



Promotion of forest owner cooperatives in Lithuania – Policy strategies to facilitate sustainable forest management

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Abstract

Forest owner cooperatives are often regarded as a policy vehicle to improve the management of private forests and facilitate entrepreneurship in the forest sector. This can be especially important for countries with economies in transition and recently restored private forest ownership. This study provides decision support and policy recommendations for the promotion of forest owner cooperatives in Lithuania. General characteristics of forest owner cooperatives and cooperative entrepreneurship are portrayed as well as the situation in private forestry in Lithuania. International case studies on forest owner cooperatives and public policies in their regard serve to derive elements and aspects of cooperation that are applicable elsewhere as well as concrete policy recommendations for the case of Lithuania. A variety of different entrepreneurial approaches of existing forest owner cooperatives is found to be applicable to Lithuania as well as different policy measures to promote them. Preferably a policy framework consisting of a complementary mixture of public services and financial support should be chosen for the Lithuanian case and implemented with sufficient financial and personnel capacity in order to achieve an effective policy impact. Thus the promotion of forest owner cooperatives holds much potential to improve the viability and sustainability of private forest management in Lithuania.

Keywords: Forest owner cooperatives, Lithuania, forest policy, private forest management.

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1. Introduction

1.1 Outline

During a study trip in spring 2012 within the Euroforester program by the Swedish University of Agricultural Sciences I visited Lithuania for the first time to learn about the local forest sector and its challenges. I was already very interested in cooperation among private forest owners when I came there. During the study trip I realized that cooperation holds much potential for Lithuania and other countries with economies in transition as it may encourage entrepreneurship and the transfer of knowledge. This may improve the viability of private forestry and result in more active forest management that is better able to facilitate and protect the full array of forest uses and functions.

The restitution and privatization of private forest ownership in Lithuania has led to small-sized forest holdings (Lithuania's Ministry of Environment, 2011) and forest owners with little experience and expertise in forest management (Mizaraite & Mizaras, 2005). In those Central and Eastern European countries where forest land has been restituted and privatized, among them Lithuania, the aim was to create a private based economy in rural areas and re-establish private land rights. Early on in the newly privatized forest estates problems appeared, such as over harvesting, timber theft as well as insufficient forest regeneration and forest investment. These problems were partially a consequence of a lack of tradition in forestry among the new owners and their lack of awareness and expertise. Later on the institutional and informational context was identified as an important factor determining the private owners' attitudes towards forestry. Furthermore the enforcement of property rights of private forest owners, for instance the protection against timber theft, remains an immediate concern, with private forest owners often not being able to assume this by themselves. Consequently many of those forest owners whose property rights have been attributed since 1990 are not yet able to fully exercise their land use and management rights. Additionally, the small average size of forest holdings leads to the specific problems associated with small-scale forest management, such as lack of economies of scale and rent dissipation. As a result the restitution and privatization of forest land has in many cases induced a suboptimal utilization of the forest resource's potential (Bouriaud & Schmithüsen, 2005). Therefore in Lithuania there is an evident threat for shortcomings in the sustainable management and efficient use of private forests. In all likelihood private forests do not contribute as much to society and common welfare as they potentially could.

Currently in Lithuania private forest owners receive little public support in the management of their holdings (Mizaras, intv. 2012; Siaulys, intv. 2012). At the same time they increasingly have a need for effective and reliable forest management service providers (Lazdinis & Pivoriunas, 2004). Accordingly the improvement of the economic situation of private forestry in Lithuania is high on the national forest policy agenda. Cooperation among private forest owners is regarded as a promising measure to facilitate the sustainable management of private forests (Kupstaitis & Vaikasas, intv. 2012). Cooperative initiatives among private forest owners have proven effective in the provision of training and advice (Lillandt, 2001). Forest owner cooperatives can play an essential role in promoting entrepreneurial activities in small private forests, improving the productivity of forest management.

Thus they may facilitate the delivery of wood into viable supply chains and function as effective intermediaries between private forest owners and the forest industry (Mendes et al., 2006 cited by Niskanen et al., 2007a). Forest owner cooperatives maintain customer relations with their members to whom they provide services as well as the forest industry that they provide with timber. They aggregate wood supplies from private forests through joint activities such as timber harvesting, marketing and logistics. Some cooperatives also offer additional services such as forest management for absentee owners or develop new products such as forest fuel supply for energy plants. Therefore cooperatives are seen as an opportunity to satisfy the rapidly growing timber demand of forest based industries and the renewable energy sector (Rauch, 2007). At the same time forest owner cooperatives can be regarded more inclusively as enterprises that move value and control down the supply chain, closer to the forest owners and within local communities, to promote environmental and social objectives (Hull & Ashton, 2008). Therefore forest owner cooperatives could improve the sustainability and viability of private forest management in Lithuania. Joint management could help reap economies of scale and improve management efficiency. Furthermore forest owner cooperatives could make missing services such as advice and full service forest management available in the first place. Thus cooperation could contribute to the national economy and improve sustainable management and nature conservation considerations in private forests.

Forest owner cooperatives have the potential to provide many public benefits. Therefore cooperation has often been promoted as a tool to implement public policy on private lands (Kittredge, 2005). Cooperation could act as a mediating element between private and public parties, motivating and helping owners to take further measures that improve their economic situation and apply for public support. The small size of many forest holdings makes the provision of public support difficult. Cooperatives could improve this and make the allocation of support more efficient (Kupstaitis & Vaikasas, intv. 2012). Thus the involvement of forest owner cooperatives in the efficient allocation of public services and support could improve the effectiveness of public support in private forests.

In order to provide a balanced combination of private and public benefits through multifunctional forest management, forest policies need to foster joint private and public engagement and investments in an equitable manner (Bouriaud & Schmithüsen, 2005). Forest owner cooperatives give their members the opportunity to live up to the rights as well as the liabilities of their ownership through the promotion of sustainable forest management. However the provision of services to the owners of small forest holdings is a difficult business venture. Especially in the transition economy of Lithuania the successful establishment of forest owner cooperatives will very likely depend on effective public support and cannot merely rely on market developments in a yet developing market economy. Thus the promotion of forest owner cooperatives will require a combination of private and public efforts. If successful, cooperation among private forest owners offers the potential to facilitate sustainable and active forest management and become an integral part of private forestry in Lithuania.

The private forest sector in Lithuania as in the whole of Europe carries a lot of potential but also faces substantial challenges for sustainable and viable forest management. On an international scale

private forest owners have for a long time sought to improve their forest management through cooperation and a variety of local solutions has evolved. However the transfer of knowledge in this respect is very limited and a more systematic, international dialogue is needed to learn the lesson from existing approaches, find new ones and fully develop the potential benefits of cooperation among private forest owners.

This thesis seeks to contribute to this process by giving an overview of different approaches to cooperation in private forest management, by deriving aspects and characteristics of those that are applicable elsewhere and finally by providing decision support and concrete policy recommendations for the specific case of Lithuania. Due to its general analysis of cooperation among private forest owners this work is relevant for everyone concerned with forest owner cooperatives such as professionals, policy makers or the interested public.

Objectives of the thesis are:

- A general understanding of forest owner cooperatives and cooperative enterprises.
- A description of the situation in private forestry in Lithuania.
- A portray of opinions and ideas of stakeholders in Lithuania as well as their policy suggestions and conflicts of interests.
- Case studies on forest owner cooperatives and public policies in their regard.
- General elements and organizational aspects of cooperation and corresponding policy tools.
- Policy strategies for the promotion of cooperation among private forest owners in Lithuania.

1.2 Understanding forest owner cooperatives- a literature review

1.2.1 General considerations on forest owner cooperatives

Cooperation of forest owners in different countries has often had *common origins*:

- *Government involvement* in the development of cooperative organizations. Often forest owner cooperatives have served as a forest policy tool for private forests. Government involvement often provides the necessary vehicle to initiate cooperative organizations among forest owners. It may occur as direct subsidies or indirectly, when payments of subsidies for forest management activities are routed through cooperatives. Even financial incentives for forest owners to join cooperatives occur. Furthermore the state may encourage the establishment of cooperatives with personnel from the public sector or provide office or meeting space. State support probably needs to be locally oriented to create effective networks of small units with local relevance. Many examples of cooperatives

continue to receive governmental support after decades of operation which seems warranted by the social benefits private forestland provides (Kittredge, 2005).

- A *common problem* often serves as a catalyst for forest owner cooperation. In Scandinavian countries timber markets were dominated by large industrial buyers. Therefore private forest owners had low market power and received low timber prices which motivated them to cooperate. During war times there was a very high demand for fuelwood and the government acknowledged the cooperatives' potential to satisfy local energy demands which further promoted cooperative development. In South Korea Village Forestry Associations were founded for afforestation. Fragmentation of private forest holdings in central Europe motivated governments and forestry professionals to initiate cooperatives. Nature conservation and transformation forestry concerns motivated NGOs and governments to form cooperative organizations in the UK and the Netherlands. Overstocked or newly established conifer plantations in need of tending combined with markets for small dimension timber have led to cooperation among governments and landowners in the UK, Ireland and Japan. The promotion of reforestation on private forest land and needs for local forest worker training and recruitment initiated cooperation between the Provincial Government of Quebec and cooperatives. In Australia environmental concerns led to the foundation of volunteer groups to counter environmental degradation within the Landcare program, led by NGOs, the government and the industry. In British Columbia private forest owners formed organizations for information, education and support to promote alternative forest management approaches to the dominant industrial large-scale forestry practices. Nevertheless threats alone cannot lead to cooperation as this also requires trust and consensus about management objectives and decisions (Kittredge, 2005).

Furthermore there are *common elements* of cooperation among forest owners:

- Concerning *organizational structure*. There probably is an optimal size or economies of scale of operations when a cooperative is small enough to maintain local contact and relevance with members but at the same time large enough to operate strategically and effectively in the marketplace as well as in the policy arena. When a cooperative grows too large it may lose contact with the members. However this can be improved by having regional divisions within a larger organization. Within the larger market-driven organizations local cooperatives can handle timber mobilization and feed larger concentration yards, while larger umbrella organizations represent the owner's interests and educate them (Kittredge, 2005).
- Concerning *increasing absenteeism*. As a result of migration from rural areas to urban centers more and more forest owners are detached from their property and forests are bought by owners with no previous history of land ownership. Here cooperatives can offer management services and thus contribute to rural employment and development (Kittredge, 2005).

- Concerning *green certification*. Cooperatives often offer green certification to members under group or umbrella agreements with certifiers. Group certification is a financial advantage as the organization shares the high costs. For some cooperatives certification even was the initiating motive. PEFC was initiated through cooperation of several forest owner associations (Kittredge, 2005).
- Concerning the *effectiveness of cooperation*. Cooperative organizations do not appeal to all landowners and even in Finland, where all landowners are required by law to contribute to cooperatives, only a 75 % participation rate exists (Koistinen, 1998 cited by Kittredge, 2005). In Sweden successful organization still attract only roughly half of non-industrial private forest owners (Kittredge, 2003 cited by Kittredge, 2005).

Kittredge (2005) examines international examples of forest owner cooperatives with varying goals, structures and sizes and identifies *different types* of cooperation:

- *Information cooperation*. Members share information, techniques, experience and advice. They operate independently.
- *Equipment cooperation*. Members share equipment and machinery. They operate independently even though incidentally joint activities in sharing equipment may occur.
- *Financial cooperation*. Typical elements include joint timber marketing, forest management services, wood processing, information and education, purchase of goods and services and political representation. In forest owner cooperatives members usually own a share in the organization corresponding to the size of their forest property. Members may earn dividends in the form of annual returns or share value growth and may also benefit from higher timber prices. In the provision of forest management services, packages are evolving for the full array of services which is particularly attractive for absentee owners. This may even leave management decisions to the cooperative while the forest owners' approval is only required for financial transactions such as timber sales. However financial cooperation still does not guarantee the operational optimization of business processes as it does not necessarily result in integrated and cooperative management planning.
- *Management cooperation* offers yet a more advanced form as forest owners make and implement integrated management decisions jointly. There is more opportunity for considerations to landscape scale conditions and ecosystem-based approaches to forest management. However examples for integrated, landscape scale management across property boundaries by non-industrial private forest owners are rare (Kittredge, 2005).

In promoting integrated management cooperation among private forest owners it is recommendable to first promote information, equipment and financial cooperation and let management cooperation evolve from them. Functional cooperation on the basis of information, equipment and finance promotes trust, communication and solidarity to create the preconditions for more integrated management cooperation (Kittredge, 2005).

Depending on local circumstances Kittredge (2005) identifies *potential benefits* of cooperation that can be summarized by the following categories:

- *Joint purchases*: purchase of supplies in bulk, joint use and disposition of equipment, joint disposition of contractors and professional services.
- *Joint sales*: timber marketing, development of brands for forest products.
- *Joint forest management and planning*: road construction, road access and maintenance, full management service to absentee owners, consolidation of small parcels to larger management units.
- *Joint forest protection and enhancement of non-timber forest products*: fire protection, recreation planning, habitat planning and game management, promotion of afforestation or reforestation, enhancement of forest protection, uniting a sufficient amount of forest area for environmental certification under a group or umbrella scheme.
- *Socio-economic benefits*: shared knowledge, experience and assistance, information and education, lobbying and political representation, insurance pool, financial assistance and loans, pooled, improved access to government and private sector grants (Kittredge, 2005).

Watershed function, wildlife habitat, outdoor recreation and scenic ambience for tourism as well as effective access for timber harvest all benefit from cooperation among small private forest owners. The role of information cooperation grows as through absentee ownership private forest owners become increasingly detached from their property and less interested in forest management (Kittredge, 2005). Furthermore Blinn et al. (2007) point out, that forest owner cooperatives could facilitate communication and community building between established and new landowners to promote a sense of community.

Forest owner cooperatives need to develop management models for the broad variety of forest uses and include non-timber forest products and other uses as well. The objectives of private forest owners need to be understood and respected since they are the decision-makers at the beginning of the timber supply chain. Forest owner cooperatives should have an internal orientation to support their members' interests. They need to acknowledge the diversity of interests and attitudes among forest owners and find new ways to facilitate active forest management (Mendes et al., 2006 cited by Niskanen et al., 2007a).

The fact that cooperation occurs in a variety of countries and cultures with very different circumstances demonstrates that the success of cooperatives does not strictly depend on a social or cultural predisposition towards working collectively (Kittredge, 2005). Instead there are other *preconditions for the success* of forest owner cooperation:

- Strong communication.
- Clear goals of cooperation.
- Local relevance.

- Involvement of forest owners who already actively manage their property.
- Avoidance of the perception of competition to existing management approaches.
- Concentration on services and benefits which are not already available by the public sector or conventional management.
- Avoidance of single focus of benefits, such as improved timber marketing only or nature conservation only in order to address a broader variety of members.
- Institutional support for the difficult initiation and establishment phase.
- Base of motivated and skilled local leaders (Kittredge, 2005).

Hull and Ashton (2008) identify *success factors* for cooperation as:

- Maximum forest owner control and flexibility
- Emphasis on amenity and environmental qualities over short-term profits
- Integration of harvesting, processing and marketing
- Improved access to capital from public grants and private investors
- Good management skills, organizational capacity, leadership, business management and conflict resolution
- Sophisticated natural resource inventory system (Merrett & Walzer, 2001; Baker & Kusel, 2003; Conley and Moote, 2003 cited by Hull & Ashton, 2008).

There are also potential problems with cooperation. If landowners do not see continued benefits from cooperation they might not be interested any longer. Participation may not seem attractive for holdings where only infrequent harvests are possible with long intervals in between. Resources tied up in shares might result in high capital costs in the face of attractive alternative investments. If services potentially offered by cooperatives are already provided in a satisfying way by governmental bodies at low rates this can be a competitive disadvantage. High competition on forest management may confuse forest owners. Larger cooperatives with more structured, corporate organization might alienate members at local level. Landowner cooperation probably needs to remain local to be relevant (Kittredge, 2005).

The lack of opportunity for frequent timber harvesting, small harvest volumes and time consuming consulting for single owners of small forest holdings are major operational challenges for forest owner cooperatives (Rauch & Gronalt, 2005 cited by Rauch 2007). Furthermore there is often a lack of forest inventory information (Rauch, 2003 cited by Rauch, 2007). Cooperatives also face challenges due to the complexity of capitalizing and managing a vertically integrated, value-added forest processing stream. The capital needed to build the infrastructure for a forest industry operating in niche markets seems to be the biggest challenge for cooperatives (Hull & Ashton, 2008).

It needs to be accepted that there is no universal appeal of cooperatives and that some landowners may be satisfied with the status quo (Kittredge, 2005). Kittredge (2005) points out several *obstacles that may prevent participation* by some forest owners:

- General disinterest in their forest holding, due to absentee ownership, recent or incidental acquisition and urban lifestyle.

- Disinterest in the economic aspects of their forest holding in contrast to the primary economic motivations of most cooperatives.
- Distrust of an organization or of the profession of forestry or personal aversion to the local cooperative leadership.
- Belief that independent management will be more successful.
- Ability to benefit from cooperative service and performance indirectly as a “free rider” without joining.
- Lack of mature timber and thus no market incentive to participate.
- Forestry needs are currently satisfied by a different management model.
- Perceived benefits of participation do not outweigh the costs (Kittredge, 2005).
- Mentality of owners who might be protective of their property and be reluctant to work in a group.
- Communication problems and lack of objective knowledge or informed opinions.
- Legal context, as some regulations may present an obstacle to cooperation.
- Different owner objectives, especially concerning the economic orientation of activities.
- Size and fragmentation of holdings.
- Technical and organizational obstacles to common management activities (Suda et al., 1999 cited by Kittredge, 2005)

Forest owner cooperatives’ dependence on a volunteer membership base makes it difficult for them to keep the business functioning or to be strategic in their approach, reacting to internal and external factors. Accordingly a weakness in some forest owner cooperatives is a lack of attention to business and marketing strategies. A business plan to guide members and maintain focus on goals is essential for the long-term stability of the business (Blinn et al., 2007).

Threats to cooperatives from outside the business itself come from the lack of knowledge about cooperatives which may make it difficult to attract new members, receive government support or sell products. Communities may lack the capacity in terms of networks, organizations and infrastructure for the cooperative to build on. Landowners may value independence more than the benefits of cooperation. Even local laws and regulations may inhibit cooperation (Blinn et al., 2007).

Forest owner cooperatives fail when membership costs exceed membership benefits, especially in case of inflexible and excessive membership commitment, when internal conflict requires excessive negotiations and if new members are not recruited and educated (Dempsy and Markeson, 1969; Parnell, 1999; Nadeau, 2002 cited by Hull & Ashton, 2008). They fail when they do not make profits

because they are inadequately capitalized and unable to control product quality and market their products (Dempsey and Markeson, 1969; Parnell, 1999; Merret & Walzer, 2001 cited by Hull & Ashton, 2008). They also fail if inadequate management infrastructure inhibits effective inventory and the management of members' diverse interests (Cook, 1995; Katz & Boland, 2002; Kittredge, 2005 cited by Hull & Ashton, 2008).

Rauch (2007) applied SWOT analysis to existing examples of forest owner cooperatives to derive and evaluate *business strategies* for forest owner cooperatives:

- Forest owner cooperatives should seek to optimize the supply chain. This combines two core competencies of forest owner cooperatives, improved timber marketing for their members and improved timber procurement from small private forests for the forest industry. Optimized business processes reduce the time that daily business consumes and give the management time to develop the enterprise and realize innovations.
- The potential for highly mechanized logging should be utilized and stands identified that can be thinned cost-efficiently using harvesters and forwarders.
- Forest owner cooperatives should seek to enhance the reliability of their deliveries (Rauch 2007). The coordination of timber supplies from small private forests and the management of exact delivery profiles is a challenge. Therefore small private forests are often regarded as inferior, but cheap timber suppliers by the forest industry (Maier 1995 as cited in Rauch 2007). Many forest owners who manage their property by themselves are active farmers at the same time. Often they prioritize weather dependent, agricultural needs.
- Merger with neighboring forest owner cooperatives may produce synergy effects by increased market power and shared experience. This strategy responds to new demands and challenges arising from corresponding concentration processes in the forest industry.
- When timber marketing is offered to attract new members it has to be considered that only forest owners who already harvest timber profit from joint sales. However many forest owners require the provision of other services to address their specific problems or needs.
- Forest owner cooperatives should adapt their services to structural changes among forest owners and respond to new demands.
- Cooperatives should dedicate themselves to the efficient provision of services even in case of very small harvest volumes. They should develop new business segments and further optimize their business processes.
- Pursuing defensive strategies forest owner cooperatives may stop dealing with small timber volumes as this may take high efforts and consume a lot of time. However the efficient acquisition and handling of small timber volumes is indeed a challenge but at the same time a core competency of cooperatives. It is a service with high potential for the acquisition of timber and should therefore receive some consideration.
- Cooperation with forest enterprises may raise the timber supply volume which strengthens the cooperative's market power. When employees of forest enterprises work for forest owner cooperatives, taking over specific tasks or working part-time for the cooperative this increases the professionalism of business processes.

- Forest owner cooperatives can facilitate their growth and professionalism by employing full-time management. The forest owner cooperative Kempten evolved along with its management from the secondary occupation of a state forester to a half-time and finally even full-time management position, accompanied by the development of more sophisticated services (Rauch 2007).
- Summarizing the above mentioned, Rauch (2007) recommends optimized processes in the supply chain from forest owner cooperatives to the forest industry to combine their ability to enhance timber marketing for their members and to improve timber acquisition for timber buyers. Highly mechanized harvesting can cost-efficiently acquire timber from thinnings. The development of new business segments is important for the further development of cooperatives as the demand for consulting among forest owners increases (Rauch 2007).

Key issues related to improving cooperative effectiveness include an expansion of membership to enhance leadership and volunteer assistance, improving marketing efforts, developing networks within local communities and among cooperatives as well as supporting organizations (Blinn et al., 2007).

The major strength of cooperatives is to service members' needs that are difficult to meet as an individual. This can help overcome the impacts of many cooperatives' high initial start-up and operational costs. The best way to overcome the lack of resources at a community level is the cooperative process itself to address shared problems. A main challenge, especially during a cooperative's initiation is sufficient experience in accounting, human resource development, marketing and networking. Assistance from within the membership can be a valuable contribution. Potential sources of members can be enhanced by addressing local residents, businesses and organizations who appreciate the cooperative's benefits for the community or customers of the cooperative's products. Forest owner cooperatives can enhance interest in their goals and reach a wider public if they broaden their membership base to those who do not own forestland. Non-landowning members could be charged a fee for services such as information and education and be offered discounts on the cooperative's products. Broadening membership would also expand the skills available to a cooperative. Sympathetic locals might even support a cooperative with free, voluntary services without being a member. Lawyers, accountants, tax preparers and marketing specialists could contribute a lot to cooperative development (Blinn et al., 2007). The cooperative's customers could become members for discounts or other benefits like ensured supply volumes, broadening the scope of a cooperative from that of a classical producer cooperative to that of a consumer cooperative or other models.

Partnerships with cooperatives that have similar concepts and complementary products can enhance membership and customer base. This could for instance include a food cooperative that sells edible forest products (Blinn et al., 2007). Thus strategic partnerships with other cooperatives or local enterprises could improve the marketing of mushrooms, berries, honey, fuel wood, game meat or hunting opportunities (Hull & Ashton, 2008). It can be a good strategy to promote cooperation for forest management also among forest owners that have already joined cooperatives for other purposes such as agricultural cooperatives, particularly dairy cooperatives in areas that are also rich

in forests owned by farmers. If many forest owners also own agricultural lands or are active farmers a forest owner cooperative could form a partnership with an agricultural producer cooperative (Hull & Ashton, 2008). Alternatively existing agricultural cooperatives could establish forest management branches to promote the forest as an additional source of income for farmers. Furthermore networks with other cooperatives can serve for a valuable exchange of information and experience. Therefore one strategy could be the establishment of a federation of forest owner cooperatives that could serve as a body to share experience and serve public relations and marketing efforts (Blinn et al., 2007).

Furthermore cooperatives can also develop relationships with other local businesses to exchange knowledge and build support for their products. Local businesses like forestry consultants may see the cooperative as a threat to their own enterprise. By involving and incorporating these enterprises the cooperative may gain access to a network of well-connected members (Blinn et al., 2007).

To avoid the mistakes of the past forest owner cooperatives should focus on membership recruitment and retention by concentrating on their needs, develop a business plan, focus on increasing demand and expanding markets, reach out into the community to broaden their membership base and build networks, form partnerships and learn from others to facilitate management and marketing strategies (Blinn et al., 2007).

Governments can support cooperatives through financial, technical and organizational support. Technical support could include business and marketing plans, forest inventory and silvicultural services. Organizational assistance may facilitate the setup of cooperatives. Financial support could take the form of low interest loans, start-up grants and space at industrial parks (Hull & Ashton, 2008). Cooperative development services can further facilitate the transfer of knowledge and offer information and assistance in cooperative development, technical assistance and education (Blinn et al., 2007).

Strategic initiatives may assist public forest agencies and forestry practitioners to support cooperative forestry ventures (Hull & Ashton, 2008). Suitable programs that assist private forestry in the US include the American Tree Farm System, Forest Stewardship Program and the National Woodlands Owners Association. They provide information, technical assistance, education and cost sharing of management operations (Blinn et al., 2007).

1.2.2 Cooperative enterprises and business administration

Business administration highlights important lessons on the organizational structure and development of successful cooperative enterprises. A brief summary is given here and a more elaborate portrayal in Annex 2.

Success factors of cooperation:

- Social factors such as shared goals and values and a sense of community (Birchall, 2009).
- Members' social cohesion, commitment and involvement (Nilsson, 2001).

- Ensured member commitment through participation (Birchall, 2009).
- Prioritization of members' interests (Birchall, 2009).
- Homogeneity of interests among members (Birchall, 2009).

Cooperative enterprises benefit from a supportive environment characterized by social factors such as shared goals, values and a pronounced sense of community. To be successful cooperatives need to prioritize their members' interests and ensure their members' commitment through participation. A certain measure of homogeneity among members' interests reduces the costs of ownership (Birchall, 2009).

Benefits of cooperation:

- Addressing *market failures* by improving the market position (Nilsson, 2001).
- Reaping *economies of scale* (Sexton, 1986 cited by Nilsson, 2001).
- Joint *vertical integration* (Nilsson, 2001).

Cooperative enterprises have often been successful as they are effectively able to address market failures (Nilsson, 2001). Cooperative enterprises help their members attain larger amounts of commerce and reap economies of scale (Sexton, 1986 cited by Nilsson, 2001). They give their members the opportunity for joint vertical integration of further steps in the production and value chain and to improve their market position (Nilsson, 2001).

Cooperative enterprises generally distribute costs and benefits equally and make decisions democratically. They differ from other forms of enterprises due to their emphasis on the production of benefits to their members in the form of services and an improved market position rather than return on invested capital (Skurnik, 2002). Cooperative enterprises can be owned by anyone who provides input to the production process. This may include employees, suppliers of raw material and suppliers of capital as well as purchasers of the company's products (Skurnik & Vihriälä, 2012). Members of cooperatives assume simultaneously the role of patrons who control and benefit from its activities and investors who own the company. Often the provision of services has dominated over the orientation on capital returns and so has the patron role over the investor role. However this has led to less individually owned assets and promoted a variety of problems (Nilsson, 2001).

Problems with cooperation:

- *Property rights problems*: Threat of inefficiency due to vaguely defined property rights that inhibit decision making, monitoring of the enterprise and the transmission of market signals (Nilsson, 2001).
- *Agency problems*: Difficulty for the members to monitor and control the management leads to higher agency costs, a threat of inefficient use of financial resources and lower ability to raise equity and make investments (Nilsson, 2001).

- Efficiency is especially low when collective ownership is combined with an insufficient ability to correct market failures and gain the members' commitment (Nilsson, 2001).

Cooperatives face the threat of inefficiency due to property rights problems. Vaguely defined property rights and lack of individual ownership to the company may inhibit decision making, monitoring of the company's performance and the transmission of market signals. In a cooperative enterprise it is especially difficult for the members and owners to ensure that the management is operating in their interest and thus agency costs will be high. Especially with increasing size and complexity of the company the members' monitoring of the management becomes more difficult and costly. This leads to the threat that the use of financial resources in cooperative enterprises is inefficient and the ability to raise equity and make investments is low. Grave efficiency problems of cooperative enterprises occur in the face of collective ownership when it is combined with an insufficient ability to correct market failures and gain the members' commitment (Nilsson, 2001).

Solutions:

- *High membership involvement* (Nilsson, 2001).
- *Individual property rights* through tradable and appreciable equity shares for members (Nilsson, 2001).

A cooperative's viability and ability to tackle the inherent problems of its ownership structure strongly depend on its members' social cohesion, commitment and involvement. Specific cooperative problems do not exist when members have individual property rights or if a collectively financed and governed cooperative enjoys high membership commitment. Cooperatives with tradable and appreciable equity shares can still be owned and controlled by members but function the same way as investor owned companies only that ownership is limited to business partners. Thus they do not face particular property rights and agency problems and have no different efficiency from investor-owned firms (Nilsson, 2001).

Over time cooperative enterprises have significantly evolved and diversified their organizational structures (Skurnik, 2002; Nilsson, 1999). Market developments have promoted the evolution of entrepreneurial cooperatives that are more adapted and responsive to an increasingly volatile and complex business environment than traditionally organized cooperatives. Entrepreneurial models involve capital investors that may either exclusively be the cooperative's members or also include non-members as external investors. This creates a stronger orientation on profitability and improves the company's capital base. Traditional organizational models of cooperative enterprises have often proven successful in the collection and primary processing of their members produce, pursuing cost-leadership through economies of scale. This only captures moderate added value but also permits a relatively low capital base and keeps investments and overhead costs in check. A stronger orientation on added-value operations often requires a corresponding transformation of a cooperative's organizational structure, especially with changing activities outside a cooperative's original business segment, which often results in an accumulation of capital and investments not closely related to the members' own activities (Nilsson, 1999).

Traditionally organized cooperatives may at some point no longer be able to effectively produce benefits to their members and become difficult for them to monitor and control, especially as they develop and diversify their operations. In this case there is a threat that such a cooperative enterprise becomes degenerated which may require reorganization towards an entrepreneurial or a diversified company structure to maintain the company's resources and ensure its continued existence (Nilsson, 2001).

1.2.3 Implications for forest owner cooperatives

These findings demonstrate that inherent traits of cooperative enterprises and forest owner cooperatives in particular need to be recognized to make their establishment and development a success:

- Forest owner cooperatives are able to provide socio-economic and environmental public benefits and improve the viability and activeness of private forest management. Therefore they may serve as an effective policy tool for the private forest sector.
- Governmental support and common challenges for forest owners may promote the development of forest owner cooperatives.
- Cooperatives may offer significant benefits to their members in providing a framework for vertical integration of production and value chains to capture added value. They may help their members improve their market position and benefit from economies of scale in their production and marketing activities. Forest owner cooperatives can be very effective in integrating and improving the timber supply chain. Thus they can improve timber marketing for forest owners and timber acquisition for industrial buyers.
- However different types and goals of forest owner cooperatives allow them to provide a broad variety of services and benefits to their members. Forest owner cooperatives need to expand their activities to a variety of business segments and actively consult and support their members to ensure their trust and commitment.
- Small private forests are a difficult sphere of activity. The variety of interests and information deficiencies among forest owners may pose a challenge to cooperatives that can be mitigated by actively consulting them and providing a variety of benefits and services. The interests and needs of private forest owners need to be respected and addressed.
- A cooperative organization is controlled democratically and serves the interests of all members equally.
- Members of a cooperative may benefit from it both in their role as patrons, who receive services, and investors, who receive return on investment.
- A cooperative's membership may include anyone who is involved in its business process, such as suppliers of capital and raw material, consumers of its products and services or its employees.

- Partnerships with other cooperatives and enterprises as well as an expansion of membership within the community may improve a cooperative's network and base of resources and skills.
- The success of cooperative enterprises depends on a supportive environment and sufficient social capital among their members. Social cohesion and homogeneity of interests among members are important factors to make cooperative entrepreneurship successful.
- Vaguely defined property rights, unallocated capital and high agency costs pose a threat to cooperative enterprises. Cooperative enterprises should only operate as traditionally organized cooperatives in business segments that are close to their members' own activities. For operations in segments more remote from their members' own activities that are difficult for them to monitor, cooperatives should consider the diversification of their organizational structure and the introduction of individual property rights through tradable and appreciable equity shares for members and external investors. This may enhance the organizations' economic efficiency and their ability to raise capital. Furthermore it may improve the cooperatives' capability to adapt to challenges and changes in their business environment as well as to the variety of interests and demands among their members. Upon expansion into new business segments cooperatives may benefit from the resources and the knowhow of new members or external investors who are already active in that area.

1.3 The private forest sector in Lithuania

The transition from a centrally-planned economy and a one-party system to a market economy and a democratic political system in Lithuania has resulted in a privatization of the forest industry, the formation of a free timber market, increasing timber export levels and private forest ownership and entrepreneurship. While there was no private forest ownership in Lithuania between 1950 and 1990, forest property rights were restored after the declaration of independence in 1990. The structure of forest ownership has changed throughout the 20th century and is still changing today due to the continuing land reform process (Mizaraite & Mizaras, 2005).

The Forest Act of 1994 divided the forest into state and privately owned lands. Small-sized private forest properties are common in Lithuania (Mizaraite & Mizaras, 2005). In 2011 the area of private forests amounted to 837,400 ha, with almost 245,000 private forest owners and an average holding size of 3.3 ha. The proportion of private forests amounted to about 38.6 % of the national forest cover (Lithuania's Ministry of Environment, 2011). According to Mizaraite & Mizaras (2005) this proportion is expected to increase to 40-45 % in the course of the restoration process of private forest property.

The main legal act concerning cooperatives in Lithuania is the Law on Cooperative Societies, which states that a cooperative must have at least five members, either of Lithuanian citizenship and at least 16 years of age or juridical persons registered in Lithuania (Lazdinis & Pivorius, 2005). In 2005 the Chamber of Agriculture of the Republic of Lithuania united over 100 of these organizations, 17 of those from the crop sector, 22 from animal husbandry, 25 professional and cultural organizations

and 40 regional farmers' associations (Chamber of Agriculture, 2005 cited by Lazdinis & Pivoriunas, 2005).

Existing forest owner cooperatives in Lithuania provide services not exclusively to their members. Thus they do not have the characteristics of cooperative enterprises in their strict sense but can rather be considered private silvicultural contractor companies. A study by Lazdinis & Pivoriunas (2005) found that they typically have up to 10 members and provide services to around 20 clients, while executives of these companies indicated that up to 40 clients would be an optimal customer base. Their main objectives concern timber harvesting and trade to most attractive conditions for their members. The first of these forest owner cooperatives was established in 1997. However, while private forest ownership rapidly expanded, the number of registered cooperatives only increased to 15 until 2004 (Lazdinis & Pivoriunas, 2005).

State owned forest companies- the State Forest Enterprises- manage the state forests and are not concerned with private forests other than their general mandate to provide silvicultural services and coordinate fire-fighting. The State Forest Service's officers have legal control function and in principle have the task to provide extension services to private forests. In spite of this, private forest owners do not manage their holdings actively enough to maintain the ecologic, economic and social functions of the forest (Lazdinis & Pivoriunas, 2004). Therefore Lazdinis & Pivoriunas (2004) argue that the potential for forest management services should be brought actively to the forest owners and all their needs and interests in forest management should be considered, even in cases where it is not economically viable.

