

*Research*, part of a Special Feature on [Understanding Adaptive Capacity in Forest Governance](#)  
**Multi-Stakeholder Collaboration in Russian and Swedish Model Forest  
Initiatives: Adaptive Governance Toward Sustainable Forest  
Management?**

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**ABSTRACT.** Building the adaptive capacity of interlinked social and ecological systems is assumed to improve implementation of sustainable forest management (SFM) policies. One mechanism is collaborative learning by continuous evaluation, communication, and transdisciplinary knowledge production. The Model Forest (MF) concept, developed in Canada, is intended to encourage all dimensions of sustainable development through collaboration among stakeholders of forest resources in a geographical area. Because the MF approach encompasses both social and ecological systems, it can be seen as a process aimed at improving adaptive capacity to deal with uncertainty and change. We analyzed multi-stakeholder approaches used in four MF initiatives representing social–ecological systems with different governance legacies and economic histories in the northwest of the Russian Federation (Komi MF and Pskov MF) and in Sweden (Vilhelmina MF and the Foundation Säfsen Forests in the Bergslagen region). To describe the motivations behind development of the initiative and the governance systems, we used qualitative open-ended interviews and analyzed reports and official documents. The initial driving forces for establishing new local governance arrangements were different in all four cases. All MFs were characterized by multi-level and multi-sector collaboration. However, the distribution of power among stakeholders ranged from clearly top down in the Russian Federation to largely bottom up in Sweden. All MF initiatives shared three main challenges: (a) to develop governance arrangements that include representative actors and stakeholders, (b) to combine top-down and bottom-up approaches to governance, and (c) to coordinate different sectors’ modes of landscape governance. We conclude that, in principle, the MF concept is a promising approach to multi-stakeholder collaboration. However, to understand the local and regional dimensions of sustainability, and the level of adaptability of such multi-stakeholder collaboration initiatives, empirical studies of outcomes are needed. To assess the adaptive capacity, the states and trends of economic, ecological, social, and cultural dimensions in actual landscapes need to be linked to how the multi-stakeholder collaboration develops and performs over the long term.

**Key Words:** *boreal forest; landscape; multi-level collaboration; sustainability; sustainable development*

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## INTRODUCTION

Since the discourse about sustainable development (SD) emerged during the 1980s, a range of international and national policies, as well as implementation approaches, related to the sustainable use of renewable natural resources have been formulated (e.g., Kennedy et al. 2001, Campbell and Sayer 2003, Innes and Hoen 2005, Sastamoinen 2005, Baker 2006). With respect to natural forest and cultural woodland landscapes, the

sustainable forest management (SFM) concept appeared as an answer to a gradual societal response to unsustainable use of forest goods, ecosystem services, and landscape values (e.g., Merlo and Croiteru 2005, Shindler et al. 2003). Sustainable forest management is defined as the stewardship and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, and vitality and their potential to fulfil, now and in the future, relevant ecological, economic, and social functions at local,

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national, and global levels (Ministerial Conference on the Protection of Forests in Europe (MCPFE) 1993).

Realising the contemporary ambitions of SD as a process and sustainability as an objective requires that users of forest goods, ecosystem services, and landscape values and other stakeholders collaborate at multiple levels and develop the adaptive capacity to deal with uncertainties and risks (e.g., Mayers and Bass 2004). To support policy implementation, approaches such as ecosystem management (e.g., Christensen et al. 1996), adaptive management (Shindler et al. 2003), ecosystem approach (e.g., Sayer and Maginnis 2005), adaptive management and governance (e.g., Lee 1993, Folke et al. 2005, Olsson et al. 2006, 2007), and landscape approach (e.g., Singer 2007) have been developed. Explicitly or implicitly, all these approaches acknowledge the complexity of ecosystems and social systems and seek to address the challenges of accommodating multiple users' claims and interests. This involves making decisions that support the visions of social learning for sustainability; facilitating the planning, negotiation, and implementation of activities across an entire geographical area; learning from other similar initiatives; and supporting the development through continuous evaluations and synthesis of the results and progress (e.g., Lee 1993, Boyle et al. 2001). In response to this, scholars have studied multi-stakeholder collaboration within multiple societal sectors and levels of organization (e.g., Folke et al. 2005, Olsson et al. 2007).

Inspired by these challenges, many global, national, regional, and local concepts have appeared with the aim of implementing the process of SD on the ground (e.g., Shindler et al. 2003, Axelsson et al. 2008). One such concept is the Model Forest (MF) concept, which was developed in Canada in the early 1990s. A MF can be understood as a process designed to establish a partnership and a forum for collaboration to solve a wide spectrum of issues related to the implementation of SFM policies. The key functions of a MF are to test new ideas and develop innovations related to SD, as agreed to by MF partners, with the goal of developing the adaptive capacity of the local social-ecological system to deal with uncertainty and change (LaPierre 2002).

According to the MF development guide (Natural Resources Canada 2008), a MF has six key attributes. These are: (1) a landscape large enough

to address an area's diverse forest uses and values, (2) an inclusive and representative partnership, (3) a commitment to sustainability, (4) a governance system that is representative, transparent, and accountable, (5) a program of activities that reflects the values, needs, and management challenges of the partners, in the local community, and on regional to national levels, and (6) a commitment to knowledge sharing, capacity building, and networking, from local to international levels. Two attributes are of a more basic character (1, 3) whereas attributes 2 and 4–6 can be considered as indicators of a multi-stakeholder collaboration approach.

The purpose of this study was to analyze the multi-stakeholder collaboration approach by focusing on the scope of the MF initiatives at initiation, including the motivations for their establishment (attribute 5), the governance system (MF attributes 2 and 4; see Natural Resources Canada (2008)), as well as the structure and level of collaboration among stakeholders (attribute 6) as indicators of the ability of partners to plan, prepare for, facilitate, and implement adaptation measures toward SFM on the ground. By exploring these dimensions, we sought to understand the extent to which MF stakeholders had the opportunity to collaborate at multiple levels and, thus, develop adaptive capacity for learning to deal with uncertainties and risks. We compared two MF initiatives in the Russian Federation's northwest region and two in Sweden. The following criteria were used: (1) the four MFs were all gradually initiated in the 1990s and developed over about 10 years; (2) they are located in the same boreal forest ecoregion in Europe, therefore, they share many landscape and ecosystem properties; (3) Russian and Swedish MFs both follow the International Model Forest Network criteria and principles for MF development (Natural Resources Canada 2008), however, they have been developed under very different systems of governance with regard to use and management of natural resources; (4) the selected MFs are the only four in the European boreal forest ecoregion that were in operation when the study was conducted. Given the emerging application of the MF concept, it is thus both timely and appropriate to examine the organization of the existing MF initiatives, how they contributed to good governance, and what their activities and aims were.

