forest sector transition and take advantage of emerging forest-based opportunities through collaboration between multiple partners (Natural Resources Canada, 2013a). Such initiatives have been recognized as innovative governance arrangements and as "living laboratories" for learning how to practice sustainability (Lapierre, 2002) and facilitate transitions towards more desirable futures (Bullock, Armitage & Mitchell, 2012). The Vision exercise was initiated by community organizations in the ALRCM in order to combine the strengths within the community to increase well-being and contribute to the socio-economic revitalization of the region through the adoption of a common long-term sustainability vision (Institut pour le progrès socio-économique, 2011). Thus, the ALRCM represented some key characteristics of best openings for applications of sustainability assessment as identified by Gibson (2017). There was a clear need for improved decision-making and governance within the community, an opportunity to take action and to broaden the scope of considerations, reasonable awareness of the issues and potential for collaboration (Gibson, 2017).

The fact that two local governance initiatives geared towards sustainability took place in the same time-frame in the ALRCM as responses to the forestry crisis also justifies the choice to focus on this forest community. In addition, as will be further discussed in chapter 4, good knowledge of the region and its main actors due to previous professional experience further explains the decision to study the ALRCM.

The research approach to meet the research objectives was exploratory and transdisciplinary. The conceptual framework was developed iteratively navigating inductively and deductively between generic requirements of governance for sustainability identified in the literature (chapter 3), forest communities specifications (chapter 5) and case and sub-cases key considerations (chapters 6,7,8). Challenges of forest communities can most usefully be integrated into a more comprehensive framework that is focused not so much on the causes of difficulty as on the requirements for positive responses for lasting improvement. Three categories were put forward to assess the contributions to sustainability of both initiatives (i.e., significant and minor contributions to sustainability, and unmet criteria).

Semi-structured interviews were conducted with participants in The Bourdon project and the Vision exercise in order to gain further insights into the sustainability issues in the ALRCM and the initiatives for their assessment. Participant observation was also used to better understand how the initiatives worked. In addition, document analysis of the different written documents produced by the two initiatives was undertaken as well as the analysis of relevant policy and historical documents.

1.4 Dissertation structure

Chapter one has presented an overview of the research problem and context as well as the core questions and objectives pursued. It also has provided a rationale for the focus on forest communities as a case application for the framework to be developed in the following chapters.

Chapter 2 aims at defining the core concepts that represent the theoretical foundation of this dissertation as well as situating them in their contemporary context. First, sustainability and its core requirements are presented. Second, the emergence of governance and governance for sustainability are discussed. Complexity is then addressed as a contemporary phenomenon that requires new approaches in order to better match its specificities and implications. Furthermore, insights from complexity approaches and their interpretation of change are drawn. This allows for a working definition of governance for sustainability in a complex and dynamic world. It also serves as a theoretical background to understanding how different conceptualizations of governance for sustainability apply, frame and address tensions of complexity approaches as chapter 3 highlights.

Chapter 3 reviews different conceptualizations of governance for sustainability and aims at identifying key requirements for intentional change towards sustainability. More specifically, the chosen bodies of literature consist of resilience and transformations in social-ecological systems, sustainability transitions and innovation studies, and future studies. Furthermore, lessons from critical constructivist perspectives on these approaches are identified. Sustainability assessment and more specifically Gibson's (2017, 2005) eight generic requirements for assessing progress towards sustainability are presented and justified as a receptacle for integration of intentional change requirements.

Chapter 4 presents the exploratory and transdisciplinary research approach as well as the methodological strategy used in this dissertation. Justifications for the choice of the ALRCM as a case study are provided as well as details on the specific methods used to collect and analyze data. The iterative process of specifying sustainability-based assessment criteria for the application to forest communities is described.

Chapter 5 specifies the conceptual framework for the application to forest communities. Gibson's (2017; 2005) eight sustainability requirements with intentional change criteria identified in chapter 3 are used to organized key considerations for forest communities uncovered through an exploration of the evolution of forest management policies in Canada and literature related to rural and forest-dependent communities. In addition to outlining the specified framework, the potential contribution to sustainability of Model Forests and community forestry initiatives are presented.

Chapter 6 explores the socio-political dynamics in the ALRCM and provides contextual information on governance in rural forest communities in Quebec. Three major interlinked waves of change converged during the last decade in the ALRCM. First, the forestry crisis resulted in a notable transformation of the industrial structure in the region, thus affecting forest governance. Second, austerity measures by the provincial Liberal government elected in 2014 considerably modified the landscape of the region's governance, including the governance of forests on public land. Third, a new forest management regime with significant shifts in responsibilities and new structures was put in place during the period of inquiry. These dynamics greatly impacted the two initiatives studied in chapter 8.

Chapter 7 uses the conceptual framework to provide contextual information related to each sustainability requirement and aims simultaneously to further specify the framework for its application to the ALRCM.

Chapter 8 describes the two initiatives (The Bourdon project and a Vision exercise) studied. Details are provided on the actors involved, the initiatives' mission and governance as well as

their unfolding and ultimate demise. In addition, research results and analysis are presented based on the assessment of both initiatives through the developed conceptual framework.

Chapter 9 concludes this dissertation by summarizing the most significant findings and highlighting research contributions. Theoretical, policy and practical implications for the ALRCM are then identified.

CHAPTER 2 - SUSTAINABILITY, GOVERNANCE AND COMPLEXITY

2.1 Introduction

In the last decades, sustainability has made its way into businesses, civil society organizations and governments' policies as a normative ideal. It has become an imperative with change as a requirement for its attainment (Rumpala, 2010). In a complex and dynamic world, change is ubiquitous. At times, it catches us off guard through surprise despite conscious efforts to prepare for situations, while in other circumstances, it is sought as a praised, undisputed and intrinsic prerequisite of our time.

The pursuit of societal goals is increasingly perceived through the lens of governance which includes a network of actors rather than government as the sole and main actor recognized for public action. Governance involves that actions of state, but goes beyond by including other actors as well as their relationships in the governing process (Adger & Jordan, 2009). Governance for sustainability is a field of inquiry aiming at prescribing decision-making structures and processes to support progress towards sustainability (Adger & Jordan, 2009; Gibson, 2017). Governance for sustainability in a complex and dynamic world poses a perplexing challenge. Goals are ambiguous, uncertainty is inherent, power is distributed and knowledge is incomplete (Leach, Scoones & Stirling, 2010; Newig, Voß & Monstadt, 2008). In this emerging context, the object of governance is not to steer society towards fixed and detailed preferences but to iteratively and collectively negotiate and redefine actions and goals (Leach, Scoones & Stirling; Meadowcroft, 2008) in order to influence and better cope with social-ecological system change. Core principles of sustainability serve as an ethical compass to deliberation and decision-making and need to be specified according to different contexts, needs and options available.

This chapter aims at outlining a general conceptualization of governance for sustainability in a complex and dynamic word. This requires defining and situating the core concepts of sustainability, governance and complexity. Section 2.2 defines sustainability and its core requirements. In section 2.3, the emergence of governance is discussed as well as its potential as a means for delivering contributions to sustainability. Section 2.4 turns to complexity as a contemporary phenomenon and draws insights on change processes according to complexity approaches. Section 2.5 defines governance for sustainability in a complex and dynamic world. While not a panacea, complexity approaches have undeniable implications for governance and sustainability. Most importantly, they highlight that surprises are possible, the future is open, knowledge is incomplete and direction of system change cannot directly be imposed. Interpretations of change are integral to understanding and identifying sustainability requirements. Chapter 3 reviews different conceptualizations of governance for sustainability

that address the problem and opportunities of complexity in order to specify generic requirements for governance for sustainability. The current chapter first sets the stage for such discussion.

2. 2 Sustainability

What does sustainability mean and imply? Sustainability is an evolving concept that needs to be understood in reference to its context of emergence. Section 2.2.1 highlights the convergence of different realizations that led to a wide adoption of the concept. A usual way to discuss sustainability is by referring to its definition coined in the Brundtland report: "Sustainable development is a development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987, p.43). However, throughout the literature, multiple interpretations and definitions can be found which generated criticism on the concept's ambiguity, fuzziness, and misuse (e.g., Dovers, 2006; Kates, Parris, & Leiserowitz, 2005; Mitcham, 1995; Phillis & Andriantiatsaholiniaina, 2001; Redclift, 2005). Concerns have also been raised about its smokescreen effect obscuring more fundamental processes of capitalist exploitation, and an extension of scientific and technocratic perspectives (Jacobs, 1999; Lascoumes, 2002) process often refered to as ecological modernization (Dobson, 2007). Nevertheless, like other contested concepts, core elements can be identified providing distinction and meaning. Section 2.2.2 and 2.2.3 present different interpretations of sustainability as well as broadly agreed upon core principles.

2.2.1 The emergence of sustainability

The roots of modern understandings of sustainability can be found in notions of progress and development as well as peace, freedom and environment (Kates et al., 2005). Progress implies that history moves in the direction of improved material and life conditions for a greater number of human beings while development refers to a process of directed change (Lélé, 1991). In addition, economic growth was thought of as the chief means to attain societal goals. The emergence of the concept of sustainability can be explained by the realization of the failure of both conventional modern conceptions of progress and development through economic growth. Soon after the period of economic prosperity that followed the Second World War, proponents of progress and development had to face the thorny issue of the widening gap between developed and developing countries (Du Pisani, 2006). Concurrently, there was increased awareness of the existence of natural resources limits. Worldwide recessions demonstrated the potential consequences of resource shortages and dampened expectations of unlimited economic growth (Du Pisani, 2006). Concerns of ecological degradation underlined the necessity to consider relationships between human activities and ecosystems. Beyond the need to consider ecosystem limits, there was recognition that social conditions influence ecological sustainability (Lélé, 1991). Hence, the main idea behind sustainability was to handle environmental protection and economic growth objectives

together in policy making and implementation (Dryzek, 1997). The Brundtland report represents a new interpretation of combined objectives (Theys, 2010). Environmental and development concerns overlap in terms of an increased conception of well-being, a long-term orientation, a concern for the articulation between the local and global levels and finally, through a desire for improved governance (Theys, 2010).

2.2.2 Sustainability conceptions

Drawing on several intellectual streams (Kidd, 1992) and leaving ample room for interpretation, authors have put forward several typologies to try to make sense of how sustainability has been construed. For instance, economists' debates about the possible substitution of natural capital by human capital led to conceptions of *weak* and *strong* sustainability (Redclift, 2005). This interpretation however misses the core idea of sustainability which is to redefine and combine objectives of development and environmental protection, rather than to integrate the environment into the economy or vice versa. Dobson (1996) also puts forward a typology of sustainability conceptions based on four categories: what is being sustained, for what reason(s), privileging what (needs, wants, present, future, humans or non-humans), and to which degree of substitutability between human-made and natural capital. This demonstrates several new possible orderings of priorities.

The now broadly used three pillars approach – environment, social, economy – put forward in the 2002 World Summit on Sustainable Development further expanded (Kates et al., 2005) but also fragmented the definition of sustainability. It addressed a continuing concern of seeing development solely as economic development obscuring concerns of equity, human development and social justice. However, sustainability is not about balancing the three pillars, but about integrating them and seeking overall positive gains and being transparent about the rationale behind the definition of goals and any unavoidable resulting trade-offs (Gibson et al., 2005). It also concerns dealing with dynamics and complexity.

Sustainability has been conceptualized by the goals it seeks to achieve with different time-horizons, by indicators that focus on measuring progress, by identifying underlying values such as freedom or equality that provide standards against which the behavior of individuals and societies can be judged, and by empirical analysis of efforts to strive towards it (Kates et al., 2005). Kates and colleagues (2005) illustrate through a wide literature review of case studies with specified indicators that their number varies between only a few to several hundred. These works demonstrate the popularity of the concept and the rhetoric surrounding it which generated "murmurs of disenchantment" (Lélé, 1991, p. 607). Nevertheless, through this haze, core components of the concept can be distinguished.

2.2.3 Sustainability: core elements and debates

According to Kalaora (2005), sustainability represents a new referent for time and space which calls for new moral sensitivities (Norton, 2005). Sustainability concerns future generations, who are included through the principle of intergenerational equity. The idea of futurity raises several long-term policy obstacles. For instance, Underdal (2010) highlights the problem of asymmetrical uncertainty and sensitivity. Uncertainties related to policy consequences increase further in time and people are less inclined to accept losing short term benefits as the price of gaining long term benefits. An associated problem is the difficult negotiation between short term and long term goals or intergenerational trade-offs. Furthermore, there is debate about substitution. For instance, Gibson and others (2005, p. 104) ask "can gains in human capital (wealth, knowledge, technological advance) substitute for associated ecological losses?" Norton (2005) points out the nebulosity of how far our moral obligations extend in the future. There is also great uncertainty about which of our actions will have true moral consequences for future generations, and we do not know much about what their needs will be (Norton, 2005).

Such uncertainty about the consequences of our actions on the future also brings to the forefront the necessity to consider risks and ecosystem integrity for their intrinsic value or minimally, for the services they currently provide to humans. New conceptions of risk demonstrate that they are distributed without borders (Szerszynski, Wynne & Lash, 1996) and potentially exacerbating vulnerabilities of marginalized communities (Raleigh, 2010). Local issues can have global consequences (Bosselman, Engel & Taylor, 2008) that can be irreversible (Bouni, 1998). Therefore, minimizing risks and applying the precautionary principle as well as humility in regard to incomplete knowledge and inherent uncertainties are key considerations of sustainability (Bouni, 1998). Furthermore, efficient use of natural resources ought to be considered in a context where additional demands of humans who presently suffer from wellbeing deficiencies need to be met and ecosystems are already under significant stress. Moreover, uncertainties related to human interventions, including actions to restore or rehabilitate ecosystems, are involved.

Another core principle is intragenerational equity. As discussed earlier, distribution questions were at the centre of discussions about new interpretations of development. Sustainability refers to the willingness to consider in priority the essential needs of poor, marginalized and vulnerable populations and territories (Theys, 2010). Lack of key prerequisites for a decent life had proven to be a threat to ecological conservation (International Union for Conservation of Nature and Natural Resources, 1980).

Sustainability also has democratic implications. It calls for more open, transparent, and participatory processes as a response to uneven power distribution, lack of legitimacy and credibility of public action, and the presence of uncertainties and complexities (Theys, 2003).

Gibson's (2005) sustainability criteria (see Table 2.1) illustrate well these principles.

As a useful starting point, these principles offer an ethical compass for discussing ways forward. However, they need to be specified according to the context, needs and options available to communities. These principles also highlight substance requirements of sustainability as well as procedural requirements related to democratic processes such as public participation broadly defined.

Table 2.1: Requirements for progress towards sustainability

Socio-ecological system integrity - Build human-ecological relations that establish and maintain the long term integrity of socio-biophysical systems and protect the irreplaceable life support functions upon which human as well as ecological well-being depends.
Livelihood sufficiency and opportunity - Ensure that everyone and every community have enough for a decent life and opportunities to seek improvements in ways that do not compromise future generations' possibilities for sufficiency and opportunity.
Intragenerational equity - Ensure that sufficiency and effective choices for all are pursued in ways that reduce dangerous gaps in sufficiency and opportunity (and health, security, social recognition, political influence, etc.) between the rich and the poor.
Intergenerational equity - Favour present options and actions most likely to preserve or enhance the opportunities and capabilities of future generations to live sustainably.
Resource maintenance and efficiency - Provide a larger base for ensuring sustainable livelihoods for all while reducing threats to the long-term integrity of socio-ecological systems by reducing extractive damage, avoiding waste and cutting overall material and energy use per unit of benefit.
Socio-ecological civility and democratic governance - Build the capacity, motivation and habitual inclination of individuals, communities and other collective decision-making bodies to apply sustainability principles through more open and better informed deliberations, greater attention to fostering reciprocal awareness and collective responsibility, and more integrated use of administrative, market, customary, collective and personal decision-making practices.
Precaution and adaptation - Respect uncertainty, avoid even poorly understood risks of serious or irreversible damage to the foundations for sustainability, plan to learn, design for surprise and manage for adaptation.
Immediate- and long-term integration - Attempt to meet all requirements for sustainability together as a set of interdependent parts, seeking mutually supportive benefits.

Source: Gibson et. al., 2005

2.2.4 Sustainability and change

Sustainability concerns the need to change how we make decisions by broadening the scope of considerations and engaging more participants in the necessary learning and decision making. Therefore, it implies changes in substance and process. Due to acknowledged limits of dynamic and complex social, biophysical and socio-ecological systems about which we have highly imperfect understanding, sustainability means that we ought to rethink how we make decisions and reconfigure our governance and institutional structures in order to put the possibility of surprise at their core. Finally, sustainability is about spurring change and

redirecting present unsustainable pathways. For instance, the Brundtland report (1987) explicitly states in its objectives to "change the quality of growth" as well as work on "reorienting technology" (p.49). Sustainability implies "recognition of both inviolable limits and endless opportunities for creative innovation" (Gibson et al., 2005, p. 85). Since sustainability requirements are context specific but also need to address globally unsustainable trends, generating change towards sustainability is like two sides of a coin. Finally, as any concept, it is influenced by its broad historical context. Sustainability today is underlain by commitment to positive improvements in a world of complexity and dynamics, all of which affect the agenda for, and possibly appropriate approaches to, governance.

2.3 Governance

In this section, the emergence of governance as an explanation of changes that have taken place in how political decisions are made and influenced is discussed. Focused on societal goals, governance can be understood as organizing discussions and actions to be pursued.

2.3.1 From government to governance

Within the field of political science, governance has been described as changing patterns of interaction between state and society entailing a "new method by which society is governed" (Rhodes, 2007, p. 1246). Governance is sometimes portrayed as a blurring of boundaries between the state and society (Stoker, 1998), but represents perhaps more a renegotiation of roles and responsibilities due to changing circumstances and values. Depending on the perspective, some of the changes in power distribution can be seen as the hollowing out of the state (Rhodes, 2007) or can represent a form of adaptation of governments (Pierre & Peters, 2000).

According to Rhodes (1996, p. 660), governance represents a new form of social and political interaction qualified as "self-organizing, interorganizational networks". Studying environmental governance, Lemos and Agrawal (2006) de-emphasize the novelty of multiple players in decision making, and note rather a hybridization of governance arrangements going beyond the conventional locus of markets, states, and more recently communities. According to Lemos and Agrawal (2006, p. 311) "the emergence of these hybrid forms of environmental governance is based upon the recognition that no single agent possesses the capabilities to address the multiple facets, interdependencies, and scales of environmental problems". Similarly, Kooiman (2003) refers to an amalgam of governing efforts by public as well as private actors taking place at different levels in response to growing diversity, dynamics, and complexity.

Across the literature, several explanations are given for the rise of governance. Pierre and Peters (2000) highlight the financial crisis of the state, the ideological shift towards the market,

globalization, social change and increased complexities, new sources of governance, the emergence of the New Public Management and an enduring concern for political accountability. Corporate globalization and the rise of multilateral trade institutions as well as more collaborative transparent forms of policy deliberations all participate in increasing complexity beyond the capacity of any traditional institution. The most significant implication of governance as a phenomenon is that power to pursue societal goals is distributed among several actors located at different and interlinked levels.

Critical perspectives on governance warn against impositions by governments or the neoliberal agendas (Bäckstrand et al., 2010). For instance, the concept of governmentality underlines that particular perspectives become institutionalized strategies of power and regulation (Leach, 2008; Theys, 2002) and some scholars argue that governance is part of the processes of globalization and the dominance of the neoliberal order (Bäckstrand et al., 2010). While neoliberalism comprises a wide range of ideas, it calls for, among others, minimum state intervention and the privatization of enterprises owned by the state and the services state provides. However, governance can also be a means to enhancing democracy and sustainability. This last focus is put forward in this dissertation.

2.3.2 Defining the concept

Governance usually involves the actions of the state, but goes beyond by including other actors as well as their relationships in the process of governing (Adger & Jordan, 2009). Such actors can be the private sector, different civil society organisations such as unions or non-profit organizations, and individual citizens. Governance also refers to "the totality of 'mechanisms' and 'instruments' available for influencing social change" (Lafferty, 2004, p. 5).

Some forms of governance, such as governance for sustainability as discussed in this dissertation (see section 2.5), are understood as being desirable for their potential to enhancing democracy or the sustainability agenda and associated structures and processes. As will be further discussed in chapter 5, scholars of community forestry have demonstrated that such local initiatives can serve to enhance democracy, ecological integrity and sustainability.

Good governance first appeared in the international development literature (Theys, 2003). It represented a shift in perspective from *getting the policies right* to putting in place preconditions for development and poverty reduction (Grindle, 2007). The concept of good governance represents a shift from an outcome to a process focus (Pierre & Peters, 2000). It has now been broadened to other fields of application and associated with a variety of criteria such as accountability, transparency, and participation or inclusiveness (Meadowcroft, 2008). These criteria seem particularly important in the context of cynicism about politics (Rosenberg, 2007; Stoker, 2009) and are recognized objectives in the pursuit of sustainability.

Empirical work on governance has focused on different scales and levels such as the global, national, local, and metropolitan levels, usually based on jurisdictional or administrative boundaries. Relevant governance boundaries have also been studied depending on natural attributes such as landscapes or watersheds and some institutions have been established on these grounds. Other governance studies focus on social constructions of localities through their relationships with the environment. Governance of social-ecological systems (SES) or territorial governance are such examples (e.g., Chiasson, Andrew & Leclerc, 2008; Folke et al., 2005; Ostrom, 2009). For instance, Ostrom (2009) put forward a framework based on interactions between resources, resource systems, governance systems and users.

2.4. Complexity

Complex and complexity are words that are used very loosely in scientific literature and in common language. In many instances, complex is used as an adjective to describe today's world and therefore refers to a contemporary phenomenon. Through different approaches, a diversity of relationships to complexity are put forward from reverence to new grounds to colonize (Jackson, 2008). Reverence implies humility towards complexity as an irremediable intrinsic trait of the world. In other cases, complexity is perceived as a human limit that ought to be pushed in efforts to inhabit this new space. This demonstrates unsettled grounds on the locus of complexity in which a middle ground response including reverence and advancing human limits to better respect and engage with complexity might be a way forward.

Complexity is more often used to distinguish it from what it is not, that is, simple or even complicated. Drawing boundaries, classifying, and categorizing are, of course, the purpose of language. However, in the case of complexity, what is enclosed is often what eludes us. Complex situations or complex problems are often qualified as being *wicked*. They cannot be managed with simple solutions nor can they be clearly outlined because they involve to many ill-understood dynamic interactions, change in non-linear ways with long-time horizons (Rittel & Webber, 1973) and are subjected to many random interactions and surprising results of aggregate behaviour (Kay, 2008).

This section aims to define complexity as a contemporary phenomenon as well as a concept and approach in order to highlight implications for governance for sustainability. Complexity approaches offer an alternative view of change that moves away from linearity and efficient causality. Tensions in complexity approaches are also highlighted; these include the persistent dualism between subject and object. The aim is not to attempt to resolve these issues but to understand implications for governance for sustainability. In addition, this section on complexity serves as theoretical background to understand in chapter 3 how different conceptualizations of governance for sustainability use and address complexity.

2.4.1 Complexity as a phenomenon

It is also worth mentioning that in a dynamic and complex world, it is not surprising that old debates about change and notions of causality resurface. Around 3000 years ago, Parmenides argued that reality was stable without change (being) while Heraclitus defined reality as becoming through flux and change (Stacey, Griffin & Shaw, 2000). Similar, quite simplistic debates were also captured in sociology for instance with statements presenting change as a mask for an unchanging reality by Bourdieu as a response to Mendras optimistic view that it is a good thing that everything changes (Trémoulinas, 2006). Perspectives on change vary according to historical contexts.

Societal complexification refers to major transformations in technology, economics, politics and culture that have taken place in the last decades. Changes such as the computer revolution, post-industrialization (in the wealthier countries) and globalization have shifted the organization of society into a global society (Castellani & Hafferty, 2009). The global society is highly dynamic as well as interconnected. Amongst its consequences are environmental collapses, global economics as well as cultural and political conflicts (Castellani & Hafferty, 2009). The global society is also characterized by environmental and social changes occurring at an accelerated rate as well as an increased pace of developments in science and technology.

The field of sociology has tried to make sense of this emerging world. Authors have emphasized different dimensions of what they refer to as the modernization process. Amongst many, explanations of modernity can be identified respectively as rationalization (Weber), individualization (Simmel), functional differentiation (Durkheim), domestication of nature (Marx) (Castellani & Hafferty, 2009). Within modernity, tradition is questioned and faith in scientific and technological progress is to the forefront (Beck, Giddens & Lash, 1994).

Later sociological theories addressed the transition from modernity to post modernity. For instance, Beck (1994) describes processes of reflexive modernization understood as the transition phase between the industrial society and risk society in which the premises and contours of the industrial society are ceding way to another modernity. Undisputed social, scientific and technological progress, modern rational planning and the related institutions are called into question in late and post modernity (Beck, 1994; van Ham, 2001). In post modernity, the metamorphosis of the state in which the authoritarian state gives way to a negotiation state (Beck, 1994) relates to the shift from government to governance discussed earlier.

What is clear from these different perspectives on today's complex and dynamic world is that past experiences are not as likely to be useful predictors of future events as they once were (Innerarity, 2012). Inseparable from this depicted context are new emerging ways of thinking about science since its usual tools cannot adequately address contemporary societal issues. One

of the ways forward is systems thinking. Complexity approaches are systems thinking with a more explicit focus on change.

2.4.2 Complexity as an approach

Embedded in the societal changes mentioned above, new developments in multiple sciences (biology, physical chemistry, physics, psychology, etc.) emerged in the 20th century slowly outlining systems thinking as an approach to understanding the world. Several approaches can be found under the umbrella of "complexity studies" as demonstrated by Francis (2006). However, there is no unified theory. Rather, the various perspectives represent complementary ways to study complexity focused on properties of complex systems (Peter & Swilling, 2014). Therefore, complexity as an approach refers to scientists' orientation to problems on which they work with no consensus on its meaning but a cluster of related ideas (emergence, self-organization, feedbacks, etc.) that establishes common intellectual grounds and languages for discussion (Lane, 2006). The contours of complexity as an approach are usually described in contrast to traditional approaches to sciences also referred to as normal, classical or mechanistic science.

2.4.2.1 Traditional approaches to science and the need for a new perspective

Several societal changes and controversies, most notably in the field of environment, have exacerbated enduring scientific issues related to uncertainties, the changing nature of risks, and the goal of objectivity (Jastremski, 2010, 2013). The following discussion highlights epistemological, ontological and causal postulates of traditional approaches to sciences in order to better understand complexity approaches.

Knowledge and reality through simplification

Major differences between traditional approaches to science and systems thinking concern the organization of knowledge generating processes and their underlying beliefs. Traditional approaches to science aim to simplify and to control reality (Morin, 2005). They aim to dissect wholes into parts in order to better understand them with the belief that parts can be sewn back together to recreate reality. In other words, wholes are equal to the sum of the parts. Such emphases have been labelled mechanistic, reductionist or atomist and are under the Cartesian paradigm (Capra, 1996). They are also related to the period of Enlightenment characterized by views of individualized human consciousness and the belief in our ability to build and unbuild a world without limits (Vitek & Jackson, 2008).

According to the Cartesian paradigm, the scientific method is believed to be objective, which implies that the findings are independent of the observer and the process of knowing (Capra, 1996). It is presumed that truth or reality could be discussed based on scientific facts that

emerge from simplification. Theories are either true or false, or following Popper (2002), falsified or unfalsified at that moment.

Dividing problems into different components often led to mistaking this arbitrary division of reality as being reality itself (Morin, 2005). Under such a simplification paradigm, a disjunction between scientific knowledge and philosophical reflection can be noticed (Morin, 2005). Methods are used to structure reliable observations in experiments secluded from their context so that the process and results can be reproduced for validity requirements in a quest for scientific objectivity and truth. Hence, knowledge is less meant to be thought of and discussed; rather it ought to be captured in informational memories and manipulated by anonymous powers (Morin, 2005).

Linear causality for prediction

By increasing knowledge of the parts, researchers aim to enhance grounds for predicting what will happen and controlling our destiny (Midgley, 2000). Time has no importance since the past, the present and the future are all repetitions of the same pattern (Stacey, Griffin, & Shaw, 2000). The main assumption is that if we can figure how things work, their mechanics, we will be able to change them to our advantage (Midgley, 2000). It was postulated that parts behave predictably through efficient causality (Stacey, Griffin & Shaw, 2000) – that is, *if x, then y*. In this view, chance plays no part (Toffler, 1984). More importantly, the behaviour of all phenomena was held to be driven by universal linear laws in a deterministic way towards states of equilibrium. No novelty occurs under such patterns of change (Stacey, Griffin, & Shaw, 2000).

Several authors harshly denounce reductionist approaches. For instance, Mol and Law (2002, p. 4) underline the violence that is exerted when "single orders are shaped to tame complex realities." The "revolt against simplification" (Mol & Law, 2002, p. 2) arises in part from fears that belief in Enlightenment rationality leads to the dangerous assumption that science is able to discern good from evil and to determine who is to blame. This false optimism and its injustices as well as ecological disasters have resulted in several critiques and responses.

2.4.2.2. Systems thinking and complexity approaches

Systems thinking and complexity approaches aim at being complementary to traditional sciences rather than replacing them. Systems thinking is even said to be one approach to simplification (Waltner-Toews, Lister & Bocking, 2008). Since there are multiple interpretations and uses of systems thinking and complexity approaches, the following will highlight the main underpinning ideas and tensions.

Comprehensiveness for intervention

Systems thinking and complexity approaches provide a common language and methodology to frame situations and discuss our understanding (Kay, 2008). This is made possible through isomorphism; that is, universal laws and principles that apply to systems in general. Comprehensiveness is the main ideal of systems thinking and complexity approaches apply no matter whether systems are considered as real or socially constructed (Midgley, 2000). However, complexity thinking does not anticipate possible completeness of knowledge on reality (Morin, 2005); nor does it assume that everything is connected in a unified tissue of existence (Capra, 1996; Castellani & Hafferty, 2009). Also, the aim of systems thinking is to translate knowledge into action (Kay, 2008; Midgley, 2000), which demonstrates a shift in the role of science from mere (objective) observation to intervention.

From parts to wholes

One of the core principles of systems thinking is to recognize the links and patterns between or among entities or interactions. It represents a shift in focus from parts to wholes and from objects to relationships and interactions (Capra, 1996). Emphasis is on connectedness, relationships, interdependence and context. According to a systems perspective, the essential properties of systems (i.e. emergent properties), are properties of the whole. These cannot be found in the individual parts but arise from the interactions and relationships between and among the parts. This implies that systems cannot be understood by analysis (Capra, 1996). Hence, properties of the parts can only be understood within the context of the encompassing whole. The focus is on the principles of organization and dynamic behaviour rather than on building blocks. For instance, the parts of a machine support each other in a functional whole while parts of a (living) system also exist by means of each other; they produce one another (Capra, 1996). They are self-reproducing or self-organizing systems.

According to Capra (1996) changes in emphasis and tensions between mechanistic and holistic perspectives have been a recurring theme throughout history and can be traced back to the dichotomy between substance (matter, quantity, and structure) and form (order, pattern, quality). Explaining what something is made of has shifted towards understanding what its pattern is. As a matter of fact, quantum physics highlights that there is no matter, only connections (Capra, 1996).

Holarchy

The term holarchy was coined by Koestler in 1967 (Kay, 2008) in order to define how systems can be understood as nesting within encompassing systems. It avoids the polysemous concept of hierarchy (Lane, 2006). Holons are wholes that are contained in holons, which serve as contexts that influence and constrain (Kay, 2008) or empower behaviour. Each holon is characterized by a particular spatiotemporal scale and the higher the level of the holon, the

more extended are the associated spatiotemporal scales. They exhibit upward and downward causation.

Generally, different systems levels exhibit different properties and represent different levels of complexity. Depending on the ontological perspective of systems put forward, holarchies can be understood as being real or a human construct. Following the latter, what is contained in holons is a human projection for its intended uses (Capra, 1996; Kay, 2008). Therefore, while we tend to depict systems as being above and below there is no hierarchical arrangement. Nevertheless, the concept of nested holarchies tends to favour attention to vertical differences in scales rather than horizontal connections among systems.

Multiple perspectives and alternative futures

If comprehensiveness cannot be achieved due to the inherently unquantifiable gap between knowledge and reality as well as due to explanation dependent on the observer's position, purposes and values, it follows that theoretical and methodological pluralism are possible (Midgley, 2000). There is no full truth but multiple perspectives or lens. For instance, there are multiple versions of the good. Different orders "do not always reinforce the same simplicities or impose the same silences" (Mol & Law, 2002, p. 7). Therefore, values, concerns and knowledge of stakeholders and actors need to be acknowledged and made central to any inquiry (Kay, 2008). Non-equivalent perspectives and evaluations of situations will result in different strategies toward the future (Kay, 2008). In fact, multiple possible, plausible and desirable futures need to be acknowledged. Public participation and collaboration are emphasized as processual requirements of decision making and inquiry under the complexity approaches. What remains contentious is how and for what reasons various perspectives are legitimized and how they may best be integrated.

Self-organization as causality and multiplicity

Self-organization can be understood as the central concept of causality in complexity approaches. Accordingly, effects are their own causes. In Pascal's words (1846, p.108):

> all things are either caused or causes, assisting or being assisted, mediately or immediately; and all are related to each other by a natural and imperceptible bond, which unites together things the most distant and dissimilar; I hold it impossible to know the parts, without knowing the whole, and equally so to know the whole, without knowing the parts in detail.

In other words, complex systems are referred to as displaying internal causality, which means that parts and wholes provide meaning to each other. In contrast to linear or efficient causality, complex causality is dynamically circular (Capra, 1996). Therefore, complexity approaches represent an alternative way to explain change and its underlying processes. The phenomena of self-organization allow us to have a sense of the "identity" of the system, particularly in how it

reacts to disturbances (Kay, 2008). It concerns how the patterns of relationships are internally structured and change through time (Kay, 2008).

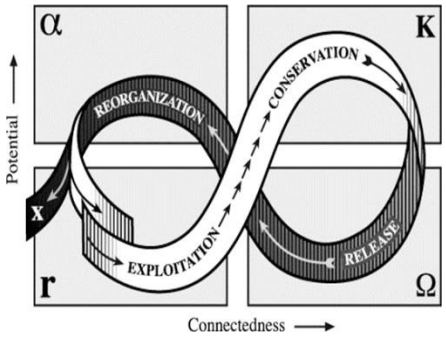
According to Mol and Law (2002), multiplicity concerns the coexistence of different worlds at a single moment. Multiplicity refers to multiple causes that can serve to explain a phenomenon. Causality is not singularly located.

Types of changes and their unfolding

Authors of complexity approaches have emphasized two types of change. One consists of co-evolution of complex adaptive systems while the other refers to abrupt changes and tipping points or bifurcations (Walby, 2003). The first emphasizes complex systems' relationship to the context or environment and how they are both mutually influential. The latter attracts our attention to the fact that there are certain thresholds that when pushed beyond, will result in a system abruptly reorganizing. Such change can be explained by positive or negative feedback loops that amplify the direction of change in systems. When new structures emerge, the system may move into a different organizational state formed (conceptually) around an "attractor" (Kay, 2008). How the story of that transformation unfolds will depend on the history of the system and its constituent subsystems as well as on the external conditions and dynamics. Therefore, complex systems are undeniably unpredictable. This is also why they are called adaptive since they are constantly adjusting in the face of evolving stresses (and opportunities) and won't always react the same way.

In addition, complex systems dynamics are often represented (in a simple heuristic) by a four phase cycle. The fore loop consists of a movement from rapid growth to the conservation phase depicted as gradual increase in rigidity, loss of flexibility and novelty eventually leading to collapse (Walker & Salt, 2006). Changes in the fore loop are usually much slower than those that occur in the back loop. The back loop refers to release and reorganization. It is characterized by uncertainty, novelty and it represents opportunities for change (Walker & Salt, 2006).

Figure 2.1 Adaptive cycle



Source: Resilience Alliance, 2016: http://www.resalliance.org/adaptive-cycle

The direction of change

The direction of change in complexity approaches is usually understood as being irreversible (Slocombe, 1990). It also brings to the forefront teleological questions (i.e. understanding a phenomenon by the purpose it is serving or the end to which it is moving) which have often been deemed unacceptable in science. For instance, Lovelock's Gaïa hypothesis of Earth as a self-regulating being was criticized since it was interpreted as being purposeful (Capra, 1996). However, through his Daisyworld model, Lovelock was able to demonstrate that nature can be mindful and intelligent without overall design or purpose (Capra, 1996). While teleology provides an uncontroversial explanation of a tree that evolved from a seed, applying such reasoning to social systems raises concerns of determinism and pre-established stages decided upon by an unknown initiator. Social systems are made of individuals able to reflect on their situation and actions, with rights and values. Furthermore, "human societies are able – at least in principle – to translate such normative convictions into collective action in order to produce and distribute collective goods" (Duit et al., 2010, p. 365). Without such capacity for forward-looking intentional change (or at least forward-looking efforts to influence change in a desired direction), putting democracy in place would not have been possible. Hence, societies and ecosystems are fundamentally different (Duit et al., 2010) and the role of humans cannot be equated to other species.

Stacey, Griffin, & Shaw (2000) propose a classification of teleological causes, or final causes according to Aristotle's typology, to understand how complexity approaches have been thought of in management studies. Several reasons for system movement are identified in management literature: an optimal arrangement, a chosen goal, a mature form of itself, and continuity and transformation of its identity (Stacey, Griffin, & Shaw , 2000). Stacey, Griffin, & Shaw (2000) propose a Transformative Teleological framework based on this last purpose in which they also question Adaptive Teleology for its assumptions of actions for the sake of survival and freedom that arises by chance constrained by competition.

Path dependence

Although path dependence was originally developed in economic theory, it is now widely referred to elsewhere, such as in the fields of management and organizational studies, innovation studies, ecology, and in more specific literature on the quest for sustainability. A wide variety of complex systems demonstrate path dependence. The most well-known examples of path dependence are probably in the field of economics of technology with studies by David and Arthur on the QWERTY versus Dvorak keyboard or the VHS versus Beta video tape recorders (Magnusson & Ottosson, 2009). The general implication of these studies is that history is necessary to explain the adoption of a certain technology. The main concern of researchers in the field of economics was to understand why less effective technologies were chosen in contradiction to standard neoclassical theories that anticipate optimal choices (Garud et al., 2009).

A system is path dependent if its present state can be explained by prior events that favoured one package of characteristics over others, which means that history matters (Magnusson & Ottosson, 2009). In other words, the emergence of novelty is a path dependent process (Garud et al., 2010). Path dependence is a dynamic process that is irreversible, or difficult to reverse, that produces contingent outcomes depending on a specific sequence in which events unfold (Donnely, 2007). In social systems, it suggests that the prevailing direction of change is often determined by powerful narratives within which power and knowledge are interlocked (Leach, Scoones & Stirling, 2010). Through time, ideologies, institutions and other structures, power relations, dependencies and people's sense of themselves can be entwined, mutually reinforcing each other (Leach, Scoones, & Stirling, 2010). Following the concept of path dependence, self-reinforcing mechanisms often lock actors in paths whose evolution is determined by contingencies (Vergne & Durand, 2010). This can imply that only significant and typically exogenous shocks can allow actors to break free (Vergne & Durand, 2010).

Path dependence is interpreted differently in the literature. For instance, Magnusson (2009) identifies *weak* and *strong* notions of path dependence within the history of technology. Regarding institutional theory, Ebbinghauss (2009) distinguishes two different interpretations that he captures through the metaphors of road juncture and a trodden trail. The road juncture suggests different decision points that structure the unfolding of the future. The trodden trail refers to the process of adopting social norms until a threshold is attained, or in other words, diffusion from the micro-level.

As mentioned by Garud and colleagues (2010), path dependence is a useful concept to understand why change can be difficult, but does not necessarily shed light on the processes that induce change. Additionally, it is criticized for subordinating agency to past events that shape or determine the present and the future (Garud et al., 2010; Stack and Gartland, 2003). Based on these arguments, advocates for path creation focus on explaining how human agency shapes and interacts with the environment (Garud et al., 2010). However, this approach does not allow us to move beyond modern dichotomies such as determinism versus social constructivism or macro versus micro and structure versus agency (Donnely, 2007). However, authors such as Giddens (1984) through structuration theory have emphasized that an agent's actions emerge in dynamic tension with social structures.

2.4.3 Complexity approaches' tensions

Several tensions can be highlighted in complexity approaches. First, there is subject/object dualism. Subject/object dualism implies that we are external to the world; that the observer is not involved in constructing what is observed. Systems thinking and complexity approaches have identified the issue of subject/object dualism in traditional sciences and have attempted to put forward solutions. For instance, Midgley (2000) using process philosophy put forward the

boundary concept in order to attract our attention to judgements on what is inside or outside the system.

Another significant tension in complexity approaches concerns the role of humans in systems. Perspectives vary between humans being bound by the rules of behaviour in complex systems to authors that argue that anticipation and conscious intent provides means to potentially influence the direction of system change (Garud et al., 2010).

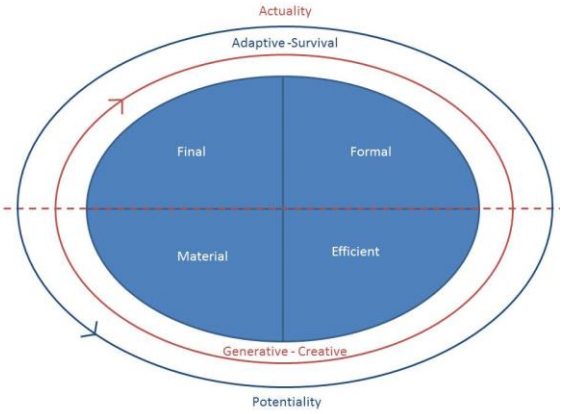
Another tension in complexity approaches concerns differing ontological perspectives on systems. These are particularly present when considering social-ecological systems. Ecologists tend to view their interpretations of nested systems as portraying basic biophysical reality (Francis, 2011). However, social scientists understand systems as social constructs in flux. Some authors put forward typologies of reality such as artificial reality or tangible reality (Whitling, 2002), which illustrates the diversity of ways to consider reality and tempers extremes between "critical realists" and "social constructivists".

While complexity approaches offer an alternative to linearity, there exist other causality frameworks. The most popular is probably Aristotle's four causes or explanations of things (material, efficient, formal and final)[2] (Stacey, Griffin, & Shaw, 2000). For Aristotle, causes were not a characteristic of the world or of a system. They represented how humans experience change (Ruben, 1992).

As discussed earlier, direction of change is a delicate issue in complexity approaches. Among complex systems theorists, the extent to which complex systems can be directed varies between being an illusion (Rip, 2006) to something that can be influenced or modulated to a certain degree (Loorbach, 2007) therefore influencing conceptions of governance for sustainability. This will further be explored in chapter 3. Aristotle's four causes framework suggests that without vision or an end, change cannot be experienced. The following figure illustrates Aristotle's four causes. Although it contrasts with a systems perspective, Aristotle's framework is interesting because it integrates human visions and ideas with material explanations.

[2] Efficient causality is how we usually think of causality due to the Cartesian paradigm. It refers to *if x, then y* relationships in a linear and direct way. It is also described as a change-initiator (Ruben, 1992) referring to agency and its tools and capacities. A material cause refers to a source of becoming that is the material of which something is made. For instance, a sculpture can be explained by the material(s) it is made of. The formal cause is the form or vision of what something is or ought to be. Lastly, the final cause consists of the end for which something is done such as health or sustainability.

Figure 2.2 Aristotle's Four Causes



Source: Modified from http://ifelthat.blogspot.ca/2010/12/aristotles-causality.html

2.5 Governance for sustainability in a dynamic and complex world

This section brings together implications of sustainability, governance and complexity approaches in order to put forward a specific conception of governance for sustainability. According to Adger and Jordan (2009), there are two main perspectives in governance studies on sustainability. The first consists of empirical descriptions and assessments to see how sustainability is interpreted and pursued. According to this perspective, scholars focus on governance *of* sustainability. The second broad perspective, informed by the former, consists of studies on governance *for* sustainability which have a normative interpretation and seek to identify and prescribe a governance system able to move society towards a sustainable pathway (Adger & Jordan, 2009).

2.5.1 Complexity approaches' implications on governance for sustainability

Complexity approaches have several implications for how we can understand governance for sustainability. In complex systems, catastrophic behavior and inherent uncertainties are the norm (Kay et al., 1999). Complexity approaches highlight the limits of usual ethical frameworks for deciding "best" ways forward. For instance, a consequentialist perspective, which implies that we judge what is right or wrong by the consequences of our actions (Shaw, 2006), is insufficient due to incomplete knowledge about systems dynamics. Additionally, a rule of law ethical framework, which consists of getting the rules right as the sole requirement to guide decisions (Lyons, 1984), is also unsatisfactory since systems are constantly changing and contexts vary significantly. Therefore, sought purposes seem to take more importance as well as prudence and space for context specificities.

Sustainability literature recognized early on the need to favour humility as well as precaution by prioritizing efficient use of resources and safe fail options in decision making. As discussed in section 2.2.3, these notions were integrated as a core principle in several sustainability

frameworks and were also mentioned in the Brundtland report. However, the persistent issue concerns governance responses continuing to insist upon solutions favouring stability, equilibrium and predictable, controllable risks (Leach, Scoones, & Stirling, 2010).

Complexity approaches generally highlight the need for public participation in decision making and public involvement in inquiry. This overlaps with the sustainability requirement for democratic governance although with occasionally differing rationales. In complexity approaches, participation is usually considered a necessary criterion for comprehensiveness of systems understanding (Midgley, 2000).

Change is constrained by path dependence. Therefore, choices need to avoid sole alternatives that severely constrain future options. Flexible and diverse alternatives are required.

Systems don't have a purpose or an end (unless change is considered an end in itself). That is in no way contradictory to humans putting forward their intentions by negotiating societal goals. It is the expectations that we have of attaining these goals and our approaches to doing so that need to be adjusted.

Agency and power are distributed (Newig, Voß & Monstadt, 2008). This is even more the case for sustainability issues which cut across scales and usual political and administrative silos. As mentioned by Meadowcroft (2008), distributed power is not necessarily something negative and stems from the often useful diversity of agents able to influence structures that also constrain and enable their actions. This is not an era of heroic politics where one sole person can be identified as bringing about political change (Innerarity, 2012). Governance is, in part, a phenomenon of agency distribution, though not necessarily an adequate comprehensive and equitable one.

The future is open and emerging. Future events cannot be predicted with confidence. Strategies constantly need to be adjusted to changing circumstances that will also affect goals. This implies some form of iterative process in setting and pursuing goals as well as progress monitoring and adaptive response. Governance for sustainability does not refer only to actions or policies that will move society towards a sustainable pathway. It also refers to how those pathways need to be collectively negotiated and how goals are defined, improved, and redefined (Leach, Scoones & Stirling, 2010; Meadowcroft, 2008). Hence, governance for sustainability is a dynamic process and more importantly a political process.

The division between ontological perspectives of systems as real or social constructs results in irresolvable contradictions for any governance process (Francis, 2011). In addition, subject/object dualism often leads to strategies objectifying "real and neutral" systems in order to fix them (Smith & Stirling, 2008). Although there is increased recognition of possible social

interpretations of systems, Smith and Stirling (2008, p. 160) point out concerning socio-technical systems that "confusion prevails between reflexive interpretations of socio-technical systems and objectifying injunctions for authoritative interventions". Transparency about the goals pursued and the processes used as well as identifying assumptions are possible ways forward as will be further discussed in chapter 3.

Finally, there are multiple types of change. Complexity approaches emphasize co-evolutionary and abrupt changes. Since sustainability is simultaneously about change and the maintenance of desired qualities in a constantly fluctuating environment, change has to be at the core of governance for sustainability. Leach, Scoones & Stirling (2010) put forward four dynamic properties of sustainability - stability, resilience, durability and robustness - as sufficient requirements for responses to different temporalities of change. However, the framework does not identify generic sustainability criteria to guide responses beyond considerations of temporality of change.

2.6 Conclusion

In the first sections of this chapter, sustainability was discussed as emerging from different fields and representing a new interpretation of combined objectives of development and environment. Core elements of sustainability and their challenges were then presented as well as the overlaps between sustainability and change. In section 2.3, governance was described as a contemporary phenomenon as well as a desired means for sustainability. In section 2.4, complexity was discussed as a phenomenon that underlines the need for renewed procedures for public action. Complexity approaches offer a new interpretation to understanding change that provides an alternative to linearity, simplistic solutions and undue confidence. While not a panacea, complexity approaches have undeniable implications for governance and sustainability. Complexity approaches highlight that surprises are possible, the future is open, knowledge is incomplete and the direction of system change may be influences but cannot be imposed. Sustainability calls for change as well as for maintenance of desired qualities in a continually fluctuating environment. Therefore, interpretations of change are integral to understanding and identifying sustainability requirements. Chapter 3 will provide an overview of different conceptualizations of governance for sustainability that address the problem of complexity in order to specify generic requirements for governance for sustainability.

CHAPTER 3 - GOVERNANCE FOR SUSTAINABILITY: CONCEPTUALIZATIONS AND REQUIREMENTS

3.1 Introduction

How is intentional change understood in different literatures relevant to governance for sustainability and what are the implications? How can these implications be transferred into a governance for sustainability framework? The purpose of this chapter is to respond to these questions. This chapter reviews academic literature on the resilience approach and transformation in social-ecological systems (SES) (section 3.2), sustainability transitions and innovation studies (section 3.3) as well as futures studies[3] (section 3.4) in order to assess how sustainability, governance, complexity and change have been addressed. It also incorporates critical and constructivist perspectives on these approaches to sustainability. However, the boundaries between bodies of literature often overlap. For instance, several research symposia have been organized throughout the last decade bringing together researchers from international development studies, social-technical systems studies as well as the Resilience Alliance (e.g., Leach, 2008; Leach et al., 2012; West et al., 2014; Westley et al., 2011).

The chosen bodies of literature reflect different categories of knowledge relevant to governance for sustainability. Futures studies are increasingly linked to sustainability governance approaches and recognized as a useful and necessary tool in the context of complexity and an increased rate of change (Leach, Scoones & Stirling, 2010; Mulvihill & Kramkowski, 2010; Mutombo & Bauler, 2009; Robinson, 2003; Rotmans, van Asselt & Anastasi, 2000; Swart, Raskin & Robinson, 2004). This fact is exemplified by futures studies' presence in both the resilience, and transitions and innovations toward sustainability, approaches. Futures studies emphasize requirements for rigorous inquiry into futures as additional ground to improve decision making. The resilience approach generally favours building capacities to manage uncertainties and change in order to stay within safe operating spaces for human survival. Maintaining and increasing the capacities for change are crucial. The transition towards sustainability literature emphasizes intentional change through consensus and networks. Following the overview of each approach, lessons in terms of governance for sustainability are identified as well as their generic requirements.

A common challenge identified in the literature relates to linking intentional change to sustainability substance and process requirements. The need for generic requirements for sustainability emerges as a way to make sure that there are no omissions in key considerations. As mentioned by Gibson (2017), "the absence of explicit criteria is an indicator of unquestioned adherence to established practice or fear that the underlying reasoning would not withstand scrutiny" (p. 21).

[3] Futures studies is used as an encompassing term for a body of literature referred to through different approaches and methods (e.g. scenario building, foresight, etc.).

Thus, sustainability assessment and more specifically Gibson's (2017, 2005) generic requirements for progress towards sustainability and criteria specification approach is discussed as a useful way to address the challenge (section 3.5). Sustainability assessment overlaps with, and plays a role in governance for sustainability (Gibson, 2017). Sustainability assessment criteria allow for open critical observation of underlying reasoning, guides comparative evaluation between options and pathways, and provides discernment from prevailing practices (Gibson, 2017). Generic requirements will be specified for the application to forest communities in chapter 5.

3.2 Resilience approach

Resilience captures audiences in academia as well as in the policy and popular world. For instance, since 2013 a scientific journal titled *Resilience* has been dedicated to the idea of resilience at the international policy level. The following presents the context of emergence of the resilience approach, its definition, as well as how it addresses the core questions of governance for sustainability (governance towards what and for whom, governance of what and through which processes) with specific attention to the problem of intentional systemic change through transformation in social-ecological systems (SES).

3.2.1 Context of and for the resilience approach

The term resilience was introduced in 1973 by C.S. Holling (Folke, 2006) to the field of ecology as the perspective emerged in the 1960s and early 1970s. However, resilience has also been applied in other fields such as psychology and education (Cork, 2010; Cyrulnik, 1998) as well as organizations and businesses (Hamel et al.,2006) with variable emphases and interpretations.

As with other concepts such as sustainability, resilience thinking has evolved since it first emerged. For instance, emphasis has shifted from being focused on ecological systems to SES through Berkes, Folke and Colding's work (1998) and Ostrom's later conceptual framework SES (2007, 2009). Evidence of the integration of social concerns into resilience thinking is further demonstrated by the added requirement of fairness and equity in the list of attributes of a resilient world first presented in 2006 (Walker & Salt, 2006, 2012). More recently, increased attention has been directed towards transformability (Folke, 2006) – "the capacity to create a fundamentally new system when ecological, economic, or social (including political) conditions make the existing system untenable" (Walker et al., 2004, p. 3) – as another facet of resilience (see section 3.2.3). Mathevet and Bousquet (2014) also identified future scenarios as a useful participative tool increasingly being mentioned in the resilience literature. In addition, attention has been directed towards normative questions of power, for example in considering questions such as resilience for whom (Lebel et al., 2006; Nadasdy, 2007).

The problem that the resilience approach aims to address is the continued degradation of natural resource bases due to problem responses that favour optimization of one variable, more control, and greater efficiency (Walker & Salt, 2006). The approach highlights the failure of current systems of governance to consider the interlinkages between social and ecological systems as well as their inherent uncertainties and dynamics. Often referred to as the problem of *(mis)fit* between ecosystems dynamics and governance systems, this oversight prevents acknowledging significant feedbacks which might lead to ecosystem degradation and even collapse (Galaz et al., 2008; Olsson, Bodin, & Folke, 2010; Plummer & Armitage, 2010). For this reason, a call to reconnect with the biosphere is made (Folke et al., 2011). The underlying challenge of the resilience approach is to dissolve lock-ins, rigidity traps or path-dependent situations in order to shift towards governance systems that are more capable of considering the complexity of SES.

3.2.2 Adaptive management and adaptive governance

Adaptive management was put forward by the ecologists Holling (1978) and Walters (1986) as an approach to deal with uncertainties in the management of renewable resources. Through time, adaptive management has been applied across a wide range of contexts such as in the management of fisheries, agriculture, grasslands, and forests. It is defined as an "inductive approach, relying on comparative studies that blend ecological theories with observation and with the design of planned interventions in nature with the understanding of human response processes" (Gunderson, Holling & Light, 1995, p. 491). The core principle of adaptive management is to treat management as an adaptive learning process (learning by doing) in which management activities are viewed as experiments (Walters, 1986). The underlying ideas are that knowledge can never be complete, that resource management can never be perfect, and that the better way to answer questions is through experiments (Lee, 1999). These ideas have been transposed into the broader realm of governance.

Adaptive governance is described as the enabler of adaptive management and as the social dimension of adaptive co-management (Folke et al., 2005). Dietz and others (2003) used adaptive governance to expand the scope of adaptive management towards social contexts that allow ecosystem-based management. Therefore, at its core are the same key elements of adaptive management: learning by doing through experiments anchored in SES. Adaptive governance requires acknowledging uncertainties and the possibilities of surprise as well as the role of humans in shaping social-ecological dynamics (Folke et al., 2005). Adaptive capacity is also needed; the ability to manage for resilience is built in actors, organizations, social networks and institutions (Lebel et al., 2006). Adaptive governance is conceptualized as polycentric and multi-level. It involves institutional variety, nested and redundant institutional arrangements as well as public involvement (Dietz et al., 2003). In addition, attributes of adaptive governance have been linked to good governance principles (Griffith, Davidson, & Lockwood, 2009; Lebel et al., 2006). It is also identified as a way to address the conflicts

among diverse stakeholders and governments (Armitage et al., 2009; Folke et al., 2005). In summary, Armitage and Plummer (p.288) identified several elements that are worth considering for governance for navigating change: understanding change and uncertainty, avoiding panaceas, recognizing the influence of scale, linking actors and networks of actors, rethinking the role of government, benefiting from bridging organizations, promoting knowledge co-production and learning processes, highlighting the role of ecosystems, ensuring integrative approaches to analysis. Within the Millennium Ecosystem Assessment framework, bridging organizations are defined as arenas providing "for multisector and/or multilevel collaboration for conceiving visions, trust-building, collaboration, learning, value formation, conflict resolution, and other institutional innovations" (Malayang, Hahn, & Kumar, 2007, p. 207). According to Berkes (2009), bridging organizations "can respond to opportunities, serve as catalysts and facilitators between different levels of governance, and across resource and knowledge systems" (p. 1695). As will be highlighted in chapter 5, Model Forests have been referred to as bridging organizations (Bullock, 2013; Bullock, Armitage & Mitchell, 2012).

3.2.3 Defining the resilience approach

The resilience approach locates change at its core. It is based on insights from research that led to the realization that ecosystems, social systems, and social-ecological systems (SES) behave like complex adaptive systems. As a complex systems' approach, the resilience approach is characterized by bringing ecosystems into the spotlight and by studying the co-evolving nature of SES across different spatial and temporal scales. The interactive dynamics of nested adaptive cycles is referred to as panarchy (Gunderson & Holling, 2002) rather than holarchy or hierarchy as discussed in chapter 2. Therefore, the resilience approach is based on multiscalar analyses that grant importance to temporal and spatial scales as well as place sensitivity, which implies directing attention to context specificities and local needs (Norton, 2005). Walker (2010) identifies two major outcomes of complex system behaviour. First, controlling systems dynamics is an impossible task and attempts to exert control can lead to reduced system ability to absorb shocks. Second, there are limits to the amount of change or shock a system can endure while continuing to function in the same way.

Norton (2005) has linked the resilience approach to the philosophical school of pragmatism. Environmental pragmatism is a philosophy of environmental action anchored in real-life problems that bypasses theoretical questions through context specific learning by doing (Norton, 2005). The notion of stewardship is also preponderant in the resilience approach (Chapin, Kofinas & Folke, 2009; Chapin et al., 2010). Stewardship recognizes that managers are part of the systems they are managing and more importantly, implies a sense of responsibility for the state of such systems (Chapin et al., 2009). Stewards have also been identified as essential change agents in SES (Folke, Colding & Berkes, 2003).

The approach does not deal in itself with the normative dimension of change and highlights that resilience in and of itself is not inevitably desirable (Walker et al., 2004; Walker & Salt, 2006). Unsustainable systems are often very resilient. Nadasdy (2007) criticizes some of the resilience literature for failing to consider the broader capitalist system that is at the origin of present conditions of SES. This capitalist system participates in perpetuating the unsustainable exploitation of resources and the marginalisation of some groups within this broader structure (Nadasdy, 2007). The explicit normative stance in the resilience approach relates to the necessity to protect ecosystems from collapse in order to ensure human survival.

As a concept, resilience is defined as the "capacity of a system to absorb disturbance and reorganize while undergoing change so as to still retain essentially the same function, structure, identity, and feedbacks" (Walker et al., 2004, p. 2). This definition has expanded to include the notion of transformation as will be detailed further. Such resilience is different from engineering resilience which refers to the speed of return to an initial state (Berkes, Colding & Folke, 2003) and is more closely related to the etymological meaning of "bouncing back". The notion of thresholds or tipping points which, when exceeded, lead to collapse and reorganization into a new system, is a central focus of complex systems' resilience. Therefore, resilience pays attention to drivers, where they might lie and how they may cause a system to move beyond its thresholds to an alternate regime (Walker & Salt, 2006). Resilience initiatives also aim at enhancing aspects of a system in order to maintain its resilience.

Authors distinguish specified resilience or vulnerability from general resilience or adaptability (e.g., Folke et al., 2010; Walker & Salt, 2006). The first refers to resilience to known disturbances while the latter also includes resilience to unanticipated surprises. Adaptability is the capacity of actors in a system to influence resilience (Walker et al., 2004) through collective action (Folke, 2006). It focuses on the attributes of a system that enhance its ability to cope with surprises. Transformability as a third facet of resilience has more recently been identified. It refers to "the capacity to create a fundamentally new system when ecological, economic, or social (including political) conditions make the existing system untenable" (Walker et al., 2004, p. 3). Encompassing these perspectives under the ecosystem stewardship approach for well-being, Chapin and colleagues (2010) identify different strategies to reduce vulnerability to known stresses, to prepare for and shape change, as well as to transform an SES away from lock-in. Vulnerability strategies aim to reduce the exposure to known hazards and stresses as well as to reduce social-ecological sensitivities and adapt to adverse impacts (Chapin et al., 2010).

3.2.4 Transformations in social-ecological systems (SES)

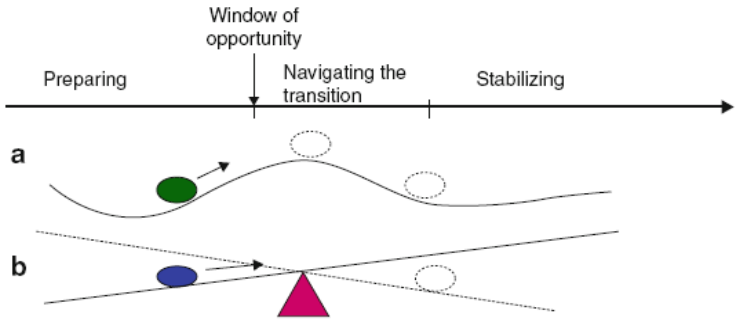
Research on resilience has focused primarily on strategies to avoid the collapse of ecosystems on which humans depend. However, a cluster of recent studies is addressing the notion of transformability. Transformability implies not merely having a capacity but also actually

taking transformative action and navigating transformations (Olsson et al., 2006). Transformations are required to rebuild and assure the long-term resilience of desired systems. They also aim to dissolve unsustainable lock-in situations that are problematic. Through this lens, resilience encompasses concerns and actions to build adaptability and transformability. This perspective comes into tension with the prior definition of resilience focused on maintaining a system's identity when undergoing change.

According to tenets of the resilience approach, transformative change can occur internally through quiet revolutions or through response to external events such as crises (ecological, social, economical, political) (Olsson, Bodin & Folke, 2010). For example, the broad changes in economic orientation in Viet Nam through the Doi Moi or the development of Chilean democracy in 1990s allowed for new laws, policies and associated structures to be put in place (Armitage, Marschke & van Truyen, 2011; Gelrich et al., 2010). The system thresholds or tipping points involved represent critical junctures or windows of opportunity (Armitage, Marschke & van Truyen, 2011; Gelrich et al., 2010; Olsson, Bodin & Folke, 2010; Olsson, Folke & Hahn, 2004; Olsson, Folke & Hughes, 2008). However, windows of opportunity can only be capitalized on when certain conditions are in place, such as the existence of an alternative pathway articulated by a network of actors with adequate knowledge of a system. Capacities have to be built to know where we are, where we want to go, and to develop strategies to help us get there (Olsson, Bodin & Folke, 2010). Transformation requires actors and organizations able and willing to carry such change.

A transformation requires the introduction of new components, or allows them to emerge (Walker et al., 2004). It also requires ways of governing SES that will define and create a novel system (Olsson, Bodin & Folke, 2010). Transformations in SES are linked through cross-scale interactions. Olsson and others (2004) proposed a framework involving three phases to explore how transformations in governance occur as illustrated in the following figure.

Figure 3.1: Three phases of a social-ecological transformation



Source : Olsson, Bodin, & Folke, 2010, p. 269

As the figure illustrates, the first two phases are linked by a window of opportunity. Scenario *a* represents a regime shift between multiple stable states by passing a threshold while for scenario *b*, the transformation occurs by passing a tipping point (Olsson, Bodin & Folke, 2010). The last phase entails building resilience in the system.

In addition, a sequence of responses leading to change in ecosystem management approaches was identified by Olsson, Folke and Berkes (2004). Change begins with an expansion of people involved in the management exercise, from individuals, to a group to multiple actors. In response to broadening environmental issues and to knowledge on ecosystem dynamics developed through collaboration, organizational and institutional structures evolve and internalise the discourse on dynamics. Social networks are then established and expanded allowing for knowledge to be shared leading eventually to a better ability to deal with uncertainty and surprise (Olsson, Folke & Berkes, 2004).

Table 3.1 illustrates potential strategies for transformations in case of unsustainable lock-in situations.

Table 3.1: Strategies for transformations in social-ecological systems (SES)

Transformations		
Preparing for Change	*Navigating the Transition*	*Building Resilience in the New System*
• Engage stakeholders to identify dysfunctional states and raise awareness of problems • Identify thresholds, plausible alternative states, pathways and triggers • Identify the barriers to change, potential change agents and strategies to overcome barriers • Understand cross-scale interactions • Develop new ideas and alternatives guided by a clear vision	• Identify potential crises and use them as opportunities to initiate change • Maintain flexible strategies and transparency guided by a clear vision • Support different experiments • Foster institutions that facilitate cross-scale and cross-organizational interactions and stakeholder participation • Build diverse networks and understand their dynamics • Foster strategies to change people's perceptions and perspective • Gain political support	• Create incentives and foster values for stewardship in the new context • Initiate and mobilize social networks of key individuals for problem solving • Foster interactions and support of decision makers at other levels

Source: modified from Chapin et al., 2010 and Olsson, Bodin, & Folke, 2010

3.2.5 Requirements of the resilience approach

Several requirements for resilience can be extracted from the above literature review and its lessons. In addition, Walker and Salt (2006; 2012, pp. 193-195) developed attributes of a resilient world. These are presented in table 3.2. Examples of their application are still scarce.

The attributes illustrate well the underlying premises of the resilience approach. The diversity and social capital criteria aim to increase or maintain the sources of change. According to Norberg and Cumming (2008, p. 10), "[d]iversity in complex adaptive systems arises by chance and imperfection, recombination, and in social systems, by innovation and foresight". This explains why the attributes of transformability overlap with those of general resilience (Folke et al., 2010). Diversity provides the making for answers to the questions we have not yet learned to ask. Therefore, it is argued that diversity should be promoted and sustained in all forms possible such as biological, landscape, social, economic (Walker & Salt, 2006), capital, collective action, networks, and learning platforms (Folke et al., 2010). However, diversity is not a panacea; it can also be the source of conflict, incomprehensiveness and even collapse (Page, 2011).