Within the Lithuanian forest sector several large companies and international corporations have set-up their operations with private forests as their main target. This, and the restructuring of state companies to also service private forests, creates serious competition for forest owner cooperatives as large corporations and state enterprises have functioning infrastructure, established tradition and reputation in place and their knowledge, technological and financial bases are much stronger (Lazdinis & Pivoriunas, 2005). However they might also hold the potential to become effective partners for the promotion of cooperation among private forest owners.

A study conducted by Mizaraite & Mizaras (2005) found that the most important management objectives for Lithuanian private forest owners are firewood for domestic consumption, income from the sale of timber and other forest products as well as nature conservation. Their main problems in forest management are the small size of many holdings, lack of financial resources for silviculture and forestry, heavy bureaucracy associated with the documentation of forest related activities and a lack of silvicultural knowledge. Insufficient qualification on part of forestry advisors and too low profitability of forest-related activities were found to be problematic as well (Mizaraite & Mizaras, 2005). A study by Lazdinis & Pivoriunas (2004) found that main problems for Lithuanian forest owners are extensive bureaucracy, illegal timber harvesting, lacking knowledge and information on forest management and a lack of assistance with fire protection and forest health issues.

The study by Mizaraite & Mizaras (2005) distinguished groups of forest owners according to their ratings of different forest management objectives. According to their dominant management objective four main groups could be identified as multi-objective owners, businessmen, consumers and ecologists (Mizaraite & Mizaras, 2005).

The *multi-objective owners* put equal importance on a variety of management objectives, namely income from the sale of timber and other forest products, wood for home consumption as well as nature conservation. They comprised the largest group within the survey and also have the largest forest holdings. They actively manage their holdings and have good forestry knowledge. Many of them live in the countryside in villages close to their forest property. The main management problems for them are bureaucracy and the lack of financial resources for forestry. Particularly multi-objective owners suffer from forestry related bureaucracy as they actively manage their holdings for different objectives. For the same reason qualified forestry consulting is very important to this group (Mizaraite & Mizaras, 2005).

The second largest group is the *businessmen* whose main objective is income from the sale of forest products. Just like the multi-objective owners they own larger properties but have the shortest forest ownership time of all groups. Many of them live in cities and quite far away from their holdings. Most of them manage their forests actively but have a low level of silvicultural knowledge. They too have most problems with the bureaucratic burden of forest management but also lack knowledge and experience in forest management (Mizaraite & Mizaras, 2005). Therefore Mizaraite & Mizaras (2005) recommend providing consulting and education especially for this group of owners. They also recommend acquainting them more closely with silvicultural contractors and timber traders to help them fulfill their income-oriented management objectives (Mizaraite & Mizaras, 2005).

The third largest group of owners was classified as *consumers* that mostly manage for forest products for domestic consumption. Therefore fuel wood from their forests is very important to them. However they do not generally manage their holdings very actively even though their forest related knowledge is quite high. They tend to own small holdings and do not assign priority to income from the sale of forest products. Many of them live in the countryside close to their holdings. They mostly have problems with forestry related bureaucracy and a lack of money for forestry measures. For the consulting of these owners the sustainability of forest management and a balance of different functions and services of the forest should be emphasized. The proportion of this group of forest owners is expected to decrease due to rural depopulation and structural changes among forest owners (Mizaraite & Mizaras, 2005).

The smallest group of owners found in the survey was classified as *ecologists*, whose main objective is nature conservation. Most of them live in cities and furthest away from their holdings. Almost half of them do not manage their property at all. However as a whole this group was found to be moderately active in forest management. They have the lowest level of forestry related knowledge. They use their forests for recreational purposes and do not consider income from their forest as important. This group of owners is expected to increase. Their main problem is not only the

bureaucracy of forest-related activities but also a lack of financial resources for forestry measures and the small size of their estates (Mizaraite & Mizaras, 2005).

The study by Lazdinis & Pivoriunas (2004) found that private forest owners tend to manage their forests by themselves. Only a small proportion of owners receive external forest management services. A similar proportion does not even manage their forest at all and for some owners their property causes more trouble and efforts than it actually yields benefits. The main services that forest owners request were found to be protection from forest fires, diseases and illegal timber harvests, forest related information, education and extension services and commercial forest management services. Interestingly enough, 38 % of the owners participating in the survey were not willing to delegate management of their holdings to forestry professionals, public or private, 34 % were very well willing to hire a professional and 25 % were undecided. However, only 14 % have already delegated management of their property (Lazdinis & Pivoriunas, 2004). Lazdinis & Pivoriunas (2004) assume that this difference between forest owners' intentions and practice could indicate a low awareness of the potential benefits of their forest and little trust in existing service providers. They conclude that forest owners have a need for reliable and effective services in commercial forestry that will even increase with higher awareness and knowledge and a consolidation of tenure rights (Lazdinis & Pivoriunas, 2004).

The study by Lazdinis & Pivoriunas (2004) found that quite many Lithuanian forest owners would be willing to join forest owner cooperatives if this brought advantages in gaining access to EU support or tax privileges. At least as many would be motivated to join cooperatives in order to improve forest management and achieve higher timber prices. Most respondents in this study thought that only a forest area of at least 100 ha would allow economically viable management (Lazdinis & Pivoriunas, 2004). This suggests that forest owners are actually aware that small forest properties face economic difficulties in forest management which could further motivate them to cooperate.

2. Materials and Methods

This work starts out with a review of existing findings on forest owner cooperatives, cooperative entrepreneurship and the state of private forestry in Lithuania. Then perspectives of different stakeholders in private forestry in Lithuania on cooperation among private forest owners are portrayed. Case studies on cooperatives and public policies in their regard portray the implementation of cooperation among private forest owners and highlight experiences and lessons that can be learned from existing examples. On this basis different elements of cooperation and corresponding policy tools for their promotion are derived. Based on existing approaches and their possible combinations and modifications, suitable strategies for the promotion of cooperation under Lithuanian conditions are recommended (figure 1).

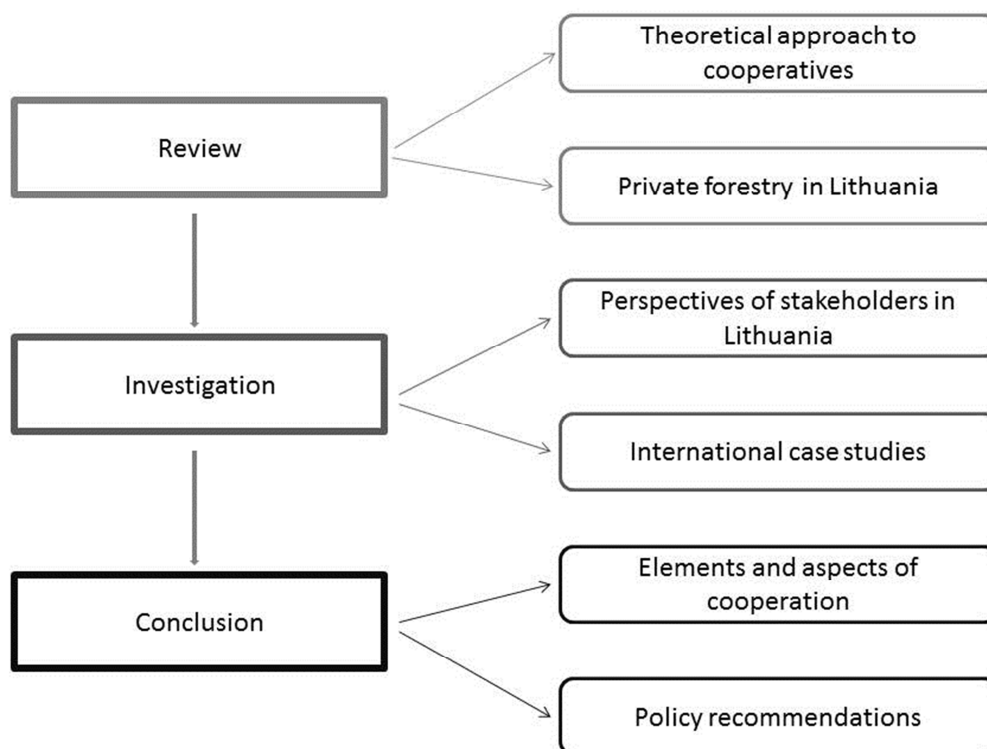


Figure 1: Overview of the methodology of this work. A theoretical approach to forest owner cooperatives and cooperative entrepreneurship provides a general understanding. The situation of private forestry in Lithuania and perspectives of different stakeholders are portrayed. Case studies portray selected international examples of cooperation among private forest owners. From these findings elements and aspects of cooperation with general relevance are extracted and applied to the Lithuanian case to derive policy recommendations for the promotion of forest owner cooperatives.

Findings from a literature review portray forest owner cooperatives in general as well as cooperative enterprises from a business administration perspective. This work seeks to provide a scientifically founded understanding of a practical problem. Consequently other theories that apply to the situation but that do not help understand the support target and design public initiatives were not considered. Therefore the focus here lies on entrepreneurial characteristics of forest owner cooperatives to determine what is required to make their establishment a success. To approach forest owner cooperatives from a theoretical perspective, literature was selected that portrays and examines the functions, opportunities and challenges of forest owner cooperatives with general relevance, preferably on an international scale. This was especially the case with a study by Kittredge (2005) as it provides a thorough overview of a field that few authors have approached in an international and general way. Consequently many of the characteristics of forest owner cooperatives were taken from this work. Other authors contribute with information of general relevance as well but through studies with a stronger regional focus.

An examination of cooperative enterprises from a business administration perspective strongly relies on studies by Nilsson (1999; 2001) who provides an in-depth analysis of the organizational structure of cooperative enterprises with special attention to the very relevant case of primary producer cooperatives. Therefore these works serve as the main sources to provide the general economic context of forest owner cooperatives. In order to provide condensed information to the reader, only a brief summary including the most relevant findings for decision-makers concerned with forest owner cooperatives is given in the main body of the text. A more elaborate portrayal that helps the reader get a more in-depth understanding of specifics of cooperative entrepreneurship is provided in Annex 2.

A literature review introduces the facts, history and context of private forestry and cooperation in Lithuania. It provides a typology of Lithuanian private forest owners, their objectives and needs as well as opportunities and threats for cooperation among them.

To provide an up to date assessment of the local situation in Lithuania different stakeholders in private forestry were interviewed. Their assessments and opinions on the present state of cooperation among private forest owners in Lithuania are portrayed as well as their suggestions for the future. The interviews include a variety of perspectives, involving forest owners and forestry entrepreneurs as well as government officials, a lobbyist and a researcher.

One interview was made with Dr. Nerijus Kupstaitis, Head of the Department of Forestry Development, and Donatas Vaikasas, Head of the Department of Private Forestry, at the Lithuanian Ministry of the Environment. It falls within their competence to design and implement the Lithuanian Ministry of the Environment's policies concerning private forest owners. Another interview was made with Algis Gaizutis, Head of the Forest Owners Association of Lithuania. The Association represents the interests of Lithuania's forest owners on political level. To get an assessment from a scientist involved in the issue, Prof. Stasys Mizaras, researcher at the Forest Resources, Economics and Policy Department, Lithuanian Forest Research Institute, was interviewed. In order to get an assessment from private forest owners and forestry entrepreneurs Kazimieras Siaulys and Vidmantas Jusas were interviewed. Mr. Siaulys is board member of the Forest Owner Association of Lithuania and owns a larger forest holding as well as a sawmill. He buys timber from other forest owners and provides them with silvicultural contractor services. Overall about 50 people are employed in his operations. Mr. Jusas is also a board member of the Forest Owner Association of Lithuania, forest owner and director of the silvicultural contractor company UAB Misko darbai that services private forest owners and also consults them in EU support measures. A complete overview of interviewees can be found in Annex 1.

Case studies portray international examples of forest owner cooperatives. The selection of regions and examples of cooperation covers by far not all relevant cases. However it includes a variety of different approaches that are all distinguished by their own characteristics and have some relevance for the Lithuanian case.

Case studies on Germany show the greatest detail. Due to Germany's federal governance structure and the historic existence of two different political systems, the variation in forest policies and administration as well as forestry entrepreneurship is very pronounced. Consequently there is substantial regional variation among forest owner cooperatives and forest policies in their regard. Due to the high level of detail of case studies in Germany different approaches under relatively similar conditions could be compared. Furthermore the eastern federal states of Germany show some similarity with Lithuanian conditions due their history of land reforms, centrally planned economy and restituted forest ownership. General information on private forestry and forest policies for the respective states has been taken from the literature and information available on the World Wide Web. For Brandenburg, FBG Neuruppin as a local forest management cooperative and FVB as an umbrella cooperative for joint timber marketing are presented. The studies are based on an interview with Enno Rosenthal, who is involved in both organizations as executive of the local forest owner cooperative and president of the umbrella cooperative, as well as on information from the organizations' online presentation. For Mecklenburg-Western Pomerania, FWV MV is portrayed as one more umbrella cooperative of several local forest owner cooperatives that is active throughout one federal state. The information presented is based on the cooperative's online presentation. Furthermore FBG Elbeholz as one supra-regional umbrella cooperative is portrayed that is active across state borders. The information presented is based on the cooperative's online presentation. For Lower Saxony, FVL as a regional umbrella cooperative and its subsidiary are portrayed as well as its cooperation with the Chamber of Agriculture. This is based on an interview with Armin Menge, head of the Chamber of Agriculture Lower Saxony's forest district. He is in charge of coordinating the Chamber's activities with FVL and the local forest owner cooperatives. Furthermore the study relies on the cooperative's online presentation and publications by the Chamber of Agriculture. For Bavaria FV Swabia is portrayed as a regional umbrella cooperative. This is based on an interview with Hubert Messmer who is the State Forest Administration's advisor for FV Swabia and information from the cooperative's online presentation. General information on the situation of forest owner cooperatives in Bavaria was complemented by an interview with Prof. Michael Suda, researcher and professor of Forest and Environmental Policy at the Technical University Munich. A complete overview of interviewees can be found in Annex 1.

Case studies on Austria, Sweden, Finland and the USA are based on a review of literature and online resources from the World Wide Web. These case studies include less detail than the case studies from Germany, which also portray local aspects and practical problems of forest owner cooperatives. These case studies contribute background information on substantially different approaches and complement the general portfolio of cooperative entrepreneurship in the private forest sector. In Austria the central government has promoted a regional network of forest owner cooperatives. Case studies from Sweden and Finland portray larger industrial cooperatives with a broad variety of activities and a more complex organizational structure. In the USA a variety of joint initiatives that often differ from conventional producer cooperatives has sought to improve private forest management and nature conservation efforts.

The case studies serve as a basis to derive entrepreneurial approaches of forest owner cooperatives with general relevance as well as policy tools in their support. Operational elements of cooperation among forest owners describe specific services that cooperatives provide to their members. Organizational aspects of cooperation describe structural aspects of how forest owner cooperatives structure and organize their business. Policy tools describe support measures and services that affect forest owner cooperatives. These general factors of cooperative entrepreneurship in the forest sector are then applied to Lithuanian conditions, according to the findings in previous chapters. On this basis specific strategies for the promotion of forest owner cooperatives in Lithuania are derived.

3. Perspectives of selected Lithuanian stakeholders

3.1 State of forest policy and cooperation

According to Kupstaitis & Vaikasas (intv. 2012) the improvement of the economic situation of private forestry, including such measures as cooperation among private forest owners, road construction and silviculture is high on the national forest policy agenda. The impact of these improvement measures is strongest for small forest owners, who should cooperate to jointly apply for support and implement the measures. Cooperation could act as a mediating element to motivate and help owners to take further measures that improve their economic situation and apply for public support. Many project types funded by funds of the European Agricultural Rural Development Policy (RDP) have an impact problem because there are just too few actual project cases to not only have an effect on some few stakeholders' attitudes but on the sector as a whole. Pre-commercial thinning and road construction are supported by 50-60 % of the actual cost from RDP funds but so far only individual owners could apply as it is considered an economic activity. Due to the bureaucratic burden involved only owners of larger holdings applied. Since many holdings are small, uptake of the measures was not satisfactory. Cooperatives could improve this and give owners of small holdings the possibility to apply together (Kupstaitis & Vaikasas, intv. 2012). Gaizutis (intv. 2012) shared the opinion that currently it is not attractive for most forest owners to apply for support measures from RDP funding due to the high level of bureaucracy involved. He also emphasized that this problem is further promoted by the fact that joint applications of several forest owners for the same measure are not accepted but only applications by individual owners. The possibility for joint applications would certainly help small owners apply for RDP support measures (Gaizutis, intv. 2012). Gaizutis (intv. 2012) also pointed out that cooperation could also help organize and implement activities such as road construction and pre-commercial thinning. Furthermore he pointed out that one reason why Natura 2000 measures have only rarely been applied so far is the difficulty to define, identify and mark key habitats (Gaizutis intv. 2012). If cooperatives were able to provide more professional forest management, possibly even across borders of individual properties, this could facilitate the protection of key habitats as well.

Many stakeholders advocated that for the next RDP planning period support for cooperation among private forest owners should be included (Kupstaitis & Vaikasas, intv. 2012; Gaizutis, intv. 2012; Mizaras, intv. 2012). Gaizutis (intv. 2012) also pointed out that there can only be a mobilization of timber through a mobilization of forest owners. Mizaras (intv. 2012) criticized that at the moment funding by the RDP is provided to landowners for being inactive in managing their holdings. Instead public support should promote more active management (Mizaras, intv. 2012).

Kupstaitis & Vaikasas (intv. 2012) explained that the National Program on Forestry Development published intv. 2012 included in its draft a policy target of about 5000 forest owners that should be organized in cooperatives by the end of the nine year planning period. Since there were concerns over how much RDP funding would be allocated to forestry measures instead of agriculture, mainly by the Ministry of Agriculture, the final version contained the establishment of forest owner cooperatives only as a general goal. For the financial planning period 2014-2020 there is the possibility to allocate 10 % of RDP funding to forestry measures. Initially the RDP funding for the forest sector amounted to 200,000,000 € for the seven year period but there is some national flexibility on how large the proportions allocated to forestry and agriculture actually are (Kupstaitis & Vaikasas, intv. 2012). The final decision of how these funds will be allocated exactly lies with the Ministry of Agriculture and the National Paying Agency (Mizaras, intv. 2012). For the actual allocation of RDP funds within the forest sector there will be a plan of measures for every three years to be approved within the Ministry of the Environment. This plan of support measures can include specific targets for cooperation of forest owners that are explicit concerning the amount and source of the required budget. 500,000 € annually over the 2014-2020 planning period could be a realistic amount of resources available for the promotion of cooperation among private forest owners. More funding could be available if the measures were tied to other services such as silviculture and forest management planning (Kupstaitis & Vaikasas, intv. 2012). According to Mizaras (intv. 2012) the total amount of 500,000 € annually should then be divided to support each newly established cooperative with about 50,000 €.

Kupstaitis & Vaikasas (intv. 2012) explained that at the moment there is no more staff available at the Department of Forestry Development to help support cooperation in particular. But it is possible that the State Forest Service's inspectors could work as advisors as the whole system of support and control of private forest owners has become the Forest Service's responsibility. However it still remains a challenge to achieve a paradigm shift for forest inspectors to work as advisors instead of controllers. Furthermore the State Forest Service cannot offer services on contract basis. The State Forest Enterprises on the other hand could very well offer consulting contracts. They already offer this service but the extent of these contracts is currently very low. State Forest Enterprises just occasionally have these arrangements as it is one of their tasks but at the moment their own interest in this business segment appears to be very low (Kupstaitis & Vaikasas, intv. 2012). In accordance with this Mizaras (intv. 2012) argued that public expenses for consulting and extension services to private forest owners so far have been very low. Correspondingly Siaulyš (intv. 2012) complained that the Lithuanian government does very little to support private forest owners. He suspected that the government has no genuine intention to promote cooperation as it would not approve of strong,

organized private forest owners. He himself does not receive any kind of state support even though he employs about 50 people (Siaulys, intv. 2012).

3.2 Problems with cooperation

Kupstaitis & Vaikasas, Jusas and Mizaras (intv. 2012) regarded the absence of direct public support as the main problem that currently prevents increased cooperation among private forest owners. Furthermore there is also a lack of legal or tax advantages (Kupstaitis & Vaikasas, intv. 2012). Gaizutis (intv. 2012) argued that without any external funding cooperation of private forest owners will not be feasible at all. Mizaras, Jusas and Siaulys (intv. 2012) pointed out that financial support is crucial particularly during the initial establishment of cooperatives. Cooperatives will need to make investment for the set-up and maintenance of their operations (Jusas, intv. 2012) and will have to prove that they can generate economic benefits for their members (Siaulys, intv. 2012).

Gaizutis (intv. 2012) pointed out that cooperation depends on psychological factors and thus needs time to develop. He expected that cooperation can most likely be initiated through economic incentives (Gaizutis, intv. 2012). So far forest owners apparently are not convinced of direct advantages of cooperative over individual forest management (Gaizutis, intv. 2012; Kupstaitis & Vaikasas, intv. 2012), which seems comprehensive given the lack of actual forest owner cooperatives. Members of existing cooperatives in agriculture are active and full-time farmers (Gaizutis, intv. 2012). Many potential members of forest owner cooperatives however do not actively manage their properties or receive significant income from it.

Gaizutis, Kupstaitis & Vaikasas and Siaulys (intv. 2012) argued that there are psychologically and historically founded resentments of forest owners towards cooperation due to negative historic experiences with collectivist land use. Siaulys (intv. 2012) stated that consequently owners appreciate their individual property and are not willing to give up control. However Jusas (intv. 2012) argued that negative historic experiences with collective farming cannot be as relevant as much time has passed and it would only take proven benefits to change forest owners' skepticism towards cooperation.

Gaizutis (intv. 2012) argued that considering the legal environment there is also a problem in Lithuania with the very strict terminological distinction between associations and cooperatives that both have their separate laws. There is concern that cooperatives might be considered cartel agreements as had happened in the dairy industry and be brought to court (Gaizutis, intv. 2012). Another legal factor that currently puts cooperatives at a competitive disadvantage was pointed out by Jusas (intv. 2012). The income tax on timber sales is the only tax forest owners pay on their property or the income from it. Therefore this tax could be the only possible target for tax benefits at the moment. Jusas (intv. 2012) explained that the current taxation system works adversely for joint harvesting activities. For small harvested volumes of up to 8000 Lithuanian litas of sales revenue there is no taxation which encourages small harvested volumes per measure. For the joint harvesting activities of cooperatives harvested volumes would usually be higher than the tax-free amount (Jusas, intv. 2012). Jusas (intv. 2012) also argued that higher revenues from joint timber sales are

difficult to achieve when the frequency of harvesting activities in each individual property is low. A lot of affiliated members' property would be necessary to improve that situation (Jusas, intv. 2012).

Mizaras (intv. 2012) pointed out another possible problem as the establishment of genuine forest owner cooperatives may face the opposition of existing organizations that are cooperatives in name only. Existing cooperatives in Lithuania are totally profit oriented with few members and a focus on the acquisition of forest land and timber from non-members (Gaizutis, intv. 2012; Siaulys, intv. 2012). Siaulys (intv. 2012) stated that from the perspective of a forest owner, silvicultural contractor and timber buyer he cannot imagine a cooperative actually working in Lithuania. He explained that there are many joint stock companies buying forest land and that for all management activities there are contractor companies. Therefore forest owners who want to sell their property do so. The others are content to hire contractors (Siaulys, intv. 2012). However this statement may be strategic in nature and may indicate opposition to forest owner cooperatives among larger forest owners, forestry contractors and smaller timber buyers. They may be concerned to face competition or stronger market positions of small forest owners on timber and service markets as well as a reduced willingness among smallholders to sell their property.

3.3 Motivations and policy measures to encourage cooperation

Gaizutis (intv. 2012) pointed out that cooperation for its own sake is not meaningful but instead needs clear objectives. Its ultimate goal has to be maximum utility for the forest owner, for instance in economical, ecological and recreational terms (Gaizutis, intv. 2012). Siaulys and Jusas (intv. 2012) agreed that there must be clear and proven benefits of cooperative over individual management to motivate forest owners to cooperate.

Kupstaitis & Vaikasas (intv. 2012) argued that policy efforts to promote cooperation should target private forest owners with small holdings as these have high social value and fulfill important social functions. Policies should further aim to promote cooperatives that provide a full array of forest management services to private forest owners. A sole focus on joint timber sales would not be sufficient to reach many forest owners and achieve the policy targets. In general suitable policy strategies should not focus on quick and inexpensive measures but generate long-term benefits (Kupstaitis & Vaikasas, intv. 2012).

According to Kupstaitis & Vaikasas (intv. 2012) future incentives to motivate private forest owners to manage their holdings more actively and to cooperate with each other should target their economic interests, even though there is a more recent movement of owners who are more interested in other values of their forest. Siaulys (intv. 2012) stated that economic benefits such as higher timber prices or tax reductions would be the only effective motivation.

Gaizutis (intv. 2012) argued that the legal environment is decisive for the implementation of cooperation among forest owners. He claimed that likely cooperation among private forest owners could be initiated as in Finland through a legal obligation to become member of a cooperative or else pay a fine. These funds would then be reinvested for measures that serve the common welfare of all

forest owners. A legal obligation would also include all forest owners and not limit cooperation to certain types or groups of owners only (Gaizutis, intv. 2012). Mizaras (intv. 2012) agreed that obligatory membership is a possible solution but points out that the fine on non-participation would compare to raising a tax. A liberal policy with freedom to join would receive more acceptance by the owners (Mizaras, intv. 2012). Jusas (intv. 2012) agreed to the idea of creating a fund for the common welfare of private forest owners and also suggested to charge reduced fees for members of cooperatives to create another motivation to join.

According to Kupstaitis (intv. 2012) tax advantages would also be a suitable measure to promote forest owner cooperatives as agricultural cooperatives pay lower taxes as well. However he would expect strong political opposition to this proposal (Kupstaitis, intv. 2012). Jusas (intv. 2012) agreed that there could be support by the government in the form of tax privileges. Siaulys (intv. 2012) stated that tax reduction could only work in theory since there is only a tax on revenues from timber sales and at the moment taxation is not a very relevant issue. According to Mizaras (intv. 2012) creating an additional tax on the forest property itself would face massive opposition from forest owners and would threaten the current state of private forest ownership. In case that no new taxes should be raised, the creation of a fund for support measures from taxes could only be financed through a higher income tax rate on timber sales revenues or an involvement of the wood industry. Furthermore the government may consider allocating part of the tax revenues at current rates. As far as the creation of these funds would contribute to increased harvesting activity and timber sales they could in turn stimulate the tax base and thus achieve returns to the public budget.

Mizaras (intv. 2012) explained that the European Union, Lithuania's Ministry of the Environment as well as domestic tax revenues from forest owners could all serve as sources of funding. The easiest and most probable source however would be the EU (Mizaras, intv. 2012). Jusas (intv. 2012) agreed that there should be support from EU funding. Cooperative organizations could help apply for and implement supported measures such as thinning and road construction. Jusas (intv. 2012) argued that cooperation should be supported from RDP funds in two ways. The initiation of cooperatives should be supported directly and cooperatives should be included into the application process for other RDP measures. A major problem is that so far only individuals and associations can apply for support. However associations cannot own any property. Therefore real cooperatives cannot apply for EU support (Jusas, intv. 2012). Another approach could be to channel all RDP support measures through cooperatives only. According to Kupstaitis & Vaikasas (intv. 2012) the Forestry Department's experience has shown that support measures should not disturb the market. While support for machinery by RDP funds has had negative effects in this respect, support for silvicultural measures such as pre-commercial thinning or joint timber sales would be beneficial and not disturbing (Kupstaitis & Vaikasas, intv. 2012).

Gaizutis (intv. 2012) suggests a system of territorially consolidated forest owner cooperatives that provide services within their private forest districts, distributed just like the State Forest Enterprises. Also Mizaras (intv. 2012) suggests cooperatives with clear territorial spheres of activity on municipality level, since there are 42 municipalities and about 240,000 forest owners in Lithuania. Then there would be 42 cooperatives, one in each municipality, modified depending on the number

of forest owners so that about 6000 forest owners are members in each cooperative (Mizaras, intv. 2012). Siaulys (intv. 2012) agrees to setting up cooperatives with territorial spheres of activity. These could initially be smaller at the level of more local districts and in a second phase expand their activities to whole regions (Siaulys, intv. 2012). Jusas (intv. 2012) put emphasis on the fact that cooperatives can not only be initiated from outside the private forest sector but require support from within. To increase support for this idea among private forest owners, good examples of cooperatives could be initiated with the help of EU funding in a few districts to demonstrate their capacity and potential. This would promote the idea for the whole country. Local examples of successful cooperatives would later attract new members when they have proven their competitive advantage (Jusas, intv. 2012). Combining Jusas' suggestion with the one from Siaulys a very efficient procedure could be to create at least one cooperative with activities on district level within each region. As soon as operations are successful and well established they could expand their activity to the whole region and thus service the entire country.

Jusas (intv. 2012) agreed that the easiest way to create cooperatives would be to set them up in a territorial pattern. But it would be much better to create them on the basis of different objectives for cooperation. For instance several forest owners could cooperate on a joint forest management plan. Or several owners with property along a river could form a cooperative to plan joint measures to promote recreation and nature conservation. Cooperatives of forest owners could also help maintain and improve the infrastructure and forest road system and organize silvicultural activities. Some estates are very long and narrow and harvesting is difficult due to legal management requirements. In this case silvicultural and logging cooperatives could help organize harvesting units and comply with the legal requirements. Joint timber marketing could lead to higher prices especially when dealing with large buyers of pulp wood and industrial wood assortments. Hunting and game management could be other objectives for cooperation. There could be many different approaches of cooperatives with different functions and management targets (Jusas, intv. 2012). To improve the knowledge base about possible objectives of cooperation among private forest owners, Jusas (intv. 2012) suggested a case-study for a specific area to assess options such as joint harvesting, joint timber sales, watershed management or nature conservation.

According to Gaizutis (intv. 2012), initially local timber marketing cooperatives would be most feasible and from there on the next step could be the additional provision of consulting and forest management services on a territorial basis. Siaulys (intv. 2012) even stated that finally cooperatives should set up their own timber processing facilities to capture added value. According to him it could also be possible to set up cooperatives as joint stock companies, especially if the state cannot provide sufficient support (intv. 2012). Gaizutis (intv. 2012) argued that a system of industrial forest owner associations like in Sweden is not feasible. Also Siaulys (intv. 2012) agreed that the Scandinavian conditions are very different and an approach that includes paying dividends from the profits of the cooperative's own timber processing operations would hardly be feasible in Lithuania right now. It still has to be considered that models such as the "Waldsäge Fuchstal eG" in Bavaria, that will be discussed later, may become interesting for Lithuania. Especially for owners of smaller sawmills, like Siaulys, it could eventually become interesting to turn operations into a cooperative

that involves beside the established company also forest owners and their cooperatives. This may help increase the capital supply and secure the raw material base, which may become especially important in case an expansion of the sawmill's capacity is planned.

One measure to improve the opportunities of private forest owners on the timber market could be to install a timber auctioning system. Kupstaitis (intv. 2012) agreed that the General State Forest Directorate's Electronic Timber Auctioning System could have some useful potential in supporting forest owner cooperatives in their timber marketing efforts. However for private forest owners there needed to be an exclusive, voluntary system separate from the one for the State Forest Enterprises' timber sales (Kupstaitis & Vaikasas, intv. 2012).

Another option could be to target larger forest owners or owners of forest enterprises and wood processing operations to initiate or participate in cooperation. However Siaulys (intv. 2012) as a larger owner stated that it is not attractive for him to set up a cooperative. With his own forestry machinery and sawmill he considers his enterprise as too big already. Running a cooperative he would be tempted to buy up other forest owners' property. With about ten other forest owners he has regular customer relations as a silvicultural contractor and timber buyer. These occur as single deals and are not forms of organized cooperation (Siaulys, intv. 2012).

Siaulys (intv. 2012) suggested that cooperatives of logging companies and forestry contractor businesses would be more feasible and promising than cooperation of private forest owners. But Kupstaitis & Vaikasas (intv. 2012) argued that forest policies should not involve forestry entrepreneurs or the wood industry as these are already established actors that do not need to receive additional support. Jusas (intv. 2012) stated that cooperation of contractor companies only serves to achieve a better price position in timber sales. Forest owners however could cooperate for many other products and services of the forest. There would be more benefits from the cooperation of forest owners than from cooperation that just concerns timber marketing. He also warned not to support companies that are cooperatives in name only or that abuse public funding or other forest owners (Jusas, intv. 2012). Gaizutis (intv. 2012) agreed too that neither forestry entrepreneurs nor the wood industry should be involved in cooperatives as they are solely profit-oriented and would not necessarily act in the interest of the forest owners. Existing cooperatives in name only have shown questionable business practices and are more interested in buying up property than in recruiting actual members (Gaizutis, intv. 2012). Even occasional negative experiences of private forest owners with these enterprises can damage the reputation of cooperatives and markedly reduce the trust that forest owners have in them or in silvicultural contractors.

Mizaras (intv. 2012) argued that since the existing cooperatives in name only have earned a bad reputation new cooperatives should not be set up as profit oriented companies but as non-profit organizations. Only through consulting and advisory of forest owners free of charge or at least as a non-profit operation the necessary trust can be built. Therefore a system of forest owner cooperatives like in Denmark would be suitable. The EU support should result in real help to forest owners through trustworthy consultants (Mizaras, intv. 2012). Due to cases of unreliable business practices among forestry contractors and existing cooperatives in name only the establishment of

trustworthy payment systems and long-term cooperation with contractors might be key motivations for forest owners to join cooperatives.

According to Mizaras (intv. 2012) many of the owners are very inactive in forest management and the support should address cooperatives that approach the owners actively and provide them with all the advice and services they need. 1-2 managers would then be sufficient to provide consulting and forest management services to forest owners and to apply for RDP support measures. Fees should be low or services even free of charge to attract members. Consequently the cooperatives themselves could assume the free advisory function of an extension service. Public support to cooperatives should depend on the number of members and the cooperative's activities. There are many problems with the bureaucratic burden and lack of knowledge on legal affairs in private forestry. Cooperatives could provide a great service with advice on these matters and thus effect more active management and increased harvesting activity. Free advisory and extension services are usually provided by governmental institutions and not through cooperative enterprises. But in combination with the cooperatives' commercial activities such as harvesting and timber sales free consulting with public support could help them be more effective in reaching forest owners, recruiting new members and implementing forestry measures as advisors and service providers at the same time. Since cooperatives provide services to their members only the extension services would create a competitive edge. Of course once cooperatives are established successfully it would be feasible and necessary to reduce state support and let cooperatives charge members for services just as has been done in Denmark (Mizaras, intv. 2012). Jusas (intv. 2012) agreed that cooperatives could basically offer any service that is in demand, while joint harvesting and timber sales are the most logical offers. But he disagreed to the provision of free of charge extension services as that would make external funding indispensable. Instead to him the main idea of a cooperative is to jointly market a product (Jusas, intv. 2012). Jusas was involved in the past in a joint forest management unit that forest owners, his company and the Ministry of the Environment participated in. His company provided consulting to forest owners. However this consisted mostly of advice and did not result in harvesting orders that could have financed the consulting. This illustrated that an emphasis on advice can be very costly. Therefore Jusas (intv. 2012) recommended separating cooperation from consulting of private forest owners as this would just lead to costs and not generate income. Cooperation in turn needs to fulfill clearly defined commercial objectives to be successful (Jusas, intv. 2012). Also Siaulys (intv. 2012) disagreed with the suggestion of free of charge consulting since extension services, consulting and contractor companies are already in place and as far as he is concerned they are sufficient. Of course it has to be considered that a system of free extension and consulting may have significant impact on the business base of forestry entrepreneurs like Siaulys and Jusas.