## THEORETICAL FRAMEWORK AND METHODS

### Adaptive governance as a basis for sustainable landscapes

Sustainability is the capacity to create, test, and maintain adaptability. Development is the process of creating, testing, and maintaining opportunity. The phrase that combines the two, sustainable development, thus refers to the goal of fostering capabilities and creating opportunities (Holling 2001). Thus, navigating toward SFM, as defined in the relevant Pan-European (Sweden) and Montréal (Russian Federation) forest policy processes, requires adaptive governance approaches that embrace the inherent uncertainty and complexity of a social–ecological system, or put simply, a sustainable landscape. Adaptive governance can be understood as an institutional response to the challenges of SD and SFM. A key characteristic of adaptive governance is iterative learning, which enables humans to cope with change and governance, enabling institutions that guide public and private interactions (Folke et al. 2005, Armitage et al. 2007, Olsson et al. 2007).

The European Landscape Convention defines landscape as “an area perceived by local people or visitors where the visual features and characteristics of the landscape are a result of natural and/or cultural factors” (European Treaty Series 2000). A landscape can thus be viewed as a geographical unit that offers a sense of place to actors and represents a wide range of dimensions, including biophysical, sociocultural, and perceived dimensions (e.g., Antrop 2006, Dyakonov et al. 2007). The landscape as a social–ecological system reflects the need to expand the spatial scale of management, moving from smaller units or objects to the magnitude of landscapes and regions, embracing the micro, meso, and macro levels. Additionally, all social organizational scales must be considered, from individual, family, community, regional, national, and global levels (Elbakidze and Angelstam 2007). Thus, both social and ecological subsystems, as well as their interactions, must be studied (e.g., Angelstam et al. 2004, Lazdinis and Angelstam 2004), which is consistent with the studies of complex adaptive systems. Although the literature related to adaptive capacity at the local level is quite extensive, the literature dealing with this concept at the meso and macro levels using multiple landscapes as case studies is limited.

Our study, analyzing and comparing four place-based MF initiatives, is intended to remedy this gap by elaborating on a set of features that can be used to assess adaptive capacity as the ability to produce appropriate knowledge and to facilitate resilience. Consistent with the attributes of adaptive governance (Berkes and Folke 1998), these features include (1) the motivations for collaboration or the way in which collective action originates, (2) the emerging partnership and governance structure and, finally, (3) the networks of horizontal and vertical links among different partners, actors, and stakeholders (Berkes 2008: 2).

Of principal interest in our study are the motivations behind stakeholder collaboration, which influence the capacity of a MF initiative to incorporate new and changing issues into its activities as collective actions, whether they are ecological, economic, or sociocultural. The development of collective action differs in different situations and places. It can, for example, be initiated by local people from the bottom up or by external actors from the top down. Different stakeholders may also have different motivations for taking part in collective action. Much of the literature on collective action in natural resource management has also recognized the importance of concerted efforts by policy entrepreneurs, facilitators, champions, and leaders in facilitating institutional change (Blomquist 1992, Thomas 2003). Thus, it is necessary to analyze the motivations of the stakeholders and leaders to engage in a MF and how this might affect the adaptive capacity of the initiative. The adaptive capacity of a MF initiative is enhanced if the program of activities reflects and includes partners’ needs and values. This is further reinforced if the process is grounded in the principles of democratic governance (Currie-Alder 2005), capacity building, and knowledge production (Gibbons et al. 1994) to strengthen the partners and the partnership.

Satisfying the different dimensions of SD also requires governance systems that support coordination and cooperation across the horizontal and vertical organizational dimensions of a landscape. In the context of natural resources, governance refers to decision-making processes and networking aimed at problem solving and policy implementation. As such, the concept focuses on participation and deliberative consensus-building processes with the goal of enhancing cooperation and coordination among a diverse range of stakeholders (e.g., Healey 1996, Stoker 1998).

Therefore, a platform or forum for adaptive governance is vital for enabling the processes of SFM implementation and sustainable development. Such platforms can facilitate an overriding strategy and coordination of planning and management activities by representatives from various sectors of society (public, private, and civil) that represent needs and interests of stakeholders at different levels (Bellamy and Johnson 2000, Bellamy et al. 2002, Connor and Dovers 2004). This coordination can also be enhanced by the development of social learning that transfers knowledge and new approaches in collaboration among managers and other stakeholders at different levels (Tikkanen et al. 2000, Lee 1993, Mayers and Bass 2004). In complex adaptive systems, this also fosters dialog between sectors and the production of new knowledge (Gibbons et al. 1994, Diets et al. 2003). The extent to which MF initiatives are able to establish a platform or forum for coordination of management activities may also provide an indication of the level of their adaptive capacity.

As Folke et al. (2005:449) pointed out, adaptive governance of linked social and ecological systems or landscapes “generally involves polycentric institutional arrangements, which are nested quasi-autonomous decision-making units operating at multiple scales.” These institutional arrangements engage “local, as well as higher, organizational levels and they aim at finding a balance between decentralized and centralized control” (Folke et al. 2005). If the management of a natural resource or a set of resources involves multiple levels of governance from local to global, it is also necessary to design institutions that encompass and overlap those levels (Shindler et al. 2003, Berkes 2007). Of particular importance is the existence of bridging and bonding (i.e., nestedness) organizations (Grafton 2005, Dale and Newman 2010) that may facilitate analytic deliberation and interaction among actors horizontally and vertically at the landscape level. Nestedness of stakeholders and actors of a MF initiative, with commitments to knowledge sharing, capacity building, and networking, may enhance the adaptive capacity of the system (Coleman 1988, Cash and Moser 2000, Putnam 2000, Adler and Kwon 2002, Olsson et al. 2007). This includes a representative balance among involved sectors but also among local, regional, and national stakeholders in the MF initiative. Because actors at different levels and in different sectors may have varying levels of

influence (Arnstein 1969) and different motivations to participate, an overrepresentation of actors with particular interests may decrease the chances for implementing SFM.

However, local and regional governance arrangements such as MFs do not exist in a vacuum. The adaptive capacity of a MF depends on its context and how different management systems are situated at different levels (Duit and Galaz 2008). For example, the culture and administrative system at the constitutional state level may influence how MFs can respond to change and manage adaptively. Thus, the difference between Sweden and the Russian Federation is an important variable.