Table 3.2: Attributes of a resilient world

1. **Diversity**: A resilient world would promote and sustain diversity in all forms (biological, landscape, social, and economic).
2. **Ecological variability**: Resilience is about embracing and working with ecological variability, rather than attempting to control and reduce it. Holding a system in the same (desired) condition erodes resilience because the capacity to absorb disturbance is based on the system's history of dealing with disturbances.
3. **Modularity**: Resilient systems consist of modular components. In what ways is the system you're interested in modular and is this modularity changing? Is the system becoming more fully connected, or are there parts of it that are becoming more isolated, or too loosely connected?
4. **Acknowledging slow variables**: There needs to be a focus on the controlling (often slowly changing) variables associated with thresholds. The "rule of hand" that arose out of comparative studies says that at any one scale there are no more than three to five important controlling variables. It invokes Buzz Holling's call for "requisite simplicity" in attempting to understand and manage social-ecological systems.
5. **Tight feedbacks**: A resilient world possesses tight feedbacks (but not too tight). Are the signals from cost/benefit feedbacks loosening? Are procedural requirements increasing the time it takes to detect and respond to system changes?
6. **Social capital**: This is about promoting trust, well-developed social networks, and effective leadership. Sometimes leadership needs to be vested in a strong, visionary individual; at others it needs to be more of a process of shepherding or leading from behind.
7. **Innovation**: Resilience places an emphasis on learning, experimentation, locally developed rules, and embracing change
8. **Overlap in governance**: A resilient world would have institutions that include "redundancy" in their governance structures, including a mix of common and private property with overlapping access rights.
9. **Ecosystem services**: A resilient world includes all the unpriced ecosystem services in development proposals and assessments. In practice that means getting to know your ecosystem services—where they come from, how they are bundled, who benefits and who doesn't, how they might be affected by potential thresholds, how changes in one can influence the resilience of others.
10. **Fairness/equity**: A (desirable) resilient world would acknowledge notions of equality among people, would encourage democratization so that everyone has a say, a sense of agency, and would promote the notion and practice of "fair trade." These attributes would encourage diversity, innovation, collaboration, and effective feedbacks while promoting higher levels of social capital.
11. **Humility**: A resilient world would acknowledge our dependence on the ecosystems that support us, would allow us to appreciate the limits of our mastery and accept that we have much to learn, and would ensure that our people are well educated about resilience and our interconnection with the biosphere.

Source: Walker and Salt, 2012, pp. 193-195

Several interpretations of social capital can be found in the literature. It generally refers to relationships between and among individuals and groups through networks, and relates to

notions of reciprocity and trust (Onyx & Bullen, 2000). Putnam (1995, pp. 664-665) defined social capital as "features of social life – networks, norms and trust – that enable participants to act together more effectively to pursue shared objectives". According to Adger (2003) social capital can replace governmental actions in times of crises through informal networks that have sufficient resources at their disposal. Social memory is also mentioned as a source of resilience (Folke et al., 2005).

In addition, the literature attempts to identify the ideal structure for resilient systems (i.e., the way in which the components are best interconnected). Systems have to be modular which means that their parts need to be connected while keeping a certain degree of independence (Schouten et al., 2012). This way, disturbances cannot be rapidly and easily dispersed through the system and a component can collapse without bringing down the rest. Redundancy between the components of a system that provide the same function is also required in order to maintain that function in case of the collapse of one component. This notion has been translated in governance terms through the requirement for overlap. It provides alternative pathways of action and allows for the continued services by the governance system in case of collapse. In the adaptive governance literature, this idea is mentioned through the requirement of polycentric governance which simultaneously allows meeting the redundancy requirements as well as allowing for more flexibility through less centralized control.

Other attributes of a resilient world relate to the necessary information to guide human action in complex systems. Tight feedbacks refer to the flow of information between systems such as social and ecological systems, or modules of a system in order to guide proper human action. Globalization is used as an example by Walker and Salt (2006) to illustrate an issue area characterized by a lack of tight feedbacks. They argue that due to globalization, people presently receive weak signals of the consequences of their consumption patterns. Moreover, this example illustrates the spatial character of feedback loops represented by the distance between users and natural resources (Schouten et al., 2012). Identifying slow variables that control long term change processes is also mentioned as being indispensable to long term resilience (Walker & Salt, 2006, 2012).

As mentioned above, the core argument of the resilience approach is that we need to change our relationship to change processes in order to assure the maintenance of healthy ecosystems upon which we depend. In particular, tenets of the approach favour humility in our decisions and interventions. Different ways of making sure that ecosystems are valued are also discussed in the literature. Walker and Salt (2006, 2012) highlight using ecosystem services approaches while others emphasize ecosystem stewardship (Chapin et al., 2010; Chapin et al., 2009) or environmental awareness and attachment to local ecosystems (Biggs, Westley, & Carpenter, 2010).

In addition, innovation through experiments and learning by doing is put forward as a requirement. Innovations are necessary in all the resilience approach strategies such as in finding new ways to better address vulnerabilities, surprises and to generate transformations.

The resilience approach allows for ecological disturbances and encourages working with change, adapting to it and embracing it. For instance, Baskerville (1995) demonstrates how by trying to control budworm invasions with technical fixes based on the use of pesticides, government intervention made this problem perpetual rather than periodic.

In terms of decision-making process requirements, Walker and Salt (2012) mention the requirement of equity and fairness for increased democratization. Bottom-up approaches, participation and collaboration of multiple stakeholders acting at different scales are at the core of governance's implications of the resilience approach. Carpenter et al. (2009, p. 1) state that "the consideration of a wide range of perspectives is a hallmark of resilient decision making in the face of unexpected change".

3.2.6 The resilience approach for sustainability

Resilience and sustainability are often interlinked (e.g., Anderies et al., 2013; Chapin et al., 2009; Chapin et al., 2010; Folke et al., 2010; Lebel et al., 2006; Walker & Salt, 2006, 2012). In such work, resilience is depicted as a requirement for sustainability. However, it is often implied that putting in place adaptive management or adaptive governance systems in order to better cope with change will lead to sustainability. Additional requirements for sustainability are not discussed although Walker and Salt (2012) integrate notions of equity and fairness into the identified attributes of a resilient world and processual requirements of participation or stakeholder involvement. Participation is depicted as a way to have more thorough understanding of ecosystems and SES trends in order to better adapt or shape change. More specifically, in the literature on transformations in SES, participation is mentioned as a way to build support or legitimacy for a vision.

Some authors have tried to conceptually differentiate concepts of resilience and sustainability arguing for a need for clarification in order to further academic debates (Lew et al., 2016; Redman, 2014). However, this seems to lead to a narrow understanding of broad evolving concepts. For instance, Lew and others (2016) argue that sustainability concerns mitigation measures to maintain resources within safe limits while resilience is about building capacities to adapt to change following disturbances. Lew and others' (2016) follow what is usually referred to as a *weak* sustainability perspective. However, as mentioned in chapter 2, mere mitigation is insufficient in a context of persistent unsustainable trends. Thus, sustainability is as much about transformations as it is about building resilience in desirable systems.

The resilience approach combines non-directed change causing systemic shifts and notions of human agency (Westley et al., 2013), but the combination involves tensions. Attempts to clarify the distinctions between resilience, adaptability and transformability in SES (Folke et al., 2010; Walker et al., 2004) demonstrate well some of these tensions. Applying a resilience lens to social systems and more specifically to questions of politics and governance, inevitably confronts fundamental concepts such as power, democracy and the right to self-determination (Duit et al., 2010). Social systems are made of individuals able to reflect on their situations and actions, with rights and values as well as capacities to translate convictions into collective action (Duit et al., 2010). The literature on transformation in SES clearly demonstrates that actors and organizations are contingently able to intentionally influence change in the direction hoped for (e.g., Gelrich et al., 2010; Olsson et al., 2010; Olsson, Folke, & Berkes, 2004). However, Folke and others (2010) specify that the resilience approach does not set goals and processes for reaching them rather it allows "the new identity of the SES to emerge through interactions within and across scales" (p. 5). Throughout literature on transformations in SES, little information is provided on how to determine where we want to go. For instance, Olsson and others (2010) mention vision exercises and scenario building as tools for identifying possible futures, but possibility is emphasized, not desirability. The discussion neglects the underlying goals of such tools as well as how judgements of desirability are made.

While knowledge about how transformations towards more sustainable systems of governance have occurred is essential, it would also be important to acknowledge who is affected in the suggested changes. For instance, Gelrich and others (2010) highlight the perverse effects of some governance transformations on small-scale benthic fisheries. Research on the effects of political architecture on women also demonstrates some possibilities of further marginalization of groups due to new multilevel governance arrangements (Sawer & Vickers, 2010).

Folke and others (2010) contrast deliberate local change with imposed change that often results from activities at other scales. For instance, although a successful transformation in local resource management can occur, there is always the possibility of a cascading ecological collapse at other scales (Armitage et al., 2011). This also raises the question of how bottom-up initiatives are able to confront structural forms of power that are vested in the present global level (Smith & Stirling, 2010). Therefore, connection between scales is essential.

The tension related to the direction of change is also made apparent in Holling's (1999) Editorial in the scientific journal *Conservation Ecology* and the responses it generated (Kotyk, 1999; Rogers, Roux, & Biggs, 2000; Tyson, 2000). In his provocative editorial, Holling (1999, p. 1) stated the following:

> I'm suspicious of folks with visions. They are too certain. Blind to surprise. Deaf to other voices. I do not have a vision for *Conservation Ecology*.

Differences between researchers stem from different interpretations of visions and their role or use as well as from deeper ideological divisions rooted in political economy. Kotyk (1999) emphasizes that visions do not need to be rigid, while Rogers and colleagues (2000) point out

that they can be used to bring people together rather than be an act of control. Furthermore, it can be argued that what we hear or see, what captures our attention, is influenced by our goals and values as well as being an intrinsic part of *reality* (Rogers et al., 2000). This brings us to ontological questions related to SES.

The resilience approach adheres to realist ontology. Reality is understood through linked and nested SES (Gunderson & Holling, 2002) where human actions are recognized as fundamental drivers of changes. A separation between ecological and social systems is thought to exist objectively. The resilience approach considers that we act upon our knowledge, which explains why they favour learning and experimentation in a context of uncertainty (West et al., 2014). Representations of systems dynamics will always be incomplete but can still be improved by better reconnecting to the Biosphere (Folke et al., 2011). Similarly, the aim of future scenarios is to try to anticipate and better adapt to systems unfolding based on an analysis of key drivers (Walker & Salt, 2006) while planetary boundaries have also been identified in a new Earth system in order to keep humanity within a safe operating state (Rockström et al., 2009).

Critical and more constructivist perspectives in systems thinking argue that systems are not particular ontological realities but particular framings of reality that bring to the forefront certain elements while leaving others behind (Leach, Scoones, & Stirling, 2010; Midgley, 2000). According to this perspective, system framings and their related priorities emerge as dominant forces driving system change (West et al., 2014). Conceptions form systems rather than merely representing them (Callon, Lascoumes, & Barthe, 2001; De Smedt, Borch, & Fuller, 2013).

The resilience approach also adheres to teleological assumptions. To explain adaptive management, Norton (2005) uses the metaphor of Neurath's boat which has to stay afloat indefinitely while repairs are made. Sailors, motivated by their will to survive, attentively debate on which planks to change and in which order of priority (Norton, 2005). This metaphor however makes the assumption that sailors are willing to follow the rules of the system in place. It also assumes that sailors agree that changing planks is necessary in order to survive and that survival is their main motivation for action. As mentioned in chapter 2, actions for the sake of survival and freedom that arise by chance constrained by competition is a teleological assumption that might not capture the essence of complex systems change (Stacey, Griffin, & Shaw, 2000).

The resilience approach deals with constant and often unpredictable change through putting forward experiments and functioning in an iterative manner by learning by doing. According to Lee (1999), adaptive management undermines the politics of decisions and the possible conflicts emerging from its influence on how people live their lives dictated by who has learned (Lee, 1999). Furthermore, several authors highlight how governance systems are bogged down in addressing short term conflicts between special interests rather than thinking of shared futures that can guide dispute resolution (Costanza, 2000). According to Innerarity

(2012) a big part of the problem with our political systems is that they are reduced to managing the present. Urgency does not impede the elaboration of long-term plans, but the absence of plans can subjugate us to the tyranny of the present (Innerarity, 2012).

In addition, complex problems are often framed beyond local communities' reach (Giddens, 2009). Furthermore, focusing on negative consequences or impacts has often favored responses in terms of infrastructure rather than new social and political relationships such as new property rights or the extension of democratic rights (Chollet & Felli, 2015). Such perspectives on problems can encourage the status quo of unsustainable situations under the argument of urgency. Combining vulnerability strategies with transformation or transition strategies under an encompassing governance for sustainability framework would address this issue.

3.3 Sustainability transitions and innovation studies

Academic literature interested in sustainability transitions (Grin, Rotmans, & Schot, 2010) has emerged in an attempt to understand the dynamics as well as the governance of sociotechnical transformations and social change towards sustainability in locked-in and path dependent systems. Transition literature comes as a response to crises portrayed as symptoms of persistent problems caused by processes embedded in societal structures requiring innovative practices and structural adaptation for their resolution (Grin, Rotmans, & Schot, 2010). Although different perspectives on sustainability transitions co-exist, common concepts draw them together: co-evolution, learning, the multi-level perspective, and the multi-phase perspective (Grin, Rotmans, & Schot, 2010) as well as multi-player engagement. Most importantly, they all express some form of dissatisfaction with existing structures and practices. An example of the application of sustainability transitions is transition management.

3.3.1 Transition management

Transition management stems as a reaction to the Dutch polder-model, a consensus-based approach to policy making which was put in place during the 1990s to counter problems of effectiveness and legitimacy of the state (Loorbach, 2007). According to Loorbach (2007), this model left too much space for vested interests, was time-consuming and generated mediocre solutions. While the polder model was able to adapt to changing circumstances, it was not anticipative since it did not focus on innovations (Loorbach, 2007). The transition management model was officially introduced in government policy in the fourth Dutch National Environmental Policy Plan in 2000 and initiated in the sectors of energy, transport, water management, natural resource use, and agriculture (Loorbach & Rotmans, 2010). Transition management is also framed as a new generation of long-term policy approaches that builds on the failures of modernist conceptions of rational planning (Voß, Smith, & Grin, 2009).

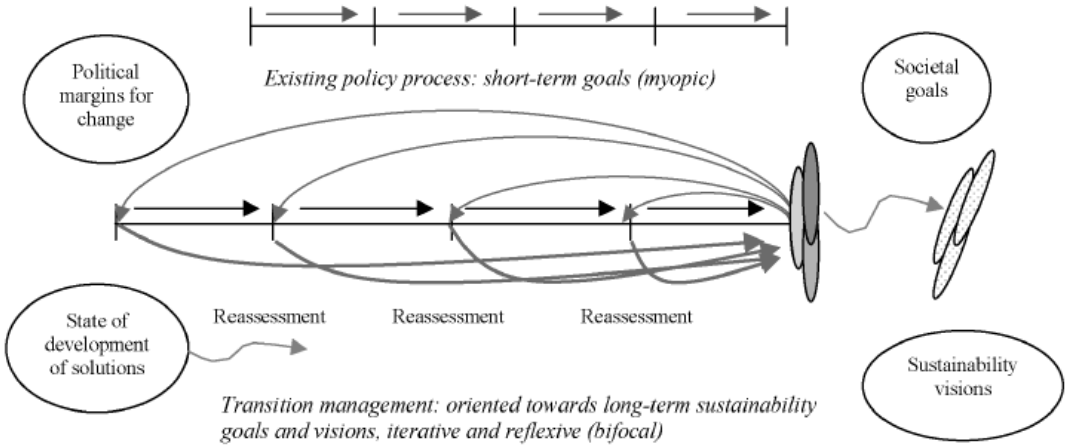
The need for transitions is expressed through the challenge of path dependency of social-technical systems (STS) as well as through issues of persistent and wicked problems. These issues are depicted as problems of modernization, or in other words, as side-effects of modernization therefore building on Beck's work on reflexive modernization (Beck, 1994). Reflexive modernisation is a transition phase between the industrial and risk society (or between first or simple to second modernity). First modernity is broadly characterized by decisions based on traditional scientific knowledge developed in institutional silos (Beck, 1994). Transition management is usually understood as an operationalization of reflexive governance. According to Grin (2006), reflexive governance is essential to reflexive modernisation because usual practices have a tendency to reflect assumptions of first modernity and to reproduce its patterns. In contrast, reflexive modernization comes from the recognition that industrial society and its *simple modernization* processes of *first modernity* give rise to risks and side effects that are unwanted by society (Grin, 2006). Thus, the self-confrontation of those side-effects consists of first order reflexivity (Beck, 1994). This circular relationship between cause and effect is similar to the notion of path dependence. Second order reflexivity refers to how problems are dealt with through their own implications and side effects (Voß & Kemp, 2006). It suggests agency, intention, and change.

Furthermore, the inadequacies of governing by top-down or market approaches exclusively are highlighted (Loorbach, 2007, 2010). Transition management therefore presents itself as a solution to the lack of direction and coordination of governance networks in order to "increase the effect of existing forms of government and planning in the context of long-term change in society" (Loorbach, 2010, p. 162). Compared to network governance, actors in reflexive governance are portrayed as, knowingly or not, engaging in the process of changing the systems in which they operate rather than simply "working around and across existing modernist institutions" (Hendriks & Grin, 2008, p. 144).

3.3.2 Defining transitions

The transition management literature defines transitions as continuous, non-linear and co-evolutionary processes of structural change that occur in sub-systems, such as the energy or transportation sector (Kemp & Rotmans, 2005; Loorbach, 2010). Transition is described as a long term process of at least one generation and requires interactions at different scale levels (niche, regime, landscape) (Loorbach, 2007). The resulting societal transformation cannot be planned or controlled, but broadly directed or nudged in desired directions. Thus, transition management aims at guiding transition iteratively and adaptively using markets, institutions, and hierarchy (Kemp & Rotmans, 2005). Consequently, transition management researchers are interested in understanding dynamics of transitions to be able to influence them towards sustainability. Sustainable development is described as a complex long-term multi-level and multi-actor process. The following figure illustrates transition management in comparison to existing policy process.

Figure 3.2: Transition management process



Source: Kemp, et al., 2005

Transition management can be described as a directed search-and-learning process through goal-oriented incrementalism (Loorbach, 2007).

Transitions are portrayed as occurring through four phases: a predevelopment phase where very little change is visible and experimentation takes place; a take-off phase; an acceleration phase; and finally, a stabilization phase (Grin, Rotmans, & Schot, 2010; Loorbach, 2007).

In addition, transition management builds on a multi-level framework originating from innovation and technology studies (Geels & Green, 2004; Rip & Kemp, 1998). The multi-level perspective aims at understanding the relationship between innovative radical niches, dominant systems or incumbent regimes, and broader landscape pressures (Kemp, Schot, & Hoogma, 1998). According to Rip and Kemp (1998), it is usually at the micro-level, or niche level, that novelty occurs. Niches are characterized by their capacity to offer temporary protective space for the configuration of path-breaking innovations (Smith & Raven, 2012). The meso level, where the regime is located, incorporates the outcomes of earlier changes while structuring future pathways (Rip & Kemp, 1998). Loorbach (2007, p. 20) defines a regime as a "dominant culture, structure and practice embodied by physical and immaterial infrastructures". The larger level consists of the broad social environment or landscape where changes occur in long time scales (Rip & Kemp, 1998).

Transition management is operationalized through four different types of governance activities represented in a non sequential four step cycle. The first is a strategic phase where a transition arena is established by bringing together forerunners. Forerunners are required to invest considerable time and energy in the innovation process, and must have several competences such as the ability to consider complex situations, to influence various networks and to

establish sustainability visions in those networks (Loorbach, 2010). Bringing multiple perspectives together is encouraged (Loorbach, 2007). In the case of the energy transition, the Ministry of Economic Affairs was responsible for creating the transitions arenas and these were led by business people (Kemp & Rotmans, 2005). The strategic phase is dependent upon an integrated system approach and analysis developed by experts that aims to generate a basis for discussion and a shared understanding of problems as well as a sense of urgency for action (Loorbach, 2007). In addition, processes of vision development and long-term goal formulation and anticipation are put in place (Loorbach, 2007). Shared sustainability criteria are developed by the forerunners. These governance activities are not institutionalized into the usual policy making process in order to avoid political cycles, individual interests and public pressure (Loorbach, 2007). The premise behind strategic governance activities is that long-term processes depend on informal networks through which ideas can spread and the capacities of individuals involved in them.

The second step, the tactical phase, is about developing sustainability target images and paths as well as transition agendas within a shorter timeframe of approximately 5 to 15 years (Loorbach, 2007). It involves interests driven by the current systems and activities are directed towards attaining goals that are specific to a sector rather than the overall system (Loorbach, 2010). Processes aim to create a transition network and coalitions guided by the work accomplished in the strategic phase by increasing the number of actors involved and generating support towards the intended direction (Loorbach, 2007). Moving from abstract long-term vision towards more concrete and tangible actions is the substantive goal of the tactical phase (Loorbach, 2007).

The third step, the operational phase, consists of mobilizing actors and conducting different experiments (Loorbach, 2007). The literature provides few details are on the nature of the experiments. For the energy transition, a 35 million Euro budget was established to support experiments. Experiments had to involve stakeholders, have learning goals, and be a part of a transition path to be eligible (Kemp & Rotmans, 2005). In addition, Loorbach (2007) specifies that a whole port-folio of experiments ought to be put forward and that effort should be directed towards keeping options open in terms of possible alternative transition paths. Experiments should contribute to the overall system sustainability goals and mutually reinforce each other (Loorbach, 2007). Experiments should have the highest level of impact possible "through a process of deepening of knowledge and understanding, broadening of the scope of the project and involvement of actors and up-scaling or augmenting of the experiences and lessons (Loorbach, 2007, p. 148).

The fourth step, the reflexive phase, consists of evaluating, monitoring, and learning (Loorbach, 2007). Each transition management process requires its own evaluation. In the energy transition, fifteen high-level representatives from business, NGOs, government, and the

field of science had to reflect on the overall energy transition as well as its future direction (Kemp & Rotmans, 2005).

Table 3.3 presents different phases of transition management and related goals, activities, instruments, and capabilities.

Table 3.3 Transition management phases and related goals, activities, instruments, and capabilities

Type of Governance Activity	Goals	Activities	Transition Instruments	Capabilities
Strategic	Integration	System demarcation problem structuring Envisioning	Integrated systems analysis	Systems thinking Creativity, guts, innovative ideas
	Giving direction	Exchange of perspectives, developing new discourse	Transition Arena, Transition visions	Communication and network skills, integrative capabilities
	Reframing		Transition Arena, Integrated systems analysis Transition vision	
Tactical	Translating	Developing inspiring images, strategies	Transition images, transition paths	Creativity, independence
	Agenda-building	Exchange of goals, negotiations, shared goal-formulation	Transition agenda Transition coalitions	Thinking in terms of co-production, negotiation skills
	Networking	Coalition building	Transition paths Innovation networks	Communication and consensus building
Operational	Innovation	Experimenting	Transition experiments, testing grounds	Learning and communication
	Development	Implementation	Experiment portfolios	Project management
Evaluation	Social learning	Monitoring and evaluation Inventory of learning experiences	Transition monitoring	Expert knowledge Structuring skills
	Adaptation	Adjustment of vision, agenda New experiments	Participatory evaluation	Reflexive thinking Reflexive attitude

Source: Loorbach, 2007, pp.127

3.3.3 Transitions for sustainability

As discussed in the above section, transition management proposes four different and complementary governance strategies in order to attempt to steer society towards sustainability: strategic, tactical, operational, and evaluation or reflexive strategies. Through these strategies, transition management integrates long term societal goals into the policy process by using them to guide the shorter term decisions and experiments. However, generic or specific, substantial or processual requirements for sustainability are not explicitly considered or discussed. Sustainability is defined as a "complex long-term, multi-level and multi-actor process" (Loorbach, 2007, p. 23). However, sustainability's core substance (i.e.,

social justice or intragenerational equity, social-ecological system integrity, etc.) is not explicitly considered in how judgements of unsustainable or sustainable pathways are determined. Through discussions among forerunners (i.e., "creative minds, strategists and visionaries" (Loorbach, 2007, p. 114)), shared guiding principles for sustainability are formulated. They represent the conditions under which forerunners agree that a system under transition can be considered sustainable (Loorbach, 2007). The primary goal is to develop consensus over desired criteria (Loorbach, 2007).

Guiding visions (Berhout, 2006) play a fundamental role in shaping transitions. Several authors have researched the overlaps, specificities and uses of futures studies for transition management and system innovation (Berhout, 2006; De Smedt et al., 2013; Loorbach, 2007; Quist, 2007; Sondeijker et al., 2006; Wiek, Binder, & Scholz, 2006). For example, Sondeijker and others (2006) highlight how scenarios can be used to identify weak signals while Berkhout (2006) mentions that visions contribute, among other things, to mapping possibility spaces. According to Loorbach (2007), visions matter as much as envisioning or, in others words, they aim to mobilize potential. Visions are not products or ends that lead to bureaucratic processes, but a means to congruency (Loorbach, 2007). Although resource and time consuming, Loorbach (2007) considers envisioning essential to directional change since it provides "a focus and creates the constraints, which determines the room for change within which the future transition management activities can take place" (p. 119). Furthermore, Loorbach (2007) distinguishes transition management visions from usual visions by the fact that they are not produced by regime actors or experts. Forerunners whose purposes and qualities enable them to work outside the system are in charge of envisioning and multiple images can be produced. Smith and others (2005) argue that visions are problematic in socio-technical transitions due to the presence of multiple visions tied to agency and power. Moreover, complex interactions between competing contingencies, determinacies and intentions were recognized as leading to past technological transformations rather than actions directed by shared long-term sustainability goals (Smith & Stirling, 2008).

Transition management is highly dependent on agency, more specifically, forerunners and their networks. It builds on literatures such as technological change and innovation where leadership plays a preponderant role in generating system change. In transition management, forerunners are relied upon "to develop coherent, inspiring and meaningful new discourse and visions" (Loorbach, 2007, p. 117) in order to produce consensus on long-term goals and convergence of actions. Their ambition for innovation is considered as superseding their vested interests. This is considered a very important element since transition management stems from a critique of the conflicts resulting from vested interests in the former polder model. However, in the case of the energy transition initiative, pressures from the existing energy regime seem to be undermining the ambition of innovation (Foxon, Reed, & Stringer, 2009). Such scepticism comes in part from the fact that the Chief Executive Officer of Shell Oil has been appointed to lead the energy transition (Foxon et al., 2009; Hendriks, 2009). According to

Diprose and colleagues (2008, p. 273) “insofar as this quest [for innovation] is framed by current economic priorities and preferred social arrangements, it fails to break with the conservative aim of ‘restrict[ing] innovation to a framework of unbroken progress’ (Ewald, 2002, p. 284)”.

In addition, big businesses are overrepresented (Voß et al., 2009). Through their deliberations elite visionary forerunners may affect the lives of millions of people. This explains why transition management is viewed as an elitist and technocratic process (Hendriks, 2009). This raises questions about the sufficient implication of institutions of representative democracy in the substance of visions and experiments of transition management (Smith & Stirling, 2008). Parliaments have difficulty engaging with long term goals which brings to the forefront questions of legitimacy and accountability (Meadowcroft, 2005) and their alternative sources.

Consequently, the majority of the criticisms are directed towards the oversight of power relations and agenda setting in the process as well as its lack of democratic reflection (Heiskanen et al., 2009; Hendriks, 2009; Scholten, 2008; Shove & Walker, 2010; Smith & Stirling, 2010; Voß & Bornemann, 2011; Voß et al., 2009; Walker & Shove, 2008). For instance, Hendriks (2009) points out that most of the participants in the energy sector transition are middle-aged white men and that women participants represent less than ten percent.

In the literature, transition management emphasizes learning, reflexivity and monitoring. However, Smith and Stirling (2008) highlight that little attention is directed towards processes that repeatedly re-open debates over what needs to be sustained, why, for whom and how. According to Smith and Stirling (2008), proponents of transition management generally recognize such challenges but in an instrumental way. “The driving aims, orientations and modalities of sustainability itself, not just the managerial instrumentalities, are, in practice, much more plural – and continually open to radical reformulation” (Smith & Stirling, 2008, p. 14). How political conditions influence the kinds of consensus and coordination seek by transition management as well as how they can be achieved requires further research (Smith & Stirling, 2008).

Critical perspectives on innovations emphasize that the quest for innovation in modernity is idiosyncratic and its emphasis on technology and science often narrows and constrains its direction (Nowotny, 2006; Stirling, 2009). Similarly, the quest for innovation is linked to the conventional notion of progress, which is strongly correlated with discourses of wealth seeking through more advanced science and technology and the urgency of catching up (Stirling, 2009).

In addition to providing direction through long term goals and visions, the approach addresses the issue of path dependence by not closing down too early on options and by favouring a

diversity of pathways. Transition management attempts to avoid lock-ins in favoring hybrid technologies that are malleable (Meadowcroft, 2009) as well as experimentation. Furthermore, with the safe space provided by transition management, options are kept open and competing innovations have a fair chance (Loorbach, 2010). Consequently, lock-in is delayed by the flexibility of the process which allows further time for influencing the selection and nature of pathways to sustainability.

Shortcomings of the concept of protective space related to strategic niche management have also been identified. According to Smith and Raven (2012), further research is needed to understand how innovations break out of their protective space and interact with the wider regime. From a constructivist perspective, these authors point out the importance of considering the politics of protective spaces by adopting an insider ontology (Smith & Raven, 2012). "While thinking of niches as being functional in evolutionary transition processes might be attractive to a more managerial 'outsider' ontology on niche development, it runs the risk of not being able to capture the generative forces required to initiate and then sustain those functional processes" (Garud, Kumaraswamy, & Karnøe, 2010, p. 761).

The emphasis of transitions literature on technological innovations in market settings has also undermined, or at least neglected, social innovations and community action as a site for transition niches for sustainability (Hargreaves et al., 2013; Seyfang & Haxeltine, 2012; Seyfang & Longhurst, 2013; Seyfang & Smith, 2007). Similarly, recognizing differences between contexts, which is imperative to sustainability can sometimes be forgotten in social-technical change, which is often depicted as a uniform process directed by rational action (Smith et al., 2005). Recent work on grassroots innovations addresses this deficit. Following Seyfang and Smith (2007), grassroots innovations are conceptualised as creative spaces or innovative niches with the potential to change institutions. Grassroots innovations are described as "networks of activists and organisations generating novel bottom-up solutions for sustainable development; solutions that respond to the local situation and the interests and values of the community involved" (Seyfang & Smith, 2007, p. 585). However, this supposes that grassroots innovations seek diffusion (Seyfang & Haxeltine, 2012). The idea of a niche also presupposes a community's capacity to support and produce niche activity (Middlemiss & Parrish, 2010). Also, between the grassroots innovations and the elite efforts described in transition management literature, there are multi-stakeholder initiatives of various sorts.

Some authors highlight the absence of linkages between local and international/global/sectoral actions to pursue sustainability. The notion of governance in the field of environment and sustainability seems to manifest itself at both the local and global levels – through direct management by local communities of their biophysical and socio-economic environment and through international negotiations (Milot, 2011). A new approach to innovation in which global and grassroots efforts are connected is needed for the pursuit of sustainability in order to

address this hiatus (Leach et al., 2012). This hiatus is clearly evident in forestry innovations as pointed out by Francis (2012). The forest industry globally is repositioning itself in a *high tech*, knowledge-based economy while local initiatives such as Forest Communities seem to favour diverse practices relying on broadly accessible technology (Francis, 2012).

Transition management raises the significant question of who governs (Shove & Walker, 2007). In the Dutch context, since the government has taken on the transition management model, the answer is evident. However, STS cut across sectors, scales and related policy networks (Smith & Stirling, 2008) and transition initiatives may also originate in other loci such as business communities or civil society (Kemp & Rotmans, 2005). Directing change toward a better future remains a daunting challenge.

Table 3.4 presents an initial set of generic requirements for innovations for transition towards sustainability develop by Gibson (2011) which summarizes the above findings.

Table 3.4 Generic requirements for innovations for transition towards sustainability

- Apply the full suite of sustainability and resilience criteria
- Adopt long term thinking
- Build systems understanding of problems and opportunities
- Incorporate multiple domains, scales and participants
- Combine backcasting and forecasting
- Take anticipatory action
- Experiment with multiple options
- Support diffusion, up-scaling and embedding of successful innovations
- Encourage co-evolution
- Build supportive networks
- Strengthen democratic legitimacy
- Combine consistency and adaptiveness in transition support
- Ensure fairness and enhance equity
- Emphasize learning

Source: Gibson 2011, p.18

3.4 Futures studies

A very broad range of research falls under the umbrella of futures studies. Such research generally addresses one or several of the following questions: What will happen in the future?, What could happen in the future?, and What should happen in the future? These questions take, respectively, a predictive, probabilistic, and explicitly normative stance. Section 3.4.1 presents how different authors have tried to sort out and define futures studies. Inquiring into the future is not a new practice as different utopias and prophets through time demonstrate. However, contemporary futures studies are characterized by a rationalization or scientification of methods (Bell, 1996; Son, 2015). Section 3.4.2 specifies how future studies can be understood in the present context. No matter the different postures towards the future,

overarching beliefs linked them together. Section 3.4.3 identifies the underlying premises of futures studies as well as some tensions. Finally, section 3.4.4 presents different lessons from futures studies for sustainability in a complex and dynamic world as well as requirements for futures studies for sustainability.

3.4.1 Untangling the terminology

It is unclear in the literature whether futures studies are a field of inquiry, a discipline or a set of methods that can be applied in different disciplines or fields. For instance, Godet and others (2008) describe strategic foresight, the approach better known as *la prospective*, as a discipline. Similarly, Bell (1996, p. xix) attempts to demonstrate that futures studies are an "identifiable sphere of intellectual activity". Furthermore, considering futures studies as an art or a science is an ongoing debate (Bell, 1996). Other authors have attempted to define futures studies by contrasting them with planning (Wallenborn & Mutombo, 2009) or policy analysis (Bell, 1996). For others, the use of futures studies is understood as a new way of undertaking planning in the context of the imperatives of sustainability in a complex world (Giddens, 2009; Rotmans et al., 2000). Furthermore, the significant variations among rationales behind the use of futures studies influence research orientations and the future of futures studies.

Throughout the futures studies literature, confusion related to definitions, principles, and methodological guidelines is often underlined (e.g., Mulvihill & Kramkowski, 2010). For instance, different terms can refer to identically defined concepts such as *scenario planning*, *scenario building*, or *scenario analysis.* Conversely, a single term, such as *foresight,* can refer to very different approaches (e.g., a predictive quantitative methodology versus an explorative qualitative exercise). This is undoubtedly a consequence of futures studies being applied to and tailored by scholars in different fields of research and empirical contexts. For this reason, futures studies is used an encompassing term in this dissertation.

Several typologies have been developed through extensive literature reviews in order to better distinguish similarities and differences among futures studies exercises. For instance, Rotmans and colleagues (2000) distinguish exercises that are forward or backward directed, descriptive or normative, quantitative or qualitative, participative or expert led. However, most futures studies initiatives are hybrids. For instance, some part of the exercise can be expert led while another can be participative.

Since this dissertation concerns governance for sustainability in a complex and dynamic world, our interest is centred on futures studies approaches with a normative (what ought to be) and explorative (what if) orientation and related strategies to move towards desired visions or prepare for unexpected outcomes. With the above acknowledgement of terminology fuzziness, these usually involve scenario building or backcasting.

Future scenarios, defined in the context of sustainability are "coherent and plausible stories, told in words and numbers, about the possible co-evolutionary pathways of combined human and environmental systems" (Swart et al., 2004, p. 139). Their plausibility and internal consistency differentiate them from science fiction and mere visions of utopias or dystopias (Schmitt Olabisi et al., 2010). Scenarios allow ordering perceptions about alternative futures in which decisions might be played out as well as dreaming effectively (Schwartz, 1991).

Backcasting, a term coined by Robinson (1982), can be considered a type of scenario exercise. It is an approach to futures studies in which the starting point is desired ends where scenarios serve to explore the feasibility and implications of moving towards these goals (Robinson, 2003). Backcasting uses future depictions similar to the guiding visions discussed in section 3.3.3 but is not necessarily tailored to transition management.

3.4.2 The emergence of future studies

Moniz (2006) identifies science and technology, military interests, business, sociology, history, and the literary tradition as intellectual trends behind futures studies. The story of modern Western futures studies started after the Second World War (Schwartz, 1991; Son, 2015; Swart et al., 2004) in part due to the acceleration of change and the accretion of societal complexity (Innerarity, 2012; Schwartz, 1991; Toffler, 1978, 1984). According to Innerarity (2012), the appearance of modern futures studies demonstrate society's changing relationship to the future and transformations in how we govern. For instance, Toffler (1978) identifies anticipatory democracy characterized by exploring futures through public participation as an alternative to usual political processes inherited by the industrial era.

In the Western tradition prior to the scientific revolution in the 17th century, the future was often thought of as being pre-ordained according to a divine plan (Robinson, 2003). Several practices were used to discover the patterns that governed human destiny such as pyromancy which consisted of observing how fire burns in order to retrieve information on the future (Bell, 1996). With the Enlightenment, causal explanations were at the forefront and the future was understood as depending on chance, choices and the past (Robinson, 2003). Ironically, prediction was still at the forefront and considered a main measure of scientific validity (Bell, 1996; Robinson, 2003).

Authors usually identify three phases or waves of future studies in modern times (Mutombo & Bauler, 2009; Robinson et al., 1996; Son, 2015; Swart et al., 2004). According to Son (2015), the first phase (1945-1960s) is characterized by the prevalence of technological forecasting, the emergence of systematic ways to inquire into alternative futures, as well as increased professionalization. Utopias gave way to rationalization.

The second phase (1970s and 1980s) is marked by rising interest in global futures as well as involvement of the business community (Son, 2015). During the Cold War, future scenarios were used to study the consequences of nuclear proliferation (Kahn & Wiener, 1967) while in the 1970s, corporations like the Royal Dutch Shell oil company began pioneering futures-related work (Moniz, 2006) led by Pierre Wack (Schwartz, 1991). Future scenarios allowed Shell to anticipate the rise and fall of oil prices (Moniz, 2006; Schwartz, 1991). More importantly, Wack changed the focus of future scenarios from prognostication to altering the mind-set of decision-makers (Schwartz, 1991) through "The Gentle Art of Reperceiving" (Wack, 1984). Through Shell's strategic planning, creativity and imagination was in the vanguard to foster anticipation and adaptation in a rapidly changing context (Mutombo & Bauler, 2009).

Backcasting was also developed in the 1970s out of the discontent with forecasting exercises that favoured business-as-usual by relying on trend extrapolation assuming continual rises in energy demand with no regard for new technologies or conservation strategies (Vergragt & Quist, 2011). In the same years, Meadows and others (1972) used complex simulations of multiple interacting variables in order to assess their impact on the planet's carrying capacity in their famous report *Limits to Growth* (Swart et al., 2004). Scenarios therefore came into the public eye for the first time (Kosow & Gaßner, 2008).

The emergence of sustainability marks the beginning of the third wave where futures studies are increasingly sought for addressing its complex issues (Mulvihill & Kramkowski, 2010; Mutombo & Bauler, 2009; Raskin et al., 1998; Robinson, 2003; Rotmans et al., 2000; Swart et al., 2004). Prevalent uncertainties inherent to sustainability require decision making that moves away from single-point forecasting (Inayatullah, 2002). Following the Brundtland report and the Rio World Conference, there was a second wave of global scenario building, such as the Intergovernmental Panel on Climate Change (IPCC) series on greenhouse gas emissions (Swart et al., 2004). In Canada, future scenarios were also used to explore what the country might look like in 2030 through the Sustainable Society Project (Robinson et al., 1996). In addition, the 1990s moved towards hybrid and participative models of future studies (Robinson, 2003) such as participatory backcasting (Quist, 2007; Vergragt & Quist, 2011). Finally, future scenarios were increasingly utilized to address sectoral or thematic issues as well as in local communities (Mutombo & Bauler, 2009).

With respect to the evolution of futures studies, Slaughter (2002) identifies lessons learned concerning the relationship between the outside world that is understood and conditioned by our inside world. Slaughter (2002) points out that futures studies are subjugated to the broader expression of the modernist project while also having as a fundamental goal to promote visions that contravene prevailing assumptions. Furthermore, according to Inayatullah (2002), decisive

factors for the future of futures studies relate to tensions between reductionism and complexity as well as strategic and moral orientations.

3.4.3 Underlying premises

Identifying common beliefs underlying futures studies can be perilous considering the wide variety of existing initiatives, methods and approaches. Very different assumptions about reality, knowledge, agency, and change processes support futures initiatives. Nevertheless, several common underlying premises or assumptions can be identified.

Considering the future implies that time is understood as being continuous, unidirectional and irreversible (Bell, 1996). Although futures studies' authors might conceive the temporality of change as being linear (e.g., Bell, 1996), most suggest avoiding linear extrapolations of current trends or business-as-usual (e.g., Schmitt Olabisi et al., 2010; Schwartz, 1991) and moving away from single-point futures (Bell, 1996; Inayatullah, 2002, 2008). Furthermore, identifying assumptions and different temporality of changes are identified as requirements for futures studies (Inayatullah, 2008).

In addition, as Robinson (2003) points out, futures studies are based on the assumption that the future is essentially probabilistic and malleable rather than predetermined. Consequently, it is more appropriate to refer to *futures* than to *the future*. Futures are characterized by attributes that are not completely different from those present today but somewhat open and flexible to include anticipated and unexpected change (Walton, 2008). Consequently, there is room for novelty in futures and uncertainty is at the core of futures studies.

Since the future is presumed to be malleable to some extent, human agency is intrinsic to futures studies. The future can be understood as resulting from the human desires, projects, and dreams that propel human agency (Godet, 2007). In other words, futures can compel human action (Godet, 2007). By choosing between options and according actions, we influence and shape the future (Walton, 2008). This brings about questions related to the ontological status of the future. According to Bell (1996, p. 76) "[p]resent possibilities for the future are real." It is suggested that reality is not the most appropriate way to question the future (Wallenborn & Mutombo, 2009). Futures are made of events and becomings in which the past and the future belong to a virtual present (Wallenborn & Mutombo, 2009). What distinguishes the present from the future is not necessarily reality but actuality (Wallenborn & Mutombo, 2009). This relates well to Aristotle's four explanations of change divided between potentiality and actuality discussed in chapter 2.

Futures studies imply that looking into the future produces useful knowledge for decision-making and action (Bell, 1996). Bell (1996) identifies critical realism as an epistemological basis for futures studies since it conceives of knowledge as being conjectural while

acknowledging justified beliefs as truths of propositions. Bell (1996) specifies that knowledge about the future does not consist of facts. Knowledge of the future is nonevidential since the future cannot be observed. Therefore, principles such as bivalence which imply that propositions are true or false in a timeless way are not appropriate for futures studies (Wallenborn & Mutombo, 2009). Futures studies require that different propositions be true at the same time. For instance, we need to consider the possibility of a future in which climate change is stabilized and reversed as well as a future where it is not. The value of futures studies comes from this systematic exploration where propositions are compossible[4] (Wallenborn & Mutombo, 2009). Interdependence and holism underlie such thinking where relationships between entities and the questions that need to be asked are the focus rather than facts and substantive characteristics of systems in flux that need to be managed (Wallenborn & Mutombo, 2009). Therefore, focussing on a single gradient of one driving variable is not recommended (Schmitt Olabisi et al., 2010). Inayatullah (2008) refers to a "disowned future" where direction can sometimes deny other parts of ourselves or a system that can come back to haunt us.

Another assumption that follows the above reasoning is that it is possible to determine what futures and processes to get there are preferable (Bell, 1996). As mentioned above, futures studies aim to inform *better* decisions in the present by considering alternative futures that will guide actions. Normativity is intrinsic to futures studies (Bell, 1996; Godet et al., 2008). For instance, Slaughter (2002, p. 233) defines strategic foresight as "the ability to create and maintain *high quality forward views* and to apply these in organisationally *useful* ways." Similarly, Godet (2008, p. 8) defines the purpose of *la prospective* as seeking "*enlightened* anticipation by clarifying actions made in the present through the thoughtful examination of both possible and *desirable* futures" (emphasis added). It follows of course that acknowledging that the future can be better means that it can also be worse. Little information is given in the literature in how such judgements were made in futures studies initiatives.

3.4.4 Future studies for sustainability

Normative futures studies are anchored in beliefs such as exemplified by the following saying by the Roman philosopher Seneca: "Not a fair wind blows for him who knows not where he goes" (Godet et al., 2008, p. 9). Therefore, it is no surprise that the emergence of sustainability has spurred a third wave of futures studies as mentioned in section 3.4.2. Sustainability influences how we consider the future by directing our attention to the increased presence of environmental constraints and limits on prospects of human life while also aiming to better the extent and distribution of human and environmental well-being. Sustainability is characterized by a shift of emphasis towards futures that are desirable (Wallenborn & Mutombo, 2009) but

[4] Propositions that are possible in conjunction with others.

contingent on limited resources. As discussed in chapter 2, at its core is the moral necessity of considering future generations, which highlights the need for long term thinking.

Sustainability can provide guidance for the desirability of future states, for evaluating the different scenarios and visions produced as well as for designing futures studies processes (Wiek & Iwaniec, 2014). However, there is a gap in the futures studies literature in evaluating the relative preferability or desirability of different scenarios or strategies for change. However, quality criteria for rigorous futures studies initiatives are well-developed (e.g., Kosow & Gaßner, 2008; Kuusi, Cuhls, & Steinmüller, 2015; Wiek & Iwaniec, 2014). Of all the quality criteria for futures studies, only Wiek and Iwaniec (2014) specify that visions produced ought to be sustainable following an evaluation through sustainability criteria.

Several authors detail the usefulness of futures studies to the quest for sustainability (e.g., Mulvihill & Kramkowski, 2010; Swart et al., 2004; Wallenborn & Mutombo, 2009). For instance, Swart and colleagues (2004) demonstrated that scenario analysis contributed to nine research challenges of sustainability science such as engaging stakeholders, integrating across themes and issues, and reflecting uncertainties and considering the possibility of surprise through critical thresholds and abrupt change. Furthermore, Walton (2008) considers that futures studies are a good tool for dealing with multiple realities such as physical reality and reality that encompasses the social world, which demonstrates its utility in understanding SES.

Nevertheless, several limits to futures studies are identified. For instance, unrealizable goals or expectations, insufficient attention to the relationship between futures studies and decision spaces as well as being time consuming and costly are mentioned among many others (Duinker & Greig, 2007; Godet, 2000; Mulvihill & Kramkowski, 2010; Rotmans et al., 2000; Wack, 1984). Moreover, although futures studies are minimally vulnerable to academic turf wars due to their interests in a wide variety of knowledges, the subjective, normative and heuristic nature of futures studies represents barriers to their use in academia and in the *real world* (De Smedt et al., 2013; Inayatullah, 2002; Mulvihill & Kramkowski, 2010).

Futures studies address directionality of change in different ways such as in building capacities for adaptation and transformation. As discussed in previous sections, futures studies facilitate being prepared for whatever happens (Schwartz, 1991; Walker & Salt, 2006). Therefore a certain detachment and calmness facilitated by a long term view is suggested (Godet et al., 2008; Schwartz, 1991). Such detachment assists adaptation to changing circumstances by decreasing emotional shock when things do not unfold as envisaged (Inayatullah, 2008). Moreover, as mentioned in the above discussion on transition management (section 3.3.3), futures studies can contribute to system innovation. Scenarios also serve as a way of legitimizing decisions and actions in addition to providing information for decision making (Swart et al., 2004).

The focus of futures studies is not solely to *know* the future but to observe the present from different futures (Godet et al., 2008; Robinson, 2003). Therefore, futures studies facilitate changing perspectives and distancing oneself from assumptions by looking far ahead (Inayatullah, 2008; Schwartz, 1991; Wallenborn & Mutombo, 2009). Long-term considerations make assumptions and their consequences difficult to discern (Schwartz, 1991; Wallenborn & Mutombo, 2009). Futures studies also raise a specific set of critical questions related to change and the future. For instance, Inayatullah (2008) suggests making explicit assumptions about envisaged and desired futures as well as on change and its temporality.

Table 3.5 presents generic requirements for future scenarios and backcasting for sustainability. Most of the requirements concern the quality of scenarios or visions and are intrinsic to their definition (e.g. plausible, coherent, realizable, etc.). More importantly, the requirements represent the variety of ways in which scenarios explore the tensions between possibility (from actuality to potentiality) and desirability (potentiality to actuality). Process criteria are also specified for futures studies such as the iteration between image building and strategies to get there and participation in such processes (Wiek & Iwaniec, 2014). Transparency about the favoured goals and strategies is also crucial particularly since futures cannot be empirically verified (Godet, 2000; Kosow & Gaßner, 2008; Swart et al., 2004). Scenarios or visions need to be nuanced in part through exploration of different priorities between goals and values, which therefore have to be made explicit through transparency (Wiek & Iwaniec, 2014).

Table 3.5 Generic criteria for scenarios and backcasting for sustainability

Criteria	Explanation	Sources
Plausible	Incorporate sufficient elements from the present empirical reality	(Bossel, 1998; Godet, 2000; Kosow & Gaßner, 2008; Swart et al., 2004; Wiek & Iwaniec, 2014; Wollenberg, Edmunds, & Buck, 2000)
Consistent/ coherent	Paths and images of the future must not contradict each other	(Bossel, 1998; Godet, 2000; Kosow & Gaßner, 2008; Schmitt Olabisi et al., 2010; Swart et al., 2004; Wiek & Iwaniec, 2014; Wollenberg et al., 2000)
Comprehensive	Integrate a large number of interrelated elements	(Kosow & Gaßner, 2008; Kuusi et al., 2015; Swart et al., 2004)
Integrated, systemic/ holistic	Integrate elements from different domains and levels (vertical and horizontal integration) and do not focus on a single gradient of one variable	(Inayatullah, 2008; Kosow & Gaßner, 2008; Schmitt Olabisi et al., 2010; Swart et al., 2004; Wiek & Iwaniec, 2014)
Distinctive	Each scenario must be sufficiently different from one another	(Inayatullah, 2008; Kosow & Gaßner, 2008; Schmitt Olabisi et al., 2010)
Multiple	Multiple scenarios (2 to 5) must be produced in order to identify different pathways	(Duinker & Greig, 2007)
Nuanced	Different scenarios should explicitly explore different priorities	(Wiek & Iwaniec, 2014)
Realizable	Based on real resources and their processes	(Bossel, 1998; Frittaion, Duinker, & Grant, 2010; Ravetz, 2000; Wiek & Iwaniec, 2014; Wollenberg et al., 2000)
Transparent	Transparent about decisions, priorities and assumptions since products of futures studies cannot be reproduced or falsified for validity.	(Godet, 2000; Kosow & Gaßner, 2008; Swart et al., 2004)
Critical	Highlight assumptions about envisaged and preferred futures as well as change and its temporality	(Inayatullah, 2008)
Anticipative	Anticipate potential changes and prepare to take advantage of such changes while also building compelling projects towards desired futures	(Godet, 2007; Schmitt Olabisi et al., 2010; Schwartz, 1991; Swart et al., 2004)
Understandable/ Usable	Must be understandable to different users and decision-makers in order to fulfill their function	(Kosow & Gaßner, 2008; Kuusi et al., 2015; Wollenberg et al., 2000)
Relevant	Must relate to people's lives, roles and responsibilities.	(Godet, 2000; Wiek & Iwaniec, 2014; Wollenberg et al., 2000)
Compelling/ detachment	Must entice action towards desired futures while also acknowledging the inherent possibility of surprise.	(Godet et al., 2008; Swart et al., 2004; Wiek & Iwaniec, 2014)
Aligning	Must generate further alignment between daily activities, strategies and images	(Inayatullah, 2008)
Bridging	Must create a bridge between the past and the future, domains, levels, communities, etc.	(Gill & Reed, 1997; Quist, 2007; Wiek & Iwaniec, 2014)
Participative	Must incorporate public participation minimally in the determination of goals	(Kosow & Gaßner, 2008; Quist, 2007; Swart et al., 2004)
Learning	Emphasis should be on social learning	(Inayatullah, 2008; Robinson, 2003; Wollenberg et al., 2000)
Sustainable	Goals and visions produced, the processes for determining them and their evaluation must meet sustainability requirements	(Wiek & Iwaniec, 2014)
Iterative	Continuous re-assessment of visions and alignment strategies	(Ravetz, 2000; Wiek & Iwaniec, 2014)

Intentional change in futures studies that combines normative and possible futures relies on a combination of processes of virtualization (creating coherent images or scenarios of the future)

and processes of actualization (transforming virtual reality into the present constrained by strengths, weaknesses and contingencies). Alignment is therefore necessary, which requires building bridges between day-to-day activities, strategies and broad desirable visions (Godet et al., 2008; Inayatullah, 2008).

Godet (2008) highlights that preparing for surprises or future possible changes does not preclude us from provoking desired changes. Bell (1996) mentions old debates about false contradictions between determinism and freedom. For instance, while it is determined that we will die, when and how this will occur is not. *La prospective*, developed by the French philosopher Berger in the mid-1950s (Godet, 2007), is based on a definition of anticipation which integrates pre-activity and pro-activity. Pre-activity is defined as anticipating possible changes in the global environment so as to best prepare oneself and take advantage of such changes (Godet, 2007). Pro-activity is the deliberate construction of a project which compels an organization or community to take action leading to a desirable future (Godet, 2007). It reconciles current situations with the range of choices it affords and desires.

In addition, transitional processes are contested. Past and future can be better articulated when valued attributes of actors of the old regime are integrated into the new image (Gill & Reed, 1997). For instance, the case study of the reimagining process of the forest-dependent community of Squamish, British Columbia demonstrates the important role of the bridging concept of heritage in identifying a new orientation for the community (Gill & Reed, 1997).

Vision and scenario exercises towards sustainability ought to be geared towards social learning which requires several interactions between people involved at all stages of the process (Robinson, 2003). Referring to the different uses of the future, Inayatullah (2008) identified several levels of contributions or potential learning. First, learning can concern new competencies and skills for participants such as being more innovative by recognizing assumptions. Second, futures can contribute in creating capacities to create desired futures. Then, futures thinking favours emergence by creating the conditions for a paradigm shift. Finally, futures can participate in changing memes (the ideas that govern institutions) (Inayatullah, 2008). Putting forward multiple, distinctive and understandable scenarios and visions quality criteria support the learning criteria. Furthermore, joint learning has been identified as a factor of long term success in backcasting exercises (Quist, 2007).

3.5 Towards an integration of the approaches

Attempts have been made to compare adaptive management and transition management (Foxon et al., 2009; Smith & Stirling, 2010; van der Brugge & van Raak, 2007; Voß et al., 2009). Both approaches recognize complexity, address multi-scale dynamics, and are learning oriented (Foxon et al., 2009; van der Brugge & van Raak, 2007). Change is at the core of both approaches and similarities can be found between multi-phase (Loorbach, 2007; Olsson et al.,

2010) and multi-level frameworks (Rip & Kemp, 1998). Initial phases of the resilience and transition management approaches are similar in encouraging respectively transformative experiments at small scales and arenas for safe experimentation (Folke et al., 2010). While the transition management approach puts forward new goals and processes to reach them, the resilience approach allows "the new identity of the SES to emerge through interactions within and across scales" (Folke et al., 2010). The resilience and transition management approaches have very different origins. Furthermore, SES are locally anchored while socio-technical systems are not place bounded (Smith & Stirling, 2010).

Futures studies are recognized as an essential component of both approaches, and more broadly they are coherent with the pursuit of sustainability in a complex and dynamic world. Sustainability is simultaneously about change as it is about preserving or sustaining desired qualities in a constantly changing environment and futures studies can contribute to both aspects.

The literature review presented in this chapter demonstrates diverse possible governance for sustainability strategies. Even with different theoretical underpinnings, intentional change lessons from these three literatures can be extrapolated. More importantly, the literature review reveals the challenge and possible room for improvement in dealing with substance and process requirements of sustainability in pursuing intentional change.

In summary, the literature review uncovered tensions in the resilience approach in combining non-directed change causing systemic shifts and notions of human agency (Westley et al., 2013). More recent literature on transformation in SES demonstrates that actors are contingently able to intentionally influence the direction of change (Gelrich et al., 2010; Olsson et al., 2010; Olsson, Folke, & Berkes, 2004). However, the new system emerges without pre-established goals or processes (Folke et al., 2010). Consequently, additional sustainability considerations beyond socio-ecological integrity are overlooked. However, fairness and equity have recently been added as attributes of a resilient world (Walker & Salt, 2012).

In the transition management approach, the most present issues with the approach to intentional change underlined in the literature review concerned who decides and builds the vision and criteria that will guide the transition process. Thus, the majority of criticisms of the approach are directed towards the oversight of power relations and agenda setting in the process as well as its lack of democratic reflection. Sustainability is defined as "a complex long term, multi-level, multi-actor process" (Loorbach, 2007, p. 23). Processual characteristics of sustainability in a complex and dynamic world are emphasized over normative considerations. Thus, no generic sustainability criteria serve as transparent guidance to identify possible omissions in the approach.

Futures studies literature has emphasized quality characteristics of scenarios and visions in order to better deliver move towards sustainability. However, few studies suggest using sustainability criteria to assess the desirability of future states, compare alternatives and designing futures studies processes (e.g., Wiek & Iwaniec, 2014).

Nevertheless, these three approaches provide valuable insights based on extensive case applications on ways to generate intentional change in a complex and dynamic world. The need for generic requirements for sustainability emerges as a way to make sure that there are no omissions in key considerations. As mentioned by Gibson (2017), "the absence of explicit criteria is an indicator of unquestioned adherence to established practice or fear that the underlying reasoning would not withstand scrutiny" (p. 21). Furthermore, processes should be open enough to assure that they are submitted to critical review (Gibson, 2017).

Generic sustainability requirements are however insufficient in themselves to guide action. Sustainability criteria also need to be specified to the context. Without specification, the desired endeavors remain too vague to provide guidance in concrete action. Criteria specification clarifies expectations and standards as well as favours reflection on the purposes and objectives pursued (Gibson, 2017). It should also be open to participatory debate (Gibson, 2017). Criteria also need to be iteratively revisited in order to adapt to changes circumstances.

To address the identified challenge as well as to build on lessons on ways to pursue intentional change, these insights are integrated within Gibson's (2005; 2017) sustainability assessment framework which sets forward generic sustainability criteria and provides guidance for criteria specification to meet particular contexts of application. Hence, the framework allows assessing simultaneously contributions to sustainability and intentional change.

3.5.1 Sustainability assessment

Sustainability assessment is most often depicted as emerging from and being similar to environmental impact assessment and strategic assessment (Bond, Morrison-Saunders, & Pope, 2012; Gaudreau, 2013; Gibson et al., 2005; Pope, Annandale, & Morrison-Saunders, 2004; Waas et al., 2014). Sustainability assessment is qualified as a new field (Waas et al., 2014) in its early stage of development (Bond et al., 2012) or as a later, more comprehensive version of environmental impact assessment (Gibson, 2002; Sadler, 1999).

Sustainability assessment has been broadly defined as referring to any process that can direct decision-making towards sustainability (Bond et al., 2012; Devuyst, 2000). This allows considering several forms of decision-making concerning projects, plans, programs and policies (Bond et al., 2012). Therefore, sustainability assessment also emerged in the field of planning and resource management (Gibson et al., 2005) and from new imperatives for sustainability following international agreements (Bond et al., 2012). More specific definitions

of sustainability assessment highlight its anticipative nature (Pope et al., 2004). This might explain the use of the term "assessment" rather than "evaluation" which would suggest focusing on ex-post consequences (Waas et al., 2014).

Furthermore, sustainability assessment that incorporates respect for complex systems represents a move away from the three pillars of sustainability approach towards broad principles or criteria for change towards sustainability (George, 2001; Gibson et al., 2005; Sadler, 1999). Following from this is the underlying idea that sustainability assessment's purpose is to focus attention on delivering positive contributions to sustainability, while also avoiding significant adverse effects (Gibson et al., 2005; Verheem, 2002). The emphasis in environmental assessment on mitigating negative impact can be traced back to the evolution of environmental policies and management that was initially more concerned with regulating the polluting industries than protecting the environment per se (Howlett, 2002) or moving towards sustainability for that matter.

Several authors identify guidelines for sustainability assessment or key features (Bond et al., 2012; Gaudreau, 2013; Gaudreau & Gibson, 2010; Gibson et al., 2005; Sala, Ciuffo, & Nijkamp, 2015). For instance, participation, transdisciplinarity and transparency are mentioned as being essential to sustainability assessment as well as generic substantive objectives such as inter and intragenerational equity (e.g., Gaudreau, 2013; Sala et al., 2015). Through time, specific principles or guidelines underlying a sustainability assessment approach have been identified, some of which integrate some notion of complexity and resilience (Gaudreau, 2013; Gaudreau & Gibson, 2010; Gibson et al., 2005). Furthermore, specific trade-offs rules have been identified in order to help guide decision making in situation where not everyone wins and agrees (Gibson et al., 2005).

3.5.2 Gibson's (2005) sustainability assessment approach as governance for sustainability

Gibson's (2005, 2017) assessment approach has been selected for its philosophical overlaps with conclusions from chapter 2 and lessons from the different approaches to governance for sustainability outlined in this chapter. Gibson's (2005, 2017) approach focuses on understanding how recognizing the interactions of sustainability criteria can help deliver multiple, mutually reinforcing, and lasting gains. Such a perspective based on contributions to sustainability moves away from solely searching to avoid negative impacts through mitigation measures as unique justification for decision making. The change in focus broadens the reflection by opening up the discussion on sought purposes and intentions in light of social-ecological trajectories. This philosophy integrates lessons from chapter 2 related to the insufficiency of consequentialist perspectives due to inherent uncertainties in a complex and dynamic world. It is also well justified in a context of new moral sensitivities demanded by sustainability imperatives (Norton, 2005). Avoiding negative impacts is insufficient to move towards sustainability. Similarly, being responsive is not necessarily "good" in itself. Hence,

purposes, values and envisaged futures are at the forefront and the possible consequences of our actions or the symptoms of socio-ecological trajectories become a component of a more complete package. This stance is at the core of the argument developed in the sustainability assessment literature. Although complexity dampened the myth of rational decision making where scientific facts support best decisions, it unleashed a great amount of normative power (Chang, 1997). Multiple paths and desirable states are possible and more knowledge is needed in order to better navigate through the possibilities. No criteria are privileged above others. They are all mutually supportive and essential to sustainability. Synergy is preponderant rather than hierarchy.

3.5.3 Requirements for governance for sustainability

Table 2.1 in chapter 2 presented the eight key sustainability requirements according to Gibson's (2005, 2017) approach. The requirements are socio-ecological system integrity, livelihood sufficiency and opportunity, intra and intergeneration equity, resource maintenance and efficiency, socio-ecological civility and democratic governance, precaution and adaptation, and immediate and long term integration. The following sections details how resilience and intentional change considerations can be integrated into Gibson's (2005, 2017) sustainability assessment framework. Appendix A presents the core generic requirements for sustainability assessment as well as illustrative explanations.

3.5.3.1 Resilience considerations

There are several overlaps between Gibson's (2005, 2017) sustainability requirements and resilience criteria identified by Walter and Salt (2012). Resilience criteria are less comprehensive than sustainability assessment criteria. They do not aim at identifying the desired qualities of socio-ecological systems beyond their ability to adapt or transform. However, the resilience approach provides some guidance in specifying system qualities for socio-ecological integrity such as system configuration (modularity) and information flow (tight feedback). These considerations can be integrated within Gibson's (2017, 2005) socio-ecological system integrity requirement.

Moreover, additional resilience criteria overlap with sustainability assessment requirements such as fairness and equity as well as humility. Fairness and equity can be met through intragenerational equity which concerns distributional effects as well as through process requirements in terms of enhancing democratic governance. Similarly, the notion of humility is directly addressed in Gibson's (2005, 2017) sustainability assessment framework through the precaution and adaption requirement which consist of respecting uncertainty and avoiding poorly understood risks of serious or irreversible damage to sustainability (Gibson et al., 2005).

Resilience criteria can also moderate the sustainability requirement for enhanced resource and energy efficiencies by directing the attention towards the need for system redundancy (Gaudreau & Gibson, 2010).

3.5.3.2 Intentional change considerations in sustainability assessment

The literature review identified several intentional change criteria and several criteria are common to different approaches. For instance, all areas of scholarship reviewed highlight the importance of building a shared and integrative problem understanding of problems and opportunities as a criteria for governance for sustainability (Chapin et al., 2010; Inayatullah, 2008; Loorbach, 2007; Olsson et al., 2010; Wiek & Iwaniec, 2014).

For the most part, these intentional change criteria can most logically be integrated within the immediate and long term integration requirement as intentional change implies seeking mutually supportive benefits and multiple gains for all sustainability requirements. However, these specific choices will have to be enlightened by context considerations for forest communities.

Transposing intentional change lessons into Gibson's (2005, 2017) sustainability assessment framework is not a linear process. There is overlap between criteria and often multiple rationales behind a singular criterion. Furthermore, reinterpretation is necessary to adjust to the applied context. Most importantly, sustainability criteria are not a recipe but aim to bring to the forefront elements that are worth considering in a specific context.

3.6 Conclusion

This chapter reviewed different governance for sustainability approaches in order to identify intentional change requirements. More specifically, the selected bodies of literature were the resilience approach and transformation in SES, transitions towards sustainability and innovation studies, and futures studies. Futures studies are present in both the resilience and transitions and innovations towards sustainability approaches. A common challenge in the literature related to dealing with the direction of change towards sustainability.

Sustainability assessment using explicit criteria for evaluations and decisions was discussed as a complementary approach to addressing the challenge of linking intentional change to sustainability endeavours. More specifically, Gibson's (2005; 2017) sustainability assessment framework and approach to specifying criteria for case applications was explained and justified as an anchor for further integration of intentional change criteria. Explicitly identifying criteria for progress towards sustainability allows being transparent examination of the contributions pursued. Chapter 5 presents the conceptual framework specified for application to forest communities.