Gaizutis (intv. 2012) suggested a reliable system of extension services for private forest owners just like the one that the Chamber of Agriculture is providing to farmers. This would be oriented on the Danish model for extension services. So far the State Forest Service has been in charge of the extension system but it has mostly control functions and has not been able to provide sufficient services yet. Also the State Forest Enterprises do not sufficiently provide consultation and forest

management services to private forest owners in spite of the means and the legal mandate to do so. As a result in forestry there are no consultants available on a project basis. Therefore Gaizutis (intv. 2012) suggested the provision of extension services for private forest owners through the Chamber of Agriculture just like the existing agricultural service. Mizaras (intv. 2012) agreed that this way of organizing extension services to private forest owners would also be a very suitable solution for Lithuania. This question may become relevant as both the need of private forest owners for consulting and services and the benefits of cooperation are related. The Chamber of Agriculture could be involved for instance just as in the German federal state of Lower Saxony through the provision of consulting and extension services at cost-covering rates while the cooperatives take care of silvicultural work, timber sales and administration. Especially during an early stage, when cooperatives are only beginning to operate, this approach may be more feasible than the provision of free of charge extension services through private cooperatives in public private partnership.

3.4 Summary of policy suggestions and challenges

The following suggestions concern the promotion of cooperation and active forest management in private forests in Lithuania. They were either explicitly stated by the stakeholders or implicitly concluded from their comments, as can be seen above. The stakeholders' reasoning is complemented with synthesis and conclusions by the author.

Financial support

- Provide direct financial support to forest owner cooperatives from RDP funds, especially during the establishment (Gaizutis, intv. 2012; Jusas, intv. 2012; Kupstaitis & Vaikasas, intv. 2012; Mizaras, intv. 2012).
- Enable and encourage joint application and implementation of silvicultural measures and road construction supported by RDP funds by groups of forest owners or their cooperatives (Gaizutis, intv. 2012; Jusas, intv. 2012; Kupstaitis & Vaikasas, intv. 2012).
- Provide legal or tax advantages for forest owner cooperatives (Kupstaitis & Vaikasas, intv. 2012).
- Reconsider tax exemption for small harvested timber volumes as it may discourage joint forest management activities (Jusas, intv. 2012).
- Create a fund for the common welfare of private forests and charge reduced fees for members of cooperatives (Jusas, intv. 2012).

Public services

- Provide extension services and advice in private forests through the State Forest Service (Kupstaitis & Vaikasas, intv. 2012).

- Install a reliable public extension service for private forestry through the Chamber of Agriculture (Gaizutis, intv. 2012). The Chamber of Agriculture could then promote forest owner cooperatives and closely cooperate with them.
- Install a timber auctioning system for private forests to initiate cooperation, to enhance marketing opportunities for cooperatives and to improve the income situation of private forestry. Promote other kinds of timber marketing initiatives as well.

Regulations

- Revise the regulations concerning associations and cooperatives. Particularly the legal distinction of both is problematic. Ensure legal safety for cooperatives particularly concerning competition laws (Gaizutis, intv. 2012).
- Consider a legal obligation for forest owners to join cooperatives. Create a common welfare-oriented fund from the fines of those who refuse (Gaizutis, intv. 2012).

Cooperative development

- Support cooperatives with distinct geographical spheres of responsibility, oriented on the distribution of municipalities and State Forest Enterprises (Gaizutis, intv. 2012; Mizaras, intv. 2012). These spheres could initially be smaller and more local and then expand to higher and more regional levels (Siaulys, intv. 2012). Create small successful examples that inspire the set-up of more cooperatives, since the success of cooperatives depends on the forest owners' support and conviction (Jusas, intv. 2012). Merge these approaches and set-up one local cooperative within each region that will expand its activity upon successful establishment from a district to the whole region.
- Initiate timber marketing cooperatives that upon successful establishment provide additional consulting and forest management services (Gaizutis, intv. 2012). Finally these cooperatives could even set-up their own timber processing operations (Siaulys, intv. 2012). However the opposite development starting with local forest management operations towards timber marketing on regional scale may be most feasible in the face of inactive forest owners.
- Promote cooperatives that provide the full range of forest management services to their members and do not only organize joint timber marketing (Kupstaitis & Vaikasas, intv. 2012).
- Create cooperatives on the basis of specific objectives of cooperation. To improve the knowledge base about this possibility, conduct a case study for particular regions (Jusas, intv. 2012).
- Set up cooperatives as non-profit organizations that provide advice and consulting of forest owners for low fees or even free of charge. Thus cooperatives could assume the function of a forest extension service. Support them according to their number of members and their

activities (Mizaras, intv. 2012). For higher feasibility consider raising moderate fees to at least break even.

Challenges

- Cooperation needs time to develop. It is possible that forest owners are not yet convinced of the advantages of cooperative over individual management (Gaizutis, intv. 2012; Kupstaitis & Vaikasas intv. 2012).
- Silvicultural contractors, larger forest owners and current Lithuanian forest owner cooperatives in name only may oppose the formation of genuine cooperatives (Mizaras, intv. 2012; Siaulys, intv. 2012).
- Some parties regard the government's expenses for private forestry presently as very low (Mizaras, intv. 2012; Siaulys, intv. 2012), which could indicate a threat that public support could only be weak and insufficient to successfully promote forest owner cooperatives.
- Not all stakeholders agreed that it is feasible or beneficial to provide free extension services to private forest owners through cooperatives (Jusas, intv. 2012; Siaulys, intv. 2012).

4. International case studies on cooperation among private forest owners

The case studies give an account of different approaches to cooperation among private forest owners and corresponding public policies. A summary and discussion of the cases is included here and a more elaborate portrayal in Annex 3.

4.1 Brandenburg/ Mecklenburg-Western Pomerania

Forest owner cooperatives in Brandenburg have been active since 1992. In 2001 there had been 407 cooperatives with 21,705 members and 142,572 ha of affiliated forest area. In 2002 the largest cooperative in Brandenburg managed 3,995 ha of forest. However most cooperatives did not expand significantly and maintained a size of 50 to 1000 ha (Lessner, 2002). The average size of a cooperative in Brandenburg in 2001 was 361 ha with on average 53 members (Federal Ministry of Consumer Protection, Food and Agriculture, 2001 cited by Lessner, 2002). Mecklenburg-Western Pomerania had 83 legally acknowledged forest owner cooperatives in 2008 with an average forest area of 511 ha (MLUV MV, 2008).

The policy aim in the federal states of Brandenburg and Mecklenburg-Western Pomerania is to promote the formation of larger, more professionally managed cooperatives by merger or the formation of umbrella cooperatives (Korth, 2002; MLUV MV, 2007 cited by MLUV MV, 2008). Public

support is only granted to cooperatives that have a certain size in terms of number of members and forest area. These requirements are progressively being raised (MLUV MV, 2008). Forest owner cooperatives in Brandenburg have from the early 1990s on been actively promoted by the State Forest Administration. The integrated State Forest Administration of Brandenburg functions as a state forest enterprise in managing the state's forests combined with the official functions of a forest administration. Additionally it is consulting individual private forest owners or their cooperatives. The State Forest Administration also initiates forest owner cooperatives (Korth, 2002). After a cooperative is established and legally acknowledged it can even request to be initially managed by the State Forest Administration for a limited period of time (Ministry of Food, Agriculture and Forestry, 1996 cited by Lessner, 2002). Thus forest owner cooperatives have served as a policy vehicle to promote active management of private forest, with the aim to achieve increasingly larger and more viable organizations. However, according to Rosenthal (intv. 2012) the strong public involvement also had a negative impact on the formation of independent organizations with a good market position. Accordingly it can be concluded that public support should not be provided through agencies where conflicts of interests concerning private forests may arise. Furthermore public involvement should decrease as cooperatives develop into more independent organizations.

The State Forest Administration supports private forest owners both through consulting and financial support. Consulting consists of advice as well as active operational services for private forest owners (Korth, 2002). Advice includes the recommendation and demonstration of silvicultural measures, information on financial public support, consulting in business administration and legal advice. Services include the contract-based, active provision of forest management operations (Lessner, 2002). Advice is provided free of charge and operational services for a fee. The recipient of this support can either be an individual forest owner or a cooperative (Korth, 2002). Furthermore for forest owner cooperatives there is financial support for new investments, administration and consulting (Lessner, 2002).

Cooperation among private forest owners may range from a one- time case of operative cooperation to permanent and institutional organizational models. Especially owners with very small properties rarely join cooperatives with permanent membership. Instead it may be an option for them to cooperate on specific projects, such as joint forest management operations in larger treatment units (MLUV MV, 2008). In Brandenburg and Mecklenburg-Western Pomerania forest owner cooperatives are sometimes further distinguished according to the way they implement their operations into "Waldverein" and "Waldgemeinschaft". However it is not always easy to distinguish them in practice and many mixed forms occur. A "Waldverein" is characterised by property specific forest management while the "Waldgemeinschaft" manages the holdings jointly across property boundaries (Lessner, 2002). While a "Waldverein" usually has more affiliated forest area with fewer members, the "Waldgemeinschaft" offers a management model that is attractive for a high number of members with small properties (MLUV MV, 2007 cited by MLUV MV, 2008).

- **FBG Neuruppin**

Type: Local forest owner cooperative

Size: 298 forest owners, 2,250 ha of forest area (Rosenthal, intv. 2012).

Employees: 1 full-time professional and one part-time secretary (Rosenthal, intv. 2012).

Membership: no fixed membership fees but a turnover dependent allocation of 10 % on timber sales (Rosenthal, intv. 2012).

Services and functions: Consulting of forest owners and forest management (Rosenthal, intv. 2012).

Public support: Financial support for 40 % of the supposed administrative costs, which corresponds to at most 20 % of the actual administrative costs (Rosenthal, intv. 2012).

Subsidiaries: Silvicultural contractor company (Rosenthal, intv. 2012).

- **FVB w.V. (Forstwirtschaftliche Vereinigung Brandenburg)**

Type: Regional umbrella cooperative

Size: 13 local forest owner cooperatives, 10,000 ha of forest area (Rosenthal, intv. 2012).

Employees: Simultaneously managed by the staff of the latter local cooperative (Rosenthal, intv. 2012).

Membership: no membership fee but a turnover dependent allocation for marketed timber (Rosenthal, intv. 2012).

Services and functions: coordination of timber harvests and timber sales, joint acquisition of contracted silvicultural operations, participation in forest management planning (FVB w.V., 2012). The focus is on timber marketing, while consulting of forest owners and forest management is taken care of by the local member cooperatives (Rosenthal, intv. 2012).

Public support: Initially financial support for 60 % of the supposed administrative costs, which corresponds to about a third of the actual administrative costs. The cooperative's manager found that opposite to the state's policy goal the State Forest Administration did not sufficiently support and even opposed independent and viable cooperatives. He regarded the administration's simultaneous responsibilities for state and private forests and resulting conflicts of interests as the key problem (Rosenthal, intv. 2012).

- **FWV MV (Forstwirtschaftliche Vereinigung Mecklenburg-Vorpommern)**

Type: Regional umbrella cooperative

Size: 21 members (local forest owner cooperatives, larger individual forest owners), 23,988 ha of forest area (FWV MV, 2012).

Services and functions: Coordination of timber harvesting and marketing, information and representation of members, joint contracting, role of an agent in sales and contracting (FWV MV, 2012).

- **FBG Elbeholz**

Type: Supra-regional forest owner cooperative

Size: 42 larger private forest owners, 30,427 ha of forest area (FBG Elbeholz, 2012).

Employees: One full-time executive (FBG Elbeholz, 2012).

Membership: Area dependent membership fee, a higher one upon entry and a lower one annually, volume dependent brokerage on timber sales (FBG Elbeholz, 2012).

Services and functions: Coordination and concentration of timber for joint marketing, mostly by stumpage sales, forest management consulting (FBG Elbeholz, 2012).

Public support: No public support to the cooperative itself (FBG Elbeholz, 2012).

These examples illustrate that even smaller and more recently established cooperatives can already provide significant benefits to their members through improved economies of scale and a better market position. Mainly they benefit from the commitment and social cohesion of a small membership base. However, in case these factors are not sufficient, the limited ability to improve the members' market position combined with collective ownership and difficulties to monitor the management can make it difficult to raise capital and to diversify and expand operations and ultimately adapt to the market.

4.2 Lower Saxony

In Lower Saxony the Chamber of Agriculture is cooperating with 93 forest owner cooperatives. Together they have 31,000 members and manage 360,000 ha of forest area. The Chamber of Agriculture of Lower Saxony provides consulting and extension services to 50,000 private forest owners, who are its members and customers, on 500,000 ha of forest land. Thus 62 % of these forest owners with 73 % of that forest area are organized in cooperatives. The average size of a cooperative in Lower Saxony is about 3,900 ha of forest land with 333 members. Most members have forest holdings smaller than 100 ha (von Busse, 2012).

The Chamber of Agriculture's aim is to promote and increase forestry production through information, education, consulting and extension services for private forest owners, forest owner cooperatives and municipalities. Furthermore it provides advice for the foundation of forest owner cooperatives and available public support (von Busse, 2012). Extension services by the Chamber of Agriculture are offered for a fee and need to break even (Hillmann, 2012). From federal funds forest owner cooperatives can receive a timber marketing premium depending on their timber sales volume as an efficiency criterion. It is only granted if certain structural parameters are met and only

if the cooperative markets the timber independently without relying on the Chamber of Agriculture. Structural parameters are regionally varying and over time progressively increasing minimum sizes of members' forest area and harvested timber volumes. These are however relatively low and are usually met (Menge, intv. 2012).

- **FVL GmbH (Forstwirtschaftliche Vereinigung Lüneburg)**

Type: Regional umbrella cooperative

Size: 7 forest owner cooperatives (FVL, 2012).

Employees: 1 full time executive, one secretary as well as 1 logistics manager and additional personnel in the subsidiary company (FVL, 2012).

Membership: No membership fees. Instead timber is bought directly from the forest owner (Menge, intv. 2012).

Services and functions: Timber marketing, administration for local member cooperatives, operation of machinery, logistics, financial services (FVL, 2012).

Public support: Close cooperation with the Chamber of Agriculture (FVL, 2012). The Chamber provides consulting and forest management services to the cooperative's members for a fee (Menge, intv. 2012). The Chamber of Agriculture organizes together with the cooperative auctions and submissions for valuable timber (Menge & Tonat, 2012).

Subsidiaries: Silvicultural and timber transport contractor company (FVL, 2012).

This regional umbrella cooperative runs its own subsidiary company for forest management and logistics. Thus its members benefit from improved economies of scale in management operations and higher added value from vertical integration through factory gate deliveries. The members' market position is improved through joint timber marketing, especially by larger framework contracts and the supply of a significant share of some customers' raw material base.

4.3 Bavaria

In Bavaria forest owner cooperatives have achieved a state-wide and permanent presence (Schaffner et al., 2009a). About 28 % of all private forest owners with about two-thirds of the private forest area are members of forest owner cooperatives. 80 % of all municipal forest owners with 88 % of all municipal forest area are members of these cooperatives as well (Schreiber & Hastreiter, 2009).

There are umbrella cooperatives on district level and local forest owner cooperatives as their members (Messmer, intv. 2012). The regional umbrella cooperatives, so called "Forstwirtschaftliche Vereinigungen" or FVs have been established for each of the seven Bavarian governmental districts. These umbrella organizations of cooperatives represent the interests of their members, coordinate timber sales and consult, inform and support their members in all forestry related issues

(Leitenbacher & Perfler, 2009a). The local cooperatives join the FVs voluntarily and take care of forest management locally (Messmer, intv. 2012).

Public support to forest owner cooperatives in Bavaria aims to improve forest management and motivate forest owners for active management. It seeks to promote the necessary infrastructure and develop efficient, independent forest owner cooperatives (FV Swabia, 2012). Bavarian Forest Law includes three pillars of support to private forest owners, financial support, consulting and education (Leitenbacher & Perfler, 2009a). The Bavarian policy approach has so far been very successful. It combines the economic development of forest owner cooperatives with a close and local cooperation of cooperatives and the State Forest Administration (Suda et al., 2009). Forest owner cooperatives receive targeted financial support for certain business projects and state forest advisors provide them with direct consulting (Schaffner et al., 2009 cited by Leitenbacher & Perfler, 2009b).

Forest owner cooperatives only receive public support when they provide certain services to their members and specify them in their articles of association. Consulting of forest owners is mandatory. Furthermore minimum membership in terms of number of members and forest area and minimum requirements for marketed timber volumes per hectare of forest area, depending on tree species, are necessary conditions. There is an upper limit for financial support of 50,000 € maximum per cooperative and year (Leitenbacher & Perfler, 2009a). Support projects include timber marketing, full-service forest management contracts, timber submissions and auctions as well as education and training for cooperative staff. Timber marketing is supported according to performance through a marketing premium per unit volume (Leitenbacher & Perfler, 2009a). Forest management contracts receive annual support payments depending on the array of services included and the size of the holding. There is an upper limit of supported service area per cooperative forester (FV Swabia, 2012). Investments in machinery, equipment and bioenergy plants as well as office equipment for newly founded cooperatives are supported with part of the costs up to a certain limit (Leitenbacher & Perfler, 2009a).

Forest owner cooperatives are released from corporate income tax if they only service their members. Tax release on corporate income tax is only granted to cooperatives that provide such services to members as information, timber marketing, joint use of machinery and sale of goods for forest management. Furthermore these activities need to be stated in the articles of association (Dintenfelder, 2009).

Advisors from the State Forest Administration consult cooperatives in developing more efficient business processes and new business opportunities; help them with public relations, forestry issues and public support. They do not engage in operational, business- related tasks and decisions (Leitenbacher & Perfler, 2009b). This form of public support has led to a dynamic development of cooperatives and larger organizations with a stronger division of tasks, increased timber marketing and a wider array of services (Schaffner et al., 2009a).

- **FV Swabia e.V.**

Type: Regional umbrella cooperative

Size: 20 forest owner cooperatives (Messmer, intv. 2012), with 21,000 private and municipal forest owners and a forest area of almost 200,000 ha (FV Swabia, 2012)

Services and functions: Information and education of members, coordination of timber sales, timber harvesting, acquisition and operation of machinery and public relations (FV Swabia, 2012).

Public support: Consulting by the State Forest Administration (Messmer, intv. 2012).

Subsidiaries: None that are purely run by the umbrella cooperative. Several of the local member cooperatives have founded subsidiary companies for their business activities or are in one way or another involved in other business ventures, such as consumer and marketing cooperatives (FV Swabia, 2012) and even a cooperative sawmill (Messmer, intv. 2012).

Bavarian forest owner cooperatives have achieved improved economies of scale through local cooperatives for forest management and specialized subsidiary companies. They have improved their market position through the establishment of larger organizations for joint timber marketing. Furthermore vertical integration of different parts of the production process up to the establishment of bioenergy plants or a cooperative sawmill have captured added value.

4.4 Austria

In Austria the forest owner association and the Chamber of Agriculture have jointly developed strategies for cooperation among private forest owners to meet the challenge of increased concentration processes in the forest industry and protect the forest owners' income situation. Horizontal cooperation among forest owners aims to improve forest management and increase timber supplies. Vertical cooperation with the wood industry through long-term contracts aims to improve timber harvesting and transport. Forest owner cooperatives seek to develop new services, offer the full management package to absentee owners and be managed by full-time professionals (Rauch 2007).

Since the year 2000 forest associations have been active on provincial level throughout the country. They operate in close coordination with the Chamber of Agriculture's consulting foresters. A network of local forest owner cooperatives with a growing membership base has developed into regional timber marketing units and complements the activities of the provincial forest associations. Currently about 37 % of small private forest holdings are organized in forest associations and forest owner cooperatives. Until 2020 it is the goal to involve half of all small private forest owners. Forest associations continuously improve the business processes in timber harvesting, logistics and marketing. They coordinate harvesting activities in their members' forests according to their customers' needs and have proven to be able to acquire higher timber volumes from private forests. The forest associations' joint timber marketing has developed dynamically in recent years. Since 2004 this development has been further promoted by new, successful acquisitions of harvestable timber and coordinated support in the event of calamities such as windthrows (Waldverband Österreich, 2009).

Forest associations seek to supply their customers according to supply agreements. The sustainability of forestry as well the timber market situation and the members' individual income requirements receive high consideration. Forest associations are among the largest roundwood suppliers in Austria. Their supply seeks to be customer oriented and to reach customers of different capacities. Concentration processes and capacity increases in the Austrian wood industry are a substantial logistical challenge. Industrial timber assortments in Austria are now purchased by a few organizations only. Even though timber markets are dominated by large companies small- and medium-sized sawmills remain very important for the local timber marketing activities of forest associations (Waldverband Österreich, 2009).

4.5 Sweden

In Sweden there is a long tradition of cooperation among private forest owners. They have founded associations to improve their market position and receive higher timber prices. Historically larger forest industries had been purchasing small forest holdings from local farmers. Furthermore a few large companies also dominated the timber markets. In order to improve the market position of small private forest owners local associations were formed initially (Kittredge, 2003). Later forest owner associations developed by merger of smaller and more local associations into a few larger forest owner cooperatives out of many smaller organizations. While forest owner associations had been initiated to improve the forest owners' market position the larger organizations that emerged later expanded their activities beyond timber marketing to their own wood processing industries to capture added value. They offer a variety of services to their members from joint purchases to timber marketing, forest management services, information, education and political representation (Kittredge, 2005). Forest owners invest in a capital share, usually depending on the size or the value of their holding, to become member of an association. Thus they become shareholders in the industrial association and also share the industry's profits (Kittredge, 2003).

In Sweden there are four regional forest owner associations with about 88,000 members. They operate as producer cooperatives and are owned and managed by their members (LRF, 2012). The members of all associations own more than six million ha of forest. About 44 % of all private forest owners in Sweden with holding sizes of more than five ha are member in an association. In 2002 about 28 % of all annual timber harvests were coming from the associations while they produced 12 % of the Swedish sawmill capacity and 40 % of the raw pulp capacity (LRF Skogsägarna, 2002 cited by Kittredge, 2003).

Associations buy timber from members and even non-members, arrange harvests, haulage and coordinate timber transports to the mills. Their district foresters procure timber from forest owners and also arrange harvesting and timber transports. Additionally associations also provide forest management planning, silvicultural services and tax advice through their district foresters. Associations benefit economically from increased efficiency and economies of scale in timber marketing, bonuses for contract reliability and value-added from the operation of their own wood processing industries. The associations' members benefit from competitive timber prices while they maintain their marketing autonomy. They can receive full-service forestry and pay reduced prices for

forestry supplies and education. Members may benefit from annual share growth and potential annual dividends. At the same time they pay no annual membership fees and stay flexible to withdraw from membership and take their capital share (Kittredge, 2003).

In principal forest owner associations seek to achieve fair timber price levels for their members as opposed to external investor owned industries that seek to minimize their raw material expenses (Kittredge, 2003). However it has to be considered that forest owner cooperatives that operate their own wood processing industries and let members participate via share value and dividends may still seek to minimize timber prices for the sake of their industrial operations. Basically it can still be argued that even in that case forest owners benefit economically from the industry's added value through their shares. On the other hand this arrangement may affect the association's timber procurement policy and give it an orientation towards the supply needs of its wood processing industries. As a result there is a threat that the assortment structure and resulting harvest revenues as well as overall forest management do not only reflect the goal of maximum utility for the forest owner.

As argued by Nilsson (2001) traditionally organized cooperatives face a threat of becoming degenerated especially when they make large investments to expand into operations remote from their members' own activities in increasingly complex and competitive business segments. These investments are made from unallocated equity that members' do not directly control and thus they have difficulty to monitor the organization. Monitoring problems in turn pose a threat that the organization's management will seize control while weak market functions curb the cooperative's efficiency. These developments may lead to an increasingly heterogeneous and anonymous membership base. In case members do not regard the cooperative as effective neither in correcting market failures nor in generating return on investment the threat of becoming a degenerated cooperative becomes imminent (Nilsson, 2001). An example of a forest owner cooperative in Sweden that actually went bankrupt did so in the face of low member commitment in terms of patronage and investment (Dahlgren, 1990 cited by Nilsson, 2001). Accordingly for large industrial forest owner cooperatives that did not modify their structure from a traditionally organized cooperative to a diversified group the greatest challenge is to ensure their members' participation and commitment.

- **Södra**

Type: Industrial forest owner cooperative

Size: 51,000 forest owners with 36,000 holdings and 2,373,000 ha of forest area (Södra, 2012).

Employees: 3,830 (Södra, 2012).

Membership: Members supply timber at market price. They benefit economically because they collectively own the forest industry operations. Dividends to the members are based on the capital contributed through their shares and the timber delivered for the given year (Södra, 2012).

Services and functions: Full array of forest management services, production of paper pulp, wood products and energy wood, representation of members' interests on political level (Södra, 2012).

Public support: During the major economic crisis during the late 1970s and early 1980s the Swedish government supported Södra by buying up over 40 % of the shares in Södra's industrial section. Later when the situation had stabilized again Södra redeemed these shares (Södra, 2012).

Subsidiaries: Södra's forest management unit operates five subsidiary companies, trading in biofuels, operating a tree nursery, dealing with cargo, procuring timber in Estonia and Latvia and selling equipment to forest owners and contractors (Södra, 2012).

Södra has achieved vertical integration of the whole production chain, from forest management to the production and distribution of industrial forest products. However, due to the collective ownership of the diversified forest industry group, property rights and agency problems may become a threat, especially in economically challenging times. Therefore the cooperative's continued success largely depends on the participation and commitment of its members.

4.6 Finland

In Finland cooperation helped develop the newly established market economy. The foundations of the Finnish cooperative movement lie in rural areas where it helped the rural population and economy adapt to the market economy and rapid industrialization. Cooperation was an integral part of all major structural and societal changes in Finland during its transition from an agrarian national economy into an industrial one and further on into a post-industrial welfare state. Cooperative enterprises often ensured that these often rapid changes took place in an economically and socially more controlled and sustainable way. The wide-ownership base and bottom-up network organization of democratic cooperation in Finland had a socially and economically stabilizing effect (Skurnik, 2002). Accordingly the Finnish case demonstrates the potential of cooperative entrepreneurship for the sustainable development of the transition economies of former centrally planned economies.

Finland has been facing a persistent dilemma to facilitate large-scale forest industries under the conditions of small-scale private forest ownership. This has always been the main focus of Finnish forest policies. They included four major policy packages:

1. Legal and other support to local forest management associations.
2. Regional control, extension, training and planning services for private forest owners.
3. Financial support for forestry measures that improve the forest condition.
4. National forest programs that seek to balance forest resources and the demand of the forest industry (Saastamoinen & Pukkala, 2001).

Because of the crucial role of private forestry in Finland the government has sought to influence the forest management decisions of private forest owners. Therefore it legally regulated the activities of Forest Management Associations (FMAs) and supported them in the provision of training and advice to forest owners. This had been a cornerstone of the whole forest sector's development. Changes in forest ownership structure have created a risk for neglect of active forest management and decreasing wood supply. Therefore FMAs need to evolve their traditional structure and activities into a more market oriented approach (Lillandt, 2001).

Today 136 local Forest Management Associations are governed and financed by their 330,000 members and provide them with practical advice, different services and attorney wood sales. As FMAs are controlled by forest owners they can almost be considered cooperatives even though legally they are not (CEPF, 2008). FMAs have a democratically chosen administration. They have been established and are financed and administered by the forest owners themselves. There is a legal obligation for every forest owner to pay a forest management fee and automatically become member of the local FMA where the forest holding is located. Forest holdings smaller than 5 ha are not legally required to join a FMA. Otherwise membership is free of charge (Lillandt, 2001). FMAs cooperate closely with private forest owners in all forest related matters. They offer training, advice, professional forestry assistance and help with timber sales. FMAs do most of the planning and implementation of forestry measures, timber sales planning and help with actual transactions. About 80-90 % of timber production activities in private forests and 70 % of the preliminary planning of timber sales are carried out by FMAs. Furthermore forest owners can grant FMAs the power of attorney in wood sales and deliveries. Changes among forest owners and their decreasing ability and willingness to perform forest management themselves have increased the FMAs power of attorney in forest management and timber sales. Around 40 % of timber sales from private forests are based on attorney sales (Lillandt, 2001). However it has recently been discussed if obligatory fees that forest management associations in Finland receive from forest owners distort the market for forest management services and inhibit the development of private service providers (Kolström & Harstela, 2005 cited by Niskanen et al., 2007b).

The consolidation and globalization of the forest industry can lead to imbalances in timber markets. The three leading forestry companies in Finland, among them Metsäliitto and UPM-Kymmene, buy more than 80 % of their wood from private forests. In pulpwood this share is even 98 %. In the sawlog market there is more competition as there is a high number of small- and medium-sized sawmills. However the three largest companies control 70 % of the sawmilling capacity through integration. Therefore private forest owners need to have sufficient knowledge on timber markets and benefit greatly from the help of FMAs in timber sales. FMAs also seek to improve timber marketing from private forests through new roundwood pricing methods, information systems and e-commerce solutions (Lillandt, 2001). Forest owners in Finland started to cooperate to achieve a stronger market position for timber sales in the first place. Higher timber revenues also made it possible to improve forest management practices to the benefit of the forest resource. Furthermore cooperation resulted in a sufficient and stable supply of good quality timber and thus promoted the development of the forest industry (Metsä Group, 2012). As a consequence there was a positive

feedback between the development of forest owner cooperatives and that of the forest resource and the forest industry.

9 Regional Forest Owners' Unions guide and develop FMAs in their activities, guide and assist the marketing of forest products and represent forest owners politically on regional level. These Unions are regional central organs of the local FMAs. Furthermore the regional Unions are members of MTK, the Central Union of Agricultural Producers and Forest Owners that represents Finnish forest owners politically through its national Forestry Council (CEPF, 2008). MTK guides the activities of Regional Unions of FMAs, protects the interest of the local FMAs and develops cooperation between forest owners (Lillandt, 2001).

Metsäliitto is a cooperative that seeks to procure, market and process wood at its own facilities to enhance its members' assets (Metsä Group, 2012). Metsäliitto was initially established to market the timber from private forest owners to enhance their marketing control. Later it developed from a roundwood exporter to a forest industry group with operations in Europe and product markets worldwide. Metsäliitto's business idea is to integrate procurement, transportation, processing and marketing of forest products starting from the forest owners' supply side to the customers. Therefore Metsäliitto has two main fields of activity. One is to procure and market competitively its members' wood to the industry. The other is to run a holding to actively participate in developing the forest industry to improve its members' economic situation. Streamlining of the company's structure over several years has made the companies within Metsäliitto Group major players in the forest industry in Europe and beyond (Vaajoki, 1999). The forest industry is consolidating rapidly which puts Metsäliitto under existential competitive pressure. In this process Metsäliitto seeks to develop its competitive advantage in being a major forest industry company owned and controlled by forest owners (Vaajoki, no year cited by Skurnik & Vihriälä, 2012).

- **Metsäliitto Cooperative**

Type: Industrial forest owner cooperative

Size: By turnover the biggest forest owner cooperative in Europe (CEPF, 2008), with 125,000 members who own about half of all private forests in Finland (Metsä Group, 2012).

Employees: About 12,500 employees with operations in about 30 countries (Metsä Group, 2012).

Membership: Members purchase an obligatory capital share according to the size and location of their forest holding (Metsä Group, 2012).

Services and functions: Forest management services, assistance with timber sales, timber processing, marketing of wood products, investment opportunities in different additional shares (Metsä Group, 2012), timber supply, logistics, wood processing, manufacturing and marketing of end products globally (Vaajoki, 1999).

Subsidiaries: Metsäliitto Cooperative is the parent company of the forest industry group called Metsä Group, including the subsidiaries Metsä Tissue for special papers, Metsä Board for boards,

Metsä Fibre for pulp, Metsä Wood for wood products and Metsä Forest for wood supply and forestry services. Furthermore Metsä Group's purchasing services the other companies of the group (Metsä Group, 2012). Metsäliitto Cooperative developed from its original role as a roundwood exporter to a forest industry group with operations in Europe and product markets worldwide. Streamlining of the company's structure over several years has made the companies within Metsäliitto Group major players in the forest industry in Europe and beyond (Vaajoki, 1999).

Metsäliitto cooperative has achieved vertical integration of the whole production chain, from forest management to the production and distribution of industrial forest products. However different activities are carried out by separate companies within the group. Furthermore members of Metsäliitto cooperative get the opportunity to purchase additional shares to their mandatory one. Thus individual property rights have been introduced and market mechanisms restored. This may improve the efficiency, adaptability and performance in business areas that are remote from forest management.

4.7 USA

The success of forest owner cooperatives in the USA has been very limited. The wide diversity of ownership objectives and a tendency for a very active forest land market combined with a strong sense of independence among private forest owners have been very problematic for cooperation among non-industrial private forest owners (Rickenbach et al., 2005 cited by Niskanen et al., 2007b). Nevertheless there are interesting initiatives that differ substantially from traditional approaches to cooperation among private forest owners and that hold potential for application elsewhere.

Today a new wave of cooperatives is occurring that involves forest owners, consultants, wood processors and others to create economic benefits for members and at the same time improve common welfare in ecologic and social respect (Nadeau et al., 2002 cited by Blinn et al., 2007). Thus forestry cooperatives re-emerge in response to growing interests in sustainable forest management, including certification, and in increased profit opportunities from timber processing (Blinn et al., 2007). Nonbinding and low-commitment strategies of cooperation are being developed as hybrids of partnerships. They address quality control and management efficiency as well as leadership, organization and management infrastructure. Forest owners today seem to be willing to surrender some control for trusted advice and affordable services (Hull & Ashton, 2008).

- **ATFS (American Tree Farm System)**

Type: A program by the American Forest Foundation promoting environmental certification among family forest owners in the US (ATFS, 2012).

Size: 65,000 private forest owners with almost 10.5 million ha of forest (Kittredge, 2005).

Employees: More than 4,400 volunteer ATFS Tree Farm Inspectors (private forestry consultants, public agency foresters or industry foresters) (ATFS, 2012).

Services and functions: Networking, information, education, cost-free access to forest certification, improved business opportunities in private forests (ATFS, 2012).

Public support: ATFS' administration relies partly on governmental agencies and it receives public and private grants and donations (ATFS, 2012).

- **Oregon's watershed councils**

Type: Locally-organized collaboratives that represent diverse interests within the watershed. The 83 watershed councils in Oregon work as stakeholder- driven collaboratives that seek workable solutions through consensus-based decision making. They are voluntary collaboratives formed by local communities to broadly represent the variety of interest within a watershed. Watershed councils aim to foster enhanced stewardship of waterways and riparian areas. They lack regulatory power but seek to facilitate collective action within the watershed towards restoration activities through education and financial incentives. Watershed councils facilitate cross-boundary cooperation by private forest owners to improve stream habitat conditions (Rickenbach et al., 2004). The councils' membership should broadly represent those living and working in the watershed, typically including local government, environmental groups, forest product companies, private landowners, agricultural producers and state agencies. Watershed councils include a variety of stakeholders such as ranchers, farmers, National Forest managers, private forest owners, homeowners and the forest industry (Rickenbach 1999 cited by Rickenbach et al., 2004).