## Methods and materials

Both interviews and document analyses were carried out to describe and analyze the four selected MF initiatives, the areas, their governance systems, and their decision-making and policy-implementation processes, and the motivations for their establishment. First, a total of 198 open-ended qualitative interviews were conducted: Komi MF ( $n = 55$ ), Pskov MF ( $n = 40$ ), Säfsen Forests ( $n = 53$ ), Vilhelmina MF ( $n = 50$ ). Most interviews ( $n = 173$ ) were conducted face to face, and lasted between 40 and 90 min. In Vilhelmina MF, 25 of the interviews were done by telephone and lasted about 20 min. All interviews were recorded on tape or digitally. Most of the interviews ( $n = 165$ ) were fully transcribed and some ( $n = 33$ ) were either partly transcribed or used as notes to extract data. Respondents represented MF coordinators, facilitators, and leaders, local and regional managers of state and private forest enterprises, government agencies, NGOs, landowners, local teachers, journalists of local and regional newspapers, representatives of research organizations, private business, and local administrations. Most of the open-ended interviews focused on motivations for MF development, information about the areas, land use, natural and cultural values, products, development trends, and as well as perceived problems, challenges, and conflicts. Second, the interviews were complemented by analyses of documents from local archives, protocols from meetings within the MF initiatives, and published information, such as regional newspapers, journals, and magazines. Both interviews and document analyses were used to map stakeholders in the four MF initiatives.

To analyze the multi-stakeholder structure and collaboration in the governance system of the MF initiatives, stakeholders involved in MF development were divided according to three variables (Fig. 1). First, drawing on methods used by Mingione (1991), we defined three groups of stakeholders according to the sector (horizontal dimension) that they represent, i.e., (i) the civil sector, comprising a broad range of organizations outside of government, including civil associations, non-profit organizations, churches, and neighborhood clubs that contribute to the public good (Kingsley and Gibson 1997), (ii) the private sector, made up of businesses controlled or owned by private individuals, directly or through stock ownership, and (iii) the public sector, which is formed by stakeholders representing public interests through governmental agencies and local government units.

Second, representing the organizational vertical level of governance, all stakeholders were classified into four groups according to their level of activity. Stakeholders came from local and operational (e.g., rayon in the Russian Federation and municipality in Sweden), regional and collective (e.g., oblast in Russia and counties in Sweden), national and constitutional (Federation members and country of Sweden), and international levels (cf. Carlsson 2008).

Third, because different levels of collaboration represent a very wide gradient from information to partnership (Arnstein 1969), we divided the stakeholders into three groups (Table 1). Group 1 stakeholders were formal partners who played a significant role with equal voting capacity in the decision-making and implementation processes. The main types of collaboration between them were through a formal organization such as an NGO, society, or foundation. Group 2 stakeholders were those involved with the initiative's own or co-managed projects, which were internally, externally or jointly funded. The main type of participation was cooperation. Finally, Group 3 stakeholders were those where the initiative is represented in stakeholder projects or stakeholders that participate through continuous information sharing and networking. The main type of participation is an advisory committee; the main types of participation were communication, consultation, and information sharing.

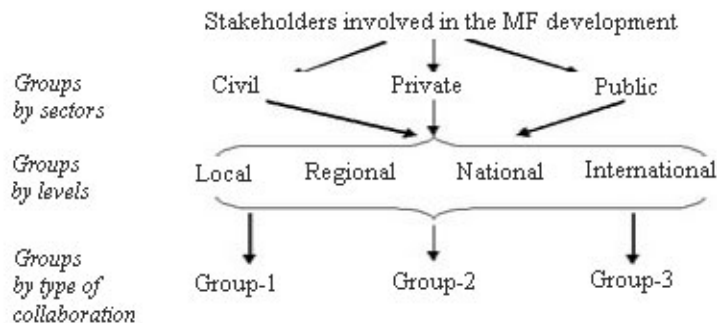
## STUDY AREAS

Our study areas are two MFs in the Russian Federation and two MFs in Sweden, which represent interesting gradients in the European boreal forest landscapes due to different environmental and economic histories as well as current economic development, and different systems of governance and government (Angelstam et al. 2007). Realizing that a MF is a continuous development process, we focused on the situation leading up to the end of 2007.

According to the "Initiative Network of Russian Model Forests," which was established by five MFs in the Russian Federation in 2006, Russian MFs are long-term projects, which develop on the basis of generally recognized international and Russian principles of SFM ([www.komimodelforest.ru](http://www.komimodelforest.ru), Elbakidze and Angelstam 2008). They aim to enhance the quality of forest management and efficiency of forest use regionally by developing partnerships and stakeholder collaboration ([www.komimodelforest.ru](http://www.komimodelforest.ru)). At the end of 2007, the Russian Federation's Forestry Agency, inspired by the MF concept, planned the creation of 31 MFs in addition to the five already existing (Zheldak 2008; V. Roshchupkin, *pers. comm.*). The vision was that this suite of MFs should represent all forest zones in the Russian Federation, and would become good examples of SFM based on Russian and international experiences (Elbakidze and Angelstam 2008). All MFs in Russia have been established on government-owned land.

The Komi MF (60°20'N; 49°36' E) is located in the southern part of the Russian Federation's boreal zone, and occupies a state forest management unit of about 800,000 ha. The forest history is recent and the region still hosts remnants of naturally dynamic forest (Yaroshenko et al. 2001). The forest is owned by the state. The forest sector dominates the economy in the area of the MF. There are 37 permanent settlements with around 16,000 inhabitants in the region. Local people depend on use of natural resources for their traditional livelihood. The interests of the state are represented by the Priluzje lesnichestvo, a local state forest management unit, which controls the activity of forest companies operating in the area. Since 2005, about 20 forest companies leasing the forests are responsible for harvesting and forest management.

**Fig. 1.** Description of our approach to divide stakeholders into different: (1) sectors, (2) levels of organization, and (3) levels of collaboration to analyze the structure of multi-stakeholder collaboration in MF initiatives in the Russian Federation and Sweden.



The international company Mondi Business Paper Syktyvkar is the main customer for wood harvested in the region.

The Pskov MF (58°16'N; 29°06'E) is situated in the Russian Federation's southwestern part of the boreal forest biome in the Pskov region. It occupies an area of about 18,400 ha. Forest covers almost 80% of the area. Intensive logging, a lack of silvicultural activities during the 20th century, and abandonment of agricultural land have resulted in a high proportion of deciduous trees and large volumes of dead wood compared with Nordic managed forests (Angelstam and Dönz-Breuss 2004). The area of Pskov MF is state-owned and is a leasehold territory of STF-Strug Company (a subsidiary of StoraEnso Co.). There are ten settlements in the vicinity of Pskov MF.

In Sweden, several local initiatives have emerged that share the MF concept's focus on collaboration toward SFM in an area. These initiatives seek to (1) create a societal platform for local to regional multi-sector governance that supports well-informed decisions (e.g., Axelsson and Angelstam 2006, Jougda et al. 2006), (2) focus on a geographical landscape or region, and (3) develop indicators toward an accounting system that shows status and trends on relevant sustainability dimensions to natural resource managers, landowners, academia, government officials including policy makers, media, and the public (e.g., Svensson et al. 2004). By and large, this is consistent with the six MF

attributes. In 2003, formal contact with the international MF network was established (Svensson et al. 2004). In Sweden, the MFs have been established on land having a mixed ownership pattern.