CHAPTER 4 - RESEARCH DESIGN

4.1 Introduction

Research design encompasses broad assumptions that underlie research from different strategies of enquiry to specific methods of data collection and analysis (Creswell, 2009). This chapter details the elements relevant to the research design adopted for the applied portion of this dissertation.

Section 4.2 presents the research approach as explorative and transdisciplinary. Section 4.2 also justifies using a case-study approach for this research as well as choosing the ALRCM as a forest community and two community-led initiatives embedded in ALRCM as sites of exploration for lessons concerning governance for sustainability. More specifically, The Bourdon project, a Forest Community initiative under the federal Forest Communities Program (FCP) and a Vision exercise (*Voyons loin agissons ensemble pour un développement durable*) that took place in the ALRCM were studied.

Section 4.3 describes the methodological tools used to collect and analyze data. Data collection was based on three methods: semi-structured interviews, participant observation and field notes, and document analysis. Section 4.3 also provides details concerning data analysis. The data collected was analyzed through an inductive and deductive approach. This led to sustainability criteria specification for the application to forest communities. Once the conceptual framework was developed, the two studied initiatives' contributions to sustainability were assessed through a simple metric (i.e., significant, minor or unmet criteria).

4.2 Research approach

Strategies of inquiry or methodology are usually presented as being qualitative, quantitative or as using mixed methods. Qualitative research is suitable as a "means for exploring and understanding the meaning individuals or groups ascribe to a social or human problem" (Creswell, 2009, p. 4). Since the intended research is exploratory, a qualitative strategy of inquiry was pursued. Qualitative research is well-justified for making sense of ongoing processes that do not abide prediction (Babbie, 1986). By contrast, quantitative research generally aims to determine the validity of predictive generalizations (Creswell, 2009). Although quantitative sustainability assessment methods can be used such an approach was not chosen for this dissertation. The emphasis of the research pursued in this dissertation was on developing and applying a set of sustainability-based criteria through integration. Section 4.4 provides additional details on how research results were analyzed.

Contexts for social situations play a significant part of qualitative social research (Flyvbjerg, 2001; Neuman, 2003). According to Flyvbjerg (2001), paying attention to context specificities

is part of what makes social sciences matter. By specifying sustainability criteria for a specific type of communities facing similar challenges, context plays a preponderant role in this research that iteratively navigates and bridges general principles to their local form. Validity is not considered to be attained solely through universal facts or values nor in empirical contexts but through a dialogue between the two. Furthermore, knowledge produced by sustainability research is a means to progress rather than a goal in itself (Loorbach, 2007). The research approach also embraces the recent changes in epistemology where certainty is not science's product (Ravetz, 1992).

Transdisciplinary approaches are increasingly adopted to address messy sustainability issues (Angelstam et al., 2013; Hadorn et al., 2006; Voß et al., 2008). Such issues transcend disciplinary boundaries and are intertwined with socio-political contexts. Ambiguity remains in the definition of transdisciplinarity and its distinction from multidisciplinarity or interdisciplinarity. Transdisciplinarity is understood here as an approach aiming at resolving *real world problems* and having practical application of various knowledges as key motivator (Brown, 2015; Montuori, 2008). This research addresses the *real world problem* of the quest for sustainability in a rural forest community challenged with the forestry crisis and multiple enduring stresses.

Transdisciplinarity is understood as a way of thinking and organizing knowledge that recognizes the roles and values of inquiry rather than trying to suppress them (Montuori, 2008). It also implies internal (academic) and external (communities and stakeholders) collaboration (Russel et al., 2008). Although this research was not based on a participatory action research methodology, information gathered by field visits and through discussions with key informants helped orient the research's direction. In these terms, this research project follows a transdisciplinary approach.

Following an explorative and transdisciplinary approach, the conceptual framework was built through an iterative process, or an inductive and deductive approach, alternating between understanding issues in the region of study as described by key informants, interviewees and regional or local documents, and exploring theory that would help comprehend and guide change in this situation. In this way, the sustainability criteria were specified for the studied region.

The research approach also coincides with phronetic research focused on questions about where are we going, who gains and who loses from this development, is this direction desirable and what should be done (Flyvbjerg, 2001). Phronetic research favours letting go of taken-for-granted scientific *truths*, putting the problems that matter to different communities first, and iteratively dialoging with fellow local actors concerning the research (Flyvbjerg, 2004).

Following a complexity approach, a predefined, linear research process would have been illogical and counter-effective. An open and explorative research approach in which the core research question evolves and best methodologies are chosen was consequently put forward.

4.2.1 Case study approach and case study selection

This research is based on an in-depth single case study of a forest community through the inquiry of two embedded sub-cases or initiatives striving for sustainability. Several misunderstandings have led to criticism of the use of case studies (Flyvbjerg, 2006; Gerring, 2004). The intended research here is not explanatory or descriptive although some description was needed to expose contextual elements. The case research aims to illuminate governance for sustainability through a new conceptual lens, which justifies well the chosen strategy (Siggelkow, 2007). According to Yin (2003), deliberately focussing on a specific contemporary context is another of the elements that makes a case study a good choice of strategy of inquiry. According to Yin (2003), single case studies as a strategy of inquiry can be justified when the chosen case represents a typical case or when it represents a longitudinal case that is studied at two or more points in time. Single cases also have the capacity to accommodate multiple units of analysis (Creswell, 2009) as demonstrated in this research.

The ALRCM was chosen as a forest community to study through a process involving several steps. Forest-dependent communities were particularly impacted by the recent forestry crisis and are thus in need for change while simultaneously possessing tremendous potential for sustainability due to lasting socio-economic benefits and ecological services provided by forests. In Canada, over 300,000 jobs were lost in the forest sector between 2002 and 2012 (Natural Resources Canada, 2013b). Quebec is the province that has been most affected by forest industry layoffs followed very closely by British Columbia (Smith & Parkins, 2011). Choosing a forest community in Quebec was particularly interesting since the forest regime was in transition (transition period 2010-2013) during the period of study due to the gradual implementation of the new forest management policy framework. This entailed several uncertainties and possible openings for moving towards sustainability in forest governance.

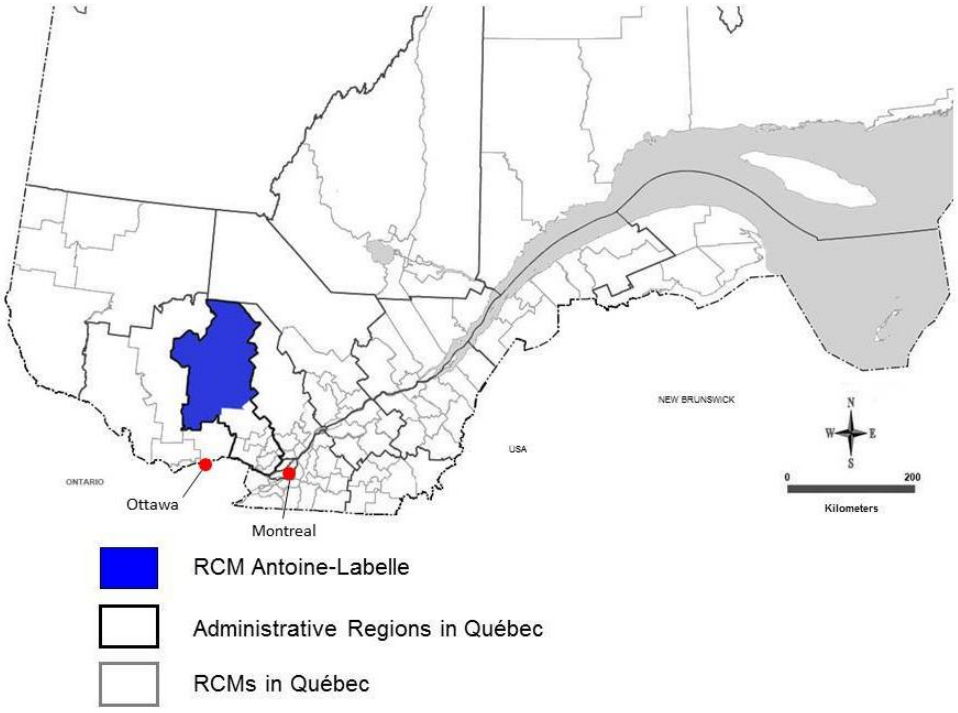
In response to the enduring forestry crisis, the federal government launched the Forest Communities Program (FCP) in 2007 aimed at supporting forest communities in adjusting to the forest sector transition and to take advantage of emerging forest-based opportunities (Natural Resources Canada, 2013a). Model Forests and Forest Communities have been identified as examples of innovative place-based governance initiatives towards sustainability in forest communities (Lapierre, 2002). Therefore, an overview of the different Model Forests and Forest Communities in Canada was undertaken. Examples of extreme situations (failure or success) were eliminated in order to keep typical cases to test the proposed framework. As mentioned in the research objectives in chapter 1, the aim of this dissertation was to develop a

conceptual framework of governance for sustainability rather than explicitly generating understanding of the factors of success and failure of sustainability initiatives.

Two regions in Quebec were selected under the FCP: The Bourdon project in the ALRCM and Lac-Saint-Jean's Model Forest in the Saguenay-Lac-Saint-Jean region. The regions are very different in terms of proximity to markets, population, forest industry structure and projects under the FCP.

The ALRCM was chosen since a community-led collaborative sustainability Vision exercise was also put forward during the same time period. No such long term thinking initiative could be found in the Saguenay-Lac-Saint-Jean region outside usual planning. The following figure illustrates the geographic location of the ALRCM in Quebec. With two simultaneous sustainability initiatives, the ALRCM presented itself as fertile ground to explore the application of a sustainability assessment framework integrating intentional change requirements specified for forest communities.

Figure 4.1 Geographic location of the ALRCM in Quebec



Source: Jastremski, 2010

Moreover, the ALRCM was greatly impacted by the forestry crisis. Employment within the forest sector was reduced by more than 50 percent between 2004 and 2007 (Ecotec Consultants, 2007). As will be further detailed in chapters 6 and 7, the forestry crisis significantly modified the industrial structure in place in the ALRCM.

Good knowledge of the ALRCM issues and key informants was also an important factor in selecting this region as well as familiarity with the language. In 2009, for a six month period, I was employed by the ALRCM through the provincial Assistance program for the prevention of blue green algae of the *Ministère des Affaires municipales, des Régions et de l'Occupation du territoire*. My family history is also intertwined with the region.

In spring 2012, the Federal government announced significant cuts to the FCP. Financial support was reduced by 50 percent each year and was entirely eliminated within three years. Several initiatives such as The Bourdon project were unable to persist after the program was abolished. The Bourdon project was terminated in 2014.

4.3 Research methods

Research methods consist of ways of collecting, analyzing and interpreting data (Creswell, 2009). The choice of research methods is directly tied to the objective pursued. Section 4.3.1 presents the different data collection methods used in this dissertation. Section 4.3.2 describes how the data collected was analyzed.

4.3.1 Data collection

The data for this research was collected through semi-structured interviews, participant observation and field notes, as well as through the selection of relevant documents. Tashakkori and Teddlie (1998) mention that triangulation facilitates validating results by combining different sources of information, encourages creativity by identifying new factors for further research, and increases the research scope for a thicker understanding of the research problem.

4.3.1.1 Semi-structured interviews

Semi-structured interviews are a useful methodological instrument to gain access to actors' experience by allowing the exploration of their perspective in order to understand social phenomena (Poupart, 1997). They provide an insider's perspective on the issues actors face and can facilitate the emergence of new dimensions expressed in the interviewee's own terms (Poupart, 1997; Wholey, Hatry & Newcomer, 2004).

Key participants in both initiatives studied were interviewed. Each interview closed with the identification of further potential valuable interviewees. All the identified people were interviewed with the exception of a representative of the Atikamekw First Nation community

of Manawan, which represents a significant limitation to this dissertation. Representatives of the Atikamekw First Nation community refused to take part in the interview process due to lack of time and family issues. Several documents produced by the Atikamekw First Nation community of Manawan as well as academic research related to the community were reviewed in order to gain further insight into their sustainability challenges.

In total, 20 interviews were conducted. Two interviews were completed by phone while all the others were conducted in person. Five of the people interviewed were involved in both initiatives. Thirteen interviews were conducted with The Bourdon project partners and 12 local governance actors involved in the Vision exercise were interviewed. Invitations were sent to all the people involved. General interview questions for both initiatives are presented in Appendix B. The length of the interviews was between 41 minutes and 1.5 hours for an average of 1 hour and 5 minutes per interview. The interviews took place between July 2014 and March 2015.

As further explained in chapter 6, the provincial Liberal government elected in 2014 considerably modified the governance landscape in Quebec, including the governance of forests on public land, by removing or diminishing the number of governmental structures. Several interviews were conducted with participants directly affected by these changes. This specific unpredictable contextual element considerably influenced the research results by emphasizing the provincial government's threat to local governance through its plans to remove or diminish the number of governmental structures.

Tables 4.1 and 4.2 present the participants to the initiatives based on their position at the moment of the interview.

Table 4.1 Interviews with partners of The Bourdon project

Interviewed participants	Number of Interviews
Ministry of Forests, Wildlife and Parks	1
Forest industrial worker	3
Regional Forest-based organization	1
Outfitters, controlled harvesting zones organizations (ZECs), off-road vehicles organization	3
Regional Land and Natural Resources Commission of the Laurentians	1
Antoine-Labelle Regional County Municipality (ALRCM)	1
Local development center (CLD)	2
Forest innovation and research	1

Due to changes in positions through time, presenting results through a specific typology of actors was not feasible. For instance, distinguishing between governmental and forest

industrial actors' perspective was not possible since several industrial participants were hired by the Ministry of Natural Resources and Wildlife (now the Ministry of Forests, Wildlife and Parks) during the lifetime of the initiative.

Several interviewees from The Bourdon project were aware of the Vision exercise and were involved as citizens. Therefore, additional general perceptions of the initiative were gathered. As with The Bourdon project, some interviewees changed position during the initiative's lifetime. For instance, one interviewee was first involved in the Vision exercise as a representative of a community organization and later participated as a political party representative. The following table presents the participants interviewed based on their position at the moment of the interview.

Table 4.2 Interviews with participants of the Vision exercise

Interviewed participants	Number of Interviews
Community organizations	3
Forest sector	1
Politicians or political party representative (Federal, provincial, and municipal levels)	4
Antoine-Labelle Regional County Municipality (ALRCM)	1
Local development center (CLD)	2
Consulting firm	1

In addition, five key informants helped to provide additional information on the ALRCM one of which also took part in The Bourdon project. Three were employees or former employees of Ministry of Forests, Wildlife and Parks in the Laurentians. The other key informant was a forest industry general manager in the ALRCM.

The UW Office of Research Ethics provided clearance for the research project (May 2014) after reviewing the interview protocol and interview questions. Potential participants were contacted by email, in person or by phone and interviews only started when participants stated that they had reviewed the information letter, signed the consent form and agreed verbally to be sound recorded.

The interview questions were divided into six building blocks. The first block queried the interviewees' professional backgrounds, and their roles in their organization in the present and at the time of their involvement in the initiative (s). The second block aimed at understanding how the initiatives functioned and at identifying its main achievements and challenges. Block three's focus was on the issues and assets of the ALRCM. Interviewees were also asked to identify a broad desired future for the region as well as possible threats. Block four returned to

the contributions of the specific initiatives in light of the challenges identified in block three. Block five inquired about possible solutions and barriers to further change towards a sustainable future. Finally, block six closed the interviews by giving the interviewees the opportunity to add any other information they judged relevant, to ask questions about the project, and to identify other potential interviewees.

All of the interviews were audio recorded and transcribed in their entire length through verbatim to capture their entirety (Poupart, 1997) rather than relying on note taking. All the interviews were conducted in French. The software *Sonal* was used for transcribing the interviews. This software was chosen particularly since it was developed to be used in French. Difficulties may be encountered using transcribing software developed for the English language in dealing with different French language letters (i.e., é, ç, ï).

4.3.1.2 Participant observation and field notes

Field notes document descriptive elements that recordings cannot capture such as setting characteristics, facial expressions, and a researcher's impressions (Given, 2008). In addition, participant observation allows learning through exposure by immersing the researcher into a specific setting (Kawulich, 2005). While participation observation is often linked to deception (i.e., covert participant observation) as a strategy by the researcher (Given, 2008, Kawulich, 2005), in the context of this research, such a strategy was not necessary as the focus was on understanding the substance and processes of the events. However, research purposes were not disclosed to all participants in the events.

Several trips were made to the ALRCM during this dissertation. Observations were made during a one day seminar on non-timber forest products (NTFP) organized by The Bourdon project (25 February 2011) and during public consultations related to the Vision exercise in the ALRCM (21 February 2011 in Mont-Laurier, 22 February 2011 in Lac-des-Écorces). In addition, a field day in the public forest of the region guided by an employee of the Ministry of Forests, Wildlife and Parks was undertaken on 5 September 2014. This field trip allowed better understanding through a concrete demonstration of forest activities (recently harvested areas, areas in regeneration through new silviculture practices, new roads and bridges, etc.) and their issues. Field notes were taken immediately after all event participation to minimize the loss of information.

4.3.1.3 Documents

According to Tremblay (1968) (cited by Cellard (1997)), documents guide a longitudinal perspective that allow observations of the evolution of knowledge and individuals through time. Consequently, a temporal dimension can be added to social analysis.

Several documents were reviewed in order to specify the context related to the assessment criteria for the ALRCM. Different documents produced and published by The Bourdon project and the Vision exercise were analyzed. The Bourdon project produced a large amount of publications available on their Internet site. Annual reports and just over 50 project reports were analyzed in light of the developed conceptual framework (see section 4.3.2 for additional information on document analysis). Several documents were also produced by the Vision exercise such as the main findings of the public consultations and the Citizen Forum, a portrait of the issues in the region as well as the action plan. Furthermore, documents produced by members of the hired firm for the Vision exercise explaining their perspective and procedures were analyzed to gain further insight on their sustainability framework developed throughout the years.

The two main local and regional newspapers (L'Echo de la Lièvre and Le Courant des Hautes-Laurentides) as well as historical documents were studied to better understand issues such as different forestry conflicts in the region. These documents allowed a better understanding of the evolution of the relationships between communities and forests in the region. This historical information was gathered by and through the *Société d'Histoire et de Généalogie des Hautes-Laurentides*.

In addition, documents detailing the challenges through time in the Laurentians, the Upper-Laurentians, and ALRCM were analyzed. These stem from work accomplished by the Regional Land and Natural Resources Commission of the Laurentians (abolished in 2015 (see chapter 6)) in their Integrated Land and Resources Management Plan for public land in the Laurentians, the ALRCM's land use and development plans, as well as different socio-economic development community organizations' diagnostics of the region.

In summary, data collection followed Gibson's (2017a) guidelines for criteria specification:

- Ensure attention to all of the interdependent requirements for progress towards sustainability while respecting the particulars of the case and context and the needs and capacities of the participants;
- Use multiple methods of information gathering
- Work to identify the interactions and implications of considerations that most often have been addressed separately through time.
- Engage with those that are potentially affected as well as relevant experts and authorities, and emphasize attention to the interests of future generations who cannot be represented directly.
- Share and present the proposed specified criteria, their categories and elaborations in language that all participants can understand.

4.3.2 Data analysis

This section provides details on how data collected through the three methods presented above was analyzed in order to meet the purpose of this dissertation of developing a sustainability assessment framework that integrates intentional change requirements for the application to forest communities.

4.3.2.1 Transcript, field notes and document analysis

The interview transcripts were analyzed manually based on a deductive and inductive approach (e.g., Boyatzis, 1998). An inductive approach is data-driven while a deductive approach identifies a priori categories (Boyatzis, 1998). As mentioned by Saldana (2009), coding is not a linear process and requires several rounds of application. The first round of coding and theme identification was inductive and focused on the interview questions while the second round was based on Gibson's (2005; 2017) eight generic sustainability-based assessment and the added intentional change requirements specified for the application to forest communities. In general, interview questions focused on identifying sustainability issues in the ALRCM served to document chapter 7. Interview questions directed towards the initiatives provided information for chapter 8.

The same inductive and deductive approach was used for the analysis of documents detailing challenges in the Laurentians and the Upper Laurentians as well as for analyzing field notes. Documents produced by the two studied initiatives such as project reports were also analyzed through the complete assessment framework to determine which criteria were met. Therefore, the initiatives served to build the framework and as sites for the application of the framework.

French to English translation

Research accomplished in this dissertation required a great deal of translation from French to English. When possible, word-for-word or literal (i.e., reordering of words) translations were applied (Vinay & Darbelnet, 1995). In cases in which such translation procedures were not possible, alternative procedures were used such as adaption (when terms do not exist in English) or modulation which replaces a term or an expression to better fit the other language (e.g., *peu profond* meaning *not very deep* in French would be replaced by *shallow*) (Vinay & Darbelnet, 1995).

Several translations of provincial policy documents were also available. The terms used in these official documents were used for consistency.

4.3.2.2 Specifying sustainability criteria for forest communities

The framework is built on the eight core generic requirements for progress towards sustainability (Gibson, 2005; 2017), which provide the categories for criteria that are specified

for application to the challenges facing rural forest-dependent communities. Intentional change criteria that were identified in chapter 3 are also integrated in the conceptual framework.

Specifying sustainability criteria starts by uncovering the key case and context considerations (Gibson, 2017a). A literature review of the evolution of forest management policies in Canada with particular attention to its influence on forest communities was undertaken (chapter 5). In addition, literature on rural communities and resource-dependent communities allowed uncovering specific issues relevant to forest communities. The same approach was then used to organize data collection and analysis at the level of the ALRCM. Having a long term perspectives on the sustainability issues allowed for a thick understanding of the dynamics of change.

4.3.2.3 Assessing the initiatives

While there are several sustainability assessment for forest communities, Gibson's (2005, 2017) approach was chosen because it has been tested and refined many times which provides solid anchoring grounds. Gibson's (2005; 2017) approach is also comprehensive in addressing the multiple requirements of sustainability.

Forest communities are confronted to multiple challenges. However, these challenges can most usefully be integrated into a more comprehensive framework that is focused not so much on the causes of difficulty as on the requirements for positive responses for lasting improvement.

A simple metric was used to assess the initiatives' contribution to sustainability (i.e., significant, minor or unmet criteria). No quantitative indicators (e.g., the percentage of unemployment in the ALRCM before and after the initiatives) were put forward to assess the progress towards sustainability as such approaches are often problematic in sustainability assessment (Gibson, 2017). The aim of the conceptual framework is to identify and illustrate the complexity of matters that are worth attention to in forest communities rather than quantifying results. The sustainability criteria are not a recipe for change. The purpose of using a metric was to gain insights into the areas of strengths and weaknesses of the initiatives and identifying routes for improvement in sustainability contributions.

The concept of significance in environmental assessment is essential in deciding to what extent a project is likely to cause significant adverse environmental effects (Federal Environmental Assessment Review Office, 1994). Several elements need to be considered in determining impact significance such as their intensity, their reversibility, and public opinion on the possible effects (Gibson et al., 2005; Federal Environmental Assessment Review Office, 1994). Significance is also dependent on context such as local sensitivities (Gibson et al., 2005).

In the context of this research, contributions to sustainability were considered significant when the actions emerged from the collaboration of two or more partners to generate mutually supportive gains, when there was sufficient evidence to support such a claim (mentioned in documents and by interviewees), when actions or projects specifically and explicitly addressed a criterion, and when there was potential for long lasting gains. These significance criteria were not applicable for all sustainability criteria put forward in this dissertation.

4.4 Conclusion

This chapter presented the research design put forward in this dissertation. First, the research approach which is explorative and transdisciplinary was presented. Moving towards sustainability in forest communities is a *real world problem* in the context of the recent forestry crisis and exploratory research through a case-study approach is well justified in the development of a novel framework.

Different data collection methods used in this dissertation were then presented. More specifically, data was collected through semi-structured interviews, participant observation, and document selection. Combining data collection methods allows for triangulation which facilitates the validation of results. The analysis of the research results is presented in chapters 6, 7 and 8.

The data collected was analyzed through a deductive and inductive approach. The eight generic sustainability assessment requirements put forward by Gibson (2005; 2017) as well as the identified intentional change requirements were used to classify issues in a theory-driven way. The data was also analyzed inductively to identify further themes. Details on how the initiatives were assessed using a simple metric were then provided.

CHAPTER 5 - TOWARDS SUSTAINABLE RURAL FOREST COMMUNITIES

5.1 Introduction

Community-based initiatives in forest communities have been identified as playing a critical role in contributing to change towards sustainability and sustainable forest management (SFM). At the same time, myriad forces are causing fundamental changes in the forest sector and forest communities. The broad aims of this chapter are to specify governance for sustainability requirements identified in chapter 3 for forest communities and to justify forest communities' need for and potential in change towards sustainability.

Identifying the requirements of governance for sustainability in rural forest communities implies an understanding of the relationships between forest governance and governance in rural forest communities. The separate evolution of these strands of literature represents a challenge for researchers (Chiasson, 2013). Forest governance will first be explored through the evolution of Canadian forest management policies (section 5.2). Through this evolution, how sustainability has been defined and pursued as well as the relationship between forest management policies and communities are discussed. Closed relationships between governments and the forest industry, narrow goals focused on timber production and lack of consideration for ecosystem complexity have had significant impacts on the sustainability of forestry operations and forest communities by increasing their vulnerability to environmental, social, political and economic changes. Furthermore, forest communities' vulnerability and need for change was exacerbated by the forestry crisis.

Section 5.3 dives deeper into the challenges of rural forest-dependent communities. To do so, meanings of community, rural, and forest dependence are explored. The core issues of forest communities are explained by their historically ephemeral and weak relationships with natural resource economies as well as by the irregular contributions of resources sectors to their socioeconomic status (Smith & Parkins, 2011). The challenges before forest communities are profound, multifarious and interconnected. Most importantly, forest communities are faced with economic and demographic decline, increased environmental changes, forest degradation as well as conflicts between forests rights, uses and values.

In recent years under the overarching paradigm of sustainable forest management (SFM), new avenues for sustainability are being explored. Community forestry initiatives and Model Forests' contributions to sustainability as well as their challenges will be explored in section 5.4. While these initiatives have come a long way in reconciling forest and community governance, a great deal remains to be done.

The fifth and final section integrates the challenges of forest communities with the sustainability assessment framework presented in chapter 3. The results are presented as a set of criteria based on sustainability requirements specified for forest communities.

5.2 Forest management policies in Canada

This section aims at exploring the evolution of forest management policies in Canada in order to understand how sustainability has been understood and pursued through time. More importantly, the interface between forest management policies and communities will be explored demonstrating the specific challenges in the quest for sustainability in forest communities. The illustrative examples used are focused on forest management policies and communities in Quebec.

Similar major trends in forest management policies across Canada can be discerned, albeit with some time variability and overlaps, despite the particularities of different actors, regions, and their challenges. Changes are referred to as a broad shift from conventional forest management towards new forms of forest management policies and practices that fit under the paradigm of sustainable forest management (SFM) (e.g.,Bullock, 2010; Wang, 2004). In addition, there is consensus in historical accounts of the evolution of forest management policies in Canada about distinct eras, which were originally proposed by Howlett (1988). Intertwined in the eras are different social perceptions and referents (Muller, 2015) to forests, management practices and policies including forest tenures. Four eras can broadly be identified: an unregulated era, a provincial and industrial profit enhancement era, a conservation "wise use" era, and a management era (Apsey et al., 2000; Beckley, 2003; Drushka, 2003; Fréchette, 2013; Howlett & Rayner, 2001; Kimmins, 1987; Ross, 1995; Rotherham & Armson, 2016). An additional sustainable forest management era, which features attention to sustainability implications has since the early 1990s, been reflected in the goals and processes of forest management policies and practices (Blais & Boucher, 2013; Drushka, 2003; Rotherham & Armson, 2016).

5.2.1 Unregulated era (1600-1800 approximately)

In the 17th to 18th century, formal tenure arrangements did not exist. However, "broad arrow" policies were put in place as early as 1728 in Nova Scotia (Drushka, 2003). These consisted of red arrows marked on specific tree species suitable for shipbuilding. The perspective of this policy was colonial, which means that its purpose was to favour the power and development of the mother country rather than to serve future interests of people living in the colony. The practice of *taking the best and leaving the rest* resulted in less robust trees to replace the harvested ones (Beckley, 2003).

Even if settlers were heavily dependent on forests as material for building construction, fences and heating, the sentiment towards forests was at best ambivalent (Drushka, 2003) and very little value was attributed to forests (Baskerville, 1995). The immensity of available territory generated very little concern related to the sufficiency of forest resources.

5.2.2 Profit enhancement era (1800-1900 approximately)

During the 19th century, the square timber trade that floated pine timber down the Ottawa and St. Lawrence Rivers to the port in Quebec city for export to Britain reached its peak and declined sharply following a shift towards sawlog trade with the United States (Aird, 2016). Through the adoption of laws and regulations during the first half of the nineteenth century, the foundations for future forest policies in Canada were established (Drushka, 2003). Two important elements were laid out and represent the start of the partnership with industry (Drushka, 2003) that later was characterized as hegemonic (Blais & Boucher, 2013; Boucher, 2010a) and closed (Howlett & Rayner, 2001). First, colonies and later, provinces, were in charge of forest resources. Second, forest resources were used to finance government activities. For instance, as of 1826 in Quebec a rudimentary licensing system was put in place (Blais & Boucher, 2013). With small populations and budgets, provincial governments used forest lands to attract investments and development (Haley & Nelson, 2007). Although the land remained in the public domain, harvesting rights on public land were transferred to the private sector in exchange for money to the Crown (Gillis & Roach, 1986). Following Confederation, provinces continued with licensing agreements requiring royalties, stumpages, land rents or other fees from the private sector through what is now known as Crown forest tenures (Haley & Nelson, 2007). Policies were oriented for the most part towards putting in place an environment in which industry could prosper therefore generating greater revenues for the government (Fréchette, 2009).

Very few issues related to forests are mentioned in historical literature with respect to this early period. This is not to say that the very wasteful forest exploitation had no adverse impacts, but it underlines the dominance of the liquidation paradigm. Some conflicts between the “barons” of the forest (Chiasson, Blais, & Boucher, 2006) and settlers are mentioned as they were competing for land for either agriculture or forestry purposes (Bouthillier, 2001; Ross, 1995). In Quebec, the priority given to forestry was indicated by the requirement imposed to settlers to maintain 15 percent of forest cover on their land (Bouthillier, 2001). The forest industry even asked Quebec authorities to prohibit settlers from selling wood from their land (Coursol, 1983). In addition to using wood for fire and shelter, settlers produced potash with wood ash to sell as fertilizer (Coursol, 1983; Drushka, 2003). Therefore, forest resources were highly important to settlers to generate increased revenues from their land. Settlers also often worked for the forest industry during the winter time providing affordable labor to the industry (Coursol, 1983). However, difficult and dangerous working conditions were often condemned by labourers (Ferme-Neuve Municipality, 1976). In addition, the competition for

land control between colonist and forest exploiters took an ideological form for Quebec settlers. Due to language barriers to merchant activities taking place in English, French Canadians settlers were relegated to a permanent woodland proletariat (Bouthillier, 2001).

Issues such as numerous fires, loss of forest land to agriculture as well as increased demand for wood to build railroads led to local wood shortages (Beckley, 2003). Depleted pine resources were discussed but the arrival of the pulp and paper industry in need of different species made those worries disappear for a while.

5.2.3 Conservation era (1900-1950 approximately)

The turn towards the twentieth century marked the transition towards industrialization and the emergence of the pulp and paper industry, which changed forest management policies in Canada. As Howlett and Rayner (2001, p. 26) mention in reference to the pulp and paper industry: "its capital intensive nature, large scale of production, and need for an extensive transportation and service sector infrastructure required considerably different government policies than those needed for the small-scale, labour intensive, and transitory lumber industry". Large bureaucracies and closed relationships between the government and the industry were put together to manage large scale forest development (Hessing, Howlett, & Summerville, 2005; Ross, 1995). Long-term leases were introduced to promote industrial development and encourage the management of timber resources (Baskerville, 1995; Hoberg, 2008; Howlett & Rayner, 2001). In Quebec, more and more *concessions* were warranted to the pulp and paper industries lending them exclusive rights on specific territories (Bouthillier, 2001). For instance, by 1969, eight pulp and paper companies held 72 percent of the conceded territory (Bouthillier, 2001). Concession-holders or limit-holders had significant power since they were in charge of collecting and analyzing inventory data (Bouthillier, 2001).

Such tenure systems have been criticized for constraining diversification and innovation by pushing all interests other than those of the tenure holders out of forests and stifling other possible uses of fiber (Bullock, Armitage, & Mitchell, 2012; Haley & Nelson, 2007; Rosehart, 2008). In Quebec, following the decline or closure of several villages after the 1930 economic crisis and the slowly decreasing activities of the pulp and paper industry, intellectuals such as Minville argued that communities and their farmers would be better stewards of forests than the forest industry (Boucher, 2010b; Bouthillier, 2001). Minville is known for his alternative development approach focused on cooperatives particularly related to agro-forestry (Trépanier, 1995). Decline in other resource activities such as fisheries in the Gaspé region prompted the idea of using surrounding forests for economic development (Duinker et al., 1994). While the turmoil related to the Second World War prevented most initiatives to blossom, they did provide a starting point for the cooperative movement in forestry (Duinker, Matakala, & Zhang, 1991; Gingras & Carrier, 2006).

In addition to laying down the hierarchical and bureaucratic organizational structure of the forest industry (Drushka, 1985), the first half of the twentieth century is characterized by the emergence of the conservation movement and the creation of forestry schools. Ideas of utilitarian conservation guided resource management. This shift from liquidation to conservation was made possible by the influence of key leaders of the conservation movement, such as Pinchot, Muir and Fernow. Pinchot's utilitarian perspective particularly benefited from the scientific spirit of the epoch as well as from the context of war and economic depression in which intrinsic conservation was too much of a luxury (Beckley, 2003).

According to Drushka (2003), the state of Canadian forests at the beginning of the twentieth century was probably at its lowest since the retreat of glaciers. Several reports and inventories described concerns about shortages of forest resources. This led to increased public awareness and doubt related to the idea that Canadian forests were a never-ending resource (Drushka, 2003). Through his literature review, Fréchette (2009) mentions the following consequences as a result of the quest for short term profits in the early twentieth century: increased frequency and severity of spring floods and low levels of water in the summer, rising numbers of fires, changes in local climate through modified precipitation regimes, overharvesting and related wood stock decline, social instability due to the closure of mills in dependent villages and, finally, job insecurities in the forest sector.

The approach taught in the forestry schools was known as sustained yield forestry, an approach imported from Germany based on the scientific management of forests (Burton et al., 2003). The goal of sustained yield forestry was to create a *normal forest*, a forest with an even distribution of age classes, which would provide a constant volume of timber in perpetuity (Drushka, 1985). The sustained yield approach's integration into policy was made possible by the establishment of those schools and trained forest professionals. Professional foresters became influential actors in forest management policy making. According to Beyers (2002), a close relationship between industrial objectives and professional forestry was crystallized in the conservation era. This further excluded people with *non scientific perspectives* from participating in forest management policy decisions.

While the idea of sustained yield emerged with the conservation movement at the beginning of the twentieth century, in reality its serious integration into policy came after the Second World War. According to Druska (2003), due to the bankruptcy of several pulp and paper companies during the economic depression of the 1930s, provincial governments were disinclined to enforce forest management regulations. In their explanation of the failure of the implementation of conservation movement ideas, Gillis and Roach (1986) mention the temptation of provincial governments to use forest revenues to decrease the debt instead of investing in reforestation as well as the federal government's similar preoccupation with deficit.

5.2.4 Management era (1950-1990 approximately)

In this era, the sustained yield principle that made its appearance in the conservation era remained officially at the forefront. This time period is also characterised by a continued transformation, allowed and encouraged by the provinces, from dispersed small-scale leases to large area-based tenures that could attract enough capital to build large manufacturing facilities (Ross, 1995).

After the Second World War, multiple-use forestry was put forward to open up the traditional focus on timber production to consider other uses of the forest such as wildlife, water, hunting and trapping, recreation, and other non-timber resources (Ross, 1995). This recognition of other uses and values can be explained by the increased demand for recreation and leisure made available by after-war economic prosperity and increased mobility due to the growing middle-class' access to automobiles (Burton et al., 2003). Concerns for multiple-use forestry were gradually integrated into legislation governing the management of public lands, and are mainly directed towards protecting animal habitat and maintaining recreational activities (Burton et al., 2003). However, the broader perspectives of utilitarianism and materialism were still largely present (Burton et al., 2003). According to Bengston (1994), multiple-use forestry fell short of changing the timber dominated perspective of forestry practice. There was an institutionalized lack of concern for the other benefits that the forests have to offer (Swift, 1983).

Several new demands emerged in the 1970s related to anti-pollution laws, the protection of biodiversity, increased democratic participation, and the preservation and establishment of parks (Burton et al., 2003). Swift (1983) mentions the distance between large and centralized government and the retreating forest frontier as factors that made procrastination of responses to difficult forestry issues easier for governments. New demands led to more effective attention to multiple forest uses through the gradual adoption of more integrated resource management. Integrated resource management is a process that aims at integrating different interests and multi-sectoral perspectives into forest management and decision making (Ross, 1995). According to Howlett and Rayner (2001), integrated resource management emerged as a result of many conflicts between environmentalists and the forest industry. As the industry moved further into remote regions, conflicts were spurred by local people and environmental organizations who tried to protect more forest lands for non-timber purposes. The noisiest public conflicts probably took place in regions of British Columbia such as South Moresby, and Meares Island in Clayoquot Sound, among others. The initial focus of environmental campaigners was to preserve remaining unlogged "old growth" landscapes (Burda, Gale, & M'Gonigle, 1998). If their immediate concern was the lack of protection of old-growth forests, the roots of the conflict were the persistent resource liquidation and the commitment to a demand-driven ideology put forward by the governments and the forest industry (Burda, Gale,

& M'Gonigle, 1998). Moreover, First Nations struggled to regain their rights to traditional lands and resources usurped through colonization (Mabee & Hoberg, 2006).

Social pressures continued to increase through the 1980s and 1990s with the expansion of forest developments. Burton and others (2003) list nineteen environmental and socio-political developments that raised public concerns related to forest management in Canada in the 1990s. Among others, the film *L'Erreur Boreale* focusing on industry and government complicity in the management of public lands in Quebec, several conflicts involving environmental groups and First Nations as well as international events and documents promoting sustainability, are observed.

An important issue in that period raised by Burton and others (2003) is the further depopulation of many forest communities due to the introduction of new technologies requiring fewer workers and the reorganization of small and scattered sawmills into new larger ones. Demands by rural populations for more security from the forest industry were made due to multiple examples of community decline following the retreat of industry (Haley & Nelson, 2007). In Quebec, communities pressured the provincial government for the abolition of forest concessions. While the provincial government was concerned with the underutilization of forest resources under the concession regime and the desire to stimulate economic development within rural communities (Bouthillier, 2001), a social movement led by the lower clergy and farmers in rural communities was increasingly putting forward the idea of community forestry requiring access to forests close to communities (Lessard, 2014).

Tenure policies were implemented to use timber to generate rural economic development (Bouthillier, 2001; Hoberg, 2008). Regional manufacturing facilities were established to maintain employment and yield regulations were used to mitigate the instability in rural forest-dependent communities (Haley & Nelson, 2007). The recognition of industries' moral obligations to ensure perpetuity of timber resources using sustained yield was pointed out particularly in communities that where highly dependent on timber production (Nadeau, Shindler, & Kakoyannis, 2003). However, the underlining assumption was that a prosperous forest industry inevitably resulted in a prosperous forest community (Nadeau, Shindler, & Kakoyannis, 2003).

Drushka (1985) mentions several technical controversies on the subjectivities surrounding the allowable annual cut (AAC) which sustained yield depends on. According to Sturtevant and Donogue (2008), the immediate economic stability obligation towards forest-dependent communities was used by timber interests and their government supporters as a rationale for unprecedented levels of harvesting following the Second World War. In other words, sustained yield was often sacrificed in practice when its imperatives conflicted with shorter term economic and political objectives (Drushka, 1985), especially to maintain or expand mill

supply, secure jobs and retain or gain political support (Swift, 1983). This demonstrates well the difficulty of pursuing long term goals. The sustained yield approach also suffered from a questionable assumption about the continued merchantability of timber in a forest economy that is demand driven and can be cyclical (Drushka, 1985; Duinker & Greig, 2007).

The move towards sustained yield management had other significant impacts on forest regions and communities. Although the sustained yield approach integrated concerns related to sustained production of timber over time, its lack of consideration of forest dynamics and complexity impacted the resilience of different social and ecological systems. Forest-dependent communities were particularly vulnerable to forests perturbations such as fires and insect outbreaks. For instance, by analysing how the spruce budworm problem was handled through time in New Brunswick, Baskerville (1995) points out how policies based on narrow scientific research treated forests and insects separately. Furthermore, by trying to control budworm invasions with privileged technical fixes such as the use of pesticides to protect its economic assets, government intervention (chemical pesticide spraying) made this problem a perpetual one rather than a periodic one (Baskerville, 1995). This situation was further exacerbated by the objective of sustained yield to create *normal* forests, which provided ideal perpetual conditions for the budworm (Baskerville, 1995).

Timber production as the sole objective undermined economic activities based on other forest uses and led forest-dependent regions and communities to be vulnerable to technological changes, economic vagaries, ecological cycles, and other unanticipated stresses. Increasingly, timber production became a contested goal. As mentioned above, demands for recognition of other forest uses and products were formulated. According to Ross (1995), even though the tenure system is at the heart of the Canadian forest policy regime, land use conflicts are those that generated the most publicity. The narrow dedication of Canadian forests to industrial timber purposes had not been debated in public. This stems from the closed relationship between the forest industry and the government and resulted in increased demands for participation in decision making related to forest planning and management. Throughout Canada, forest-dependent communities, including First Nations, have had little participation in forest management decision-making (Rotherham & Armson, 2016). Public involvement in forest management was considered at its infancy (Sinclair & Lobe, 2005)

In summary, Beyers and Sandberg (1998, cited by Beyers, 2002, p.195) highlight four historical and institutional characteristics that delimit Canadian forest policy:

1- A colonial legacy in the form of an economy built on export staples and a very high degree of Crown ownership of forested land;
2- provincial jurisdiction;
3- a closed policy network centred on provincial governments and industry; and,

4- the influence of professional foresters, who help keep in place the timber-oriented industrial paradigm.

In addition, Bullock (2010) underlines three characteristics of conventional forest management: linearity, efficiency, and narrow end goal(s). According to Wilson (2001, p.94), "if twentieth century forestry was about simplifying systems, producing wood, and managing at the stand level, twenty-first century forestry will be defined by understanding and managing complexity, providing a wide range of ecological goods and services, and managing across broad landscapes". These findings concur with the main criticisms found in the literature and in public debate so far. In summary, these criticisms relate to the lack of consideration in forest management of system dynamics and complexity, the narrow perspective of using forests solely for timber production, the closed relationship between industry and government, and the increasing evidence of forest community vulnerability to technological change, economic globalization, and other anticipated stresses. These criticisms represent the main challenges at the outset of the sustainable forest management (SFM) era specified for the Canadian context. As Apsey et others (2000) point out in reference to the limitations of the sustained yield approach, the resulting series of conflicts could not be solved based solely on new policies such as multiple use, integrated resource management or forest practice codes. The context was ripe for a new paradigm.

5.2.5 Sustainable forest management

The emergence of sustainable forest management (SFM) is interwoven with the realizations that led to appearance of sustainable development (see chapter 2, section 2.2.1). In summary, these realizations concerned the existence of natural resources limits, the importance of social conditions for sustaining ecosystems, and the failure of both conventional modern conceptions of progress and development through economic growth. While the above exploration of the evolution of forest management policies depicts a period of intense conflicts as an incentive for Canada to embark on the quest for SFM, other factors or realizations were also occurring at the global scale. Among others, the problem of deforestation particularly in tropical forests led to increased attention to accountability in forest practices (Wang, 2004). In addition, the decline of the health of forests due to industrial forestry practices generated a push towards better conservation and adoption of ecosystem management principles (Wang, 2004). The rise of complex systems approaches applied to forests recognized multiple interacting factors, underlined the issues with maximizing one parameter (i.e., fibre to the mills), accepted multiple forest uses, and adopted adaptive management in situations of uncertainties (Baskerville, 1995). Poverty was exacerbated by both deforestation and forest health degradation for people who depend on forests to support their livelihoods (Chomitz et al., 2007). These realizations prompt important changes and experimentation in forest governance such as forest certification and new market-based incentives as well as decentralization and community-based forest governance (Agrawal, Chhatre, & Hardin, 2008).

As with sustainability generally, SFM's definition and how it should be pursued remains fuzzy or misunderstood. SFM is defined as "the wise and sustainable management of our forest resources so as to conserve their biodiversity, productive capacity, and ecological integrity while, at the same time, maintaining the social, cultural, and economic benefits we derive from them" (Canadian Forest Service, 1996, p. 7). According to Cook and O'Laughlin (2000), SFM goes beyond planning forest exploitation for commercial pulp and lumber purposes by considering other forest needs of local citizens such as protecting plants and wildlife or conservation for recreational purposes. It is also characterized as being an adaptive and continuous process of assessing progress towards sustainability (Canadian Council of Forest Ministers, 2003).

Furthermore, in order to delineate SFM, Wang (2004) compares it to conventional forest management, which he characterizes as a disciplinary and hierarchical approach. According to Wang (2004), SFM is transdisciplinary, less hierarchical and more transparent, complex, socially accountable and reflexive. It is also shaped by a diverse spectrum of social demands, considers a wider set of stakeholders and is characterized by heterogeneity (Wang, 2004).

Although a specific definition remains elusive, there is wide consensus on the principles of SFM (Carpenter & Kessler, 1999). Having essentially the same roots, principles of SFM overlap with sustainability assessment criteria (Gibson, 2017; Gibson et al., 2005) discussed in chapter 2 (section 2.2.3). For instance, Carpenter and Kessler (1999) identify considerations for ecological disturbances, hierarchy scales, ecosystem integrity, equity and other social issues, public participation and accountability as well as the acknowledgement of uncertainty as the main principles of SFM.

The impetus for SFM was expressed through several global developments (Food and Agriculture Organization of the United Nations (FAO), 2003; MaDonald & Lane, 2004; Wang, 2004). The privileged approach from the onset was developing criteria and indicators for SFM. The most significant document in setting the stage for discussions on concepts and practices related to SFM was without a doubt the *Forest Principles* produced at the United Nations Conference on Environment and Development (UNCED) in 1992. In addition, several other meetings in the 1990s drafted international agreements on criteria and indicator frameworks for SFM such as the Helsinki Process in 1993, updated in Lisbon in 1998, and the Montreal Process of which Canada was a founding member (Adamowicz & Burton, 2003). The Montreal Process developed criteria and indicators for the Boreal forest region.

5.2.5.1 Sustainable forest management in Canada

The Canadian Council of Forest Ministers (CCFM) was initially responsible for articulating Canada's vision for SFM. The CCFM is a national body comprised of federal, provincial and

territorial government ministers that have management responsibility for Crown forestland. Established in 1985, the CCFM's objective was to increase cooperation among ministers in national and international matters (Bridge et al., 2005). The CCFM provided direction for SFM through the 1992 National Forest Strategy and Canada Forest Accord. In addition, Forestry Canada (formally the Canadian Forest Service) started publishing reports on the state-of-the-forests in 1991 based on an engagement process led by the CCFM to develop criteria and indicators specific to Canada (Duinker, 2011). In total, 83 indicators were put forward, the majority of which concern ecological processes (Beckley, 2000). This framework has become the basis for changes in forest management institutions throughout much of Canada (Adamowicz & Burton, 2003).

The CCFM (2003, p. 2) criteria and indicator framework supports four main components of SFM: the need to manage forests as ecosystems in order to maintain their natural processes; the recognition that forests simultaneously provide a wide range of environmental, economic, and social benefits to Canadians; the view that an informed, aware, and participatory public is important in promoting SFM; and, the need for forest management to evolve to reflect the best available knowledge and information. The following table presents the criteria endorsed by the CCFM.

Table 5.1 SFM criteria endorsed by the Canadian Council of Forest Ministers

Criteria	Explanation
Conservation of biological diversity	Forest management must maintain the variety and quality of the earth's ecosystems, must not allow any species to go extinct, and must conserve genetic diversity in species being managed
Maintenance and enhancement of forest ecosystem condition and productivity	The health, vitality, and rates of biological production in forest ecosystems must be protected (and even increased in some places) by minimizing the incidence of biotic and abiotic stresses, enhancing ecosystem resilience, and maintaining the biomass of selected components
Conservation of soil and water resources	Soil and water quantity and quality must be maintained in order to guarantee long-term forest productivity, provide potable water for human and wildlife use, and to provide suitable habitats for many other organisms
Forest ecosystem contributions to global ecological cycles	Forest management should promote sustained utilization and rejuvenation of forest ecosystems and protect them from widespread destruction by fire, pests, and conversion to alternate land uses in order to maintain or enhance their role in sequestering carbon and regulating regional hydrological cycles; it should further promote the manufacture of products that can act as long-term carbon pools and that have a low fossil fuel demand in their production
Multiple benefits to society	Forests must continue to provide the flow of wood products, commercial and nonmarket goods and services, and environmental and option values over the long term
Accepting society's responsibility for sustainable development	Forest management must respect Aboriginal and treaty rights, encourage Aboriginal participation in forest-based economic opportunities, sustain forest communities, and incorporate fair, effective and informed decision making through public participation

Source: Adamonicz and Burton, 2003, p.47

Early on in the process of defining SFM, a connection between forests and communities can be noticed (Bullock, Jastremski, & Reed, 2017). Organizations in different regions of the world specified criteria and indicators in order to fit with their contexts (Brand, 1998), aspirations and values (Bullock, Jastremski, & Reed, 2017). Due to Canada's high ownership and responsibilities for forests, a criterion of society's responsibility for SFM was specified (Brand, 1998). Landscapes, rather than simply stands, as well as their embedded communities became the core focus of SFM (Beckley, Parkins, & Stedman, 2002). Some authors mention a *territorial perspective* of forest management (e.g.,Bouthillier, Carrier, & Désy, 2000; Chiasson, Andrew, & Leclerc, 2008). A *territorial perspective* usually refers not only to ecosystems' boundaries such as watersheds but also to the social and political construction of spaces in relation to their environments (Davoudi et al., 2008). This demonstrates well the semantic shift in understanding forest management and its changing relationship with communities. As Duinker and others (1994) point out, the idea of *territoriality* leads towards new institutional arrangements favoring the adoption of a systemic approach by all players involved with forest development. This will be further developed in section 5.4.

In the SFM era, concepts such as ecosystem management and adaptive co-management are put to the forefront, integrating multiple social demands on forests as well as adaptive strategies to manage the integrity of forests (Bouthillier et al., 2000). The idea that local communities have responsibility and rights over the forests that surround them is central to these concepts. However, the relationship between forests and communities is still left for clarification (Bouthillier et al., 2000) and is probably best to be tailored for each specific community's needs and aspirations.

The evolution of forest management policies involves procedural and substantive changes that affect the relationship between forest management and communities. In terms of procedures, citizens are increasingly included in forest management planning and decision making through formal participation in forest management planning and through volunteer processes such as forest certification. For instance, the policy regime put forward in Quebec in 1986 in the *Loi sur les forêts* allowed for the population to consult forest management plans (Chiasson, Boucher, & Martin, 2005).

In addition, tenure modifications were made allowing communities to use local forests for development purposes. For example, two significant changes were put in place in Quebec. First, as of 1995, Territorial Management Agreements[5] granted the right to municipalities and regional county municipalities to utilize public intra-municipal land as a lever for local economic development (Chiasson, Boucher, & Martin, 2005; Teitelbaum, Beckley, & Nadeau, 2006). Second, a specific type of licence, Forest Management Contracts[6], gave municipalities

[5] Referred to in French as "convention de gestion territoriale"
[6] Referred to in French as "convention d'aménagement forestier"

and other forest users that were not mill owners the right to exploit forest resources in exchange for stumpage fees (Chiasson, Boucher, & Martin; Teitelbaum, Beckley, & Nadeau, 2006). This led to increased experiments in community forestry (see section 5.4.1).

These procedural and tenure changes were intertwined with substantive changes. Through SFM criteria, generating benefits for society as a whole and communities were put at the forefront (e.g.,Canadian Council of Forest Ministers, 2003; Food and Agriculture Organization of the United Nations, 2014). Just as an economic focus on community stability provided by a healthy forest industry was deemed insufficient to meet the requirements of community sustainability (Nadeau et al., 2003) (see section 5.3.5 for additional details), sole reliance on a healthy forest was also found deficient. As Hayter and Barnes (1997) mention referring to their research on the troubles in the rainforests in British Columbia, "the scientific panel convened in 1993 to study Clayoquot Sound, for example, found that it was unable to examine only the ecosystem of the forest, its initial charge. Rather, it was necessarily led to consider the wider nature of the forest industry […] and the communities that would be affected by any changes included First Nations peoples […] as well as loggers, millworkers, and their families" (p.1). The challenge of SFM in forest communities is much more complex and interwoven with what occurs *outside* forests.

The pursuit of SFM also has to confront the forestry crisis that has as much to do with the health of public forest as with the forest industry's role in the economic development of rural regions (Fréchette, 2009). In 2007 the Forest Futures Project was launched in Canada by the Sustainable Forest Management Network to put forward different scenarios on possible states of Canada's forests and forest sector in the year 2050 (Frittaion, Duinker, & Grant, 2010). Environmental change and social values were considered the main driving forces affecting Canada's forests and forest sector (Frittaion et al., 2010). Beyond its negative ecological and socio-economic consequences, the forestry crisis is depicted as a loss of legitimacy of ways of governing forests (Beckley, 1998a) spurred by different conflicts. In other words, the forestry crisis is also a political crisis on modes of governance (Chiasson, 2013). Greater accountability over forest management decisions is demanded by the general public and the efficacy of the institutional forest management arrangements is called into question. Management systems more able to consider a wide range of benefits are preferred.

5.3 Rural forest-dependent communities

This section broadly defines rural forest-dependent communities and provides additional details on their main challenges. The meaning of the terms composing rural forest-dependent communities is evolving and often difficult to discern with precision. For instance, the notion of dependency has broadened through time. How terms are defined as well as the underlying characteristics and issues of rural communities have concrete impacts on communities by

being triggers for certain policies and government orientations (Côté, 2000) as well as orienting sustainability responses.

5.3.1 Community

The notion of community can be defined in multiple ways and has varied through time. Most generally, it refers to a specific space and the human relationship with this space. Hillery's (1955) typology suggests three main approaches to defining community: a geographical location linking a human settlement to a territory, a system of interrelationships between and among people living in the same area, and a shared sense of identity. Similarly, focused on rural communities, Liepins (2000) presents a reworking of perspectives to understanding community combining multiple approaches. These approaches generally overlap with Hillery's (1955) typology while also emphasizing the dynamic nature of communities and their diversity. Literature on community is also linked to notions of social capital (Proulx, 2002). Other terms such as locality, region or territory convey the similar and overlapping broad ideas. Forest communities, by their specific landscapes, resources and history have specific characteristics and challenges.

5.3.2 Rural

There are several ways to define the meaning of rural depending on the approaches or lenses being used. Approaches such as social representation (Woods, 2005) or social construction perspectives (Cloke, 2006) aim to uncover how people define the meaning of rural. The most common approaches are descriptive approaches (Woods, 2005) in which certain characteristics of place are selected, such as population, size or density. The relationship with urban centres is also often part of the definitions of rural. For instance, according to Statistics Canada (2012), a rural area is an area that remains after the delimitation of population centres. Statistics Canada (2012) further identifies a gradation of rural and small towns in relation to urban influence reported in terms of a Metropolitan Influence Zone (MIZ). Some studies contrast urban and rural areas as well as document their interdependencies (Reimer, 2013). These studies highlight characteristics of rural areas such as low densities, less diversified economies and higher levels of poverty than urban areas (Jean, 1997), which underline a need for improved intragenerational equity between regions.

Assumptions or duality between rural and urban places are often present such as distinctions between *Gemeinschaft* and *Gesellschaft* that contrast closer ties found in rural living to impersonal relationships in urban areas (Cloke, 2006; Parkins & Reed, 2013). However, rural communities have distinct characteristics and an existence that goes beyond just waiting to become urban (Cloke, 2006; Jean, 1997). Therefore, assumptions behind rural and urban distinctions do not shed sufficient light on understanding the phenomena of rurality (Dionne & Jean, 2007). Significant broad changes have blurred the boundaries between urban and rural

where rural spaces have been culturally urbanized and urban areas ruralized (Cloke, 2006). Furthermore, the meaning of rurality is also changing (Cloke, 2006; Sandwell, 2013). According to Jean (1997), the diffusion of modernity has not induced the disappearance of irreducible characteristics of rurality.

Several authors use a political-economic framework to understand and demonstrate the increased connection between rural areas and changes in national or international political economies (Cloke, 2006). According to Moncton (2008) several rural restructuring frameworks were put forward in the 1990s to this end in part due to the failure of the transition perspective from Fordism to Post-Fordism to explain the peculiarities of rural change (Cloke & Goodwin, 1992). Therefore, the literature suggests that rural communities have specific characteristics and challenges.

5.3.3 Resource dependence

Resource-dependent communities are usually described as communities where the primary economic development engine consists of the use of natural resources, such as agriculture, forestry, fisheries, mining, tourism and recreation, which represent a large percentage of a community's labour force (Robson, 1995). However, similarly to *community* and *rural*, the notion of resource dependence does not have a single definition. Moreover, resource-dependence is referred to in different ways such as the different forms of dependency represented by single industry or enterprise communities (Lucas, 1971) and resource frontier communities (Hanlon et al., 2014) with slight variations in emphasis and meaning.

In Canada, resource dependence became a research focus particularly in rural sociology by the 1950s (Teitelbaum et al., 2003). Lucas' (1971) seminal research demonstrated that these communities are a unique product of the industrialization process in the twentieth century bound by unique properties (Randall & Ironside, 1996). The Lucas/Himelfarb model put forward in the 1970s outlined demographic, economic and cultural as well as overarching characteristics of single-industry towns (Teitelbaum et al., 2003). According to this model, single-industry communities are small (less than 30,000 people, dominated by one resource-based industry and economically dependent on outside forces (Teitelbaum et al., 2003). While this model is generally insightful, several characteristics are out of date. For instance, the model mentions that single-town industries are characterized by a young population (Teitelbaum et al., 2003) while rural regions are now facing unprecedented population aging (Bryant & Joseph, 2001). Furthermore, Randall and Ironside (1996) warn against generalizations and stereotypes of resource-dependent communities. Their findings point to the diversity of communities in terms of actors and their relationships, the roles played by the single industry and the degrees of dependency, isolation, and stability of employment (Randall & Ironside, 1996).

Most early studies focused on measuring the degree of economic dependence in terms of the proportion of employment or income generated through resource exploitation. Taking a broader perspective, other studies illustrated how resources and extractive activities play a defining role in local culture and lifestyles (Matarrita-Cascante & Trejos, 2013; Randall & Ironside, 1996). Therefore, the notion of dependency is broadening (Bouthillier et al., 2000; Teitelbaum et al., 2003).

5.3.3.1 Forest dependence

Dependence in forest communities can manifest itself in many ways according to the dominant forest activities. Some studies distinguish between dependence on silvicultural activities and dependence on wood processing activities (Bouthillier et al., 2000). Harvesting, planning and sawmill activities or the presence of pulp and paper industries as well as recreotouristic activities generate different community traits (Bouthillier et al., 2000).

Beckley (1998b) underlines the fact that forest dependence is a nested concept, which means that it varies at and is intertwined with different scales. For instance, a household's dependence on forests is related to its community's dependence to forests but is not necessarily identical. Hence, the scale of assessment, the type and degree of dependence are essential dimensions to document (Beckley, 1998b).

In addition, different facets of forest dependency can be identified. Dubé (2002) describes forest-dependence in the Saint-Maurice Regional County Municipality (RCM) in Quebec as having three facets: historical dependency that influences the economic, social and cultural organization of the region; economic dependency characterized in terms of employment and revenues; and social dependency in terms of contributions of big forest industries to local infrastructures, values, education or qualification.

Several authors have uncovered historical dependencies through their case analyses. For instance, Teitelbaum and colleagues (2003) emphasize historical dependencies through the choice of economic diversification strategies in certain communities that aim to attract businesses that favour traditional commodity producers rather than complementary diversification avenues. Such *rigidities* have been identified to explain the lock-in or path dependent situations into a narrow set of industrial activities prone to booms and busts and difficult economic diversification (Randall & Ironside, 1996). The consequences for resource-dependent communities are that they have to face conditions of instability, uncertainty and change (Matarrita-Cascante & Trejos, 2013; Randall & Ironside, 1996) characterized by vulnerability and fragility (Bouthillier et al., 2000). Factors of instability in forest communities in British Columbia have been linked to frequent layoffs, high employee turnover rates and high population mobility (Marchak, 1983).

The forestry crisis and its vectors have certainly exacerbated the instability and vulnerability of forest-dependent communities. Furthermore, rural forest-dependent communities will undoubtedly be more sensitive to the drivers of change influencing forests and the forest sector (Frittaion, Duinker, & Grant, 2010).

5.4 New forest governance models in forest communities and their contribution to sustainability

New institutional models of forest management "turn, bend and flex" (Romm, 2005, p. 231) the boundaries of forest governance. They have been touted as alternatives for forest-dependent communities that are heavily impacted by forest policy decisions and international developments (Lindquist & Wellstead, 2001). They also demonstrate the reconciliation between sectoral and territorial or local governance in communities dominated by forest landscapes.

The new governance models in forest governance are often posited in the context of community resource management and conservation under different labels such as co-management or integrated resource management. Decentralisation and tenure reforms to increase community control over forests are emerging global trends (Agrawal, Chhatre, & Hardin, 2008) that are increasingly present in Canada (Teitelbaum, 2016). Community forestry and initiatives such as Model Forests are in part manifestations of these trends generally considered to be positive contributions to sustainable forest management (SFM) or sustainability more broadly. New governance models are characterized by engaging multiple actors, sectors and levels (Lemos & Agrawal, 2006) and depicted as sites of experimentation and innovation (Duinker, Matakala, & Zhang, 1991; Lapierre, 2002). The following section explores community forestry and the Model Forests in Canada as potential initiatives to move forest communities towards sustainability.

5.4.1 Community forestry

Community forestry is broadly defined as "a tree dominated ecosystem managed for multiple community values and benefits by the community" (Duinker et al., 1994, p. 712). It expresses the need to do forestry differently and has several commonalities with ecosystem-based management and participatory democracy (Bullock, Hanna, & Slocombe, 2009). With varying emphasis and interpretations, some authors refer to such initiatives as the local governance of public forests (Chiasson, 2013), community forest management (Pagdee, Kim, & Daugherty, 2006) or inhabited forests (Gélinas & Bouthillier, 2005).

Community forestry is often contrasted with industrial forestry. Consensual decisions at the local level involving a broad scope of management objectives are advocated rather than narrow hierarchical decision-making (Beckley, 1998a). Therefore, community forestry implies substantive and processual changes to forest management. Favoured management practices are

oriented towards sustainable forest management (SFM) as well as more openness to other forest values and increased power or control over decisions by communities (Teitelbaum, 2014).

In international development literature, community forestry is an established approach to managing forests (Agrawal, Chhatre, & Hardin, 2008). However, in industrialized countries such as Canada where the public forest landscape is dominated by long-term tenures held by the private forest industry sector, the adoption of the concept has been slower (Teitelbaum, 2014). Literature on community forestry in Canada emerged mainly in the 1990s (Teitelbaum, 2016) laying down foundations for future work. Different empirical overviews demonstrated the diversity of existing community forest initiatives in Canada (Charnley & Poe, 2007; Duinker et al., 1994; Teitelbaum, Beckley,& Nadeau, 2006). For instance, Teitelbaum, Beckley and Nadeau (2006) found over one hundred community forestry initiatives across Canada, of which nearly half were located in Quebec. This is explained by a history of rural mobilizations concerning the access and control of public forests and a strong grassroots movement to counter economic decline in rural regions in Quebec (Gingras & Carrier, 2006; Teitelbaum, Beckley,& Nadeau, 2006).

Although there are multiple definitions and models of community forestry, there is consensus around its main attributes: participatory governance and community control, local benefits and multiple forest use (e.g., Beckley, 1998a; Charnley & Poe, 2007; Duinker et al., 1994; Duinker, Matakala,& Zhang, 1991; Teitelbaum, 2016; Teitelbaum, Beckley,& Nadeau, 2006; Teitelbaum & Bullock, 2012). The attributes of community forestry can be understood as being on a continuum (Teitelbaum, Beckley,& Nadeau, 2006), which explains the wide variety of initiatives that can be found. Diverse community forestry arrangements imply different emphases in the priority objectives, from stewardship of forest habitats to creating economic opportunities for communities.

The purposes and benefits of community forestry are manifold. The main premises of community forestry are that forest activities can occur in a more sustainable way and that greater local control over forest management decisions will deliver more ecologically sustainable results (Charnley & Poe, 2007; Luckert, 1999). At the core of community forestry is also the idea that community forestry initiatives serve as an economic development lever in forest communities by diversifying their economy (Duinker, Matakala & Zhang, 1991; Gélinas & Bouthillier, 2005). In addition, community forestry initiatives have been described as useful ways to reduce conflicts over environmental resources, as local empowerment opportunities and as a way for communities to reconnect with their surroundings (Bullock & Hanna, 2008; Teitelbaum, Beckley,& Nadeau, 2006). They also represent potential for the integration of local or traditional knowledge such as with respect to First Nation communities' knowledge (Chiasson, Boucher,& Martin, 2005).

While a vast international literature documents the success factors and constraints of community forestry initiatives, this information is scarcer in the Canadian context (Chiasson, 2013). In the international development literature, relationships between community forestry initiatives and poverty reduction or environmental degradation are very well documented (Charnley & Poe, 2007). For example, through an investigation of 69 case studies, Pagdee and others (2006) highlighted, among others, the importance of clear ownership over forests by communities and strong community leadership. However, there are limits to application of such conclusions to Canadian initiatives due to contextual variances and differences in goals pursued. For instance, community forestry in developing countries usually aims at meeting the basic needs of the community rather than preserving economic stability (Mallik & Rahman, 1994).