Size: The watershed councils studied by Rickenbach et al. (2004) cover thousands of hectares and encompass hundreds of private forest owners, communities, public lands and a great variety of interests. A typical council includes about 10-20 members and represents local government, environmental organizations, forest industry, state and federal agencies, landowners, farmers, to provide a mix of opinions and expertise (Rickenbach et al., 2004).

Services and functions: Members perform collaborative planning themselves, setting priorities, approve grant proposals and may participate in the implementation of council activities. Members who own land may allow council activities on their property (Rickenbach et al., 2004).

The initiatives in the USA mostly target the forest owners' sense of community and environmental interests, often focusing on their common goals of nature conservation and sustainable forest management.

5. Pathways for forest owner cooperatives and forest policies- A general approach and its application to Lithuania

5.1 Operational elements of cooperation

5.1.1 Timber marketing

The efficient concentration and coordination of harvests and timber sales is a key competency of forest owner cooperatives. They may offer their members joint timber sales on a voluntary basis without affecting their management or marketing autonomy (Rosenthal, intv. 2012).

Forest owner cooperatives may pursue different timber marketing strategies. They may draw on a variety of measures:

- Cooperatives may actively organize and control the whole timber supply chain and actively participate in the planning and implementation of harvests. This should involve close cooperation with contractor companies in silviculture and logistics (Schaffner et al. 2009b).
- Forest owner cooperatives may handle all measures and transactions for their members from planning and implementation of forestry measures to timber sales and deliveries. Forest owners may grant the cooperative the power of attorney (Lillandt, 2001).
- By actually buying and selling their members' timber and not only acting as a broker cooperatives may significantly improve their competitiveness (Kölbl, 2009). A specialization on the purchase of stumpage from their members gives cooperatives more control and flexibility over harvesting and transport and allows customer-oriented deliveries (Rauch 2007). Forest owner cooperatives may purchase timber from members only but may also handle external supplies from non-members as well (Södra, 2012).
- Factory gate deliveries of timber can be very cost-efficient. However they may require substantial investments in machinery and personnel and are more feasible for cooperatives with sufficient forest area and resources (Hillmann, 2012).
- Efficiency in transports and payments is crucial for success and therefore payments to forest owners have to be swift and deliveries to customers on time (Schaffner et al. 2009b).
- Efficient logistics may also require targeted investments in the forest road infrastructure (Schaffner et al. 2009b).
- Cooperatives that lack the means for factory gate deliveries or that do not expect adequate market rewards from it may sell stumpage to their customers instead (Rosenthal, intv. 2012). Stumpage may be sold in the name and to the account of the member while the cooperative

only coordinates and administrates the deals. Standardized timber contracts may be closed between the buyer and the forest owner. The harvest operations may be left in the responsibility of the customer (FBG Elbeholz, 2012). It is also possible to arrange that the customer accepts the services of a contractor for harvesting and transport that the cooperative selects (Rosenthal, intv. 2012).

- Stumpage sales may be combined with roadside sales of timber especially from joint thinnings (Hillmann, 2012).
- Cooperatives may close framework contracts over longer periods of time with timber buyers (Kittredge, 2003).
- Cooperatives should seek to become the largest timber suppliers in their sphere of activity. This may require strategic alliances and the formation of umbrella cooperatives for joint framework contracts or specialized marketing and service subsidiaries to achieve economies of scale and more reliable and flexible services (Schaffner et al. 2009b).
- Cooperatives may improve their market position when they can secure the supply of a significant proportion of one particular customer's raw material base. The market position is especially improved if such relations exist with several customers (Menge, intv. 2012).
- Timber sales may be facilitated by bidding procedures and e-commerce solutions such as online timber sales portals (FBG Elbeholz, 2012).
- Timber auctions and submissions for valuable timber assortments may achieve higher prices for quality timber. Forest owner cooperatives may organize this in cooperation with public actors like a Chamber of Agriculture (Menge & Tonat, 2012).
- For the long-term facilitation of timber sales cooperatives may expand into value-added processing activities. The bioenergy-sector is a feasible start (Schaffner et al. 2009b).

5.1.2 Additional services

Information and advice

Forest owner cooperatives may offer advice and education to their members and may contribute to the education and training of forestry professionals (Waldverband Österreich, 2009). Advice and extension services may even be the central motivation for forest owners to set-up and join cooperatives (Lillandt, 2001).

Full-service forest management

Forest owner cooperatives may provide their members with the full range of forest management services from silviculture to nature conservation measures (Södra, 2012). Full-service forest management contracts may be an important marketing instrument that helps cooperatives to establish themselves as professional service providers. The provision of complete and permanent

support in all forest related affairs may create a competitive edge that attracts new members. Furthermore full-service forest management contracts may give cooperatives more control over timber acquisition and supply (Schaffner et al. 2009c). This may help cooperatives become more efficient and customer-oriented in timber marketing. The provision of full-service forest management contracts may be facilitated through advertisement and operational support from public organizations. Model contracts and legal consulting from public authorities may help cooperatives develop their services.

However full-service forest management contracts remain a difficult business segment with a low likelihood of being profitable (Schaffner et al. 2009c). This may be especially difficult for small holdings where transaction costs are high. For smaller holdings the bundling of services and joint implementation of operations across property boundaries significantly lowers the costs. Furthermore service providers should achieve strong local presence and attractiveness both for larger as well as for smaller private forest owners. Good availability of silvicultural service providers may be crucial (Suda et al., 2009). A silvicultural subsidiary company run by the cooperative may be an important contribution to ensure service availability.

A critical competence for offering full service contracts is the ability to monitor the state of the forest health and provide forest protection quickly and cost efficiently. To enhance the cooperative's local presence it can be very helpful to employ members as local wardens and involve them in the provision of services (Schaffner et al. 2009c). The provision of full-service forest management contracts can be improved by specifically disposing personnel for this task and improving contracts and work flow (Neuner & Lutze, 2009).

Nature conservation and the promotion of common-welfare

Forest owner cooperatives need to provide customer-oriented services that acknowledge the diverse and changing nature of interests among private forest owners (Lillandt, 2001). They may expand their service portfolio to address non-commercial owner objectives such as recreation and nature conservation (Lessner, 2002).

Forest owner cooperatives are well able to give high consideration to forest protection and nature conservation by improving silvicultural practices, promoting certification and cooperating with environmental organizations (Waldverband Österreich, 2009). Forest owner cooperatives may become certified under regional group certification. Regional umbrella cooperatives may apply for certification for the area where their local member cooperative is active. Participation in certification of course remains voluntary for everyone (Lillandt, 2001). Forest owner cooperatives may even promote environmental certification among their members by offering a price premium on certified timber if they see potential in the market (Kittredge, 2003).

Forest owner cooperatives may become actively involved in research and development projects, public and private projects and initiatives for the improvement of the forest sector as well as in the implementation of public policies (Waldverband Österreich, 2009).

Timber processing

Forest owner cooperatives may run their own wood processing operations. While the pulp and paper industry offers high added-value it is more feasible and requires smaller investments to become active in sawmilling operations (Birchall, 2009).

Financial services

Forest owner cooperatives may set-up internal insurance systems against forest fires and payment default (Rosenthal, intv. 2012). Alternatively they may jointly purchase insurances from external providers for improved conditions.

Forest owner cooperatives may create individual accounts for their members through which payments associated with timber sales and forest management services are handled. This may also allow the cooperative to grant interest-free loans for the preliminary financing of silvicultural measures, especially when the state grants reimbursement for support measures only after they have been implemented (Menge, intv. 2012).

Forest owner cooperatives may offer their members the purchase of additional interest-bearing shares in the organization (Metsä Group, 2012).

5.2 Organizational aspects of cooperation

5.2.1 Management and organizational development

Organizational structure and economies of scale

Effective and customer-oriented timber marketing from private forests and the employment of professional management may require a critical size of the cooperative (Lessner, 2002). When smaller, local forest owner cooperatives seek to attain the critical scale for efficient timber marketing they may merge to larger units or form umbrella cooperatives concerned with joint timber marketing (Korth, 2002). Therefore increasing competition among forest owner cooperatives may facilitate merger and expansion (Suda, intv. 2012). Mergers and changes in legal form of cooperatives may lead to higher market shares and more personnel and thus increase the cooperatives' attractiveness to forest owners (Schreiber & Hastreiter, 2009). Forest owner cooperatives may cooperate beyond provincial and national borders (Waldverband Österreich, 2009).

Partnerships with cooperatives that have similar concepts and complementary products can also enhance membership and customer base. This could for instance include a food cooperative that sells edible forest products. Furthermore networks with other forestry cooperatives can serve for a valuable exchange of information and experience. Another strategy could be the establishment of a federation of forestry cooperatives that could serve as a body to share experience and serve public relations and marketing efforts (Blinn et al., 2007).

Employees and division of tasks

Cooperatives can become more efficient through a clear division and definition of tasks and responsibilities as well as the use of modern information technology (Schaffner et al. 2009b). Timber sales volume and the number of employees are correlated. More personnel with divided tasks allow a wider spectrum of services and may lead to increased marketing intensity per hectare of members' forest (Schaffner et al., 2009a).

The economic efficiency of smaller forest owner cooperatives can be improved by hiring a full-time manager. It is possible that local forest owner cooperatives that are member in umbrella cooperatives may not have full-time managers but honorary offices instead. Their business processes may be handled on contract basis by the umbrella cooperative (Menge, intv. 2012).

Cooperatives do not only employ executives, field foresters and office staff but also members as local forest wardens to enhance their local presence, reputation and the trust of the members (Neuner & Lutze, 2009). Forest wardens may act as contact persons who acquire new harvestable timber from other members, measure and sort harvested timber and supervise timber transports. They may receive a commission or a fixed moderate salary (Messmer, intv. 2012).

Umbrella cooperatives

Local forest owner cooperatives may voluntarily join umbrella cooperatives (Messmer, intv. 2012). The local member cooperatives within a larger umbrella cooperative may be responsible for local service and support to forest owners while the umbrella cooperative organizes joint activities such as timber harvesting and sales as well as overall administration (FVL, 2012). Umbrella cooperatives may market timber through bidding procedures and framework contracts and also coordinate and implement harvest operations and hire contractors. Furthermore umbrella cooperatives may provide a forum for the exchange of information and experience and may also organize joint purchases and other activities (Rosenthal, intv. 2012). Umbrella cooperatives may operate their own subsidiary companies for forest management operations and timber transports and at the same time hire the services of contractors (Menge, intv. 2012).

Regional umbrella cooperatives may fulfill a variety of functions. These may include:

- Timber marketing and the coordination and administration of timber harvests and timber sales (FVL, 2012; FVB w.V., 2012).
- Forest management consulting and services (FVL, 2012).
- Acquisition of silvicultural services (FVB w.V., 2012).
- Acquisition and operation of machinery (FVL, 2012).
- Advice and information of members (FV Swabia, 2012).
- Joint environmental certification (FVL, 2012).
- Joint insurances (Menge, intv. 2012).

- Representation of members' interests (Leitenbacher & Perfler, 2009a).
- Public relations (FV Swabia, 2012).

The sphere of activity of umbrella cooperatives does not have to be limited to one particular region. They may also function as a supra-regional timber sales network instead. Such umbrella cooperatives may regionally concentrate timber supplies within marketing units. These marketing units may sell stumpage, concentrating the members' individual offers to larger orders to create logistical advantages. While offers may be advertised for each regional marketing unit separately the whole administration of timber sales should be centralized and facilitated through information technology to ensure an efficient and reliable sales process (FBG Elbeholz, 2012).

Political forest owner or farmer associations may promote the establishment of regional umbrella cooperatives (Messmer, intv. 2012).

Large industrial cooperatives

While forest owner cooperatives are often established for timber marketing purposes they may develop into larger organizations that expand their activities to their own wood processing industries to capture added value (Kittredge, 2005). Large industrial forest owner cooperatives may seek to procure market and process wood at their own facilities to increase their members' income (Metsä Group, 2012). They may organize timber procurement, logistics, processing as well as manufacturing and marketing of end products and thus integrate the whole supply and value chain from their members' forests to consumer markets (Vaajoki, 1999). At the same time they should continue to offer a broad variety of additional services to their members (Kittredge, 2005). Additionally to forest management services and timber sales they may offer their members investment opportunities in different additional shares (Metsä Group, 2012).

Large industrial forest owner cooperatives may develop by merger of smaller and more local cooperatives (Kittredge, 2005). Via purchases large industrial forest owner cooperatives may first integrate mechanical and then chemical wood processing (Metsä Group, 2012). Thus the forest owner cooperatives may develop through the acquisition of wood processing operations, shares and voting rights, mergers and joint ventures with existing industries into a vertically integrated industrial conglomerate.

Large industrial forest owner cooperatives may organize their enterprise in separate business units, for instance by separating forest management services and timber trade from wood processing activities (Södra, 2012). The forest owner cooperative may function as a parent company within an industrial group with separate subsidiaries that focus on specific business segments (Metsä Group, 2012). The forest owner cooperative may be divided in smaller districts with their own democratic administration and their own district foresters for local forest management. These districts may maintain a network of reliable contractors, while a central administration markets timber and coordinates the entire supply chain (Kittredge, 2003).

To adapt to high competition in the modern market environment industrial forest owner cooperatives may pursue competitive advantages in niche markets and focus on the development of value chains to become market leaders in their respective niches (Skurnik & Egerstrom, 2007). Large industrial forest owner cooperatives may undergo continuous restructuring processes through sales, mergers and acquisitions to create a more unified group structure and concentrate activities on selected business segments (Metsä Group, 2012).

These industrial groups founded by forest owner cooperatives may also expand abroad through acquisitions and new investments. The expansion into markets away from their forest owner member base may become a challenge for wood procurement. This may lead to the foundation of wood procurement subsidiaries abroad (Metsä Group, 2012). However it may be an interesting alternative for the expansion of internationally active forest owner cooperatives to found subsidiary forest owner and timber marketing cooperatives abroad that involve local forest owners as members and suppliers of additional timber and capital. The knowledge base and resources of established forest owner cooperatives may facilitate the foundation of new ones and may even lead to the formation of trans-regional or trans-national cooperatives.

Subsidiary companies

Forest owner cooperatives may create and participate in a network of specialized subsidiaries for different business processes. These may or may not be cooperatives by themselves. While forest owner cooperatives may assume tasks such as forest management services and consulting to their members the subsidiaries may organize joint purchases, timber sales, logistics and added-value operations by sawmills as well as heat and power plants (LWF, 2009).

Cooperatives may found their own subsidiaries for *forest management operations* and *timber transports*. The subsidiaries may operate their own staff and machinery or centrally contract measures out. They may also combine both (FVL, 2012). The company's own machinery and staff may help the company to maintain a certain amount of control over capacities and operating costs and have a price reference for contract negotiations (Rauch 2007). The central organization of forest management activities may allow the formation of rational treatment units and cost-efficient operations. Centrally organized logistics may allow flexible, customer-oriented deliveries factory gate and an integrated and optimized supply chain. A company that is owned by the cooperative will capture added-value for the forest owner (FVL, 2012).

Forest owner cooperatives may found joint specialized *timber marketing subsidiaries*. This may be initiated and supported by political forest owner associations as well (FV Swabia, 2012). Timber marketing subsidiaries may even operate across national borders. Just like forestry and timber transport subsidiaries they too may organize the logistics throughout the supply chain and deliver timber at factory gate. They may buy timber directly from the forest owner, paying him swiftly and delivering timber flexibly and just-in-time to the buyer. Thus specialized marketing cooperatives can be important for the provision of efficient, reliable and transparent logistics and payment solutions (Messmer, intv. 2012).

There is an alternative to the complete acquisition or independent establishment of wood processing operations that large industrial forest owner cooperatives accomplished. Even smaller forest owner cooperatives may establish subsidiaries in *timber processing* for instance through strategic partnerships with existing sawmills. They may become members or shareholders in a member-investor cooperative or private limited subsidiary, providing it with additional capital and increased security of raw material supplies. This is especially attractive for medium-sized operations that have to expand their capacities to become more competitive in an increasingly concentrated sector (Messmer, intv. 2012; FV Swabia, 2012).

Forest owner cooperatives may become involved through subsidiaries in all matters of concern, for example expanding into the renewable energy sector by establishing their own heat and power plants (Suda, intv. 2012). They may also trade energy wood and procure additional timber, possibly even in foreign branches, run their own tree nursery or purchase goods and services jointly (Södra, 2012). Furthermore through involvement in subsidiaries cooperatives may participate in research and development in new forest management planning tools and information technologies that acknowledge their specific requirements (Messmer, intv. 2012).

5.2.2 Membership and member participation

Typically each member of a forest owner cooperative has one vote in his organization, irrespective of the size of his holding (Kittredge, 2003). Forest owner cooperatives may actively involve their members in their management to seek assistance and benefit from their professional expertise. This may help cooperatives to expand their base of skills and knowledge (Blinn et al., 2007).

Forest owner cooperatives may reach out into the community where they are active to broaden their membership base and build networks (Blinn et al., 2007). Consumer and community owned cooperatives may involve new groups of members (CDS, 2012b). Community cooperatives are owned, controlled and run for the benefit of those living in an area or having a common interest (CDS, 2012a). Therefore community cooperatives may expand their membership to other groups of people than forest owners only (Blinn et al., 2007). Furthermore cooperatives may also involve public forest owners such as municipalities (Schreiber & Hastreiter, 2009). Community cooperatives are especially suitable for renewable energy projects (CDS, 2012a). Furthermore forest owner cooperatives may involve the customers of their products and grant them discounts on the cooperative's products and services (Blinn et al., 2007). Additionally to discounts customers may benefit from higher control and security of supplies. Therefore forestry cooperatives may broaden their scope from that of a classical producer cooperative to that of a consumer cooperative or other models.

Furthermore cooperatives can also develop relationships with other local businesses to exchange knowledge and build support for their products. Local businesses like forestry consultants may see cooperatives as a threat to their own enterprise. By involving and incorporating these enterprises cooperatives may gain access to a network of well-connected members (Blinn et al., 2007).

Forest owner cooperatives may distribute costs and benefits for specific silvicultural measures among members based on individual accounting for property specific forest management or dividend systems for joint measures across property boundaries. The latter is particularly suitable for small holdings (Lessner, 2002).

Forest owner cooperatives may charge forest area dependent membership fees. These may be divided into a higher amount upon joining the cooperative and a lower annual fee (FBG Elbeholz, 2012). Forest owner cooperatives may also charge a combination of an annual fixed basic membership fee plus an additional forest area dependent fee (Menge, intv. 2012). However fixed membership fees may alienate potential members (Rosenthal, intv. 2012). Therefore forest owner cooperatives may instead of raising a fixed membership fee charge a turnover or volume dependent allocation on timber sales (Rosenthal, intv. 2012; Messmer, intv. 2012).

Forest owner cooperatives may require their members to purchase an obligatory capital share, depending on the size and location of their forest holding (Metsä Group, 2012). In this case they may not have to pay additional membership fees. It may also be possible to pay the share progressively from the income from the forest holding. The share may be fully refundable upon withdrawal from the cooperative and may be appreciable in accordance with the cooperative's performance. In profitable years the cooperative may even pay members a dividend on their share, at least if they have been harvesting timber. The cooperative may keep an interest-bearing account for each member through which it transfers all payments (Kittredge, 2003).

5.2.3 Alternative models of cooperation and cooperation across business segments and sectors

An alternative approach to the formation of institutional cooperatives with permanent membership can be cooperation on specific projects. This may concern the joint implementation of forest management activities in larger treatment units in a temporary and not institutionally binding way. Such alternative approaches may be especially suitable to address small forest owners (MLUV MV, 2008).

Another alternative approach that may foster joint activities among private forest owners may be strategic initiatives that support and consult forest owners (ATFS, 2012). They may provide information, technical assistance, education and cost sharing of management operations (Blinn et al., 2007) as well as free environmental certification (ATFS, 2012). These initiatives may rely on voluntary committees, governmental agencies, forest inspectors and forestry consultants, other experts and the forest industry (ATFS, 2012). The involvement of different stakeholders from the forest sector to work on the same goal may give the initiative a broad base of ideas, resources, knowledge and skills.

Nature conservation efforts on landscape scale may be promoted by nature conservation councils for the protection of special habitats and endangered species. They may facilitate collective action within an ecosystem towards restoration and habitat improvement activities through education and financial incentives (Rickenbach et al., 2004).

Additional business opportunities for cooperatives in the forest sector may lie in the collective production and marketing of energy wood, cooperative marketing initiatives for the promotion and branding of local timber, the creation of subcontractor cooperatives by smaller silvicultural contractors for joint tenders and administration or collective initiatives for education and advice (CDS, 2012a). Furthermore forest owner cooperatives may become involved in rural tourism as well (Niskanen et al., 2007b). Apart from strict producer cooperatives other models such as consortium cooperatives between several private enterprises or employee owned cooperatives may be relevant for the forest sector as well (CDS, 2012a).

Cooperative enterprises may be in a good position to locally develop renewable energy projects for the benefits of the local community. Bioenergy can be promoted through the formation of cooperatives among timber producers to jointly produce, market and distribute energy wood. Customer-owned district heating cooperatives may provide local hot water and heat. Cooperatives may also promote the development of small-scale hydro-power projects. Onshore wind can be promoted through community owned wind farms and new cooperative models that attract public or private investors while mitigating development risks. Cooperative enterprises in renewable energy may help to achieve scale, distribute risks and raise capital while the benefits are retained in the local community. This approach allows local development and control of the assets, a reduction of development risks, opportunities to raise investments and improved acceptance among the local community (CDS, 2012b).

Strategic partnerships with other cooperatives or local enterprises could improve the marketing of mushrooms, berries, honey, fuel wood, game or hunting opportunities. If many forest owners also own agricultural land or are active farmers a forest owner cooperative could also form a partnership with an agricultural producer cooperative. It may be a good strategy to promote cooperation for forest management also among forest owners that have already joined cooperatives for other purposes such as agricultural cooperatives, particularly dairy cooperatives, in areas that are also rich in forests. Existing agricultural cooperatives could establish forest management branches to promote forest management as an additional source of income for farmers.

5.2.4 Cooperative development in the case of Lithuania

Public policies should promote cooperatives that offer a wide spectrum of customer-oriented services to their members. This should cover the full range of forest management services and not only consist of joint timber marketing (Kupstaitis & Vaikasas, 2012). Cooperatives should operate on the basis of specified and defined objectives. Therefore it is recommendable to conduct further research on possible needs and objectives of private forest owners that cooperatives should address for Lithuania or particular regions (Jusas, 2012).

Public support for forest owner cooperatives should allow them to employ at least a full-time manager. This can markedly improve their effectiveness in the provision of services and the development of the company. Individual forest owner cooperatives should be encouraged to join regional umbrella cooperatives. These may be initiated by the government as well as Lithuania's Forest Owner Association and receive public support. Larger regional cooperatives could be

facilitated by promoting mergers of smaller, local cooperatives, once they are firmly established. The state should promote the establishment of at least one local forest owner cooperative within each region that could demonstrate the concept and serve as an encouraging example to private forest owners. Later these local forest owner cooperatives could expand their activities from the local level to a whole region. Extension foresters from the State Forest Service or a newly created forestry division of the Chamber of Agriculture could initially promote the establishment of forest owner cooperatives in selected pilot areas to concentrate and efficiently allocate limited public resources.

Public policies should encourage forest owner cooperatives to involve communities and customers. This may be especially relevant for the renewable energy sector. Customers and municipalities or regional governments can be involved in cooperatives that operate heat and power plants, onshore wind farms or small-scale hydro-energy projects. Forest owner cooperatives may participate in these projects and supply the raw material or required sites. Furthermore some of their members may also live in the municipality concerned and thus be customers as well.

Furthermore public policies should promote the involvement of cooperatives in the collection and marketing of non-timber forest products such as mushrooms or berries. Public initiatives to support rural tourism should also involve forest owner cooperatives as stakeholders and potential service providers.

Public policies should facilitate the cross-sectorial cooperation between cooperatives. Established agricultural cooperatives with members that also own forest land may find it attractive to establish a forestry branch to develop a source of additional income. This may benefit from already established organizational structures and members who are familiar with cooperatives. Such a strategy could be especially relevant for dairy cooperatives when they are active in areas with less productive agricultural land and a higher share of forests and which members may be interested in additional sources of income. A region in Lithuania where this may be especially relevant could be Dzūkija for instance.

Cooperative entrepreneurship should be promoted across and beyond provincial and national borders. For a larger industrial cooperative with international markets and operations it could indeed be attractive to found timber procurement and marketing cooperatives with members and business activities throughout the Baltic Sea Region. This could also facilitate the transfer of knowledge, education and training on cooperative entrepreneurship in the forest sector. Therefore existing industrial forest owner cooperatives from abroad may be encouraged to establish daughter cooperatives in Lithuania. However it is possible that they lack the local knowledge and acceptance to provide services on forest holding level. In that case this task could be assumed by locally owned and governed Lithuanian forest owner cooperatives. They in turn could participate in timber processing cooperatives or other forms of joint venture together with existing domestic sawmills or plywood producers to capture added value on high quality timber. To market pulp wood and other bulk assortments, joint export-oriented timber marketing cooperatives with participation of existing industrial forest owner cooperatives from abroad may be a promising solution. They could specialize on larger framework contracts for pulp wood exports and the reliable provision of other bulk

assortments and energy wood to larger domestic customers such as panel producers or municipal heat and power plants.

5.3 Forest policy tools in general and as applied to Lithuania

5.3.1 Forest policy goals

Public policies may support private forest management and forest owner cooperatives through financial support, consulting and education (Leitenbacher & Perfler, 2009a) as well as technical and organizational support (Hull & Ashton, 2008). This may include direct subsidies, subsidized credit, public and private extension services as well as development programs for special sectors such as tourism and bioenergy (Niskanen et al., 2007b).

Public policies in regard of cooperatives should promote their economic viability and the efficiency of their business processes and at the same time ensure that they also involve small forest owners (Schaffner et al., 2009a). Public policies may facilitate cooperation among private forest owners by promoting horizontal cooperation between forest owners, the provision of a variety of customer-oriented services to forest owners, the management of cooperatives by full-time professionals as well as vertical cooperation of cooperatives with the wood industry and contractor companies (Rauch 2007).

5.3.2 Forest policy goals in the case of Lithuania

The promotion of forest owner cooperatives in Lithuania may serve a variety of forest policy goals. Forest owner cooperatives could contribute significantly to the economic viability of private forestry, leading to higher incomes for private forest owners and timber harvesting activities that better acknowledge the market situation. Furthermore forest owner cooperatives could provide customer-oriented and reliable consulting to private forest owners. This could address a variety of aspects and services to acknowledge the individual needs and interests of private forest owners. Nature conservation and environmental considerations in private forests may benefit substantially from joint initiatives among forest owners and more professional service providers in private forest management that give high consideration to the owners' satisfaction and the sustainable management of their property.

Nevertheless small private forest owners are a challenging customer base with a variety of goals and interests as well as high transaction costs in the provision of services. Therefore private enterprises that explicitly address them in their business activities may need public support and advice for their successful establishment and development. However public support should ensure the development of independent and viable organizations in private forest management. Therefore support should be substantial in the beginning to be effective. As cooperatives develop public support needs to be repeatedly reassessed to not foster inefficiency among cooperatives and to ensure the development of larger and more independent organizations. A static support scheme combined with little resources will likely be ineffective.

To better understand existing forest policies in Lithuania Lazdinis et al. (2005) provide a useful classification of forest policies in the Baltic countries. It combines different existing classifications and distinguishes four main families of governmental tools for the administration of forest resources:

Mandatory legally binding instruments	National legislation such as Forest Acts and Forest Laws.
Market intervention instruments	Taxes; incentives and grants to production processes; public infrastructure; public purchases and forest management; direct compensation in the form of subsidies; natural resource protection in forest management and through reserves.
Market facilitation instruments	Institutions, agreements and tariffs for prices, marketing and trade with forest products; information, advice, extension and technical assistance; research.
Persuasion and administration instruments	Education of the general public and professionals

(Lazdinis et al., 2005).

This work will mainly focus on market intervention instruments in the form of financial support and market facilitation instruments in the form of public services.

5.3.3 Financial support

The government may promote forest owner cooperatives through direct financial support for activities such as:

- New investments (Lessner, 2002).
- Administration (Lessner, 2002).
- Consulting (Lessner, 2002).
- Joint timber marketing (Leitenbacher & Perfler, 2009a).
- Full-service forest management contracts (Leitenbacher & Perfler, 2009a).
- Organization of timber submissions and auctions (Leitenbacher & Perfler, 2009a).
- Education and training for the cooperative's employees (Leitenbacher & Perfler, 2009a).
- Subsidized loans (Hull & Ashton, 2008).
- Start-up grants (Hull & Ashton, 2008).

Financial support for management activities in private forests may be available for cooperatives only and not for private individuals or private limited companies as is the case in Japan (Niskanen et al., 2007b).

Joint timber marketing may receive a timber marketing premium from public funds (FV Swabia, 2012). To strengthen forest owner cooperatives economically and promote the development of larger, more professionally managed organizations state support of cooperatives may be tied to structural and efficiency criteria. These may include a minimum size of the cooperative in terms of the number of members and forest area (MLUV MV, 2008) as well as minimum timber sales volumes (Schaffner et al., 2009a) or timber marketing efficiency per forest area (FV Swabia, 2012). These criteria may be progressively raised over time and may vary by region (Menge, intv. 2012).

Full-service forest management contracts may receive public support as a fixed, annual amount for small holdings and a property size dependent amount for larger ones (FV Swabia, 2012). Contracts for small holdings may receive special consideration for structural disadvantages and higher labor requirements per unit area (Leitenbacher & Perfler, 2009a).

Just like the Forest Trust Fund in Norway all forest owners may be obliged to pay a certain percentage on the gross value of timber sales to a governmental trust fund. The exact amount may be regularly adapted to demand and harvest level. It is possible to create individual accounts for each forest owner. The fund may encourage long-term investments in forestry and finance investments in silviculture, forest management planning, road maintenance and construction and nature conservation measures. New entrepreneurial initiatives like cooperatives may receive support from the fund as well. The fund's administration may be financed from the interest on the deposits. Furthermore forest owners may receive tax benefits when they are using the fund. The fund may be established in cooperation of public agencies and forest owner cooperatives or political associations (Niskanen et al., 2007b). A fund which supports private forest management may also involve the wood industry (MLUV MV, 2008).

In addition to direct financial support a variety of tax advantages can be an effective tool to support forest owner cooperatives. They may be released from corporate income tax if they provide certain services to their members (Dintenfelder, 2009). In case forest owner cooperatives trade with timber, value added taxes on sales become important to them and may provide a good opportunity for tax abatements (Kölbl, 2009). Furthermore the members' contributions to cooperatives may be treated as a tax-deductible portion of their timber revenues (Kittredge, 2003). When there are no benefits from environmental certification from timber markets the state may consider to grant forest owner cooperatives tax advantages on certified timber to promote the uptake of certification.

5.3.4 Financial support in the case of Lithuania

Direct financial support should support forest owner cooperatives through a variety of measures:

- A timber marketing premium should be granted to forest owner cooperatives that fulfil certain structural and efficiency criteria in terms of minimum number of members and forest

area and minimum timber marketing volume per unit forest area. They should be required to provide a defined variety of services to their members that also address their information and forest management needs.

- Full-service forest management contracts by cooperatives that encompass a defined variety of services should receive a fixed basic amount of financial support if they concern a small holding and an area-dependent additional amount if the holding is larger.
- Forest owner cooperatives should have the opportunity to receive low-interest loans during their establishment. These loans could be limited to expenses for defined purposes such as administration, timber-marketing and consulting of members.
- Forest owner cooperatives should have the opportunity to receive start-up grants over a share of their administrative costs. This contribution should be significant enough to effectively support them during their early establishment but may gradually decrease to not foster inefficiency.

It could be considered to make direct financial support for the private forest sector available for members of cooperatives only. However this may face the opposition from actors that would then be excluded as well as legal constraints, especially concerning EU competition law. Furthermore such a regulation would not be very effective in creating an additional competitive advantage for cooperatives as application and implementation of public support measures may only become feasible and attractive for small private forest owners if they are member in a cooperative anyway.

A release from corporate income tax could economically strengthen cooperatives and indirectly support them. To direct this to the right type of organization tax advantages could be granted to cooperatives only in case they fulfil certain criteria such as democratic involvement of their members and the provision of a variety of services exclusively to their members. For cooperatives that purchase their members' timber, reductions of value-added tax on timber sales may be another tool to indirectly promote their marketing activities and help them be competitive. If cooperatives require their members to purchase a capital share or pay membership fees the government may treat those as a tax-deductible portion of the forest owners' income. The same could apply to volume or turnover- dependent allocations that cooperatives may charge on timber sales for their services. Furthermore income tax advantages could be granted on certified timber in particular to promote the uptake of environmental certification in private forests. Since cooperatives are better able to organize certification than individual owners this may further increase their attractiveness.

5.3.5 Public services

The cooperation of forest owner cooperatives with public forest agencies in forest consulting may facilitate active forest management by private owners (Schreiber & Hastreiter, 2009). Public service providers may promote local examples of forest owner cooperatives to demonstrate their benefits or may also support other initiatives for joint management (MLUV MV, 2008).

There is a variety of ways to organize the provision of public services to private forest owners and their cooperatives. An integrated State Forest Administration may assume this as an additional task to the management of state forests and its administrative tasks. Alternatively public services may be provided through a Chamber of Agriculture or any other separate agency in which state employees are explicitly responsible for this task (Korth, 2002).

An integrated State Forest Administration may have the advantage that it already has high local presence everywhere throughout its sphere of activity (Korth, 2002). It may actively promote the establishment of cooperatives even by managing them initially for a limited time by its own staff (Korth, 2002; Lessner, 2002). Since an integrated State Forest Administration is also responsible for the management of state-owned forests, independent initiatives in private forest management may also face the opposition of at least part of the Administration. This will be especially relevant the more independent and influential they become. Furthermore the close cooperation of forest owner cooperatives with the State Forest Administration may become problematic if state employees remain responsible for a challenging variety of tasks. In this case conflicting obligations may foster neglect of the promotion of viable cooperatives (Rosenthal, intv. 2012). Therefore the variety of tasks of the Administration's foresters may require an adaptation of its organizational structure to regional demands. High dependency and close affiliation with an agency that is also in charge of state forest management may result in organizational neglect and interest conflicts once cooperatives are successfully established. Furthermore the Administration may become excessively influential not only in state but also in private forests and establish a monopolistic power structure and market influence for the whole forest sector. This may inhibit innovation and initiatives and foster inefficiency in forest management. Therefore once forest owner cooperatives are established their structural change towards increased efficiency and independence requires a progressive disengagement of public influence.

In case public services are handled through a Chamber of Agriculture, the forest owner cooperatives may focus on timber marketing while the Chamber of Agriculture focuses on consulting and extension services in forest management (Menge, intv. 2012). The Chamber may provide consulting and extension services directly to private forest owners (von Busse, 2012). This may improve the efficient provision of a broader variety of services (Waldverband Österreich, 2009). The involvement of public extension foresters may enhance the trust of forest owners and improve the availability of services throughout the country (MLUV MV, 2008). The division of tasks between public agency foresters and the cooperatives as well as larger administrative units than an integrated State Forest Administration would have may lead to larger and more efficient cooperatives. This may be the reason why Bavaria and Lower Saxony for instance have larger and more viable cooperatives than Brandenburg.