The Säfsen Forests Foundation (60°08'N; 14°23'E) is a local development initiative that was formalized as a foundation in 2000 (<http://www.safsenskogarna.se>). The geographical area is the northwest of the Bergslagen region in south-central Sweden with two municipalities covering just over 300,000 ha of forest landscape and having 36,000 inhabitants. Bergslagen was of paramount historical importance to Sweden because of the development of mining and iron production (e.g., Nelson 1913, Heckscher 1935–1949). In addition, sustained-yield forestry methods were developed in this region in the early 19th century (Brynte 2002). Thus, the forest use history is very long. Land ownership in Säfsen Forest is dominated by one large forest company, but also includes state forests, other forest companies, the Church, forest commons, non-industrial private owners, and public land.

The Vilhelmina MF (64°37'N; 16°38'E) in northwest Sweden occupies 870,000 ha covering the transition from the boreal forest to the alpine zone. About 530,000 ha is forested land. Almost half of the 8000 inhabitants live in the town of Vilhelmina. The municipality owns some forest property. Forests are a vital component of Vilhelmina's economy, but no longer directly

**Table 1.** Rule for distinguishing stakeholders involved in a MF initiative according to level of collaboration.

Stakeholder category	Type of participation	Type of participation (Pretty 1995)	Ladder of community participation (Guaraldo Choguill 1996)	Ladder of citizen participation (Arnstein 1969)
Group 1	Formalized participation through foundation or society	Self-mobilization Interactive	Empowerment Partnership	Partnership Joint mgmt board
Group 2	Participation in projects or activities managed or co-managed by the MF initiative	Functional Material incentives	Conciliation	Cooperation
Group 3	Collaboration in stakeholder projects (active or passive) to continuous communication and information	Consultation Information giving Passive	Dissimulation Diplomacy Informing Conspiracy Self-management	Advisory committee Communication Consultation Information

through employment based on wood, but rather because of the role of forests for the sense of place and for small-scale businesses (Theilbro 2006). About 100 Sami people, an indigenous group of people in Sweden, have the exclusive right to herd reindeer on private and public land in Vilhelmina MF in order to produce meat (Sandström et al. 2003). Hunting of big and small game, berry and mushroom picking, and recreational activities also have an important role for the inhabitants of Vilhelmina (Theilbro 2006, Angelstam et al. 2006).

## RESULTS

### Motivations for MF development

According to their statutes or other written documents, the objective of all four MF initiatives was to implement SFM at the local or regional level through a partnership with representative stakeholders. It was expected that collaboration would be beneficial and that the experiences and new knowledge would be scaled up and disseminated. However, the pioneering motivations for MF development were different. This was because of differences among the initiatives in terms of biophysical characteristics of landscapes, their ecological and economic history, existing systems of governance and government in the Russian

Federation and Sweden, and current regional economic development and global factors.

Protecting pristine forests from wood harvesting was the original motivation for developing the Komi MF. At the start of the 1990s, several foreign forest companies began logging operations in the naturally dynamic forests adjacent to the Pechora-Ilych Reserve in the eastern Komi Republic (Elbakidze and Angelstam 2008). To prevent exploitation of these last-remaining large intact forest landscapes (Yaroshenko et al. 2001), researchers from Russia and Sweden created a project to elaborate approaches for sustainable management of them and submitted it to World Wildlife Fund (WWF) International. The project idea was accepted and began in 1996. The Swiss Agency for Development and Cooperation (SDC), which supported SFM implementation in countries in transition in the mid-1990s, funded the project. In 1999, SDC decided to shift the focus of the project to southwest Komi and to use the term Model Forest, despite its departure from the Canadian Model Forest concept. Criteria for selecting a MF area were formulated and the area of Priluzje state forest enterprise in southwestern-most Komi was chosen for the Komi MF development.

The motivation for creating Pskov MF was to create new regional forestry norms for intensification of

forest management to sustain the wood resource base, primarily for international forest companies using the Nordic intensive sustained yield approach. Large forest companies of Sweden and Finland, which were using Russian timber and pulpwood, experienced problems due to reduced supply starting in the early 1990s after the collapse of the Soviet Union. In the 1990s, the Pskov region, bordering the Baltic States, began to play an important role in the Baltic timber trade. The international forest company StoraEnso showed a particular interest in the area. To ensure regular wood supplies, the company decided to harvest timber in the Pskov region. However, modern Nordic approaches conflicted with the existing Russian system of forestry norms and regulations. To improve economic efficiency, StoraEnso initiated a project targeted at sustaining profits from the timber industry on a long-term basis. At that time, harvesting operations by western companies in Russia incited serious protests among the local population. Hence, StoraEnso suggested that WWF participate, which resulted in the project to develop Pskov MF in 2000.

The pioneering motivation for local collaboration in Foundation Säfsen Forests in Sweden was to develop new livelihoods for local people in the village of Fredriksberg, located in Ludvika municipality. During the 1970s, the Swedish forest sector eliminated many local jobs by restructuring operations and intensifying silvicultural practices. Consequently, smaller local industries were closed and bigger units were built in strategic locations (e.g., Berger et al. 2006). To counteract these negative trends, the Swedish government supported development of the tourist sector locally by investments in a ski resort in the village of Säfsen. As a result of the intensification of forestry and greater availability of food, the moose population increased to very high levels, causing forest damage (Angelstam et al. 2000). Later, the area was recolonized by wolves (*Canis lupus*), eventually leading to conflict between local communities, hunters, tourism enterprises, and landowners over the landscapes' goods, services, and values (e.g., Angelstam 2002, Karlsson 2007). In the early to mid 1990s, conflicts among different landscape users increased in both numbers and intensity. Thus, the Foundation Säfsen Forests were developed and formalized as a platform for dialog among different stakeholders in order to address local conflicts related to natural resource management. In 2003, the focus of the Foundation Säfsen Forests turned

to economic development and entrepreneurship as a way of meeting new, emerging needs. In 2006, the board of the local-level Foundation Säfsen Forests decided to lobby for the creation of a regional-level development initiative in the entire historic Bergslagen region inspired by the MF concept (Seebass 1928). This cooperation encompasses several other development initiatives in the Bergslagen region, which consists of about 25 municipalities and more than 2 million ha.