From the onset of community forestry research in Canada, Beckley (1998a) identified a gap, which is now slowly decreasing (Teitelbaum, 2016), between theoretical definitions of community forestry and the practical empirical information on initiatives. Several authors also have questioned the premises of community forestry (e.g., Bradshaw, 2003; Luckert, 1999) and there is some debate over the success factors of community forestry (Bradshaw, 2007; Pagdee, Kim, & Daugherty, 2007; Reed & McIlveen, 2007). Duinker and others (1991) as well as Luckert (1999) questioned the notion that community forestry would necessarily be better at delivering on SFM goals in comparison to industrial forestry particularly in light of the forest industry's latest significant improvements.

In assessing the Burns Lake Community Forest in British Columbia through a civic science lens, Reed and McIlveen (2006) observed that organizations tended to favour forestry expertise over a more pluralistic approach, demonstrating the tension between delivering on traditional economic objectives of forestry and local as well as broader societal goals. Research also shows the limits of devolution in tenure rights. For instance, Ambus and Hoberg (2011) demonstrate that community forestry is limited to a few actors and makes use of small unallocated forests land rather than a more complete reorganization of forest tenure rights. Similarly, in reference to proximity forests[7] modalities in the new forest management regime in Quebec, Laplante (2010) considers that such initiatives are condemned to be sporadic mitigation measures responding to the forestry crisis, allowing communities to manage their decline rather than demonstrating a shift towards a dual tenure system of inhabited and uninhabited (e.g., industrial) forests.

Community forestry is not a one-size fits all model and different communities have different capacities to deliver on its broad objectives (Duinker, Matakala,& Zhang, 1991) particularly within the existing governance regimes (Ambus & Hoberg, 2011). More ambitious steps

[7] Proximity forests represent the possible delegation to local or aboriginal communities of territorial and resource management responsibilities under the new forest management policy regime in Quebec (Government of Quebec, 2016). Chapter 6 provides additional details on the new forest management regime in Quebec.

would require institutional shifts such as in property regimes, regulatory policy, and location within international markets (Reed & McIlveen, 2006).

5.4.1.1 The pursuit of sustainability through community forestry

The literature above demonstrates the overlaps between the community forestry and sustainability. These overlaps concern processes of public participation, attention to redistribution of benefits and ecological outcomes. For instance, Chiasson's (2013) edited book focuses on the democratic potential of local governance of public forests. Teitelbaum (2014) also developed criteria and indicators for the assessment of community forestry based on local and participatory governance, local economic benefits and multiple forest uses.

Although the overlaps between sustainability or sustainable forest management (SFM) and community forestry are widely acknowledged in the literature in Canada and abroad as well as promoted in forest management policies (e.g., for proximity forests in Quebec), few assessments can be found based on such frameworks (Assuah, Sinclair, & Reed, 2016; Furness, Harshaw, & Nelson, 2015).

Assuah and others (2016) used a SFM framework based on ecological, social, economic and cultural sustainability considerations to examine the Wetzin'kwa Community Forest Corporation in British Columbia. Through this research the need to tailor criteria to specific cases is underlined. In addition, results and goals of initiatives vary according to socio-political contexts (Bixler, 2014; Pagdee et al., 2006). Bixler's (2014) concludes his research on community forestry in British Columbia by highlighting the importance of thinking of community forestry in terms of polycentric governance in order to consider external change drivers and avoid possible negative consequences at other scales.

Furness and others (2015) assessed the *Community Forest Pilot Program* put forward in British Columbia in 1997. In addition to the usual requirements of economic benefits, management of multiple values and participation, Furness and others (2015) considered the potential for innovation of the program. However, no specific requirements for innovation are discussed. Rather, challenges of forest use diversification due to the economic and policy environment in British Columbia are mentioned.

In conclusion, community forestry initiatives, although their aims usually overlaps with sustainability, are not all explicitly oriented towards delivering such goals; nor is comprehensive attention to sustainability requirements considered or assessed in reviews of forest communities. Model Forests were specifically thought for these specific tasks.

5.4.2 The Model Forests

The Model Forest Program (MFP), an initiative sponsored by the Canadian federal government under Canada's Green Plan, was announced in 1992 at the United Nations Conference on

Environment and Development (UNCED) in Rio de Janeiro. Since its inception, over 50 Model Forests initiatives have been undertaken in 25 different countries (Pollett, 2012). The first national competition in Canada generated 50 proposals from all around the country after being announced in 1991. Of these, 11 sites were selected (Brand et al., 1996).

The emergence of the MFP can be characterised as a two pronged initiative by the Canadian government. First of all, it reflected Canada's desire to follow and align its policies with international agreements (Wellstead, Lindquist, & Sinclair, 2003). Second, Canada sought to legitimize its expertise in forest management. Multiple conflicts in Canada's forest sector due to struggles over forest resources between emergent actors and to increased public awareness of poor forest practices greatly affected the country's image. Therefore, the MFP served as a possible lever for improving Canada's image and for changing paradigms from maximum sustainable yield to sustainable forest management (SFM) (Beyers, 2002; Howlett, 2002; Lindquist & Wellstead, 2001). Although the MFP was oriented towards SFM, according to Parkins and others (2016), it also aimed to assure the credibility and marketability of industrial products at very low cost for the companies involved in the initiatives.

The number of Model Forests fluctuated through time following the demise and emergence of individual initiatives. Model Forests were guided and supported by two federal programs (the Model Forest Program (MFP) and the Forest Communities Program (FCP)) through four different phases. The first three phases were under the MFP (phase 1: 1992-1997, phase 2: 1997-2002, phase 3: 2002-2007), which was replaced during the fourth phase (2007-2012) by the FCP. During the FCP, four new Forest Communities were added (Clayoquot Forest Communities, Lac-Saint-Jean Model Forest, The Bourdon project and Northeast Superior Forest Community) and financial support was also provided to seven existing Model Forests (see Figure 5.1 below) (Natural Resources Canada, 2011a). However, in the spring 2012, the Federal government announced significant cuts to the FCP. Financial support was reduced by 50 percent each year and was entirely eliminated within three years. Several initiatives such as The Bourdon project were unable to persist after the program was abolished. According to Parkins and others (2016), there are currently five Model Forests in Canada.

5.4.2.1 Model Forests principles and governance

Model forests under the Model Forest Program (MFP) and the Forest Communities Program (FCP) were sustainability-centred governance models. Since there is no single pathway towards SFM, a flexible and adaptive approach was set forward (Lapierre, 2002), resulting in significant variability between initiatives. Model Forests varied in size, although they had to take place in physical areas of a minimum of 100,000 hectares (Wellstead, Lindquist, & Sinclair, 2003). Model Forests were allowed considerable freedom to interpret the guiding principles of the program, to decide how their partnership would be structured and governed

facilitating adaption to each contextual characteristic (International Model Forest Network, 2010).

Model Forests also benefited from the Canadian Model Forest Network (CMFN) that involves approximately 500 organizations and 200 communities across Canada (Canadian Model Forest Network, 2011), as well as from the International Model Forest Network (IMFN).

Figure 5.1 Model Forests under the Canadian Forest Communities Program

Source: (Natural Resources Canada, 2011b)

Model Forests were used to pave the way towards sustainable forestry practices using experiments, scientific research and knowledge transfer through uptake in stakeholder networks (Beyers, 2002; Sinclair, Smith, & Bidinosti, 1998). A wider inclusion of citizens in forest management decision-making processes represented a fundamental goal of the MFP (Ryan, 2003) and FCP. In playing such a role, Model Forests have been characterized as bridging organizations (Bullock et al., 2012).

Model Forests aimed at responding to issues of SFM by establishing concrete situations where forest management conflicts could be addressed by stakeholders at the local or regional scale (Sinclair & Lobe, 2005). Therefore, Model Forests brought traditional adversaries to work together in building consensus on policies and practices to better strive towards SFM (Sinclair & Smith, 1998). Model Forests were intended to form a "neutral partnership" between organizations (International Model Forest Network, 2010). The goal was for communities to manage their own natural resources considering their history, cultural and economic reality while leaving that same option for future generations (International Model Forest Network, 2010).

Most Model Forests functioned with an incorporated non-profit organization. Each Model Forest gathered different partners, established a board of directors that designed an annual plan, and set up technical committees. Technical committees were in charge of planning each specific activity in detail while the board of directors focused on an annual integrated plan (Brand & LeClaire, 1994).

Model Forest organizations had no decision-making power. Therefore, the multi-stakeholder partners were important for Model Forests to implement the different ideas and studies undertaken (Sinclair, Smith, & Bidinosti, 1998). The forest industry, the provincial ministry responsible for forest management and the Canadian Forest Service were all represented in Model Forests (Wellstead, Lindquist, & Sinclair, 2003). The partners involved donated time, expertise and sometime brought financial support (Natural Resources Canada, 2006).

Model Forests were heavily dependent upon resources from the federal government although some were able to diversify their funding (Gilbert, 2007). They received 1 million dollars per year in the first phase, 500,000 dollars per year in the second phase, 375,000 per year in the third phase, and finally, 325,000 per year under the FCP. Model Forests were also required to have other sources of revenue. For instance, during Phase III (2002-2007), every Model Forest had to prove direct contribution of at least $250,000 each year from sources other than Natural Resources Canada (Natural Resources Canada, 2006). Also, government assistance could not add up to more than 90 percent of the budget (Natural Resources Canada, 2006).

Although the overarching goal of Model Forests to implement SFM remained constant throughout the phases of the programs, each phase emphasized different objectives. The most significant shift in goals can be noticed in the replacement of MFP by the FCP. The following table 5.3 presents the objectives of the two programs through different phases.

In the context of the persistent forestry crisis, continuing conflicts over conservation and development, and ongoing needs to improve First Nations' involvement, the aim of the program was modified towards a strong focus on the sustainability of forest-based communities under the FCP (Natural Resources Canada, 2011b). The program shifted towards developing and sharing "knowledge, strategies and tools to adjust to forest sector transition,

and to take advantage of emerging forest-based opportunities" (Natural Resources Canada, 2013a).

Table 5.2 Evolution of the federal level Model Forests' objectives

Phase 1: 1992-1998 1. Accelerate the implementation of sustainable development in the practice of forestry, in particular by applying the concept of integrated resource management. 2. Develop and apply new and innovative concepts and techniques in the management of forests. 3. Test and demonstrate the best sustainable forestry practices available.
Phase 2: 1998-2002 1. Encourage the demonstration of management systems that emphasize practical application of the concepts of Sustainable Forest Management that the Model Forests have developed. 2. Establish acceptable indicators of measurement and monitoring systems, and reporting mechanisms that can measure performance relative to the Model Forests' goals and objectives. 3. Ensure that the results and knowledge gained through the Model Forest Program are disseminated at local, national and international levels. 4. Encourage Model Forest participants and organizations to work together as a network and to participate in activities at the Network level. 5. Encourage the representation of a broad range of forest values in each Model Forest.
Phase 3: 2002-2007 1. Increase development and adoption of Sustainable Forest Management systems and tools within and beyond model forest boundaries. 2. Disseminate the results and knowledge gained through Canada's Model Forest Program at local, regional, and national levels. 3. Strengthen Model Forest network activities in support of Canada's Sustainable Forest Management priorities. 4. Increase local-level participation in Sustainable Forest Management.
Phase 4: 2007-2012 (Forest Communities Program) 1. Pilot ideas, conduct experiments and develop models that assist forest-based communities to build capacity and meet the opportunities and challenges of a forest sector in transition. 2. Develop and share integrated, multi-sector approaches, based on science and innovation, to address community transition that involves new and existing natural resource stakeholders. 3. Work with industry and other community-level stakeholders to develop new forest-based opportunities for rural Canada. 4. Develop and share Sustainable Forest Management knowledge, practices, tools and experiences with international forest-based communities and their model forests, in keeping with Canada's international forest agenda.

Source: Bullock, Jastremski, & Reed, 2017

5.4.2.2 Model Forests' contributions to sustainability

The MFP, the FCP, and individual Model Forests have been studied and evaluated at different occasions through time. Among the positive findings, authors point out the important quantity of research that has been accomplished by Model Forests throughout the years (Bullock, Jastremski,& Reed, 2017; Sinclair & Lobe, 2005). More specifically in social sciences, Model Forests have helped to advance social sustainability and community sustainability indicators as well as sensitized forest sector actors to a broader range of values (Beckley et al., 2002; Duinker, 2011).

Several partnerships have been fostered and there is evidence that some knowledge was shared between Model Forests and adopted for implementation (Sinclair & Lobe, 2005). Partnerships have also led to broader relationships outside the Model Forests structure (Sinclair & Lobe, 2005) and initiatives built some capacity by providing the tools for forest communities to act upon new opportunities (Beckley et al., 2002).

However, several criticisms have been directed towards the MFP and FCP. Bullock and others' (2017) overview of the MFP and FCP demonstrates a limited integration of socio-economic aspects of SFM into Model Forests. From the onset, the MFP focused on forest science to improve forestry practices for SFM and only later were considerations of community sustainability integrated into programming. This emphasis was present from the initial selection process of Model Forests, which explains why Beyers (2002) qualifies such initiatives as *bounded innovations*. Accordingly, George and Reed (2017) demonstrated that participants in Model Forests were predominantly highly educated professionals, and that there was a significant gender disparity. Similarly, Wellstead and others (2003) found that policy actors such as First Nations and environmental non-governmental organizations were overlooked. As Sinclair and Lobe (2005) point out, there is an overuse of the terms "collaboration" and "partnership" and partnerships can take many forms.

The integration of new actors represents a challenge, which is amplified by the fact that citizens in forest-dependent communities do not have a uniform voice regarding forest management (McFarlan et al., 2011; Parkins et al., 2016). Interestingly, although helping communities adapt to the forest industry transition was an implicit and explicit role of the MFP and FCP respectively, no criteria regarding forest dependence were used to select potential sites. Moving from the hermetic relationship between industry and government, which have traditionally held power regarding forest management, through Model Forests has proven to be a challenge. According to Klenk and others (2013), Model Forests served to legitimize dominant discourses rather than provide real alternatives.

Communities had limited impact on the direction of Model Forests due to the fact that program goals were determined at the federal level and initiatives had to comply to meet the selection criteria (George & Reed, 2017; Parkins et al., 2016). This limited capacity building, communities' sense of ownership over the initiative and accountability to the community (George & Reed, 2017). Moreover, the quest for legitimacy from above in Model Forests undermined the autonomous role of local communities (Parkins et al., 2016).

In its evaluation of the FCP, Natural Resources Canada (2011a) comes to the conclusion that its department was ill-equipped to deal with local economic development and that other departments have more resources to do so. While Model Forests contributed to bring community and forest sustainability closer together, federal silos represented a barrier to reaching integration (Bullock, Jastremski,& Reed, 2017).

Another significant element reported in the literature is the limited impact of Model Forests on provincial forest management policies as well as slight uptake of findings by partners and industry (Bullock, Jastremski,& Reed, 2017; Gardner Pinfold Consulting, 1996; Wellstead, Lindquist, & Sinclair, 2003).

Several issues with the internal governance of Model Forests are also pointed out. Sinclair and Lobe (2005) report a lack of feedback given to organizations from the board of directors, a problem that raises questions related to the degree of representation of organizations and to the real input of communities in the decisions of board of directors. Similarly, George and Reed (2017) highlight that Model Forests are run by small staff therefore providing little opportunity for wider public participation.

While consensus was an important goal in Model Forests, time constraints created an environment that was not always conducive to consensus building (Sinclair & Smith, 1998). When consensus was reached, it was often due to passive voices being dominated by chairs (George & Reed, 2017) and to conflict avoidance (Gardner Pinfold Consulting, 1996). Consensus sometimes covered conflicts of interests where individuals submitting projects were part of the committees evaluating their approvals (Gardner Pinfold Consulting, 1996).

Significant rotation in members of Model Forests is also mentioned as a hurdle to their governance and goals attainment (Hvenegaard et al., 2015) and perseverance through time (Elbakidze et al., 2010). In addition, the decreasing financial support by the federal government led Model Forests to seek projects that would provide immediate results in order to secure funding sources (Bullock & Reed, 2015). Therefore, attention to long-term goals might have been affected.

In conclusion, Model Forests were assessed in several ways. Two Model Forest studies have been found focusing specifically on their potential through an adaptive governance lens (Chiasson et al., 2012; Elbakidze et al., 2010). Chiasson and others' (2012) work is particularly relevant since it is based on an assessment of The Bourdon project. The results of the study suggest that The Bourdon project had significant contributions related to conflict management and social capital. However, since the study is focused exclusively on adaptive governance, the criteria used are not as comprehensive and sustainability-based as those suggested in this dissertation.

5.5 Sustainability criteria specified for forest communities

Throughout the literature, several challenges for rural forest communities are identified. The challenges are often depicted as consequences of economic globalization (Leach, 2013; Southcott, 2013) and conceptualized as resulting from the transition from a staple to post staple economy (Smith & Parkins, 2011; Thorpe & Sandberg, 2007), or from Fordism to post-Fordism (Hayter & Barnes, 1997) and related to changes in neoliberal ideology (Ryser,

Manson, & Halseth, 2013). However, the challenges can most usefully be integrated into a more comprehensive framework that is focused not so much on the causes of difficulty as on the requirements for positive responses for lasting improvement.

This section presents a framework for responding to the main challenges of rural forest-dependent communities. The framework is in scope and purpose sustainability-based. It is built on the eight core generic requirements for progress towards sustainability (Gibson, 2017; Gibson et al., 2005), which provide the categories for criteria that are specified for application to the challenges facing rural forest-dependent communities. The historical account of the evolution of forest management policies as well as additional literature pertaining to forest communities related to the eight sustainability requirements served as a basis to develop the conceptual framework. Intentional change criteria that were identified in chapter 3 are also integrated in the conceptual framework.

5.5.1 Socio-ecological system integrity

Socio-ecological system (SES) integrity consists of building "human–ecological relations to establish and maintain the long-term integrity of socio-biophysical systems and protect the irreplaceable life support functions upon which human and ecological well-being depends" (Gibson et al., 2005, p. 95).

Complex systems understandings from chapter 2, resilience criteria (Walker & Salt, 2006, 2012) discussed in chapter 3, and more specific literature pertaining to forests as complex adaptive systems are used here to guide the specification of the requirements. As discussed in chapter 3, there are several overlaps between sustainability assessment and resilience requirements. Several of the resilience criteria (e.g., fairness and equity, humility, etc.) are addressed later within other sustainability assessment criteria.

5.5.1.1 Considering ecosystem dynamics and variability

Major natural disturbances in the boreal forest consist of fires and outbreaks of defoliating insects (Burton, 2013; Johnson et al., 2003). As demonstrated for instance by Baskerville (1995) and Burton (2010) related to spruce budworm and pine beetle outbreaks respectively, allowing, anticipating and preparing for natural disturbances is a better forest management strategy than trying to control them. Preventive policies to use pesticides spraying or rehabilitation policy responses such as accelerating timber harvesting following a natural disturbance to salvage the greatest amount of wood possible are called into question for increasing the vulnerability of forests (Baskerville, 1995; Burton, 2010). As highlighted by Burton (2010, p. 2408), "[i]t may yet turn out that the biggest impact of the mountain pine beetle outbreak […] is not the number of trees killed by the insect, but the disruptive spikes and lulls in the rate of logging."

In addition, consideration ought to be directed towards global changes such as climate change, the introduction of new species and the human modification of biogeochemical cycles (Rist & Moen, 2013) as well as towards their interaction with natural disturbances. As illustrated in the case of climate change, the potential effects of disturbances are best addressed in an integrative way rather than focusing on one variable (Dale et al., 2001). For instance, the effects of climate change on forests go beyond the ability of species to adapt to temperature and moisture change. The effects entail possible alteration in the frequency, intensity, duration, and timing of fire, climate events such as hurricanes, ice storms and their consequences, the introduction of new species, as well as insect and pathogen outbreaks (Dale et al., 2001). Forest communities' close relationship to their surrounding forests entails that they will undoubtedly be impacted by future forest changes.

Criterion
Allowing socio-ecological system change such as natural disturbances as well as anticipating and adapting to natural and anthropomorphic induced changes

5.5.1.2 Considering ecosystem services and interactions

The literature review on forest management policies in Canada underlined the shift towards multiple use forestry as a response to critics of the narrow perspective on forests exploitation for the sole objective of timber production. According to this perspective, forest harvesting and planning ought to benefit wildlife, to enhance biodiversity, and to protect water quality among many new demands. Forest management has broadened to incorporate scales larger than individual stands. Furthermore, meeting these broadened objectives requires consideration of patterns and relationships at multiple scales and how they are linked between scales (Carpenter & Kessler, 1999). Consideration of long-term horizons in combination with short-term planning that prevailed in traditional forest management is necessary to understand the cumulative effects of our decisions (Carpenter & Kessler, 1999).

Criterion
Enhancing system understanding and managing the ecological integrity at the whole system level with attention to direct, indirect, and induced effects

5.5.1.3 Promoting diversity

Diversity is identified as a key requirement for the resilience of social-ecological systems (Walker & Salt, 2006). As mentioned above, working with nature to maintain biological diversity is advocated as a best approach rather than trying to control ecosystem change (Baskerville, 1995; Burton, 2010). The biological diversity criterion in the SFM criteria put forward by the CCFM specifies that forest management should "maintain the variety and quality of the earth's ecosystems, must not allow any species to go extinct, and must conserve genetic diversity in species being managed" (Adamowicz & Burton, 2003, p. 47). This implies

having the required knowledge on the state and evolution of ecosystems and putting forward different actions to maintain critical ecological services, to protect key and vulnerable species as well as their habitat. For instance, some animals have significant roles in ecosystem processes such as pollination or seed dispersal and their loss can have negative consequences on ecosystem resilience (Norberg et al.,2008).

Through time, forestry has been focused on specific tree species that have oriented forest management policies which have also led to situations of scarcity in some forest communities. For instance, as discussed in section 5.2, in several occasions white pine depletion was reported. Therefore, maintaining the genetic diversity of forest through harvesting and restoration is essential (Canadian Council of Forest Ministers, 2006; Thompson et al., 2009). Determining protected areas is also a key step towards maintaining diversity (Canadian Council of Forest Ministers, 2006; Thompson et al., 2009).

Criteria
Maintaining diversity (genetic, ecosystem, species), critical ecological services and protecting key and vulnerable species and their habitat
Maintaining the genetic diversity of forests through harvesting not solely targeted at specific species and planting that does not depend on certain genotypes
Maintaining the structural complexity of stands and landscapes and functional diversity and redundancy of ecosystem
Enhancing and maintaining representative, connected and recognized ecosystem protected areas

5.5.1.4 Reducing anthropogenic impacts on socio-ecological systems

Throughout the literature, the adverse impacts of forest activities on ecosystems and their inhabitants are a persistent concern. A major threat to diversity is forest fragmentation due to urbanization or forest road construction (Burton, 2013). Other anthropogenic impacts on forests include habitat fragmentation, soil degradation, decrease in biomass and related carbon stocks, as well as the loss of species (Thompson et al., 2009). Well protected water and soil resources are identified as key components in SFM for the function they serve for forest productivity as well as being essential to support the life of humans, wildlife and any organism, and their habitat (Adamowicz & Burton, 2003). These concerns are usually integrated into forest harvesting directives, for instance for the construction of roads, bridges and culverts (e.g. Ministère des Forêts de la Faune et des Parcs, 2016). Approaches such as *reduce-impact logging* (RIL) were specifically elaborated to decrease the negative environmental impacts of forestry (Putz et al., 2008). Furthermore, the need to direct attention to cumulative forestry environmental impacts is underlined (Carpenter & Kessler, 1999; Kilgore & Ek, 2007). These impacts can result from different forest management activities and timber harvesting (Kilgore & Ek, 2007). One example of an unexpected cascading effect of the interaction of forestry activities is the increased presence of trembling aspen in several boreal landscapes (Haeussler & Kneeshaw, 2003). Furthermore, forestry activities can interact with

other stresses that are not considered in forest management (e.g., water pollution through failing septic systems of lakeside residents).

Criteria
Maintaining ecosystem connectivity by reducing fragmentation and recovering damaged areas
Enhancing the understanding of, and limiting direct and cumulative anthropogenic impacts on, socio-ecological systems (particularly of valued components) and considering their interaction with disturbances

5.5.2 Livelihood sufficiency and opportunity

The livelihood sufficiency and opportunity requirement entails "that everyone and every community has enough for a decent life and that everyone has opportunities to seek improvements in ways that do not compromise future generations' possibilities for sufficiency and opportunity" (Gibson et al., 2005, p. 98). The literature review on forest management and rural forest-dependent communities has underlined different desirable paths to tackle this complex challenge.

5.5.2.1 Supporting economic diversification

The forestry crisis has significantly affected communities throughout Canada. As mentioned previously, the number of rural communities with forestry as the main economic driver decreased significantly because of the decline of the forest sector (Natural Resources Canada, 2013b). In addition, the modernization and rationalization of the forest industry has decreased the number of available employment opportunities in this dominant economic sector (Bouthillier et al., 2000).

Effort to increase economic diversification is the most common response identified in the literature as a solution to rural forest-dependent communities. Diversification is thought of as *in* forests, for instance by exploring the potential for non-timber-forest-products (NTFP) as additional sources of revenues (Boxall, Murray, & Unterschultz, 2003) and by developing added-value products in first and second transformation (Canada Parliament, 2015). The underlying premise of *in*-forest diversification is the recognition of a range of values beyond timber production and the further development of added-value products. However, economic diversification is much too narrow of a goal for innovations to counter unsustainable situations. Teitelbaum and others (2003) suggest that communities need to identify economic diversification strategies that complement rather than compete with existing strengths.

Criterion
Enhancing and supporting economic diversification opportunities in forest activities as well as in other sectors by seeking complementarity and synergies between initiatives in order to contribute to poverty reduction and rural economic development while maintaining social-ecological system integrity

5.5.2.2 Increasing access to natural resources

The literature review on forest management policies in Canada underlined the closed relationship between the forest industry and governments throughout time. Tenure reforms allowing for diverse stakeholders and jurisdictions such as First Nation communities to have access to resources and develop the capacities the reap benefits from the forests are advocate most notably through community forestry initiatives or multiple use forestry.

Criteria
Supporting and developing capacities for increase local forest tenure and recognize aboriginal rights
Supporting and developing capacities for multiple users on public forest land

5.5.2.3 Increasing access to services

Low population densities and their dispersion as well as the remoteness of communities are barriers to service delivery in rural communities (Dugas, 1996; Slack, Bourne, & Gertler, 2003). This results in physical as well as technological isolation such as having no internet services (Woods, 2005). Furthermore, offering and maintaining in place services (e.g., schools, grocery store, postal office, etc.) is a constant struggle due to population decline (see intergenerational equity requirement).

Criterion
Maintaining and improving service delivery and accessibility (Internet, public transit, health, education, banking, etc.) with particular attention to poorer population and disparities within the community

5.5.2.4 Enhancing entrepreneurs and workforce skills and education

Rural forest-dependent communities face significant challenges related to education and employment opportunities. Youth exodus for education or employment purposes entails the disappearance of possible entrepreneurial resources (Bryant & Joseph, 2001). Moreover, having a limited labour market makes resource-dependent communities less attractive to highly educated workers and scarcity in local amenities can limit the attraction and retention of labour (Slack et al., 2003). In addition, forest-dependent communities are characterized by low average education levels (Bouthillier et al., 2000) and a labour force that often lacks diversity and depth (Slack et al., 2003).

The evolution of forest management policies in Canada had an influence on the organization of the forestry workforce (Boucher & Leclerc, 2013). As highlighted by Apsey et al. (2000), a move towards SFM requires a new alignment in terms of education and skills development in the forest sector. Increased mechanization and other technological developments as well as SFM requirements such as those concerning increased ecosystem integrity considerations and multiple use forestry imply that educational programs must be adapted to new needs. For instance, surveys on the emerging skills related to forestry point to the necessity for increased

competency in communication skills and collaborative problem solving (Alaric et al., 2015; Alaric et al., 1999).

Criteria
Increasing and adapting education and training opportunities within the community to meet present and future labour needs
Supporting strategies to attract educated and skilled workers
Encouraging the development of entrepreneurial skills for local communities and indigenous communities

5.5.2.5 Enhancing community well-being

The literature review on forest management policies in Canada revealed some issues concerning difficult and dangerous working conditions, particularly in early forest management eras. Throughout the years, mechanization in combination with economic crises produced significant fluctuations in the number of jobs in the forest sector and led to the creation of labor unions and cooperatives for a better sharing of resources and benefits (Boucher & Leclerc, 2013). Although there have been significant gains throughout the years, health and security concerns are still on the agenda as demonstrated by their presence in different certification requirements (e.g., CSA's Z809 forest management standard (Canadian Standards Association, 2009)).

Safety and quality of life within the communities are also essential for livelihood sufficiency and opportunity. SFM literature emphasizes the support of recreational activities in forests as well as visual quality in protecting landscapes (Canadian Council of Forest Ministers, 2006). In addition, using a resilience index as a component of their broad study, the Interior Columbia Basin Ecosystem Management Project (ICBEMP) revealed that resilient communities are characterized, among many elements, by having a high degree of local amenities (Harris et al., 2000). Security is also an essential component of forest community well-being (Beckley et al., 2002).

Criteria
Support health and security in working conditions
Enhance the protection and maintenance of the quality of life within the community (landscapes, spaces for leisure, cultural activities, etc.)
Enhance and maintain health and safety in the community

5.5.3 Intragenerational equity

The intragenerational equity requirement directs actions towards the reduction of gaps in sufficiency and opportunity (health, security, social recognition, political influence, etc.) between the rich and the poor (Gibson et al., 2005, p. 101). Being at the margins, the condition of marginality and the process of marginalization represent a complex phenomenon with multiple layers to consider in forest communities (Reed, 2003).

5.5.3.1 Fostering inclusion

In forest management literature, intragenerational equity concerns mainly the opening-up of forest management goals and opportunities to other values and actors. This implies respecting other interests' rights, values and uses of forests. Throughout Canada, forest-dependent communities, including First Nations, have had little participation in forest management decision-making (Rotherham & Armson, 2016). This stems from the traditionally closed relationship between the forest industry and the government and resulted in several conflicts. According to Wyatt (2008), First Nation communities' rights, customs and culture have been repeatedly overlooked in Canadian forestry. Emerging demands for attention to a wide variety of services and values have been recognized and accommodated with varying degrees of success through multiple use forestry and integrated resource management.

Research shows that very few women are involved in forest governance both in the South and in the North American context (Agarwal, 2001; Andrew, 2013). In Canada, women in First Nation communities are even more affected by discrimination, socio-economic marginalization, victimization, and health issues (Morissette, 2013). Beyond conceptualizations idealizing the environment protecting role of women and First Nation communities, a need for structures and practices that recognize a variety of expertise to counter marginalization is suggested (Andrew, 2013). Through time, industrial forestry has privileged scientific forestry over local knowledge and individual experience (Beckley, 1998a). While research findings increasingly highlight the need to include traditional ecological knowledge and broader Indigenous knowledge in forest management, most attempts so far have not allowed for a significant contribution to management practices (Stevenson, 2005).

There exist several avenues for participation in local governance, such as voting in local government elections or volunteering in local organizations. Women were for a long time deemed ineligible to vote and it is only in 1940 that women received the right to vote in Quebec, with the exception at the municipal level of adult unmarried women who owned property or were widows (McAllister, 2004). While the presence of women in municipal council is increasing, it is still far from satisfactory (Tindal & Tindal, 2009). Furthermore, visible minorities remain poorly represented (Tindal & Tindal, 2009).

Criteria
Opening-up and integrating other values and expertise in forest governance (traditional ecological knowledge, spiritual values, etc.)
Encouraging and supporting respect for First Nations communities' rights, customs and culture
Supporting gender equity and the involvement of women in forest governance
Increasing the involvement of communities and local governance actors in forest governance
Increasing the involvement opportunities for women and visible minorities in local governance

5.5.3.2 Reducing poverty, low education levels and local disparities

Forest-dependent communities, due to high population turnover, are faced with more profound social issues– such as higher suicide rates – than other communities (Force et al., 1993). As mentioned previously, forest-dependent communities generally have lower education levels than other communities (Bouthillier et al., 2000). Moreover, poverty in rural communities and in forest and other natural resources communities has been underlined, particularly in the context of community well-being assessments (Beckley et al., 2002; Jean, 1997; Stedman, Parkins, & Beckley, 2004). Poverty can increase through the *impoverization* of the population in place as a consequence of job losses and wages that do not keep up with inflation or due to poor populations moving into the community (Forest Ecosystem Management Assessment Team, 1993). Several explanations are provided in the literature to explain the relationship between poverty and resource-dependence such as an underinvestment in human skills, the social construction of nature which may result in the exclusion of certain groups, and power imbalances in natural resource bureaucracy (Stedman, Parkins, & Beckley, 2004).

Disparities also occur within the different areas of a community for instance in terms of access to health and education services or in terms of distribution of risks. Geographical unevenness and unequal resources between partners in a community can affect cooperation and the capacity of partnerships to compete for resources (Bouthillier et al., 2000; Edwards et al., 2001).

Criteria
Enhancing education levels in the community (addressing high drop-out rates, valuing education, etc.)
Promoting a fair distribution of wealth and income generating opportunities within the community
Building awareness of and responding to marginalization in the community and within forest governance
Promoting a fair distribution of risks within local communities

5.5.3.3 Building awareness on imposed pasts and business as usual futures

Marginalization of resource-dependent communities also occurs through their labelling as such by governments that focus primarily on supporting urban development (Dugas, 1996; Laurin, 1989). This can increase negative perceptions of rural regions held by rural and urban people (Dugas, 1996). More importantly, it can reinforce path dependence which can lead to boom and bust cycles and difficult economic diversification (Randall & Ironside, 1996). This situation makes forest-dependent communities vulnerable to changes in external circumstances as well as exacerbates issues within the communities' boundaries.

Criterion
Building awareness of negative labelling and imposed futures in the region in order to open-up its future options

5.5.4 Intergenerational equity

Intergenerational equity implies that "present options and actions that are most likely to preserve or enhance the opportunities and capabilities of future generations to live sustainably" should be favored (Gibson et al., 2005, p. 117). This requirement represents the main challenge for rural forest-dependent communities since they are characterized by a constant threat of, not only declining, but of completely closing down.

5.5.4.1 Managing decline and its feedback processes

A significant challenge for rural regions of Canada is population aging (Bryant & Joseph, 2001). This phenomenon is amplified in rural regions and forest-dependent communities by youth leaving for education and employment purposes (Parkins, 1999) and older people moving in after retirement (Bryant & Joseph, 2001; Woods, 2005). The challenge is not only an aging population but in many cases, population decline as well as its related economic, environmental and social consequences that have been further exacerbated by the recent forestry crisis. The consequences of decline are for instance the disappearance of rural services (Bouthillier et al., 2000; Woods, 2005) that are already limited (Slack et al., 2003) such as the difficulties facing provision of public transit (Woods, 2005). As mentioned by Bryant and Joseph (2001, p. 135) "[s]chool re-organizations, the loss of postal outlets, and the re-organization of religious life (e.g., the part-time priest) are just some of the hardships that have had to be endured."

As underlined by Slack et al. (2003), devising development strategies predicated on hypothetical future growth is unrealistic for many remote communities. Several strategies can be put in place to slow down or reverse decline such as better managing conflicts within the community, preparing leaders and reducing fear of change and denial (Ortiz-Guerrero, 2010). Such strategies cut across different criteria put forward in this framework.

Criteria
Managing and preparing for population aging
Building understanding of decline and the forestry crisis and their feedback processes

5.5.4.2 Moving away from path dependence

Boom and bust cycles are inherent to forest-dependent communities. The evolution of forest management policies underlined modifications put in place to increase the stability of forest communities such as establishing regional manufacturing facilities to maintain local employment and yield regulations to mitigate the instability (Haley & Nelson, 2007). However, these changes did not address the economic dependence on the forest sector within forest communities. Forest communities often find themselves locked-in into a situation characterized by a narrow set of industrial activities prone to booms and busts and difficult economic diversification (Randall & Ironside, 1996). Over time, negative effects on

knowledge, institutions, power relations, and people's sense of themselves can be entwined, mutually reinforcing each other (Leach, Scoones, & Stirling, 2010). In precarious situations, the temptation is high to sacrifice long-term needs for short-term gains.

Furthermore, historical perspectives on Canadian forest policies often describe them as having remained very stable and closed over the years (Howlett & Rayner, 2001) or even fixed (Fréchette, 2009) due to their persistent objective of assuring the timber supply of mills. Resistance to change is given as an important element to explain the forestry crisis. However, major steps have been taken towards SFM.

Another issue in rural forest-dependent communities is the economic fragmentation that results from the shift towards service-based economies (Gill & Reed, 1997). While employment opportunities are more present in communities that have shifted towards a service-based economy, wages are usually lower than in resource extraction and employment opportunities are contractual or seasonal (Woods, 2005).

Criteria
Enhancing long-term quality employment opportunities
Avoiding trading off long-term needs for short-term gains
Maintaining and enhancing future options for future generations

5.5.4.3 Fostering long-term socio-ecological system integrity

Forests not only support the region's population but play a role in broader systems. Forests in Canada represent approximately 10 percent of the world's forest area and forests play a key role in long-term global ecological cycles such as carbon sequestration, as well as regional climate and hydrological cycles (Canadian Council of Forest Ministers, 2006). Disturbances such as insect outbreaks, fire and human interventions and their legacies affect carbon stocks (Canadian Council of Forest Ministers, 2006). These are further impacted by climate change.

There is a lively debate on carbon sinks as appropriate measures for climate change. For instance, it is argued that an emphasis on carbon sinks to mitigate climate change can encourage forestry that does not support sustainability requirements - such as huge plantations that could allow *forestry barons* to override local interests (Leach & Leach, 2004). While there is valuable debate and concern, a sustainable middle ground for thinking of carbon sinks can easily be envisaged (Leach & Leach, 2004). Maintenance and enhancement of carbon sinks can be complementary actions in support of other transitional steps towards sustainability and a low carbon economy and help meet sustainability requirements such as addressing livelihood sufficiency and opportunity for local communities.

Criteria
Encouraging ecosystem management based on maintaining the integrity of socio-ecological system and delivering on broad social objectives
Maintaining or enhancing the role of forests in sequestering carbon and regulating regional hydrological cycles (Canadian Council of Forest Ministers, 2006)
Maintaining long-term resource availability, local capacities and expertise

5.5.5 Resource maintenance and efficiency

The resource maintenance and efficiency requirement directs our attention towards providing "a larger base for ensuring sustainable livelihoods for all, while reducing threats to the long-term integrity of socio-ecological systems by reducing extractive damage, avoiding waste and cutting overall material and energy use per unit of benefit" (Gibson et al., 2005, p. 117).

5.5.5.1 Maintaining ecosystem productivity

As highlighted in the evolution of forest management policies in Canada, scarcity and depletion of forest resources has been a reoccurring concern throughout history. Within the SFM literature and its criteria, sustainability is often interpreted as maintaining timber productivity and non-timber forest values in perpetuity. Moreover, it is often expected that forest values will demonstrate continuity overtime if managed adequately. As pointed out by Burton (2010), one of the SFM criteria endorsed by the CCFM is that "forests must continue to provide the flow of wood products, commercial and nonmarket goods and services, and environmental and option values over the long term" (Adamowicz & Burton, 2003, p. 47). This perspective comes to some extent in tension with respecting and allowing ecological variability and favouring redundancy. Nonetheless, directing efforts towards harvesting practices that are less damaging for socio-ecological systems, respecting regeneration rates and improving silvicultural practices are possible responses for improvements.

Maintaining or increasing productivity (i.e., an "ecosystem's ability to accumulate biomass, which depends on the degree to which nutrients, water, and solar energy are absorbed and transferred within the ecosystem" (Canadian Council of Forest Ministers, 2006) is an essential component of SFM. Threats to forest productivity include acid rain, increased ozone rates, harvesting impacts, as well as deforestation through urbanization. Protecting water and soil resources are identified as key components in SFM for the function they serve for forest productivity as well as being essential to support the life of humans, wildlife and any organism, and their habitat (Adamowicz & Burton, 2003).

Regeneration of harvested areas is necessary and mandatory in Canada. Several pathways are possible such as natural regeneration, planting, seeding or scarifying (Canadian Council of Forest Ministers, 2006). In addition, several silvicultural practices can be put in place. A major concern following increases in protected areas was the protection of site productivity and the intensification of forest management activities (Apsey et al., 2000). Improvement of

silvicultural practices was at the forefront which explains the development of nurseries and reforestation expertise (Apsey et al., 2000). A major issue related to several stand level treatments is that they remain costly in relation to the profits generated by forest harvesting (Lieffers et al., 2003).

An important issue identified mainly at the global scale concerns deforestation (Wang, 2004). In Canada the deforestation rate has decreased slightly (Natural Resources Canada, 2013c). While land-use conversion of forest in forest communities might not be a significant issue, maintaining forest cover for forestry and other activities is still beneficial action particularly in a context of decline in existing developments in municipalities.

Gains in efficiency can also be accomplished in well-planned harvesting operations that carefully avoid damage to other resources. This can be accomplish through better forest inventories, infrastructure data, information of environmental constraints, etc. (Pulkki, 2003). Road engineering is also a major component of harvesting operations that can have the potential to reduce forest fragmentation (Pulkki, 2003).

Criteria
Respecting the capacities of ecosystem in harvesting levels or utilization of resources and enhancing ecosystem regeneration
Maintaining forest productivity by minimizing adverse harvesting impacts, carefully choosing silvicultural practices, and limiting other anthropogenic impacts
Enhancing and maintaining the protection of water (riparian zones, wetlands, etc.) and soil
Minimizing the loss of forest cover for urbanization by directing development in existing cores close to services and amenities

5.5.5.2 Reducing, reusing, and recycling waste, and enhancing energy efficiency

The forest industry has significant greenhouse gases (GHG) emissions and through harvesting, transporting, and processing timber to manufacture different products, the forest sector is the largest industrial energy user in Canada (Canadian Council of Forest Ministers, 2006). Increasing attention has been directed towards reducing waste related to the forest products industry (Zhou, 2003) and reducing GHG emissions in the context of climate change (Canadian Council of Forest Ministers, 2006). For instance, incorporating wood processing waste into new value-added products is increasingly sought as well as reducing energy consumption and waste generation by using alternative technologies (Canada Parliament, 2015; Zhou, 2003). Encouraging local processing has also been identified as a possible pathway to increase efficiency (Forest Stewardship Council Canada, 2008).

Although gains in resource efficiency in the forest sector are important for forest communities, other gains in resource efficiency should also be sought. This is particularly relevant in a context where sustainability imperatives are increasingly present (for instance in provincial policies guiding municipal waste management) in rural communities and represent a

significant challenge (Jean, 1997). A wide range of possibilities can be explored, such as reducing residential, institutional, and industrial waste, or changing morphological aspects of communities in order to make them more walkable hence reducing carbon dependence.

Gains in resource efficiency have to be attentively weighed. Efficiency concerns in forestry have mainly been directed towards finding ways to increase profits by reducing costs through better planning of operations (Canada Parliament, 2015). Technological development through mechanization for instance resulted in decrease employment opportunities for communities.

Criteria
Encouraging and supporting the local processing of forest resources or other community resources
Encouraging and supporting energy efficiency in the forest product sector and other sectors, organizations, and institutions
Encouraging and supporting reusing, reducing and recycling within the forest products sector and other sectors, organizations, and institutions
Seeking opportunities to increase resource maintenance and efficiency in all aspects of the community

5.5.6 Social-ecological civility and democratic governance

Social-ecological civility and democratic governance involve building "the capacity, motivation and habitual inclination of individuals and other collective decision-making bodies to apply sustainability requirements through more open and better informed deliberations, greater attention to fostering reciprocal awareness and collective responsibility, and more integrated use of administrative, market, customary and personal decision-making practices" (Gibson et al., 2005).

5.5.6.1 Enhancing capacities for reciprocal awareness and conflict resolution

The historical account of the evolution of forest management policies in Canada demonstrated that stakeholders and the general public were for the most part excluded from forest management. Although public involvement is now integrated into forest management policies, capacities remain to be built for all players involved. More generally, according to Proulx (2002), territorial actors in rural regions lack expertise, fiscal and legal resources to truly exercise their responsibilities towards their communities.

A significant challenge relates to increased conflicts in forest communities. As demonstrated in section 5.2, conflicts have had significant impact on forest management policies. These conflicts can be explained in part by a shift from production to consumption spaces (Gill & Reed, 1997; Woods, 2005). New imperatives of environmental protection and activities such as tourism conflict with dominant industrial production perspectives. These conflicts emerge between different development views and interests within the community as well as between the clash of local imperatives and broader societal goals (Teitelbaum, Beckley,& Nadeau, 2003). Governance structures in forest communities also have the challenge to ensure that

settlers' communities can coexist with First Nation communities (Bouthillier et al., 2000). Furthermore, conflicts represent solidarity and coherence hurdles to planning activities such as service delivery due to multiple values and interests to be considered (Woods, 2005) as well as a challenge to forest management.

Social capital generally refers to mutually supportive relationships between and among individuals and groups through networks, and relates to notions of reciprocity and trust (Onyx & Bullen, 2000). Putnam (1995, pp. 664-665) defined social capital as "features of social life – networks, norms and trust – that enable participants to act together more effectively to pursue shared objectives". Trust between resource users has been identified as a key feature of collaboration in solving social dilemmas such as sustainability issues in common pool resources (Boschetti et al., 2016; Ostrom, 2010; Plummer & Armitage, 2010; Walker & Salt, 2006). As with other criteria, building social capital cannot stand on its own.

Criteria
Enhancing social awareness and capacities for involvement (e.g., understanding needs, aspirations, perspectives, and disciplinary language, etc.)
Enhancing conflict resolution through collaborative processes and strengthening social ties (social capital) with particular attention to marginalized groups

5.5.6.2 Enhancing stewardship

Stewardship is a core requirement within the resilience literature (and more broadly the literature on natural resource management and sustainability). One of the SFM criteria endorsed by the CCFM consists of "accepting society's responsibility for sustainable development" (Adamowicz & Burton, 2003, p. 47), which implies recognizing and developing the role of different authorities, stakeholders and society in forest management. Beyond a long-time closed relationship between the forest industry and government in forest management, major environmental concerns were mainly institutionalized through top-down processes leaving little room for engagement by local communities (Blais & Chiasson, 2013).

The literature review on the evolution of forest management policies in Canada underlined several issues related to specifying annual allowable cut (ACC) due to its vulnerability to imperatives of short term economic and political gains (Drushka, 1985). Furthermore, environmental standards and regulations are often perceived as imposing costs that have negative impacts within communities that are dependent on forests for their livelihoods (Blais & Chiasson, 2013). This highlights the need for broader direct engagement in stewardship in forest communities.

Corporate responsibility of the forest sector has been solicited through time. Through SFM, a better sharing of benefits is advocated (Adamowicz & Burton, 2003). Sustainability-based forest management and forest products certification is an innovative non-state market-driven

contribution to governance that emerged after the Rio Summit in 1992 (Cashore, 2002). While not a panacea, certification is a mechanism for evaluating forest management according to predetermined standards that can be more stringent than governmental legislation in place. Certification demonstrates to some extent the recognition of local knowledge and the positioning of public participation at the core of decision-making (Parkins & Mitchell, 2005).

Criteria
Enhancing citizen awareness of socio-ecological system integrity
Enhancing the communities' capacity to develop and enforce environmental standards
Enhancing the social responsibility of the forest industry (for instance through increased sustainability-based certification) and other industries in the region

5.5.6.3 Fostering good governance

As underlined in section 5.2 on the evolution of forest management policies in Canada, the recent forestry crisis represents a loss of legitimacy of old ways of governing forests (Beckley, 1998a) spurred by different conflicts. Greater accountability over forest management decisions is demanded by the general public and the efficacy of the institutional forest management arrangements is called into question. Increased pressure for public participation and better decision-making that considers a broad array of interests and values is advocated not only for forest management, but for governance in general. For instance, legitimacy and accountability issues that have arisen because local decision makers are not always elected by citizens are mentioned as challenges of local rural governance (Cloke & Goodwin, 1992).

Criteria
Increasing opportunities for community involvement in decision-making and local governance
Enhancing opportunities for collaboration and information sharing between sectors, organizations, and institutions at multiple levels
Enhancing transparency of decisions, pursued objectives, and priorities as well as the accountability of decision-makers
Enhancing the legitimacy of decisions and closely relating decisions to representative and participative democracy and accountability

5.5.7 Precaution and adaptation

Precaution and adaption are responses to needs to "respect uncertainty, avoid poorly understood risks of serious or irreversible damage to the foundations for sustainability, plan to learn, design for surprise, and manage for adaptation" (Gibson et al., 2005).

5.5.7.1 Promoting adaptation and prudence

The review of the evolution of forest management policies in Canada demonstrated that forest planning is most often based on the assumption of continued merchantability of timber in a forest economy that is demand driven and can be cyclical (Drushka, 1985; Duinker & Greig,

2007). Even the most sophisticated models that considerer a panoply of variables omit what could be highly relevant information on the future forests being modelled. For instance, Duinker and Greig (2007) mention uncertainties related to the future of fossil fuel, the development of biomass in energy production and climate change as potentially influencial factors to consider. Changes within forest communities (e.g., aging population, increasing education levels, etc.) may interact positively or negatively with changes at broader scales (e.g., economy in the United States, international conflicts, etc.). Furthermore, inherent uncertainty related to future changes and developments calls for multiple pathways towards sustainability. This means having more than one strategy to meet the ends that are being pursued.

As highlighted in chapter 3, scenario building is a useful method to explore these uncertainties. Future scenarios are identified as useful tools in forest management (den Herder et al., 2014). In forest communities, Evans and others (2006) demonstrated that scenarios can strengthen collaboration within a community. Furthermore, scenarios provided a structure for communities to discuss their vulnerabilities and dependency to a single source of sustenance and to develop ways to prepare for the future (Evans et al., 2006; Velarde et al., 2007). The use of scenarios in forest communities has also been linked to improved democratic processes and planning (Evans, de Jong, & Cronkleton, 2008). In addition, some research documents large-scale future scenarios for forests and the forest sector through public involvement such as the Canadian Forest Futures Project (Frittaion, Duinker,& Grant, 2010; Wallin, Carlsson, & Hansen, 2016).

The literature on the evolution of forest management policies in Canada and rural forest-dependent communities allowed to highlight major trends that will undoubtedly influence the future of forest communities such as climate change, increased technological developments in the forest sector, increased acknowledgement of First Nation communities (Hoberg, 2008) and an aging population. Such trends call for adaptation strategies that are flexible to possible changes.

The forestry crisis and its vectors have exacerbated the instability and vulnerability of forest-dependent communities that will also be more sensitive to the drivers of change influencing forests and the forest sector (Frittaion, Duinker,& Grant, 2010). Some socio-economic activities and ecosystems may be more vulnerable to envisaged changes. Creating awareness around potential risks for forest communities and promoting actions that will not exacerbate vulnerabilities if they fail are essential. New technological avenues are being explored related to forestry and been have present for several years in Canadian forest research priorities (Forestry Canada, 1989). For instance, somatic embryogenesis is now used to produce trees with increased growth rates and other enhanced properties (Canada Parliament, 2015).

Creating awareness of the potential for utilization of new technologies in communities' surrounding forests should also be integrated into SFM.

Criteria
Exploring and engaging with uncertainties at multiple levels
Supporting and developing alternative sustainability pathways
Increasing knowledge on long-term trends and proactively promoting flexible adaptation strategies
Identifying areas where irreversible damage may occur and areas of precaution
Building community awareness of potential risks (other forestry crisis, effects of climate change on forests and forest activities, budworm outbreaks, technological innovations related to forestry, etc.)
Promoting safe-fail characteristics of actions and development paths put forward

5.5.7.2 Fostering humility and inspiring positive hope

Forest sector history has been characterized by periodic fluctuations in the intensity of activities. It has also underlined the difficulties for forest communities trying to move away from path dependence and the entrenched ideas and practices that have slowed the shift towards SFM. In addition, forest governance is becoming more complex with the broadening of goals pursued and the inclusion of multiple stakeholders. More importantly, forests are extremely complex and attempts to control system change have led to increased vulnerability of ecosystems and forest communities.

Criteria
Fostering humility about system change and the adequacy of present knowledge
Acknowledging the possibility of surprise while taking positive steps towards sustainability

5.5.7.3 Fostering learning, monitoring and iteration

While significant and gradual steps towards sustainability have been taken through time, as depicted in chapter 2, in a context of complexity, expectations of meeting goals and intentions put forward have to be adjusted. Attention should be directed towards continual learning led through monitoring and a reassessment of what is being done and monitored as goals and practices are modified through time.

Criteria
Promoting continuous learning to build understanding and commitment to addressing significant sustainability challenges
Encouraging knowledge and information sharing between members of the initiative and with the community
Enhancing monitoring of and responses to significant sustainability challenges

5.5.8 Immediate and long-term integration

This requirement entails that all sustainability requirements should be applied at once with the objective of seeking mutually supportive benefits and multiple gains (Gibson et al., 2005).

Requirements apply to the present moment but also aim to close the gap between the unsustainable present and possible sustainable futures. Initiatives or undertakings need to contribute to change processes related to all requirements for progress towards sustainability as sustainability assessment is meant to be positively disruptive in multiple mutually supporting ways (Gibson, 2017). Attention is directed toward contributions to generating change and building capacities for action for sustainability.

5.5.8.1 Enhancing benefits and multiple gains

As discussed earlier in the chapter, the assumption that a prosperous single industry inevitably results in a prosperous community has been disproven (Nadeau et al., 2003). The endeavour of sustainability is comprehensive and not as linear. It recognizes many contributing requirements for lasting wellbeing rather than relying on economic activities to drive all others, it builds mutually supporting capacities and qualities across sectors and scales through multiple linked initiatives.

Criterion
Seeking mutually reinforcing benefits between projects and actions

5.5.8.2 Supporting a transition towards sustainability

It was highlighted earlier in the chapter that forest communities are faced with the challenge of addressing their economic dependency on forestry while also contributing to a broader transition from unsustainable trends. Throughout the years, progress has been made towards SFM, but much remains to be accomplished.

All areas of scholarship reviewed in chapter 3 highlight the importance of building a shared and integrative problem understanding of problems and opportunities as a criteria for governance for sustainability (Chapin et al., 2010; Inayatullah, 2008; Loorbach, 2007; Olsson, Bodin, & Folke, 2010; Wiek & Iwaniec, 2014).

The review of forest management policies through time demonstrated a sectoral approach to change often based on the premise that increased economic prosperity for the forest industry would lead to community sustainability. Only recently have local governance and forest management been addressed simultaneously. In addition, the forest sector is now expected to play a significant role in the transition away from the carbon dominant economy (Roos & Stendahl, 2016). As mentioned, new avenues are being explored in areas such as the use of biomass, low carbon forestry, and producing nanocellulose and crystalline cellulose (Ministère des Ressources naturelles et de la Faune, 2008). These developments could represent opportunities for sustainability gains for forest communities. However, as discussed by Francis (2012), a gap is clearly evident between forestry innovations articulated around a *high tech* knowledge-based economy and local initiatives favoring diverse practices relying on broadly

accessible technology. Connection between different paths being articulated is essential for diversification and alignment (Leach et al., 2012).

Transitional processes are contested. Past and future can be better articulated when they embed valued attributes of actors of the old regime into the new path pursued (Gill & Reed, 1997). For instance, the case study of the reimagining process of the forest-dependent community of Squamish, British Columbia by Gill and Reed (1997) demonstrated the important role of the bridging concept of heritage in identifying a new orientation for the community (Gill & Reed, 1997).

While sustainability experiments in forest communities can take many forms (e.g., new governance arrangements for improved services to citizens, pilot project for using forest biomass for heating public buildings, etc.), in order to generate broader system shifts, up-scaling, diffusion, and embedding of successful innovations are necessary (Gibson, 2011; Loorbach, 2007; Rip & Kemp, 1998). Questions remain concerning the role of local forest communities in such processes though it is clear that supporting sustainability experiments is essential.

Criteria
Enhancing the building of a shared and integrative system understanding of sustainability problems and opportunities according to the community's needs and aspirations
Promoting constructive co-evolution of community goals, actions and projects and broader societal goals and trends by connecting them through multiple networks and domains
Enhancing alignment of present actions with envisaged desired futures, needs and values and enhancing alignment capacities while staying responsive to learning
Bridging the past and the envisaged desired futures, needs and values
Developing , providing space for and supporting multiple mutually supportive experiments to enhance sustainability, allowing flexibility, and keeping options open to avoid early path dependence
Enhancing support for up-scaling, diffusion, and embedding of successful sustainability community innovations
Enhancing the democratic legitimacy of sustainability alternatives

5.5.8.3 Harnessing opportunities

Identifying opportunities for change implies being proactive and aware of the socio-political landscape and emerging trends. For instance, representative democracy elections usually occur every four years and might open up opportunities for communities through new program funding. Furthermore, identifying and addressing barriers to change as well as anticipating potential thresholds are essential (Chapin et al., 2010; Olsson et al., 2010). The role of leadership in transformations in social-ecological systems and transition management has also been recognized (Folke et al., 2005; Loorbach, 2007; Walker & Salt, 2012; Westley et al., 2011).

In addition, adaptability and flexibility have to be built into local governance initiatives for them to persist through time. Instability due to fleeting partnerships is underlined as an issue in

responding to rural governance challenges (Edwards et al., 2001) and achieving self-sufficiency in Model Forests and Forest Communities has been problematic due to high dependence on external funding (Gilbert, 2007).

Criteria
Enhancing knowledge in and about the governance system, its actors and responsibilities
Identifying potential thresholds and barriers to change and developing strategies to overcome barriers to change
Building connections between and empowering key players to develop opportunities
Building adaptability, flexibility and proactivity to take advantage of rapid changes or windows of opportunity and emerging new contextual environments

5.6 Conclusion

Through an historical account of the evolution of forest management policies in Canada, section 2 of the chapter identified some of the main challenges for governance for sustainability in forest communities. The core challenge consists of reconciling forest and community governance. Forest communities have been repeatedly excluded from influence over what happens in their surrounding forests due to forest management policy regimes favouring allocation of large-scale forest tenure rights to forest industries and forest management goals focused on timber production. This led to several conflicts and a call for revised forest policy regimes and a new institutional model better able to accommodate multiple forest uses and deliver multiple benefits. Furthermore, focusing solely on timber production and lack of consideration of complexity in ecosystems' dynamics rendered forest communities vulnerable to undesirable changes. This situation was exacerbated by the recent forestry crisis.

Section 3 of the chapter provided further details on the meaning of community, rural, and forest dependence. Vulnerabilities in rural forest-dependent communities are chiefly explained through historically ephemeral and weak relationships with natural resource economies as well as by the irregular contributions of resource sectors to the communities' socioeconomic status (Smith & Parkins, 2011).

Section 4 explored the possible contributions and challenges of new governance models such as community forestry and Model Forests in pursuing sustainability. While multiple contributions have been highlighted throughout the literature, no comprehensive and sustainability-based set of criteria integrating notions of intentional change have been used to assess such initiatives.

Finally, section 5 integrated an understanding of the sustainability challenges for forest communities into Gibson's (2017; 2005) sustainability assessment framework as well as intentional change lessons highlighted in chapter 3. Table 5.3, below, presents the overall requirements for sustainability put forward in this chapter.

Table 5.3 Sustainability requirements for forest communities

SOCIO-ECOLOGICAL SYSTEM (SES) INTEGRITY

Considering ecosystem dynamics and variability

- Allowing socio-ecological system change such as natural disturbances as well as anticipating and adapting to natural and anthropomorphic induced changes

Considering ecosystem services and interactions

- Enhancing system understanding and managing the ecological integrity at the whole system level with attention to direct, indirect, and induced effects

Promoting diversity

- Maintaining diversity (genetic, ecosystem, species), critical ecological services and protecting key and vulnerable species and their habitat
- Maintaining the genetic diversity of forests through harvesting not solely targeted at specific species and planting that does not depend on certain genotypes
- Maintaining the structural complexity of stands and landscapes and functional diversity and redundancy of ecosystem
- Enhancing and maintaining representative, connected and recognized ecosystem protected areas

Reducing anthropogenic impacts on socio-ecological systems

- Maintaining ecosystem connectivity by reducing fragmentation and recovering damaged areas
- Enhancing the understanding of, and limiting direct and cumulative anthropogenic impacts on, socio-ecological systems (particularly of valued components) and considering their interaction with disturbances

LIVELIHOOD SUFFICIENCY AND OPPORTUNITY

Supporting economic diversification

- Enhancing and supporting economic diversification opportunities in forest activities as well as in other sectors by seeking complementarity and synergies between initiatives in order to contribute to poverty reduction and rural economic development while maintaining social-ecological system integrity

Increasing access to natural resources

- Supporting and developing capacities for increase local forest tenure and recognize aboriginal rights
- Supporting and developing capacities for multiple users on public forest land

Enhancing access to services

- Maintaining and improving service delivery and accessibility (Internet, public transit, health, education, banking, etc.) with particular attention to poorer population and disparities within the community

Enhancing entrepreneurs and workforce skills and education

- Increasing and adapting education and training opportunities within the community to meet present and future labour needs
- Supporting strategies to attract educated and skilled workers
- Encouraging the development of entrepreneurial skills for local communities and indigenous communities

Enhancing community well-being

- Supporting health and security in working conditions
- Enhancing the protection and maintenance of the quality of life within the community (landscapes, spaces for leisure, cultural activities, etc.)
- Enhancing and maintain health and safety in the community

INTRAGENERATIONAL EQUITY

Fostering inclusion

- Opening-up and integrating other values and expertise in forest governance (traditional ecological knowledge, spiritual values, etc.)
- Encouraging and supporting respect for First Nations communities' rights, customs and culture
- Supporting gender equity and the involvement of women in forest governance
- Increasing the involvement of communities and local governance actors in forest governance
- Increasing the involvement opportunities for women and visible minorities in local governance

Reducing poverty, low education levels and local disparities

- Enhancing education levels in the community (addressing high drop-out rates, valuing education, etc.)

- Promoting a fair distribution of wealth and income generating opportunities within the community
- Building awareness of and responding to marginalization in the community and within forest governance
- Promoting a fair distribution of risks within local communities

Building awareness on imposed paths and business as usual futures

- Building awareness of negative labelling and imposed futures in the region in order to open-up its future options

INTERGENERATIONAL EQUITY

Managing decline and its feedback processes

- Managing and preparing for population aging
- Building understanding of decline and the forestry crisis and their feedback processes

Moving away from path dependence

- Enhancing long-term quality employment opportunities
- Avoiding trading off long-term needs for short-term gains
- Maintaining and enhancing future options for future generations

Fostering long-term socio-ecological integrity

- Encouraging ecosystem management based on maintaining the integrity of socio-ecological system and delivering on broad social objectives
- Maintaining or enhancing the role of forests in sequestering carbon and regulating regional hydrological cycles
- Maintaining long-term resource availability, local capacities and expertise

RESOURCE MAINTENANCE AND EFFICIENCY

Maintaining ecosystem productivity

- Respecting the capacities of ecosystem in harvesting levels or utilization of resources and enhancing ecosystem regeneration
- Maintaining forest productivity by minimizing adverse harvesting impacts, carefully choosing silvicultural practices, and limiting other anthropogenic impacts
- Enhancing and maintaining the protection of water (riparian zones, wetlands, etc.) and soil
- Minimizing the loss of forest cover for urbanization by directing development in existing cores close to services and amenities

Reducing, reusing and recycling waste and enhancing energy efficiency

- Encouraging and supporting the local processing of forest resources or other community resources
- Encouraging and supporting energy efficiency in the forest product sector and other sectors, organizations, and institutions
- Encouraging and supporting reusing, reducing and recycling within the forest products sector and other sectors, organizations, and institutions
- Seeking opportunities to increase resource maintenance and efficiency in all aspects of the community

SOCIAL-ECOLOGICAL CIVILITY AND DEMOCRATIC GOVERNANCE

Enhancing capacities for reciprocal awareness and conflict resolution

- Enhancing social awareness and capacities for involvement (e.g., understanding needs, aspirations, perspectives, and disciplinary language, etc.)
- Enhancing conflict resolution through collaborative processes and strengthening social ties (social capital) with particular attention to marginalized groups

Enhancing stewardship

- Enhancing citizen awareness of socio-ecological system integrity
- Enhancing the communities' capacity to develop and enforce environmental standards
- Enhancing the social responsibility of the forest industry (for instance through increased sustainability-based certification) and other industries in the region

Fostering good governance

- Increasing opportunities for community involvement in decision-making and local governance
- Enhancing opportunities for collaboration and information sharing between sectors, organizations, and institutions at multiple levels

- Enhancing transparency of decisions, pursued objectives, and priorities as well as the accountability of decision-makers
- Enhancing the legitimacy of decisions and closely relating decisions to representative and participative democracy and accountability

PRECAUTION AND ADAPTATION

Promoting adaptation and precaution

- Exploring and engaging with uncertainties at multiple levels
- Supporting and developing alternative sustainability pathways
- Increasing knowledge on long-term trends and proactively promoting flexible adaptation strategies
- Identifying areas where irreversible damage may occur and areas of precaution
- Building community awareness of potential risks (other forestry crisis, effects of climate change on forests and forest activities, budworm outbreaks, technological innovations related to forestry, etc.)
- Promoting safe-fail characteristics of actions and development paths put forward

Fostering humility and inspiring positive hope

- Fostering humility about system change and the adequacy of present knowledge
- Acknowledging the possibility of surprise while taking positive steps towards sustainability

Fostering learning, monitoring and iteration

- Promoting continuous learning to build understanding and commitment to addressing significant sustainability challenges
- Encouraging knowledge and information sharing between members of the initiative and with the community
- Enhancing monitoring of and responses to significant sustainability challenges

IMMEDIATE AND LONG-TERM INTEGRATION

Enhancing benefits and multiple gains

- Seeking mutually reinforcing benefits between projects and actions

Supporting a transition towards sustainability

- Enhancing the building of a shared and integrative system understanding of sustainability problems and opportunities according to the community's needs and aspirations
- Promoting constructive co-evolution of community goals, actions and projects and broader societal goals and trends by connecting them through multiple networks and domains
- Enhancing alignment of present actions with envisaged desired futures, needs and values and enhancing alignment capacities while staying responsive to learning
- Bridging the past and the envisaged desired futures, needs and values
- Developing , providing space for and supporting multiple mutually supportive experiments to enhance sustainability, allowing flexibility, and keeping options open to avoid early path dependence
- Enhancing support for up-scaling, diffusion, and embedding of successful sustainability community innovations
- Enhancing the democratic legitimacy of sustainability alternatives

Harnessing opportunities

- Enhancing knowledge in and about the governance system, its actors and responsibilities
- Identifying potential thresholds and barriers to change and developing strategies to overcome barriers to change
- Building connections between and empowering key players to develop opportunities
- Building adaptability, flexibility and proactivity to take advantage of rapid changes or windows of opportunity and emerging new contextual environments

CHAPTER 6 - PREAMBULE: TURBULENCE IN THE ANTOINE-LABELLE REGION

6.1 Introduction

Rural forest communities in Canada face significant challenges through processes of globalization and forest sector restructuration. They need to engage in the arduous endeavour of adapting to changing circumstances while maintaining past achievements and seeking new opportunities to move towards sustainability. More specifically in the Antoine-Labelle region, three major interlinked waves of change converged during the last decade in addition to other persistent stresses. First, the forestry crisis resulted in a notable transformation of the industrial structure in the region, thus affecting forest governance. Second, austerity measures by the provincial Liberal government elected in 2014 considerably modified the landscape of the region's governance, including the governance of forests on public land. Third, a new forest management regime with significant shifts in responsibilities and new structures was put in place. This chapter aims to position the two studied initiatives, The Bourdon project (2007-2014) and the *Voyons loin* (2007-2015) Vision exercise in this imposing socio-political context as well as to provide an initial descriptive account of the region's governance.