Consulting to private forest owners may consist of free of charge advice and operational forest management services for a fee. Services may be provided project-based or permanently (MLUV MV, 2008). This form of support can either go to individual owners or their cooperatives (Korth, 2002). For the provision of all-inclusive forest management services to private forest owners the public agency may close contracts with their forest owner cooperatives. There may be all-inclusive

contracts where a public forester is available for all members of the cooperative for a fixed fee. Alternatively there may be a project-based fee according to a price list (Menge, intv. 2012). Forest owner cooperatives may be charged reduced fees for public forest management services compared to individual owners. However this may be problematic in relation to European Union competition law and require careful legal assessment. Since forest owners may have their own management in place to support the implementation of these services it may still be justifiable to charge them reduced rates and not have any legal controversies (Korth, 2002).

Public agencies may coordinate their regional activities closely with the local forest owner cooperatives to optimize administrative procedures and the provision of services to private forest owners. In this process the agency's regional administration may communicate with the cooperatives and coordinate activities of larger scale such as road construction while local public foresters consult the cooperative's members and provide them with forest management services locally (FVL, 2012). To promote larger cooperatives the public agencies should support cooperatives across and beyond their own administrative units (Lessner, 2002). This is especially important the closer the cooperation between agency and cooperatives is. Cooperation with public agencies may also concern the exchange of information on the acquisition of members through regular meetings and joint consulting appointments (Neuner & Lutze, 2009). It may even be considered to provide public services to members of forest owner cooperatives only. This would create an incentive for forest owners to join cooperatives and result in substantial administrative advantages and efficiency gains for the agency as it may then be supported by the cooperative's management and deal with a central contact person.

Public policies may seek to promote the necessary infrastructure for active management of private forests through independent and efficient forest owner cooperatives (FV Swabia, 2012). The less forest owners perform management activities by themselves the more important it becomes for public policies to not only support individual forestry measures and joint timber marketing but also promote the conditions for forest owner cooperatives as professional service providers in private forests (Suda et al., 2009). Nevertheless for very small forest holdings public consulting may remain necessary as they are a difficult business area for forest owner cooperatives as well. Common-welfare oriented consulting and business-oriented consulting of private forest owners may be treated separately while the former remains the task of a public agency and the latter is taken care of by cooperatives and private service providers (Suda, intv. 2012). Therefore it is questionable if forest owner cooperatives may completely replace public extension services in small private forests where structural disadvantages make high service intensities hardly economically attractive or feasible. Cooperatives may rather complement public services in small private forests and provide valuable support and information to public agencies.

Forest owner cooperatives may be supported in their development through specialized advisors from public agencies that provide them with direct consulting (Messmer, intv. 2012). They may help improve the cooperatives' operational efficiency, help them expand into new business segments and educate and inform the cooperative's staff. Furthermore they may help the cooperative with public

relations, forestry matters and public support. However they should not interfere with operative business tasks and the cooperative's decisions (Leitenbacher & Perfler, 2009b).

Furthermore governments may promote cooperatives through cooperative development services and consulting initiatives that provide organizational assistance and advice on business and marketing plans (Hull & Ashton, 2008; Blinn et al., 2007). They may provide advice on business opportunities and options, company structure, financing and the development of member participation (CDS, 2012a). Their service may include assessments of cooperative opportunities through feasibility studies and ownership models, structural advice in company registration options, trust structures and share plans, financial advice on sources of funding and taxation as well as advice concerning membership and communication (Birchall, 2009).

5.3.6 Public services in the case of Lithuania

The provision of extension services through the State Forest Enterprises could create problems as they already have management responsibilities for state-owned forests. This may lead to conflicts of interests, a too high workload and neglect of the tasks in private forests. Furthermore it could create a trend towards monopolistic supply structures on timber markets.

The provision of extension services in private forests through the State Forest Service may be problematic as well as it also has control functions and has so far not been very active in this segment (Kupstaitis & Vaikasas, 2012). However the State Forest Service's officers very likely have strong forestry expertise and good local knowledge, especially concerning the needs of private forest owners.

The Chamber of Agriculture may be the most suitable organization for the task of forestry extension. It has a capable agricultural consulting service in place and many of its existing customers are not only farmers but also forest owners. The main drawback is that the Chamber of Agriculture's employees may not possess sufficient forest related expertise, unlike the State Forest Service's. Therefore it may be considered to establish a new forestry division within the Chamber of Agriculture involving officers that have formerly worked for the State Forest Service. This would combine the institutional capability and explicit service orientation of the Chamber of Agriculture with the forestry expertise and local knowledge of the State Forest Service's current personnel. This option may become especially feasible and attractive in case the State Forest Service would undergo restructuring processes and have to reduce its staff.

A promising strategy could involve close cooperation among the Chamber of Agriculture and forest owner cooperatives. This could include a division of tasks where the Chamber provides advice and services in the field while cooperatives take care of timber harvesting, transport and marketing. The provision of consulting and services in private forests through cooperatives only would not be very feasible or promising right-away due to the lack of existing cooperatives and the small-scale of private forest ownership in Lithuania. However given a successful establishment of forest owner cooperatives over time the Chamber of Agriculture's involvement could progressively be reduced. At the same time cooperatives may gradually assume the full responsibility for consulting with their

own staff. This may happen as a transition process from an approach similar to the one described in this work for Lower Saxony to one similar to the model described for Bavaria.

Therefore forest owner cooperatives should be promoted through a variety of public services:

- Installation of a reliable governmental extension service for private forestry through the Chamber of Agriculture (Gaizutis, 2012). The Chamber of Agriculture could promote forest owner cooperatives and closely cooperate with them when consulting forest owners. The Chamber of Agriculture should provide private forest owners with free of charge advice and operational services for a fee. It should provide project-based services as well as all-inclusive contracts. Services to members of cooperatives could be organized and accounted through the cooperative. Thus administrative efforts could be lower and members of cooperatives may receive discounts. It could even be considered to provide advice to all forest owners but forest management services to members of cooperatives only. Thus membership in forest owner cooperatives would effectively be advertised while the administrative and organizational burden in the provision of services would be lower. Public consulting foresters should organize joint consulting and meetings together with managers of cooperatives to facilitate the acquisition of members and build trust. Cooperatives could especially be involved in measures of larger-scale like road construction or joint thinnings. To acquaint private forest owners with cooperation public consulting foresters should encourage and organize project-based, joint activities. Public consulting foresters could also advertise and locally support full-service forest management contracts. However public consulting foresters should not act as executives and completely administrate the business for forest owner cooperatives since this would inhibit the development of viable and independent private companies. A public agency may develop model contracts and offer legal advice to cooperatives that offer full-service forest management contracts.
- Forest owner cooperatives should receive support from specialized public advisors. This could be provided either by the State Forest Service, the Chamber of Agriculture or other agencies. Public advisors should have forestry expertise but should also be trained in cooperative development and entrepreneurship.
- Public consulting services should provide potential and active managers of forest owner cooperatives with training, organizational assistance and advice on business and marketing matters and help them with business plans, taxation and the application for public support. It would be very recommendable to install a cooperative development service that is active across all sectors. Therefore such an initiative would not only have to involve the Ministry of the Environment. Instead a working group could be formed and a joint development service founded, possibly also involving the Ministries of Economy, Agriculture and Energy. Otherwise existing cooperative development services from abroad may be able and interested in consulting clients in Lithuania as well. In that case the Lithuanian government might arrange this cooperation and may even provide grants to cover part of the costs.

- Public agencies such as the State Forest Service or the Chamber of Agriculture should promote timber marketing initiatives for private forests and organize them jointly with cooperatives. This could include submissions of high quality timber, auctions for bulk assortments or online timber marketing portals that allow bidding procedures and help organize framework contracts.
- Establishment of a strategic initiative comparable to the American Tree Farm System that involves a variety of stakeholders from the forest sector. It could provide a variety of services including consulting, certification and forest management planning tools to private forest owners. The information tools could especially advertise cooperation and give contact information and descriptions on the background and services of all local forest owner cooperatives. These offers could well be combined with an online timber marketing portal to give forest owners all tools and information they need for the management of their property from one source.
- Establishment of nature conservation councils, particularly for watersheds and riparian areas. The Environmental Protection Agency, the State Forest Agency and municipalities may organize and guide these initiatives. They should involve a certain variety of stakeholders from the community but should remain small and locally relevant enough to allow efficient decision-making and collective action. Such councils could also address water resources, tourism, traditional land use practices or other resources and uses at the same time.

5.3.7 Regulations

There may be a legal obligation for private forest owners to pay a forest management fee and become automatically member of a local forest owner cooperative (Lillandt, 2001). However this approach does not have the bottom-up character that is so crucial for the social support to cooperative initiatives. Therefore there is a threat that cooperatives that develop by the help of legal obligations will lack the necessary member commitment to be successful.

5.3.8 Regulations in the case of Lithuania

Accordingly it should not be considered to create a legal obligation for forest owners in Lithuania to directly finance or join cooperatives. This may make it difficult to build sufficient trust and commitment to the organizations and may indeed remind some people of historic collectivist agriculture.

Instead a more suitable tool for the promotion of forest owner cooperatives could be the creation of a fund for the common welfare of private forest owners and the promotion of forest health and nature conservation. Its support targets may include forest owner cooperatives as well, especially when they provide services that cannot expect high economic returns but that may be beneficial for sustainable and active forest management and nature conservation. The fund may be financed through a proportion of the income tax on timber sales, annual fees from private forest owners, contributions by the forest based industries or a combination of those. The creation of such a fund has definite advantages over the option to create a legal obligation to join cooperatives as it would

not restrict the forest owners' freedom of choice and not eliminate market mechanisms necessary for the evolution of viable and independent cooperatives.

Other stakeholders in the forest sector that would benefit from more active management of private forests may also contribute to the fund. This may especially concern the wood industry that would benefit substantially from the establishment of forest owner cooperatives. They may be charged a fixed fee or one depending on the amount of timber they purchase. Alternatively a proportion of the value-added tax on their purchases may be allocated to the fund.

The fund may be complemented with funding from the European Union and the Lithuanian government and offer a lot of potential for the promotion of forest owner cooperatives. There may be individual accounts for forest owners as is the case with the Forest Trust Fund in Norway. However the small size of many forest holdings in Lithuania and the infrequent and small harvests that can be obtained from them make this option problematic. To better involve private forest owners, a common fund should be created that gives private forest owners the general opportunity to apply for financial support. The fund could also finance the increased provision of public consulting and extension services.

Of course it has to be considered that any form of additional financial burden on private forest ownership may threaten the viability of private forestry. Likewise contributions from the industry or existing tax revenues may face the opposition of other private and public actors. Therefore the creation of a fund can only present an option to supplement funding from other sources in the long run. For immediate policy initiatives the European Agricultural Rural Development Policy offers a more available source of funding.

5.4 Conclusion: A policy framework to promote forest owner cooperatives

For the promotion of forest owner cooperatives in Lithuania there is a variety of promising policy measures. To achieve the best results it is recommendable to combine several of those in a way that they complement one another and efficiently draw on public financial and institutional capacity. While public services should seek to create and promote the preconditions and capacities for cooperatives to operate successfully, financial support should strengthen their base of resources in their operating activities where those are critically scarce.

Public services:

- Provision of *public extension services* in close cooperation with forest owner cooperatives through the Chamber of Agriculture.
- Specialized *public advisors* and a *cooperative development service* to support forest owner cooperatives in the development and administration of their business.
- Initiation and support of *timber marketing initiatives* such as timber submissions and auctions or e-commerce timber marketing solutions.

- Initiation and support of *strategic initiatives* for the development of private forestry to promote the engagement in forest owner cooperatives, sustainable forest management and environmental certification through the transfer of knowledge and the creation of business opportunities. This could involve the wood industry, forestry contractor companies as well as environmental NGOs and public agencies.
- Initiation and support of *nature conservation councils* to foster cooperation on environmental goals.

Financial support:

- *Tax advantages* (e.g. release from corporate income tax for cooperatives that fulfil certain criteria).
- *Timber marketing premium* for forest owner cooperatives (if they fulfil certain structural and efficiency criteria and provide a defined variety of services exclusively to their members).
- Support to *full-service forest management contracts* by forest owner cooperatives.
- *Low interest loans* and *start-up grants* to forest owner cooperatives during their establishment.

Very likely there is a minimum requirement of funding and personnel for a policy package promoting forest owner cooperatives to have any genuine impact at all. Therefore any chosen policy package needs to at least reach this level of effectiveness and not consist of measures that merely demonstrate political goodwill. Any allocation of resources to an ineffective policy package will also be inefficient and waste capacity at the expense of other policy targets. However any policy package effectively promoting forest owner cooperatives will help install a capable institutional framework for the private forest sector with the capacity of positive synergistic effects on a variety of other policy targets.

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Annexes

A.1 Cooperative enterprises and their business environment

A.1.1 Cooperation and society

The development of cooperative entrepreneurship has had different preconditions. Economics identify market failures as a motivation for cooperation. Historically large scale factors such as nationalism, ethnic homogeneity, social equality and high levels of literacy may have been important for cooperative development. Sociology explains that cooperative development is positively correlated with social capital. It consists of bonding capital to found cooperatives and bridging capital to create a supportive environment. Bonding implies strong local networks among people with shared characteristics. Bridging implies networks that reach beyond a community to people who are not alike but may have shared goals. Both types of social capital are important for cooperative development. Social capital generally leads to high levels of trust, networking and mutual aid. It is associated with background factors such as associational involvement, social homogeneity, egalitarian social structures and economic equality in a society. Cooperation is further encouraged by a set of shared norms that includes a willingness to reward cooperative behavior with social approval. Collective action is often motivated through shared values, shared goals and a sense of community. Cooperative theories highlight a need for a supportive environment, a prioritization of the members' interests, membership homogeneity that reduces the costs of ownership, ensured voice and loyalty and the ability to network and form business clusters (Birchall, 2009).

A.1.2 Ownership, control and participation in cooperative enterprises

Cooperative enterprises differ from other forms of enterprises through their basic aims and operating objectives, their ownership model and their structure for internal control and the distribution of profits (Skurnik, 2002). Cooperative enterprises are owned and controlled by their members and produce benefits that mainly go to the members. A cooperative's membership may include consumers, producers or employees of the enterprise (Birchall, 2009). Central principles of a cooperative society are the fact that it is open to everyone, unlimited in membership and while an investor- owned company produces return on invested capital the members of a cooperative receive benefits in the form of services. A general goal is to improve the market position of several small businesses through cooperation on the same objective, deciding upon aims and procedures democratically while the collectively owned and operated business benefits all participants equally (Skurnik, 2002).

The principles of cooperation are based on social values such as self-responsibility, democracy, equality and solidarity. For the implementation of these values generally accepted guidelines have evolved, so-called cooperative principles:

1. Voluntary and open membership.

2. Democratic member control. Members actively participate in policy setting and decision-making. Primary cooperatives usually have equal voting rights and cooperatives further up the production chain are also organized democratically.
3. Member economic participation. Members contribute equally to the cooperative's capital base and control it democratically. At least part of the capital is the organization's common property. Members receive no or limited compensation for their investments and surpluses are allocated to develop the cooperative, to set up reserves or to support other activities decided by the members. Members benefit in proportion to their transactions with the cooperative.
4. Autonomy and independence. Cooperatives will always maintain democratic member control and maintain their cooperative autonomy in all management decisions and business transactions with other organizations, including governments.
5. Education, training and information provided to members, representatives, managers and employees as well as the interested public.
6. Concern for community and contribution to the sustainable development of the communities the cooperative operates in.
7. Cooperation among cooperatives. Cooperatives work together and support each other through local, national, regional and international structures (ICA, 1995 cited by Skurnik, 2002). In order to support cooperation in a particular country, supra-national networking and cooperation may create effective opportunities.

Members of cooperatives simultaneously have the roles of patrons and investors with varying importance. The patron role depends on the cooperative's ability to correct market failures and the trust and cohesion among members that allow them to control the business. The vertical integration that cooperatives can achieve may let the patron role dominate over the investor role. In this case investments become more of an entry requirement. Traditionally, cooperatives have been organized to promote the patron role and suppress the investor role. This has even led to the point where members do not regard themselves as investors anymore, as the investor role is associated with allocated, individually owned assets and tradable residual rights. Nevertheless with increasing suppression of the investor role monitoring problems become more relevant as well (Nilsson, 2001).

Cooperative enterprises can be owned by anyone who provides input to the production process. This may include employees, suppliers of raw material and suppliers of capital as well as purchasers of the company's products (Skurnik & Vihriälä, 2012). The relative advantage of different patrons as owners depends on the costs associated with ownership on one hand and with the patrons' market transactions on the other. Cost of ownership includes monitoring costs, decision-making and risk bearing costs. Market transaction costs include costs of market power and costs of asymmetric information. Investor ownership is not necessarily optimal but instead that type of ownership that performs best in the face of these costs. In the case of many farmer cooperatives farmers have become owners of primary processing operations to eliminate the market power that would otherwise have increased their costs or reduced their revenues (Skurnik & Vihriälä, 2012).

A main aspect concerning the efficiency of ownership is the homogeneity of interests among owners. According to Hansmann (no year cited by Skurnik & Vihriälä, 2012) the degree of homogeneity of interests among any group of patrons determines the costs of collective decision making. While employees and raw material suppliers may have very heterogeneous interests, investors have relatively homogenous interests as their goal is to maximize the value of their investment. This is the main reason for the dominance of investor owned companies in the modern market environment rather than the supply of capital (Hansmann, no year cited by Skurnik & Vihriälä, 2012). Control over a company's decision making by exit or direct say should be given to the group of patrons that can most effectively and cost efficiently make use of it and who cannot cheaply exit the company. Homogeneity of interests is one crucial factor in this and cooperatives may seek to constrain their business segments in order to maintain a sufficient alignment of their owners' interests. However this could become a serious handicap if the circumstances require diversification and expansion of business segments (Holmström, no year cited by Skurnik & Vihriälä, 2012). Homogeneity of members' interests can be achieved through economic benefits and is more probable in the face of strong commitment to the cooperative idea (Skurnik & Vihriälä, 2012).

A.1.3 Critique on cooperative entrepreneurship

Agency and property rights theories imply that cooperatives are economically inefficient enterprises (Nilsson, 2001).

Cooperatives differ from investor-owned companies due to their vaguely defined property rights and the fact that residual claims are not openly tradable. Cooperative residual claims are unique because the members of the cooperative society that own the enterprise have no individual ownership right to the company. Instead they own the monetary value of their shares in the cooperative society. Surplus of the cooperative reaches the members in the form of improved terms of trade, such as better prices and services. All decisions concerning these individually owned shares as well as those concerning collectively owned unallocated capital are made collectively by the society. As a result the members of a cooperative hardly have any individual property rights in it and thus the organization receives no market signals from the owners in terms of capital flow. This makes it hard to set goals and to assess their attainment. The time perspective of members is reduced as they cannot sell their shares at market price. However these market mechanisms are very important as they effect in an investor-owned firm with tradable residual rights that both the management and the owners operate effectively. A high proportion of unallocated equity that is collectively managed in relation to equity allocated in shares which is subject to members' own decision making will lead to an inefficient decision-making process and increased property rights problems (Nilsson, 2001).

Agency theory is concerned with the relationship between owners and the management of a company and the way owners can prevent other stakeholders in a company from behaving deceitfully. The management's decisions affect the owners' property. With increasing size and complexity of a company it can be more and more difficult for its ownership to control its leadership. It can be difficult for the owners to prevent their agents from acting in their own interest. This causes monitoring costs on part of the owners, bonding costs on part of the management and residual loss

to the owners when the management actually behaves deceitful (Nilsson, 2001). Consequently agency theory claims that problems will arise from a separation of ownership and control of an enterprise. In cooperatives this can become especially relevant since vaguely defined property rights can lead to conflicts about residual claims and decision making. This is becoming even more pronounced with increasing complexity of organizational structures (Hackmann & Cook 1997 cited by Nilsson, 2001). In a cooperative it is especially difficult for the members and owners to ensure that the management is operating in their interest and thus agency costs will be high (Nilsson, 2001).

Due to vaguely defined property rights, control by a cooperative's membership over its management can be insufficient and monitoring of the company may be inhibited. There is a threat that the use of financial resources is not optimal and that raising equity is problematic. Investments may tend to be short term only and accumulated investments may be below optimum. Furthermore the cooperative may accumulate unallocated capital. As a result a low capacity to correct market failures may lead to low commitment and trust among members (Nilsson, 2001).

Ferrier & Porter (1991 cited by Nilsson, 2001) identify different forms of inefficiency in cooperatives that occur due to unclear property rights and high agency costs:

1. Technical inefficiency. Due to the usually higher number of owners cooperatives have higher costs of control and reduced incentive for innovation.
2. Allocative inefficiency. A member's claim to returns on long-term investments will end with his membership. Furthermore cooperatives have difficulty to diversify to avoid risks or to concentrate ownership in the least costly or risky areas. Therefore they will be allocatively inefficient and tend to under-utilize capital and intangible assets.
3. Scale inefficiency. The optimum scale of production with minimal costs requires sufficient membership. However the costs of control increase with the number of members and legal constraints limit business that the cooperative can conduct with non-members. Thus its expansion is inhibited and the cooperative is likely to be scale-inefficient (Ferrier & Porter, 1991 cited by Nilsson, 2001).

Agency and property rights theories imply a number of organizational problems for cooperative enterprises (Schuster, 1990 cited by Nilsson, 2001):

1. Common ownership or free-rider problem (Schuster, 1990 cited by Nilsson, 2001). A cooperative enterprise's assets are owned collectively by a cooperative society. Thus individual action may have negative effects (Vitaliano, 1983 cited by Nilsson, 2001). Upon joining a cooperative a new member has immediately access to assets that other members have accumulated before him and since he generally only has to pay a small entrance fee this dilutes the existing members' equity. Therefore the organization's capital growth is inhibited because it is difficult to motivate members to invest in the organization when this is shared with others (Condon & Vitaliano 1983 cited by Nilsson, 2001). Upon leaving the cooperative a member does not have access anymore to the assets he had contributed to. At the same time he does not have to bear the full consequences of his actions. This encourages

members to be free-riders and inhibits certain market mechanisms to work. Collective ownership of cooperatives leads to the core problem of large amounts of unallocated, collective capital on one hand and collective decisions on the allocation of individual capital on the other hand. Common ownership can inhibit mutual market signals on the company's performance between the members and the management as they are distorted or absorbed by unallocated capital. Therefore unallocated capital functions as a filter that inhibits an optimal allocation of resources and poses a threat to the company's viability and existence. This affects investment and management decisions and may be harmful to operations. It prohibits the exchange of equity shares at market price and often makes it hard for cooperatives to raise capital, even for profitable investments. When an enterprise is built upon unallocated capital the movement of assets from shrinking sectors and less profitable investments to more successful ventures becomes difficult. This difficulty to expand or decrease equity quickly affects the enterprises competitiveness and flexibility. This can even become a socio-economic problem as the mobility of resources is an important condition for a productive market economy. The operations of a cooperative are oriented towards certain benefits to the members. These are often specified in the cooperative's statutes. Therefore it can become difficult to adapt operations to changes in member's needs and market conditions. It can also become a problem when the cooperative's management can ensure that its working conditions are better than it would be possible elsewhere. In that case there would be little incentive for the management to restructure or terminate an inefficient company. The use of unallocated capital is not recorded as a depletion of resources. Thus product prices offered by the cooperative to its members do not correspond to actual resource use and therefore members pay less than the market would allow when they purchase and receive more when they sell through the cooperative (Nilsson, 2001). Furthermore suboptimal use of capital makes it harder and more costly to borrow capital which further reduces the value of the cooperative for its members (Condon & Vitaliano, 1983 cited by Nilsson, 2001).

2. Horizon problem (Schuster, 1990 cited by Nilsson, 2001). The fact that residual rights in a cooperative cannot be transferred upon withdrawal limits its members' planning horizon. Furthermore planning horizons between members and other actors within the cooperative may differ which does not allow optimal investment decisions and inhibits the development of the company (Sogaard, 1994 cited by Nilsson, 2001). Therefore members are less concerned with strategic long-term decisions and more interested in immediate benefits of their membership. However this inhibits potentially profitable investments and capital growth and reduces the company's value (Nilsson, 2001).
3. Portfolio problem (Schuster, 1990 cited by Nilsson, 2001). A diversification of assets between different operations reduces the risk to the investor. Cooperatives cannot reduce the risk effectively as members' risk preferences, capital worth and other relevant characteristics are heterogeneous (Vitaliano, 1983 cited by Nilsson, 2001). Cooperative investment decisions can at best be oriented on an average or consensus of the members' preferences which can

result in interest conflicts within the organization and thus in economic inefficiency (Nilsson, 2001).

4. Follow- up or control problem (Schuster, 1990 cited by Nilsson, 2001). Sacrifices and rewards of members in a cooperative do not correspond. This indicates distorted market signals and reduces members' motivation for involvement and investment. Insufficient compensation for their involvement also reduces the members' control over the enterprise. A very common example for this is when members are allowed to join a cooperative without paying an entrance fee that corresponds to their share of the company's assets, thus letting them become free-riders. As a result collective ownership can let members lose their interest and ability to monitor the enterprise. This gives the management the opportunity to seize control and promote its own interests (Boettcher, 1980 cited by Nilsson, 2001). This could result in an expansion of the company that does not necessarily benefit its members. If members are passive and equity is disconnected from capital markets the management will get insufficient feedback on its decisions. Thus the management of cooperatives has significant power. It is difficult to replace executives and it is hard for members to monitor their performance (Nilsson, 2001).
5. The decision- making or influence costs problem (Schuster, 1990 cited by Nilsson, 2001). The variety of interests among members can make management decisions difficult and more costly (Richards, Klein & Walburger, 1998 cited by Nilsson, 2001).

A.1.4 Rationales for cooperative entrepreneurship

In spite of this critique cooperatives are still successful even on competitive markets (Cook, 1995 cited by Nilsson, 2001). Empirical studies on cooperatives do not confirm the above mentioned critique. Therefore it seems likely that property rights and agency theory do not completely explain the business environment of cooperative enterprises. Other theories are able to explain why cooperatives exist under certain business conditions. The above mentioned critique on the economic efficiency of cooperative enterprises focuses mainly on the influence of capital markets. However the formation of cooperatives was not a reaction to capital market requirements but to market failures (Nilsson, 2001).

According to transaction cost theory cooperative enterprises provide members a framework for joint vertical integration forwards or backwards in the production chain to improve their market position when they are too small to accomplish this individually. For members a better functioning product market may outweigh costs resulting from capital markets and vaguely defined property rights (Nilsson, 2001). Especially primary producers tend to organize themselves in transport and marketing cooperatives when they are cut off from emerging markets (Birchall, 2009). Agricultural producers are vulnerable on the market due to their large transaction-specific investments and considerable uncertainties in agricultural production which depends on natural conditions. The product quality is difficult to assess by the producer so there is substantial information asymmetry. The geographical dispersal of agriculture increases the risk that small producers come up against a local or regional

monopsonist and selling to independent trading partners they could face high transaction costs. Therefore owning the trading partner can markedly reduce transaction costs. The difference in optimal scale of operations between raw material producers and processors makes cooperation a recommendable form of joint ownership. Even a certain amount of unallocated capital in the cooperative can be indeed in the members' interest as it protects their transaction-specific investments and ensures the continued existence of the company (Nilsson, 2001). Other market failures also include gaps in the market when a demand is not met by any offer (Birchall, 2009).

The rationale for cooperative entrepreneurship according to neo-classical economic theory is to attain larger amounts of commerce and thus reap economies of scale. Therefore cooperatives have a competitive advantage in industries where the average costs show an ever declining pattern as an expression of market failure (Sexton, 1986 cited by Nilsson, 2001). Thus cooperatives have large market shares where economies of scale are most pronounced, namely in the collection and primary processing of raw materials (Nilsson, 2001). Cooperatives often practice a policy of cross-subsidization between member categories which may stimulate increased production among members whose production conditions are worse so that the total output increases (Nilsson, 1998a cited by Nilsson, 2001). Ideological motivations of cooperation such as solidarity, equality and fairness have an economic rational as they lead to growing membership and increased economies of scale (Nilsson, 2001).

Social factors are crucial to cooperative organizations. Social cohesion facilitates participation in a cooperative. It can ensure sufficient control of the company by the members and reduce agency costs in spite of vaguely defined property rights. Social cohesion reduces transaction costs and facilitates joint decision-making. If cooperatives are able to correct market failures and win the trust of their members, members can actively control the company because they understand the purpose. High member commitment due to homogenous ownership and the cooperative's success to correct market failures may mitigate adverse factors like the follow-up problem or the decision-making problem. Homogenous membership, small joint assets, efficiency gains from economies of scale and improved market position mitigate common ownership problems (Nilsson, 2001).

Even though a cooperative may be able to eliminate market failures this may still require the commitment of its members to the cooperative idea. A monopolist may undercut the cooperative's prices for a while in order to force the cooperative out of business and restore monopoly prices. The cooperative's members need to understand this and be sufficiently committed to use the cooperative's services even if there are more attractive offers in the short run. Furthermore successful cooperatives require members' active participation in controlling the management. The commitment to cooperative enterprises is not only economically motivated but is linked to the social and political context. When cooperative activities were established they were often seen as morally superior and more socially intelligent than conventional investor-owned companies (Fulton, no year cited by Skurnik & Vihriälä, 2012).

Cooperatives have often received public support in the form of reduced taxes, subsidies, protected markets and technical assistance (Sexton & Iskow, 1993; Cook, 1995 cited by Nilsson, 2001). However

public support may foster inefficiency to the national economy's disadvantage. On the other hand support may contribute to the efficient provision of socially valuable services (Nilsson, 2001).

Cooperative entrepreneurship has proven to be a socially reliable and risk-preventing alternative to the top-down, multinational corporate approach that concentrates ownership in the hands of a few. Cooperative societies were a social innovation with an important social function in organizing economic activities. Originally cooperatives facilitated the development of the market economy. Today cooperatives present more local, democratically controlled organizations that ensure the effectiveness of an increasingly complex and global economy to serve the actual needs of the population (Skurnik, 2002).

A.1.5 Challenges and responses in cooperative entrepreneurship

Cooperative operations face grave efficiency problems when they are collectively financed and run without any individual property rights and at the same time do not correct market failures and enjoy the trust of their members. Specific cooperative problems do not exist when members have individual property rights or if a collectively financed and governed cooperative enjoys high membership commitment. Simply put cooperative organizations face problems when their characteristics do not match the characteristics of their members (Nilsson, 2001).

For contemporary cooperatives the correction of market-failure is often no longer a major rationale. Many collectively financed cooperatives have high amounts of equity that allow investments in activities that do not serve to correct market failures. Sometimes members are not in very great need for better trading conditions any more or lack homogeneity. External conditions may change towards lower transaction costs, for instance when a cooperative's operations affect the behavior of other market actors. In other cases cooperative enterprises expand and therefore increase membership heterogeneity and lower their trust and commitment. Different developments may impact the members' commitment and social cohesion and let them lose interest in the cooperative enterprise (Nilsson, 2001).

Different business environments result in different challenges and require different organizational adaptations:

- Reduced transaction costs are most relevant for newly founded companies operating in less structured business areas to attract new members while established cooperatives often work within mature industries with well-functioning markets.
- Member involvement, assessment and control of a cooperative's operations are easier closer to their own activity in the processing chain. Large-scale, capital intensive and complex operations are more difficult to control and finance which increases transaction costs between the members and monitoring problems.
- A large membership is more likely to be heterogeneous which raises internal transaction costs and reduces members' control. Especially cooperatives that have laymen rather than

professionals as members often have difficulty in controlling the management (Nilsson, 2001).

Collective ownership and large amounts of unallocated capital are not necessary components of cooperatives. The cooperative enterprise can be owned and controlled by members and distribute benefits on the basis of use and at the same time improve its efficiency by addressing the problem of vaguely defined property rights. Such cooperatives exist and function the same way as investor owned firms only that ownership is limited to business partners. In that case members are more involved and willing to invest because their planning horizon is greater. Cooperatives that are financed by tradable and appreciable equity shares with associated residual rights do not face the problems proposed by property rights and agency theories and have no different efficiency from investor-owned firms (Nilsson, 2001).

A.1.6 The ability of cooperative enterprises to develop their organizational structure

The traditional activities of small-scale and primary producer cooperatives have evolved radically over time (Skurnik, 2002). Examples like Metsäliitto Cooperative in Finland demonstrate that the cooperative model may serve to organize enterprises even in capital-intensive industries like the wood industry (Vaajoki, 1999 cited by Skurnik, 2002). Agricultural cooperatives are especially involved at the beginning of the supply chain but in many countries they are active throughout the processing chain (Skurnik, 2002).

For many decades all agricultural cooperatives had almost the same organizational principles, from open membership to unallocated capital and democratic governance (Barton, 1989, Nilsson, 1996 cited by Nilsson, 1999). This organizational model can be termed traditionally organized cooperative. Over the last decades new entrepreneurial cooperatives have evolved since the changes in agricultural markets required organizations that were adaptive and responsive to increasingly volatile markets. New establishments and transformation of existing cooperatives have led to agricultural cooperatives with quite different attributes. They can be termed entrepreneurial cooperatives (Nilsson, 1999).

Nilsson (1999) distinguishes four entrepreneurial cooperative organizational models among agricultural cooperatives that differ from traditional cooperatives: the participation shares cooperatives, cooperatives with subsidiaries, proportional tradable shares cooperatives and public limited company cooperatives. Concerning their legal form the first three ones are still cooperatives with members whereas the public limited company only has shareholders instead. The entrepreneurial models all have capital investors of different types. The return on investment that investors receive creates a profitability component. The participation shares cooperative and the cooperative with subsidiaries have non-members as investors and are consequently called external-investor cooperatives. The difference between them is that participation shares allow external parties to invest in the cooperative itself while the other only allows investment in public limited subsidiaries. The proportional tradable shares cooperative and the public limited company cooperative have members as investors and are thus called member-investor cooperatives. All of

these five cooperative models are of course ideal types and may occur in many variations or be combined within one organization. The concept of a cooperative organizational model does not necessarily describe the entire company. Its various business units can all have their own organizational models (Nilsson, 1999).

The traditional cooperative model

- Often aims at increased production volume, facilitated by open membership (Nilsson, 1998, cited by Nilsson 1999).
- Often there is a cooperative ideology to promote member recruitment (Hakelius, 1996 cited by Nilsson, 1999).
- The enterprise is owned collectively by a cooperative society that is open to new members. If there is individual ownership of equity it is limited and equal or under collective control.
- Open membership and lack of individually owned shares do not allow trading of shares and thus realizing changes in asset value.
- Members have full control and equal governance with one vote per member.
- External partners have no influence, not on governance and not as shareholders.
- The cooperative's profit is not distributed to members as return on investment but as a patronage refund in proportion to the members' deliveries. Unallocated capital and gratis allocated capital allow the cooperative to raise prices for its members' produce.
- Traditionally organized cooperatives often conduct basic activities with no or few value-added operations and little need for highly-qualified management (Nilsson, 1999).