The motivation to establish Vilhelmina MF was a desire to reduce or avoid conflicts between use and conservation by establishing a platform for dialog among different stakeholders and actors. The Vilhelmina MF has its roots in work with regional development plans for the Vilhelmina municipality and the project "Diverse forest utilization in a landscape perspective" in the mid 1990s (Svensson et al. 2004). The Regional Board of Forestry in Västerbotten County initiated the latter project together with a reference group including representatives of research, nature conservation organizations, and concerned regional and national authorities. The main objective for the project was to avoid serious new conflicts among local stakeholders, which the area had suffered from for more than a decade (Svensson et al. 2004). The Vilhelmina project also included a continuous dialog with private landowner representatives, forest companies, reindeer herding communities, and nature conservation organizations. Thus, the motivation to establish the MF was to avoid conflicts among different land-use interests and foster communication. The development of the Vilhelmina MF, however, is due in large part to one local champion, who was able to develop and sustain a range of local activities. Due to the rise in conflicts between reindeer husbandry proponents and the forest sector, the Vilhelmina MF has given specific focus to the ecological, social, and cultural dimensions of SFM as a complement to the economic dimensions of forest management. In 2005, the Vilhelmina MF was inaugurated as the first European member of the International Model Forest Network.

To summarize, the initial motivations for all four MF initiatives were influenced by the range of SFM challenges to be solved in the particular region. Although ecological motivations dominated in Komi MF and economic factors were the driving force in Pskov MF, sociocultural dimensions were important in the Foundation Säfsen Forests and



Vilhelmina MFs. From the outset, all four MF initiatives have emphasized a balance of the different SFM dimensions. In addition, a main focus has been to build adaptive capacity in the local to regional governance system through capacity building and education. The commitment of being a MF includes a willingness to contribute to and share knowledge and experiences about sustainable development and sustainable forest management globally (Natural Resources Canada 2008). This means that different MFs preferably should have different profiles to contribute jointly with many different parts that together will present new knowledge and experiences in support of SFM processes and sustainability even outside the MF initiative areas.

However, our data suggest that there are fundamental differences in the way organizations identified and formulated problems and initiated dialog among stakeholders in the different initiatives. In Sweden, it was done by local champions with very limited financial support. In Russia, the initiative grew out of a political opportunity involving foreign stakeholders who were concerned about the changes in the forest sector. Both Russian MFs were initiated and funded by foreign actors because of their ecological or economic interests.

### **Governance system: stakeholder structure and process**

A system of governance includes structures and processes, through which partners make and implement decisions and distribute power. The studied MFs differed in number of stakeholders who participated in MF development. For example, more than 50 stakeholders participated in the activities of the Foundation Säfsen Forests and the Komi MF, and Vilhelmina MF involved 37 stakeholders, but only nine stakeholders were identified in Pskov MF. The seeming “deficiency” in stakeholders in the Pskov MF compared with the three other MFs analyzed could be explained by the small size of the MF area (18,400 ha), the fact that there is only one landowner, and that it has a different stakeholder profile than the other MF initiatives.

The analysis of the multi-stakeholder structure in the four MF initiatives showed that governance systems encompassed all societal sectors (horizontal organizational dimensions), i.e., civil,

private, and public (Fig. 2). However, in three of the MFs, more than 40% of stakeholders represented just one sector. This was the public sector in Komi and Pskov MFs, and the private sector in Vilhelmina MF. The public and civil sectors together were only well represented in the Foundation Säfsen Forests, with more than 40% of all stakeholders from each of these two sectors. The private sector was less represented in the Komi and Foundation Säfsen Forests MFs, whereas the civil sector was less represented in the Vilhelmina and Pskov MFs.

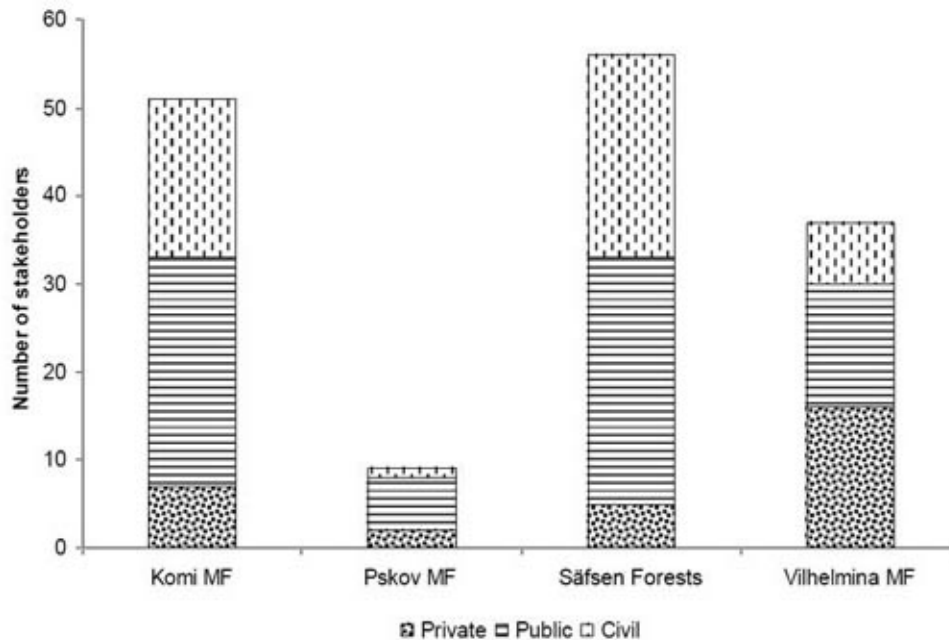
A vertical interaction among stakeholders was also present in the governance system of the MF initiatives. In the Foundation Säfsen Forests and Komi MFs, there was a balance between represented groups of stakeholders at local to global levels. Only in Vilhelmina MF could we distinguish a dominant group where almost 50% of all stakeholders represented local-level stakeholders. Local stakeholders were in a minority in the governance system of Pskov MF, and stakeholders from the international level were less represented in Vilhelmina MF (Fig. 3).

A Group 1 stakeholder, which has the organizational form of a foundation or a society, can be seen as a kind of “bridging organization” in a governance system. This group could play a key role in bridging different levels and stakeholder categories, thus supporting the development of adaptive governance.

The represented levels of Group 1 stakeholders differed noticeably among the MF initiatives (Fig. 4). In the Foundation Säfsen Forests, this group consisted mostly of local-level stakeholders. In contrast, Group 1 stakeholders in Komi MF came mainly from the national level; in Pskov MF, national- and international-level stakeholders were in the majority. In Vilhelmina MF, Group 1 stakeholders consisted mainly of actors from the national and local levels.

Group 2 stakeholders who joined those who participated in the initiatives managed and co-managed projects or activities, and were a key group in decision-making processes in the decision formulation and implementation phases. In the Foundation Säfsen Forests and Komi MF, the Group 2 stakeholders came mostly from the local level. Due to their simple governance structures, the Vilhelmina MF and Pskov MF did not have Group 2 stakeholders (Fig. 4). Group 3 stakeholders, whose participation in the MF activities mainly consisted

**Fig. 2.** The relative number of stakeholders in three societal sectors involved in multi-stakeholder collaboration in Russian and Swedish MF initiatives (in a number of stakeholders in each MF).