In section 6.2, an initial brief and broad portrait of the Antoine-Labelle region is presented in order to set the stage for discussion of changes in the region as well as the sustainability issues that will be discussed in chapter 7.

In the following section, the relationship between the Antoine-Labelle region and its forests is explored. Biophysical features as well as religious and governmental aspirations influenced the development path and industrial structure of the region. This information provides the base for a preliminary understanding of how the forestry crisis played out in the region.

Section 6.4 explores governance in the Antoine-Labelle region. More specifically, it details the establishment of the administrative region of the Laurentians and of the Antoine-Labelle Regional County Municipality (ALRCM) in the 1960s and early 1980s respectively as part of the modernization process of Quebec's provincial government. Hence, different existing governmental bodies and community organizations adapted to or adopted the boundaries of these new governmental apparatuses. Under the austerity measures of the provincial Liberal government elected in 2014, removing or diminishing the number of governmental structures was a priority that significantly changed governance in the Antoine-Labelle region. Therefore, this section also documents the consequent governance structure modification endured by the region.

The final section turns to another important wave of change affecting the Antoine-Labelle region. In 2008, the provincial government published its Green paper on the future of Quebec's forests, featuring the main premises of what would become the Sustainable Forest

Management Act in 2010. This section explores the governance of public forests in the Antoine-Labelle region with more specific attention to the forest regime modifications that took place during the two initiatives.

The forestry crisis and the provincial policy changes affecting the governance of the ALRCM and the governance of forests on public land in the region point to the need to adapt to new contextual realities. In the midst of turbulence, revised, prudent, and most importantly, patient direction is called upon.

6.2 Location of the Antoine-Labelle region

The Antoine-Labelle Regional County Municipality of (ALRCM) is one of the eight RCMs located in the administrative region of the Laurentians in Quebec, which is also divided in two emblematic entities: the Lower and the Upper Laurentians. Together they totalize 21 438 square kilometers, of which the ALRCM occupies approximately 72 percent (Commission des Ressources naturelles et du Territoire des Laurentides, 2010). The ALRCM and the RCM of the Laurentians are usually considered as being equivalent to the Upper Laurentians' territory although this appellation is not necessarily bound to administrative delimitations.

The situation of the ALRCM differs quite significantly from other RCMs located in the administrative region of the Laurentians. Other RCMs are in closer proximity to Montreal and host higher rates of urbanization. In contrast, the ALRCM is characterized by population decline or slight increases in population (Institut de la Statistique du Québec, 2015). Several other differences between these entities can be identified most notably differences in socio-economic status and land tenure. Other RCMs have higher education levels and income in comparison to ALRCM. Land tenure in the ALRCM consists of 86 percent of public land compared to 45 percent in the RCM of the Laurentians and less than 15 percent for all others (Commission des Ressources naturelles et du Territoire des Laurentides, 2010).

The ALRCM covers a wide territory (15 618, 41 square kilometers) that is more than ten times the size of the Regional Municipality of Waterloo in Ontario. For instance, approximately a 45 minute drive (60 kilometers) separates two of its core municipalities, Rivière-Rouge and Mont-Laurier. Two major roads link the region with other centers. The 117 connects the ALRCM to Montreal approximately 200 kilometers to the South and Val d'Or, 300 kilometers to the North. The 309 connects the region to Gatineau and Ottawa, approximately 200 kilometers to the South-West of the ALRCM.

There are 17 municipalities in the ALRCM of which Mont-Laurier is the most populous with close to 14 000 residents (Municipalité régionale de comté d'Antoine-Labelle, 2016g). In 2014, 35,159 people resided in the ALRCM and the population has been decreasing or mostly stagnant since the forestry crisis beginning approximately in 2006 where population was 35,629 (Institut de la Statistique du Québec, 2015).

First Nation communities are present in the ALRCM. The Atikameks of Manawan First Nation community is located to the northeast and Algonquin First Nation communities (Kitigan Zibi Anishinabeg) can be found to the west of the ALRCM. However, no reserves are located in the ALRCM but traditional activities are practiced. Atikameks of Manawan's traditional territory overlaps with the forest development zone 64-51 and the Algonquins of Kitigan Zibi Anishinabeg use a portion of the forest development zone 64-52 (see Figure 6.4).

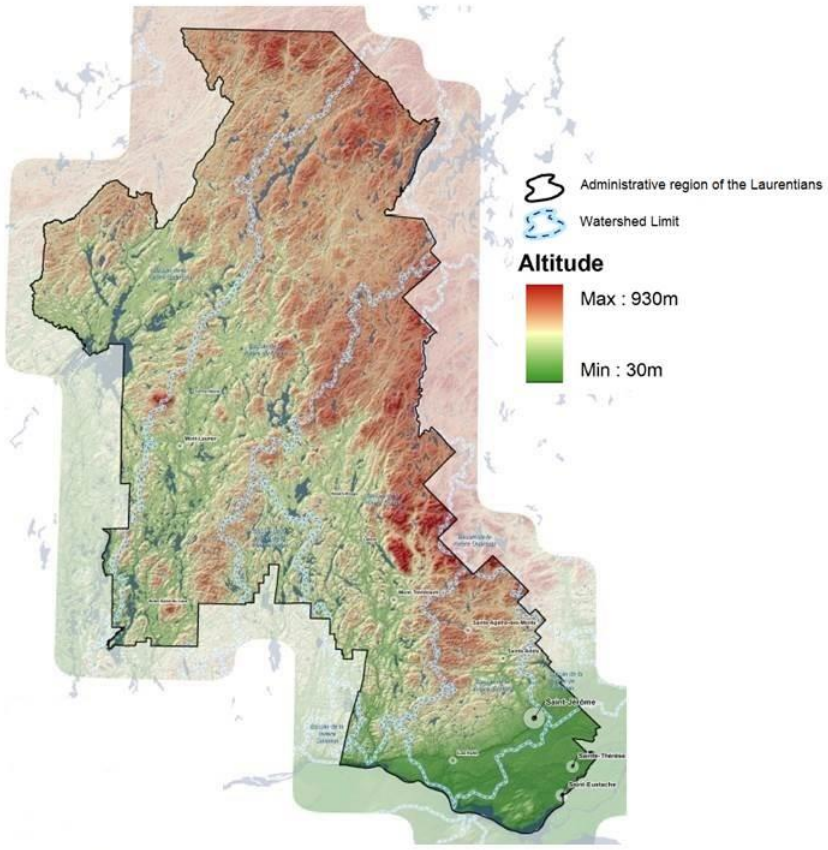
6.3 The Antoine-Labelle region: a forest community

Forests in the region of Antoine-Labelle are an integral part of the landscape and they have modulated the construction of its institutions and identity. Its rivers and abundant forests as well as the soubresaults of economic imperatives have oriented the direction of the region's development.

6.3.1 Landscape

The region's landscape is characterized by the presence of thousands of lakes, rounded mountains, and valleys cleaved by rivers. The highest point in the ALRCM is Mont Sir-Wilfrid with an elevation of 783 meters (Commission des Ressources naturelles et du Territoire des Laurentides, 2010). Mountains divide the administrative region of the Laurentians into four major valleys (Rouge, Lièvre, Gatineau and Nord) named after the rivers that drain the watersheds and flow for the most part towards the Ottawa River (Commission des Ressources naturelles et du Territoire des Laurentides, 2010).

Figure 6.1 Elevation and watershed limits in the administrative region of the Laurentians



Source: Modified from Commission des Ressources naturelles et du Territoire des Laurentides, 2010

6.3.2 From Rapide-de-l'Orignal to the Antoine-Labelle Regional County Municipality

Several names in the ALRCM demonstrate Aboriginal community occupation at the moment when settlers arrived. These include the municipalities of La Macaza and Nominingue and the Windigo Falls near la Montagne du Diable. The first settlers arrived near the end of the 19th century. Large forest concessions were already in place in the region as well as a fur trade post (Laurin, 1989). There were no roads connecting the region to other colonized parishes. The easiest access was by boat on the rivers that flowed towards the Ottawa River. This biophysical connection explains stronger historical ties of the Antoine-Labelle region with Ottawa and Gatineau than with Montreal. For instance, the burgeoning forest industry near Ottawa opened-up the Antoine-Labelle region for colonization approximately ten years before its neighbouring regions to the South (Rodier & Girouard, 1983). For a long time foresters simply floated square timber back down to the industries near Ottawa. Moreover, it was the Catholic Church from the diocese of Gatineau rather than Montreal that sent its priests for settlers in the region (Coursol, 1983).

Colonization efforts in the Upper Laurentians were deployed towards the end of the 19th century as a means to counter the massive exodus of French Canadians towards the United States after the political uproar of the Patriots (Laurin, 1989). The only farmlands present in the Antoine-Labelle region at that time were farms to provide food supplies for forestry camps close to La Lièvre River built by wood merchants (Roy et al., 2009). These farms and their abandonment by forest companies later became the locations for the municipalities of the ALRCM due to their strategic location and the convenience of being already cleared for agriculture (Laurin, 1989). They also became the bases for distant embryotic parishes that called upon to deliver religious salvation (Rodier & Girouard, 1983).

The colonization effort in the Laurentians was pushed forward by Colonization Societies and the epic character of priest Antoine Labelle (Rodier & Girouard, 1983). Priest Antoine-Labelle's efforts resulted in an extension of the railroad to Saint-Jérôme in the Lower Laurentians in 1891. However, the railroad only reached what is now known as Mont-Laurier in 1909 following relentless political pressure from its priest Génier and inhabitants (Coursol, 1983). Mont-Laurier was known as Notre-Dame-de-Fourvières municipality and the surrounding area was referred to as the Rapide-de-l'Orignal region (Coursol, 1983). When discussions with the provincial government concerning the railroad extension were unsuccessful, support from the federal government of Sir Wilfrid Laurier was solicited by avid residents (Coursol, 1983). The municipality was renamed Mont-Laurier in appreciation for Sir Wilfrid Laurier's influence in discussions with the Canadian Pacific which led to the extension of the railway (Coursol, 1983). Around the same time Mont-Laurier was chosen as the location for a new judiciary district and diocese which confirmed its position as the capital of the North (Coursol, 1983).

From the onset, it quickly became obvious that the potential for agriculture in some parts of the Upper Laurentians had been overestimated (Laurin, 1989). However, the forest industry was able to assist in propelling the region's development.

6.3.3 The forest industry

Forest workers arrived in the Upper Laurentians following Philemon Wright's forest industry establishment in 1806 which led to the creation of Hull (Rodier & Girouard, 1983). Bowman's sawmill acquisition in Buckinham, Levi Bigelow's construction of a sawmill on the Lièvre River as well as Mears and Patee's sawmill in Hawkesbury allowed continued and significant forest exploitation in the Upper Laurentians (Coursol, 1983). In 1864, James and John MacLaren started acquiring different sawmills and increasing their concession area in the Upper Laurentians (Roy et al., 2009) which marked an influence that would last over a century. The huge MacLaren concession proceeded to give lots for colonization while simultaneously regularly increasing its area from 167 square kilometers in 1913 to 217 square kilometers in 1947 (Roy et al., 2009). Outside the Antoine-Labelle region, MacLaren's domination led to turmoil in Buckingham, including the assassination of two union laborers at

its sawmill in 1906 (Lapointe, 2006). MacLaren's monopoly in the Antoine-Labelle region and the resulting shame of workers for not having access to surrounding forests to support their livelihoods later contributed to the creation of the forest cooperative of the Upper Laurentians in 1978 (Desmarais & Tremblay, 1994).

By the end of the 19th century, forest exploitation in the Upper Laurentians still focused on few species, especially white and red pine. This can be explained by the fact that hardwood could not be floated down rivers for long periods of time, by the lack of road development, and by the unpredictability of markets for the sawmill industry (Roy et al., 2009). Initial sawmills in the Upper Laurentians served local markets (Coursol, 1983). However, the railroad extension to Mont-Laurier in 1909, increased demand for lumber in the United States, and the availability of a variety of tree species allowed forests to serve as an economic lever (Coursol, 1983). For instance, around 1920 over 100 sawmills could be found within Mont-Laurier's vicinity changing the landscape near the train station to an immense wood yard (Coursol, 1983). With the construction of route 11 (now 117) connecting Mont-Laurier to Montreal by the mid-twentieth century and the closure of the railroad in 1981, the trucking industry made a noticeable appearance in the region's landscape. The railway bed is now used as a linear park, which attracts tourism in the region.

The sawmill industry era between 1880 and 1920 was very prosperous in the Antoine-Labelle region (Laurin, 1989) and some sawmills were able to persist for over 100 years up to the recent forestry crisis. However, the shift towards the pulp and paper industry and more importantly, the establishment of the transformation facilities in the Outaouais region instead of the Antoine-Labelle region represented a significant hindrance to the region's development (Laurin, 1989). Moreover, there were reports of forest resource depletion in the region (Laurin, 1989). Henceforth, the Upper Laurentians turned towards tourism and the service economy for additional development opportunities (Laurin, 1989).

In the late 1980s, the industrial structure in the Upper Laurentians expanded significantly with the abolition of concessions in the 1986 Forest Act (see section 6.5). The Antoine-Labelle region was one of the rare regions to be organized around small and medium sized forest transformation industries directly linked, or linked through subcontracts, to harvesting activities (Institut pour le progrès socio-économique, 2011; Laboratoire d'expérimentation, 2004). First and second transformation of soft and hardwood consisted essentially of locally owned independent enterprises that were not integrated within the pulp and paper industry (Consensus-Action, 2004). This situation changed drastically with the advent of forestry crisis around 2006.

In 2010, the two most important softwood sawmills in the region were acquired following bankruptcy (Max Meilleur et Fils and Henri Radermaker et Fils) by Groupe Forex owned by the American company Louisiana-Pacific of Tennessee (Institut pour le progrès socio-économique, 2011). Groupe Forex is now in a situation of monopoly over small producers in

the region working in complementarity with independent sawmills in the Upper Laurentians. Thus, the forest governance landscape was significantly modified with the arrival of new players and the disappearance of industries that had shaped the region's evolution for several decades.

6.4 Governance of the Antoine-Labelle region

This section aims to overview governance of the Antoine-Labelle region without being exhaustive. The focus is directed towards understanding the main organizations playing a role in land planning and social-economic development as well as their connection with forest activities. The organizations mentioned were all implicated to some extent in the two studied initiatives. This overview will also serve better understanding of the significant changes that took place during the period of study and lifespan of the two initiatives studied.

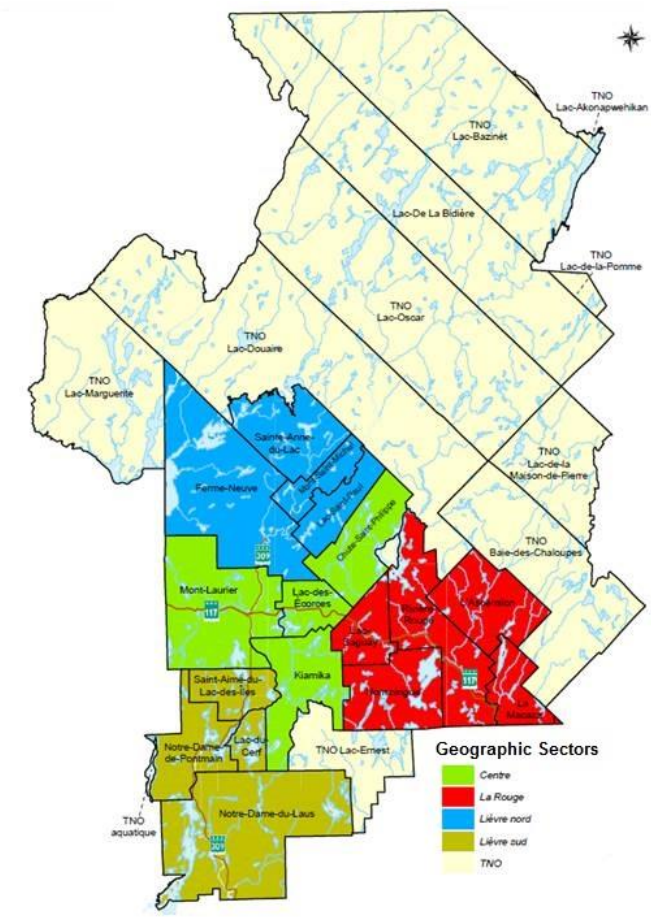
6.4.1 Towards the Antoine-Labelle Regional County Municipality

As in other rural regions in Quebec, the parish remained the principal structure organizing life (Laurin, 1989) in settlements. In the 19th century and more particularly after the 1837-38 rebellion, the importance of putting in place a municipal regime in Quebec was underlined (Proulx, 2002). Following economic difficulties of municipalities during the 1930 economic crisis, the provincial government increasingly relieved municipalities of financial obligations (Proulx, 2002). In addition, several instances of municipal corruption led the provincial government to intervene in municipal affairs (McAllister, 2004; Sancton, 2011). The idea of states as economic and social regulators became increasingly preponderant. Economic growth after the Second World War allowed even more profound government intervention.

In the important period of socio-political change of the Quiet Revolution in Quebec, the modernization and *national* affirmation of the State were priorities (Hamel & Jouve, 2006). A broad process of laicization of institutions and secularization of society was undertaken. Furthermore, increasingly complex issues underlined insufficiencies in public administration and the need to adapt to new circumstances (Gow, 1986). Several diagnostics on territorial occupancy were conducted highlighting, among many, social and economic disparities between regions and incoherence in public management and territorial organization (Proulx, 2002). In 1966, administrative regions were created (Proulx, 2002). In addition, according to Gow (1986), 46 new ministries and public organizations were created, accompanied by a regionalization of different services such as health and education. For instance, the Pierre Neveu School Board of the Antoine-Labelle region was created in 1972 (Commission scolaire Pierre Neveu, 2016). Another example is the creation of REXFOR, a provincial Crown corporation in charge of recovering and exploiting forest resources, rehabilitating forests through silvicultural practices and stimulating the development of the forest industry, following significant loss of forests through flooding for the reservoir of the immense Manic-5 hydroelectric dam (Côté, 1979).

Following the *Loi sur l'aménagement et l'urbanisme* in 1979, Quebec's territory was subdivided into regional county municipalities (RCM) and urban communities (later called metropolitan communities). The new RCM entity was adopted slowly by collective organizations as well as public and parapublic organizations (Proulx, 2002). RCMs include municipalities of different sizes and in some cases non-municipalized territories known as "unorganized territories" (TNO) within a same administrative region (Ministère des Affaires municipales, 2009). The ALRCM was officially created in 1983 (Municipalité régionale de comté d'Antoine-Labelle, 2016a). Seventeen municipalities are within the boundaries of the ALRCM as well as 11 TNOs.

Figure 6.2 Division of the ALRCM in municipalities, geographic sectors and Unorganized Territories (TNO)



Source: Municipalité régionale de comté d'Antoine-Labelle, 2016f

6.4.2 Governance in the Antoine-Labelle Regional County Municipality

Several responsibilities are assumed by RCMs such as urban planning and development, regional watershed management, and preparing property assessments (Ministère des Affaires municipales, 2009). The ALRCM has also been designated as a rural region, which gives it special powers such as the ability to elect a chair by universal suffrage (Ministère des Affaires municipales, 2009). In the case of the ALRCM, however, the chair is nominated every two years by the board of mayors of the 17 municipalities (Municipalité régionale de comté d'Antoine-Labelle, 2016b). RCMs also have the responsibility of having an up-to-date strategic vision for cultural, economic, environmental and social development spanning at least one generation (Ministère des Affaires municipales et de l'Occupation du territoire, 2010). The latest vision statement of the ALRCM was adopted in September 2013 (Municipalité régionale de comté d'Antoine-Labelle, 2016c).

Along with the provincial government, RCMs in Quebec are in charge of financing Local Development Centers (CLDs), which aim to provide further autonomy to local communities in orienting their development (Tardif, 2007). CLDs de facto adopted the RCM's boundaries. CLDs are in charge of planning and encouraging local economic development through partnerships and entrepreneurship building. They also have the mandate to support the social economy through different programs. This has been criticized for pressuring social economy initiatives to narrow their objectives to economic performance and for draining resources rendering them incapable of fulfilling their complete mandates (Dionne & Thivierge, 2000; Tardif, 2007).

In the ALRCM, most community organizations are regrouped under the *Corporation de développement communautaire des Hautes-Laurentides* (CDCHL). The CDCHL initiated the *Voyons loin* vision exercise detailed in chapter 8. There are 56 CDCs in Quebec regrouped in a *national* table (Corporation de développement communautaire des Hautes-Laurentides, 2014). The CDCHL was incorporated in 2003 but stems from partnerships in health and social services dating back to 1987 (Corporation de développement communautaire des Hautes-Laurentides, 2014). The aims of the CDCHL are to transform structures and systems in place to increase the quality of life in the region (Corporation de développement communautaire des Hautes-Laurentides, 2014). Poverty reduction and defeating social exclusion, objectives that go beyond any individual community organization, are favored through partnerships, training and research (Corporation de développement communautaire des Hautes-Laurentides, 2014).

Local economic development in the ALRCM is also supported by *Community Futures Development Corporations* (SADC) funded by the federal government. SADCs have a mission very similar to that of the Local Development Centers (CLDs). While the federal government was accused of interfering in matters that were not of its jurisdiction in some instances, rural communities generally accepted the additional help without issue (Jean, 1997). The Antoine-Labelle SADC's mission is to facilitate collaboration and partnerships between community stakeholders, to assure community vanguard, to favour the creation and maintenance of

employment and to develop businesses, and to stimulate community participation in taking control of its future (Société d'aide au développement de la collectivité d'Antoine-Labelle, 2014).

Other influential organizations in the ALRCM relate to education, training, health and social services. Most importantly, these consist of the Pierre-Neveu school board, the Vocational Training Center of Mont-Laurier, the Université du Québec en Abitibi-Témiscamingue centre in Mont-Laurier, and the Health and Social Services Centres (CSSS).

The Laurentians administrative region serves as an organizing entity for innovation development under the Ministry of Economic Development, Innovation, and Export Trade (MDDEIE) through the ACCORD[8] program. More specifically, three innovation axes have been selected for the administrative region of the Laurentians: advanced land transportation, tourism, and forest activities (Ministère de l'économie de la Science et de l'Innovation, 2014). Under the forest activities axes, the organization *Signature Bois Laurentides* was created to bring together businesses involved in silvicultural practices as well as second and third forest transformation industries to develop innovations (Signature Bois Laurentides, 2014). In all, 23 enterprises are part of this non-profit organization which aims to commercialize high quality timber products from hardwood and mixed forests of the region (Institut pour le progrès socio-économique, 2011).

In 2003, the Liberal provincial government initiated a modernization of administrative structures that led to the creation of regional conferences of representatives (Conférence régionale des élus (CRÉ)) (Tardif, 2007), and more specifically in the administrative region of the Laurentians, the regional conference of representatives of the Laurentians (CRÉL). Regional conferences of representatives were responsible for advising the provincial government on regional issues to better direct public interventions and implement projects (Conférence régionale des élus des Laurentides, 2014). In addition, under the new provincial forest management regime (see section 6.5.2), the CRÉL was in charge of creating the Regional Land and Natural Resources Commission of the Laurentians[9]. Through Local Integrated Land and Resource Management Panels, the Commission's main mandate was to put forward a Regional Integrated Land and Natural Resources Development Plan. After 2006, the CRÉL was also in charge of supervising regional consultation tables on off-road vehicles (Commission des Ressources naturelles et du Territoire des Laurentides, 2010). Regional conferences of representatives were abolished in 2015 along with the newly created Regional Land and Natural Resources Commission of the Laurentians.

The election of the provincial Liberal government in 2014 marked a significant change for the governance of the ALRCM. Following the Liberal government's austerity measures, several

[8] In French, ACCORD stands for *Action concertée de coopération régionale de développement*
[9] Referred to in French as the Commission des ressources naturelles et du territoire des Laurentides (CRNTL)

structures were abolished, several responsibilities were transferred to RCMs, and several management boards within the ALRCM were abolished and reorganized at the administrative region level.

RCMs were given the choice to keep Local Development Centers (CLDs) or to delegate to another organization responsibilities for local economic development and entrepreneurship support (Rettino-Parazelli, 2014). The ALRCM decided to keep the CLD. The responsibilities of RCMs were further extended by the abolition of the regional conferences of representatives of the Laurentians (CRÉL), which affected the new forest management policy regime. Some of the responsibilities of the Regional Land and Natural Resources Commission of the Laurentians that were under the CRÉL were transferred to the ALRCM. In addition, the management board of the Health and Social Services Centres in Antoine-Labelle was abolished and integrated into one organization for the whole administrative region. Similarly, the Liberal government planned to reduce the number of school boards in Quebec from 72 to 46 (Biron, 2014). This meant the merger of all the school boards in the administrative region of the Laurentians into one (Labbé, 2015). Due to public uproar and difficult negotiations, school board reorganization has now been left aside (Chouinard, 2015).

These political changes greatly affected the population of the ALRCM. More than 1000 residents demonstrated in the streets of Mont-Laurier in December 2014 with little media attention (Pagé, 2014).

6.5 Governance of public land in the Antoine-Labelle region

This section provides information on the governance of public land in the Antoine-Labelle region. The governance of public land has been characterized by several conflicts due to the presence of multiple users with varying interests and values. In addition, due to the implementation of the new forest management regime and the industrial reorganization related to the forestry crisis, uncertainty reigns in the Antoine-Labelle region.

6.5.1 Multiple users

The ALRCM has been labeled a “resource region” by the provincial government (Laurin, 1989). The region is characterized by a very high overlap of rights on public lands which explains a long history of conflicts but also collaborative initiatives (see chapter 7).

In addition to its tiered responsibilities for its municipalities, the ALRCM is responsible for unorganized territories (TNO) and acts as the municipal government for these territories. However, no permanent residents reside in the region’s TNOs (Municipalité régionale de comté d'Antoine-Labelle, 2016e). Since 2000, following an agreement with the provincial government, the ALRCM is also responsible for the management of intramunicipal public lands through a Multiresources Management Plan (Municipalité régionale de comté d'Antoine-

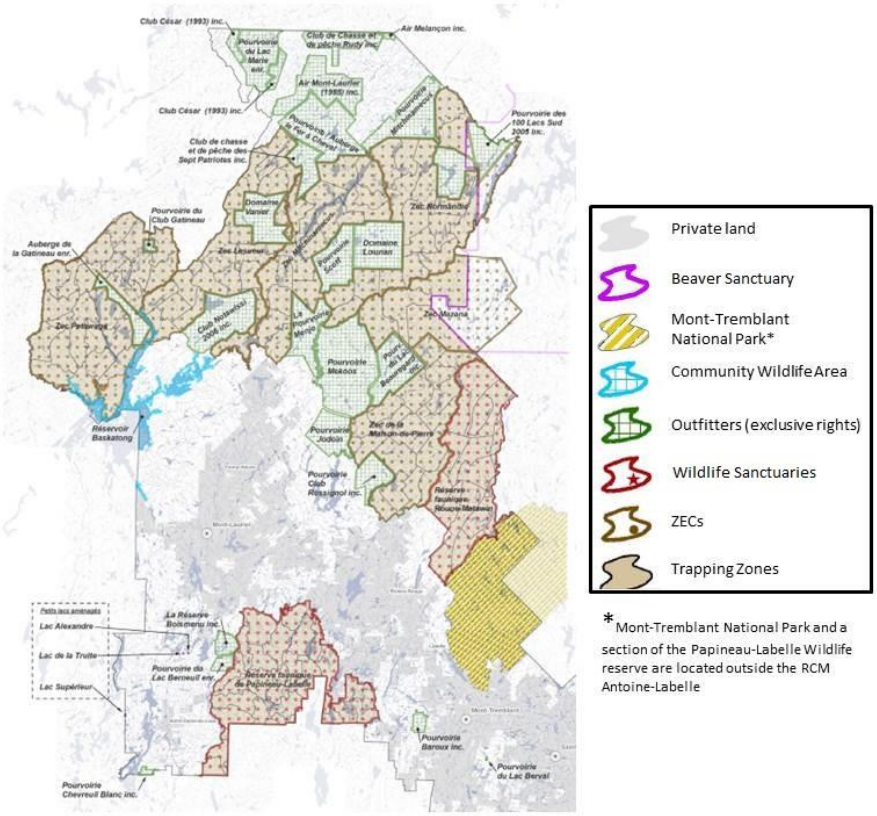
Labelle, 2014). The intramunicipal public lands are used by the ALRCM to generate revenues from forest harvesting, maple syrup production, or other uses. For instance, since 2001, over 4 million dollars in revenues were generated through harvesting hard and softwood and partially reinvested in a fund for the management of intramunicipal public land (Institut pour le progrès socio-économique, 2011). Different projects were developed in intramunicipal public lands such as a nursery for plants that are used to help naturalize stream banks and counter erosion, as well as maple syrup production (Commission des Ressources naturelles et du Territoire des Laurentides, 2011; Institut pour le progrès socio-économique, 2011).

Three types of organizations are granted rights on public land for the exploitation and protection of wildlife (hunting, fishing and recreational activities). Controlled harvesting zones (ZECs) are non-profit organizations that manage wildlife on the behalf of the provincial government. They offer services for hunting, fishing and other recreational activities. There are 63 ZECs in Quebec, five of which are located in the ALRCM (Réseau ZEC, 2016). The other two types of organizations are outfitters with exclusive or non-exclusive rights. Outfitters offer services such as lodging and equipment rental for hunting, fishing or trapping. Outfitters with exclusive rights have a lease granting them exclusive rights for hunting, fishing or trapping in a specific area while non-exclusive outfitters need to share public land with other users. There are close to 60 outfitters with exclusive or non-exclusive rights in ALRCM (Commission des Ressources naturelles et du Territoire des Laurentides, 2010). In addition to these organizations, Wildlife reserves, managed by the SEPAQ[10], a provincial government corporation, also oversee and offer activities related to hunting, fishing and trapping.

Other rights can be granted for trapping activities on public land; approximately 60 square kilometers are allocated to permit holders (Commission des Ressources naturelles et du Territoire des Laurentides, 2010). In addition, several off-road vehicle clubs use and maintain trails on public lands.

[10] In French, SEPAQ stands for *Société des établissements de plein air du Québec*.

Figure 6.3 Wildlife structured tenure in the ALRCM



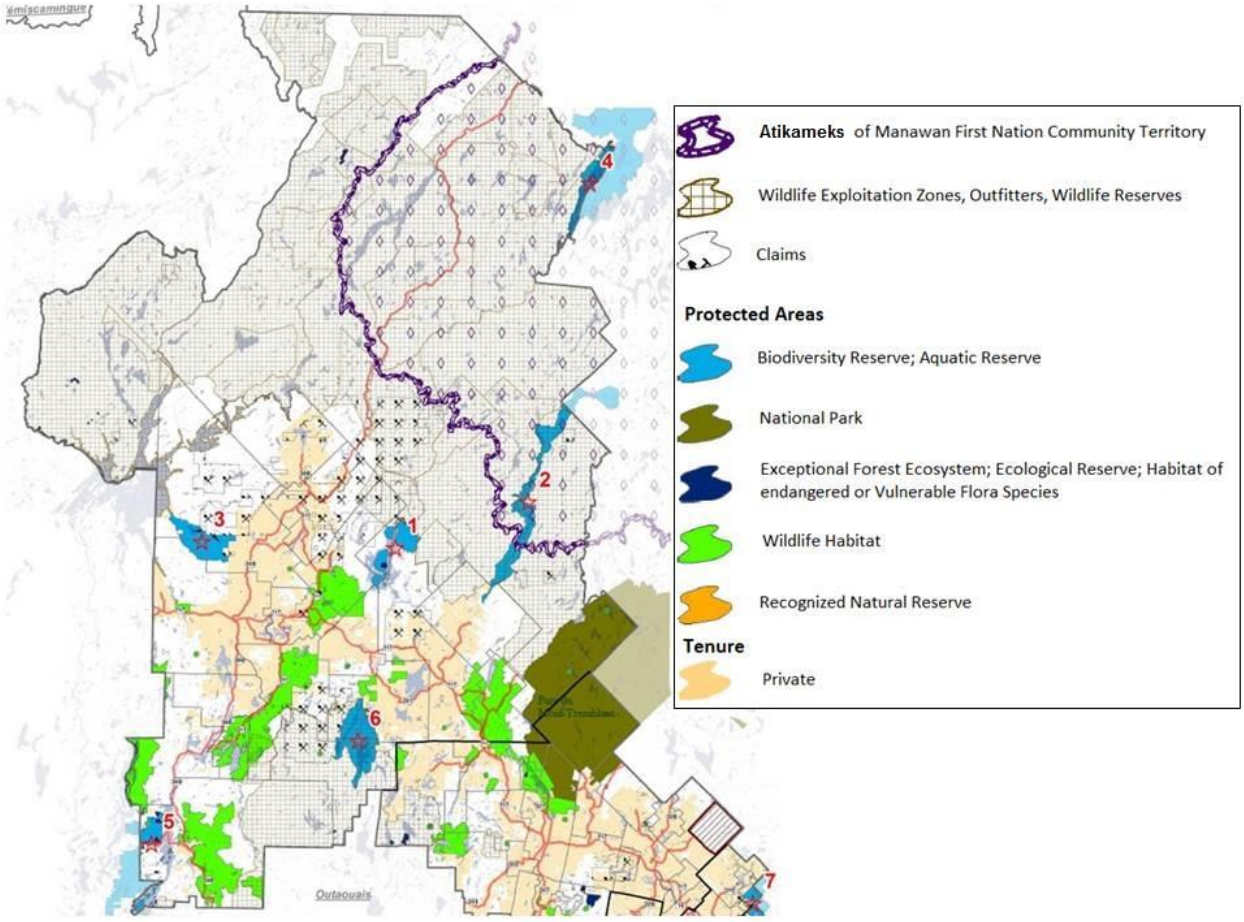
Source: Modified from Commission des Ressources naturelles et du Territoire des Laurentides, 2010

The Atikameks of Manawan First Nation community's traditional territory overlaps significantly with the Nord-Est part of the ALRCM. In 2012, an agreement was established between the Atikameks First Nation and the government of Quebec concerning resource management on their traditional territories (Ministère des Ressources naturelles, 2012). In addition, mechanisms to facilitate the access to economic development opportunities were put in place in 2003 between the Ministry of Natural Resource and the Atikameks of Manawan (Ministère des Ressources naturelles, 2012).

Algonquins from Lac-Rapide also signed an agreement in 1991 with the governments of Quebec and Canada aimed at preparing an integrated resource management plan for forests and wildlife in the La Vérendrye wildlife reserve located outside the ALRCM.

There are also several mining claims in the ALRCM as well as protected areas under different legislative frameworks.

Figure 6.4 Principal rights and statuses in the ALRCM



Source: modified from Commission des Ressources naturelles et du Territoire des Laurentides, 2010

6.5.2 Quebec's new forest management regime

In 2008 in response to the forest sector's changes and the increased demands related to environmental protection and public involvement, the government of Quebec decided to engage in a complete reform of the forest management regime that had been in place since 1986. Although the 1986 Forest Act represented a milestone in sustainable forest management by integrating the sustained yield concept and public participation, it failed to generate sufficient public confidence and consensus among stakeholders involved in forest management (Ministère des Ressources naturelles et de la Faune, 2008a). A series of steps were undertaken by the provincial government such as public consultations on the orientations presented in the Green paper *Forests: Building a Future for Quebec* in 2008 in which over 450 briefs and reports were put forward (Verreault & Lavoie, 2009). In 2008, Regional Land and Natural Resources Commissions were also put in place (Ministère des forêts de la faune et des parcs, 2015b) slowly moving towards the new forest management regime based on increased regionalization of forest management.

The government of Quebec introduced in 2010 the Sustainable Forest Development Act (Bill 57) with a transition period until April 1st 2013. However, the overarching strategy for sustainable forest management supposed to guide forest management was only published in December 2015 (Ministère des forêts de la faune et des parcs, 2015b). Furthermore, specifications on the government's orientations related to proximity forests (see section 6.4.2.2 below) were published in June 2015, but there is still no official policy (Ministère des forêts de la faune et des parcs, 2015a) guiding implementation.

6.5.2.1 Forest management policy regime 1986-2010

The 1986 regime was modified repeatedly through time to accommodate increased public concerns over issues such as environmental protection, multiple usages and overall sustainability effects. Before 1986, forestry rights were granted through concessions. In the concessions, the province's responsibilities regarding management activities were very limited. In the 1986 Forest Act, concessions were replaced by Timber Supply and Forest Management Agreements (CAAF) that were meant to address concerns of resource renewal and sufficient supply for industries (Brochu, 1990). Agreements depended on the availability of required species to satisfy the needs of a mill. Common areas (development zones) could be shared between or among more than one agreement beneficiary (Bouthillier, 2001). By linking the industry to the land and by defining public forests as a residual source of timber, the province aimed to avoid the waste of public forests and to transform the industry's role from logger to forest intendant (Bouthillier, 2001). Agreement beneficiaries (chiefly private sector forest product companies) were responsible for forest management in their zones. They also had to integrate provincial objectives in their forest management plans and harvesting strategies while respecting forest development standards for environmental protection prescribed by the government. Therefore, the province's responsibilities were extended in 1986 to overseeing and policing forest industries with regard to provincial objectives and standards (Amedzro St-Hilaire & Chiasson, 2012).

Changes to the Forest Act in 2001 required the integration of different stakeholders in planning activities of agreement beneficiaries (Ministère des forêts de la faune et des parcs, 2016). Regional County Municipalities (RCMs), First Nation communities, managers of controlled harvesting zones (ZECS), and any other actors interested could participate in the process under the supervision of the Ministry in charge of forests[11]. General management plans and public participation reports were accessible to the public. Following this addition of opportunities for participation, several integrated resource management panels were put forward across the province (Chiasson, Andrew, & Perron, 2006).

[11] Through time, the name and composition of the Ministry in charge of forests changed several times. For instance, under the Parti Québécois government in 2012, the Ministry became the Ministère des ressources naturelles and following the election of the Liberals in 2014, it was modified to Ministère des forêts de la faune et des parcs (Ministry of Forest, Wildlife and Parks).

The forest entrepreneurs in the Upper Laurentians avidly participated in pressuring the government for an increased access to the forest by small and medium size enterprises. This led to the Timber Supply and Forest Management Agreements allocation system (Consensus-Action, 2004). For instance, it was argued that timber was being lost while local sawmills were short of supply because the MacLaren company, possessing most of the concessions in the region, was not interested in wood affected by the spruce budworm (Desmarais & Tremblay, 1994). In addition, it was highlighted that the ALRCM was in a vulnerable situation by being located between two major forest regions (Outaouais and Abitibi-Témiscamingue). Any overexploitation and supply issues in those regions could lead to the provincial government granting them additional rights to the ALRCM's forest therefore diminishing supplies for local industries (Guerard, 1989). A considered solution was to increase local access to resources and to further develop local transformation enterprises' status (Guerard, 1989).

6.5.2.2 The new forest management regime 2013-

With the Sustainable Forest Management Act, new concepts, roles and structures were created to address the deficiencies of the old regime. Table 6.1 presents major differences between the Forest Act and the new Sustainable Forest Management Act.

Ecosystem-based forest management was integrated as an approach to guide forest management towards meeting sustainable forest management requirements (Grenon, Jetté, & Leblanc, 2011). The approach aims to "ensure the maintenance of biodiversity and ecosystem viability by reducing the differences between managed forests and forests that are considered natural. At the same time, ecosystem-based forest management aims to meet socioeconomic needs, while respecting the social values related to the forest environment" (Grenon, Jetté, & Leblanc, 2011, p. 5).

In addition, the notion of proximity forests established through local forest management delegation agreements was put forward in the new regime. Proximity forests aim to delegate management responsibilities for forests near inhabited areas to communities to promote local control over social and economic development (Ministère des ressources naturelles et de la Faune, 2012a).

Through the new forest management regime, the provincial government intended to increase its accountability by dissociating forest management from the forest transformation industries (Ministère des Ressources naturelles et de la Faune, 2008b). The Timber Supply and Forest Management Agreements allocation system was abolished and replaced with Timber Supply Guarantees that specify the volume of timber the agreement holder is allowed to purchase from a region and the conditions governing the agreement. In addition, a shift in planning responsibilities from the private sector to the Ministry of Forests, Wildlife and Parks was put forward. Under the Sustainable Forest Management Act, the provincial government is in

charge of tactical as well as operational planning reducing the role of the industry to timber purchasers. This represents an important challenge for the Ministry of Forests, Wildlife and Parks since it needs to develop expertise in planning forest operations (Amedzro St-Hilaire & Chiasson, 2012). The provincial government also sought to increase forest management transparency by creating the Chief Forester's Office in charge of independently calculating allowable cut across the province.

Another significant change consists of the creation of a Timber Marketing Board (*Bureau de mise en marché des bois*). This measure aims at increasing access to forest resources for a greater number of businesses. The responsibilities of the Timber Marketing Board, among many, are to sell 25 percent of the volume of timber available in public forests in an open market and to identify from which forest operation zones the timber is to be sold (Ministère des Ressources naturelles et de la Faune, 2012b).

The new forest management regime further consolidates participative and integrated forest management into the planning process. Planning is based on development zones. Development zones do not follow administrative boundaries and are of varying size depending on criteria such as the needs of processing plants and their distance from the zones. Three development zones are found partially or in totality in the ALRCM: 061-52 (86%), 064-51 (93,2%) and 064-52 (100%) (Commission des Ressources naturelles et du Territoire des Laurentides, 2010). The Figure 6.5 illustrates the different development zones in the ALRCM.

The Ministry in charge of forests is organized around six regional offices in Quebec. The administrative region of the Laurentians is one of the six regions served by the regional office of Estrie-Montérégie-Montréal and Laval-Lanaudière-Laurentides (Commission des Ressources naturelles et du Territoire des Laurentides, 2010).

The Ministry in charge of forests puts forward tactical and operation plans for each development zone in collaboration with Local Integrated Land and Resource Management Panels. Operational plans contain specifications for forest harvesting in potential sectors, non-commercial silvicultural work and roads. The time frame is approximately one to three years. Following public consultations, propositions are submitted to Local Integrated Land and Resource Management Panels in order to identify harmonization measures. Tactical plans are realized every five years and link chosen strategies to sustainable forest management goals and allowable cut objectives (Commission des Ressources naturelles et du Territoire des Laurentides, 2014).

Table 6.1 Major differences between the old and new forest management policy regimes in Quebec

	Forest Act (1986-2010)	Sustainable Forest Management Act (2010-)
Role of the State	• Important role in forest operations (policing) • Normative approach	• Refocused on strategic functions and responsibilities • Developing a Sustainable Forest Management Strategy • Management approach focused on results and objectives
Role of regions	• Consultative, stakeholders participate in the preparation of forest management plans	• Regional bodies are responsible of defining regional objectives for forest protection and harvesting, of preparing management plans, of the allocation and monitoring of forest management contracts
Forest management responsibilities	• Forest industry responsible for forest management and timber transformation • Transformation industry entrusts forest management to forest management enterprises	• Dissociation of forest management and transformation industry • Regional bodies in charge of forest management • Regional bodies favouring certified enterprises for forest management
Land use in public forests	• No specific zones for forest harvesting in public forests • Provincial protected areas strategy	• Identification of multiple use zones covering approximately 70% of the territory and intensive harvesting zones for the remaining 30% • Completion of the provincial protected areas strategy
Timber allocation	• Almost all timber is allocated by Timber Supply and Forest Management Agreements (CAAF) to a limited number of transformation facilities • Cost of timber based on private forest sales	• Creation of the Timber Marketing Board (*Bureau de mise en marché des bois* (BMMB)) in charge of selling timber in an open market through auctions • Cost of timber influenced by prices in auction sales
Industrial development	• Forest product development strategy based primarily on the competitiveness of first transformation facilities, the development of second transformation facilities and technological innovation	• New Industrial strategy development avenues based on high value-added products: ➢ Develop wood sector, forest biomass and biorefinery sectors ➢ Encourage use of wood particularly in public buildings ➢ Modernizing first transformation sector ➢ Shorten wood product development cycles ➢ Increase industrial connections between regions

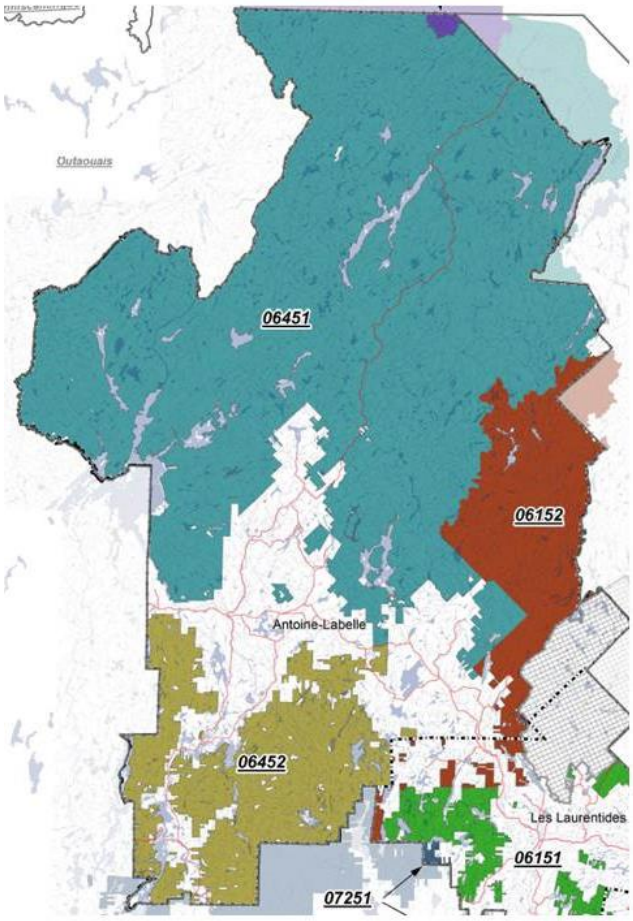
Source: modified from (Ministère des Ressources naturelles et de la Faune, 2008b)

According to the Sustainable Forest Management Act, the following persons or bodies, or their representatives must be invited to sit on Local Integrated Land and Resource Management Panels:

- the Native communities, represented by their band council;
- the regional county municipalities and, if applicable, the metropolitan community;
- the holders of a timber supply guarantee;

- the persons or bodies that manage controlled zones;
- the persons or bodies authorized to organize activities, provide services or carry on a business in a wildlife sanctuary;
- the holders of an outfitter's licence;
- the holders of a sugar bush management permit for syrup production purposes;
- the holders of a permit to harvest timber to supply a wood processing plant;
- the lessees of land for agricultural purposes;
- the holders of trapping licences who hold a lease of exclusive trapping rights; and
- the regional environmental councils.

Figure 6.5 Forest development zones in the ALRCM



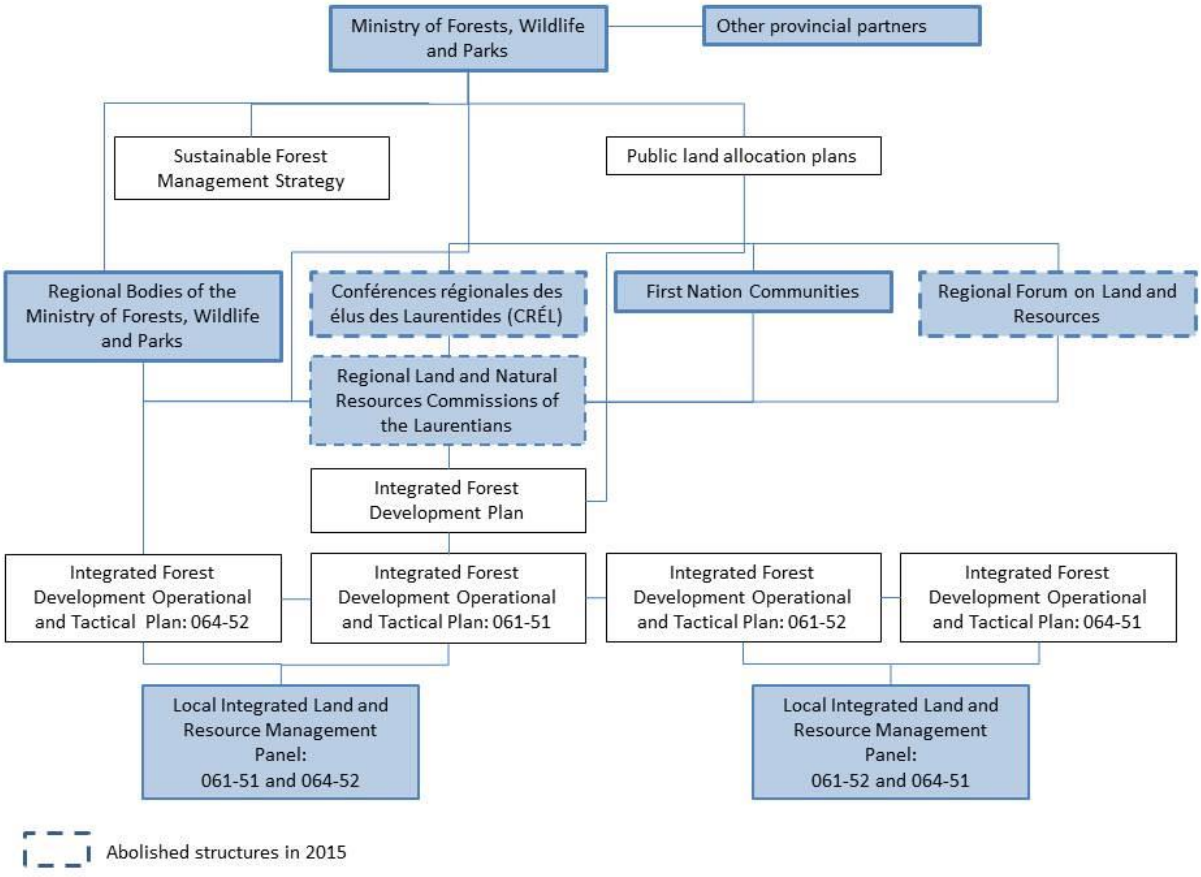
Source: (Commission des Ressources naturelles et du Territoire des Laurentides, 2010)

Two Local Integrated Land and Resource Management Panels are in place in the Laurentians, one for the forest development zones 061-51 and 064-52 (the South panel) and another for forest development zones 061-52 and 064-51 (North panel). Some stakeholders within the

Antoine-Labelle region are called upon to participate in both panels. Figure 6.6 presents an overview of governance in public forests in the ALRCM under the new forest management regime.

As mentioned previously, the organization at the administrative region level (CRÉL) and its mandated Commission responsible for putting forward Local Integrated Land and Resource Management Panels was abolished by the Liberal government in 2015. However, the government decided to maintain Local Integrated Land and Resource Management Panels. In the case of the Antoine-Labelle region, the ALRCM was designated to manage the public consultations related to sustainable forest management in the Laurentians as well as the two existing panels. Therefore, the ALRCM created the Natural Resources Integrated Management Service in 2015 (Municipalité régionale de comté d'Antoine-Labelle, 2016d).

Figure 6.6 Governance of public forests in the Antoine-Labelle region between 2010 and 2014



Source: modified from Ministère des ressources naturelles et de la Faune, 2006, p. 15

Comments on the new regime's possible success or failure and the importance of the suggested changes are still tentative. For instance, who will actually benefit from the reserved 25 percent of timber to be sold by the Timber Marketing Board is unclear. Moreover, the actual percentage (25 percent) is nowhere to be found in official documents (Institut pour le progrès socio-économique, 2011). Furthermore, some elements are still missing such as a policy guiding the implementation of proximity forests. These issues as well as the implications for the ALRCM will be further detailed in the next chapters.

6.6 Conclusion

This chapter aimed to describe governance in the ALRCM and the three major waves of change that have occurred in the last decade. The first wave related to the forestry crisis. The impact of the forestry crisis in the region was significant and led to the disappearance of several forest enterprises that were present for many decades in the region. Forest governance was altered by the departure of these players as well as the arrival of a multinational corporation that acquired different mills and the related Timber Supply Guarantees.

The second wave concerns the new forest management regime. In 2008 the provincial government laid the foundations of what would become the Sustainable Forest Management Act in its Green paper on the future of Quebec's forests as a response to changes in the forest sector and increased demands related to environmental protection, state accountability in forest management, and increase public involvement. The Sustainable Forest Management Act also significantly modified the landscape of forest governance in the ALRCM. The most important change for foresters in the ALRCM was a shift in planning responsibilities from the private sector to the Ministry of Forests, Wildlife and Parks. Under the Sustainable Forest Management Act, the provincial government is in charge of tactical as well as operational planning reducing the role of the industry to timber purchasers. In addition, a further regionalization of forest management was put in place with the creation of the Regional Land and Natural Resources Commission of the Laurentians and Local Integrated Land and Resource Management Panels bringing together multiple actors in operational and tactical forest planning processes.

A third wave of change emerged in 2014 with the arrival in power of the Liberal provincial government and its desire to modernize the governmental apparatus with austerity as a justification. Several structures were abolished, several responsibilities were transferred to RCMs, and several management boards within the ALRCM were abolished and reorganized at the administrative region level. This represented a significant threat to the ALRCM in terms of well-remunerated job losses through structure abolition and possible decrease in influence by centralizing services at the administrative region level. Furthermore, the changes affected the Sustainable Forest Management Act and forest governance in the ALRCM by abolishing the short-lived Regional Land and Natural Resources Commission of the Laurentians.

This broad portrait of governance in the ALRCM and the changes that took place during the life-span of the studied initiative sets the stage for a more in-depth exploration of sustainability issues in the Antoine-Labelle region in the next chapter and the challenges faced by The Bourdon project and the Vision exercise (chapter 8) to deliver positive contributions to sustainability in such a context.

CHAPTER 7 - SUSTAINABILITY CHALLENGES IN THE ANTOINE-LABELLE REGION

7.1 Introduction

Sustainability is context specific. Each community has its own history, challenges and potentials, which are constructed and reinterpreted through the passing of time. This chapter aims at providing contextual information of the Antoine-Labelle Regional County Municipality (ALRMC) pertaining to the sustainability criteria specified for forest communities in chapter 5 in order to assess in chapter 8 sustainability contributions of each studied initiative.

An impressive number of documents detailing the challenges through time in the Laurentians, the Upper-Laurentians, and ALRCM can be found. These stem from work accomplished by the Regional Land and Natural Resources Commission of the Laurentians (abolished in 2015) in their Integrated Land and Resources Management Plan for public land in the Laurentians, the ALRCM's land use and development plans, different socio-economic development community organizations' diagnostics of the region, as well as from studies produced by the two sustainability initiatives analyzed in the next chapter of this dissertation. For the most part, the production of these documents involved public participation and extensive research, often subcontracted to consultant firms. Although the organizations in charge and the specific mandates underlying the production of the documents influenced their content, there is significant convergence on the issues identified. Furthermore, there are substantial overlaps between the challenges of forest communities outlined in chapter 5 and those present in the Antoine-Labelle region, especially demographic decline and a need for economic diversification.

In addition to document analysis, information from interviews facilitated better understanding of the information found in the documents and the underlining dynamics as well as the perception of the interviewees on the issues in the region. The specific socio-political context also influenced the issues discussed by interviewees. As detailed in chapter 6, several changes occurred during the life-time of the initiatives. The impacts of these changes are provided in this chapter.

7.2 Sustainability challenges in the Antoine-Labelle region

The following sections present the main challenges uncovered based on sustainability criteria put forward in chapter 3 and adapted to forest communities in chapter 5.

7.2.1 Socio-ecological systems integrity

"Build human–ecological relations to establish and maintain the long-term integrity of socio-biophysical systems and protect the irreplaceable life support functions upon which human as well as ecological well-being depends" (Gibson et al., 2005, p. 95).

7.2.1.1 Considering ecosystem dynamics and variability

The forest in the Laurentians is very complex, particularly due to the fact that it is a mixed forest with different dominant species across the territory. Maps and documents produced by the MacLaren company, a forest concession holder in the Antoine-Labelle region between 1864 and 1992, provide relevant information on the evolution of forests in the region and the effects of disturbances (Allard & Gauthier, 2009; Doyon et al., 2009). Major disturbances mentioned are forest fires in 1922 and 1923 as well as two major spruce budworm outbreaks in the 1940s and 1970s (Doyon & Bouffard, 2009). Budworm outbreaks in the 1970s significantly damaged softwood stocks in the region, particularly fir (Commission des Ressources naturelles et du Territoire des Laurentides, 2011). In combination with anthropogenic perturbations, budworm outbreaks have affected forest composition in the region (Allard & Gauthier, 2009; Doyon & Bouffard, 2009; Puigdevall & Gauthier, 2009). More precisely, a reduction of mixed forests towards more predominantly hardwood forests in the forest development zones 61-51 and 64-52 is reported (Commission des Ressources naturelles et du Territoire des Laurentides, 2011). However, additional research is required to confirm the phenomenon (Commission des Ressources naturelles et du Territoire des Laurentides, 2011).

The latest budworm outbreak with significant defoliation consequences in the Laurentians was in 2004 with close to 200 hectares affected (Commission des Ressources naturelles et du Territoire des Laurentides, 2010). In addition, 346 forest fires were reported in the Laurentians between 2002 and 2007 affecting 175 hectares of forests (Commission des Ressources naturelles et du Territoire des Laurentides, 2010).

Scenarios of the effects of climate change in the region underline potential increased temperature, more (but also more erratic) precipitation, and longer growing periods for vegetation, which will potentially affect socio-economic activities in the region (Doyon et al., 2011). However, climate change is generally overlooked as a concern for the region. For instance, climate change is not mentioned in the territorial diagnostic of the region (Municipalité régionale de comté d'Antoine-Labelle, 2013) and only one interviewee brought up the issue as a potential threat to the region (interview 19).

7.2.1.2 Ecosystem services and interactions

The Antoine-Labelle region is very rich in natural resources. Quebec is divided into ten bioclimatic domains of which three are present in the Antoine-Labelle region: sugar maple-

yellow birch domain (East and West), balsam fir-yellow birch domain and balsam fir-white birch domain (Commission des Ressources naturelles et du Territoire des Laurentides, 2010). The Laurentians' productive forest is 68 percent deciduous, which is much higher than the percentage (31%) for the totality of Quebec, dominated by coniferous forests (Commission des Ressources naturelles et du Territoire des Laurentides, 2010). The southern part of the region's forests is predominantly deciduous, while it slowly transforms into a mixed and coniferous forest towards its northern boundary. This provides a diversity of tree species for a varied supply to transformation facilities and allows maple syrup production (Commission des Ressources naturelles et du Territoire des Laurentides, 2010). However, the diversity of species makes coniferous harvesting more difficult. This results in higher softwood supply costs in the region than in the rest of Quebec (Commission des Ressources naturelles et du Territoire des Laurentides, 2010). Also, there are no pulp and paper transformation facilities in or close to the region, which generates high transportation costs. However, there are several sawmills in the ALRCM using softwood and hardwood (Centre de recherche industrielle du Québec, 2016).

Over 60 percent of the ALRCM's territory is in "unorganized territories" (TNO) dominated by forest activities. As depicted in chapter 6, public land in the region is characterized by a very high overlap in rights and numerous activities being practiced. In addition to forestry and the multiple activities within public forests, the region hosts the only graphite mine in operation in Canada with an annual capacity of 25, 000 tons as well as uranium exploration (Institut pour le progrès socio-économique, 2011). The third economic sector in the ALRCM is the agro-food sector (Institut pour le progrès socio-économique, 2011).

Relevant information on the state and evolution of the region's ecological systems through time was difficult to find, and in many cases absent from available documents. Organizations and governments often gather narrow information that does not allow having a complete picture of the interaction between human activities and ecosystems. For instance, the Integrated Land and Resources Management Plan for public land in the Laurentians divides information based on forestry, conservation, wildlife, and water issues (Commission des Ressources naturelles et du Territoire des Laurentides, 2011) while the ALRCM focuses on environmental issues under its jurisdiction such as waste management. However, the watershed management organization for the Lièvre river watershed provides useful information on the impact of different activities (e.g., agriculture, forestry, etc.) on water (COBALI, 2013). The organization also bridges the divide between information and activities taking place on Crown land and municipal land.

Throughout the documents, an overall conclusion stated by different actors in the region concerns the lack of information on ecosystems to adequately guide future action paths. This concerns forests and vegetation as well as wildlife present on the territory. Such realizations are highlighted in the context of the new forest management regime centered on the concept of

ecosystem-based management, which advocates for required knowledge on the state of the pre-industrial forest in order to keep track of its evolution and possible negative paths.

7.2.1.3 Promoting diversity and reducing anthropogenic impacts on socio-ecological systems

There are 65 exceptional forest ecosystems in the Laurentians and a little more than 20 in the ALRCM which benefit from legal protection (Commission des Ressources naturelles et du Territoire des Laurentides, 2011). In addition, there are 1672 square kilometers of protected areas in the Laurentians, 20 percent of which are located in the ALRCM (Municipalité régionale de comté d'Antoine-Labelle, 2013). Sections of regional parks in the ALRCM (Poisson Blanc park, Montagne du Diable and the Kiamika reservoir) are considered protected areas.

Few issues with wildlife are mentioned in documents. Concerns are expressed to protect desired wildlife species such as moose and deer or their wintering areas, and some decreases in brook trout and walleye are noticed (Commission des Ressources naturelles et du Territoire des Laurentides, 2011). There are no endangered species but 13 species have been identified as vulnerable and protection considerations have been integrated into forest planning and harvesting (Commission des Ressources naturelles et du Territoire des Laurentides, 2011).

Several impacts of human activities on ecological systems in the ALRACM are documented. A decreasing proportion of mature and overmature forests in the region is noticed (Commission des Ressources naturelles et du Territoire des Laurentides, 2011). These issues are particularly present in softwood or mixed forests with softwood dominance (Allard & Gauthier, 2009). Different action paths have already been explored such as creating biological refuges or maintaining “islands” of mature and aging forests (Commission des Ressources naturelles et du Territoire des Laurentides, 2011).

Another significant issue is the modification of the spatial organization of forests, especially the disappearance of *intact forests*. The main driver of vanishing *intact forests* is forest fragmentation due to the highly developed network of forest roads (Commission des Ressources naturelles et du Territoire des Laurentides, 2011). There is no consensus on the concept of *intact forests* but it generally refers to different parameters of forest and landscape fragmentation (Allard & Gauthier, 2009). Since the new forest management regime increasingly favours forest certification and the Forest Stewardship Council (FSC) certification requires looking at thresholds of forest fragmentation, addressing this issue is very important for the region (Commission des Ressources naturelles et du Territoire des Laurentides, 2011). Several action paths to limit forest fragmentation were put forward in the Integrated Land and Resources Management Plan. Major components include limiting the construction of new forest roads and avoiding the dispersion of harvesting activities (Commission des Ressources naturelles et du Territoire des Laurentides, 2011). Forest roads also result in maintenance

costs, facilitate increased hunting and fishing pressures, and can affect water quality by modifying the landscape and generating increased sediment inputs. However, the construction of roads increases the accessibility to public lands for other users.

Additional identified issues in the region consist of the depletion of certain forms of dead wood which are essential for biodiversity (Commission des Ressources naturelles et du Territoire des Laurentides, 2011). Another issue concerns the modification of the internal structures of stands towards trees with smaller diameters (Commission des Ressources naturelles et du Territoire des Laurentides, 2011).

Water is a very important resource and asset for the region. It allowed the development of forestry more than a hundred years ago and provides tremendous potential for recreational activities. There are approximately 4500 lakes in the ALRCM, three reservoirs and three major rivers (La Rouge, du Lièvre, and Gatineau). Several lakes are showing signs of eutrophication resulting in many blue-green algae outbreaks, amplified by the increase presence of watermilfoil (Institut pour le progrès socio-économique, 2011). A provincial program[12] was put forward in 2009 to address blue-green algae outbreaks in several regions in Quebec including the ALRCM. However, the program focused on the performance of residential septic systems leaving out considerations such as the impact of other activities (forestry, agriculture, etc.) on watercourses. Other water-related issues concern the degradation of banks and the loss and degradation of wetlands (COBALI, 2013). As mentioned above, forestry and forestry roads may negatively impact water quality and flow.

7.2.2 Livelihood sufficiency and opportunity

"Ensure that everyone and every community has enough for a decent life and that everyone has opportunities to seek improvements in ways that do not compromise future generations' possibilities for sufficiency and opportunity" (Gibson et al., 2005, p. 98).

7.2.2.1 Developing and supporting economic diversification

Economic diversification is identified by actors in the region and repeatedly found in documents concerning the issues in the region. According to the Herfindahl index, a measure of economic diversification, the regional economy is not well diversified although the situation improved slightly between 2001 and 2006 (Institut pour le progrès socio-économique, 2011).