In the collection and primary processing of primary products economies of scale are substantial. Larger production volumes often lead to lower costs and larger profits which allow traditional cooperatives to pay higher prices to their members and thus improve trading conditions. Thus cooperatives protect their members' interest on the market in relation to independent buyers. Furthermore traditional cooperatives are able to provide large quantities of commodities at low prices. Members investments in cooperatives take the form of gratis capital and should therefore be as small as possible. To members' this gratis capital is compensated by the cooperative's purpose of safeguarding the members' large investments in their own businesses. Thus members' investments do not serve as risk capital but have insuring function instead. Members are only patrons and not investors. Other strategies would alienate members and threaten the volume maximization goal. As a consequence the capital base of traditional cooperatives tends to be relatively weak considering their production volume. This does not have to be a problem in case of a low degree of processing, limited business complexity and small investments (Nilsson, 1999).

Many traditional cooperatives have tried to increase their profits through value-added operations. But only in some cases they have also transformed their organizational structure at the same time. Traditional cooperatives that have not adapted their organization to their changing activities often face problems concerning their governance and financing. When traditionally organized cooperatives operate outside their business domain, accumulate capital and invest in operations not closely related to their members' activities property rights problems often become serious. When they

pursue a strategy of low investments, low added value and low overhead costs and production orientation they can prevent these problems. A traditional cooperative has the greatest chance for success if it pursues cost-leadership through large volumes (Nilsson, 1999).

The participation shares cooperative

- External investors may own individual shares in the cooperative society. These shares are tradable and thus appreciable.
- Investors can have voting rights in the general assembly or the board while the majority of voting rights remains with the cooperative society.
- Members benefit from the cooperative through trading conditions while investors receive return on investment either fixed or profit dependent.
- Due to an enhanced equity base the cooperative can expand its activities and employ more qualified management (Nilsson, 1999).

Subsidiary cooperative models

- The cooperative society runs parts of its business in subsidiary companies that are owned together with external investors. External ownership can be openly traded at a stock exchange or closed with selected partners.
- Investors' shares are individual property and appreciable.
- Investors participate in the general assembly and the board while the cooperative maintains majority vote in the board.
- Profits are divided among the cooperative's members and investors in proportion to their ownership.
- This model allows the raising of substantial capital and promotes the establishment of value-added operations and the employment of highly qualified management (Nilsson, 1999).

The establishment of subsidiary companies that accept external investors has often shifted the entrepreneurial lead towards the subsidiaries while the parent cooperatives have assumed organizing tasks and handle transactions with the members (van Dijk, no year cited by Skurnik & Vihriälä, 2012).

The proportional tradable shares cooperative or new generation cooperative

- Members buy delivery rights from the cooperative and therefore membership is not open but restricted and defined.
- Binding delivery rights are individual, tradable and appreciable. Their extent is directly proportional to members' investments in the cooperative. Thus the model is suitable for value-added activities and requires high qualified management.
- Members get their share of the profits as patronage refund which is equal to what they would get as return on investment.

- Members usually have equal voting power but it may also depend on the extent of delivery rights.
- Members are in control but there may be a minority of external investors (Nilsson, 1999).

When new generation cooperatives developed in North America cooperative principles were revised to revitalize the competitiveness of cooperatives on the very competitive North American food market and to grow them into large companies with high member investments (Skurnik, 2002). Traditional cooperatives were struggling with operating efficiency problems and new generation cooperatives were able to improve the property rights problems of traditional organizations. The case of new generation cooperatives demonstrates that individual producers are able to markedly improve the efficiency of cooperative enterprises by clarifying residual rights and control within the company (Cook & Iliopoulos, no year cited by Skurnik & Vihriälä, 2012).

The public limited company cooperative model

- Very similar to the proportional tradable shares cooperative but with a different legal form.
- Members become shareholders but remain patrons of the cooperative society.
- Voting power is in accordance with investment and shareholders receive return on investment.
- There may be external owners as long as they do not purchase a controlling interest (Nilsson, 1999).

Apart from organizational changes towards entrepreneurial cooperative models, Prof. van Dijk (no year, cited by Skurnik & Vihriälä, 2012) observed another adaptation strategy as cooperative enterprises have undertaken mergers across national borders.

A.1.7 Different ownership structures in cooperative enterprises

Different cooperative organizational models are adaptations to their business environment. The traditional cooperative implies collective ownership and governance and is well suited for the collection and primary processing of agricultural commodities. Cooperatives active in more advanced and more capital intensive industries benefit from individual ownership by external investors and members. Outside investments increase the capital base and the commercial orientation of the company and allows a differentiation strategy. When members of the cooperative become investors through tradable shares proportional to their deliveries a focus strategy on specific business activities is recommendable (Nilsson, no year cited by Skurnik & Vihriälä, 2012).

External investor cooperatives

In some so-called external investor cooperatives external investors hold a relatively large share. Therefore this model concerns more subsidiary cooperatives than participation shares cooperatives as their investors are most probably members that act more like patrons than investors. The main differences to traditional cooperatives are a higher amount of capital and a stronger orientation towards return on investment. Therefore external investor cooperatives can invest in more advanced

production and marketing with more value-added and more complex products and markets. Their business strategy becomes more expansive and production is best oriented towards differentiation (Nilsson, 1999).

In an external-investor cooperative the cooperative society is still involved in the company, normally holding a majority of votes (Ketilson, 1997 cited by Nilsson, 1999). Therefore the influence of a collectively-owned cooperative is still predominant and there is a threat that property rights and monitoring problems are the same as in a traditional cooperative. However these problems are smaller due to various reasons:

- The cooperative holds less assets as the investors supply some as well.
- External investors monitor the management.
- Members develop a clear return on investment objective too, as members and investors are mutually dependent on each other. This also avoids cross-subsidization among member groups and leads to strict cost related pricing. A clear orientation towards economic efficiency and higher returns make the company' shares more attractive to external investors and allow members more control and economic benefits.
- The invitation of external investors often weakens cooperative ideology.
- External investors transfer market signals from capital markets which provide the cooperative with valuable information for decisions concerning market-oriented activities (Nilsson, 1999).

Member-investor cooperatives

In member-investor cooperatives such as the new generation cooperatives and public limited cooperatives only members of the cooperative can become investors. They own tradable, appreciable and negotiable shares and act equally as patrons and investors. This has the potential to solve many of the problems of traditional cooperative models. Member-investor cooperatives effectively achieve vertical integration of processing stages. Therefore their success is less dependent on economies of scale but rather on the economies of scope of their vertical integration. Members' investments are genuine risk capital and thus their willingness to invest increases. Investments are made for specific purposes and therefore it is most suitable for the cooperative to focus on specific markets and highly processed, specialized products (Nilsson, 1999).

The cooperative's objective will be to simultaneously enhance the value of the members' assets in their own enterprises and their shares in the cooperative putting equal importance on their roles as patrons and investors. In both roles members transfer market signals to the cooperative while their investor role gives the cooperative an orientation on its markets and towards profit and expansion (Nilsson, 1999).

A.1.8 The ability of cooperative enterprises to address their members' needs

Traditional cooperatives

For members of traditional cooperatives their patron role is more important than their investor role. High member involvement ensures them effective control in spite of collective ownership. Traditional cooperatives are often active in business segments closely related to the members' own operations for instance by collecting primary products. In first stages of the value chain the size of investment is relatively small. Moreover operations can easily be standardized and automated to reap economies of scale and reduce the investment per unit and member. Thus members become motivated to increase volumes, expand their own operations and invite new members. Furthermore operations close to the members achieve beneficial social conditions as membership is more homogenous with more similar occupations and possible involvement in the cooperative's operations (Nilsson, 2001).

Entrepreneurial cooperatives

Members' residual claims are tradable as equity shares that receive remuneration, thus increasing their willingness to invest. The cooperative effectively improves members' market position if they are highly involved both as patrons and investors. As operations expand and become more complex the need for capital increases and members' investments become so large that they require individual and precisely defined property rights. With growing investments members will adopt more of an investor's relation to the cooperative than a patron's, making financial aspects dominate over social factors (Nilsson, 2001).

Degenerated cooperatives

Degenerated cooperatives occur if members do not regard the cooperative as effective neither in correcting market failures nor in generating return on investment. Monitoring problems pose a threat that the management or the board will seize control while weak market functions curb the cooperative's efficiency. At this point reorganization may be necessary to maintain the company's resources and ensure its continued existence. Degeneration is a threat to traditional cooperatives in particular when they expand through large investments in operations removed or unrelated to their members' activities. These investments are made from unallocated equity that members' do not directly control and thus they have difficulty in monitoring the more complex organization. Growing cooperatives may also have an increasingly heterogeneous and anonymous membership base. Often this development is the result of cooperatives' expansion into increasingly complex and competitive business segments (Nilsson, 2001). Many of today's cooperatives are probably degenerated (Nilsson, 1996b cited by Nilsson, 2001). The Swedish forestry cooperative Vänerskog is one example as it went bankrupt in the face of low member commitment both in terms of patronage and investment (Dahlgren, 1990 cited by Nilsson, 2001).

Ex-cooperatives

Ex-cooperatives have become investor-owned companies either through former members of a cooperative or a cooperative enterprise as investor. Mainly they are the result of a degenerated cooperative that did not manage to develop into a traditional or an entrepreneurial cooperative (Nilsson, 2001).

Pathways for degenerated cooperatives

Degenerated cooperatives have to increase their members' involvement as patrons and investors. The cooperative's business activities may be organized with different ownership arrangements. Several strategies can be pursued individually or combined:

- Degenerated cooperatives may redirect their activities to other markets where they can better mitigate market failures, take other market correcting measures or redefine the cooperative's mission. Degenerated cooperatives have often accumulated much capital which may inhibit the transformation into a traditional cooperative with redirected objectives.
- A more effective solution is to introduce individual, tradable and appreciable residual rights by transforming a degenerated into an entrepreneurial cooperative. This could take the form of a new generation cooperative that is owned by members through tradable and appreciable equity shares or a co-maker cooperative with joint ownership between the cooperative society, individual members and possibly external investors.
- Degenerated cooperatives may be transformed into a combination of other types and be divided into separate organizations. In that case the cooperative society focuses on operations closely related to its members' activities to effectively correct market failures and ensure high membership involvement and social cohesion. Business segments more remote to the members can be conducted by co-maker cooperatives. Thus the collection of primary products and their primary processing could remain in a traditional cooperative while value-added operations that are more complex and more capital demanding are handled through subsidiary companies where members also have individual shares, just like in an entrepreneurial co-maker cooperative. Unrelated business activities can be sold off.
- Transform a degenerated into an ex-cooperative by selling it to external investors (Nilsson, 2001).

A.1.9 The ability of cooperative enterprises to change and adapt

In order to be competitive enterprises must reflect the conditions of their business environment in their own structure (Kast & Rosenzweig, 1979 cited by Nilsson, 1999). A successful enterprise adapts its products and services to changes in demand. It adapts its organizational structure to its various markets such as labor and capital markets (Nilsson, 1999).

The development of cooperative entrepreneurship has undergone strategic changes as the business environment developed from a nationally, production oriented industrial era to a globalized, investment oriented financial era. This was accompanied by major restructuring of ownership in many cooperative enterprises (Tainio, no year cited by Skurnik & Vihriälä, 2012). Deregulation, globalization and technological advance are still changing the environment of cooperative enterprises (Skurnik & Vihriälä, 2012). Markets are becoming more volatile in terms of the scale and

pace of change. The European agribusiness is particularly affected by political, technological and economic changes and agricultural cooperatives have been subject to amalgamation, technological advance and internationalization. They have responded in different ways and have often changed their cooperative business form in a very intensive reorganization process (Nilsson, 1999). Intensified competition in particular is driving these restructuring processes in which companies are merged and divided to increase efficiency and shareholder value (Skurnik & Vihriälä, 2012). Mergers and acquisitions have strengthened multi-national companies (Nilsson, 1999).

Capital markets are gaining influence on cooperative enterprises and their signals have been driving the recent wave of restructuring processes among them. Capital markets have several advantages as they are suitable to move capital, have a broad knowledge base, do not make delayed or biased decisions and are good at experimenting due to portfolio thinking (Holmström, no year cited by Skurnik & Vihriälä, 2012). Organizations that do not have tradable and appreciable shares have to cope with these pressures to change without receiving information from capital markets (Skurnik & Vihriälä, 2012). Therefore the greatest challenge for cooperatives is to develop alternative ways to change and adapt (Holmström, no year cited by Skurnik & Vihriälä, 2012).

The main difficulty for a cooperative is that change can increase tension among its members, upset established habits and make preferences diverge (Holmström, no year cited by Skurnik & Vihriälä, 2012). Some characteristics of traditionally organized cooperatives may lead to resistance towards changes. Serious property rights problems may lead to low member involvement and takeover of control by the management that may seek to maintain the status quo. Members might not feel any sense of responsibility due to their small investments. High amounts of unallocated capital may inhibit market signals and give a wrong image of the cooperative's performance. Furthermore strong ideology may prevent change. Nevertheless varying degrees of restructuring among cooperatives may further facilitate the process of merger, acquisition and growth of the more successful ones (Nilsson, 1999).

Cooperative enterprises are adjusting their organizational structures to increase their flexibility to adapt to their environment (Holmström, no year cited by Skurnik & Vihriälä, 2012). Modern cooperatives need a governance structure that allows both management and members to be actively involved. A simple imitation of corporate structures may place cooperatives at a disadvantage. Instead they should create wider approaches and specialized strategies for entrepreneurship in the future (Tainio, no year cited by Skurnik & Vihriälä, 2012). Cooperatives are facing a number of challenges to meet the rapid changes of their environment:

- Increased transparency and efficiency in decision-making.
- Stronger market-orientation among members and employees.
- Members need to be motivated to raise risk capital for market investments.

- Markets with potential for cooperative activities have to be identified and cooperative solutions across national borders have to be created to address them to the benefit of the members (Hakelius, no year cited by Skurnik & Vihriälä, 2012).

Nilsson (1999) expects that considering increasingly open markets and intensified competition the present situation of cooperative entrepreneurship with a dominant group of traditionally organized cooperatives cannot prevail. Instead more entrepreneurial cooperatives will emerge and develop a more heterogeneous business structure, with a variety of business segments being organized in different ways. Traditional cooperatives will maintain their importance in the collection and primary processing of primary products. Ongoing mergers and acquisitions will lead to very large traditional cooperatives with pan-European and international enterprises. They in turn will increasingly establish subsidiaries together with external investors for value-added operations, further facilitating the establishment of entrepreneurial cooperatives. In terms of turnover a few large external-investor cooperatives will probably become dominant. To a smaller extent specialized activities by traditional cooperatives will be run in newly established branches by a high number of member-investor cooperatives. With a limited share of the overall turnover of cooperative enterprises they will become active with focused activities in market-niches (Nilsson, 1999). Today models for cooperative entrepreneurship exist with both defensive and offensive market strategies that can be adapted to community, regional and national environments and developed both by top-down or bottom-up initiatives (Skurnik & Egerstrom, 2007).

A.2 Detailed case studies on cooperation among private forest owners

A.2.1 Germany

In 2005 for the whole of Germany there had been 1,740 legally acknowledged forest owner cooperatives with almost 300,000 members (BMELV, 2006 cited by MLUV MV, 2008). This compares to 2,031,093 forest owners in total (Mrosek et al., 2005).

Forest administration in Germany is organized differently within federal states. In some states like Brandenburg the State Forest Administration integrates forest management of state forests and consulting to private forest owners as well as the function of a public administration in one entity. In other states such as North Rhine-Westphalia, Lower Saxony and Schleswig-Holstein the Chamber of Agriculture provides consulting to private forests. This is financed both by obligatory fees that all forest owners and farmers pay as well as a subsidy by the state. Other federal states such as Saxony and Hesse have established separate institutions where employees of the State Forest Administration specifically provide consulting to private forest owners (Korth, 2002).

A.2.2 Brandenburg

Private forestry and cooperation

Since 1990 the forest ownership structure in the Eastern states of Germany has been changing constantly. The average forest holding size in Brandenburg is about 5 ha which makes forest

management difficult. Only few private forest owners manage their forests independently and break even (Korth, 2002).

Already in 1992 the first forest owner cooperatives were founded in Brandenburg. Until 1994 there were already 260 cooperatives with 11,489 members and a forest area of 62,732 ha. The State Forest Administration was very much involved in this process through consulting and support. Until 1998 the number of cooperatives rose to 524 with 20,769 members and 125,928 ha of forest area. Until the end of 2001 the number of cooperatives decreased to 407 whereas the number of members continued to rise to 21,705 with 142,572 ha of forest area. This development indicates that a necessary structural change towards larger structures among cooperatives had started and that they remained attractive to new members. In 2002 the largest cooperative in Brandenburg managed 3,995 ha of forest. However most cooperatives do not expand significantly and maintain a size of 50 to 1000 ha (Lessner, 2002).

In comparison to other German federal states Brandenburg has the highest number of forest owner cooperatives. However the average size of a cooperative in Brandenburg is only 361 ha with on average only 53 members. The size of forest owner cooperatives in the Eastern states of Germany is much smaller than in the Western states. Forest owner cooperatives in Lower Saxony are nine times larger than those in Brandenburg (Federal Ministry of Consumer Protection, Food and Agriculture, 2001 cited by Lessner, 2002).

In the future forest owner cooperatives will increasingly have to concentrate timber supplies and widen their service portfolio to non-timber forest products such as recreation and nature conservation. They should also become more customer-oriented in their provision of timber. Forest owner cooperatives in Brandenburg can only achieve this if they attain critical sizes to be effective on the market as well as in their own business administration (Lessner, 2002). Only a size of about 5,000 ha can support a full-time executive and a moderate administration (Bundeskongress Fuer Fuehrungskraefte Forstwirtschaftlicher Zusammenschluesse, 2001 cited by Lessner, 2002). The current size of forest owner cooperatives in Brandenburg is not sufficient to make these changes. Therefore existing cooperatives should either merge or join umbrella cooperatives concerned with joint timber marketing. Alternative forms of cooperation may be another option (Korth, 2002). There are some incentives for cooperatives to expand through the progressive rise of structural criteria for support measures.

Cooperation and the state

In the former German Democratic Republic almost everywhere collective farms had made contracts for the management of their forests with the state forest enterprises (Korth, 2002). After the German reunification the State Forest Administration of Brandenburg maintained significant influence in private forestry.

In the course of the privatization of many forest lands the tasks of the State Forest Administration have changed as well. After the restitution of many forests lands that had formerly been owned by the restitution trust and managed by the State Forest Administration, state foresters have

increasingly been concerned with consulting private forest owners. The integrated State Forest Administration of Brandenburg functions as a state forest enterprise in managing the state's forests combined with the official functions of a forest administration as well as consulting of private forest owners. Thus it is present everywhere throughout the state (Korth, 2002).

Already in the beginning of the 1990s the State Forest Administration and its foresters have actively promoted the establishment of forest owner cooperatives. The State Forest Administration's task is not only to support private forest owners but also to initiate forest owner cooperatives. It is even possible for the State Forest Administration to administer the business of forest owner cooperatives on request (Korth, 2002).

The State Forest Administration supports private forest owners both through consulting and financially. Consulting includes advice as well as active operational services for private forest owners. Advice is provided free of charge and operational services for a fee. The recipient of this support can either be an individual forest owner or a cooperative (Korth, 2002). Advice includes the recommendation and demonstration of silvicultural measures, information on financial state support, consulting in business administration and legal advice. Services include the contract-based, active provision of forest management operations for a fee. In 2001 there were 167 contracts for 76,623 ha of forest about the provision of management services to cooperatives. In total there were 293 contracts for 141,115 ha of private forest. Furthermore there is financial support for forest owner cooperatives within the federal program GAK (common task for the structural improvement of agriculture and coast protection). Forest owner cooperatives in particular can receive financial support for new investments, administration and consulting (Lessner, 2002).

The fees that private forest owners had to pay for management services provided by the state only changed moderately until 2000 and forest owner cooperatives in particular were charged very low rates. After a complaint at the European Commission over a violation of competition law the state of Brandenburg had to establish market conformity and stop subsidizing services. From 2002 on, individual forest owners and their cooperatives had to pay the same fees. However cooperatives that have their own executive received a 20 % discount (Korth, 2002).

After a cooperative is established and legally acknowledged it can request to be initially managed by the State Forest Administration for a limited period of time (Ministry of Food, Agriculture and Forestry, 1996 cited by Lessner, 2002). This management support seeks to enable cooperatives as soon as possible to assume the management functions by themselves. Of the 400 forest owner cooperatives that existed in 1997, 14 had employees of the state forest enterprise as executives. Of the 407 cooperatives in 2001, 22 had a state forester executive (Lessner, 2002). These figures suggest that the state's involvement had been increasing during that period.

A reform in 2001 completely restructured the State Forest Administration. The sizes of forest districts from then on depended on the foresters' tasks. If they only managed state forest the size would be around 1,300 ha since here the labour intensity would be highest. If a forester provided management services to private forest owners the district would be around 1,700 ha and if he provided consulting

it would be 3,000 ha. It is important to keep in mind that a state forester always has the public responsibility of the State Forest Administration as well (Korth, 2002). It had a positive effect on the area growth of cooperatives when they were established in areas dominated by private forests, where state foresters were mainly concerned with the consulting of private owners and cooperatives (Lessner, 2002). This supports Rosenthal's (intv. 2012) assessment that the variety of tasks that state foresters had to take over in an integrated administration did not allow them to fully dedicate themselves to the consulting of private forest owners (Rosenthal, intv. 2012). The continuing specialization of employees on the consulting of private forest owners changed their tasks and required continuing education. The 2001 reform of the State Forest Administration allowed an adaptation of its organizational structure to regional demands (Korth, 2002).

In order to promote larger cooperatives in Brandenburg it is important that the State Forest Administration supports cooperatives more across and beyond the borders of its own administrative districts (Lessner, 2002). It is entirely possible that in Brandenburg the strong association of forest owner cooperatives with the State Forest Administration and its extension foresters tends to limit the cooperatives' spheres of activity to the administrative districts of the administration. Lessner (2002) also estimates that the elimination of all resentments towards larger cooperative structures will still take a longer period of time. Rosenthal (intv. 2012) indicated that private initiatives actually may face the opposition at least of parts of the State Forest Administration. Therefore it can be concluded that the necessary structural change among forest owner cooperatives towards increased efficiency and independence requires a process of progressive disengagement of the State Forest Administration's staff.

- ***FBG Neuruppin w.V. (Forstbetriebsgemeinschaft Neuruppin)***

FBG Neuruppin is a local forest owner cooperative that was established by merger of two smaller cooperatives in 2008 and that currently has 298 members with 2,250 ha of forest property. Participating in the merger was FBG Buchenhaus, that was founded in 1990 by 40 members with 360 ha of forest area and that had been managed since 1995 by Rosenthal as a full-time professional executive as well as a part-time secretary. Among members there was some fluctuation and repeatedly members dropped out of the cooperative as they sold their land, while new members joined (Rosenthal, intv. 2012).

Concerning state support FBG Neuruppin received support for 40 % of the administrative costs from federal GAK funds (common task for the structural improvement of agriculture and coast protection), which in fact corresponded to at most 20 % of the administrative costs it actually incurred (Rosenthal, intv. 2012).

For the local cooperative FBG Neuruppin the organization is similar as in FVB. The general meeting elects the board of directors and decides on the budget. There are no fixed membership fees but a turnover dependent allocation of 10 % on timber sales (Rosenthal, intv. 2012).

- ***FVB w.V. (Forstwirtschaftliche Vereinigung Brandenburg)***

FVB strives to motivate forest owners to cooperate by promoting the continuity of forest tending and revenues from joint forest management. It also seeks to promote the solidarity among forest owners. The aims are consulting of members, coordination of timber harvests and timber sales, acquisition of contracted silvicultural operations and participation in forest management planning (FVB w.V., 2012).

FVB has 13 members that are local forest owner cooperatives with altogether about 10,000 ha of forest area (Rosenthal, intv. 2012). Organizations of public law and larger private forest enterprises can join as well. FVB's members and activities are concentrated in the federal state of Brandenburg (FVB w.V., 2012).

FVB's head office coordinates timber harvesting as well as timber sales, concentrating the timber supply to achieve higher timber prices and lower harvesting costs. However forest management activities of individual forest owners remain within the responsibility of the local forest owner cooperatives that are members of FVB (FVB w.V., 2012).

FVB's general assembly elects and controls the board of directors democratically and decides on the budget (Rosenthal, intv. 2012). FVB's members are represented by two representatives in the board of director's. At least once a year the executives of the member cooperatives meet for the general assembly where the balance is approved and the budget for the coming year is determined. Furthermore the coordination of harvesting and marketing activities of the last year is analyzed and joint measures to bundle the timber offers in the coming year are planned (FVB w.V., 2012).

In the beginning of each year members come together with their plans for thinnings and timber sales to coordinate the order of operations. The operations are contracted out as one large batch to reliable contractors. Timber is sold in batches as large as possible within framework contracts to the wood industry (FVB w.V., 2012).

FVB seeks to optimize forest tending and timber sales revenues for its members. It seeks to improve logistics to increase the forest owner's competitiveness, seeks to make invoices and accounting fast and transparent and to support the planning and implementation of harvesting activities. FVB strengthens the member cooperatives on one hand financially through higher timber sales volumes and revenues and on the other through the exchange of information and experience among executives. On request FVB provides support for forest managers with stand preparation and silvicultural operations. The autonomy and involvement of members concerning planning and implementation remain intact. Furthermore FVB attains lower fixed costs by means of the members' own voluntary forest fire and payment default insurance (FVB w.V., 2012).

In spite of the fact that FVB strives to overcome the structural disadvantages of privately owned forests the majority of forest owner cooperatives and private forest owners do not have sufficient income from forest management (FVB w.V., 2012).

Local forest owner cooperatives were founded because the connection of many forest owners to their property was growing weaker. To join a cooperative was an alternative to land sale or simply having no use of it (Rosenthal, intv. 2012).

Many cooperatives that join FVB do so because they are not content with the state's extension services and timber marketing for private forests. Rosenthal (intv. 2012) is not entirely glad about this motivation to join. However FVB needs new members and accepts most applications. A critical size of the organization however has not been reached and Rosenthal anticipates FVB's breakup eventually. New investments will become necessary and it is unclear how they will be financed (Rosenthal, intv. 2012).

From Rosenthal's (2012) perspective the key competency of a forest owner cooperative is the efficient concentration and coordination of harvests and timber sales. From his perspective many models of cooperation with strong state involvement such as the extension services of Brandenburg's state forest enterprise do not only act in the forest owners' best interest. Some deals lack transparency and appear to be decided at random. There is no bundling of sales volumes, no bidding procedure and no framework contract. Instead silvicultural contractors get hired in an unsystematic way. FVB however does work with bidding procedures and transparent business processes (Rosenthal, intv. 2012).

The annual general assembly plans harvest volumes and assortments and makes invitations to bid. These decisions are binding for the local member cooperatives. Through the bidding procedure FVB closes framework contracts for timber sales. The local member cooperatives are responsible for the silvicultural part of forest management and for making the final payments from timber sales to forest owners. FVB is responsible for the coordination and implementation of harvesting operations and also chooses and hires the contractors (Rosenthal, intv. 2012).

In the past FVB has offered deliveries factory gate. However this was not economically rewarding. Therefore FVB nowadays mostly sells stumpage. The interesting aspect of this process is that the customer closes a contract with FVB to buy stumpage while selection and hiring of the contractor that harvests and hauls the timber remains the decision of FVB (Rosenthal, intv. 2012). Thus the forest management quality can be ensured and the affiliated silvicultural contractor promoted.

Members fluctuated. For about four years now demographic change has been noticeable. It has been hard to find new honorary executives or board members for local cooperatives. Many cooperatives are too small or have too few members to continue successfully. The executive, his knowledge and initiative are determining the success (Rosenthal, intv. 2012).

There is no membership fee but a turnover dependent allocation for marketed timber. This allocation amounts to 5 % of the turnover to cover the service costs for timber marketing and accounting. Furthermore there is a fee for coordinating harvesting operations of 2 € per m³. FVB is financed totally by these allocations from timber sales. If it charged additional fees it could not expect acceptance by its members. State support is not sufficient to cover administrative costs (Rosenthal, intv. 2012).

FVB focuses on timber marketing while consulting in forest management for private owners is taken care of by the local member cooperatives. However FVB is an important forum for the exchange of information and experience among cooperatives. There are many joint activities such as the purchase of seedlings. If requested the preparation of stands for harvests is offered as well. However, this is usually done by the local cooperative (Rosenthal, intv. 2012).

FVB was PEFC certified in the past but quit because there were no benefits, neither from timber markets nor from the state (Rosenthal, intv. 2012).

Furthermore FVB has set-up an internal insurance system against forest fire damage and payment default. It consists of reserve funds within the cooperative. This also strengthens its capital stock and allows better conditions for loans (Rosenthal, intv. 2012).

There is frequent cooperation with a contractor company that was initially owned by FVB and that is now owned by FBG Neuruppin only (Rosenthal, intv. 2012). This could be a further indication for a structural change that accompanies the institutional decline of FVB. Increased control and benefit from the former subsidiary company lie now with one local member cooperative instead of the whole FVB umbrella organization, while at the same time it means decreased risk bearing and commitment on part of the other local member cooperatives. This restructuring process could also indicate that Rosenthal now focuses more on FBG Neuruppin and its contracting subsidiary and already anticipates a breakup of FVB in the future.

Deliveries factory gate by own logistics operations were not economically viable and did not achieve timber prices high enough to be economically attractive (Rosenthal, intv. 2012).

There have been ideas of FVB to acquire shares of a bioenergy plant. However this option was not chosen and today that company is bankrupt (Rosenthal, intv. 2012). Furthermore Rosenthal (intv. 2012) explained that by the time of the interview investments were difficult to plan and sustain because of the overall economy's situation. However investments in the processing of members' products remain attractive because forestry operations alone are not very firm against crises. Margins in forestry are low and depend very much on timber prices that in turn depend on the world economy. A diversification of products is only possible between tree species and assortments. According to Rosenthal (intv. 2012) however diversification is important to become more stable and resistant to crises. One way is to offer services both in forestry and landscape management at the same time and not only on the cooperative's members' area. One step towards this was the initiation of the above mentioned subsidiary company (Rosenthal, intv. 2012).

FVB keeps easy contact with FWV Mecklenburg-Western Pomerania, a similar initiative from the neighbor state. Furthermore there are regular meetings of private forest owners from Eastern Germany. The relationship to contractors and customers is reliable, cooperative and long-term in nature (Rosenthal, intv. 2012).

As internal success factors Rosenthal (intv. 2012) identified higher timber prices paid to forest owners and transparency of operations and pricing. Furthermore he highlighted the quality of the business process in terms of reliability and performance (Rosenthal, intv. 2012).

Due to the export orientation of the wood industry and the fact that FVB's timber marketing has a strong focus on pine timber only, Rosenthal (intv. 2012) explained that the organization's performance is highly dependent on timber markets and the overall economic environment.

Within the framework of the federal program GAK (common task for the structural improvement of agriculture and coast protection) there was initial funding by the government that was supposed to cover 60 % of the cooperative's administrative costs. According to Rosenthal (intv. 2012) in practice this amount covered about a third of the actual administrative costs. It took more efforts than the state anticipated for concentrating members' timber for joint marketing (Rosenthal, intv. 2012).

Rosenthal (intv. 2012) stated that while the promotion of forest owner cooperatives is part of current forest policy in practice many governmental bodies do not promote and even oppose them. According to him this is due to the economic self-interests of some state employees and their concerns to lose influence on private forests. He found this especially noticeable since the organizational development of private forestry became more and more independent of governmental involvement (Rosenthal, intv. 2012).

Rosenthal (intv. 2012) explained that FVB as an umbrella cooperative for joint timber marketing had been opposed over years by certain governmental actors. Thus it was not legally acknowledged as a forest owner cooperative in the beginning. Between 1997 and 1999, 5 local forest owner cooperatives with about 5000 ha of membership area had started to cooperate without any state recognition or support. In 1999 they finally managed to be legally acknowledged as a cooperative according to federal forest law. According to Rosenthal (intv. 2012) the reason for this late legal acknowledgement after continuous initiative was the lack of approval by some governmental actors for an improved coordination of timber harvesting and marketing from private forests. This resentment still exists (Rosenthal, intv. 2012).

Rosenthal (intv. 2012) even identifies the lack of acceptance from staff of Brandenburg's State Forest Administration as the main problem when FVB was founded. He finds that the opposition continues. It damaged Rosenthal's personal reputation and prevented other cooperatives that received services from state foresters from joining FVB. This prevented FVB from reaching a critical size that Rosenthal (intv. 2012) estimates to be around 50,000 ha of members' forest area and a marketed timber volume around 100,000-200,000 m³ annually. According to him this would be necessary to ensure sustained success and competitiveness of the cooperative. This goal is now hard to reach. Thus Rosenthal is skeptical that FVB will continue to exist in the long run (Rosenthal, intv. 2012).

Rosenthal (intv. 2012) regards the organizational set-up of the state's extension services in private forests by the State Forest Administration in the past as the key problem. State foresters consulted or even managed the cooperatives that received state support while at the same time they had to take care of other responsibilities for the management of state forests and public administration.

Therefore they could not fully dedicate their work to private forests which led to insufficient service quality. If an effective and functioning system of private forest management in cooperation with the State Forest Administration had been developed timber mobilization and competitiveness in private forests today would be much higher and forest owners would manage their property much more actively. Forest owner cooperatives had been managed by state foresters from the beginning. However their effective and progressive development was neglected or there was no political will to promote it (Rosenthal, intv. 2012).

According to Rosenthal (intv. 2012) this had three major reasons:

1. The integrated State Forest Administration in charge of forest management of state-owned forests did not want to get new competitors within its economic and political sphere.
2. Larger private forest owners were concerned that successful cooperatives would affect smaller forest owners' willingness to sell their property.
3. The developing wood processing industry preferred dealing with less organized private forest owners to achieve lower timber prices in the short term instead of dealing with well-organized cooperatives that supply timber effectively and sustainably. This has changed and today the wood industry prefers a reliable supply chain over cheap but opportunistic deals (Rosenthal, intv. 2012).

Rosenthal (intv. 2012) explained that there is a historic base for this conflict. Since 1990 private forest ownership had been restituted as it was created in the course of the land reform in 1945. However the owners' awareness and sense of their property had been very weak. In the German Democratic Republic all forests had been managed by the state and even after the German Reunification many restituted forest owners were not even aware that they did not need the approval of state foresters for management measures. In the German Democratic Republic collective farms were in charge of agriculture and private lands. For the forests they had management contracts with the state. Until 1975 there had been some collective farms that on their own initiative managed their forests jointly. For political reasons this was not continued. State forest enterprises regarded them as competition. Apart from existing models in the Western part of Germany these forest management initiatives served as inspiration when after the reunification some forest owners started up cooperatives (Rosenthal, intv. 2012).

According to Rosenthal (intv. 2012) forest owner cooperatives are necessary to ensure sustainable management of small private forests and basically have three main functions:

1. Protect and maintain the property.
2. Ensure the income potential of the forest.
3. Ensure cohesion and solidarity among forest owners as a socio-cultural function (Rosenthal, intv. 2012).

Rosenthal (intv. 2012) stated that it would only be possible to establish strong economic structures in private forests if there was a legal obligation to set-up or join forest owner cooperatives.