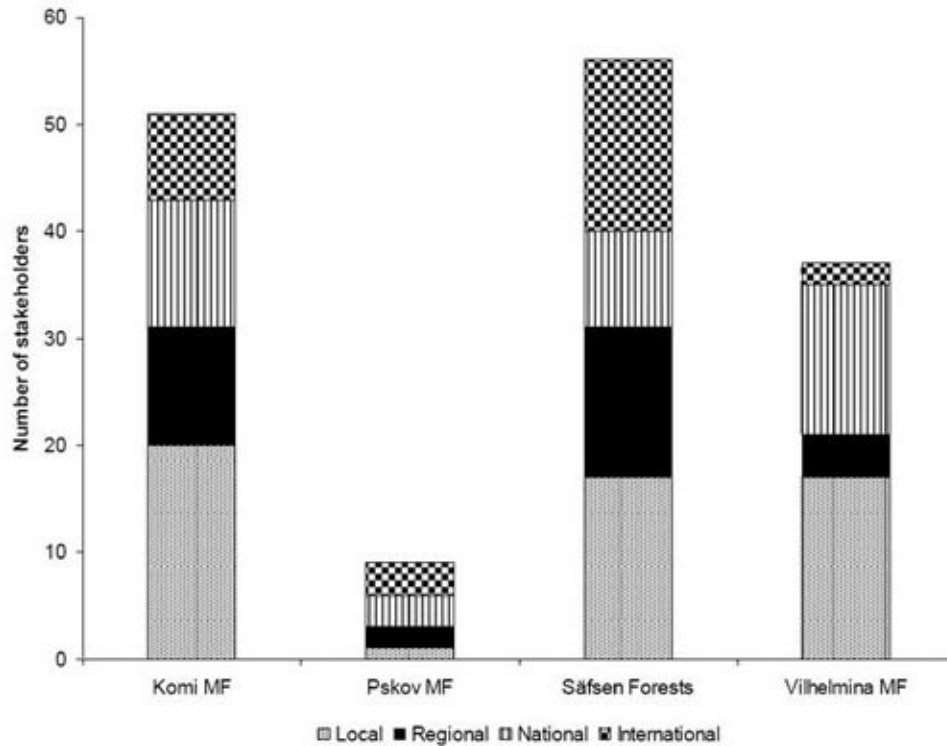
of being informed and managed by two previous groups of stakeholders, were mostly represented by stakeholders at the international (Foundation Säfsen Forests) or local (Komi MF, Vilhelmina MF, and Pskov MF) levels. The public sector was better represented than the other sectors. As there were few private- and civil-sector stakeholders in the MF initiatives, the potential for developing a bridging organization (Hahn et al. 2006, Olsson et al. 2007), and thus social capital, was not fully reached (Coleman 1988, Adler and Kwon 2002; see also Fig. 5).

The governance structures of the two Russian MFs shared the following components: (1) a donor that financed and monitored MF development (a Group 1 stakeholder); (2) project executives in the form of a non-governmental organization (Group 1 stakeholders) responsible for implementation; (3) a board of representatives (a Group 1 stakeholder), who represented the interests of donors and coordinated the work; (4) a coordinating board or a working group consisting of partner representatives that participated in the elaboration of the action plan, represented mostly by Group 2 stakeholders. In

contrast, the two Swedish MF initiatives had rather simple governance structures that shared (1) a foundation (Foundation Säfsen Forests) or a steering committee (Vilhelmina MF), which represented all the major Group 1 stakeholders, respectively, and (2) a network of stakeholders and actors representing a somewhat wider constituency (mostly Group 2 and Group 3 stakeholders). The steering committee and the foundation, which was led by a president, also had executive roles.

Data collected in interviews with managers and stakeholders of the MF initiatives suggested that the decision-making process in the Russian MFs generally adopted similar formats. A specially created NGO ("Silver taiga" in Komi MF) and project executives (Pskov MF) identified problems in forest use or management through consultations with a working group or a coordinating board. The issues were evaluated and solutions were found or developed. These were then discussed with stakeholders, especially with governmental organizations, and then with donor representatives. There are some findings that became the key components in the governance systems. For

**Fig. 3.** Stakeholder distribution at different levels of organization (in a number of stakeholders in each MF) involved in the MFs' development in NW Russia and Sweden.

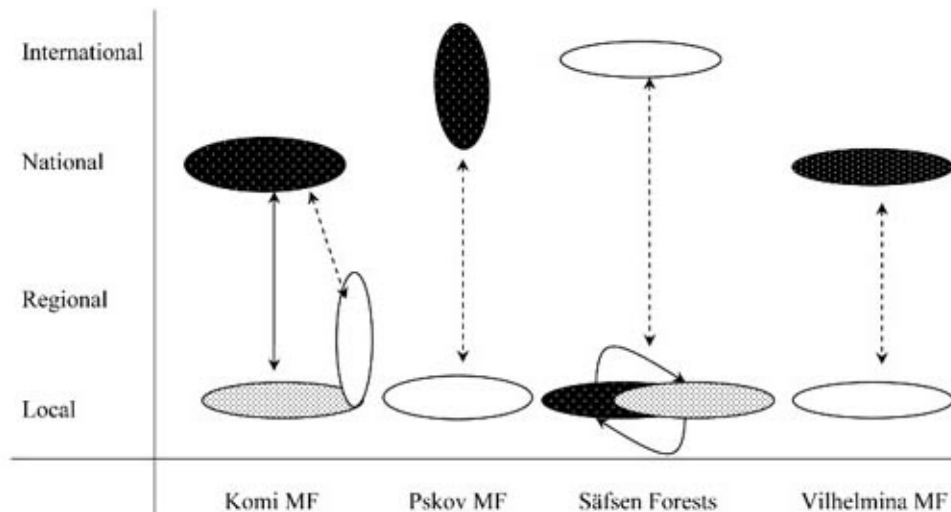


example, in Komi MF, strategic planning was initiated for the development of an operational action plan targeted implementation of SFM for the regional and local conditions and interests of the stakeholders. It consisted of a new approach toward collaboration between managers and stakeholders of different levels. To realize the plans, a working group with representatives of the main partners was formed. This group then conducted ten brainstorming sessions up to 1 week in length over a 6-month period. The discussions among partners on different aspects of SFM were controversial and often seemed to be irreconcilable. The major difficulties of this collaborative work involved (1) the partner's ability to be open and honest during discussions; (2) overcoming professional stereotypes and expanding the view on issues of forest use; (3) establishing equality between partners having different professional and social status, and in the course of discussions and decision-making processes; (4) developing teamwork. These

difficulties were overcome gradually. The process of constructive and creative work initiated a dialog among interested stakeholders and resulted in support for the MFs by many stakeholders from local and regional levels.