In 2005, 18.3 percent of the jobs in the ALRCM were in the forest sector and close to 75 percent of jobs were, more broadly, in resources and manufacturing (Ecotec Consultants, 2007). In comparison, these percentages for the province of Quebec are respectively 3.8 and

[12] The Assistance program for the prevention of blue green algae of the *Ministère des Affaires municipales, des Régions et de l'Occupation du territoire*

19.2 percent (Ecotec Consultants, 2007). This demonstrates well the importance of forestry in the ALRCM. It was estimated that 1,427 jobs related to forestry (e.g., harvesting, forest services (e.g., planning, research), first transformation and second transformation) were lost between 2004 and 2007 (Ecotec Consultants, 2007). This represents more than 50 percent of the jobs in the forest sector (Ecotec Consultants, 2007). Before the forestry crisis, it was estimated that the forest industry generated 2,450 direct jobs (Ecotec Consultants, 2007). This situation continued to deteriorate with the mill closures that occurred in 2010 as discussed in chapter 6. As the following table shows, the amount of timber harvested and transformed in the region significantly decreased between 2000 and 2010.

Two additional sectors are of significant importance in the ALRCM. Leisure, recreation and tourism jobs considerably increased over the last decades progressing from 480 jobs in 1971 to 1,450 jobs in 2006 (Institut pour le progrès socio-économique, 2011). Therefore, this sector is almost equivalent to forestry in terms of employment opportunities although the revenues produced are more limited.

Table 7.1 Amount of timber harvested and transformed in the ALRCM (m^3)

	2000	2005	2006	2007	2008	2009	2010
Harvested and transformed in the region (m^3)	534 000	662 000	225 000	311 000	395 000	128 000	52 000
relative %	*69%*	*68%*	*48%*	*57%*	*70%*	*57%*	*19%*
Harvested in the region but transformed in other regions (m^3)	235 000	307 000	247 000	233 000	170 000	95 000	223 000
relative %	*31%*	*32%*	*52%*	*43%*	*30%*	*43%*	*81%*
Total harvested volume (m^3) 064-51 / season	**769 000**	**969 000**	**472 000**	**544 000**	**565 000**	**223 000**	**275 000**

Source : Centre local de développement d'Antoine-Labelle, 2011, translated by Jastremski

The third economic sector is the agro-food sector. In 2006, there were 500 jobs in agriculture in addition to 200 in food manufacturing. Beef and dairy industries are the most present although the region is well-known for its deer and cattle breeding and aquaculture (Institut pour le progrès socio-économique, 2011). Biological production is also a regional asset and producers are mobilizing to make the ALRCM a *natural* region with no genetically modified organisms (GMO) (Institut pour le progrès socio-économique, 2011; Municipalité régionale de comté d'Antoine-Labelle, 2013).

Table 7.2 Evolution of the number of jobs in the primary and secondary sectors in the ALRCM in 1971, 1991, and 2006

Primary and secondary sectors combined	1971		1991		2006	
	Number	%	number	%	Number	%
Wood and forests	1080	16.0	1000	8.6	1500	10.3
Agri-food	375	5.6	665	5.7	700	5.0
Recreation, tourism, and leisure[13]	480	7.1	856	7.5	1450	10.0

Source: Institut pour le progrès socio-économique, 2011, translated by Jastremski

Almost all the interviewees voiced their concerns with the political context of austerity in 2014 and how this would play out for the ALRCM. The underlying threats identified are the economic dependence on the forest industry as well as a high number of employments directly or indirectly dependent on government orientations. For instance, there are over 900 jobs (6.2% of total employment) in public administration in the region (Institut pour le progrès socio-économique, 2011).

7.2.2.2 Enhancing entrepreneurs and workforce skills and education

The ALRCM is characterized by a high level of small size enterprises (10 or less employees) and several workers cooperatives (Municipalité régionale de comté d'Antoine-Labelle, 2013). The region has been recognized for being innovative particularly for its development of silvicultural practices specifically adapted to mixed forests and for its forest harmonization processes (Institut pour le progrès socio-économique, 2011).

The ALRCM has several education institutions including a little over 10 primary and secondary schools (Institut pour le progrès socio-économique, 2011). In terms of higher education, the Université du Québec en Abitibi-Témiscamingue (UQAT) is present since 2005 as well as a campus of the Saint-Jérôme Cegep since 1983 (Municipalité régionale de comté d'Antoine-Labelle, 2013). In addition, several professional diplomas have been offered by the Vocational Training Center of Mont-Laurier since 1989 (Municipalité régionale de comté d'Antoine-Labelle, 2013). These education institutions contributed to the constant decreasing of citizens without diplomas in the ALRCM from over 55 percent in 1996 to a little less than 37 percent in 2006 (Municipalité régionale de comté d'Antoine-Labelle, 2013). The average of citizens without diplomas in Quebec in 2006 was 25 percent (Municipalité régionale de comté d'Antoine-Labelle, 2013). However, there is a lack of diversity in programs offered and recruiting and keeping student throughout a program's length represents a difficulty for program managers (Institut pour le progrès socio-économique, 2011). Moreover, some institutional norms represent constraints to the offering of new programs in the ALRCM since

[13] Recreation, tourism, and leisure include accommodation and restaurants as well as information, culture and leisure.

they usually have the same enrolment criteria as bigger cities (Institut pour le progrès socio-économique, 2011).

Some actors in the region attribute poor education levels and illiteracy in the region to its forestry past (Institut pour le progrès socio-économique, 2011).

> It (forestry) didn't require education and you were able to feed your family. And salaries were well-deserved because you worked hard… but it (education) wasn't part of the culture of many families. Now maybe with fathers that have lost their jobs in forestry and that aren't able to find something else… it gives an incentive to the 12 year old that is starting to misbehave in high school. (interview 8, translated by Jastremski)

High dropout rates combined with lack of diversity in local programs results in an insufficiently qualified workforce in the region (Institut pour le progrès socio-économique, 2011). Only 9 percent of the ALRCM population held an university diploma while the average for Quebec was 20.8 percent in 2006 (Institut pour le progrès socio-économique, 2011). Furthermore, there is an overabundance of workers without diplomas in the region and lack of workers with college or university diplomas (Institut pour le progrès socio-économique, 2011). Moreover, since youth is leaving the region, issues with business succession are present in the ALRCM (Institut pour le progrès socio-économique, 2011).

7.2.2.3 Increasing access to services (health care, education, childcare, internet, etc.)

Education infrastructure in the region is in good condition and offer high speed internet to students (Municipalité régionale de comté d'Antoine-Labelle, 2013). However, some students in the southern part of the region have to commute to Mont-Laurier or outside the ALRCM to attend high school (Institut pour le progrès socio-économique, 2011). Lack of availabilities in public childcare services is also underlined and mentioned as an influential factor to attract families in the region (Municipalité régionale de comté d'Antoine-Labelle, 2013).

The region has two hospitals (Mont-Laurier and Rivière-Rouge), and Health and Social Services Centres (CSSS) providing essential healthcare for its population. However, when specialized treatment is required, the population must seek care outside the region (Municipalité régionale de comté d'Antoine-Labelle, 2013).

A major issue highlighted in the ALRCM concerns the lack of access to high speed internet and mobile phone services (Institut pour le progrès socio-économique, 2011; Municipalité régionale de comté d'Antoine-Labelle, 2013). Furthermore, long distance charges apply between some of the municipalities within the ALRCM (Institut pour le progrès socio-économique, 2011).

Maintaining services to more peripheral sectors in the ALRCM is also a concern (interviews 2, 17, and 20). For instance, the only school in the municipality of Saint-Aimé-du-Lac-des-Îles

was not rebuilt after the 2009 fire and the municipality of Lac-du-Cerf lost its only grocery store.

7.2.2.4 Increasing access to natural resources

Local forestry

As depicted in chapter 6, MacLaren's long-time monopoly in the Antoine-Labelle region disadvantaged local workers, who did not have access to surrounding forests to support their livelihoods. This situation later contributed to the creation of the forest cooperative of the Upper Laurentians in 1978 (Desmarais & Tremblay, 1994). With the abolition of concessions in the region in the 1980s, local forest enterprises in the ALRCM flourished. The ALRCM was one of the rare regions to be organized around small and medium size forest transformation industries (Institut pour le progrès socio-économique, 2011; Laboratoire d'expérimentation, 2004). First and second transformation of soft and hardwood consisted essentially of locally owned independent enterprises that were not integrated within the pulp and paper industry (Consensus-Action, 2004). This situation changed drastically with the advent of the forestry crisis and the arrival of Forex through its acquisition of the most important sawmills in the region.

The forest industry considers that supply costs for softwood sawmills in the region are higher than the Quebec average and inadequately reflected in stumpage fees (Consensus-Action, 2004). The now retired long-time chair of the ALRCM expressed his worries for the region in Le Devoir newspaper in these terms:

> In Quebec, the management mode of public forests is conceived to manage large areas. It is not conceived to consider particular phenomena like softwood stumpage and management in mixed forests. At the provincial scale, this represents a marginal problem largely ignored in big centers. At our scale, it represents a question of survival. (Lapointe, 2003, translated by Jastremski)

In addition, the recent change of forest management regime significantly affected the amount of timber distributed by Timber Supply Guarantees in the region due to lack of economic opportunities to use the timber according to the Ministry of Forests, Wildlife and Parks (Signature Bois Laurentides, 2016). The creation of the Timber Marketing Board (*Bureau de mise en marché des bois*), which reserves 25 percent of the volume of timber available in public forests in an open market (Ministère des Ressources naturelles et de la Faune, 2012b), has and will continue to influence resource accessibility in the ALRCM. Who will actually benefit from the reserved 25 percent of timber to be sold by the Timber Marketing Board is unclear.

> In the Timber Marketing Board, it (timber) is more expensive […]. Everyone wants it because we are all lacking timber […]. It is like throwing a big bone in the middle of the room and saying (to the forest industry) to fight over it. That is what is happening. […] the pulp and paper industries […] have more means to pay the big price for timber. […] You know, you invested money in this wood and after you don't even have it anymore. (interview 9, translated by Jastremski)

Although the annual allowable cut calculations only reduced by one percent the amount of timber available for harvest in the Laurentians (1,650,550 m³ between 2008-2013 to 1,633,500 m³ between 2013-2018), the amount of timber distributed by Timber Supply Guarantees was reduced by 33 percent (1,099,950 m³ to 533,550 m³) which includes the 25 percent reserved timber to be sold by the Timber Marketing Board (Signature Bois Laurentides, 2016). As mentioned previously, lack of economic opportunities to use the timber according to the Ministry of Forests, Wildlife and Parks justified these reductions (Signature Bois Laurentides, 2016) as well as increased demands related to environmental protection that the new forest management regime aimed to address.

Concerns with the local accessibility to forest resources in the region have also been linked to what happens in surrounding regions, particularly since the ALRCM is located between two major forest regions (Outaouais and Abitibi-Témiscamingue). Any overexploitation and inadequate supply issues in those regions could lead to the provincial government granting additional rights to the ALRCM's forest, thereby diminishing supplies for local industries (Guerard, 1989).

New tenure and forest management agreements

Since 2000, following an agreement with the provincial government, the ALRCM is responsible for the management of intramunicipal public lands through a Multiresources Management Plan (Municipalité régionale de comté d'Antoine-Labelle, 2014). The intramunicipal public lands are used by the ALRCM to generate revenues from forest harvesting, producing maple syrup, or other uses.

The notion of proximity forest through local forest management delegation agreements is put forward in the new forest management regime. Proximity forests are the product of a delegation of management responsibilities for forests near inhabited areas to communities to promote local control over social and economic development (Ministère des ressources naturelles et de la Faune, 2012a). Much uncertainty remains about the new forest management regime and some elements are still missing such as a policy guiding the implementation of proximity forests. As it will be further discussed in chapter 8, skepticism over the possible success of proximity forest initiatives in the region following the bankruptcy of long-term local enterprises was expressed as well as clear objection to the idea in a context of increased competition for resources.

Other agreements affecting the region involve the Atikamekw of Manawan First Nation community. In 2012, an agreement was established between the Atikamekw First Nation community and the government of Quebec concerning resource management on their traditional territories (Ministère des Ressources naturelles, 2012). In addition, mechanisms to

facilitate access to economic development opportunities were put in place in 2003 between the Ministry of Natural Resource and the Atikamekws of Manawan (Ministère des Ressources naturelles, 2012). Other negotiations between the provincial government and Atikamekws, particularly related to mining royalties (issues outside the ALRCM) were pursued in 2013 (e.g., Haroun, 2013). The Algonquin Kitigan Zibi First Nation community also started official reclaiming process on a territory that covers 650,000 square kilometers (Municipalité régionale de comté d'Antoine-Labelle, 2013).

Multiple users and forest roads

As discussed earlier in the chapter (section 7.2.2) the presence of the recreation, tourism, and leisure sector has increased significantly in the region, representing now approximately the same percentage of total employment in the region as the forest sector. As described in chapter 6, Crown land in the ALRCM is characterized by an important overlap in attributed rights and activities being practiced. For instance, three types of organizations are granted rights on public land for the exploitation and protection of wildlife (hunting, fishing and recreational activities): controlled zones (ZECs), oufitters with exclusive rights and outfitters with non-exclusive rights (Commission des Ressources naturelles et du Territoire des Laurentides, 2010). In addition to these organizations, there are also Wildlife reserves.

A major issue involving Crown land in the region concerns its accessibility through forest roads. Close to 91 percent of the ALRCM is Crown land, and 63 percent of the public land is located outside municipalities (Commission des Ressources naturelles et du Territoire des Laurentides, 2010). Access to natural resources and the territory depends upon the existence and maintenance of a network of multiple purpose roads. There are over 20,000 kilometers of forest roads in the Laurentians under the jurisdiction of the Ministry of Forests, Wildlife and Parks (Commission des Ressources naturelles et du Territoire des Laurentides, 2011). The users (chiefly the forest industry) are responsible of the costs of forest road maintenance (Commission des Ressources naturelles et du Territoire des Laurentides, 2011). Since many roads serve multiple purposes, a better sharing of costs is advocated (Commission des Ressources naturelles et du Territoire des Laurentides, 2011). For instance, before 2003, the ALRCM did not invest any money in forest road maintenance (Municipalité régionale de comté d'Antoine-Labelle, 2013). As mentioned by an interviewee, outfitters do not have the money to build roads (interview 12). They depend on the forest industry and their capacity to cease opportunities to negotiate with them when harvesting operations take place. With the new forest management regime and its reductions in timber distribution as well as its transfer in planning responsibilities from the private forest industry to the Ministry of Forests, Wildlife and Parks, the forest industry is less inclined to maintain and invest in forest roads (interview 4). Furthermore, with the significant reduction in harvesting activities due to the forestry crisis, several forest roads and bridges were closed by the Ministry of Forests, Wildlife and Parks due to the lack of maintenance (interview 4). A major controversy occurred in the ALRCM in 2012

after the closure of the important Ceizur falls bridge built in 1955 by Canadian International Paper allowing access to 505,000 cubic meters of timber as well as access to the Petawaga Zec, outfitters, camping sites, and an interregional path for snowmobiles and off-road vehicles (Bélisle, 2014).

7.2.2.5 Enhancing community well-being

A document analysis of forest-related issues in the Antoine-Labelle region reveals several associated conflicts between unions and forest transformation industries. For instance, the closure of the Sogefor sawmill (later acquired by MacLaren) resulted in a road blockade (Unknown, 1971) and a significant regional contestation movement (Laurin, 1989). The latest turmoil involving worker unions was the prolonged strike at the Max Meilleur mill in Ferme-Neuve. One of the issues was the creation of better pension funds. Members of the community such as the ALRCM's chair bused to Montreal to protest in front of one of the major unions in Quebec, the Fédérations des travailleurs et travailleuses du Quebec (FTQ) (Desrosiers, 2006). Several industries in the region were negatively affected by the strike, which explains the mobilization of the ALRCM's chair against unions.

Accessibility and safety in the region also represents an issue for the ALRCM. Located at the crossroads between Montreal, Outaouais and Ontario, and Abitibi-Témiscamingue, a lot of traffic flows through the core of municipalities in the ALRCM, particularly heavy trucks. A highway bypass project for the route 117 was first put forward in the early 1980s, reopened in 1995 followed by public consultations in 2002, and finally completed in 2011 up to the city of Rivière-Rouge in the southern part of the ALRCM (Bureau d'audiences publiques sur l'environnement, 2003; Municipalité régionale de comté d'Antoine-Labelle, 2013). A committee (SOS 117) is in place in the ALRCM to advocate for increased safety and accessibility to the region, particularly in the context of the Plan Nord, a plan put forward by the government of Quebec to develop natural resources North of the 49th parallel, which could significantly increase traffic on the 117 (Gouvernement du Québec, 2015; Municipalité régionale de comté d'Antoine-Labelle, 2013).

Protecting and enhancing the quality of urban and natural landscape is an emerging concern in the ALRCM. Two major revitalization projects were put in place in the cities of Mont-Laurier and Rivière-Rouge (Municipalité régionale de comté d'Antoine-Labelle, 2013). In addition, a landscape charter was adopted in 2004 by most municipalities and RCMs in the Laurentians (Municipalité régionale de comté d'Antoine-Labelle, 2013). Before the abolition of the regional conferences of representatives of the Laurentians (CRÉL), a regional landscape laboratory was in place (Institut pour le progrès socio-économique, 2011). Landscapes on Crown land are also protected by forest intervention norms for instance near inhabited areas, touristic sites, and watercourses (Commission des Ressources naturelles et du Territoire des Laurentides, 2010).

There is also room for several health gains for the citizens of the ALRCM. Approximately one quarter of the population occasionally or regularly consumes tobacco and more than the third on the population under 12 years old is overweight (Institut pour le progrès socio-économique, 2011). Lack of family doctors is also an issue in the ALRCM (Institut pour le progrès socio-économique, 2011).

7.2.3 Intragenerational equity

"Ensure that sufficiency and effective choices for all are pursued in ways that reduce dangerous gaps in sufficiency and opportunity (and health, security, social recognition, political influence, etc.) between the rich and the poor" (Gibson et al., 2005, p. 101).

7.2.3.1 Fostering inclusion

Large concessions in place in the Antoine-Labelle region limited the possibility for local citizens to have access to surrounding forests to support their livelihoods until the late 1980s (Desmarais & Tremblay, 1994). The 1986 regime was modified repeatedly through time to accommodate increased public concerns over issues such as environmental protection, multiple forest uses and overall sustainability effects. Changes to the Forest Act in 2001 required the integration of different stakeholders in planning activities of agreement beneficiaries (Ministère des forêts de la faune et des parcs, 2016). Regional County Municipalities (RCMs), First Nation communities, managers of controlled zones (ZECS), and any other actors interested could participate in the process under the supervision of the Ministry in charge of forests. The new forest management regime further consolidates participative and integrated forest management into the planning process. Two Local Integrated Land and Resource Management Panels are in place in the Laurentians, one for the forest development units 61-51 and 64-52 (the South panel) and another one for forest development units 61-52 and 64-51 (North panel). Some stakeholders within the Antoine-Labelle region are called upon to participate in both panels.

The acknowledgement of First Nation communities in forest management policies is relatively recent in Quebec. Before the Forest Act, no mention of First Nation communities can be found in forest management policies, nor provisions for public participation in forest management (Teitelbaum, 2015). As mentioned above, revisions to the Forest Act in 2001 included the need to consult different stakeholders, including First Nation communities. Within Quebec forest management policies, and to the dismay of many First Nation communities, First Nation communities are considered as stakeholders and words such as "aboriginal needs" and "aboriginal interests" are preferred to "aboriginal rights" (Teitelbaum, 2015). New provisions in the Sustainable Forest Management Act regarding First Nation communities include the possibility to negotiate forest management agreements between the provincial government and First Nation communities as well as the possibility for First Nation communities to manage

proximity forests, concept that is similar to the already existent Forest Management Contracts. The Atikamekws expressed concerns related to the regionalization of forest management put forward in the new forest management regime because they consider that it would be detrimental to the larger negotiation processes with the provincial and federal governments (Nation Atikamekw, 2008). According to ALRCM, communication processes imposed by government impede efforts to build partnerships with First Nation communities (Municipalité régionale de comté d'Antoine-Labelle, 2013). The annihilation of their traditional expertise and culture is also decried by the Atikamekw First Nation community (Nation Atikamekw, 2008). Furthermore, the distribution of timber volumes through the Timber Marketing Board does not consider First Nation rights (Nation Atikamekw, 2008).

Most of the powerful positions in the ALRCM are held by men, but more and more women are taking part in local politics, at a rate equal to the provincial average of 27 percent (Institut pour le progrès socio-économique, 2011). Ethnic diversity is not very present in the ALRCM. In 2011, 1.1 percent of the residents in the ALRCM were immigrants (Emploi Québec Laurentides, 2015). Approximately 80 percent of the residents that were not born in Canada immigrated from Europe (Emploi Québec Laurentides, 2015). Only 0.3 percent of the population speaks only English (Emploi Québec Laurentides, 2015). In 2011, 1,150 citizens in the ALRCM had an Aboriginal identity (Statistics Canada, 2013).

Difficult integration of newcomers, referred to as *strangers* and First Nation communities, particularly within working environments, represents an issue in the region (Institut pour le progrès socio-économique, 2011). The need to attract a qualified workforce and new citizens to address population and economic decline creates opportunities to better embrace diversity within the region.

7.2.3.2 Reducing poverty, low education levels, and local disparities

The ALRCM is one of the poorest regions in Quebec according to an economic vitality index that is based on the number of workers between 25 and 64 years old, the median income of the population over 18 years old, and the annual growth rates of municipalities. In the ALRCM, with the exception of Mont-Laurier and its neighbouring municipality of Saint-Aimé-du-Lac-des-Îles, all other municipalities are in the two lowest quintiles of the economic vitality index (Institut de la Statistique du Québec, 2016). In addition, the region's Pierre-Neuve school board is rated 64th out of 72 in terms of economic wellbeing of its students (Municipalité régionale de comté d'Antoine-Labelle, 2013). Furthermore, the ALRCM population is highly dependent on governmental transfers for income. For instance, the proportion of household income that comes from governmental transfers was 22.7 percent in the ALRCM compared to an average of 13.9 percent for the population in Quebec in 2006 (Institut pour le progrès socio-économique, 2011).

The forestry crisis exacerbated several social issues in the ALRCM. Community organizations noted increased violence towards women attributed to the economic difficulties in the region and increased mental illness and substance abuse in women (Institut pour le progrès socio-économique, 2011).

First Nation communities are present in the ALRCM. Atikamekws of Manawan's traditional territory overlaps with the forest management development zone 64-51 and the Algonquins of Kitigan Zibi Anishinabeg may use a portion of the forest management zone 64-52. The Atikamekv of Manawan First Nation community's median income was approximately half of the average for Quebec and the community had an unemployment rate of 22 percent in 2006 (Conseil des Atikamekw de Manawan, 2014). In comparison, in 2006 the unemployment rate in the ALRCM was 10.6 percent compared to 7 percent for the entire province of Quebec (Institut pour le progrès socio-économique, 2011). Algonquins of Kitigan Zibi First Nation community has an employment rate of 29.1 percent and 53.5 percent of the population over 15 years old does not have an education diploma, certificate or trade (Municipalité régionale de comté d'Antoine-Labelle, 2013).

7.2.3.3 Building awareness on imposed pasts and business-as-usual futures

As the historical account of the region of Antoine-Labelle in chapter 6 highlighted, natural attributes of the region, governmental priorities, and influential actors forged the pathway toward the ALRCM we know today. The presence of vast forests and rivers conveniently flowing toward the South-West attracted the forest industry. Later, colonization efforts led in the Laurentians by the historical figure of Priest Antoine-Labelle allowed permanent settlements to occur.

More recently, the ALRCM has been labeled a "resource region" as well as a "rural region" by the provincial government (Laurin, 1989; Ministère des Affaires municipales, 2009). In some instances, these designations provide special powers and access to funds or resources to communities. Innovations programs such as the ACCORD program favouring advanced land transportation, tourism, and forest activities in the Laurentians also orient possible futures of the region. Conflicts between the forest industry (often supported by local councillors and mayors as well as local elected members of parliament at the federal and provincial levels) and workers' unions demonstrate the tumultuous politics in the region. Behind those heavy socio-political trends, more sustainable futures may reside.

7.2.4 Intergenerationalequity

"Favour present options and actions that are most likely to preserve or enhance the opportunities and capabilities of future generations to live sustainably" (Gibson et al., 2005, p. 117).

7.2.4.1 Managing decline and its feedback processes

The aging population is significantly increasing in the ALRCM. While the population over 65 year old represented 13percent in 1996, this number increased to 16 percent in 2006, 21 percent in 2011, and 23 percent in 2014 (Institut de la Statistique du Québec, 2015; Municipalité régionale de comté d'Antoine-Labelle, 2013). This percentage is expected to continue growing in the next decade. However, the most significant threat for the Antoine-Labelle region identified by stakeholders is the continuous overall and possibly irreversible decline of the region.

> […] I don't stay here by obligation, I live here by choice. But the day that I will no longer be able to earn my living here because others decided that we should all be city dwellers and that [rural] regions shouldn't exist anymore… Then we will have to be delocalized. If we don't want to be delocalized, we have to live with and from the resources that we have on our territory. (interview 11, translated by Jastremski)

While some stakeholders referred particularly to the decline of the forest industry, others were concerned with the persistent exodus of youth and of qualified labour as well as the loss of services and amenities.

Stakeholders that were interviewed revealed a wide range of impacts of the forestry crisis in the region. With a significant varying degree of knowledge on forest activities and often a discomfort even to talk about forestry, most people interviewed were able to talk about forestry and the impacts of the forestry crisis on the community. Most importantly, it uncovered interconnections between the governance of public forests and governance in the ALRCM.

Representatives of political parties and elected members at different levels of government revealed increased pressure on their behalf to try to help the forest industry and accompanied social and economic distress.

> It was hard to see foresters that always had money drown. To see the mills close […] and to see the foresters getting depressed […] and end up in unemployment projects for the 55 years old and over because they don't have any education. The distress. I saw people in distress. I witness people seeing everything that was there for generations collapse. (Interview 15, translation by Jastremski)

Social development actors noted increased violence and increased demands for social services such as food baskets (interview 8). These demands arrived one or two years following the forestry crisis because of the time lapse and buffer provided by unemployment insurance (interview 8 and 10). The number of employees in organizations related to unemployment services, training and education significantly increased (interview 8, 10, and 15). For instance, an organization aimed at developing employability (Zone emploi) has over 25 employees which represent more employees than to run the ALRCM (Zone emploi, 2015). Economic development actors were also increasingly solicited to help newly unemployed people launch businesses (interview 14).

7.2.4.2 Moving away from path dependence

Documents produced by local governments in the ALRCM and organizations demonstrate the persistent challenge of economic diversification and need to improve socio-economic conditions (e.g., Genivar groupe conseil, 2005; Guerard, 1989; Institut pour le progrès socio-économique, 2011). The forest industry in the region has remained sensitive to economic conjuncture through time. The number of jobs in the leisure, recreation and tourism sector has increased significantly since 1971 from 480 to 1450 jobs in 2006 (Institut pour le progrès socio-économique, 2011). However, in terms of revenues generated within the ALRCM, the forest sector remains the most significant and the added value of the leisure, recreation and tourism sector is limited (Institut pour le progrès socio-économique, 2011). The quality of employment opportunities within the leisure, recreation and tourism sector is also questioned as demonstrated by the following comment by an interviewee:

> […] people said that we need to diversify […]. That we need to do something for there to be something else than wood. What? Tourism. Tourism jobs are great. You work three months per year at 10 dollars an hour. It is difficult to support your family. (interview 11)

Although forestry brought its load of negative consequences for the people of the ALRCM, it also resulted in several entrepreneurial experiments in the region (interviews 3, 14) and other governance responses such as the two initiatives studied in chapters 8. For instance, some people solicited help to launch a business that would allow them to use their forestry equipment for other purposes (e.g., a tree cutting business for urbanized areas) while others took the forestry crisis as an opportunity to do something completely new (interview 14). However, within the forest sector, the forestry crisis annihilated most innovation budgets and innovation became highly dependent on external sources of funding (interview 18). Furthermore, the forestry crisis directed innovation towards improving management and operational processes to reduce costs in order to avoid closing-down (interviews 18, 20). Moreover, within forest management, conciliation of multiple uses became more difficult due to economic imperatives of the forest industry.

> (Due to the forestry crisis) wildlife issues became more and more difficult to put forward. More there was pressure from the economic sector, even the threat of closure of some industries, well more regional and governmental political priorities were oriented towards maintaining this (forest industry) economic engine. Hence, other considerations were almost automatically relegated to second rank. (interview 20, translated by Jastremski)

7.2.4.3 Fostering long-term socio-ecological system integrity

In addition to resource depletion, forest exploitation throughout the years has resulted in softwood forests transforming into hardwood forests (Commission des Ressources naturelles et du Territoire des Laurentides, 2011). This represents a serious challenge for the supply of softwood sawmills in the region. The decreasing forest productivity and proportion of mature forests as well as the modification of the spatial organization and composition of forests and

changes to the internal structures of stands have all been highlighted as issues threatening the health of forests and forest industry.

Through time, the local forest industry in the ALRCM developed expertise and innovative knowledge tailored to mixed forests (Consensus-Action, 2004; Institut pour le progrès socio-économique, 2011). More specifically, the region was the first to introduce the precautionary principle based on attributed timber volumes and maximum priority production areas in order to assure long-term resource maintenance (Consensus-Action, 2004). This approach is now applied in the rest of the province (Consensus-Action, 2004).

As depicted in chapter 6, the forestry crisis has significantly affected the local forest industry in the ALRCM through multiple mill closures.

> They (forest industry in the ALRCM) are functioning at maybe 50% of their traditional turnover and they have difficulty making ends meet. Supervisors, operators, foresters, mill workers, truckers, etc., everybody. They don't have the workforce, they don't have the entrepreneurs. They are to some extent helpless. Tomorrow morning, if the price of wood would be more expensive, they would be in a situation to develop and restart operation within a favorable economic cycle but they wouldn't even be able to. They lost human resources and their expertise. (interview 1, translated by Jastremski)

Furthermore, the most important change in the Sustainable Forest Management Act is a shift in planning responsibilities from the private sector to the Ministry of Forests, Wildlife and Parks. Under the Sustainable Forest Management Act, the provincial government is in charge of tactical as well as operational planning reducing the role of the industry to timber purchasers. In order to adapt to these new competencies, the Ministry of Forests, Wildlife and Parks needed to hire new employees. Local forest industries lost several employees as demonstrated by the following quote from an interviewee.

> They came and stole all our best human resources in our organizations. […] The real question is why did they steal our people if they are not able to do the job (tactical and operational planning)? (interview 11)

In addition, the new forest management regime also generated fear of losing local expertise. *Signature Bois Laurentides*[14] in response to the outline of the Sustainable Forest Management Strategy questioned the fact that the sites of innovation and knowledge production identified by the government are within research centers, particularly since no research centers are located in the Laurentians (Institut pour le progrès socio-économique, 2011). Rendering the forest industry and forest users' role to the identification of needs undermines years of recognized on-the-ground operational research in the Upper Laurentians according to the organization (Institut pour le progrès socio-économique, 2011).

[14] an organization favoring regional forest sector innovation under the ACCORD program of the *Ministère de l'économie, de la Science et de l'Innovation*

7.2.5 Resource maintenance and efficiency

"Provide a larger base for ensuring sustainable livelihoods for all while reducing threats to the long-term integrity of socio-ecological systems by reducing extractive damage, avoiding waste and cutting overall material and energy use per unit of benefit" (Gibson et al., 2005, p. 117).

Concerns for resource maintenance and efficiency are not very present in the ALRCM particularly due to the context of the forestry crisis. The attention of the forest industry is directed towards restructuring their activities in order to reduce costs while generating employment opportunities through expansion and economic diversification is at the forefront for local actors.

7.2.5.1 Maintaining ecosystem productivity

As highlighted in the historical account of the Antoine-Labelle region (chapter 6), concerns with resource depletion were expressed through time. Interviewees mentioned that the region's forests are in good health and that forest cover is increasing (interview 1, 6, 7, 9 11, and 18), information which is also corroborated through the research accomplished by the consulting firm hired for the Vision exercise (Institut pour le progrès socio-économique, 2011). As discussed earlier, some concerns are expressed about needs to do more to protect desired wildlife species (Commission des Ressources naturelles et du Territoire des Laurentides, 2011).

Increasing the productivity of forests represents an issue in a context characterized by pressure to increase protected areas and urbanization. Intensification of activities increases the potential for issues of social acceptability and long term ecosystem viability (Commission des Ressources naturelles et du Territoire des Laurentides, 2011). Increasing harvesting areas by approximately 20 percent in order to reduce forest fragmentation which is the most significant human impact on ecosystems, is suggested (Commission des Ressources naturelles et du Territoire des Laurentides, 2011).

Maintaining forest cover is not a major issue in the ALRCM particularly due to low demographic growth. However, some pressure is exercised by the ALRCM to increase the development of residential areas on Crown land through auction or leases in order to better consolidate existing developments (Municipalité régionale de comté d'Antoine-Labelle, 2013). The majority of these developments are waterfront developments, which raises concerns for water protection (Municipalité régionale de comté d'Antoine-Labelle, 2013).

7.2.5.2 Reducing, reusing, and recycling waste, and enhancing energy efficiency

An issue that is easily noticed by visitors to harvesting sites on Crown land in the region is hardwood timber piles abandoned in the forest. This can be explained by the fact that the

region's forests are mixed and that there are insufficient markets for hardwood close to the ALRCM. A similar issue was reported on the construction site of La Romaine hydroelectric dam in Côte-Nord (Panasuk, 2016).

Energy efficiency and increased capacity to use all aspects of timber are at the forefront of the modernization process of the forest industry in order to remain competitive. However, the rationale is one of maximizing economic gains rather than resource maintenance.

> At the present price of raw material, you really need to optimize your mills to maximize your output per cubic meter. All the wood that you have, you can't lose some. You even pick-up the bark. We often joke around saying that we pick-up bark with tweezers not to waste any. (interview 9, translate by Jastremski)

Recent experimentation concerning resource maintenance and efficiency has taken place in the region. A biomass cogeneration project was put forward in Sainte-Anne-du-Lac but rapidly failed due to the difficult economic context (Institut pour le progrès socio-économique, 2011). A greenhouse horticultural production enterprise (Serres Frank Zyromski) also recently invested in burning forest residues and demolition wood to heat its different greenhouses (Institut pour le progrès socio-économique, 2011).

Within municipal competencies, waste management does not represent a major concern for the ALRCM although the requirements of the provincial policy on residual materials are becoming increasingly constraining and ambitious. Waste management is governed by two different companies that are presently not equipped to treat organic matter (Municipalité régionale de comté d'Antoine-Labelle, 2013). There is also an expansion project in the region to treat septic system waste to accommodate future growth (Municipalité régionale de comté d'Antoine-Labelle, 2013). Carbon dependence or climate change are not addressed within documents produced by the ALRCM.

7.2.6 Socio-ecological civility and democratic governance

"Build the capacity, motivation and habitual inclination of individuals, communities and other collective decision making bodies to apply sustainability requirements through more open and better informed deliberations, greater attention to fostering reciprocal awareness and collective responsibility, and more integrated use of administrative, market, customary and personal decision making practices" (Gibson et al., 2005, p. 117).

7.2.6.1 Enhancing capacities for reciprocal awareness and conflict resolution

Crown land conflicts

The 1986 Forest Act and its several amendments through time represented considerable changes for the Upper Laurentians. The abolition of concessions allowed forest transformation facilities to gain access to timber by signing Timber Supply and Forest Management

Agreements. This led to a significant increase in small and medium forest transformation facilities in the Upper Laurentians (Consensus-Action, 2004). For instance, in 1987, 44 employers in forest harvesting and planning were present in the ALRCM and this number increased to 133 in 1993 (Municipalité régionale de comté d'Antoine-Labelle, 1993). The number of employees increased by 35 percent from 870 to 1182 in the same time period (Municipalité régionale de comté d'Antoine-Labelle, 1993). Simultaneously, the leisure, recreation and tourism sector was intensifying (Consensus-Action, 2004). Different forestry stakeholders as well as increased forest users had to coexist within a same territory particularly after the 2001 modifications to the Forest Act, increasing public participation requirements.

In 2003, a collaborative initiative emerged in the Upper Laurentians in reaction to the closure of a sawmill and the clear intent of other sawmills to do the same in the following season (Consensus-Action, 2004). A committee[15] was created in order to pressure the government to intervene. Two issues underpinned the situation. First, supply costs for softwood sawmills in the region were higher than the Quebec average and inadequately reflected in stumpage fees. Second, there was a possibility of lack of supply for hardwood sawmills (Consensus-Action, 2004). To address the issues, a multiple users experimentation laboratory was put forward in the Upper Laurentians under a provincial government decree (Gouvernement du Québec, 2004).

The aims of the experimentation laboratory were to better understand and harmonize multiple forest uses in a context characterized by increased forestry, recreation and tourism activities (Laboratoire d'expérimentation, 2004). As described by an interviewee, "there are some development units similar in size to the 64-51 that only have one or two beneficiaries. This is not the case here. There is a panoply [of players] so it is not the same thing at all" (interview 5, translated by Jastremski).

Close to 400 harmonization agreements were concluded under the Experimentation Laboratory (Laboratoire d'expérimentation, 2005). The costs of harmonization agreements and how they would be distributed between stakeholders as well as issues related to forest accessibility through forestry roads were major themes explored by the Experimentation Laboratory (Laboratoire d'expérimentation, 2005). The Bourdon project, to some extent, represented an extension of the Experimentation Laboratory to continue the harmonization of public forest uses.

Regional cohabitation conflicts

The region of Antoine-Labelle is confronted with conflicts in development perspectives between residents. New residents often move into the region for its natural attributes and

[15] Comité d'urgence Forêts Hautes-Laurentides

quietness, which can lead to opposition to forestry operations (e.g., if harvesting is within sight of residences or if it leads to significant increase in trucking traffic) or other developments. In response to continuous protests in the Laurentians[16], a forum on social acceptability was organized by the Commission des ressources naturelles du territoire des Laurentides (CRNTL) in 2014.

Conflicts represent new demands and the need to reconcile multiple forest uses. More importantly, new capacities have to be developed on the part of all stakeholders and the population in general.

> I think that we need to go through a collective exercise of humility. Foresters need to better understand the phenomenon (of social acceptability). […] Old foresters like me are perhaps not the best people to do this transition. […] Young people like you will be able to do it […]. It is more a part of your DNA. (interview 11, translated by Jastremski)

Increasing demands are also felt in municipalities that have the difficult task of supporting and planning economic development without compromising quality of life and quietness for their residents.

> People want […] a nice little place next to the lake with beautiful landscapes and all. To have peace, no forestry around, and paying taxes that are not too expensive while having access to Internet and having cell phone reception. High speed Internet of course […], firefighters within five minutes and the police that pass twice a day. (interview 4, translated by Jastremski)

7.2.6.2 Enhancing stewardship

Only one environmental organization completely independent of public funding is present in the ALRCM: the *Association de protection de l'environnement des Hautes-Laurentides (APEHL)*. This organization has mobilized significantly in relation to uranium exploration in the region, an issue that is a major preoccupation for the ALRCM, particularly due to the fact that mining trumps regional land-use planning (Municipalité régionale de comté d'Antoine-Labelle, 2013). While information is available on the organization's website on forest management, it concerns issues at the provincial, national or international scales (Association de protection de l'environnement des Hautes-Laurentides, 2017). This possibly demonstrates difficulties limiting participation of citizens and organizations in forest governance.

In addition, several lake associations led by lakeside residents can be found in the region as well as different governmental environmental institutions such as watershed management organizations limited by governmental budgets and aspirations (Medema et al., 2017). Several collaborative initiatives that cut across usual administrative and sector perspectives take place in the region such as both initiatives studied in the next chapters.

[16] Without a doubt, the most recent significant conflict in the Laurentians has been around forest harvesting on Mount Kaaikop, the second highest mountain after Mount Tremblant (Bégin, 2015).

While the ALRCM has developed capacities in forest management, municipalities and the ALRCM have had difficulties meeting some environmental standards. The 2007 blue-green algae crisis in the Laurentians revealed deficiencies in the capacity of municipalities to enforce by-laws to protect water, such as reinforcing septic system regulations (COBALI, 2013).

Forest certification is in place in 85 percent of the forests in the Laurentians and the ALRCM has the largest certified area in Quebec (Institut pour le progrès socio-économique, 2011). The chosen certification scheme is the FSC. Forest certification is encouraged and prioritized under the Sustainable Forest Management Act, which increases the pressure to certify all the forest development units in the Laurentians (Institut pour le progrès socio-économique, 2011).

7.2.6.3 Fostering good governance

As mentioned in chapter 6, in 2008 the provincial government laid the foundations of what would become the Sustainable Forest Management Act in its Green paper on the future of Quebec's forests. The announced new forest management regime was a response to changes in the forest sector and increased demands related to environmental protection, state accountability in forest management, and increase public involvement. The provincial government intended to increase its accountability by dissociating forest management from the forest transformation industries and taking over tactical as well as operational planning (Ministère des Ressources naturelles et de la Faune, 2008). Moreover, putting forward Local Integrated Land and Resource Management Panels further structured public participation in forest management. However, the process of identifying challenges and setting priorities remains opaque (interview 20).

Low participation levels in some municipal elections are noted in the region, particularly in cases where councilors or mayors do not have opposition (Institut pour le progrès socio-économique, 2011). Several concerns were raised by interviewees about the fact that there is an absence of people in the region to take over in the future. This concerns new entrepreneurs and also volunteers that are getting older (interviews 3, 10, 16 and 17). However, there are over 250 volunteers involved in different organizations in the region (Institut pour le progrès socio-économique, 2011). Getting new residents to get involved in the region also represents a challenge (interview 13).

As noted above, while men hold the majority of powerful positions in ALRCM, more women are taking part in local politics, as they are elsewhere in Quebec (Institut pour le progrès socio-économique, 2011). There are several elected members of council that are under 35 year old, 17 in total representing 14.3 percent, which is a good sign for the future of the region (Institut pour le progrès socio-économique, 2011). Low salaries and difficult conciliation between family life and involvement in politics were highlighted as barriers to involvement in local politics (Institut pour le progrès socio-économique, 2011). Also as mentioned previously,

ethnic diversity is not very discussed or present in the region. However, the mayor of Mont-Laurier since 2003, Michel Adrien, immigrated to Quebec from Haiti in 1968. Lack of opportunities for citizens to debate and express their views was also underlined as an issue in the ALRCM (Institut pour le progrès socio-économique, 2011).

7.2.7 Precaution and adaptation

"Respect uncertainty, avoid even poorly understood risks of serious or irreversible damage to the foundations for sustainability, plan to learn, design for surprise, and manage for adaptation" (Gibson et al., 2005, p. 118).

7.2.7.1 Promoting adaptation and precaution

Chapter 6 underlined the major changes taking place in the ALRCM related to the new forest management regime, modifications in the regional governance structure, as well as significant changes in the industrial structure of the region following the forestry crisis. Furthermore, persistent stresses and long term shifts are occurring in the region. These concern for example climate change, an aging population, population movement within the region (cores are emptying, urbanization near lakes and forest land), and population exodus.

Major uncertainties remain related to the new forest management regime. The reorganization of operational planning between the Ministry of Forests, Wildlife and Parks is still tentative. The initial ambitions of the Sustainable Forest Management Act of completely taking over tactical and operational planning might not be met. Furthermore, some elements are still missing such as a policy guiding the implementation of proximity forests. Furthermore, the arrival of new players in forest governance following mill closures and acquisitions increases uncertainties about how local players will interact.

While uncertainty prevails, alternatives to the current situation need to be explored. Major potentially negative developments in the region relate to uranium mining exploration and an increased pace of forest harvesting to make-up for the forestry crisis.

7.2.7.2 Foster humility and inspiring positive hope

Document analysis of the issues in the ALRCM through time reveals recurring issues with the forest industry often followed by workers' protests due to declining working conditions. The impacts of the 2006 forestry crisis on the ALRCM also underlined its vulnerability. Considering past events, it is highly doubtful that another forestry crisis will never occur.

> There have been several crises in the forest sector. Usually, cycles are every seven years but never has it gone as low as in 2008-2009. It was really a crisis. Simultaneously you had a crisis in mills and the pulp and paper industry. Usually, when mills aren't doing well, pulp and paper industries pay a little more for chips. But pulp and paper mills were in trouble and couldn't help wood mills. (interview 9, translated by Jastremski)

As mentioned previously, addressing forest dependence in the region through economic diversification is essential. This has been recurrently underlined in documents produced by local governments and organizations in the ALRCM (e.g., Genivar groupe conseil, 2005; Guerard, 1989; Institut pour le progrès socio-économique, 2011). Despite past failures or unrealistic expectations and the uncertain context, taking positive steps is still an option. Several interviewees mentioned that they feared people would lose hope, that they would give up and leave the region (interviews 6, 9, 11, 13, 21).

7.2.7.3 Enhancing learning, monitoring and iteration

Even overall negative changes endured in the ALRCM such as the forestry crisis have valuable lessons to offer. The forestry crisis allowed for several entrepreneurial experiments to take place and new relationships to emerge (interviews 3, 14). Furthermore, the implementation of the ambitious Sustainable Forest Management Act requires significant adjustments for all actors involved. The dynamic context illustrated in chapter 6 and throughout this chapter calls for increased learning and monitoring and continuous adjustments.

7.2.8 Immediate and long term integration

"Apply all principles of sustainability at once, seeking mutually supportive benefits and multiple gains" (Gibson et al., 2005, p. 118).

7.2.8.1 Enhancing supporting benefits and multiple gains

The comments gathered on the impacts of the new forest management regime illustrate that gains at the provincial and societal level might have been obtained to the disadvantage of the Antoine-Labelle community. The forestry crisis in the region demonstrated how forest and local governance are interwoven in the ALRCM, hence the need to search for positively reinforcing and supportive sustainability solutions.

7.2.8.2 Supporting a transition towards sustainability

The need for transition towards sustainability in the ALRCM is demonstrated partly by the emergence of the two studied initiatives during the same period of turmoil and reorganization. Seeking intentional transformative change towards a long-term sustainability vision was at the forefront as highlighted by the following interviewees commenting on repeated documents produced on the community:

> […] we know that we are 35,000 (residents), […] we know that we live from forestry, […] we know that this and this and this is happening and that we have 4,500 lakes. We know that. Can you please stop repeating the same things. We know all of that. What we don't know is where we are going. (Interview 15, translated by Jastremski)

Putting forward an overall vision for the ALRCM was identified as an issue by several interviewees. The immensity of the territory and the related distance between municipalities explain part of the governance complexities in the ALRCM. What was referred to as "Mont-Laurier centrism" has also been criticized by some of the interviewees and unearthed during the Vision exercise (Institut pour le progrès socio-économique, 2011). This will be further explored in the analysis on the Vision exercise in chapter 8.

The importance of the forest sector in the future of the region is a contentious subject for the ALRCM. Several interviewees expressed the desire for forestry to recover as well as the fear of the region completely moving away from forestry due to the forestry crisis thus leaving behind part of the history, the expertise developed, and an important asset of the region (interviews 1, 6, 9, 14, 15, 21). Others expressed the desire to move away from forestry.

> There is a threat that we don't renew our way of thinking. I mean that we don't move forward with the era. That we continue thinking that we are destined to get the short end of the stick and that we are not able. You know we have to be able to see further ahead and to ask ourselves questions on how we could do things differently. […] We need to continue to ask ourselves questions and to try to find opportunities to cease so that we are not solely dependent on forest harvesting. (interview 14, translated by Jastremski)

7.2.8.3 Harnessing opportunities

The decreased capacity of the ALRCM and its municipalities to govern themselves was identified as a major threat to the future of the region by several interviewees (interviews 5, 6, 8, 9, 10, 11, 15, 18, 20). This can be explained by the political context during which the interviews took place where the provincial government announced abolitions of several of the ALRCM's institutional structures, as detailed in chapter 6. The following quote demonstrate the perception of one of the interviewees.

> In the present situation where we are talking of financial austerity in the governmental apparatus, it is very distressing for managerial staff in Health and Social Services Centers (CSSS) or the School Board that have good salaries but will have to endure salary cuts or lose their job. We become a RCM of decisions every four years. In the meantime, this is not a region that is building itself. […] it is a fatalistic issue in the sense that we are here but what can we do about it? (interview 10, translated by Jastremski)

In addition, ALRCM has developed capacities through time in managing public land and in forest management, particularly since 2000 through the management of intramunicipal public lands. The ALRCM has repeatedly voiced their desire to increase their responsibilities with adequate fiscal compensations to support the download of responsibilities (Municipalité régionale de comté d'Antoine-Labelle, 2008). The fact the ALRCM was chosen to oversee Local Integrated Land and Resource Management Panels demonstrates well the expertise that they have acquired through time. While the ALRCM has more responsibilities, tensions are felt between levels of government and downloading often resembles duplication (interview 4).

The following quote illustrates the willingness of actors in the region to increase their decision-making control.

> We are sometimes tired that decisions come from Quebec in any subject. We manage a lot of things here. And often the final decision when we ask for advice comes from a guy sitting in an office in Quebec. We say "look now, you didn't understand what we are living through". So we want to be able to make decisions that are good for our realities and what we are here. (interview 4, translated by Jastremski)

However, some interviewees pointed out the lack of vision and limited capacities of councilors and mayors due to lack of education and experience (interviews 8, 11).

7.3 Conclusion

The ALRCM is not short of sustainability challenges. The forestry crisis, the implementation of the Sustainable Forest Management Act, and the reorganizations of the governance landscape under the present provincial government exacerbated persistent issues in the region. Low education levels, limited economic diversification, youth exodus and an aging population, among many other interrelated characteristics, challenged the ability of the ALRCM to respond to socio-political changes and move towards sustainability.

This chapter underlined different sustainability issues in the ALRCM according to the sustainability-based criteria specified for application to forest communities developed in chapter 5. The purposes of this chapter were to assess if further criteria specification was necessary as well as to provide context for interpreting the assessment of the two local governance initiatives studied in chapter 8.

For the most part, the application of the framework to the key case and context considerations of the ALRCM did not reveal new considerations. Further specification could undermine the applicability of the criteria to other forest communities. In addition, the framework has the challenge to be general enough to apply to two different local governance initiatives in the ALRCM. Having very specific additional criteria might lead to several criteria not being addressed by an initiative as well as significantly increasing the number of criteria to be assessed. The sustainability-based assessment framework has the challenge of being applicable to different forest communities as well as to be thorough without being overwhelming complex. While two specified set of criteria could have been tailored to each initiative studied, this framework attempts to reconcile forest governance and local governance.

In one situation, adding a criterion to the framework is necessary. This criterion is within the livelihood sufficiency and opportunity sustainability requirement under the theme of enhancing community well-being. The criterion consists of enhancing the access to the ALRCM territory, including both public forests and the municipalized territory. The case information uncovered in this chapter shows the high degree of dependence between the leisure, recreation and tourism sector and the forestry sector related to forest road maintenance

issues. The literature review in chapter 5 identified forest road planning and maintenance as a key consideration to integrate in the framework due to the resulting forest fragmentation and high maintenance costs. Decreasing forest activities in the ALRCM due to the forestry crisis uncovered the other issue of forest accessibility related to forest roads. It is likely to believe that this issue is also present in other forest communities, particularly affecting communities with several forest users in public forests such as in the ALRCM. Furthermore, the case information put forward in this chapter revealed issues with road infrastructure to and in the ALRCM which is related to the broader challenge of remoteness of rural communities (Dugas, 1996; Slack, Bourne, & Gertler, 2003). Remoteness is common to forest and rural communities which provides additional justification to adding this new requirement.

Table 8.3 at the end of chapter 8 presents the list of sustainability-based assessment criteria with the suggested modification and their application to the two studied initiatives.

CHAPTER 8 - CONTRIBUTIONS TO SUSTAINABILITY OF THE BOURDON PROJECT AND THE VISION EXERCISE

8.1 Introduction

In the last decade, the Antoine-Labelle region has been confronted by multiple simultaneous waves of change. In response to the forestry crisis and the need to address persistent enduring stresses, two local governance initiatives were put forward in the region: The Bourdon project (2007-2014) and a Vision exercise (2007-2015). The main objective of this chapter is to describe and analyze the research results based on the sustainability assessment framework specified for application to forest communities. First, the contributions to sustainability of The Bourdon project are presented (section 8.2) followed by the results pertaining to the Vision exercise (section 8.3). Then, comparative results are highlighted in section 8.3. In the discussion section (section 8.4), theoretical reflections on the framework are put forward. The discussion is organized around three emerging themes (bridging local and forest governance; moving away from path dependence; and local impasses and alternative sustainability pathways) and a reflection on the application of the identified criteria.

The Bourdon project was selected as a Forest Community part of the federal Forest Communities Program (FCP) aimed at developing ways to adjust to the forest sector transition taking place and to take advantage of emerging forest-based opportunities (Natural Resources Canada, 2013). The boundary of the project consisted of a forest development zone 064-51 in public forests and on the Atikamekw First Nation community territory. The Bourdon project made significant contributions to sustainability in increasing capacities for involvement and awareness of the different partners as well as developing and exploring business opportunities related to forest resources.

The Vision exercise emerged from community organizations and their desire to be included in and influence the economic recovery plan of the Antoine-Labelle region following the forestry crisis. By rallying local governance leaders and citizens, the initiative aimed at combining the strengths of the community to increase well-being and contribute to the socio-economic revitalization of the Antoine-Labelle Regional County Municipality (ALRCM) through the adoption of a common long-term sustainability vision (Institut pour le progrès socio-économique, 2011a). The initiative contributed to sustainability by increasing collaboration between local actors and therefore decompartmentalizing local governance. The Vision exercise assembled a considerable amount of information on the assets and issues in the ALRCM and identified adaptation strategies to long-term trends.

The application of the framework revealed the need for increased capacities for environmental stewardship and for local communities to be involved in forest governance. In addition, it revealed that the gap between local and forest governance is entrenched and supported by the

power structures currently in place. Gains generated by the initiatives in opening-up local and forest governance to other players and their interests and values are tentative. Politics cannot be removed from innovation spaces and there are no short-cuts in learning or building capacities. Socio-political changes represent windows of opportunities for change towards sustainability (Armitage et al., 2011; Gelrich et al., 2010; Olsson, Bodin, & Folke, 2010) as well as strong incentives for reinforcing stability. In the case of the ALRCM, the forestry crisis significantly increased pressure for meeting short-term economic imperatives over other concerns. Smith and Stirling's (2010) interrogation of how bottom-up initiatives are able to confront structural forms of power that are vested in the present global level is relevant to this case. While the forestry crisis perhaps represented an opportunity to facilitate the provincial government's takeover of forest planning responsibilities as a condition for a new and *sustainable* forest management regime, the impacts of such changes on forest communities were overlooked. Identifying who is affected by suggested changes (Gelrich et al., 2010) and mitigating potential negative consequences for those concerned is underlined.

The application of the framework also highlights lack of local political will as a significant local impasse to intentional change towards sustainability in the ALRCM. In addition, existing innovation structures in the Laurentians offer some opportunities for change while simultaneously limiting the possibility for other pathways to emerge.

Sustainability-assessment has the quality of being disruptive and transparent about the intended changes put forward (Gibson, 2017b). However, the breadth of the considerations to attend to represents a significant challenge for inspiring positive hope. Both initiatives represented the need and the expressed desire for intentional change towards sustainability, but both proved to be difficult. In a period of significant reorganization characterized by enduring global shifts and substantial reorientation in provincial policies, lasting contributions remain tentative and highly dependent upon the willingness of local actors to continue building on acquired capacities, knowledge and experience.

8.2 The Bourdon project

This section presents the contributions to sustainability of The Bourdon project initiative. Results are based on a document analysis of the different annual reports, project reports, media releases and additional information available on the internet site of the initiative. In addition, semi-structured interviews were conducted with 13 participants in The Bourdon project.

8.2.1 Emergence of The Bourdon project

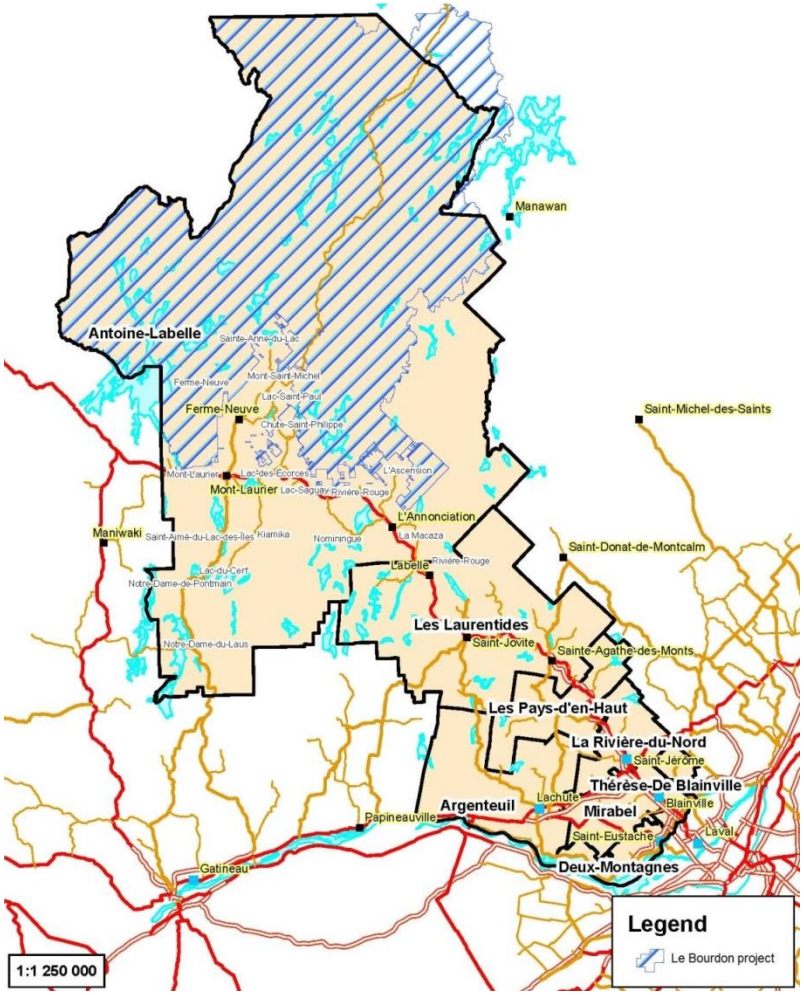
The Bourdon project was located on public land that corresponds to the forest development zone 064-51 of which 93.2 percent is in the ALRCM (Commission des Ressources naturelles et du Territoire des Laurentides, 2010) (see Figure 8.1). The project covered 10,650 Km² representing more than the two thirds of the ALRCM's territory (Le Bourdon, 2011a).

Approximately 75 percent of the project took place on structured wildlife territories (ZECs and outfitters).

As discussed in the previous chapter, multiple conflicts arose in Antoine-Labelle's public forests following the abolition of concessions and the implementation of the 1986 Forest Act, combined with a significant increase in recreation and tourism activities in the region in the 1990s. In 1985, a non-profit organization for regional collaboration between forest industrials (chiefly Timber Supply and Forest Management Agreements (CAAF) holders), the *Association des Intervenants Forestiers des Hautes-Laurentides* (AHL) was put in place aiming to develop forestry activities particularly in hardwood and mixed forests (Coopérative forestière des Hautes-Laurentides, 2011).

Due to persistent conflicts that seriously hampered forestry activities as well as a need for the region's specificities to be recognized by the provincial government (i.e., mixed forests and associated stumpage fees), an Experimentation Laboratory, led by the *Antoine-Labelle Community Futures Development Corporation* (SADCAL) was put forward in the Upper Laurentians to better harmonize forest uses between 2003 and 2007. The same firm that was later hired to conduct the Vision exercise (see section 8.3) was chosen to support the Experimentation Laboratory. This experience in collaboration provided involved stakeholders in the region with a basis for applying through the AHL to the Canadian Forest Communities Program (FCP) in 2006. The forestry crisis created an opportunity for reflection on ways of doing forestry in the region and forest industrials were committed to further develop harmonization mechanisms among stakeholders to facilitate planning. The Bourdon started its activities late in 2007 and the initiative was terminated in April 2014 after the cancellation of the federal program.

Figure 8.1 Location of The Bourdon project in the Antoine-Labelle region



Source: modified from Le Bourdon, 2011a

8.2.2 Mission and objectives

The Bourdon's partners (see section 8.2.3 for the identification of main partners) identified four main goals for the initiative (Le Bourdon, 2011a). First, the project aimed to optimise the production capacity of public forests while respecting sustainable forest management (SFM) principles. Second, it aimed to increase economic outputs of the forest sector as well as the recreation and tourism sector. Third, developing tools for partners of the project to build capacities to react to challenges and possibilities related to forest resources was identified. Finally, the project's purpose was also to actively participate in national and international networks to share and exchange knowledge on SFM and local development.

More specifically, The Bourdon organized its different projects and activities around four objectives:

- Knowledge acquisition, testing new approaches and developing new tools;

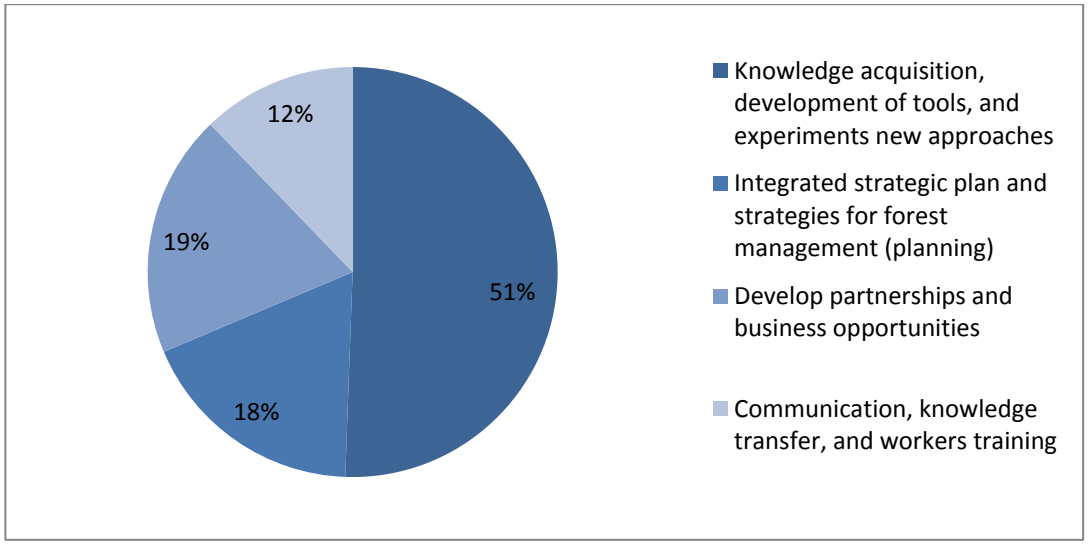
- Elaborating an integrated sustainable natural resource plan and associated forest management strategies;
- Developing partnerships and business opportunities;
- Communication (developing a common language), knowledge transfer and skill development (Le Bourdon, 2008).

These specific objectives, through immediate, medium and long-term results aimed to structure the delivery of four main goals.

Throughout the years, over 4 million dollars were invested in the region through The Bourdon project (Municipalité régionale de comté d'Antoine-Labelle, 2013). The FCP provided approximately $325,000 annually between 2008 and 2012. Following the announcement of the abolition of the federal program, contributions fell to $75,000 between 2012 and 2013 (Le Bourdon, 2013). There were also multiple contributors to the project. The Ministry of Natural Resources and Wildlife made significant contributions (over $500,000) in the first two years to increase knowledge acquisition (see figure 8.1).

Interviewees explained the mission of The Bourdon uniformly in terms of bringing people together to find solutions to the forestry crisis (interviews 4, 5, 13), gaining knowledge on the territory (interview 3, 11, 14) and learning to work together in a win-win environment (interviews 1, 5, 6, 12, 13, 17). However, participants from the Ministry of Forests, Wildlife and Parks and the Regional Land and Natural Resources Commission of the Laurentians emphasized The Bourdon's role as a testing ground and facilitator in the implementation of the new forest management regime.

Figure 8.2 Proportion of budget per objective pursued (2007-2013)



Source: Le Bourdon, annual reports, ULR: http://notreforet.com/projet_1.htm

8.2.3 Structure, partners and how it worked

The Bourdon project started its activities with 19 partners that were active or non-active members of the project. A management board designated a general manager for the project and a local organization (Table Forêt) to be in charge of the communication strategy (Le Bourdon, 2008). In addition, an Implementation Committee decided which projects were put forward. An Integrated Land and Resource group, was also put in place as well as a group focused on ecological issues.

The main players involved consisted of forest industrials with Timber Supply and Forest Management Agreements (CAAF) in the forest development zone 064-51, ZECs, outfitters, the Atikamekws of Manawan First Nation community and the Ministry of Natural Resources and Wildlife. Other partners were also involved such as the Vocational Training Center of Mont-Laurier, an organization to promote forestry in the region and related employment opportunities (Table Forêt), the ALRCM, and the Local Development Center (CLD). Therefore, actors at multiple scales were involved in the project.

Members of the implementation committee were in charge of overseeing strategic and annual planning of projects in order to meet the pursued goals and objectives of The Bourdon (Le Bourdon, 2009). The communication committee's tasks were to promote The Bourdon and its activities, as well as to develop the internet site of the project and different communication and information exchange tools between partners (Le Bourdon, 2008). The Integrated Land and Resource group as well as the Ecological issues group were put forward in the spirit of developing an integrated sustainable resource management strategy for the forest development zone 064-51.