Rosenthal (intv. 2012) also explained that there is a wider political context of the problems he encountered managing a cooperative which is the conflict between public forest ownership and private forest ownership. Private forest owners strive for higher degrees of organization and more influence throughout Europe. There are strong analogies of this conflict even between very different regions with very different conditions (Rosenthal, intv. 2012).

A.2.3 Mecklenburg-Western Pomerania

Private forestry

In Mecklenburg-Western Pomerania private forest land is owned by a relatively high number of private forest owners. 46,300 forest owners own 163,000 ha of private forest land (LFoA MV, 2007 cited by MLUV MV, 2008). 98 % of all forest owners have holdings smaller than 20 ha, which affects almost 40 % of the private forest area (MELFF MV, 2006 cited by MLUV MV, 2008). More than 80 % of all private forest owners have holdings of up to 2 ha, which affects about a fifth of all private forest land (MLUV MV, 2008).

The privatization of forest land in Mecklenburg-Western Pomerania is continuing. When this process is completed it is estimated that the share of private forest land will amount to 37 %. Between 2001 and 2005 the average forest holding size already increased from 1.9 to 3.3 ha due to forest land sales (MELFF MV, 2006 cited by LU.MV, 2008). It is likely that this trend will continue as larger forest owners seek to consolidate their holdings. The 276 private forest holdings which are larger than 100 ha together own 77,000 ha or almost half of all private forest land. Most of them have bought their land from the governmental restitution body. But then there are also a very high number of small forest owners. This leads to a polarized, heterogeneous structure of private forest ownership with few larger and commercially stronger forest owners on one hand and a majority of small forest owners on the other (MLUV MV, 2008).

Few of the smaller forest owners have properties large enough to allow economically viable individual management. There is a strong fragmentation of forest property that is mostly a result of the land reform in 1945. Furthermore some holdings are very long and narrow and their borders difficult to determine in the field. These historically founded ownership structures result in management problems. Therefore it is meaningful to organize larger, spatially coherent treatment units for silvicultural measures to make management more feasible and to achieve higher timber volumes and improved marketing conditions. In practice this often faces difficulties due to the spatial arrangements of forest holdings and a mixed pattern of different ownership types. It is often very difficult to reach the owner, determine estate borders and to account for timber revenues from joint measures for each holding separately which can let management decisions fail. Because of these structural deficits in small private forest holdings overall active silvicultural management has been neglected. Therefore the forest ownership structure in small private forests is a significant obstacle for efficient natural resources management which results on one hand from different interests of forest owners and on the other from organizational difficulties in operative management (MLUV MV, 2008).

In spite of the fact that small private forest owners often need help to manage their forests economically efficient only few of them actively seek it. Sometimes they even have little interest in any form of support due to negative experiences or a reluctance to incur costs. Even a significant timber price increase in recent years that allows most thinning operations to break even or generate profit has not resulted in increased silvicultural activity among small private forest owners. Apparently there is some indifference towards improved income possibilities as for small forest holdings incomes remain very limited anyway and other priorities may prevail. In quite a few cases private forest owners have other interests than timber production. In these cases conventional consulting and forest management services cannot effectively address their needs (MLUV MV, 2008).

However it is crucial to motivate private forest owners to manage their forests more actively in order to improve the sustainability and viability of private forestry. The methods to do so need to become more systematic in pursuing the policy aim and should include the following motivation strategies:

1. Enhance forest related knowledge and the transfer of information through advice and consultation. This could be achieved for instance by meetings and assemblies of forest owners, individual consulting, excursions and seminars in the forest as well as newsletters.
2. Acknowledge the diversity of interests among forest owners and increase the variety of goals and objectives in consulting. Forest owners with little interest in economic objectives could be motivated for active management through forest ecology seminars or recreational events.
3. Increase the data base on private forests through an information system specifically on private forests. Information on private forest holdings should be available and well-structured to assist the implementation of policies and initiatives in private forests. It should at least be possible to contact the owner and receive the basic information needed to advise them.
4. Promote examples that demonstrate the benefits of joint management. Even small but more feasible initiatives may have positive spin-off effects. One such measure could be the active organization of joint thinning activities in larger treatment units.
5. Develop and maintain good relations to forest owners through professional and consistent consulting. The quality of consulting could be promoted through more customer specific education of public extension foresters. In Mecklenburg- Western Pomerania experiences with consulting of private forest owners by the State Forest Enterprise are very positive.
6. Intensify consulting and specialize involved staff. Explicitly identify and approach inactive forest owners who have not requested consulting yet. Intensify existing relations. Provide specialist help to extension foresters for certain additional tasks. Potentially this could involve the wood industry as has been done in a public-private partnership in the federal state of Thuringia. However the independence from commercial interests has to be ensured. This could be achieved by a special fund for the necessary investments to improve the State's consulting offers for private forests.
7. Acknowledge the management goals of private forest owners and develop production alternatives. Conventional forestry with even-aged management and long rotation periods rarely achieves regular income from small holdings. Alternative silvicultural concepts such as

coppice or coppice with standards systems could become attractive, particularly in the face of high prices for pulp and energy assortments. Enhanced structural diversity of private forest management could also promote the conservation value of the forest (MLUV MV, 2008).

Coppice systems could be very interesting for owners who are mainly interested in fuelwood for domestic consumption. For regular income from timber production on small holdings single tree selection systems might be suitable as well.

A relation of trust between a forest owner and his forest consultant is the most important condition to improve private forest management. These services are most efficient when they actively address the owner according to his needs (MLUV MV, 2008).

Private forestry and the State Forest Administration

The State Forest Administration supports private forest owners through consulting and support. Consulting is provided to help private forest owners to professionally manage their forests by themselves. It is provided either on request of the owner or on initiative of the State Forest Administration. Every forest owner is legally entitled to one extensive consulting each year. Services are all operational forest management services provided on request of the forest owner that include an active involvement of the State Forest Administration and go beyond advice only. For services fees are charged and they are also taxed. Every forest owner is legally entitled to receive services on his request. Forest owners can receive single, project-based or permanent services as well. The local extension foresters enjoy the trust of many forest owners and their service is available throughout the country (MLUV MV, 2008).

If a forest owner with a typical, small forest property size decides to contract forest management services from the State Forest Enterprise it often makes sense to close a project-based contract for an individual measure. This way of offering the service acknowledges the fact that many management measures in small forest holdings only occur periodically. A permanent management contract with the State Forest Enterprise is especially recommendable for holdings that due to their size or forest structure require frequent management operations. It is also very suitable for forest owners who are not able or willing to manage their property by themselves (MLUV MV, 2008). In 2005 there were 462 of these contracts for 28,139 ha of forest area (MELFF, 2006 cited by MLUV MV, 2008). More than half of these permanent forest management contracts were made for forest holdings of up to 10 ha (MLUV MV, 2008).

Cooperation among private forest owners

The policy aim of Mecklenburg-Western Pomerania's Ministry of Agriculture, the Environment and Consumer Protection is to strengthen forest owner cooperatives economically and to develop them mainly by merger to larger, more professionally managed entities (MLUV MV, 2007 cited by MLUV MV, 2008). Therefore state support for forest owner cooperatives is tied to certain efficiency criteria. The 2007 support directive within the federal GAK-scheme, that provides financial support to forest

owner cooperatives, requires a minimum size in terms of number of members and forest area as structural parameters that a cooperative needs to fulfill in order to be eligible for financial support. In 2007 at least 15 members with at least 500 ha of forest property were required as a minimum. These requirements are progressively being raised every two years (MLUV MV, 2008).

In 2008 there were 83 legally acknowledged forest owner cooperatives with an average forest area of 511 ha. Between 2001 and 2005 the forest area owned by members of cooperatives doubled. But in spite of this considerable increase and strong efforts in the acquisition of members the degree of organization among private forest owners remains low. Only about 3,400 or 7.3 % of forest owners with 49,000 ha of forest property have joined a cooperative. Especially owners with very small properties rarely join cooperatives. Apparently they cannot be sufficiently motivated by institutional, permanent models of cooperation that are based on permanent membership (MLUV MV, 2008).

Cooperation among private forest owners may range from a one- time case of operative cooperation to permanent and institutional organizational models. The willingness of forest owners to cooperate cannot be taken for granted especially when it comes to institutional models. In spite of obvious advantages of forest owner cooperatives the general interest among private forest owners to cooperate in any form has been found to be low. In one study by the Ministry of Agriculture only every fifth forest owner was interested in cooperation and almost half of the forest owners involved totally refused to join any cooperative (MLUV MV, 2008).

For those owners who do not want to join a cooperative it might still be an option to pursue other ways of cooperation that just concern specific projects and thus are temporary and not institutionally binding. Temporary cooperation in forest management can occur as joint implementation of specific measures in larger treatment units. If forest owners want to receive the exact revenues from harvests on their property the timber and the corresponding bills have to be handled separately which increases the efforts. However this strategy can be implemented easily and is largely accepted by forest owners. It is also possible to form a management community for which revenues are not registered and paid separately by holdings. Instead the distribution of revenues from a joint management operation is determined beforehand among forest owners. In case of homogenous stand structures revenues are best distributed according to the owners' shares of the area. This procedure is very rational when dealing with small forest properties. It makes timber sorting, measurement and accounting much easier (MLUV MV, 2008).

Furthermore the study recommends alternative solutions to enhance private forest management. One measure could be to help forest owners determine their property borders in an easy and cost-efficient way or another to develop easy and cost-efficient solutions for a simplified forest inventory. It could also help to set up a regional marketing cluster for the forest and wood industry where private forest owners are represented. Finally increased economic viability and more professional management by merger of forest owner cooperatives could markedly increase the competitiveness of the private sector (MLUV MV, 2008).

Two major models of cooperation

In Brandenburg and Mecklenburg-Western Pomerania forest owner cooperatives are sometimes further distinguished according to the way they implement their operations into “Waldverein” and “Waldgemeinschaft”. However it is not always easy to distinguish them in practice and many mixed forms occur. A “Waldverein” is characterised by property specific forest management while the “Waldgemeinschaft” manages the holdings jointly across property boundaries (Lessner, 2002). While a “Waldverein” usually has more affiliated forest area with fewer members, the “Waldgemeinschaft” offers a management model that is attractive for high numbers of members with small properties (table 2).

The “Waldverein” is the classical type of forest owner cooperative that is most common and also occurs in the Western parts of Germany. Typically forest management is carried out separately for each holding. Management decisions lie with each individual owner. Costs and revenues are accounted for every owner separately. Therefore estate borders have to be recognizable in the field and forest holdings have to be surveyed and precisely located. They need to be shaped in a way that allows individual management which is often not the case for very narrow holdings. The forest owner needs to be interested in forest management and in active decision making concerning his property (Lessner, 2002).

The “Waldgemeinschaft” is a type of cooperative in which forest management activities are carried out jointly across property borders. This type of cooperative receives the same legal acknowledgement and status as the former. It is particularly suitable for small properties, especially when boundaries are not clearly identifiable or marked in the field. It is also suitable for holdings which are narrow and oddly shaped so that it is hard to manage them individually. Owners who do not want to make their own management decisions get the chance to participate in completely joint forest management. However costs and revenues are not accounted for the individual property anymore but for the whole of all affected properties together. They are distributed according to the share of the area of each individual forest holding. Owners do not surrender the ownership of their property and their share of the cooperative is directly related to the size of their property. It is not recommendable to also account for value differences of the standing timber stock as this would result in too high administrative efforts (Lessner, 2002). There is a strong experience base with this model as it has been in operation since the beginning of the 1990s (MLUV MV, 2008).

Table 1: Members and area of forest owner cooperatives in Mecklenburg-Western Pomerania (MLUV MV, 2007 cited by MLUV MV, 2008).

	Waldverein (separate management by holding)	Waldgemeinschaft (joint management of several holdings)	Cooperatives in total
Number	36	47	83
Area	42,092	6,841	48,933
Members	1,188	2,198	3,386

Average holding size per member (ha)	35.4	3.1	14.5
Average forest area per cooperative (ha)	1,169.2	190.0	589.6

- **FWV MV (*Forstwirtschaftliche Vereinigung Mecklenburg-Vorpommern*)**

FWV MV was founded in 2003 by 13 forest owner cooperatives and three private forest owners from the state of Mecklenburg-Western Pomerania. Single larger forest owners can also become members as long as this is authorized by the forest administration. Among the current members is also a cooperative of church forests. The cooperative initially managed about 16,000 ha of forest land with an annual harvest of about 50,000 m³. Today it has 21 members with a total forest area of 23,988 ha and an annual harvest volume of about 90,000 m³ (FWV MV, 2012).

The main task of FWV MV as an umbrella organization is to coordinate harvesting activities and timber sales. It informs its members about the current state of the timber markets, keeps contact to silvicultural contractors and represents its members' interests. The aim is to concentrate and bundle harvesting activities through joint contracting and to achieve higher timber prices. FWV MV takes on the role of an agent while members act as contracting parties (FWV MV, 2012).

According to its articles of association FWV MV's seeks to adapt forestry production to the market conditions in accordance with its members' interests. Therefore it has several main tasks:

- Information and consultation of its members on timber market developments.
- Coordination of timber sales. In this case the association is only agent and does not trade for its own account.
- Instructions for harvesting, conditioning and deliverance of timber in accordance with market requirements.
- Coordination of silvicultural contractors.
- Exchange and lease of machinery for forestry operations.
- Invitations and implementation of a timber marketing initiative, the "Schweriner Holzgespräche", in regular intervals (FWV MV, 2012).

Every officially acknowledged forest owner cooperative, forest owning municipality and private forest owner who is authorized according to federal forest law in the federal state of Mecklenburg-Western Pomerania can become member (FWV MV, 2012).

Members' autonomy over their property and their economic activities stays intact. Forest owners are free to decide if they want to market timber via FWV MV or not (FWV MV, 2012).

Members participate democratically through the general assembly, where every member has one vote, and the elected board of directors (FWV MV, 2012).

The association cooperates closely with the State Forest Administration of Mecklenburg-Western Pomerania. A representative of the State Forest Administration can be invited to the general assembly (FWV MV, 2012).

- **FBG Elbeholz**

FBG Elbeholz was founded in 1999 by seven private forest enterprises with a membership area of 3,995 ha. It was the follower institution of a timber sales cooperative called “Holzvermarktungsring Neue Länder” that had been founded in 1997. In the following years different organizational concepts were tried out and the cooperative’s structure changed several times (FBG Elbeholz, 2012).

“Holzvermarktungsring Neue Länder” was initiated in 1997 by several larger private forest owners from the Eastern states of Germany, Schleswig-Holstein and Lower Saxony. This was motivated by the wood industry’s demand for customer relations with cooperatives as larger and more reliable timber suppliers. This sales cooperative sought to reduce administrative costs through stumpage sales. Later it also sought to offer an alternative to the predominant form of forest management of members’ forests by public extension foresters. The aim was to combine locally present foresters with a central, flexible administration. Thus in 1999 FBG Elbeholz was founded as a legally acknowledged forest owner cooperative. In the following months more forest owners joined from the states of Brandenburg, Saxony-Anhalt, Lower- Saxony and Schleswig-Holstein. Currently FBG Elbeholz has 42 members with a total forest area of 30,427 ha (FBG Elbeholz, 2012).

Every forest owning natural or juridical person or corporate body of public law can become member. The cooperative’s board of directors consists of the chairman and two more board members, all of whom do not have to be members of the cooperative at the same time. For operational management the board is assisted by a full-time executive. The general assembly meets at least once a year. It elects the board of directors and the accountants. It decides on basic management principles and changes in the articles of association. It also serves as an important platform for the exchange of information and experience among members. There are for instance excursions on relevant business matters (FBG Elbeholz, 2012).

According to its articles of association the cooperative’s task is to coordinate timber marketing and improve forest management to its members’ advantage. Its business segments are the concentration of members’ timber supply for joint marketing, forest management consultation and representation of members’ interests (FBG Elbeholz, 2012).

FBG Elbeholz charges an area dependent membership fee of 0.50 € per ha upon entry and 0.25 € per ha of forest annually. For timber sales it charges brokerage depending on sales volume. For standard assortments this currently amounts to 2.5 % of the net sales income. Since its foundation the cooperative has received almost no governmental support at all. In 2011 for the first time members located in Brandenburg received a timber mobilization premium by the state (FBG Elbeholz, 2012).

The decisive step to improve the economy of members’ forest management was the establishment of FBG as a supra-regional timber sales network of larger private forest owners that regionally

concentrates timber supplies within marketing centers. This was facilitated by bidding procedures through an online timber sales portal. FBG Elbeholz offers joint timber marketing to members but does not restrict their autonomy in timber sales or forest management. Furthermore FBG Elbeholz also serves as a platform to exchange information among forest owners (FBG Elbeholz, 2012).

The cooperative's supra-regional sales network is active beyond state borders in Brandenburg, Saxony-Anhalt, Mecklenburg-Western Pomerania, Lower Saxony, Schleswig-Holstein and Thuringia (FBG Elbeholz, 2012).

It coordinates an annual sales volume of more than 60.000 m³. To achieve an effective concentration of supplies joint timber sales are organized within 11 regional marketing centers. Sales of larger quantities as stumpage through regional marketing centers create logistical advantages for the customer. Apart from this regional concentration of supplies it is important that there is one central contact person in charge of administration and coordination. Timber is advertised for each marketing center separately on the online sales portal while bids are accepted centrally by the cooperative's executive. The use of modern information and marketing tools ensures a fast and reliable sales process (FBG Elbeholz, 2012).

Stumpage sales mostly of standard assortments of conifers are the emphasis of the cooperative's marketing strategy. Stumpage is sold in the name and to the account of the member enterprise. FBG Elbeholz coordinates and bundles the timber offers and deals with the customer. The customer organizes harvest operations by himself. Thus the cooperative's members benefit from lower costs and higher revenues while FBG Elbeholz organizes the deal. The stumpage buyer closes a separate contract with the member enterprise that has issued the offer to a particular marketing center. The timber contracts have standardized forms and there are general terms of business for all sales (FBG Elbeholz, 2012).

For stumpage deals it is important for both the buyer and the seller to get a good understanding of the standing timber's potential value. FBG Elbeholz pre-calculates potential assortment structures based on information about dimensions and qualities determined by the member enterprise during the preparation of stands for harvest and evaluates this with current prices. This creates transparency for all stakeholders which is a major selling point. Members of the cooperative also have the option to make a preliminary calculation of revenues from planned harvest operations (FBG Elbeholz, 2012).

Members benefit from the economic cooperation first through joint timber sales that are much more rational and achieve higher prices than individual distribution. Then they also benefit from professional know-how of the cooperative regarding the economic optimization of timber harvesting activities and timber sales. Furthermore cooperation with similar enterprises results in a valuable exchange of information and experience (FBG Elbeholz, 2012).

A.2.4 Lower Saxony

Cooperation and private forestry

In Lower Saxony forest owner cooperatives have a long tradition and receive a lot of attention from the government and the wood industry. After almost 90 years they are acknowledged as an important supplier by the wood industry and also seen as a rural development instrument by the state administration (Hillmann, 2012).

In Lower Saxony 93 forest owner cooperatives are cooperating with the Chamber of Agriculture. Together they have 31,000 members and manage 360,000 ha of forest area. Overall 73 % of the forest area and 62 % of the forest owners that the Chamber of Agriculture provides services to are organized in cooperatives. The average size of a cooperative in Lower Saxony is about 3,900 ha of forest land and 333 members. Most members have forest holdings smaller than 100 ha (von Busse, 2012).

Cooperation and the state

At the beginning of the 20th century the state of Prussia prepared a law that aimed to improve the condition of private forests and result in the afforestation of degraded lands. This law was never passed but inspired activities among private forest owners. In the 1920s many silvicultural associations were founded due to the initiative of local farmers reacting to governmental influence in order to evade paternalism. Cooperation between farmers intended to enable farmers to solve silvicultural problems by themselves (Hillmann, 2012).

In the past the federal state's policies on private forests aimed to increase the state's influence. Today governmental institutions are reducing their involvement in private forestry. In the face of reduced governmental support the policy goal is to strengthen the cooperatives' economic orientation in order to enhance their service quality (Hillmann, 2012).

The Chamber of Agriculture of Lower Saxony employs 2,500 people and is responsible for state support in the agricultural sector. It provides consulting and extension services to 50,000 private forest owners who are its members and customers and is responsible for more than 500,000 ha of private forest. Its aim is to promote and increase forest production through information, education, consulting and extension services for private forest owners, forest owner cooperatives and municipalities as well a consultation for the foundation of forest owner cooperatives and their state support (von Busse, 2012). Extension services by the Chamber of Agriculture can only be offered for a fee and need to break even (Hillmann, 2012). Financial support and extension services for forestry are clearly separated within Chamber (von Busse, 2012).

Forestry is an independent branch within the chamber of Agriculture. In 2005 there were nine forest districts with 50,000 ha on average and overall 135 local forest areas. On Average 40,000 ha per forest district are organized in cooperatives and receive intensive extension services based on contracts between the Chamber and the cooperative. The average area of a local forester's area is 3,500 ha, with 2,700 ha being member in a cooperative (von Busse, 2012).

Increasingly private forest owners delegate the management of their property to cooperatives and contractors instead of doing it themselves. Therefore the Chamber's former focus on consulting has more and more shifted towards extension services that include all aspects of forest management. However this also resulted in a high work load for the Chamber's foresters. Forest owners have no legal claim to extension services by the Chamber and in spite of high demands the Chamber does not have sufficient resources to fulfill them all (von Busse, 2012).

Also in the future the Chamber of Agriculture is planned to be involved in consulting of private forest owners. However there is the political will to strengthen cooperatives and increase their independence. The Chamber withdraws from timber marketing and instead focuses on consulting and extension services where it intends to remain the major player (Menge, intv. 2012). Demands on the Chamber are constantly increasing and therefore it will concentrate on consulting since a clear focus on its main task is necessary to remain economically viable. The Chamber will continue to cooperate intensively with private forest owners and their cooperatives but will stronger focus on cost efficiency and a more rational structure. Through the fusion of the two regional Chambers, a reduction of business areas and merger of State Forest Districts from 17 into 9 the current structure has reached a minimum that is needed to maintain sufficient service quality (von Busse, 2012).

Since 2002 consulting of private forests in Lower Saxony is liberalized and owners have the free choice who is consulting them with their property. It seems likely that private enterprises will focus on the more sustainable and financially attractive forest holdings and will avoid servicing small private forest owners. However the state needs to ensure active forest management also in small forest holdings, otherwise sustainable forest management will be threatened in parts of the private forests. While the needs of private forest owners for support with forest management increases their goals become more complex. Therefore the Chamber's services together with the cooperatives need to become more competitive, more customer-oriented and more cost-efficient (von Busse, 2012).

From the federal GAK program forest owner cooperatives can receive a timber marketing premium depending on their timber sales volume as an efficiency criterion. It is only granted if certain structural parameters are met and only if the cooperative markets the timber independently without relying on the Chamber. Structural parameters are regionally varying and over time progressively increasing minimum sizes of members' forest area and harvested timber volumes. These are however very low and are usually met. Theoretically the Chamber of Agriculture offers timber marketing to forest owner cooperatives. However in this case they are not eligible for the timber marketing premium anymore and that would not be economically meaningful. Thus no cooperative currently sells its timber through the Chamber of Agriculture (Menge, intv. 2012).

Cooperation and the market environment

The assortment structure of timber sales from private forests in Lower Saxony has changed a lot. In the past large volumes of saw logs were sold to individual customers. Nowadays these assortments do not play a big role anymore as the wood industry has changed. Especially larger saw mills that were founded after the German reunification have created a high demand for smaller dimensioned

logs and a need for homogenous raw material of a certain quality. Especially since the pulp mill in Stendal started operating revenues for private forestry rose due to higher prices for industrial timber. Changing timber demand resulted within a few years in changes of silviculture, harvesting operations and logistics. In spite of all this pine dominated forest holdings are still not very economically viable. After a long process of forest restoration private forests in Lower Saxony are in a need of tending which can only be ensured through state support, relatively high timber prices and cost-efficient operations (Hillmann, 2012).

Roadside timber sales are still common practice in private forests. However they are not a cost-efficient marketing strategy. Therefore many forest owner cooperatives pursue combined strategies where on one hand they sell stumpage and on the other sell timber from joint thinnings roadside. This strategy is still not optimal. However factory gate deliveries require substantial investments in machinery and staff. Only cooperatives with a membership area of more than about 50,000 ha are able to implement this. Small and medium sized cooperatives should either cooperate among each other or else, instead of having their own harvesting and logistics operations, should focus on the acquisition and preparation of harvestable stands and timber marketing (Hillmann, 2012).

Menge (intv. 2012) explained that some cooperatives in Lower Saxony are not very economically efficient because they lack full-time managers. They consider mergers to change this. Generally the larger a cooperative is in terms of forest area and timber sales volume the better its market position. Smaller cooperatives remain price takers. According to Menge (intv. 2012) a cooperative can exert some influence on prices and is also one of the customer's first contacts if it can provide around 15-20 % of a customer's raw material base. Especially when this constellation exists with some 2-3 three customers the marketing situation improves substantially. For saw logs and especially for broadleaf timber that threshold is even lower since they are less of a bulk assortment (Menge, intv. 2012).

State Forest District Uelzen

The State Forest District Uelzen has a forest cover of 36 % of which 66 % are owned by private owners or municipalities and 34 % by the federal state. There are 3,200 private forest owners with holdings typically between 5 and 20 ha in size and a high degree of parcelization. 90 % of private forest owners are members of one forest owner cooperative, the "Waldmärkerschaft Uelzen eG" with a forest area of 32,310 ha. Transformation forestry of pine monocultures is an important silvicultural challenge in the district and is supported by funds of the federal GAK program (FVL, 2012).

The Chamber of Agriculture Lower Saxony in the State Forest District Uelzen

In the State Forest District Uelzen the Chamber provides services to an area of about 60,000 ha of which 52,000 ha are organized in 6 forest owner cooperatives with about 2,500 members. At the moment there are 20 local Chamber foresters that take care of an average area of 2,500 ha. The Chamber of Agriculture in the district coordinates its activities closely with the executives of FVL (see below) and its member cooperatives such as the "Waldmärkerschaft Uelzen eG" to optimize administrative procedures and the provision of services to private forest owners (FVL, 2012).

The Forest District head office and its local foresters have different tasks. The head office is a public office with administrative responsibilities. It consults private forest owners within the District and provides operative support. It cooperates with executives of the cooperatives. It implements measures that exceed the local responsibilities of the Chamber foresters such as road construction and amelioration. The Chamber's local foresters provide consulting to members of the cooperatives, implement silvicultural measures, plan and implement harvests, prepare timber sales, plan and implement measures supported by the state and are also responsible for nature conservation, forest protection and fire prevention (FVL, 2012).

For forest owners that are members of FVL's member cooperatives the Chamber provides consulting and forest management services that cover the full forest management package. These service contracts are closed between the Chamber and the local forest owner cooperative. In the Western part of the Chamber's area (formerly the Chamber of Hannover) there is an all-inclusive service fee. For a fixed fee of 34,000 € annually the Chamber's local forester is available for the cooperative's forest owners. However consulting remains only one part of his responsibilities. In the Eastern part (formerly the Chamber of Weser-Ems) there is a project-based fee according to a fixed price list. The two different models are planned to be united to one all-inclusive model in the future. The all-inclusive contract is not necessarily more proven but politically favored (Menge, intv. 2012).

- ***FVL GmbH (Forstwirtschaftliche Vereinigung Lüneburg)***

FVL was established on initiative by the "Waldmärkerschaft Uelzen eG", an older, regional forest owner cooperative which' structure served as a model. The "Waldmärkerschaft Uelzen eG" is the oldest and largest of FVL's member cooperatives. It was founded in 1937. Back then membership for private forest owners in the district was obligatory. Today membership is voluntary and it would not comply with democratic principles and be hardly feasible to have a legal obligation to join. In 1960 the "Waldmärkerschaft Uelzen" started to employ a full-time manager. Then other cooperatives started to close service contracts with it. This constellation was becoming too demanding to manage with the existing set-up so FVL was founded as the new umbrella organization (Menge, intv. 2012).

FVL is a legally acknowledged forest owner cooperative according to federal forest law with the legal form of a limited corporation (FVL, 2012). The legal form of a limited corporation is more suitable for a large cooperative than an association under private law. The capital requirements for a corporation give the company a broader financial base and improve its capacity to act for instance in case of investments such as logistics operations. Furthermore there are tax benefits (Menge, intv. 2012).

Shareholders are presently seven forest owner cooperatives based in the federal states of Lower Saxony and Mecklenburg-Western Pomerania. FVL is controlled by the member cooperatives and decisions are made in a bottom-up manner (FVL, 2012). The boards of directors of the member cooperatives form FVL's administrative board which is its decision making body that controls FVL's executive. The administrative board also elects an auditing committee. FVL's executive however does have far reaching competencies (Menge, intv. 2012).

The member cooperatives are responsible for local service and support to the forest owners whereas FVL is responsible for joint activities such as timber sales, administration and ensuring sustainable forest management (FVL, 2012). Local cooperatives do not have full-time employees but only honorary offices. FVL handles their business processes on contract basis. Forest management is organized through consulting contracts between local cooperatives and the Chamber of Agriculture (Menge, intv. 2012).

FVL's main tasks are forest management consulting, timber marketing, acquisition and operation of machinery, invoicing and final payments, pre-financing of silvicultural measures including those that receive state support, taking the risks of loss of receivables as well as management activities for its member cooperatives (FVL, 2012). Furthermore FVL organizes joint insurances. There is one for forest fires that is mandatory and one against storm damage that is optional. Joint contracts offer better insurance conditions (Menge, intv. 2012). All of FVL's members' forest land is completely PEFC certified. With the complete take-over of WMG (see below) machinery operations and logistics including factory gate deliveries have become central tasks of FVL (FVL, 2012). FVL does not rely on the services of WMG only but also hires external contractors (Menge, intv. 2012).

Membership fees differ among the local member cooperatives. Partly there is a fixed basic fee plus an additional fee dependent on forest holding size. The area dependent fee is mostly not even charged if the cooperative's income allows. Local examples are fixed fees of 16 € per owner plus an area dependant fee of 1-2 € per ha annually (Menge, intv. 2012).

FVL does not charge membership fees but works as a true timber buyer, not merely brokering on commission. FVL buys timber directly from the forest owner. The local cooperatives have to pay the Chamber of Agriculture for consulting and services and they also acquire harvestable timber from forest owners for FVL to market. For these services FVL pays the local cooperatives. The final payment to the forest owner is made into his personal account that is kept for him at FVL and that he can access any time. This also offers preliminary financing of silvicultural measures through interest-free loans. For measures that receive state-support this is especially useful since reimbursement by the state is only granted after the measure has been carried out (Menge, intv. 2012).

FVL's harvest volume is comparatively high with an overall harvest level of about 300,000 m³ and an average harvesting intensity of about 5 m³ per ha annually. FVL is successful in supplying relevant proportions of certain customers' raw material base and thus enjoys an improved market position and cooperative customer relations (Menge, intv. 2012).

The accountability for all timber deals lies with FVL. Forest owners as trading partners are officially obliged by the articles of association to allow harvesting of timber that they declared. However this is not enforced in practice as it could easily result in the loss of members. Occasionally forest owners change their mind and instead of selling declared stumpage to the association they find a buyer that bids higher. In case other buyers organized such campaigns on larger scale this could actually become a problem (Menge, intv. 2012).

Success factors of FVL and its subsidiary WMG are mainly their flexible and efficient logistics and the transparency of their business process to forest owners. The fact that FVL shares its office with the Chamber's Forest District head office improves communication and makes cooperation more efficient and flexible (Menge, intv. 2012).

Subsidiaries: WMG (Wald-Marketing GmbH)

The foundation of WMG in 1992 intended to source out certain business segments of its shareholders' operations, initially only concerning forestry machinery. From 1999 on timber transports and logistics became another focus of the company. WMG seeks to bundle competencies and concentrate on its core business and has today become a pace setter for the support of small private forests and the increase of added value for private forest ownership (FVL, 2012).

Just like FVL, WMG is a legally acknowledged forest owner cooperative according to federal forest law in the legal form of a limited corporation. Only shareholder is FVL, which manages for its members a substantial source of timber. WMG serves the interests of its shareholder and the associated forest owners. It has an ordinary capital of 30,000 €. WMG and FVL share the same executive, who is supported for administration by another employee of FVL (FVL, 2012). WMG additionally has a logistics manager who coordinates harvests and timber transports. The premise is to achieve as much as possible with the staff they have (Menge, intv. 2012).

WMG is responsible for the implementation and disposition of forestry operations and logistics for FVL. Timber is partly harvested and hauled by its own qualified employees with modern machinery (FVL, 2012). Concerning logging operations around 15-20 % of the work for FVL is done by WMG's own operations while for timber transports 95 % is done with WMG's trailers and a little less with its own trucks. The rest is contracted out. Quality saw logs that comprise around 10 % of the whole harvested volume are not transported by WMG but instead loaded in the customers' containers already in the forest (Menge, intv. 2012). Silvicultural operations are organized in rational treatment units and conducted quickly, carefully and at market price. The pricing of WMG is similar to that of external entrepreneurs (FVL, 2012). It serves as a reference for the evaluation of contractors' offers (Menge, intv. 2012). The preparation of treatment units is taken care of by the Chamber of Agriculture's extension foresters (FVL, 2012).

WMG provides logistics services to forest owner cooperatives that are members of FVL. Logistics are regarded as a separate branch of WMG. They are oriented towards the needs of the customers and the majority of the annual harvest is delivered factory gate. This service extent is demanded and rewarded by the market and produces clear benefits for forest owners (FVL, 2012).

Conventional logistic systems for timber do not allow optimal added value for the forest owner as sales of stumpage and roadside timber do not give control over both harvest operations and logistics to one enterprise. This creates interfaces that disturb the flow of information and material. It may also reduce timber quality and result in losses of time and revenue for forest owners. The supply chain of WMG integrates and optimizes the delivery process from harvests to factory gates.

Interfaces are reduced, fresh and large volumes are delivered directly to the customer and the forest owner captures added value of the supply chain (FVL, 2012).

The integrated supply chain depends on the formation of treatment units of at least 20-40 ha for harvesting operations. Furthermore it requires fully mechanized harvesting and hauling by qualified machine operators. A major component is the direct loading of certain timber assortments onto trailers, except for saw logs sold as whole stems. Furthermore the supply chain relies on timber measurements at the customer's plant and advanced information technology to be able to flexibly react to customer demand (FVL, 2012).

The logistic processes covered by WMG include the whole process starting from the acquisition of deals, planning, preparation and implementation of harvests, hauling, logistic planning and deliverance to the customer, approval of timber measurement at the plant and final payments (FVL, 2012). WMG organizes the whole chain but many other parties are involved in it which makes logistics management an advanced operation. The supply chain includes the following elements:

1. Forest owners give the order for harvesting.
2. The Chamber of Agriculture's extension foresters consult the owners and acquire harvesting orders, bundle the orders, prepare treatment units, make a work order and list timber assortments afterwards.
3. WMG's operative manager coordinates harvest operations and timber transports. He supervises harvesting, hauling, trailer provision and wood deliverance and thus is responsible for the completion of working orders.
4. The head of the Chambers' Forest District head office coordinates the extension foresters and supports timber deals. He also consults forest owners.
5. The timber industry is involved as a customer in closing contracts and setting up the delivery schedules. It channels information and prepares the acceptance of timber at factory gate.
6. FVL's and WMG's head office is in charge of accounting, supervision of timber and cash flows and pre-financing of contractor services.
7. The executives of WMG and FVL are responsible for supply chain management and control the whole process. They coordinate the flow of information and material at the interfaces. They develop new business processes and information flows and seek to constantly improve the supply chain (FVL, 2012).