In the Swedish MF initiatives, the decision-making processes associated with facilitation of strategic and operational planning toward SFM were different. In Vilhelmina, the process departed from the criteria and indicators based on the six MF attributes, and thus, initially represented a top-down approach to the design of the MF program and activities (Svensson et al. 2004). However, in a deliberative process, the involved stakeholders subsequently defined a set of indicators linked to each one of the six criteria to be able to implement, monitor, and proceed toward SFM. Through the identification of needs, gaps in knowledge, and project objectives, the indicators reflect a bottom-up approach to the MF program. The decision-

**Fig. 4.** The most represented levels (the vertical dimension of a governance system) of Group 1, Group 2, and Group 3 stakeholders in Russian and Swedish MF initiatives. A circle with white dots on a black background indicates a Group 1 stakeholder, a circle with black dots on a white background indicates a Group 2 stakeholder, and an empty circle indicates a Group 3 stakeholder; arrows show the interactions between groups.



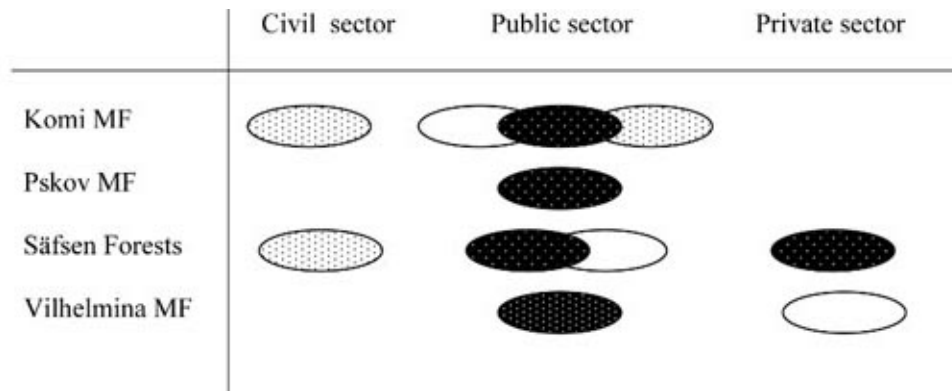
making process was open, and results of the deliberative process were published on a web page hosted by the Vilhelmina municipality (<http://www.vilhelmina.se/modelforest/VilhelminaModelForest.htm>). In addition, seminars, study tours, a showroom, and a number of demonstration areas have been established to involve the public in the MF work.

In the Foundation Säfsen Forests, a few local champions maintained informal but well-developed networks to elaborate on local problems, ideas, and possibilities for solutions. In addition, the local champions were very capable scale jumpers, contacting and interacting with actors at any governance level in response to emerging needs. To secure support, share information about activities and plans, solicit input, and foster discussion of local issues, open meetings with local stakeholders were arranged two to four times a year, or when needed. These meetings typically attracted 20 to 40 people, including representatives from the municipality and the main stakeholders. Based on information generated in these meetings, the local champions or policy entrepreneurs then prepared proposals for new projects or other actions for presentation at the

next board meeting. A web site ([www.safsenskoga.na.se](http://www.safsenskoga.na.se)) was created to communicate in Swedish and English with stakeholders at local to international levels. All formal decisions were made by the board of the foundation.

To summarize, in the Russian MFs, the implementation of decisions, or action programs, began after they had been approved by the donor. Project executives worked with target groups, stakeholders, and governmental organizations to realize the adopted decisions. The donor or its representatives controlled this process. The transparency of the governance system was ensured by the work of the public relations group, tasked with disseminating information on the project implementation by means of the mass media and publication of various materials. Local people participated in the decision-making process and its implementation through (1) public hearings on questions of forest use, which are required for FSC certification; (2) formation of forest clubs as neutral platforms for the local population and other stakeholders to discuss questions of forest use; (3) provision of grants for different activities in the MFs, such as forest club discussions, ecological

**Fig. 5.** The most represented sectors (the horizontal dimension of a governance system) of the Group 1, Group 2, and Group 3 stakeholders in Russian and Swedish MF initiatives. A circle with white dots on a black background indicates a Group 1 stakeholder, a circle with black dots on a white background indicates a Group 2 stakeholder, and an empty circle indicates a Group 3 stakeholder.



festivals, and creation of ecological trails. Libraries, local schools, and cultural establishments were the primary recipients of grants. Educational activities were one of the most important components in the governance systems of the analyzed Russian MFs. Local and regional questions and problems of forest management have since become topics of educational programs, field seminars, and excursions for forest stakeholders from local to international levels. These activities created a more open and transparent environment, attracting public attention to issues of forest management and use. Finally, to promote the principles of SD on different levels, new specialists were trained with emphasis on solving problems related to the SFM process. This training was intended to target young professionals as potential future leaders in society.

The Swedish MFs had very limited executive resources. Thus, to a large extent, the MF initiatives depended on the effectiveness and commitment of the involved stakeholder organizations for the implementation process. The Foundation Säfsen Forests activities focused on development projects that aimed to support or develop local forest-based jobs and the tourism sector. As a result, several ecological and cultural restoration projects were initiated, including efforts to develop areas of interest for tourists and restoration of cultural areas, buildings, and rivers. The decision-making and

implementation processes are well developed and tested, and linked to regional knowledge production and applied research. Previously, the Vilhelmina MF initiative focused largely on educational and research activities, in addition to international cooperation and coordination around forest and forestry demonstration sites. Thus, the decision-making and implementation processes have not yet been tested on issues of “real” conflict and disagreement.

Based on the results of our study, we distinguish three types of governance systems with different levels of integration among stakeholder groups. First, a bottom-up system with more or less strong integration among stakeholders on the local level and a distant interaction with collaborators on other levels (Foundation Säfsen Forests). Second, a top-down system in which decisions were made on national and international levels by Group 1 stakeholders with involvement of experts and specialists on a temporary basis (Pskov MF). Third, a combined top-down and bottom-up system with strong top-down interaction between national and local levels and regional-level stakeholder involvement in decision making (Komi MF). Similarly, the Vilhelmina MF had a mixed system of governance and provisional interaction among levels.

## DISCUSSION

### Governance outputs toward adaptive capacity

Current national and international policies about SFM imply a commitment to deliver a sustained yield of timber, ecological sustainability, and rural development including the need to satisfy social and cultural dimensions of sustainable development (e.g., Innes and Hoen 2005). This implicates the involvement of a much wider range of stakeholders than was previously needed, and necessitates the development of new systems of governance (e.g., Lehtinen 2006).