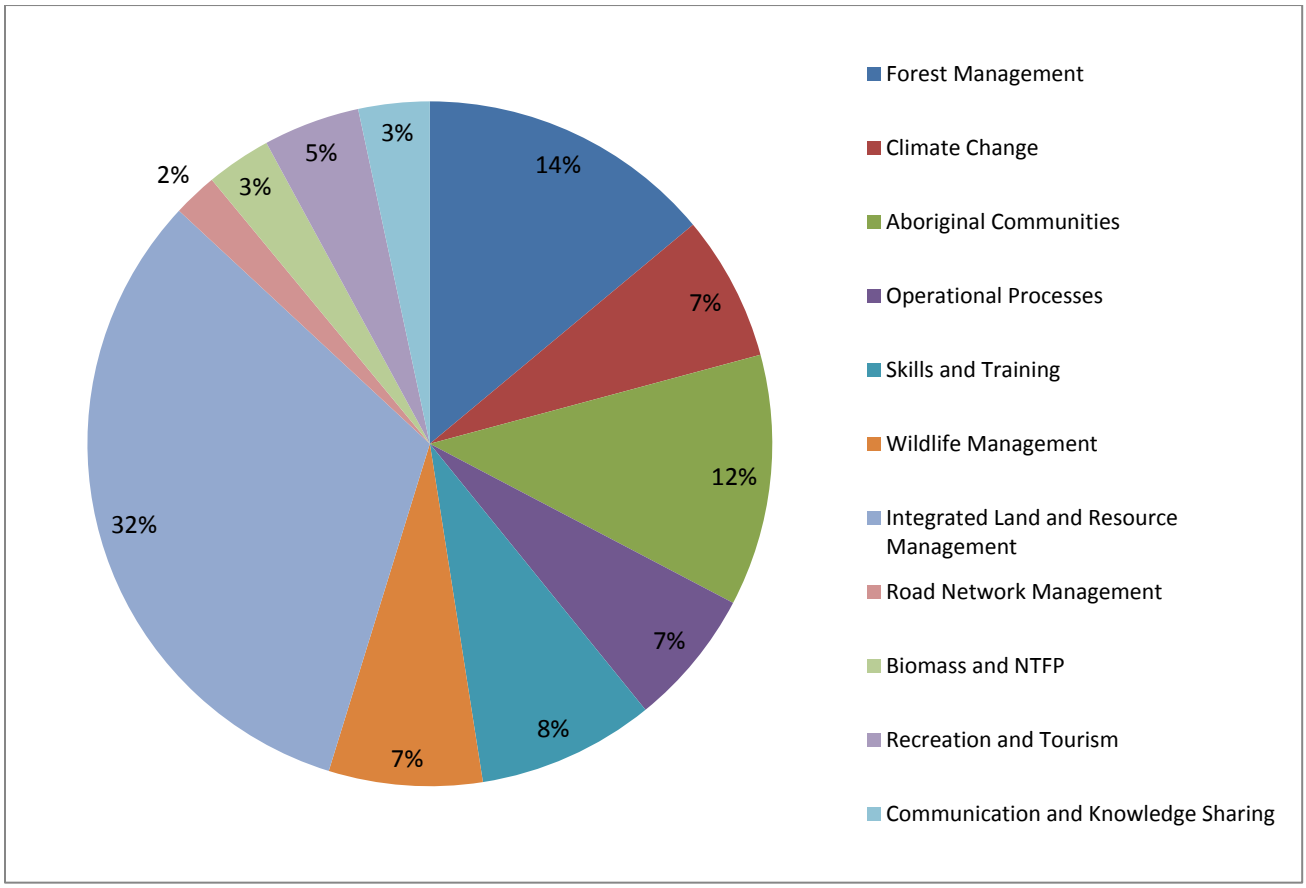
The reporting of the number of meetings throughout the project was inconsistent or incomplete. According to information available in annual reports, the management board as well as the communication committee met once or twice a year and the implementation committee between two and five times annually. The Integrated Land and Resource group was the most active, meeting up to 17 times in the 2009-2010 period (Le Bourdon, 2014).

Approximately 80 projects were put forward during the initiative's lifetime[17]. The projects varied significantly. For instance, a project involved preparing the internet site for the initiative, another project consisted in organizing a conference on non-timber-forest-products (NTFP), and several projects aimed at conducting historical research on the evolution of forest composition in the region to determine its modification through time. Figure 8.2 illustrates the different themes covered by the projects in proportion to the allocated budget.

[17] The annual report for the last year of the project (2013-2014) was not produced. Interviews reveal that activities during the last year were geared towards meeting with the partners to explore the possibility of pursuing the initiative and ending prior projects.

The strategy to deliver different projects was to allow partners to cultivate and put their expertise to use rather than developing common projects between two or more partners (Le Bourdon, 2008). However, selection criteria for the projects depended on common mutual gains among partners in addition to fitting within the FCP's requirements. As will be explained in the next section, the arrival of the new forest management regime also influenced the priorities given to certain projects.

Figure 8.3 Budget proportion in relation to project themes in The Bourdon project



Source: The Bourdon's internet site and annual reports, ULR: http://notreforet.com/projet_2.htm

8.2.4 The Bourdon unfolded

Emerging from a recent history of conflicts between forest industrials and other forest users present on Crown land and recent collaboration through the Experimentation Laboratory, The Bourdon started its activities late in 2007. For people involved, such collaborations were considered unexpected due to a history of working separately, thus the chosen name of the initiative. The Bourdon means bumblebee in French and was chosen as the name for the initiative because bumblebees are surprisingly able to fly even with very small wings.

Only two months after The Bourdon project began, the Ministry of Natural Resources and Wildlife published its Green paper laying down the foundations for a new forest management regime set to be put in place in 2010 followed by a three year transition period. The Regional Land and Natural Resources Commission of the Laurentians was also created in January 2008 and became a partner in The Bourdon. The announcement of a new regime significantly impacted the activities of The Bourdon. The priority at that point in time for The Bourdon's partners was to propose an integrated sustainable resource management strategy to the Chief Forester by the end of 2009 so that it could serve as a basis to calculate annual allowable cuts for the 2013-2018 period (Le Bourdon, 2008). Therefore, activities of the Integrated Land and Resource group and the Ecological issues group were given priority as well as different research projects that could increase timber volumes assigned through annual allowable cut calculations. In continuity with work accomplished in the Experimentation Laboratory between 2004 and 2007, creating awareness of the region's mixed forest reality and its implication for forestry was at the forefront. Hence, The Bourdon started its activities with high ambitions of influencing provincial policies. The heavy focus on integrated resource management between partners operating in the forest development zone 064-51 resulted in some other partners being disinterested by The Bourdon project. For instance, FPInnovations, a not-for-profit organization that develops scientific solutions to support the Canadian forest sector, decided not to take-part in meetings after the first year.

The third year of activities of The Bourdon represented a major turning point for the initiative. With the adoption of the Sustainable Forest Management Act in 2010, the Ministry of Natural Resources and Wildlife decided to withdraw from The Bourdon choosing instead the Regional Land and Natural Resources Commission of the Laurentians (CRNTL) as its only reference for orientation in terms of regional objectives (Le Bourdon, 2010). Through the implementation of Local Integrated Land and Resource Management Panels (Panels henceforth), the CRNTL's main mandate was to put forward a Regional Integrated Land and Natural Resources Development Plan. Hence, The Bourdon was invited, alternatively, to collaborate with the CRNTL. Furthermore, under the new forest management regime, forest planning was transferred from forest industrials to the Ministry of Natural Resources and Wildlife. Several projects aimed at improving forest planning such as research on forest growth and harvest simulations were therefore interrupted by The Bourdon partners.

The presence of the Ministry of Natural Resources and Wildlife within The Bourdon and the fact that the initiative hoped to influence provincial policies created tensions as demonstrated by the following quote:

> It is difficult to fit an institution with a formal framework that must answer to its own mandates' imperatives. […] It is not easy to bring together. Calendars and agendas are variable. And often, we don't agree with the institution so we create a parallel initiative to modify the institution. But if the institution is questioned, it is less interested in participating in the work being accomplished. (Interview 17, translated by Jastremski)

The withdrawal of the Ministry of Natural Resources and Wildlife affected the credibility of the initiative. Furthermore, the implementation of the CRNTL and the Panels as well as the transfer of planning responsibilities took away one of the main purposes of The Bourdon in bringing partners together in developing an integrated sustainable resource management strategy. In addition, since most partners involved in The Bourdon were called upon to participate in the Panels, duplication between the two entities represented an issue and partners started to weigh the value of their participation. Moreover, the announcement of the retreat of the Ministry concurred with the moment when decisions had to be made in choosing which compromises to make in The Bourdon's integrated sustainable resource management strategy. The following quote describes the moment at which the Ministry decided to withdraw.

> It was at that moment. We were getting close to the crucial moment when we needed to make a decision. People were more nervous you know, partners around the table, because they were realizing that they needed to commit to something. It was getting difficult but in the end the Ministry with its new Act stopped everything. […] So in 2010 the enthusiasm, the motivation decreased but there was still some money left to entice people to work together. However, it was difficult to find common projects with common objectives since we were no longer developing a common strategy. (Interview 6, translated by Jastremski)

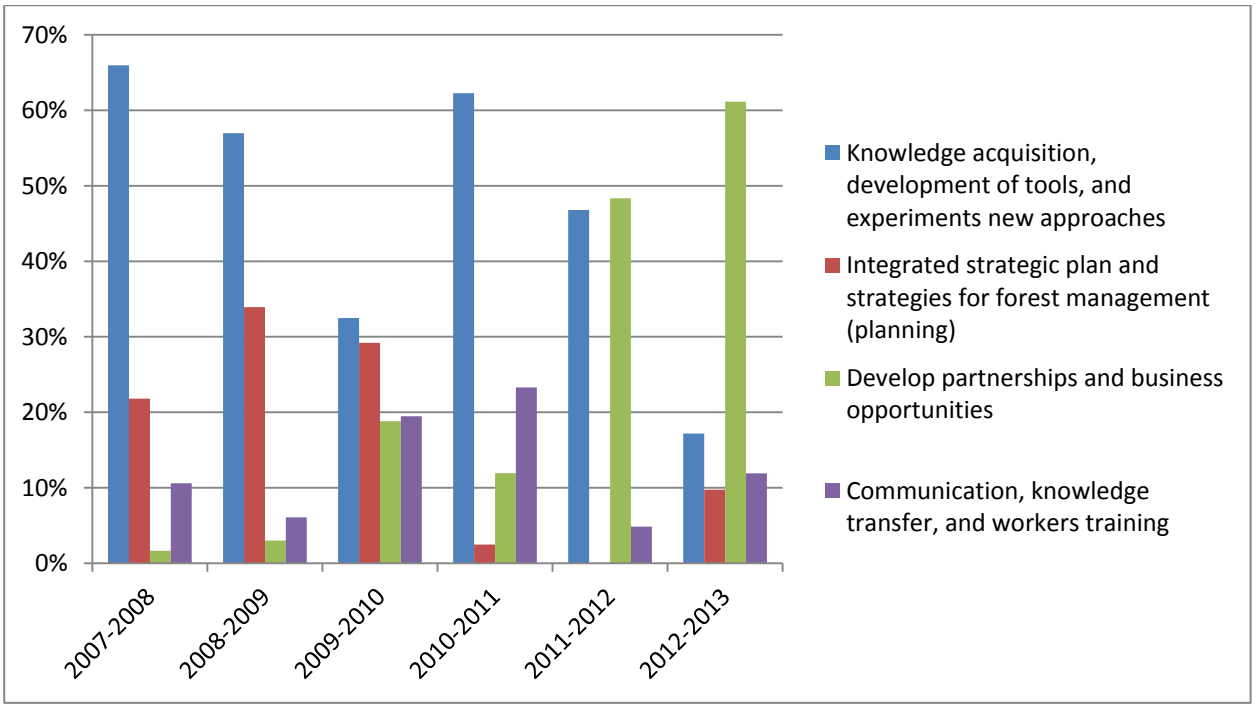
In addition to all this turmoil, the forestry crisis was still present in the region in 2010 as illustrated in previous chapters. Three softwood sawmills in the Laurentians were closed and other sawmills were functioning at reduced capacity. Forest industrials in the forest development zone 064-51 were therefore changing and many partners involved in the project (chiefly forest industrials) were hired by the Ministry of Natural Resources and Wildlife to fill the expertise gap related to the new forest management regime. At the moment of conducting the interviews, three forest industrials involved in The Bourdon were working for the Ministry of Natural Resources and Wildlife; one in the ALRCM, one in Mont-Tremblant (i.e., in the Upper Laurentians but outside the ALRCM), and another was hired at the Montreal offices.

In the following years, The Bourdon reoriented its projects towards supporting the CRNTL in developing tools to facilitate harmonization agreements between forest harvesting operations and other forest uses therefore involving forest industrials and First Nations or other stakeholders such as specific outfitters or ZECs (Le Bourdon, 2011b) and developing business opportunities for the region. Figure 8.3 illustrates the evolution of the proportion of the budget attributed each year according to the four main objectives of The Bourdon project. The figure illustrates the significant decrease in activities related to the integrated sustainable resource management strategy after 2010 and significant increase in developing new partnerships and business opportunities.

After several meetings probing the possibility for the project to continue following the cancellation of the FCP, partners decided to end the project. The following quotations represent the point of view of two partners on how the activities of The Bourdon were conducted and how it related to the demise of the initiative:

I would have imagined that […] all the interactions of the members, especially between industrial and ministerial partners would have been better coordinated at the scale of The Bourdon. But it's not what happened. They selected a set of projects. These projects took place in the context of The Bourdon but were nothing more or less than an umbrella of projects rather than becoming a more formal body […]. (interview 1, translated by Jastremski)
The plan worked well for two or three years. But then it became like we need to continue to make things roll because we need to justify the fact that we have money from the federal (government). So we'll add projects that weren't planned from the start you know. […] So at one point, we were all there sitting around the table and everybody was talking about their own project and we were looking for the connection. I think that this led to the end of this nice project […]. (interview 3, translated by Jastremski)

Figure 8.4 Evolution of the budget proportion per objective



Source: Le Bourdon, annual reports

8.2.5 The Bourdon's contributions to sustainability

Although The Bourdon project was only in place for seven years, the initiative was able to make several contributions to sustainability. Out of the 77 criteria put forward in the framework, 65 were met (84%), 13 (17%) for which were significant contributions to sustainability. However, 12 criteria (16%) were unmet.

Figure 8.5 Percentage of significant and minor contributions to sustainability and unmet criteria for The Bourdon project per sustainability requirement

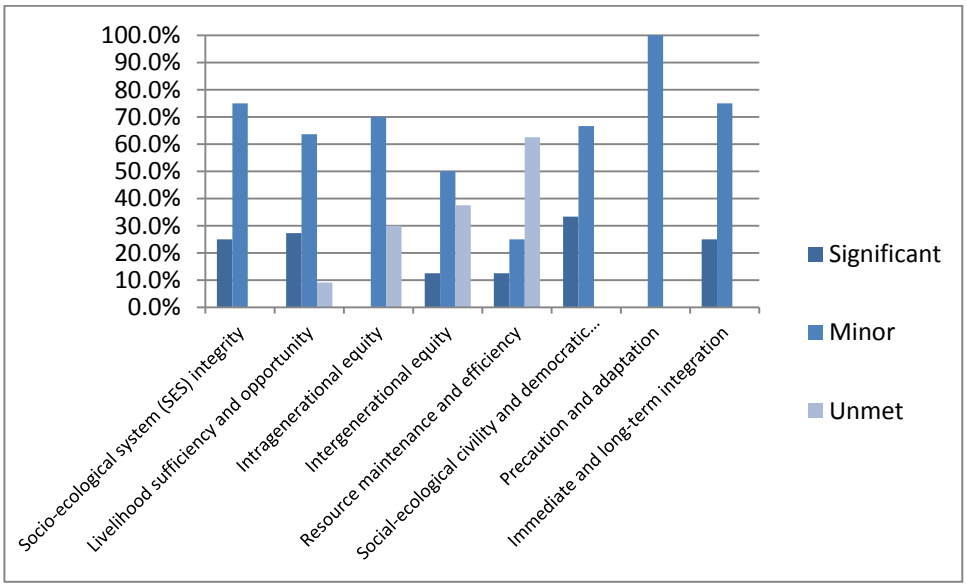


Table 8.3 at the end of the chapter presents the overall results for each criterion and requirement for both initiatives.

8.2.5.1 Significant contributions to sustainability

Significant contributions to sustainability from The Bourdon project concern mainly criteria for the requirements of socio-ecological system integrity, livelihood sufficiency and opportunity as well as social-ecological civility and democratic governance.

Concerning socio-ecological system integrity, a significant amount of research on the evolution of the forest composition through the influence of natural and anthropogenic disturbances in the forest development zone 064-51 was accomplished. This research was conducted to support the new forest management regime centred on ecosystem-based management. Furthermore, by trying to develop an integrated sustainable resource management strategy through the identification of concerns and interests of stakeholders, governments and First Nations, a more detailed system perspective of the region's socio-ecological system was put forward. Different projects attempted to identify and monitor impacts of forest activities on socio-ecological systems such as an inventory of the state of culverts and their impacts on fish populations and spawning grounds (Gasse, 2009).

Livelihood sufficiency and opportunity was addressed through multiple projects aimed at developing new partnerships and business opportunities in the region. Some projects were directed towards the consolidation of existent economic sectors. For instance, outfitters

prepared a development plan based on a study of tourism trends and ecosystem capacity (Le Bourdon, 2008, project 2008-303). Other projects explored future development paths for forest extractables (Le Bourdon, 2010, project 2010-312) or attempted to build business networks to develop the use of forest biomass in the region (Le Bourdon, 2010, project 2010-314). A project for harvesting morels involving the Atikamekw First Nation community of Manawan was also put forward (Le Bourdon, 2011b, project 2011-316).

However, the attitude towards new developments, particularly by forest industrials was defeatist. Such tone was noticed through participant observation during the NTFP seminar organized by The Bourdon on 25 February 2011 where, not necessarily unrightfully so, major barriers to developing marketing opportunities for mushrooms and birch syrup harvesting, among many, were explicitly highlighted. In addition, The Bourdon was hired by the regional committee for proximity forests to evaluate the potential revenues for municipalities in harvesting forests located close to inhabited areas (Le Bourdon, 2011b, project 2011-57). The research accomplished on the possible profitability of proximity forests highlighted the costs of managing hardwood and mixed forests (Le Bourdon, 2013). In addition, several interviewees were reluctant to support the idea of proximity forests in general. Some expressed doubt about the capacity of municipalities to manage forests in a profitable way (interviews 4, 6, 14, 17, 18).

> People see this (proximity forests) as a profit generator. But if the present industry, you know like Forget in Saint-Jovite […] or Max Meilleurs in Ferme-Neuve […] went bankrupt. If the people whose job is to be an industrial (went bankrupt) how can a small community led in good faith by a municipal council with little experience do better? […] It (proximity forest) is not simple. You need to bring in expertise. Not just anybody can improvise this. (interview 7, translated by Jastremski)

Others suggested that proximity forests were more applicable to regions that have most of their territories occupied by major forest companies (interviews 7, 20, 11).

> It might be true in Lac-Saint-Jean […] that people are asking to have an influence (on proximity forests) while the rest of the territory is for a big company […]. But in a community that has proven itself to be capable to take charge on its development, and that locals were managing the forest in collaboration with the RCM and everybody […]. It isn't the same forest reality. And you give the rest to big companies […] while inviting the local industry to leave […]. (interview 7, translated by Jastremski).

Nevertheless, research accomplished by The Bourdon allowed the proximity forest committee to be informed about the challenges of managing forests in the region. The report underlined the need for precaution due to the predominance of hardwood forests in those areas as well as the difficult economic context (Le Bourdon, 2011b, project 2011-57).

Significant contributions to livelihood sufficiency and opportunity were also made through the distribution of considerable funds for partners with recognized rights in the forest development zone 064-51 in order to develop their expertise and to be in a better position to defend their

interests in the elaboration of the integrated sustainable resource management strategy. For example, outfitters received over $100,000, ZECs were given a little over $70,000 and the Atikamekw First Nation community received close to $35,000 (Le Bourdon, 2008, 2009, 2010, 2011b, 2012, 2013).

Local capacities were also increased through the development of different training and education programs. For instance, ZECs put forward a training program for their managers for the software they developed to monitor roads and culverts maintenance (Le Bourdon, 2008, project 2007-405). A training program for the development of NTFP was also put forward (Le Bourdon, 2013, project 2012-604). In addition, a professional diploma in silviculture and a training program in carpentry offered in the ALRCM were specifically developed for the Atikamekw First Nation community of Manawan (Le Bourdon, 2008, project 2007-406).

Social-ecological civility and democratic governance consists of another requirement in which several significant contributions to sustainability were made. Several efforts were directed towards understanding and respecting other partners' points of view and developing a common language. The following quote demonstrates an interviewee's perception of lessons learn through their experience in The Bourdon project:

> It (most important lesson learned) is that there are other people in the community that are as important as you and need to be considered. […] Everybody is important and has its competences. […] If we don't know them, we do not understand them. We don't know that they are there, that they exist. But when you know they exist, you tell yourself that it is true. They are there, they are important and we need to consider them. […] It (The Bourdon project) brought us to think a little bit more regionally. (interview 13, translated by Jastremski)

Most interviewees pointed out that the biggest realization of the project was in bringing all different partners together to learn to talk to each other and develop ways to communicate positively (interviews 3, 5, 6, 7, 11, 12, 13, 14, 20). The Bourdon also participated in increasing the amount of negotiated harmonization agreements in the forest development zone 064-51 from 400 to 700 agreements approximately (Le Bourdon, 2012). Increased trust was specifically mentioned (interviews 6, 11).

Bringing people together and better understanding each other were significant contributions of the initiative as well as a major challenge. Interviewees highlighted the limited capacities for involvement of some partners in terms of knowledge and resources (interviews 1, 6, 11, 20). For instance, in response to an interview question on the involvement of partners, an interviewee underlined these issues:

> In terms of physical presence, I would say that it (The Bourdon project) was relatively complete. I think that different groups that needed to be represented were there. However, […] the level of understanding of different partners was very uneven. So, we had a boat, if I can use this expression in this way, that was pilot by a captain that knew where it was going, i.e., the forest industry […] but several partners were more like spectators because they didn't have the level of knowledge and

> […] the need to rapidly give rise to solutions was not shared by everybody. (interview 20, translated by Jastremski)

Several interviewees also underlined that participation in The Bourdon was very time demanding (interviews 3, 4, 6, 13, 14). The crucial and difficult role played by the general manager in facilitating collaboration between partners was mentioned by partners (interviews 5, 17, 20).

Although putting people together and building relationships was perceived by interviewees as the most important realization of The Bourdon, there remains some uncertainty regarding lasting gains due to modifications in forest governance. As mentioned in several interviews, the new forest management regime with the Ministry of Forests, Wildlife and Parks in charge of all forest planning and the Local Integrated Land and Resource Management Panels responsible for integrating and harmonizing needs and interests undermined several years of relationship and trust-building between forest industrials and forest users as the following quote illustrates:

> What was a common point between partners was the trust and having learned to work together. […] People aren't naïve. We knew what everybody's interests were and we understood that we needed to work together. But when the Act (Sustainable Forest Management Act) arrived, people said that it was a new game. It is the government that will decide so we will go see the government to ask for what we never were able to have […]. Instead of arriving at the Panels (Local Integrated Land and Resource Management Panels) […] it was like starting all over with their same requests you know. It was all individual (work). There wasn't that cohesion anymore. (interview 6, translated by Jastremski)

8.2.5.2 Minor contributions to sustainability and unmatched criteria

Results show that several criteria of the conceptual framework were not met (i.e., 12 criteria (16%)). For example, several criteria for intergenerational equity were not addressed such as enhancing long-term quality employment opportunities or managing and preparing for population aging.

In addition, no contributions were noted for several criteria for the resource maintenance and efficiency requirement. More specifically, enhancing and supporting energy efficiency or encouraging and support reusing, reducing and recycling as well as minimizing the loss of forest cover for urbanization were not considered within The Bourdon's projects.

Although several efforts were made to meet intragenerational equity requirements such as opening-up and integrating other values and expertise in forest governance, contributions remain tentative and frail. For this reason, it was judged to be a minor contribution to sustainability. The following quote demonstrates part of the challenge of opening up forest governance:

> The Bourdon was a lot with foresters. […] It was the Ministry (of Natural Resources and Wildlife), industrials, it was forest engineers that talked to each other. It was something to assist to that (Le Bourdon)! It was a jargon. I understood what was a CAAF, tree species, etc. […] I learned a lot about the forestry world during that time. Because foresters use a very particular jargon and that is why people have difficulty engaging with them. They don't translate their jargon. They stay in their bubble […] but they decided to open their bubble during the project. (interview 15, translated by Jastremski).

While The Bourdon involved a broad range of partners, some players were not invited or only later invited to participate in the initiative. For instance, the Algonquin Kitigan Zibi First Nation community manifested interest in participating in the project (Le Bourdon, 2009) and public land tenants were not part of the project. Additional players were invited to participate later in the initiative. The following quote describes how partners were invited to participate in The Bourdon:

> At first […] we didn't open it (the initiative), it wasn't an open bar. […] If we open the doors to everybody interested in these questions, it is legitimate, but at the same time we weren't obliged to, and it takes a lot of energy to get organized with everybody, to put people together. We told ourselves look, we'll take people with acquired rights on the territory, ZECs, outfitters, municipalities, aboriginals, foresters […]. But the others like the snowmobile organization […], the quad organization, trappers… We had people who would have liked to participate and we didn't invite them. But towards the end of the second phase, they were invited to come. […] Because it was less… the issue was less important (at that point). (interview 6, translated by Jastremski)

Results show that The Bourdon project made several minor contributions to sustainability related to the immediate and long-term integration requirement. While The Bourdon contributed in several instances to promoting intentional change towards sustainability by building connections between key players, developing new opportunities and allowing participants to have a better understanding of the governance system, the short-lived initiative was unable to successfully adapt to the "tsunami" (interviews 11, 18) of changes taking place as illustrated by the following quote:

> They started the initiative in a bad time. So it didn't help but in some sense I think that they were unable to adapt to and to understand the reality of the modifications of the new regime (Sustainable Forest Management Act) that was coming. They perhaps forgot that a steamroller was coming and that we needed to adapt to that reality. There was denial of the modifications of the regime I think. (interview 17, translated by Jastremski)

Table 8.3 at the end of the chapter presents the complete assessment of both initiatives for all the criteria put forward.

8.3 The Vision exercise

This section presents the contributions to sustainability of the Vision exercise. Results are based on a document analysis of the different reports produced in the context of the Vision exercise, media releases, and additional information available on the internet site of the

initiative and of the sustainability conference that was organized in the context of the initiative. In addition, semi-structured interviews were conducted with 12 participants in the Vision exercise.

8.3.1 Emergence of the Vision exercise

The Vision exercise was initiated by the *Corporation de développement communautaire des Hautes-Laurentides* (CDCHL), an organization that represents different community organizations in the region. The CDCHL aims at ensuring the active participation of community movements into the socioeconomic development of the ALRCM (Corporation de développement communautaire des Hautes-Laurentides, 2014). The CDCHL was incorporated in 2003 but the organization stems from partnerships in health and social services dating back to 1987 (Corporation de développement communautaire des Hautes-Laurentides, 2014). In its 2007-2009 action plan, the CDCHL identified the need for additional information on how to proactively take action for social and sustainable development as well as the need to connect social development with other sectors and institutions in the region such as the political sphere and the economic development sector (Voyons loin, 2013b). This need was exacerbated by the fact that different community organizations were increasingly solicited by citizens needing support (e.g., financial help for meals and shelter, enrollment in education, training and skill development programs, psychological distress, etc.) due to the forestry crisis and the difficult economic context (Institut pour le progrès socio-économique, 2011b).

After expressing their concerns at a Chamber of commerce meeting, the CDCHL members and its new general manager started talking with different actors in the region about the possibility of putting together an initiative that would integrate all sectors as well as citizens of the ALRCM (Voyons loin, 2013b). Several discussions, meetings, and gatherings were organized by the CDCHL to create awareness and to explore if different leaders in the region would be interested in participating and supporting a Vision exercise (Voyons loin, 2013b). Through time, increasing supporters and significant funds were found to convince hesitant and recalcitrant actors to participate. Although the idea of a Vision exercise was gaining momentum, it was also notably contested due to its disruptive nature (interviews 3, 4, 8, 14). The unease persisted throughout the initiative's lifetime (2008-2015) and partly explains its demise.

The following quote illustrates the momentum gathered through time that led to the emergence of the initiative as well as its tentative endorsement:

> Generally, it's not everybody that developed ownership (over the Vision exercise). I think that some actors were there because they no longer had the choice because they would have been too much under the spot light if they weren't present. (interview 8, translated by Jastremski)

The momentum culminated at a sustainability conference[18] organized by the CDCHL in 2009 involving over 150 participants to discuss what sustainability means in the ALRCM (Voyons loin, 2013b). Results from the conference were made available online and shared with the population in a public meeting followed by a second public meeting attended by approximately 50 people to determine how to build from the community's mobilization so far (Voyons loin, unknown). Summaries of the different presentations from multiple actors (scholars, organizations, etc.) and videos were made available as well as results from workshops on different themes (economic development, environment, local governance and politics, etc.). Results of the conference were presented in terms of challenges, positive aspects, and requirements for sustainability at the individual and organizational levels. Possible actions and tools to move towards sustainability and the evaluation of the conference by the participants were also shared on the internet site of the conference (Corporation de développement communautaire des Hautes-Laurentides, 2011). The Vision exercise officially started a couple of months later by putting together a steering committee which then hired a consultant firm (IPSÉ) to develop a vision as of 2010.

8.3.2 Mission of the Vision exercise

The aim of the Vision exercise was to bring together the strengths of the community to increase well-being and to contribute to the socio-economic revitalisation of the Antoine-Labelle community through the adoption of a common long-term sustainability vision and action plan (Institut pour le progrès socio-économique, 2011a). Interviewees explained uniformly the mission of the initiative as a collective mobilization with a broad objective of putting forward a sustainability vision to decompartmentalize organizations and sectors in the ALRCM.

Over the years, the project benefitted from approximately $250,000 provided by different sources such as provincial funds for rural communities[19] (approximately $30,000), Canada Economic Development (approximately $70,000), public health (approximately $20,000), and a stable three-year amount of $25,000 by the Caisse Desjardins. The funding served to put forward the visioning process but no money was allocated for actions. Section 8.3.4 provides additional details on the actions put forward.

For the Vision exercise, sustainability was conceptualized as requiring six success conditions: economic diversification, citizen participation and leadership, a motivated and qualified youth, sustainable natural resource management, a dynamic community, and quality of life (Institut pour le progrès socio-économique, 2011b). These conditions (later merged into 5 success conditions) served as a basis for information gathering on the issues and assets of the region as well as for identifying actions in the action plan.

[18] Colloque sur le développement social et durable
[19] Funds for rural communities are attributed through the *Pacte rural*.

8.3.3 Structure, partners and how it worked

8.3.3.1 The steering committee

The steering committee of the initiative was led by an administrator of the Caisse Desjardins[20] in Mont-Laurier and several other representatives of organizations and institutions in the ALRCM.

Table 8.1 Steering committee of the Vision exercise

Steering Committee		
Caisse Desjardins Mont-Laurier	Federal Member of Parliament (NDP)	Social and health services
Pierre-Neveu School Board	Provincial Member of Parliament (Parti Québécois)	Antoine-Labelle Regional County Municipality
Corporation de développement communautaire des Hautes-Laurentides (CDCHL)	Signature Bois Laurentides (regional forest innovation hub)	Community Futures Development Corporation of Antoine-Labelle (SADCAL)
Local Development Center of Antoine-Labelle (CLD)	Transport collectif MRC d'Antoine-Labelle (organization in charge of public transportion services in the RCMAL)	Imprimerie L'artographe (printing services enterprise)

Source: Voyons loin, 2013c

In addition to selecting the consultant firm, the steering committee had the responsibility of assuring the alignment between actions, the reality of the region and the mission of the Vision exercise (Voyons loin, 2013c). All members of the committee were identified as key actors in their respective sectors with far spanning networks to further mobilize actors and disseminate information (Voyons loin, 2013c).

8.3.3.2 The choice of the firm

A call for bids was put forward in 2010 by the steering committee to find a consultant firm able to lead the Vision exercise. The Institut pour le progrès socio-économique (IPSÉ) was chosen for its knowledge of the region. The firm had been hired in 2004 by the SADCAL in the context of the Experimentation Laboratory discussed earlier to better harmonize forest uses in the Upper Laurentians.

The firm was put together in the late 1990s by Gérald Tremblay after his departure from federal politics as a Member of Parliament for the Liberal party in the electoral riding of Outremont in Montreal. While serving as the Minister of Industry, Commerce, Sciences and Technology between 1989 and 1994, he also contributed in putting forward Quebec's economic development strategy based on industrial clusters (Guimond & Parent, 2001). Gérald Tremblay was the general manager of the firm until late 2001 after which his active involvement ceased as he became mayor of Montreal from 2002 to 2012. The firm was hired

[20] A credit union

by the city of Montreal in 2002 to organize the Montreal Summit, an initiative aimed at developing a common vision for Montreal. However, the contract was nullified after controversy surrounding conflicts of interests due to Tremblay's proximity and involvement with the firm (Unknown, 2002).

The members of the firm[21] developed a decision-making support model (Consensus-Action or Consensus-Innovation) based on collective levers to create a dynamic innovation system (i.e., available skills and knowledge, access to financial support, research and development optimisation, supporting development, vibrant entrepreneurship, quality of life, and dynamic communities) (Institut pour le progrès socio-économique, 2002). Increasing competitive capacities of enterprises, putting in place a stimulating business environment and developing the creative potential within a region are the three main axes identified as justification of the levers (Institut pour le progrès socio-économique, 2002). This model was modified in its application to the ALRCM. The co-founders of IPSÉ also published a book in 1995 highlighting major economic, technological, social, geopolitical changes organizations have to face in the near future (Gagné & Lefèvre, 1995).

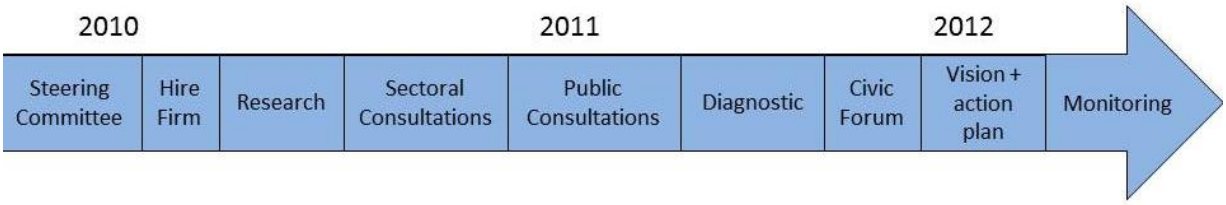
For the Vision exercise in the ALRCM, members of IPSÉ involved were the co-founders as well as Dr. Jean-Philippe Meloche, a specialist in local and regional economic development, now professor at the Institut d'urbanisme of the University of Montreal (Voyons loin, 2013c).

The firm was given the tasks of clarifying and synthesizing the sustainability issues and challenges for the Antoine-Labelle community and to provide a basis for action by putting forward a common vision for the community through broad and multiple participation processes (Institut pour le progrès socio-économique, 2011a).

8.3.3.3 The Vision exercise process

Figure 8.5 presents the different steps of the Vision exercise in chronological order.

Figure 8.6 Steps of the Vision exercise in the ALRCM



Source: modified and translated from Voyons loin, 2013b

[21] Michel Lefèvre, co-founder of IPSÉ and specialist of socio-economic trends and industrial development, Dr. Marc-Urbain Proulx, specialist in regional economy, and Pierre Gagné, co-founder of IPSÉ and specialist in territorial and managerial trends

The firm was in charge of conducting initial research based on several themes (e.g., environment, agriculture, education, health, culture, tourism, etc.) to discern major trends and issues that might affect the future of the region (Voyons loin, 2013a). The firm then organized the information in their framework based on six success conditions for the region (economic diversification, qualified and motivated citizens, dynamic community, quality of the community's environment, sustainable management of the environment, citizen participation and leadership) and validated the rigour and comprehensiveness of the information with the steering committee (Voyons loin, 2013a).

Sectoral consultations were then held according to the six conditions of success and their related actors. The aim was to develop a joint understanding of the socio-economic situation and to discover potential gains for combined and consolidated efforts (Voyons loin, 2013a). Sectoral consultations took place between 29 November and 2 December 2010 as well as on January 24 2011 (Voyons loin, 2013a). Eight round tables were organized involving over 80 local actors providing feedback on the success conditions as well as on the assets and issues of the region (Voyons loin, 2013a).

Then, five public consultations were organized in different municipalities of the region (Rivière-Rouge, Notre-Dame-de-Pontmain, Lac-des-Écorces, Mont-Laurier and Ferme-Neuve) (Voyons loin, 2013a). The public consultations aimed at gaining citizen input on the issues of the region and on their aspirations for the future as well as to build citizen awareness and support for the Vision exercise (Voyons loin, 2013a). In all, 230 citizens participated in the public consultations held between February 15 and 23 2011 (Voyons loin, 2013a).

Results from the consultations were presented in a diagnostic document structured in two parts: the first describing the components of the territory and its population; the second highlighting the challenges according to the six success conditions (Voyons loin, 2013a). The content of the diagnostic was presented at the Citizen Forum at the end of April 2011 (Voyons loin, 2013a).

The Citizen Forum was organized in order for local actors to reflect on the region's diagnostic and for a common vision to emerge from this reflection. The agenda for the day was highly ambitious. Having a high level of consensus for the future of the region, consolidating the mobilization and putting forward the basis for actions were the aims of the Citizen Forum (Institut pour le progrès socio-économique, 2011a). More specifically, the objectives were to present the results of the consultations on the diagnostic, to propose a vision, to agree on a set of actions to move towards the vision, and to reflect on the conditions necessary for implementation (Institut pour le progrès socio-économique, 2011a). The activities of the day were structured around working groups and interactive voting systems to measure the degree of convergence or divergence between statements in real time (Institut pour le progrès socio-économique, 2011a). First, actors were asked to evaluate on a scale from 1 to 10 the gap

between the present situation and the desired state in order to reflect on the efforts that would have to be mobilized. In another exercise, challenges were presented in relation to strengths and weaknesses identified (Institut pour le progrès socio-économique, 2011a). The third exercise aimed at establishing priorities based on the assessment of the issues. Finally, the last exercise presented improvement paths categorized according to action groups (citizens, elected members, municipalities, organizations, etc.).

The next step of the Vision exercise was undertaken by the steering committee and consisted in specifying and endorsing the future vision and action paths based on a five-year action plan (Voyons loin, 2013a). On April 19th 2012, the 2012-2017 action plan was launched and its synthesis was presented at the Vocational Training Center of Mont-Laurier (Voyons loin, 2013a). In all, 56 actions were identified.

A monitoring committee was then put in place to keep track of, and report on, progress in the five conditions for success. Although an evaluation process had been established, at that point in time the initiative was losing momentum and was close to its demise. Furthermore, funding had only been gathered to develop a vision. Actions were integrated into organizations' and institutions' mandates. No actions were assigned to other actors in the community such as economic sector actors.

8.3.4 The demise of the Vision exercise

As mentioned in section 8.3.1, gathering support for the Vision exercise was a major hurdle to the initiative. Important players in the ALRCM endorsed the initiative early on in the process such as the Caisse Desjardins and the provincial Member of Parliament for the electoral county of Labelle, which increased the pressure for other organizations and institutions to participate. Most importantly, the ALRCM did not appreciate the fact that a community organization (the CDCHL) was running the initiative because this "interfered with its (ALRCM's) mandate". This is due to the fact that RCMs in Quebec have the responsibility of developing an up-to-date strategic vision for cultural, economic, environmental and social development spanning at least one generation (Ministère des Affaires municipales et de l'Occupation du territoire, 2010). The latest vision statement of the ALRCM was adopted in September 2013 (Municipalité régionale de comté d'Antoine-Labelle, 2016a). Therefore, the Vision exercise emerged just before the ALRCM began its revision process. The tentative endorsement of the ALRCM affected the credibility of the initiative as demonstrated by the following interviewee:

> A member on my board of directors […] from the ALRCM, when we were approached for the first time with this challenge (the Vision exercise) told me that he wasn't happy and that I shouldn't get involved. […] You see, for sure that that idea stayed in my mind which meant that I wasn't going to invest myself as much into the process since I already knew that the people with power were not really endorsing it in the end. […] It came (the Vision exercise) from a community organization and I think people didn't like to be led by the community sector. (interview 10, translated by Jastremski)

The height of the momentum for the initiative occurred at the 2009 sustainability conference organized by the CDCHL and the identified turning point towards its demise ensued from the Citizen Forum (interviews 3, 7, 8, 14, 16). Interviewees described the day as being long, discouraging, frustrating and disorganized.

At that point in time, the steering committee decided to part ways with the firm and to take-over the further steps of the initiative. While interviewees underline the general quality of the work of the consultant firm, they expressed disappointment related to the guidance provided for actions (interviews 7, 8, 14). This following quote demonstrates the point of view of one interviewee on the consultant firm:

> They (the firm) are competent people. […] A consultant is […] someone who asks for your watch to tell you what time it is […]. You have to know what questions you want to ask […] and what answers would be useful for the community. I think that at some point they got lost in a very theoretical process that resulted in them not being able to really arrive at concrete realizations. To their defence, they were in an unstable social and economic context. (interview 7, translated by Jastremski)

Some interviewees admitted having difficulties relating to the language used by the firm to conceptualize sustainability, which differed from what was developed through the sustainability conference (interviews 8 and 15). Some interviewees perceived the process as being too theoretical or focused on "cloud shovelling" as the French expression goes (interviews 7, 11, 15). Interviewees also revealed different perceptions of the role of the consultant firm and related expectations. The meaning and related expectations of *providing guidance* were nebulous.

Following the Citizen Forum a mayor, who also represented the ALRCM in the steering committee decided to leave the Vision exercise. In addition, at that point in time several personal factors led other actors to be less engaged in the initiative. The general manager of the CDCHL went on maternity leave and the head of the steering committee and long-term supporter of the initiative departed due to a serious illness. Nevertheless, a vision for the ALRCM was put forward as well as an action plan for 2012-2017.

Table 8.2 presents the vision that emerged from the Vision exercise.

Table 8.2 General vision and specific vision statements for the ALRCM

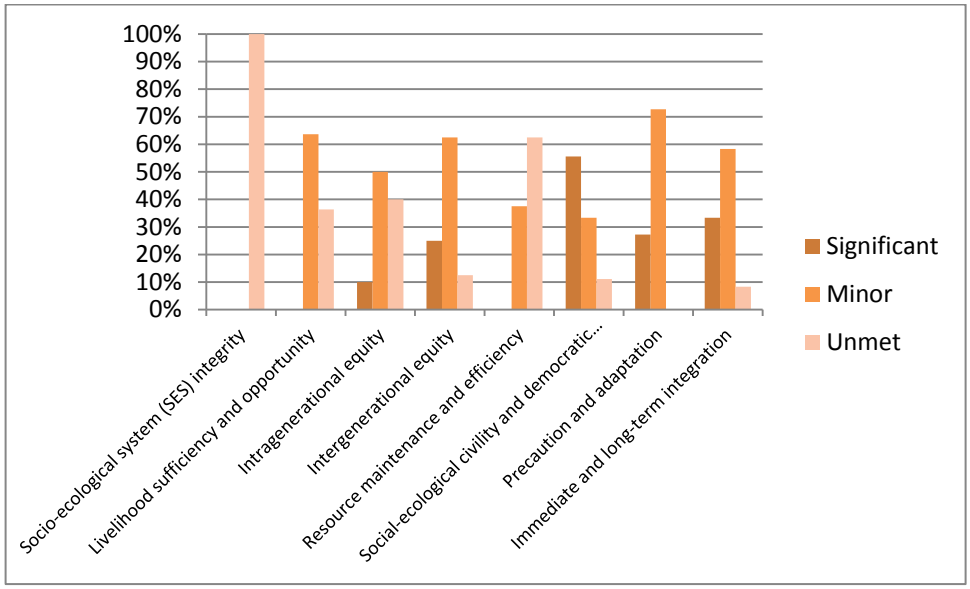
General vision statement for the ALRCM
Welcoming region recognized and supported by proactive and rallying leaders, the ALRCM is engaged in an innovative territorial project that provides plenty of employment and favours a unique quality of life for a dynamic population proud of its identity, anchored in rich, shared and accessible natural resources respecting principles of sustainable development.
Specific vision statements
Economic development and diversification: The Antoine-Labelle economy now has a variety of economic activities. Not only were its main economic sectors (forest, agro-food, and tourism and leisure sectors) further developed and sustained, but a whole new variety of economic activities has emerged and the business environment and entrepreneurship within the region have become leitmotif for entrepreneurs, organization managers, and local elected representatives.
Quality of life and dynamic community Antoine-Labelle's community benefits from an improved social climate due to everybody's efforts. Social cohesion is improved: everybody feels part of the community and it is easier for residents and new comers to integrate the community. Population aging is a reality to which we are able to adapt while directing efforts towards a better demographic balance. Antoine-Labelle, with all its services, is recognized as a good place to live.
Sustainable natural resource development The use and exploitation of natural resources (forests, water, soil, and underground) on Antoine-Labelle's territory are done with a long-term perspective, respect for ecosystems and the local population. Landscapes and built environments that represent economic, cultural and environmental assets are well preserved and valued.
Leadership and citizen participation From citizens, local elected representatives and other leaders, more and more members of the Antoine-Labelle community feel concerned by what is happening in their region. Because they believe they have the power to act, more of them are active in the community and take part in local democratic life in different ways. Therefore, citizens and leaders learned to work more in complementarity rather than in opposition to meet common objectives in win-win situations.
Qualified and motivated youth Antoine-Labelle's economy benefits from a workforce pool and entrepreneurs with increased qualifications. We are able to generate relative equilibrium between the proportion of young graduates and experienced workers to ensure sufficient and adequate responses to organizations' needs in the territory. In exchange, the local labor market offers diversified and interesting employment perspectives.

Source: Voyons loin, Action plan 2012-2017, unknown, translated by Jastremski

8.3.5 The Vision exercise's contributions to sustainability

The Vision exercise was ambitious and contributed positively in meeting several sustainability requirements. In all, 53 (69%) criteria out of the 77 criteria put forward in the framework were met. However, a significant number of criteria were not addressed (24 or 31%) The following figure presents the results of the application of the sustainability-based criteria to the Vision exercise.

Figure 8.7 Percentage of significant and minor contributions to sustainability and unmet criteria per sustainability requirement



As discussed in previous sections, the Vision exercise slowly faded when it reached the moment of determining specific actions and monitoring progress towards sustainability. For the present assessment, significant contributions to sustainability relate solely to gains that occurred through the visioning process rather than specific actions put forward in the action plan of the initiative. The chosen strategy to put forward actions was to integrate them into different organizations' mandates. Most interviewees mentioned that these actions were already within their organization's short or long-term plans. Therefore, identifying the initiative's specific role in determining actions is difficult. In some cases actions were added to an organization's planning or their level of priority was adjusted while in others, existing actions were simply promoted through the Vision exercise. Hence, when actions identified in the action plan addressed criteria, they were considered minor contributions. While the visioning process identified a broad set of issues, actions fell short in addressing the comprehensiveness of considerations identified.

8.3.5.1 Significant contributions to sustainability

Significant contributions to sustainability were particularly made for the requirements of social-ecological civility and democratic governance, precaution and adaptation as well as immediate and long-term integration. Through multiple types of participation (e.g., sectoral consultations, steering committee meetings, etc.), actors involved in the initiative were made aware of others perspectives, needs and specific issues. In addition, citizens and different organizations in multiple sectors of the community were invited to participate in the process at

different moments in time, which provided them with additional experience in getting involved in local governance. Furthermore, representatives of different organizations and institutions within the local governance landscape became more aware of others' mandates and frequent meetings allowed for professional relationships to develop even though the initiative was disruptive. The following quote illustrates how the Vision exercise contributed to develop social ties in local governance:

> The fact that we were at the same tables, people talk more. And now I get phone calls. You know people talk to each other and call each other. I'm not sure that that would have happened, that they would have had that reflex of picking-up the phone if they didn't sit at the same tables. To ask what are you doing to pull through? (interview 5, translated by Jastremski)

The Vision exercise also contributed to fostering good governance. Several efforts were made throughout the initiative to communicate results within the community through regular media updates (newspaper articles, radio segments, internet site). However, such levels of participation and aspired accountability towards the community created unease for different actors involved. Some interviewees mentioned that the Vision exercise was generating high hopes and expectations for change within the community, which increased the pressure on their organizations (interviews 3, 4). Others highlighted the fact the initiative was very time demanding and that usual accountability measures were inefficient (interviews 3, 4, 10, 14, 15). This was explained by the fact that similar actors sit on different boards of directors of organizations in the ALRCM which implied overlaps in progress reporting. The Vision exercise was also able to gain political support for the visioning process and the different actions that were determined. Although the political will behind the Vision exercise remained tentative, the initiative nevertheless was able to bring together and connect to municipal, provincial and federal political levels.

Several significant contributions to sustainability were also made related to the precaution and adaptation requirement. The portrait of the ALRCM identified major changes taking place at multiple scales such as population aging, new technologies, and emerging opportunities in the forest sector (Institut pour le progrès socio-économique, 2011b). Several actions were geared towards adapting to upcoming changes for instance by putting forward a program to support caregivers that are increasingly solicited with an aging population (Voyons loin, unknown).

Within the immediate and long-term integration requirement, significant contributions to sustainability were made in supporting a transition towards sustainability. The thorough work that was accomplished in uncovering the issues in the ALRCM and identifying the ideal scenario for each of the five success conditions allowed for a shared and integrative understanding of the situation to emerge. When asked about the issues in the region, interviewees demonstrated facility in identifying issues and common understanding in their causal explanation. Similarly, there was successful alignment of actions within the local governance landscape towards envisaged ideal scenarios for the region. Some priorities in

activity planning of organizations were modified in light of what was uncovered in the Vision exercise (interviews 8, 10, 15).

The Vision exercise contributed significantly in building capacities to harness opportunities for change by providing key actors with knowledge on the governance system in the region as illustrated by the following quote:

> It (Vision exercise) allowed me to know a few more people, to have a better grasp on how things work. Personally, it helped me better understand the realities of regions like ours. […] There is politics everywhere. […] You know, it makes you learn, it makes you grown in your professional career. (interview 4, translated by Jastremski)

In addition, the Vision exercise explicitly identified change barriers in the community such as difficult integration of new-comers, fear of change, or specific barriers in implementing new educational programs or further developing internet services (Institut pour le progrès socio-économique, 2011b). Different committees were put forward as part of the action plan to develop strategies to overcome some of the barriers such as the creation of a committee to develop internet and cellular phone services in the ALRCM (Voyons loin, unknown). However, the initiative was less successful in anticipating and dealing with resistance and barriers to change from within the local governance landscape.

8.3.5.2 Minor contributions to sustainability and unmet criteria

The action plan of the Vision exercise identified 56 actions to move towards the ideal vision (Voyons loin, unknown) and 21 were addressed according to the first progress report in 2014 (Voyons loin, 2015). However, organizations in charge of actions of the economic development and diversification success condition did not report on their progress (Voyons loin, 2015).

Several actions met criteria in the livelihood sufficiency and opportunity requirement. For instance, a tool kit for new-comers providing them with information on all the activities and services in the ALRCM was developed to attract and retain potential new residents (Voyons loin, 2015). In addition, a contribution was made to enhance access to services by putting forward a committee to foster the development of a high speed internet and cellular phone implementation strategy (Voyons loin, 2015). Within the theme pertaining to enhancing community well-being, health and social services organizations prepared different activities to promote a healthy life-style (Voyons loin, 2015).

Within the intragenerational equity requirement, minor contributions to sustainability were made related to reducing poverty, low education levels and local disparities. More specifically, a plan for staying in school was developed (Voyons loin, 2015). While the Vision exercise was very inclusive and even *too* participative according to some interviewees, First Nation communities were not specifically invited to participate and no actions were identified to reach

out to them. However, their presence in public forests is acknowledged in the region's portrait (Institut pour le progrès socio-économique, 2011b).

The initiative participated in increasing the recognition of community organizations as important actors in the ALRCM. For instance, community organizations are explicitly mentioned in the ALRCM's territorial diagnostic (Municipalité régionale de comté d'Antoine-Labelle, 2013). In addition, the number of community organizations that were members of the CDCHL increased from 12 to 48 between 2006 and 2017 (Corporation de développement communautaire des Hautes-Laurentides, 2017) augmenting simultaneously their influence on local governance.

While many significant and minor contributions to sustainability were made by the Vision exercise, several criteria remain unmet. Most notably, ecological considerations were almost totally omitted from the actions of the initiative. No criterion for the requirement of socio-ecological system integrity was met. Similarly, most criteria in the resource maintenance and efficiency requirement were not addressed. The action plan of the initiative identified nine actions related to the sustainable natural resource development success condition, seven of which were under the responsibility of the ALRCM. One action identified was to develop mechanisms to maintain forest harmonization knowledge and relationships developed throughout the years in the transition towards the new forest management regime (Voyons loin, unknown). Another action was to find ways to better recognize the potential role of local institutions in the management of natural resources (Voyons loin, unknown). Unfortunately, according to the progress report, only two actions out of the nine identified were carried out (Voyons loin, 2015). One concerned the integration of watershed plans into the land use and development plan of the ALRCM and the other consisted of developing a cultural policy for the ALRCM in which natural landscapes are considered.

There was in fact duplication in mandates between the Vision exercise and the requirement for the ALRCM to develop a strategic vision for cultural, economic, environmental and social development (Ministère des Affaires municipales et de l'Occupation du territoire, 2010). In addition, local development and employment plans in the ALRCM are required to fit into the ALRCM's vision (Ministère des Affaires municipales et de l'Occupation du territoire, 2010). Although there was duplication, interviewees mainly characterized the initiative as disruptive rather than not being useful. The Vision exercise was disruptive because it originated from a community organization, it occurred before the ALRCM was ready to start its visioning process according to its timeline, it involved more local actors in the process, and it required systematic reporting to the community of progress towards sustainability from all sectors and organizations involved in actions.

8.4 Comparative results between the initiatives

The Bourdon project and the Vision exercise emerged and ended within a close timeline and were responding to similar global changes and their more concrete implications for the ALRCM. The Vision exercise was organized in its entirety by local actors while The Bourdon project was part of the FCP. Consequently, The Bourdon had to meet program requirements to secure its funding. The Bourdon project benefited from a longer term financial input as the funds for the FCP were distributed on a five year base. Although local actors were able to raise a significant amount of money for the Vision exercise (close to $250,000), major discrepancy remains between the two initiatives as The Bourdon received $325,000 annually through the FCP and had to raise the same amount from its partners annually.

Results show that both initiatives were able to make contributions to sustainability. The Bourdon project met more criteria than the Vision exercise: 65 criteria versus 53 criteria respectively. Both initiatives failed to meet seven criteria: one within the livelihood sufficiency and opportunity requirement (supporting health and security in working conditions), two within the intragenerational equity requirement (supporting gender equity and involvement of women in forest governance; increasing the involvement opportunities for women and visible minorities in local governance), one within the intergenerational equity requirement (maintaining or enhancing the role of forests in sequestering carbon and regulating hydrological cycles), and three within the resource maintenance and efficiency requirement (minimizing the loss of forest cover for urbanization by directing development in existing cores close to services and amenities; encouraging and supporting reusing, reducing and recycling within the forest products sector and other sectors, organizations, and institutions; seeking opportunities to increase resource maintenance and efficiency in all aspects of the community).

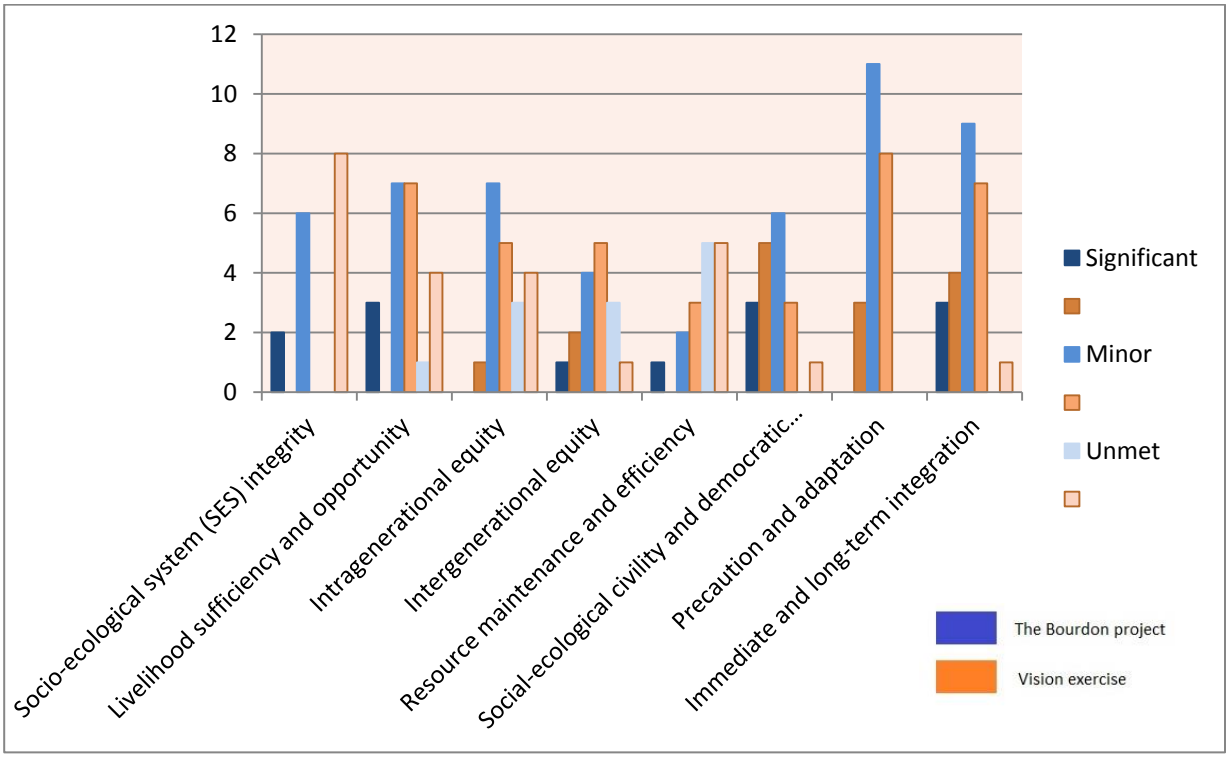
Nevertheless, the region benefited from combined contributions to 70 out of 77 criteria during the time period of both initiatives. Although the Vision exercise met fewer criteria than The Bourdon project, it had a higher proportion of significant contribution to sustainability with 19 percent compared to 17 percent for The Bourdon project.

Five criteria were met by both initiatives with significant contributions to sustainability: enhancing social awareness and capacities for involvement, enhancing conflict resolution through collaborative processes and strengthening social ties with particular attention to marginalized groups, enhancing transparency of decisions, pursued objectives, and priorities as well as the accountability of decision-makers (all three within the social-ecological civility and democratic governance requirement), enhancing the building of a shared and integrative system understanding of sustainability problems and opportunities according to the community's needs and aspirations, and enhancing knowledge in and about the governance system, its actors and responsibilities (both within the immediate and long-term integration requirement).

Interviewees identified as the most important realization of both initiatives the fact that they brought actors together to develop a better understanding of each other's interests and values. The networks built were however concentrated at the local scale. For The Bourdon, knowledge sharing with other Model Forests through the Canadian Model Forest Network or the International Model Forest Network was limited. One project (2009-154) consisted of sharing knowledge with the Humber River Basin project in Corner Brook Newfoundland. Due to contextual differences, finding knowledge that could be shared was identified as a challenge for this project (Le Bourdon, 2010). Some industrial partners of The Bourdon also participated in the International Model Forest Network Global Forum held in Hinton Alberta in 2008 (project 2008-404). Similarly, the bulk of the activities of the Vision exercises were geared towards solving community issues. However, individuals from academia and practitioners outside the ALRCM were invited to share their knowledge at the sustainability conference (Corporation de développement communautaire des Hautes-Laurentides, 2011). In addition, all political levels (municipal, provincial, and federal) were involved in the Vision exercise.

As illustrated by figure 8.7, The Bourdon project contributed in areas that the Vision exercise did not address with success, more specifically in terms of integrating socio-ecological system integrity concerns. In addition, The Bourdon project was more successful in meeting the requirement of livelihood sufficiency and opportunity. However, the Vision exercise had more success in addressing precaution and adaptation criteria. While The Bourdon project only made minor contributions to the precaution and adaptation criteria, the Vision exercise made significant contributions related to three out of 10 criteria for this requirement. More specifically, the Vision exercise engaged with uncertainties at multiple levels, increased knowledge on long-term trends and proactively promoted flexible adaptation strategies, and encouraged knowledge and information sharing between members of the initiative and with the community.

Figure 8.8 Comparative results of contributions to sustainability and unmet criteria for The Bourdon project and the Vision exercise



The Vision exercise was also more successful in addressing long-term considerations. More specifically, the Vision exercise addressed seven of the eight criteria for intergenerational equity compared to five criteria for The Bourdon project. Both initiatives had poorer performances meeting the requirement of resource maintenance and efficiency. The Bourdon project and the Vision exercise only met three criteria of eight.

Both initiatives adopted a similar strategy to put forward actions or projects. They both mostly relied on existing organizations and institutions instead of developing common projects and actions between actors. This significantly complicated the assessment of the initiatives by blurring where actions and projects emanated as well as what fell into organizational and institutional mandates versus The Bourdon project or the Vision exercise's purposes.

8.5 Discussion

The main objective of this dissertation was to develop a sustainability-based assessment framework specified for forest communities to assess two local governance initiatives in order to highlight lessons learned for governance for sustainability. As argued throughout this dissertation, sustainability considerations need to guide intentional change processes. Change and sustainability cannot be thought of separately. Focusing solely on innovation or on

avoiding possible disasters does not guarantee a sustainable future. Furthermore, in a world of complexity, even thoroughly thought through intentional change for sustainability endeavours have the potential to fall short.

Further ways to address intentional change were integrated in a sustainability-based assessment framework based on lessons learned from transition management, transformations in social-ecological systems (SESs) and futures studies literatures. The following discussion sheds light on the results of the application of the framework to the two studied initiatives in the ALRCM with specific attention to intentional change. Three themes emerged from the application of the framework to The Bourdon project and the Vision exercise as well as the identification of regional sustainability issues in chapter 7. The three themes that serve to organize the discussion are: bridging local and forest governance, moving away from path dependence as well as local impasses and alternative sustainability pathways. The discussion then turns to reflections on the criteria selected to assess the initiatives.

8.5.1 Bridging local and forest governance

As highlighted by Chiasson (2013), the separate evolution of local governance and forest management strands of literature represents a challenge for researchers. More specifically, gathering information around the requirements to build the framework was not always straight forward. For example, relevant information on the state and evolution of the region's ecological systems through time was difficult to find, and in many cases absent from available documents. Information produced on the ALRCM is often dependent on organizations and their missions or on different governments and the powers they hold which influences the knowledge they produced and the information available. Based on sustainability, the initiatives were most valuable for gathering and producing relevant knowledge for the task at hand. For this reason, this information served to build the sustainability-based assessment framework as well as to assess the initiatives.

The gap between local and forest governance represents practical challenges and barriers to sustainability for institutions and organizations that have been constructed around these boundaries. Generating a sense of ownership and finding a mission allowing mutually supportive gains for all players involved proved to be a major difficulty for both initiatives. For instance, interviewees often characterized the initiatives as being "for foresters" or for "community organizations".

The fact that the Vision exercise was unable to meet any of the criteria for the socio-ecological system integrity requirement demonstrates the long-time closed relationship between the forest industry and the government in forest management (Howlett & Rayner, 2001) and the institutionalization of environmental concerns through top-down processes leaving little room for engagement by local communities (Blais & Chiasson, 2013). As mentioned by Proulx

(2002), territorial actors in rural regions lack expertise, fiscal and legal resources to truly exercise their responsibilities towards their communities.

Forest communities have been repeatedly excluded from influence over what happens in their surrounding forests due to forest management policy regimes favouring allocation of large-scale forest tenure rights to forest industries and forest management goals focused on timber production. Authors pointed out that capacity building, communities' sense of ownership and accountability to the community were limited in Model Forests due to the fact that program goals were determined at the federal level (George & Reed, 2017; Parkins et al. 2016). Moreover, according to Parkins et al. (2016) legitimacy from above in Model Forests undermined the autonomous role of local communities. In the case of The Bourdon project, although local media often reported on the project's activities, there were limited opportunities for participation for the community. The Vision exercise had multiple opportunities for citizen participation and multiple actors were invited to participate in the visioning process, which created local accountability and pressure not to be in the spotlight for being absent from the process.

In addition, the analysis of the local governance landscape in the ALRCM shows that only one environmental organization independent of public funding is present in the ALRCM and covers the entire administrative region of the Laurentians (Association de protection de l'environnement des Hautes-Laurentides (APEHL)). Moreover, few environmental concerns were found in documents produced by different local organizations and no mention of climate change was noticed in local documents. However, one project in The Bourdon project addressed this issue.

Throughout the years, the ALRCM was able to develop expertise related to the local governance of public forests. Since 2000, the ALRCM is responsible for the management of intramunicipal public lands through a Multiresources Management Plan (Municipalité régionale de comté d'Antoine-Labelle, 2014). In addition, following the provincial government's modification of the governance landscape in 2014, the ALRCM was designated to manage the public consultations related to sustainable forest management in the Laurentians as well as the two existing Panels (Municipalité régionale de comté d'Antoine-Labelle, 2016b). Therefore, capacities have been built at the regional level. Additional capacities for the involvement of local governance actors in forest governance, or natural resource and sustainability governance more broadly, have to be built and supported.

8.5.2 Moving away from path dependence

The challenge of bridging local and forest governance goes beyond building capacities. It requires addressing path dependence which suggests that the direction of change is often determined by powerful narratives within which power and knowledge are interlocked (Leach,

Scoones, & Stirling, 2010). Through time, ideas and their related assumptions, institutions and other structures, and people's sense of themselves can be entwined, mutually reinforcing each other (Leach, Scoones, & Stirling, 2010).

One of the impacts of the forestry crisis in the ALRCM was to exacerbate economic imperatives for the forest industry supported by regional political priorities thus often relegating other issues to a lower level of importance. As mentioned by a forest industrial: "Sustainable forest management is a good concept as long as we don't touch the economy" (interview 11, translated by Jastremski). This finding coincides with the results of an overview of the Model Forest Program (MFP) and the Forest Communities program (FCP) in Canada which demonstrated the limited integration of socio-economic aspects of sustainable forest management into such initiatives (Bullock, Jastremski, & Reed, 2017). Similarly, a study of Burns Lake Community Forest in British Columbia through a civic science lens, showed that organizations tended to favour forestry expertise over a more pluralistic approach, demonstrating the tension between delivering on traditional economic objectives of forestry and local as well as broader societal goals (Reed & McIlveen, 2006).