Our study of local and regional forest governance arrangements in the Russian Federation and Sweden shows that there are similarities, but also distinct differences, among the four different MF initiatives. One obvious similarity among the MFs studied is that their systems of governance based on multi-stakeholder collaboration represent attempts to establish a new type of governance of forest landscapes, both in the Russian Federation and in Sweden. Although the ownership pattern of land and forests is very different in the two countries, particularly given that forests are government owned in the Russian MFs and that there are many industrial forest owner categories in the Swedish MFs, the traditional way to manage forest resources in both countries is mainly through a top-down and sectoral approach. In contrast, stakeholders from different sectors and levels became involved in the governance process in the various MF initiatives. This trend represents an attempt to move from governance of forest goods to governance of forest landscapes, including ecosystem services and intangible values, such as natural and cultural values. At the same time, we conclude that there are at least two important distinctions between MF initiatives in the Russian Federation and Sweden.

The first distinction is that the Russian MFs have been long-term projects, which developed as a result of successful timing and a combination of foreign donors interested in Russian SFM development and strong local or regional champions. These factors together made it possible to promote and implement new decisions in order to change and improve forest management according to the wishes of stakeholders in the two Russian MF initiatives. Most activities in the decision-making and implementation processes were initiated, facilitated, and financed by foreign donors. In contrast, in Vilhelmina, to

avoid the escalation of new conflicts, the local champion was able to legitimize a range of local activities from his central position in the forest sector, in-kind support, and small short-term projects for long time. Finally, combined with an instrumental champion, as in Vilhelmina, the Foundation Säfsen Forests relied on a large number of short-term projects, committed members in the partnership, and in-kind contributions from a wide range of stakeholders.

This realization provokes a broader set of questions related to improved adaptive governance. In the Russian cases, could a local governance arrangement supported financially and, partially, professionally from abroad be adaptive in the long run, including a "post-project" life, even if having satisfied required adaptive governance attributes during the project time? In the Swedish cases, are local governance arrangements, which are dependent on local champions and lack reliable financial resources, be adaptive in the long run, when it is possible that the policy entrepreneurs will retire or have other reasons for abandoning the process? Is it possible to generate a partnership of champions from only one champion? In other words, does social learning take place and is deliberation institutionalized as a practice in a nested governance structure of the MFs? The underrepresentation of, for example, the civil sector implies that the MF project is not really anchored outside of the public and private sectors, which may, in turn, have implications for social learning and deliberation.

Another distinction is that the studied MF initiatives operate under different "governance domains," or governance systems on a national level, which, we suggest, influences the ability to develop adaptive capacities in the local MF initiative. It is not enough to focus only on the character of the partnership forum or governance system itself, in this case in a number of MFs; it is also necessary to put it into context and elaborate on how that affects their adaptive capacity. The framework developed by Duit and Galaz (2008) (see also March 1991, March and Olsen 2006) to analyze complex adaptive systems could be applied here. Adaptive capacity can be understood as an outcome of the trade-off between "the capacity to benefit from existing forms of collective action" (exploitation) and "the capacity of governance to nurture learning and experimentation" (exploration) (Duit and Galas 2008: 318). The interaction between these two concepts yields four

types of governance systems, which are distinguished by different balances between exploitation and exploration: (1) rigid governance with high levels of exploitation and low levels of exploration; (2) robust governance, which combines a high capacity for exploration with an equally high level of capacity for exploitation; (3) fragile governance with weak capacities for exploitation and exploration; and (4) flexible governance, which has a well-developed capacity for exploration and a lack of capacity for exploitation.

Our results suggest there is a fragile governance system at the national level in the Russian Federation with badly functioning institutions, non-existent property rights, and corruption and low levels of social capital (Olsson et al. 2006). In Sweden, there is a rigid governance system at the national level, in which coordination and cooperation are high, but responsiveness to external changes is slow and incremental due to either biased or weak feedback (Pierre and Peters 2005). At the same time, stakeholders in MF initiatives in both countries have begun to develop a network-based type of governance system both locally and regionally. In the Russian Federation, this has happened in the frame of a fragile governance system at the national level, and in Sweden, in the interaction with a rigid governance system. We suggest that governance systems of MFs in Russia and Sweden differ in their potential to develop and realize their adaptive capacity, with greater potential in Sweden and less potential in Russia, resulting from opportunities (in Sweden) and limitations (in Russia) created by their “governance domain” legacies. This raises the question whether adaptive capacities of governance systems in initiatives toward sustainable landscapes, and in MF initiatives in particular, depend on the “quality” of the governance system at the national level? Are sustainable landscapes as complex social-ecological systems able to be developed only in countries with the appropriate combination of governance systems at the national and local levels?

### **The need for studies of outcomes and transdisciplinarity**

Our analysis of four MF initiatives shows that there is a rich pool of experience that can be used to gain needed knowledge to support the implementation of sustainable forest management, and for the

development of local to regional adaptive governance initiatives. Obviously we have not analyzed all attributes of adaptive governance in this study. For example, we have not studied to what extent the MF initiatives include a careful problem analysis and an egalitarian process where all stakeholders are involved, nor the operationalization of practical planning and management. In addition, analysis of organizations described as the partnerships, the boards, the executive bodies, and their interactions could provide additional insight into the nature of governance, how participatory and democratic it is (Currie-Alder 2005). Thus, there remain several unanswered questions. The MF concept has the potential for careful problem solving and analytical deliberation based on communicative and collaborative approaches, mixing local, traditional, and scientific knowledge. However, it is not clear whether all relevant stakeholders are involved in a collaborative learning process as part of the governance process. Nor is it clear whether the landscape initiatives are inclusive and representative, i.e., open to any stakeholders who wish to contribute.

Another issue that needs to be evaluated is to what extent ecological, economic, and sociocultural outcomes are delivered on the ground, or whether the process of deliberation is created without the power to affect tangible outcomes in terms different dimensions of sustainable development such as improved sustained yield of timber, adaptation and mitigation to climate change, rural development, cultural heritage maintenance, and nature conservation (Törnblom and Angelstam 2008). To evaluate the adaptive capacity of a governance system, the economic, ecological, and sociocultural outcomes of MF governance systems in actual landscapes need to be linked to how the multi-stakeholder collaboration develops over the longer term, and how it works when tested by conflicts, crises, and rapid change. This requires a multiple-case-study design. To extract and disseminate useful traditional and new knowledge from a suite of landscape-scale case studies, a transdisciplinary integrative approach is needed where researchers from different disciplines work together with representative local and national actors (e.g., Tress et al. 2006, Angelstam et al. 2007).

To evaluate outcomes on the ground, at least three approaches should be applied: (1) study stakeholders’ perceived results (Schultz 2009), (2) analyze the ways the landscape initiatives work to

achieve these results, and (3) compare the perceived results with empirical field data, official statistics, and historical records as a measure of actual change in the landscape.

Responses to this article can be read online at:  
<http://www.ecologyandsociety.org/vol15/iss2/art14/responses/>

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