While The Bourdon project was structured around bringing partners together and building mutually supportive projects therefore theoretically attempting to open-up the goals pursued according to multiple interests and values, the sense of urgency and the sheer complexity of forest management led some partners of The Bourdon to have more passive roles as illustrated below:

> It was the pressure on the forest sector. It didn't help. The context. But at one point I think came a time when partners gave up rapidly in the face of for instance very technical considerations in the planning of harvesting sites or the annual allowable cut calculations due to the extent and complexity of economic issues not knowing how to position their own issues anymore. Often, they gave up and their own issues were relegated to second and third rank. (interview 20, translated by Jastremski)

Socio-political changes, qualified as external events, are identified as possible windows of opportunities for transformative change (Armitage et al., 2011; Gelrich et al., 2010; Olsson et al., 2010). However, in this case study, these changes led to a certain extent to the collapse of both initiatives. Moreover, economic and socio-political turbulences seemed to have reinforced path dependencies that both initiatives were attempting to disrupt to varying degrees. The following quote illustrates the point of view a participant of The Bourdon related to entrenched ways of doing:

> On the other hand, I realized that industrials and even the Ministry (of Natural Resources and Wildlife), when everything goes well, they participate. When it is more precarious, for instance industrials forget about harmonization and the Ministry authorizes foresters to increase harvesting despite agreements reached. It happened at several occasions so I ask myself what's the purpose of The Bourdon in the end if it's only for when things are going well, so that we can say how good and kind we are when we're not able to respect our agreements you know. (interview 14, translated by Jastremski)

The short-term concern for The Bourdon project to influence the new forest management regime and the difficult economic context of the forestry and economic crisis significantly increased the pressure for short-term strategic considerations of the local forest industry. Integrating other interests and values as well as long-term considerations in The Bourdon project was undermined by the "tyranny of the present" in which "an imperialism of the present absorbs the future and feeds off it parasitically" (Innerarity, 2012, p. 8). Without going as far as Klenk and others (2013) in affirming that Model Forests served to legitimize dominant discourses rather than provide real alternatives, it is worth pointing out that The Bourdon project achieved mitigated results in opening up forest governance. As mentioned earlier in the chapter, some actors were not invited or only later invited to participate in The Bourdon project. For example, environmental non-governmental organizations were overlooked in The Bourdon project, a finding also noted in Wellstead et al.'s (2003) study of Model Forests in Canada. For those involved, capacity building and learning remain slow processes.

In the case of the Vision exercise, being anchored around a long-term perspective and encompassing all sectors in the community allowed to better navigate the socio-political turbulence. However, the analysis of the Vision exercise uncovered a need to open-up reflections of the future of the region beyond the ALRCM and the economic sector to include community organizations and citizens. This result concurs with Woods (2005) finding of possible concentration of power into a small group of stakeholders in rural communities. While the Vision exercise successfully integrated community organizations in local development it encountered difficulty in dealing with local disparities referred to as "Mont-Laurier centrism" (Institut pour le progrès socio-économique, 2011b) as demonstrated by the following quote:

> I thought that it (the Vision exercise) was narrowly targeted. […] When people from Voyons loin came here, we had good citizen participation […] But I would say, […] I saw after the Forum (Citizen Forum) that didn't go well… I realized that the people on the board of directors or the steering committee, that they were there for specific projects and that orders were put forward. And even the language. […] I felt as if everything that was brought forward from here […] wasn't there. […] It was only Mont-Laurier. (interview 16, translated by Jastremski)

In addition, the fact that both initiatives chose to put forward projects and actions based on organizations and related stakeholder expertise instead of developing common projects and actions demonstrates a culture of working in silos. It also illustrates the difficulty for organizations to adjust their own ways of doing in light of lessons learned through the initiatives. The issue of working in silos was mentioned by interviewees in both initiatives and explicitly underlined in the portrait of the ALRCM produced by the Vision exercise (Institut pour le progrès socio-économique, 2011b). Similarly, in the case of the FCP, federal silos represented a barrier to reaching integration between community and forest sustainability (Bullock, Jastremski, & Reed, 2017). This demonstrates the magnitude of the challenge of moving towards the governance landscape advocated by the proposed framework.

With the new forest management regime and the implementation of Local Integrated Land and Resource Management Panels, participation of different stakeholders is further structured and integrated into the forest planning process at the regional level. Involvement capacities built through The Bourdon project and the Experimentation Laboratory were reported as being useful for participation in the Panels. However, initial results show that social ties developed between forests users in The Bourdon project were not transposed to the Panels. In addition, ambiguities remain on how the identified regional concerns will be addressed in the new forest management regime as demonstrated by the following quote:

> When we talk about integrated resource management or planning, I think that we have learned what the bases of such tables like The Bourdon are. We see it now with the Local Integrated Land and Resource Management Panels. This table, it may be there, it can hold meeting after meeting but I think that the process is not clearly defined, i.e., all the processes to determine the issues and their priorities and all the work that follows on solutions. I think that this remains ill-defined and a little bit to the mercy of regional initiative. […] Thus, you know if we say that we are putting forward a Panel but that we don't give the opportunity for partners to be present, to understand the dynamics and to have the means to work towards the determined objectives of the Panel, well it is absolutely useless. (interview 20, translated by Jastremski)

Procedural modifications of the new forest management regime through the implementation of Panels will require significant and continuous support as well as transparency in determining priorities to clearly address path dependent favoritism towards economic imperatives. Furthermore, ambiguity remains related to the involvement of First Nation communities in Panels and on how the distribution of timber volumes through the Timber Marketing Board considers (or omits) First Nation rights (Nation Atikamekw, 2008).

Both initiatives had the challenge of addressing specific local issues as well as responding to major economic and socio-political shifts at a broader scale. The analysis of The Bourdon project and the Vision exercise both revealed primarily local and localized power struggles between "scientific" foresters or the ALRCM and its economic sector actors and other stakeholders or First Nation's interests and values. In addition, the socio-political analysis of the waves of change affecting the ALRCM uncovered a certain degree of marginalization of rural communities. Policy changes undertaken at the provincial level underestimated or omitted considerations for rural communities, and more specifically rural forest-dependent communities, which are more vulnerable to conditions of instability (Randall & Ironside, 1996). The most significant threat to the Antoine-Labelle region identified by interviewees was related to the decreased capacity of the ALRCM and its municipalities to govern themselves following the announced abolitions of several institutional structures. Marginalization of rural communities is often exacerbated by governments focused primarily on supporting urban development (Dugas, 1996; Laurin, 1989). Furthermore, in the forest sector, the forestry crisis, symptom of global economic forces in action, resulted in the disappearance of industries that shaped the region's evolution for several decades and the arrival of new players, most notably a multinational corporation that acquired several mills and associated timber volumes. The

implementation of the new forest management regime in the midst of the forestry crisis and related mill closures added to the uncertainty in the community and for the local forest sector. The local forest sector also endured losing forest planning responsibilities and several employees to fill the expertise gap of the Ministry of Natural Resources and Wildlife following the implementation of the new regime. This finding underlines the need to specify whose version of sustainability or sustainability for whom is put forward (Leach, 2008; Leach, Scoones, & Stirling, 2010). Identifying who is affected by suggested changes (Gelrich et al., 2010) and mitigating potential negative consequences for those concerned, particularly vulnerable and marginalized individuals, groups, or communities is essential to sustainability assessment as an intentional change towards sustainability approach (Gibson et al., 2005).

Smith and Stirling's (2010) interrogation for how bottom-up initiatives are able to confront structural forms of power that are vested in the present global level remains relevant. Local initiatives are often destined to be ephemeral and subjugated to broader shifts. For instance, Ambus and Hoberg (2011) demonstrated that community forestry is limited to a few actors and makes use of small unallocated forests land rather than a more complete reorganization of forest tenure rights. Similarly, in reference to proximity forests, Laplante (2010) considers that such initiatives are condemned to be sporadic mitigation measures responding to the forestry crisis, allowing communities to manage their decline rather than demonstrating a tenure system shift that might be viable into the long term.

Certainly, the challenges for forest communities are considerable and it is unlikely that purely local strategies could alter global economic forces. Next steps for sustainability assessment and sustainability initiatives require going beyond responses to crisis and randomness to more common influential use (Gibson, 2017b). Through case applications, capacities for intentional change are built, sustainability pathways are articulated and local impasses are identified.

8.5.3 Local impasses and alternative sustainability pathways

The literature review identified gaining political support as an important element for a transformation to occur (Chapin et al., 2010; Olsson et al., 2010). Both initiatives were able to rally a wide variety of partners and local governance actors as well as the political sphere. However, in both cases there was a clear deficiency in local political and institutional will for the initiative to persist in time. Information uncovered seems to indicate that many actors were involved not to be put under the public spotlight for their absence and to use funds and the arena provided by the initiatives to push their own agendas. Consequently, these actors rapidly disengaged with the initiatives when difficulties were incurred. Although socio-political changes had an influence in the demise of the initiatives, both turning points towards their collapse happened at the critical moment of making compromises. For the Vision exercise, the difficult Citizen Forum where actions and priorities were supposed to be decided was identified as the turning point. In the case of The Bourdon project, deciding upon a specific

sustainable integrated resource management strategy coincided with the Ministry of Natural Resources and Wildlife parting from the initiative. Although imperfect, clearly identifying assumptions and expectations representing conditions for maintaining involvement is a possible solution that could be integrated within the criteria for enhancing transparency of decisions, pursued objectives, and priorities as well as the accountability of decision-makers (social-ecological civility and democratic governance requirement).

Leaders behind the initiatives tried unsuccessfully to make adjustments for the initiatives to persist. In the case of The Bourdon project, the incentives for collaboration were significantly reduced by the implementation of Local Integrated Land and Resource Management Panels, the shift in forest planning responsibilities under the Sustainable Forest Management Act and the cancellation of the FCP and its important related funds. In the case of the Vision exercise, the initiative was dependent on the time and good will of local actors to coordinate and report their progress. Lack of political will in addition to professional position changes, personal factors (illness, maternity, etc.) and conflicts, seepage of available funds and socio-political changes all contributed to both initiatives ending. The following quote illustrates the opinion of an interviewee related to the lack of political will and the irony of the criticism of local leaders towards the Vision exercise:

> You won't go further than the actions that local actors are able to support. You won't have an action that is more innovative than the person that thought of it, you understand. So the people who say that Voyons loin wasn't innovative in its actions, well in the end they still remain the ones that chose the actions. […] We were inspired a lot by the initiative (vision exercise) in Abitibi. […] But you had leaders that wanted that there. (interview 8, translated by Jastremski)

The literature review in chapter 3 highlighted the importance of building far spanning networks to diffuse innovative sustainability solutions (Chapin et al., 2010; Loorbach, 2007; Olsson et al., 2010). The results of the application of the framework show that both initiatives contributed to enhancing opportunities for social awareness and capacities for involvement as well as enhancing conflict resolution through collaborative processes and strengthening social ties (social-ecological civility and democratic governance requirement). These results overlaps with Chiasson et al.'s (2012) findings of social capital and conflict management as major contributions of The Bourdon project. However, gains related to these criteria concerned mainly local connections. The Bourdon project particularly developed relationships between outfitters, ZECs, the Atikamekw First Nation community of Manawan and foresters while the Vision exercise facilitated relationship building between community organizations, municipalities and the ALRCM, and economic development organizations.

Although networks beyond local boundaries were less present and focused on existing innovation structures, the extent to which the initiatives could have influenced the changes that were taking place is questionable. For instance, the limited impact of Model Forests on provincial forest management policies is reported in the literature (Bullock, Jastremski, & Reed, 2017; Gardner Pinfold Consulting, 1996; Wellstead et al., 2003). This was also noticed

in the case of The Bourdon in terms of the Ministry of Natural Resource and Wildlife overlooking the sustainable integrated resource management strategy developed by the initiative. In the end, The Bourdon project partially served the transition towards the new forest management regime.

Both initiatives significantly contributed to enhancing the building of a shared and integrative system understanding of sustainability problems and opportunities according to the community's needs and aspirations. In addition, both initiatives significantly contributed to enhancing knowledge in and about the governance system, its actors and responsibilities as well as enhancing transparency of decisions, pursued objectives, and priorities as well as the accountability of decision-makers. Major hurdles were rather encountered in finding support for the initiatives and deciding upon specific actions and priorities to put forward.

Both initiatives, and more particularly The Bourdon project, explored alternative economic development pathways for the ALRCM. As found in other research (Beckley, Parkins, & Stedman, 2002), the initiative participated in building some capacity by providing tools for forest communities to act upon new opportunities. However, this exploration was contentious. Results from the analysis of The Bourdon case particularly illustrate this fact with the local forest industry's resistance to the idea of proximity forests as discussed earlier. Furthermore, the Vision exercise was unable to rally the forest sector under the initiative. Some forest sector actors did not appreciate what they perceived as an attempt to move away from the forest sector, which seems to them to be trying to "reinvent the wheel" (interviews 7, 11). The Vision exercise aimed to put forward a future sustainability vision inclusive of all the activities in the region and going beyond the ALRCM'S label of "resource region". The Vision exercise clearly attempted to address the negative perception of the initiative by the local forest sector in the diagnostic report of the ALRCM's issues and assets. The importance of the forest sector was highlighted and it was explicitly mentioned that although economic diversification ought to be pursued, "key sectors should not be left aside" (Institut pour le progrès socio-économique, 2011b, p. 6, translated by Jastremski).

The pathways explored by the initiatives were heavily influenced by existing technological trends, policy orientations and innovation structures. The quest for innovation in modernity is idiosyncratic and its emphasis on technology and science often precludes its direction (Stirling, 2009). Innovation and policy change don't emerge in a vacuum. For instance, Jasanoff (2005, p. 188) questions the assumption that inventions are "a matter of genius and serendipity, of brilliant insights sparked by chance encounters between prepared minds, of science put to use in solving well-defined problems". According to Nowotny (2006), innovations, like technologies, should be seen as subsets of culture.

Innovation in Quebec is structured and guided by the Ministry of Economic Development, Innovation, and Export Trade (MDDEIE). Specific innovation pathways are supported

according to administrative regions' assets through the ACCORD program. For the Laurentians, three innovation axes have been selected: advanced land transportation, tourism, and forest activities (Ministère de l'économie de la Science et de l'Innovation, 2014). Hence, The Bourdon project was able to connect local experiments with broader trends as well as explore alternative innovation discourses around NTFP and proximity forests for example. As discussed previously, the latter was confronted with local resistance from local power structures in place.

The Vision exercise identified sustainable agriculture as a potential significant asset in the ALRCM due to emerging local mobilizations, local success stories and related social recognition (Institut pour le progrès socio-économique, 2011b). Combined with the fact that most of the public forests in the Laurentians are certified as "sustainably managed," potential for a renewed *sustainable* identity in the region is highlighted (Institut pour le progrès socio-économique, 2011b). However, due to the innovation structure in place it is more likely that provincially recognized innovation pathways will prevail. Integrating sustainable agriculture concerns within sustainable forest management and tourism might be a potential way forward. Meeting the criteria of promoting constructive co-evolution of community goals, actions and projects and broader societal goals and trends connecting them through multiple networks and domains requires good knowledge of the innovation structures in place and creative imagination.

The case of the ALRCM demonstrates well the uneven distribution of power in the governance landscape identified as a challenge for governance for sustainability by Newig et al. (2008). However, governance for sustainability is not solely about change. It concerns how pathways towards sustainability need to be collectively negotiated and how goals are defined, improved, and redefined (Leach, Scoones, & Stirling, 2010; Meadowcroft, 2008). It is a dynamic and inevitably political process. Although they were short-lived, the initiatives were a step in the direction of sustainability. Lasting contributions of the initiatives will dependent on local actors' willingness to build on acquired capacities, knowledge and experience.

8.5.4 Sustainability-assessment for forest communities

Sustainability-assessment is about generating and guiding change towards sustainability. It suggests generic sustainability requirements that serve as guidance for further specification of criteria to meet particular contextual challenges. Therefore, sustainability assessment has the quality of being a flexible approach as exemplified by the variety of initiatives in different sectors and scales to which it has been applied (e.g., see Gibson, 2017a for multiple case applications).

Focusing on intentional change brings criteria specification in tension with sought broad contributions to sustainability. As highlighted in lessons from the transition management

literature, intentional change thought through a sectoral perspective rapidly exceeds its boundaries. Similarly, project level assessments in environmental impact assessment have been criticized for being too narrow in scope. Such insights served as a rationale for building a framework fit for two initiatives in a forest community that stemmed from a different socially constructed locus (i.e., forest and local governance). Selecting criteria reasonably applicable to both initiatives and more generally to other forest communities without being too specific to each locus was a constant concern. The criteria were selected based on a literature review of the evolution of forest management policies in Canada and rural forest communities as well as on major identified issues in the Antoine-Labelle region. More importantly, emphasis was directed towards criteria relevance to both loci in a perspective to build mutually supportive long lasting gains. Table 8.3 at the end of the chapter presents the overall results of the assessment of The Bourdon project and the Vision exercise in the ALRCM. In total, 77 criteria were selected to assess both initiatives spanning the boundaries of forest management and local governance in forest communities.

As highlighted in the comparative results, seven criteria were not addressed by either initiative. This could suggest issues with the criteria, potential matters of concern for the ALRCM, or future areas for forest communities to direct attention towards. In most cases, a criterion was not addressed because there is no significant local issue related to it. For instance, the levels of involvement of women in local governance or the loss of forest cover to urbanization are not substantial issues in the ALRCM. However, this situation could change in the near future. In addition, the framework was also built to be applicable in other forest communities. Thus, after application, no modification to the list of criteria put forward is suggested.

The criteria put forward in the framework are necessarily tentative and would merit additional debate within the ALRCM. They illustrate the complexity of matters that are worth attention in forest communities. However, the breadth of the framework combined with the extent of the socio-political changes can puzzle even the most seasoned academics and local leaders. As mentioned by Gibson (2017), “[t]he demanding character of serious sustainability assessment applications is both their blessing and their burden” (p.247). If intent is brought to the forefront in a context of complexity where judging what is right or wrong by the consequences of our actions is insufficient due to incomplete knowledge about systems dynamics, and the identified intent is change towards sustainability, practical applicability concerns cannot be overlooked. There can be a fine line between being overwhelmingly complicated and inspiring positive hope.

8.6 Conclusion

The main objective of this chapter was to describe and analyze the research results based on the sustainability assessment framework specified for forest communities and applied to The Bourdon project and a Vision exercise in the ALRCM. Even though they were short-lived, both initiatives made contributions to sustainability. Both initiatives significantly contributed

to building awareness and capacities for involvement, to enhancing conflict resolution and transparency about the goals pursued as well as building a shared system understanding of problems and opportunities in the region. However, gains remain tentative.

Several lessons learned from the application of the framework can be discerned. The research results suggest that there is a need for increased environmental stewardship and for additional capacity building for local communities to be involved in forest governance. The long-time closed relationship between the forest industry and the government in forest management (Howlett & Rayner, 2001) and the institutionalization of environmental concerns through top-down processes (Blais & Chiasson, 2013) result in a considerable capacity gap for local actors in the ALRCM.

Additional effort ought to be directed towards opening-up local and forest governance to other interests and values due to entrenched power dynamics. The analysis of the two initiatives highlighted that the forestry crisis resulted in increased local pressure for meeting short-term economic imperatives over other concerns. In addition, socio-political changes that took place during the initiatives greatly impacted the ALRCM and very likely other forest communities in Quebec. Thus, the need to acknowledge who is affected by suggested changes and mitigating potential negative consequences for those concerned is underlined.

Lack of local political will was underlined as a major hurdle for the initiatives and the related potential positive contributions to sustainability. Also evident are needs to meet the criteria for enhancing transparency of decisions, pursued objectives, and priorities as well as the accountability of decision-makers (requirement for social-ecological civility and democratic governance) with efforts to identify assumptions and expectations representing minimal conditions for maintaining involvement.

The research results show that the initiatives participated in building some capacity by providing tools for forest communities to act upon new opportunities. However, innovations structures present in the Laurentians open some supporting pathways but potentially limit other alternatives. In some cases, promoting constructive co-evolution between community goals, actions and projects and broader societal goals and trends requires agile articulation of local aspirations.

The breadth of the considerations to attend to for forest communities, and more generally for sustainability assessment applications is significant. The criteria put forward in the framework identify what desirable characteristics or trends ought to be maintained, supported, enhanced or built. They also highlight undesirable pathways that need to be adjusted or reversed. Furthermore, the criteria have the value of integrating considerations at multiple scales. While the challenge of moving towards sustainability is imposing, it is not impossible. Even in significantly turbulent circumstances, both initiatives were able to make contributions to

sustainability. More importantly, the alternative to meeting this complex challenge is prevailing unsustainable trajectories.

Table 8.3 Assessment of The Bourdon project and the Vision exercise in the ALRCM according to significant contributions (2), minor contributions (1) and unmet criteria (0)

	The Bourdon	Vision
SOCIO-ECOLOGICAL SYSTEM (SES) INTEGRITY		
Considering ecosystem dynamics and variability		
• Allowing socio-ecological system change such as natural disturbances as well as anticipating and adapting to natural and anthropomorphic induced changes	1	0
Example or explanation		
The Bourdon: historic portrait of the evolution of forests and forest perturbations in the forest development zone 064-51 (project 2007-101)		
Vision: unmet		
Considering ecosystem services and interactions		
• Enhancing system understanding and managing the ecological integrity at the whole system level with attention to direct, indirect, and induced effects	2	0
Example or explanation		
The Bourdon: Simultaneously develop wildlife and forest resources as well as tourism activities while respecting ecosystem capacity (project 2007-120)		
Vision: unmet		
Promoting diversity		
• Maintaining diversity (genetic, ecosystem, species), critical ecological services and protecting key and vulnerable species and their habitat	1	0
Example or explanation		
The Bourdon: monitoring wildlife populations and habitat loss due to forest harvesting (project 2007-108)		
Vision: unmet		
• Maintaining the genetic diversity of forests through harvesting not solely targeted at specific species and planting that does not depend on certain genotypes	1	0
Example or explanation		
The Bourdon: develop silvicultural practices that better protect forest biodiversity (project 2009-132)		
Vision: unmet		
• Maintaining the structural complexity of stands and landscapes and functional diversity and redundancy of ecosystem	1	0
Example or explanation		
The Bourdon: project respected the protection and development of forest resources prescribed by the government		
Vision: unmet		
• Enhancing and maintaining representative, connected and recognized ecosystem protected areas	1	0
Example or explanation		
The Bourdon: increasing knowledge on structured wildlife areas and the relationship between forest fragmentation and habitat connectivity (project 2009-202)		
Vision: unmet		
Reducing anthropogenic impacts on socio-ecological systems		
• Maintaining ecosystem connectivity by reducing fragmentation and recovering damaged areas	1	0
Example of explanation		
The Bourdon: Analysis of habitat fragmentation (project 2009-145)		
Vision: unmet		
• Enhancing the understanding of, and limiting direct and cumulative anthropogenic impacts	2	0

on, socio-ecological systems (particularly of valued components) and considering their interaction with disturbances **Example or explanation** **The Bourdon:** developing a process to integrate issues and concerns of all players in the forest development zone 064-51 (project 2007-201) **Vision:** unmet		
LIVELIHOOD SUFFICIENCY AND OPPORTUNITY		
Supporting economic diversification		
• Enhancing and supporting economic diversification opportunities in forest activities as well as in other sectors by seeking complementarity and synergies between initiatives in order to contribute to poverty reduction and rural economic development while maintaining social-ecological system integrity **Example or explanation** **The Bourdon:** identifying development paths for forests extractables (project 2010-312) **Vision:** put together an intersectoral committee for economic development and diversification	2	1
Increasing access to natural resources		
• Supporting and developing capacities for increase local forest tenure and recognize aboriginal rights **Example or explanation** **The Bourdon:** expertise provided to the local committee on proximity forests (project 2011-157) **Vision:** unmet	1	0
• Supporting and developing capacities for multiple users on public forest land **Example or explanation** **The Bourdon:** significant funds provided to different organizations to develop their expertise (ex: project 2007-205 for outfitters) **Vision:** unmet	2	0
Enhancing access to services		
• Maintaining and improving service delivery and accessibility (Internet, public transit, health, education, banking, etc.) with particular attention to poorer population and disparities within the community **Example or explanation** **The Bourdon:** development of an educational program in the ALRCM for the Atikamekw First Nation community (project 2011-308) **Vision:** put together committee for the development of a strategy for high speed internet and cellular phone services	1	1
Enhancing entrepreneurs and workforce skills and education		
• Increasing and adapting education and training opportunities within the community to meet present and future labour needs **Example or explanation** **The Bourdon:** development of a training program in silviculture and carpentry for Atikamekws (projects 2007-405 and 2007-406) **Vision:** study of future needs and action to adjust educational programs	2	1
• Supporting strategies to attract educated and skilled workers **Example or explanation** **The Bourdon:** organized activity to promote forestry and new technologies in forestry used in the region (project 2007-402) **Vision:** developed a welcome toolkit to promote the region and attract and retain needed workforce	1	1
• Encouraging the development of entrepreneurial skills for local communities and indigenous communities **Example or explanation** **The Bourdon:** training opportunity for NTFP (project 2012-604)	1	1

Vision: action to better promote entrepreneurship in the ALRCM		
Enhancing community well-being		
• Supporting health and security in working conditions	0	0
Example or explanation		
The Bourdon: unmet		
Vision: unmet		
• Enhancing the protection and maintenance of the quality of life within the community (landscapes, spaces for leisure, cultural activities, etc.)	1	1
Example or explanation		
The Bourdon: identified different additional areas that ought to be protected (within project 2007-201)		
Vision: action to support the implementation of a cultural policy in which the protection of landscapes is integrated		
• Enhancing and maintain health and safety in the community	1	1
Example or explanation		
The Bourdon: safe cohabitation between off-road vehicles and timber hauling on forest roads (project 2012-607)		
Vision: organized activities to promote healthy lifestyles		
• Enhancing the access to the region's territory (public forests and municipalities)	1	0
Example or explanation		
The Bourdon: develop a road and culvert maintenance information system (project 2008-128)		
Vision: unmet		
INTRAGENERATIONAL EQUITY		
Fostering inclusion		
• Opening-up and integrating other values and expertise in forest and local governance (traditional ecological knowledge, spiritual values, etc.)	1	1
Example or explanation		
The Bourdon: integration of multiple interests and values (outfitters, ZECs, Atikamekw First Nation community)		
Vision: integration of community organizations with economic development organizations and the ALRCM		
• Encouraging and supporting respect for First Nations communities' rights, customs and culture	1	0
Example or explanation		
The Bourdon: construction of a multifunctional camp for the Atikamekw First Nation community (project 2009-306), sustainable integrated resource management strategy		
Vision: unmet		
• Supporting gender equity and the involvement of women in forest governance	0	0
Example or explanation		
The Bourdon: unmet		
Vision: unmet		
• Increasing the involvement of communities and local governance actors in forest governance	1	0
Example or explanation:		
The Bourdon: NTFP conference open to all citizen in the ALRCM (project 2010-309)		
Vision: unmet		
• Increasing the involvement opportunities for women and visible minorities in local governance	0	0
Example or explanation		
The Bourdon: unmet		
Vision: unmet		
Reducing poverty, low education levels and local disparities		
• Enhancing education levels in the community (addressing high drop-out rates, valuing	1	1

education, etc.) **Example or explanation** **The Bourdon:** training program for the Atikamekw First Nation community (project 2007-406) **Vision:** support and develop school perseverance local action plan		
• Promoting a fair distribution of wealth and income generating opportunities within the community **Example or explanation** **The Bourdon:** training program for the Atikamekw First Nation community (project 2007-406) **Vision:** developed a local action plan for poverty reduction and social inclusion	1	1
• Building awareness of and responding to marginalization in the community and within forest governance **Example or explanation** **The Bourdon:** integration of the Atikamekw First Nation community's interests and concerns **Vision:** developed a local action plan for poverty reduction and social inclusion	1	1
• Promoting a fair distribution of risks within local communities **Example or explanation** **The Bourdon:** unmet **Vision:** action to protect urban cores and maintain services	0	1
Building awareness on imposed paths and business as usual futures		
• Building awareness of negative labelling and imposed futures in the region in order to open-up its future options **Example or explanation** **The Bourdon:** integration of multiple interests and concerns and promotion of social acceptability **Vision:** clear intention to create distance with the forestry past and to develop new local identity	1	2
INTERGENERATIONAL EQUITY		
Managing decline and its feedback processes		
• Managing and preparing for population aging **Example or explanation** **The Bourdon:** unmet **Vision:** action to support caregivers	0	1
• Building understanding of decline and the forestry crisis and their feedback processes **Example or explanation** **The Bourdon:** report on the socio-economic impacts of the forestry crisis in the ALRCM **Vision:** information gathering of issues in the region and reporting through multiple media	1	2
Moving away from path dependence		
• Enhancing long-term quality employment opportunities **Example or explanation** **The Bourdon:** unmet **Vision:** vision spurred reflections on the type of industries wanted in the ALRCM	0	1
• Avoiding trading off long-term needs for short-term gains **Example or explanation** **The Bourdon:** sense of urgency due to forestry crisis and new forest management regime limited participation and increased the pressure to prioritize economic imperatives **Vision:** actions for all the success conditions towards a long-term sustainability vision	1	1
• Maintaining and enhancing future options for future generations **Example or explanation** **The Bourdon:** multiple projects aiming to develop new innovative pathways and protect forest resources **Vision:** identified assets in the region such as landscapes and put forward actions to protect them	1	2
Fostering long-term socio-ecological integrity		
• Encouraging ecosystem management based on maintaining the integrity of socio-ecological	1	1

system and delivering on broad social objectives **Example or explanation** **The Bourdon:** overall objective of the initiatives around SFM **Vision:** identified forest certification and sustainable agriculture as essential components to pursue		
• Maintaining or enhancing the role of forests in sequestering carbon and regulating regional hydrological cycles **Example or explanation** **The Bourdon:** unmet **Vision:** unmet	0	0
• Maintaining long-term resource availability, local capacities and expertise **Example or explanation** **The Bourdon:** funding for different partners to develop their expertise, initiative focused on SFM **Vision:** identified territorial occupancy as the major resource maintenance issue, sustainable natural resource development is one of the success conditions identified by the community	2	1
RESOURCE MAINTENANCE AND EFFICIENCY		
Maintaining ecosystem productivity		
• Respecting the capacities of ecosystem in harvesting levels or utilization of resources and enhancing ecosystem regeneration **Example or explanation** **The Bourdon:** testing different harvesting techniques and their impact on biodiversity (project 2010-150) **Vision:** unmet	1	0
• Maintaining forest productivity by minimizing adverse harvesting impacts, carefully choosing silvicultural practices, and limiting other anthropogenic impacts **Example or explanation** **The Bourdon:** brushing beech trees from maple forests **Vision:** unmet	2	0
• Enhancing and maintaining the protection of water (riparian zones, wetlands, etc.) and soil **Example or explanation** **The Bourdon:** survey of riparian zones and wetlands (project 2008-205) **Vision:** action to integrate the watershed management plan into the land use and development plan of the ALRCM	1	1
• Minimizing the loss of forest cover for urbanization by directing development in existing cores close to services and amenities **Example or explanation** **The Bourdon:** unmet **Vision:** unmet	0	0
Reducing, reusing and recycling waste and enhancing energy efficiency		
• Encouraging and supporting the local processing of forest resources or other community resources **Example or explanation** **The Bourdon:** unmet **Vision:** action to encourage buying local	0	1
• Encouraging and supporting energy efficiency in the forest product sector and other sectors, organizations, and institutions **Example or explanation** **The Bourdon:** unmet **Vision:** activities to promote responsible environmental citizenship	0	1
• Encouraging and supporting reusing, reducing and recycling within the forest products sector and other sectors, organizations, and institutions **Example or explanation**	0	0

The Bourdon: unmet **Vision:** unmet		
• Seeking opportunities to increase resource maintenance and efficiency in all aspects of the community	0	0
Example or explanation **The Bourdon:** unmet **Vision:** unmet		
SOCIAL-ECOLOGICAL CIVILITY AND DEMOCRATIC GOVERNANCE		
Enhancing capacities for reciprocal awareness and conflict resolution		
• Enhancing social awareness and capacities for involvement (e.g., understanding needs, aspirations, perspectives, and disciplinary language, etc.)	2	2
Example or explanation **The Bourdon:** development of a sustainable integrated resource management strategy **Vision:** multiple types of participation		
• Enhancing conflict resolution through collaborative processes and strengthening social ties (social capital) with particular attention to marginalized groups	2	2
Example or explanation **The Bourdon:** development of tools for harmonization (project 2011-156) **Vision:** multiple types of participation		
Enhancing stewardship		
• Enhancing citizen awareness of socio-ecological system integrity	1	1
Example or explanation **The Bourdon:** vulgarization of forestry terms and practices for sustainability (project 2010-148) **Vision:** reporting on environmental issues and assets in the ALRCM		
• Enhancing the communities' capacity to develop and enforce environmental standards	1	1
Example or explanation **The Bourdon:** funding for partners to develop their expertise and better defend their interests **Vision:** action to support the training of municipal officers in respecting environmental standards		
• Enhancing the social responsibility of the forest industry (for instance through increased sustainability-based certification) and other industries in the region	1	0
Example or explanation **The Bourdon:** assistance to industrial partners in obtaining FSC certification (project 2011-317) **Vision:** unmet		
Fostering good governance		
• Increasing opportunities for community involvement in decision-making and local governance	1	2
Example or explanation **The Bourdon:** conference of NTFP (project 2010-309), multiple meetings **Vision:** multiple types of participation		
• Enhancing opportunities for collaboration and information sharing between sectors, organizations, and institutions at multiple levels	1	1
Example or explanation **The Bourdon:** web-collaboration interface between partners (project 2007-407) **Vision:** committee meetings and multiple types of participation		
• Enhancing transparency of decisions, pursued objectives, and priorities as well as the accountability of decision-makers	2	2
Example or explanation **The Bourdon:** annual reports, internet site, media releases **Vision:** clear and thorough reporting of the visioning process and actions undertaken		
• Enhancing the legitimacy of decisions and closely relating decisions to representative and participative democracy and accountability	1	2
Example or explanation **The Bourdon:** clear governance rules, participation of the partners in elaborating the governance		

rules **Vision:** multiple types of participation, involvement of local governance leaders and all levels of government (municipal, provincial, federal)		
PRECAUTION AND ADAPTATION		
Promoting adaptation and precaution		
• Exploring and engaging with uncertainties at multiple levels	1	2
Example or explanation **The Bourdon:** exploring the potential impacts of climate change for multiple forest users (project 2009-146) **Vision:** identified major trends that will influence the community and its different economic sectors		
• Supporting and developing alternative sustainability pathways	1	1
Example or explanation **The Bourdon:** develop a business network for biomass and available pulp in the region (project 2010-134) **Vision:** economic development and diversification committee, advanced transportation committee		
• Increasing knowledge on long-term trends and proactively promoting flexible adaptation strategies	1	2
Example or explanation **The Bourdon:** exploring the potential impacts of climate change for multiple forest users (project 2009-146) **Vision:** different strategies to adapt to population aging and new tourism demands		
• Identifying areas where irreversible damage may occur and areas of precaution	1	1
Example or explanation **The Bourdon:** identified valued and vulnerable species in the sustainable integrated resource management strategy **Vision:** documented the impacts of decline and underlined the vulnerability to devitalization of urban cores		
• Building community awareness of potential risks (other forestry crisis, effects of climate change on forests and forest activities, budworm outbreaks, technological innovations related to forestry, etc.)	1	1
Example or explanation **The Bourdon:** exploring the potential impacts of climate change for multiple forest users (project 2009-146) **Vision:** social and economic community vulnerabilities were identified as well as trends		
• Promoting safe-fail characteristics of actions and development paths put forward	1	1
Example or explanation **The Bourdon:** respecting resource maintenance (forests, wildlife, etc.) **Vision:** paths to avoid (e.g., uranium mining) were identified		
Fostering humility and inspiring positive hope		
• Fostering humility about system change and the adequacy of present knowledge	1	1
Example or explanation **The Bourdon:** complexity of the forest in the ALRCM is acknowledged as well as incomplete knowledge **Vision:** highlighted the gap between the present situation and the aspired vision		
• Acknowledging the possibility of surprise while taking positive steps towards sustainability	1	1
Example or explanation **The Bourdon:** exploring the potential impacts of climate change for multiple forest users (project 2009-146) **Vision:** action plan identified multiple concrete actions and areas of uncertainty		
Fostering learning, monitoring and iteration		

• Promoting continuous learning to build understanding and commitment to addressing significant sustainability challenges	1	1
Example or explanation **The Bourdon:** sustainable integrated resource management strategy **Vision:** iterative step-by-step process, monitoring and reporting progress		
• Encouraging knowledge and information sharing between members of the initiative and with the community	1	2
Example or explanation **The Bourdon:** conference of NTFP (project 2010-309), media releases, internet site **Vision:** multiple types of participation, internet site, media releases, reports		
• Enhancing monitoring of and responses to significant sustainability challenges	1	1
Example or explanation **The Bourdon**: developing indicators to track new goal oriented forest management (project 2007-114) **Vision:** monitoring process and reporting progress to community		
IMMEDIATE AND LONG-TERM INTEGRATION		
Enhancing benefits and multiple gains		
• Seeking mutually reinforcing benefits between projects and actions	1	0
Example or explanation **The Bourdon:** selection of projects based on mutually supporting benefits between partners **Vision:** unmet		
Supporting a transition towards sustainability		
• Enhancing the building of a shared and integrative system understanding of sustainability problems and opportunities according to the community's needs and aspirations	2	2
Example or explanation **The Bourdon:** sustainable integrated resource management strategy **Vision:** multiple types of participation and results of participation were shared and discussed		
• Promoting constructive co-evolution of community goals, actions and projects and broader societal goals and trends by connecting them through multiple networks and domains	1	1
Example or explanation **The Bourdon:** develop a business network for biomass and available pulp in the region (project 2010-134) through Signature Bois Laurentides **Vision:** actions elaborated in light of broad trends and opportunities		
• Enhancing alignment of present actions with envisaged desired futures, needs and values and enhancing alignment capacities while staying responsive to learning	1	2
Example or explanation **The Bourdon:** developing different tools for partners such as software for road and culvert management **Vision:** committees were created to further reflect on possible actions to move towards the sustainability vision		
• Bridging the past and the envisaged desired futures, needs and values	1	1
Example or explanation **The Bourdon:** develop employment opportunities, skill development and training for the Atikamekw First Nation community (2012-603) **Vision:** economic diversification to the forefront while acknowledging the importance of forestry		
• Developing , providing space for and supporting multiple mutually supportive experiments to enhance sustainability, allowing flexibility, and keeping options open to avoid early path dependence	1	1
Example or explanation **The Bourdon:** multiple business opportunities explored **Vision:** multiple committees created to support different experiments		
• Enhancing support for up-scaling, diffusion, and embedding of successful sustainability	1	1

community innovations **Example or explanation** **The Bourdon:** use of Patchworks software **Vision:** action to enhance the support and promotion for local success stories		
• Enhancing the democratic legitimacy of sustainability alternatives **Example or explanation** **The Bourdon:** conference of NTFP (project 2010-309) **Vision:** actions endorsed by local leaders and different political levels	1	1
Harnessing opportunities		
• Enhancing knowledge in and about the governance system, its actors and responsibilities **Example or explanation** **The Bourdon:** different meetings involving different partners, sustainable integrated resource management strategy **Vision:** multiple types of participation where organizations shared their mandates and concerns	2	2
• Identifying potential thresholds and barriers to change and developing strategies to overcome barriers to change **Example or explanation** **The Bourdon:** creating awareness about the benefits of forestry and its successful cohabitation with outfitters to improve its image (project 2010-315) **Vision:** portrait of the ALRCM identified multiple barriers to change and related possible actions	1	2
• Building connections between and empowering key players to develop opportunities **Example or explanation** **The Bourdon:** funding for different partners, participation to the International Model Forest Global Forum in Alberta (project 2008-404) **Vision: key** local governance actors were involved and encouraged to find ways to move towards the vision	2	1
• Building adaptability, flexibility and proactivity to take advantage of rapid changes or windows of opportunity and emerging new contextual environments **Example or explanation** **The Bourdon:** identified multiple business opportunities **Vision:** opportunities were identified, iterative process	1	1

CHAPTER 9 - THEORETICAL AND PRACTICAL IMPLICATIONS, AND CONCLUSION

9.1 Overview

Forest communities in Canada and in many parts of the world are greatly in need for change towards sustainability. They are faced with the challenge of responding to a recent forestry crisis that has revealed their vulnerability to narrow economic dependence on global paper and lumber markets while also taking part in the broader quest to reverse deepening unsustainable societal trajectories that are common to many rural and remote communities. However, progress towards sustainability is a daunting societal endeavour.

Sustainability challenges usual ways of making decisions by broadening the scope of spatial and temporal considerations, by bringing to the forefront democratic concerns of public participation as well as fair distribution of benefits with specific attention to marginalized populations, and by addressing the interdependencies between healthy ecosystems and socio-economic conditions. Furthermore, in a complex and dynamic world, assumptions of stability, linearity, and predictability of change related to the myth of adequately informed rational decision making are called into question (Leach, Scoones, & Stirling, 2010; Voß et al., 2008; Walker & Salt, 2012) and prompting a reinterpretation of the substance and processes in assisting progress towards sustainability. Due to inherent uncertainties and possibilities of surprise, the predictable consequences of our actions are an insufficient basis for decisions. Additionally, following broad principles as unique guidance is unsatisfactory due to constantly changing circumstances and contextual variety. Therefore, intent, prudence, flexibility, and contextual specificities emerge as important decision-making principles. These implications are highlighted in chapter 2.

The pursuit of societal goals is increasingly perceived through the lens of governance rather than government as the sole and main actor recognized for public action. Governance is identified as a crucial element for progress towards sustainability (Farrel et al., 2005; Lange et al., 2013) and unsustainability is often related to a crisis governance (Adger & Jordan, 2009; van Zeijl-Rozema et al., 2008). Since the broader adoption of the sustainability concept following the Brundtland Commission report in 1987, multiple governance experiments have taken place, particularly in the field of environment in an attempt to better move towards sustainability (Theys, 2003). However, unsustainable pathways are persistent and deepening. This underlines the need for increased knowledge on governance for sustainability, defined as a field of inquiry aiming at prescribing decision-making structures and processes to support progress towards sustainability (Adger & Jordan, 2009; Gibson, 2017a).

Sustainability assessment overlaps with, and plays a role in governance for sustainability (Gibson, 2017a). Sustainability assessment "embodies what must characterize the next

generation of governance structures" (Gibson, 2017b, p. 255). In addition, in the field of sustainability, different approaches such as transition management, resilience and transformation in social-ecological systems (SES), and futures studies are directing attention towards understanding change (and resistance to change) and how it can be influenced intentionally. A common gap identified in the literature review in chapter 3 related to deficiencies in dealing with substance and process requirements of sustainability in pursuing intentional change. Identifying assessment criteria allows for open critical observation of underlying reasoning, guides comparative evaluation between options and pathways, and provides discernment from prevailing practices (Gibson, 2017a).

The resilience and transformation in social-ecological systems literature has advocated allowing a new SES to emerge without setting goals or process requirements (Folke et al., 2010) therefore overlooking additional sustainability considerations beyond socio-ecological integrity. However, fairness and equity have recently been added as attributes of a resilient world (Walker & Salt, 2012). In the transition management literature, sustainability is defined as "a complex long term, multi-level, multi-actor process" (Loorbach, 2007, p. 23). Processual characteristics of sustainability are emphasized over normative considerations. Thus, no generic sustainability criteria are adopted to serve as transparent guidance to identify possible omissions in the approach. Futures studies literature has focused heavily on identifying quality criteria for rigorous future exercises such as scenario consistency, plausibility and relevance (Godet, 2000; Wollenberg, Edmunds, & Buck, 2000). As recently pointed out by Wiek and Iwaniec (2014), sustainability objectives and criteria can provide guidance for the desirability of future states, for evaluating different scenarios and visions produced as well as for designing futures studies processes.

Despite their differences, these three approaches provide valuable insights based on extensive case applications on ways to generate intentional change in a complex and dynamic world. To address the identified gap, these insights were integrated within Gibson's (2017, 2005) sustainability assessment framework which sets forward generic sustainability criteria and provides guidance for criteria specification to meet particular contexts of application. Hence, the framework facilitates assessing simultaneously contributions to sustainability and intentional change. In other words, intentional change is integrated as a normative component of sustainability beyond aspired aims of the approach.

In chapter 5, the framework was specified for forest communities through a literature review on the evolution of forest management policies in Canada as well as on rural resource-dependent communities. The framework was also tested for adjustments to better fit the context of the ALRCM through a socio-political analysis of sustainability issues in the ALRCM (chapters 6 and 7). In chapter 8, the framework was then applied to two local

governance initiatives in the ALRCM: The Bourdon project and a Vision exercise (*Voyons loin agissons ensemble*).

9.2 Summary of findings

Three major findings were uncovered through the application of the sustainability assessment framework for forest communities. These findings reflect the sustainability challenges of the ALRCM that are most likely generalizable to other forest communities without, however, replacing context-enlightened criteria development through thorough case exploration.

First, the assessment uncovered a need for increased capacities for environmental stewardship and for local governance actors and citizens to be involved in forest governance. This finding supports the historical account of the evolution of forest management policies in Canada, which illustrates that forest communities, including First Nation communities, were repeatedly excluded of forest management decision-making (Rotherham & Armson, 2016) and that public involvement in forest management is still at its infancy (Sinclair & Lobe, 2005). The abolition of forest concessions in Quebec had a significant impact in the ALRCM allowing the establishment in the 1980s of a local forest industry organized around small and medium size forest transformation industries (Institut pour le progrès socio-économique, 2011; Laboratoire d'expérimentation, 2004). However, only following repeated local conflicts and modifications to provincial forest management policies early in the twenty-first century were other stakeholders integrated into forest management.

This finding also illustrates how the institutionalization of environmental concerns through top-down processes provides few opportunities for the engagement of local communities (Blais & Chiasson, 2013). Few environmental concerns can be found in documents produced by different local organizations and no mention of climate change was noticed. Both initiatives also performed poorly in meeting the resource maintenance and efficiency requirement. More importantly, the Vision exercise was unable to meet any of the socio-ecological system integrity criteria.

The second major finding concerns path dependence and the marginalization of forest communities by provincial policies. Research results indicate that the challenge of bridging forest and local governance and building capacities for environmental stewardship is imbedded in power structures in place. While both initiatives were disruptive in opening-up forest governance and local governance to other stakeholders and the Atikamekw First Nation community of Manawan, progress remains tentative. Findings also indicate that the forestry crisis increased the pressure to narrow considerations and prioritize economic imperatives.

The initiatives contributed to intentional change in several ways. Both initiatives contributed to build networks beyond the community scale although they were more heavily focused on local

issues and relationships. In addition, they both contributed significantly to enhancing the building of a shared and integrative system understanding of sustainability problems and opportunities according to the community's needs and aspirations as well as enhancing knowledge in and about the governance system, its actors and responsibilities. However, the question of how bottom-up initiatives are able to confront structural forms of power that are vested in the present global level remains (Smith & Stirling, 2010). Politics cannot be removed from innovation spaces and there are no short-cuts in learning or building capacities. Furthermore, there is reason to believe that the innovation structures currently in place provide opportunities while simultaneously limiting the possibility of other pathways to emerge.

The third finding relates to the importance of lack of political will as a significant impasse to governance for sustainability. Gaining political support in a time of crisis and when funds are available is a relatively simple task. Moving beyond ad hoc initiatives and following through with organizational and institutional change is where the real challenge lies. Lasting contributions remain tentative and highly dependent upon the willingness of local actors to continue building on acquired capacities, knowledge and experience.

9.3 Implications

This research has implications on several levels, from the theoretical to the practical. Implications for academic research in the broad fields of governance for sustainability and sustainability assessment will be described and specific implications for provincial policies in Quebec as well as for the ALRCM will be underlined in this section.

9.3.1 Theoretical implications

Building on a wide range of literatures, this dissertation offers multiple theoretical and practical contributions. The main contribution of this dissertation is that it integrates intentional change lessons from resilience and transformation in SES, sustainability transitions and innovations studies, and future studies into sustainability requirements that are then specified for their application to forest communities. The criteria put forward in the framework are necessarily tentative and would merit additional debate within the ALRCM. The framework would also benefit from applications to other forest communities for additional insights and refinement.

Although modest in its scope, chapter 2 presented a list of implications for governance for sustainability in a complex and dynamic world based on a review of the concepts of sustainability and governance, and complexity approaches. In addition, tensions in complexity approaches are underlined such as the role of humans in systems and the notion intentional change in a desired direction. Aristotle's four causes framework is introduced as a complementary causal framework for understanding change. Aristotle's framework suggests that without a vision or an end, change cannot be experienced. Core sustainability

requirements also underline that marginalized populations are most often the victims of changes they have little or no influence on much less any vision for guiding the process (Gibson et al., 2005; Leach, Scoones, & Stirling, 2010) This preliminary discussion serves as a justification for using generic and specified criteria to guide intentional change towards sustainability in a complex and dynamic world as an approach in this dissertation. There is potential for additional theoretical contributions in thinking of intent in a complex and dynamic world between *hoping for the best* or cultivating an illusion (Rip, 2006) and "objectifying injunctions for authoritative intervention" (Smith & Stirling, 2008, p. 160) that close down on specific definitions of sustainability and narrow considerations of uncertainty. Although complexity dampened the myth of rational decision making where scientific facts support best decisions, it unleashed a great amount of normative power (Chang, 1997). No single uncontestable *truth* can be uncovered which does not imply that there are no *best* ways forward. Multiple paths and desirable states are possible and more knowledge is needed in order to better navigate through the possibilities and aspirations. Sustainability assessment addresses this challenge.

This dissertation also contributes to sustainability assessment literature and recent attempts to integrate resilience and transition management lessons into sustainability assessment criteria (Gaudreau, 2013; Gaudreau & Gibson, 2010; Gibson, 2011). For this dissertation, further insights into futures studies were drawn by putting forward key requirements for scenario building and backcasting exercises and by highlighting the differences in how different approaches frame the use of futures studies. Several of the key lessons from futures studies overlap with lessons of other approaches such as the need to emphasize learning and building an integrative system understanding of problems and opportunities. These findings serve to buttress the integration of lessons from other approaches into sustainability requirements. In addition, some requirements from futures studies were included in the framework such as bridging the past and the envisaged desired futures, needs and values, as well as building awareness of negative labelling and imposed futures in the region in order to open-up its future options. These requirements overlap with equity considerations that were already acknowledged in sustainability assessments but they have the specificity of bringing future framings into the forefront.

This dissertation contributes to bringing sustainability assessment more fully into the discourse of governance for sustainability. Through the identification of relevant assessment criteria, the desired future governance structure is clarified. In addition, by integrating intentional change requirements within sustainability assessment, the assessment allows participants to better grasp intentional change capacities that are being built. Gaps were identified in transition management, transformation in SES and futures studies literature pertaining to the clear identification of substance and process requirements for sustainability underlining the potential for sustainability assessment within these approaches.

Another contribution pertains to the originality of the specified assessment framework for forest communities and its complementarity to other assessment frameworks. There are several existing assessment frameworks relevant to forest communities such as community well-being frameworks (Beckley, 1995) as well as community capacity and resilience frameworks (Beckley, Parkins, & Stedman, 2002; Harris et al., 2000; Kusel, 1996; Magis, 2010; Nadeau, Shindler, & Kakoyannis, 2003; Teitelbaum, et al., 2003). Criteria and indicators for sustainable forest management are also well established at this point in time and recent research is directed towards developing criteria to assess community forestry initiatives (Assuah, Sinclair, & Reed, 2016; Furness, Harshaw, & Nelson, 2015; Teitelbaum, 2014).

Furthermore, this dissertation contributes in better understanding and assessing forest-dependent community responses to changed circumstances. Developing this knowledge has been identified as an important area of inquiry particularly for vulnerable resource-dependent communities characterized by their exposure to frequent instability (Matarrita-Cascante & Trejos, 2013).

The case study of the ALRCM and the assessment of two local governance initiatives that were put forward represent a substantive contribution on its own. As will be discussed in the next section, the framework facilitated identifying several practical implications for the ALRCM as well as policy implications at the provincial level.

9.3.2 Implications for policy

Recent provincial policy changes in Quebec have significantly impacted the ALRCM. A climate of uncertainty prevailed for several years due to the forestry crisis, the implementation of the new forest management regime and the structural governance modifications under the Liberal provincial government. In this dissertation, several impacts of these changes were documented, particularly changes related to the implementation of the *Sustainable Forest Management Act* on the Antoine-Labelle region.

While the new forest management regime aimed to address several issues encountered in the previous regime, such as increasing the legitimacy of the state, better structuring public participation and addressing environmental concerns, the complexity of the ambitious modifications proposed seemed to have been underestimated. For instance, the government of Quebec introduced in 2010 the Sustainable Forest Management Act (bill 57) with a transition period until April 1st 2013. However, the overarching strategy for sustainable forest management supposed to guide forest management was only published in December 2015 (Ministère des forêts de la faune et des parcs, 2015b). Furthermore, although specifications on the government's orientations related to proximity forests were published in June 2015, there is still no official policy (Ministère des forêts de la faune et des parcs, 2015a) guiding implementation.

Forest communities are often characterized by being locked-in into a narrow set of industrial activities prone to booms and busts and difficult economic diversification (Randall & Ironside, 1996). Consequently, they are particularly vulnerable to adverse effects from environmental, social, political, technological and economic changes. Better integrating concerns for marginalized communities by identifying who is affected by suggested policy changes (Gelrich et al., 2010) and mitigating potential negative consequences for those concerned is essential.

In addition, attention ought to be directed towards other changes that are taking place and affecting forest communities. The three successive waves of change submerged the ALRCM in uncertainty for close to a decade affecting capacities for action.

Information gathered on the Experimentation Laboratory and The Bourdon project demonstrate that building capacities for involvement and social ties are slow processes. Research results uncovered a tendency to favour economic imperatives particularly in times of crisis, a phenomenon often supported by local politics. Thus, procedural modifications of the new forest management regime through the implementation of Local Integrated Land and Resource Management Panels will require significant and continuous support as well as transparency in determining priorities to clearly address path dependent favouritism towards economic imperatives. Furthermore, ambiguity remains related to the involvement of First Nation communities in Local Integrated Land and Resource Management Panels and the consideration of First Nation rights and interests in decision making on the distribution of timber volumes through the Timber Marketing Board (Nation Atikamekw, 2008).

Through time, relationships were built between forest users, First Nations, and the forest industry. The recently created Local Integrated Land and Resource Management Panels offer a structured participation environment for the regional orientations in forest management. However, the research results in this dissertation indicate that the new forest management regime was not able to transpose trust relationships built under the previous forest management regime into the Local Integrated Land and Resource Management Panels, more specifically in operational planning. Additional attention ought to be directed towards better linking strategic and operational forest planning and building capacities for stakeholders, citizens, First Nations as well as the forest industry in working together to meet strategic goals under the new forest management regime.

In addition, The Bourdon project and the Vision exercise, although they encountered several difficulties, were able to contribute to sustainability. Further support of local initiatives is necessary to continue building pathways towards sustainability.

9.3.3 Implications for the ALRCM

The Bourdon project and the Vision exercise demonstrate the mobilization capacity of the Antoine-Labelle community and the presence of several leaders. Such leaders played an essential role in the positive contributions to sustainability that were accomplished. While both initiatives ended, they nevertheless contributed to sustainability in different ways. The initiatives represent steps towards sustainability in the ALRCM. Both initiatives were disruptive in opening up to a certain extent narrow economic considerations in forest management and future pathways in local governance usually articulated around economic development organizations and the ALRCM. Further steps will however be required in the ALRCM to continue to progress towards sustainability. The main enduring challenges for the ALRCM consist of:

- Building and harmonizing development pathways (forest activities, new residents, other economic development);
- Increasing capacities for local governance of public forests;
- Increasing environmental stewardship;
- Maintaining local expertise in forest management;
- Building future pathways around assets in the region, local aspirations, and innovation structures in place that are mutually supportive to different sectors and contribute positively to sustainability;
- Further recognizing First Nation communities present in the region;
- Addressing local disparities between municipalities;
- Proactively preparing for upcoming changes such as climate change and population aging; and,
- Addressing poverty and low education rates.

More importantly, these challenges will require modifying local governance and forest governance practices. They are challenges but also opportunities.

9.3.4 Directions for further research

The criteria illustrate the complexity of matters that are worth attention in forest communities. Overlaps between criteria are frequent and often reflect more subtle assumptions based on stances on change. For instance, enhancing information sharing between stakeholders can contribute to better preparing for possible future changes as well as diffusing innovations. There are multiple types of change and ways to experience change which means that there is abundant potential for further research. The subtleties behind different criteria imply that the framework is not a recipe. It brings certain elements to the forefront without freeing them from underlying layers of meaning.

Further integrating futures studies into sustainability assessment through participative scenario building seems like a fertile area of inquiry. As demonstrated in this dissertation, different

areas of scholarship have emphasized the usefulness of futures studies for dealing with complexity and moving towards sustainability (e.g., Mulvihill & Kramkowski, 2010; Swart, Raskin, & Robinson, 2004; Wallenborn & Mutombo, 2009). Furthermore, emerging literature on bridging and boundary organizations (e.g., Crona & Parker, 2012; Edelenbos & van Meerkerk, 2014; Olsson et al., 2007) and their success conditions could provide useful knowledge in moving towards a governance landscape that better integrates forest and local governance.

While several other areas of inquiry could justifiably serve to enlighten sustainability assessment criteria, sustainability assessment can only serve its purpose by being applicable and relevant to a specific context. As mentioned by Gibson (2017), "[t]he demanding character of serious sustainability assessment applications is both their blessing and their burden" (p.247). Based on the intent of generating and identifying pathways towards sustainability, practical applicability concerns cannot be overlooked.

Next steps for sustainability assessment and sustainability initiatives require going beyond responses to crisis and randomness to more common influential use (Gibson, 2017b). Forest communities due to their need for change and their potential to participate in broader societal benefits justify additional attention for sustainability assessment applications.

9.4 Conclusion

Understanding the profound implications of complexity on how we make decisions and how we can move away from prevailing unsustainable pathways guided reflections throughout this dissertation. The research undertaken integrated intentional change lessons from different approaches based on sustainability and complexity into Gibson's (2017, 2005) sustainability assessment framework. More specifically, the developed framework integrates lessons from studies of resilience and transformations in SES, transition management, futures studies, and critical constructivist perspectives on these approaches. Literature on forest management policies in Canada and rural resource-dependent communities was then used to specify the framework for forest communities. The case of the ALRCM in Quebec and two local governance initiatives that were put forward in response to the forestry crisis served as testing ground for the framework.

The challenge of pursuing sustainability is daunting but opportunities are plentiful. Redirecting unsustainable trajectories will depend on the willingness of communities and different levels of government to support sustainability initiatives and on their combined capacity and courage to open windows of opportunity rather that retracting to old practices. In a complex and dynamic world, inspiring hope and humility have emerged as necessities in the democratic governance landscape. Through disappointments, humility arises in avoiding excessive faith in promised certainties and lessons learned provide inspiring hope to still strive for progress towards sustainability.

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APPENDICES

Appendix A: Core generic criteria for sustainability assessments

Socio-ecological system integrity
the requirement:
Build human–ecological relations to establish and maintain the long-term integrity of socio biophysical systems and protect the irreplaceable life support functions upon which human and ecological well-being depends.

illustrative implications:

- need to understand better the complex systemic implications of our own activities;
- need to reduce indirect and overall as well as direct and specific human threats to system integrity and life support viability.

Livelihood sufficiency and opportunity
the requirement:
Ensure that everyone and every community has enough for a decent life and that everyone has opportunities to seek improvements in ways that do not compromise future generations' possibilities for sufficiency and opportunity.

illustrative implications:

- need to ensure provision of key prerequisites for a decent life (which, typically, are not now enjoyed by those who have little or no access to basic resources and essential services, who have few if any satisfactory employment opportunities, who are especially vulnerable to disease, or who face physical or economic insecurity);
- need to appreciate the diversity, and ensure the involvement, of those whose needs are being addressed.

Intragenerational equity
the requirement:
Ensure that sufficiency and effective choices for all are pursued in ways that reduce dangerous gaps in sufficiency and opportunity (and health, security, social recognition, political influence, and so on) between the rich and the poor.

illustrative implications:

- need to build sustainable livelihoods for all, including practically available livelihood choices and the power to choose;
- need to emphasize less materially- and energy-intensive approaches to personal satisfactions among the advantaged, to permit material and energy sufficiency for all.

Intergenerational equity
the requirement:

Favour present options and actions that are most likely to preserve or enhance the opportunities and capabilities of future generations to live sustainably.
illustrative implications:

- need to return current resource exploitation and other pressures on ecological systems and their functions to levels that are safely within the perpetual capacity of those systems to provide resources and services likely to be needed by future generations;
- need to build the integrity of socio-ecological systems, maintaining the diversity, accountability, broad engagement and other qualities required for long-term adaptive adjustment.

Resource maintenance and efficiency
the requirement:
Provide a larger base for ensuring sustainable livelihoods for all, while reducing threats to the long-term integrity of socioecological systems by reducing extractive damage, avoiding waste and cutting overall material and energy use per unit of benefit.

illustrative implications:

- need to do more with less (optimize production through decreasing material and energy inputs and cutting waste outputs through product and process redesign throughout product lifecycles), to permit continued economic expansion where it is needed, with associated employment and wealth generation, while reducing demands on resource stocks and pressures on ecosystems;
- need to consider purposes and end uses, recognizing that efficiency gains are of no great value if the savings go to more advantages and more consumption by the already affluent.

Socio-ecological civility and democratic governance
the requirement:
Build the capacity, motivation and habitual inclination of individuals, communities and other collective decision-making bodies to apply sustainability requirements through more open and better informed deliberations, greater attention to fostering reciprocal awareness and collective responsibility, and more integrated use of administrative, market, customary and personal decision making practices.

illustrative implications:

- need governance structures capable of integrated responses to complex, intertwined and dynamic conditions;
- need to mobilize more participants, mechanisms and motivations, including producers, consumers, investors, lenders, insurers, employees, auditors, reporters
- need to strengthen individual and collective understanding of ecology and community, foster customary civility and ecological responsibility, and build civil capacity for effective involvement in collective decision-making.

Precaution and adaptation
the requirement:

Respect uncertainty, avoid even poorly understood risks of serious or irreversible damage to the foundations for sustainability, plan to learn, design for surprise, and manage for adaptation.

illustrative implications:

- need to act on incomplete but suggestive information where social and ecological systems that are crucial for sustainability are at risk;
- need to design for surprise and adaptation, favouring diversity, flexibility and reversibility;
- need to prefer safe fail over fail-safe technologies;
- need to seek broadly comprehensible options rather than those that are dependent on specialized expertise;
- need to ensure the availability and practicality of back-up alternatives;
- need to establish mechanisms for effective monitoring and response.

Immediate and long term integration

the requirement:

Apply all principles of sustainability at once, seeking mutually supportive benefits and multiple gains. considerations:

- integration is not the same as balancing;
- because greater efficiency, equity, ecological integrity and civility are all necessary for sustainability, then positive gains in all areas must be achieved;
- what happens in any one area affects what happens in all of the others;
- it is reasonable to expect, but not safe to assume, that positive steps in different areas will be mutually reinforcing.

illustrative implications:

- need positive steps in all areas, at least in general and at least in the long term;
- need to resist convenient immediate compromises unless they clearly promise an eventual gain.

Source: Gibson et al., 2005

Appendix B: Open-ended interview questions

Research Project Title: Governance for Sustainability in forest regions and communities: Lessons from the Antoine-Labelle Regional County Municipality (ALRCM)

Summary of the research, signature of the consent form

Theme 1: General information on the interviewee

1. What is your role in your organization?
2. How did you come to be involved in the initiative and why did your organization and yourself decide to participate in the initiative?
3. Why did the initiative emerge? Why was it put forward?
4. What consisted of your role in the initiative? Did you role evolve over time?

Theme 2: Internal governance of the initiative

Mission and goals, objectives and strategies of the initiative

1. How do you understand the mission of the initiative?
2. How does this mission or goal "play out" in practice?
    a. Have your mission statement and goals changed over time? Why so?
    b. What project (s) or action (s) do you consider most successful in pursuing the initiative's goals? Why? What lessons can be learned?
    c. What project (s) or action (s) do you consider have been less successful in pursuing the initiative's goals? Why? What lessons can be learned?
3. Who are the key actors within the region aside from those involved in the initiative that you have worked with to meet your goals/mission?
4. Are there other groups who should have been involved in the initiative?
    a. If so, why where they not involved?

Setting priorities

1. How did you set priorities in developing projects and activities through your initiative?
2. What were the most important factors that influenced how priorities were set?
3. Who was most involved in setting priorities?

How the initiative was organized

1. How often did you meet with other participants of the initiative?
2. Where you able to work well with other participants? Why so?

Theme 3: Issues and challenges of the Antoine-Labelle RCM

1. What are the main issues (social, political, economic, environmental) in the Antoine-Labelle RCM?
2. What are the main issues for your organization?
3. What are the main issues related to the forestry crisis and the new forest management policy regime in Québec for your organization or for the ALRCM?
4. According to you, what assets or qualities need to be conserved in the region? What do you hold close to heart in the region?
5. What apprehensions do you have towards the future of the region?
6. What would you like the (sustainable) future of the region to look like?

Theme 4: The initiative's contribution to sustainability

1. Did the initiative contribute in identifying and in putting forward strategies to conserve the main assets and qualities of the region? How?
2. Did the initiative contribute in identifying future risks or possible negative scenarios for the region? How?
3. Did the initiative contribute in identifying sustainable desired futures or alternatives for the region? How?
4. Did the initiative contribute in identifying and putting forward possible steps towards a preferred future in the region?

Theme 5: Global appreciation

1. What are possible solutions to the issues and challenges in the region? What should be done in order for the region to better move towards sustainability? By whom?
2. What needs to change in the region or beyond in order for these solutions to be possible?
3. What are (were) your expectations of your involvement in the initiative and of the initiative itself?

Theme 6: Final questions

1. Do you have other observations or comments to make?
2. Do you have any questions for me (the interviewer)?