This whole process requires careful planning, centralized disposition and the use of modern information technology. The base of all planning is the acquisition of harvest-orders that are taken by the district foresters. Single orders are combined to treatment units and displayed in maps. In the head office these units are put in temporal, spatial and assortment oriented order according to existing timber contracts and then a work plan is formulated. It is forwarded to a centrally disposed entrepreneur. This work plan is then broken down again into single work orders for the machine operators. Then there is communication with the customer to ensure that the right assortments arrive at the right time (FVL, 2012). Priority is given to fully utilizing own machinery before

contracting work out. Therefore the work is planned by the Chamber's extension foresters and the logistics manager of WMG together (Menge, intv. 2012).

Central disposition and coordination of all processes along the production and supply chain serve to reduce interface and efficiency losses. They are also necessary to deliver according to the customer's needs. The provision of enough timber trailers that can be loaded directly by the haulers and sufficiently large treatment units to fully utilize the machinery are logistical challenges. The central disposition of harvesters and contractors has the advantage for them to have a reliable work base and planning horizon. Central planning and disposition require modern information technology. WMG has done a lot of development work in this field. For instance new software was tested (FVL, 2012).

A characteristic concept of WMG is its trailer based logistic system with direct loading by the haulers (FVL, 2012). The major advantage is that the trailer can be loaded without a truck being there and thus the trucks are not bound. Trailers are inexpensive, very reliable and robust. They are also lighter than regular timber trucks since they do not have a crane, which allows a heavier load and saves fuel. Also the trucks have less waiting time. Another advantage is that timber arrives at the customer fresh. Deliveries are fast and flexible and it is easy to react to changing demand, for instance after there had been sudden snow in the mountains and demand in the lowlands rises. The disadvantage of the current logistic solution is that the trailers do not have a crane which can become a problem if the means of transportation is changed, for instance when timber is loaded on trains. The trailer system is basically well developed. There could only be lighter and more trailers (Menge, intv. 2012).

Timber is mostly harvested fully mechanized. It is hauled by forwarders and loaded directly on trailers owned and operated by WMG. The company's own trucks or those of local entrepreneurs bring them to the processing plants. If the road conditions are bad the trailers are brought with four-wheel drive trucks to collecting points near good roads from where regular contractors' trucks can take over. Timber is measured at the factory. With this system all of the timber has usually been taken out of the forest around two or three days after harvest operations are over. There is no roadside storage of timber. Timber is not measured or handed over to the customer in the forest but a transparent accounting system ensures that forest owners and contractors receive their money in time (FVL, 2012).

To hire external contractors there is no bidding procedure. A cost calculation for reference is made based on the performance of WMG's machinery to better evaluate the contractors' prices. The Chamber's extension foresters lead the logging operation and work together with the contractor and WMG's logistics manager. The logistics manager determines treatment units, makes a work plan, a pre-calculation of timber volumes, and communicates with the customer to always follow the just-in-time principle. Thus the timber is fresher and fungal infections especially of pine timber can be avoided (Menge, intv. 2012).

Advantages of the logistic system:

1. For the wood industry: it can reduce its timber storage due to continuous and reliable round wood supply. The timber has maximum freshness due to the immediate transport which is an important precondition for some high- end products such as OSB.
2. For the contractor: Harvesting and hauling contractors receive larger, planned orders and can fully utilize their equipment. Transport companies save time because they do not have to search timber and load it in the forest because loaded trailers are collected at particular truckpoints.
3. For forest owners: Members of FVL- shareholding cooperatives benefit from a unique timber marketing concept which offers secured sales markets, immediate timber and therefore cash flow and higher timber prices. This is due to higher timber quality and lower freight costs. Furthermore they benefit from increased revenue due to added value of the logistics (FVL, 2012).

WMG's service quality is in high demand by the wood industry which appreciates performance and reliability, especially concerning extent and quality of timber deliverances (FVL, 2012).

WMG also operates a forest and environment center in Räber. Its purpose is to educate decision makers of forest owner cooperatives in business administration to improve the cooperatives' performance. Furthermore it serves as an information and conference center that external users can rent and for education purposes in fields related to agriculture, forestry, water, nature conservation or hunting (FVL, 2012).

Together with the Chamber of Agriculture FVL organizes auctions and submissions for valuable timber assortments that achieve higher prices for quality timber. This form of marketing takes a lot of effort but markedly improves incomes (Menge & Tonat, 2012).

Logistics for wood energy could become important in the future. On the other hand current interest in this field is low as there already is a lot of competition in this sector and prices are not attractive enough yet. Furthermore the members' forests are often pine dominated which produces little logging residue and grows on poor sites that are susceptible to degradation by nutrient exports (Menge, intv. 2012).

Processing of members products is currently not planned. However it is an option that will always be considered and could be pursued in the future (Menge, intv. 2012).

The relationship to other forest owner cooperatives is ambivalent as there have been and still are resentments towards FVL. Since its development and its logistic solutions are rather untypical for the region many other cooperatives viewed it with skepticism. Since pressures are increasing that forest owner cooperatives improve their timber marketing other cooperatives started to become more curious about FVL's approach and started communicating more. Thus cooperation increased and the relationship became more relaxed (Menge, intv. 2012).

The relationship to customers is characterized by intensive coordination of the business process and thus contacts are quite close. Due to the advanced logistics according to just-in-time principles FVL

has to permanently coordinate its activities with the customers who ultimately control the timber flow. In this FVL promotes and defends the forest owners' interests and tries to achieve best prices. Because of the close cooperation FVL gets a better understanding of the customers' business processes, their financial margins and thus the timber price potentials and trends. The fact that WMG is organizing the whole timber logistics up to the factory gate is monetarily acknowledged by the customers (Menge, intv. 2012).

A.2.5 Bavaria

Private forests and cooperation

In Bavaria an average private forest holding size of not even 2 ha makes economically viable forest management difficult (Leitenbacher & Perfler, 2009b). Furthermore private forest holdings are often distributed over several parcels. 70 % of all private forest holdings are smaller than 2 ha. (Leitenbacher & Perfler, 2009a). They account for about 20 % of the private forest area. For these forest owners high transaction costs are likely to prevent offers for forest management services on the free market except for intensive measures such as clear cuts. This could lead to total neglect of forest management. About 20 % of private forest owners have holding sizes between 3 and 5 ha which affects 15 to 20 % of the private forest area. Concerning forest holdings between two and five ha there is a threat that forest management activities will become much more infrequent depending on timber prices. Less than 10 % of forest owners have holding sizes of more than 5 ha. However they own more than 60 % of the private forest area. Also for this group the fragmentation of forest holdings and high transaction costs are key problems. Private forest management cannot be improved by targeting only one category of forest owners. Forest owner cooperatives need to address owners of larger holdings as well as those of smaller ones (Suda et al., 2009).

Throughout Bavaria there are forest owner cooperatives that help overcome these disadvantages (Leitenbacher & Perfler, 2009b). So far they have expanded to most of the forest area and due to their membership structure that mostly comprises the larger forest holdings have achieved a state-wide and permanent presence. The number of members and forest area of cooperatives steadily increase (Schaffner et al., 2009a). About 28 % of all private forest owners with about two-thirds of the private forest area are members of forest owner cooperatives. 80 % of all municipal forest owners with 88 % of all municipal forest area are members of these cooperatives as well (Schreiber & Hastreiter, 2009). In 2004, just before a larger reform of the forest sector, there were 154 legally acknowledged forest owner cooperatives in Bavaria with about 130,000 private and municipal members who owned about 1.2 million ha of forest land. Forest owner cooperatives reacted to changing demands by employing more staff such as forestry professionals and field and office staff. Up to 2007 forest owner cooperatives and their subsidiaries had about 660 full- and part-time employees, which correspond to 261 full-time posts (Schaffner et al., 2009a). Forest owner cooperatives compete with each other and will show further concentration processes by merger and expansion. Mutual understanding among cooperatives helps regulate competition locally (Suda, intv. 2012).

There are strong regional differences among forest owners' willingness to manage their forest actively and to join cooperatives. In the Allgäu, the owners' attitudes to their forest properties are noticeably different from lower Swabia, due to differences in the landscape and land use regime. In lower Swabia a high share of arable lands places the main focus on agriculture. In the Allgäu meadow and pasture management is predominant and thus the forests there serve as an important source of additional income and occupation during winter (Messmer, intv. 2012).

Forest owner cooperatives in Bavaria have formed regional umbrella cooperatives, so called "Forstwirtschaftliche Vereinigungen" or FVs for each of the seven Bavarian governmental districts. These umbrella organizations of cooperatives represent the interests of their members, coordinate timber sales and consult, inform and support their members in all forestry related issues (Leitenbacher & Perfler, 2009a). The local cooperatives join the FVs voluntarily and take care of forest management locally. FVs are closely associated with the Bavarian farmer's association (Messmer, intv. 2012).

Increasingly forest owner cooperatives also offer contracts for the full forest management package (Leitenbacher & Perfler, 2009b). But due to high transaction costs it is difficult to offer forest management services for small private forest holdings. Only organizations with strong local presence in the field will be able to offer services to small private forest owners. To achieve strong presence however they need to be attractive for both larger and smaller private forest owners at the same time. For smaller holdings the bundling of services across property boundaries significantly lowers the costs. It is also important to have silvicultural contractors that offer services everywhere throughout the area (Suda et al., 2009).

A study by Schaffner et al. (2009b) investigated success criteria that executives of forest owner cooperatives regard as important. They found that apart from quantifiable results such as timber sales volume and members' satisfaction executives of forest owner cooperatives stated that success for them depends on the fact that they can actively develop and control business processes. They found it also important to coordinate activities with business partners. Finally it was considered a success criterion to gain some influence and participation in the market place. To them success depended on active and progressive management (Schaffner et al. 2009b).

Forest owner cooperatives and forest policies

Changing ownership structures in private forests, increasing timber demand and impacts of climate change are all going to affect the development of forest owner cooperatives as well. The structure of the wood processing industry has changed a lot towards higher capacities and stronger export orientation. This change also creates a demand for reliable and efficient timber suppliers that can ensure a sufficient and reliable supply. The effects of climate change on the forest will require more intensive forest management. An increase in calamities will create a need for more frequent and reactive forestry measures. Changing site conditions may require the silvicultural transformation of forests. This will result in a higher need for forest management activity, knowledge and skills. From a

forest policy perspective this will have the following consequences on the development of cooperatives:

- Sustainable and more active forest management will depend on the area-wide availability of forest management services. An increased demand for forest management activities also results in an increased demand for forestry services and professionals.
- A concentration of timber for a reliable and efficient long-term supply is going to be crucial for the competitiveness of the timber industry and the economic viability of forestry (Suda et al., 2009).

Therefore it is important for the state of Bavaria as a business location to establish structures in private forestry that achieve this higher and reliable long-term timber supply. That requires further development of professional structures among forest owner cooperatives (Suda et al., 2009).

In the past private forest owners performed a lot of the forest management by themselves. Therefore forest policies focused on supporting the individual forest owner and the concentration of timber supplies. Forest policies in the future will seek to promote capable, economically oriented and qualified service structures for small private forests that are able to reach all forest owners. There needs to be a transition from support of individual and independent forest owners to support of private forest owners through assistance and services from forest owner cooperatives. Therefore forest policies have to improve the conditions for professional services providers in private forests (Suda et al., 2009).

Bavarian Forest Law includes three pillars of support to private forest owners, financial support, consulting and education (Leitenbacher & Perfler, 2009a). Aim of the support is to improve forest management throughout the state. Private forest owners need to be motivated to manage their property actively. The aim is to promote the necessary infrastructure for that and develop forest owner cooperatives into independent, efficient organizations (FV Swabia, 2012). The Bavarian policy approach has so far been very successful. It combines the economic development of forest owner cooperatives with a close and local cooperation of cooperatives and the State Forest Administration (Suda et al., 2009). Forest owner cooperatives receive targeted financial support for certain business projects and state forest advisors provide them with direct consulting (Schaffner et al., 2009 cited by Leitenbacher & Perfler, 2009b).

In Bavaria there are umbrella cooperatives on district level and local forest owner cooperatives as their members. This was initially oriented on the former structure of the forest administration with its forestry directorates. In 2000 they were first merged and then totally abolished in 2005. The same year the Bavarian state forest enterprise was also transformed into an independent enterprise (AÖR) and separated from the State Forest Administration (Messmer, intv. 2012).

The Bavarian reform of the forest sector in 2005 pursued a liberal policy that promoted independence and individual responsibility. Forest owner cooperatives received special consideration. It was agreed to facilitate their development by the help of staff from the State Forest Administration for a limited period of time (Schaffner et al., 2009a). In the course of the 2005 reform

it was agreed to provide increased long-term support for forest owner cooperatives. The cooperatives on their part took responsibility to establish efficient and progressive structures. The goal is to continually improve the cooperatives' market position and efficiency (Leitenbacher & Perfler, 2009a).

Financial support

The reform 2005 raised support funding by the Bavarian state from two million to three million € annually. Furthermore it was agreed to provide financial support in a project-based and performance-dependent way. Support only concerns services to the cooperatives' members as long as they are located within the state of Bavaria. State support is only meant to be compensation and cannot replace sufficient income. The support system depends on the performance and the structure of cooperatives and involves support for part of the costs for investments and so called support projects (Leitenbacher & Perfler, 2009a).

Only legally acknowledged forest owner cooperatives that effectively provide certain functions to their members can be released from competition law and apply for state support. These tasks have to be specified in their articles of association and actually fulfilled. Consulting of forest owners is a critical task that has to be included. Furthermore they need to meet certain efficiency criteria such as a minimum membership in terms of number of members and forest area and minimum requirements for marketed timber volumes per ha of forest area, varying by tree species. There is an upper limit for financial support of 50,000 € maximum per cooperative and year. Furthermore "De-minimis-Rules" required by the EU have to be respected. State support is only granted after the measures are performed. Consultants from the State Forest Administration advice and help forest owner cooperatives with support matters (Leitenbacher & Perfler, 2009a).

These efficiency criteria for forest owner cooperatives require at least 4000 ha of forest area or 2000 ha and 200 members. Cooperatives need to have a marketing volume of at least 1.8 m³ for spruce and 1.05 m³ for pine and broadleaved timber per ha of member's forest area. Efficiency criteria for FV umbrella cooperatives are that at least 60 % of forest owner cooperatives in a FV's sphere of activity have to be members and that it coordinates timber sales of at least 50,000 m³ of spruce timber or 30,000 m³ of broadleaf timber (FV Swabia, 2012).

Support projects include ventures like the concentration and bundling of timber supply, forest management contracts, the organization of timber submissions and auctions as well as education and training for cooperative staff. The project "concentration of timber supply" receives support according to the amount of timber as a performance indicator, employed staff to prove costs as well as additions and deductions for structural disadvantages and differences among tree species. The supra-regional coordination of timber sales by FV umbrella cooperatives through framework contracts can also receive a certain but lower amount of support (Leitenbacher & Perfler, 2009a).

Joint timber marketing receives state support from the GAK initiative. The support is granted for all services that cooperatives provide to their members according to their articles of association while

the marketed timber volume serves as an indicator that they actually fulfilled these tasks. The basic amount of state support lies between 0.4 and 0.5 € per m³ of marketed timber (FV Swabia, 2012).

Basic forest management contracts are supported with a fixed amount of 35 € per contract. They need to at least include forest protection which does not have to be carried out by forestry professionals. Extensive forest management contracts are supported with 70 € per contract annually for holdings smaller than 2 ha, while contracts for holdings between 2 and 200 ha receive size dependent support from 5 to 35 € per ha. For one forest manager a maximum of 2000 ha can receive support. Extensive management contracts can only be offered by forestry professionals with higher education and need to at least include forest protection and the legal duty to maintain safety (FV Swabia, 2012).

There is support for new investments for machinery and equipment related to forestry and timber transport. The construction of buildings and plants for bioenergy use is also supported as well as office equipment for newly founded or merged cooperatives. Support is granted for 40 % of the costs up to 60,000 € per measure. The overall sum of support in Bavaria since 2005 lies around 250,000 € annually and strongly depends on the economic situation of the cooperatives (Leitenbacher & Perfler, 2009a).

Public services by State Forest Advisors

There is long tradition of support to forest owner cooperatives by staff of the State Forest Administration in Bavaria. The forest reform 2005 redefined cooperation and consulting and provided additional staff (Leitenbacher & Perfler, 2009b). Before the reform of 2005 it was considered to abolish state consulting altogether. But state consulting will remain necessary for owners of very small holdings who cannot be serviced by cooperatives. Therefore common-welfare oriented consulting remained responsibility of the State Forest Administration even after the reform of 2005 (Suda, intv. 2012). However in practice the distinction between support for business related and common-welfare oriented measures is hard to implement (Messmer, intv. 2012).

A consequence of the 2005 reform of the forest sector was the abolition at least of business-oriented consulting for individual forest owners by the State Forest Administration. This task was assumed by forest owner cooperatives. While in 2004 state foresters provided forestry consulting on all matters they nowadays only give advice on common welfare oriented measures. For operative forest management matters forest owners have to consult cooperatives. Therefore consulting activities are shifting from state foresters to cooperatives (Schreiber & Hastreiter, 2009).

Even before 2005 there was a close cooperation between forest owner cooperatives and the forest administration. Following the reforms of 2005 the state forest administration's foresters consulted the forest owner cooperatives on request (Messmer, intv. 2012). An important goal of the forest reform of 2005 was to counterbalance the personnel cutback at the State Forest Administration by promoting forest owner cooperatives. In the face of decreased consulting by the state cooperatives will have to help overcome the structural disadvantages of small private forests. Thus financial support was increased and it was decided that between 90 and 100 consultants from the State Forest

Administration would support the cooperatives during a transition phase. Before the reform the demand for consulting was investigated in close cooperation with the forest owner cooperatives and the Department of Forest and Environmental Policy at the Technical University of Munich. On this basis it was decided to appoint 140 state foresters as forest consultants for the cooperatives with a range of 15 to 100 % of their post (Leitenbacher & Perfler, 2009b). As the staff of the administration is being reduced and the cooperatives are gaining independence these posts are gradually being reduced as well. Currently there are 50 posts left due to retirement. The others will be reduced in due time. The local forest owner cooperatives and the forest administration regard their joint umbrella cooperatives as a very successful model, both regarding the flow information and the effective allocation of state support (Messmer, intv. 2012).

The State Forest Advisors are supposed to support the cooperatives in becoming more efficient and professional by critically analyzing their internal structure and processes and developing recommendations to improve. Part of this is to support the search for new business opportunities for instance forest management contracts and bioenergy and to educate the cooperatives' staff. Furthermore State Forest Advisors help with public relations, forestry issues and financial state support. Operative business tasks for instance in timber marketing as well as decision making are not their responsibility (Leitenbacher & Perfler, 2009b). Messmer as the State Forest Advisor of a FV umbrella cooperative regards his task primarily as improving the economic situation of the cooperative and its members. He works for instance on controlling, quality management and proper cost calculation that completely includes all time and effort. He observes a lack of consistent work processes. Many cooperatives have been started as one-man companies and work with their own specialization quite successfully but preferably independent. Therefore it is a demanding task that requires sensitivity to really optimize their operations and to educate their leaders (Messmer, intv. 2012).

Most State Forest Advisors also manage a state forest district. However there has to be a strict separation between their advisory tasks for cooperatives and their management tasks for the state. They should not be concerned with all forest management in their area but instead facilitate communication and joint measures between State Forest Administration and cooperatives such as education and joint forest management activities (Leitenbacher & Perfler, 2009b). Regular meetings with managers of the State Forest Administration and leading representatives of the forest owner cooperatives support State Forest Advisors in their mediating role. These meetings solve current issues, redefine targets for consulting and analyze the past development. Among State Forest Advisors there are also regular meetings to discuss common challenges and exchange information. Furthermore there is specialized training to ensure the quality of state advice (Leitenbacher & Perfler, 2009b).

Results of public support

The forest reform of 2005 resulted in a great change of governmental support systems and strengthened forest owner cooperatives. Their organizational development was further facilitated by the development of the timber prices and high timber stocks in private forests that were easy to

mobilize (Suda, intv. 2012). Since the reform most cooperatives developed very dynamically. Cooperatives have become more professional with a stronger division of tasks, high marketing intensity and a broad service portfolio. A successful improvement of private forestry through cooperation depends absolutely on the economic orientation of forest owner cooperatives (Schaffner et al., 2009a).

The marketed timber volume of Bavarian cooperatives increased significantly since the reform and so did their employed forestry professionals. The internal structures and processes of many cooperatives were improved and there have been many mergers. Whereas many cooperatives developed dynamically there are also some that did not. The personnel cutback of the State Forest Administration makes it necessary to constantly reconsider the necessities for the involvement of State Forest Advisors in each case. The goal is to stabilize the achievements so that cooperatives become independent. In the medium-term there will be support by State Forest Advisors anymore (Leitenbacher & Perfler, 2009b).

Future policies for the promotion of forest owner cooperatives should target continued economic orientation and professional entrepreneurship and at the same time ensure that they also reach small forest owners. Therefore support should depend on structural criteria as well as performance indicators, e.g. members' forest area and timber sales volumes, and include increased cooperation and coordination between forest owner cooperatives and the State Forest Administration (Schaffner et al., 2009a).

In Bavaria the sector is organized very liberally. There is a strong fear of state influence on the market and negative consequences. Therefore the state's influence on forest owner cooperatives is organized very differently than in Baden-Württemberg for instance. There the state forest administration takes care of the whole consultation and extension services in private forests, including timber marketing. Forest owner cooperatives there are rather weak by themselves (Messmer, intv. 2012).

Timber marketing

Timber marketing of cooperatives is developing rapidly. In the past cooperatives often acted as timber brokers for their members. By now most cooperatives are trading their members' timber, actually buying and selling it. By trading cooperatives significantly improved their competitiveness in timber trade (Kölbl, 2009). Within three years forest owner cooperatives managed to almost double their timber sales volume. They effectively responded to market developments expanding and reducing their supply according to demand. In 2004, 154 Bavarian forest owner cooperatives marketed about 3.5 million m³ of roundwood. This corresponds to an average marketing intensity of almost 3 m³ per ha of members' forest. Among the 130 forest owner cooperatives registered in 2007 already 75 % marketed more than 25,000 m³ annually while 2004 it had only been 33 %. Clearly the majority of cooperatives remarkably increased their marketed timber volumes (Schaffner et al., 2009a).

Timber sales volume and the number of employees are clearly correlated. From about 25,000 m³ annual timber sales volume teams with divided tasks are in charge. More personnel in combination with a wider service spectrum lead to increased marketing intensity per ha of members' forest. A cooperative that markets more than 50,000 m³ annually can provide on average service for 30 minutes per ha of members' forest area which results in a marketing intensity of about 6 m³ per ha of members' forest area. A cooperative that markets less than 25,000 m³ of timber annually can provide service for a little more than 10 minutes per ha of members' forest area and only reaches a marketing intensity of almost 2.5 m³ per ha (Schaffner et al., 2009a).

Most cooperatives had a dynamic development of timber sales and number of employees since the reform of 2005. With overall 6 million m³ timber sales volume forest owner cooperatives and their members have become leading on the timber market in Bavaria. However there is also a clear differentiation among forest owner cooperatives, especially comparing to the situation in 2004. Most of the 130 legally acknowledged cooperatives developed positively and about 35 % of them have professional organizational structures with a division of tasks, high marketing intensity of about 6 m³ per ha of members' forest area and a broad service spectrum. With more than 50,000 m³ of annual timber sales volume and enough personnel to provide services for 30 minutes per ha of members' forest area annually this group is the pace maker of cooperative development and ensures the relevance of private forests on timber markets. The second group that comprises about 40 % of all cooperatives also operates quite professionally. It is able to provide services for 20 to 25 minutes per ha and achieves marketing intensities around 5 m³ per ha of members' forest area. A third group comprising about 25 % of all cooperatives provides services for 10 to 15 minutes per ha and achieves a marketing intensity of almost 2.5 m³ per ha of members' forest (Schaffner et al., 2009a).

For a research project on consulting of forest owner cooperatives the Department of Forest and Environmental Policy at the Technical University Munich and the State Forest Research Institute of Bavaria met with representatives of forest owner cooperatives and discussed strategies to further develop the central business segments timber marketing and forest management contracts. Executives of forest owner cooperatives highlighted five key aspects for optimal timber acquisition and marketing:

1. Acquisition of forest owners. The best long-term strategy is the provision of reliable services. It is important to be recognized by forest owners and the public and to become the leading contact person for forest owners when it comes to forest related issues. The acquisition of forest owners depends on four main aspects:
 - 1.1. become the first and major contact person for forest owners
 - 1.2. establish a reputation for quality forest management
 - 1.3. cooperate with the State Forest Administration
 - 1.4. represent the interests of forest owners in public
2. Timber supply. Cooperatives should aim to organize the whole process from timber acquisition to harvesting and haulage. Furthermore they should participate actively in the planning and implementation of harvesting activities. The executives defined three main activities:

- 2.1. Organizing the operations of silvicultural contractors. It was recommended to establish cooperative and permanent relations with silvicultural contractors and to try to fully utilize their capacity. The cooperative should prepare and accompany all silvicultural measures and form larger treatment units, which helps the contractor to perform well. The more the cooperative is involved in the harvesting process the easier it gets to plan timber supply volumes for larger sales contracts. The efficiency of this involvement clearly depends on the scale of timber sales. The more timber the cooperative markets the more it is possible to manage harvests effectively and to employ the necessary forestry professionals.
- 2.2. Set quality standards. Especially for members who perform harvests by themselves it is important to communicate quality standards according to the customers' needs.
- 2.3. Improve the forest road infrastructure. The quality of all timber transports and logistics fully depends on the state of the forest and skidding road network as well as timber storage places. Road construction and maintenance in cooperation with the State Forest Administration is an important task.
3. Logistics. Swift timber transport is an essential performance criterion to forest owners. This and the swiftness of payments for timber bills are deciding over a cooperatives competitiveness and success in the acquisition of forest owners. To become better at managing timber transports executives identified two main criteria:
 - 3.1. Improve harvest and transport opportunities while speeding up the information flow. Standardized information and news on the state of timber supplies is crucial. Become swift at giving transport orders for harvested timber and provide precise information on location and volumes. The cooperatives need to be up to date on the state and location of their timber and orders. IT-solutions that allow instant and standardized information flows between business partners can be a major solution.
 - 3.2. Organizing timber transports. Transport appointments are a major concern. Therefore two models are considered to help cooperatives gain more control over timber transports. One is to have long-term cooperation with timber carriers. Agreements are made with timber buyers to hire specific carriers in order to utilize much or all of their capacity. Thus the cooperative can take over the disposition of carriers and gain more control to bundle the orders. Another option is to deliver timber factory gate. Then the cooperative either has to build its own carrier capacities or work closely and permanently with independent contractors.
4. Marketing. It is expected that timber markets will become increasingly concentrated and that correspondingly cooperatives will have to provide larger offers to actively influence prices, contract conditions and business processes and protect the interests of forest owners. This will depend on five criteria:
 - 4.1. Increase the timber supply by capturing members harvest volumes to reach competitive sales volumes. The aim should be to become the largest timber supplier in a cooperatives sphere of activity.
 - 4.2. Cooperate with other cooperatives. Form alliances with other cooperatives to achieve higher sales volumes and market leadership. Therefore it is recommended to close

framework contracts via umbrella cooperatives or to jointly found corporate marketing and service subsidiaries. This achieves economies of scale and ensures reliable supply of high timber volumes.

- 4.3. Reliability of contracts and supplies. Be reliable and committed in terms of volumes and dates of timber deliveries.
- 4.4. Make swifter payments. Just like the swiftness of timber transports the swiftness of payments is decisive for forest owners. To enhance its competitiveness the cooperation should negotiate swift payments with their customers, swiftly acquire timber measurements from the factory and establish systems for quick and standardized information flows between business partners.
- 4.5. New business segments. To facilitate timber sales it is recommended to establish new business segments in timber processing. A good starting point is the bioenergy sector. Cooperatives should aim to provide not only the raw material but also heat and energy to the customer.
5. Administration process. This includes efficient accounting and good availability for forest owners. With growing and increasingly divided tasks the management needs more specific information on business processes to maintain overview and control. This can be ensured in three ways:
 - 5.1. Effective IT-solutions to manage data on members and their properties, forest management and accounting. This requires regular investments and close cooperation and the exchange of experiences.
 - 5.2. Maintain the overview with increased specialization through capable IT-solutions and innovations specifically for forest management and forest owner cooperatives. Projects such as "Waldinfoplan" can contribute much to this process.
 - 5.3. Define tasks and responsibilities for each employee and apply controlling instruments. Business processes will be increasingly managed by teams instead of individuals (Schaffner et al. 2009b).

Timber sales are the economic basis of forest owner cooperatives. Local forest owner cooperatives are in many cases financed through a volume dependent allocation of about 1-2 € per m³ of marketed timber and not through a turnover dependant allocation from members. State support for cooperatives is also dependent on marketed timber volumes. With this arrangement the cooperative itself has little interest in the structure of timber assortments. Instead it focuses on the marketed volumes. Furthermore timber mensuration at the factory is not problematic for the cooperatives (Messmer, intv. 2012). However for the forest owner quality oriented timber assortments can be very important to optimize his income and promote the quality of silvicultural measures. The volume based allocation holds potential for a conflict of interests between the cooperative that wants to maximize marketed volumes and the forest owners who want sustained value of their property and maximized income from timber sales. Turnover dependent allocations create a situation where both forest owners and cooperatives will seek to maximize the value and not only the volume of harvested timber. Concerning state support volume based support premiums will still be effective if the policy aim is merely to facilitate timber sales. If policies also aim to facilitate the economic situation of private forestry other support tools can be meaningful as well.

Subsidiaries and initiatives

There have been several timber marketing initiatives by forest owner cooperatives in Bavaria.

“Holzvermarktung Bayern GmbH” was founded by the seven FV umbrella cooperatives, the Bavarian forest owner association, the Bavarian farmers association and the association for land ownership as a joint timber marketing company. The associates strive to enhance the market power of Bavarian private and municipal forests through coordination and cooperation, common rules for sales, and consultation and support with contractor services (FV Swabia, 2012).

The timber marketing association “in.Silva eG” was initiated by WBV Kempten, a local forest owner cooperative. Members of in.Silva are also forest owner cooperatives and even state forest enterprises from Austria and Switzerland. Joint framework contracts let every member benefit from the business contacts of all others. Especially the Austrian state forest enterprise has important contacts to large customers and it benefits in turn from the cooperative’s network to be able to deliver the required volumes. In.Silva is not legally acknowledged as a forest owner cooperative according to federal forest law because timber marketing is its only activity. Furthermore not all members are based in Germany (Messmer, intv. 2012).

In.Silva only delivers timber factory gate and has its own logistic operations. In.Silva’s competitive edge is the organization and financing of timber deals. High contract sums and a difficult timber storage situation in private forests make it necessary to transport the timber as soon as possible. The customers prefer to receive timber “just-in-time”, immediately before it is being processed in order to save storage costs and to keep the time between payment and processing as short as possible. In.Silva buys timber directly from the forest owner. The timber remains its property until it is paid, also after deliverance at the factory and even when it has been processed already. Timber is bought according to the measure taken in the forest and sold according to factory measure, which has practical advantages and actually leads to higher margins for the trading cooperative. The time that lies between timber harvest, transport and payment is a core issue for forest owners. Since in.Silva buys timber directly from the forest owner either as stumpage or roadside and operates an efficient logistics and payment system it has addressed this issue successfully. In.Silva’s multitude of suppliers and customers allows it to optimize transportation distances (Messmer, intv. 2012).

However not all Bavarian district umbrella cooperatives work together with specialized marketing cooperatives like in.Silva. FV Upper Palatinate for instance has established its own extensive timber marketing operations. It markets about 300,000 to 350,000 m³ of timber annually which is comparable to in.Silva’s trade volumes (Messmer, intv. 2012).

Forest owner cooperatives in Bavaria have also become active in timber processing.

In Swabia there is an interesting example of timber processing in a strategic partnership between forest owner cooperatives and a saw mill, the “Waldsäge Fuchstal eG” (Messmer, intv. 2012). This sawmill is a cooperative founded by 20 forest owner cooperatives, the Bavarian forest owner association, FVs Swabia, Upper Bavaria and the sawmill company Pröbstl. Participating forest owner

cooperatives' members are more than 30,000 private forest owners, many municipalities and medium to large private forest enterprises. The company still accepts more shareholders from the forest sector (FV Swabia, 2012).

The medium-sized saw mill run by the company Pröbstl needed to expand due to increasing competition and concentration processes within the sector. However the enterprise lacked the necessary capital. Forest owners offered to buy shares and thus increase the capital stock (Messmer, intv. 2012). The cooperative enables forest owners to participate in the timber value chain through shares in wood processing operations. Important condition in this joint business venture is the installment of a saw line for large dimensioned timber. This took intensive preparation of almost two years. The financial participation of private forest owners serves to expand the sawmill's capacities particularly in the segment of large dimensioned timber. Therefore a new saw line for this purpose is integral part of the cooperation. Thus the sawmill can process all timber assortments and qualities. Furthermore the cooperation will actively manage timber supply and controlling. The annually processed timber volume was planned to rise at the time the cooperative was founded from 350,000 m³ to 800,000 m³ (FV Swabia, 2012). The condition that the company installed a saw line for large dimensioned timber improved the forest owner's income situation. In turn they could give a delivery guarantee for 250,000 m³ of timber annually. Board members of forest owner cooperatives are also board members of the "Waldsäge Fuchstal eG" which allows a much better understanding for the saw mill industry's business processes and margins. Thus forest owners get a better understanding of the value chain (Messmer, intv. 2012). This is a clear advantage of vertical integration. The participation of forest owners in the wood industry distributes information and added value. Thus all actors involved get a better understanding of the flows of goods and value along the whole production chain. The sawmill benefits from fresh capital as well as more reliable supplies, even in the form of a certain assured amount.

Due to the world economic crisis in 2007 and 2008 it was not possible to raise as much capital from forest owners as planned. Thus additional capital had to be borrowed at higher costs. Furthermore the customer side was heavily affected and demand shrunk. The influence of the economic crisis on the company's transformation was of course very strong. However the increase in share capital was crucial for the continued existence of the enterprise (Messmer, intv. 2012).

Concerning the bioenergy sector there are a few block heat and power plants run by forest owner cooperatives. A few of them also went bankrupt again (Suda, intv. 2012).

Furthermore forest owner cooperatives have become active in facilitating forest management planning. "WaldInfoPlan" is a GIS solution that was developed for forest owner cooperatives. The enterprise that developed it is a cooperative as well. Members are forest owner cooperatives as well software companies (Messmer, intv. 2012). The project initiative "WaldInfoPlan" consists of an online platform that helps forest owner cooperatives with the efficient provision of forest management services, timber transports and sales. It enhances the service quality by providing and exchanging all necessary data for day-to-day business (Heidobler & Einsiedler, 2009). The Bavarian FVs also encourage and assist their members to supply data on their road systems to a project called

NavLog, which is an initiative to create a country wide information system on forest roads (FV Swabia, 2012).

Forest owner cooperatives in Bavaria can rely on a network of specialized cooperatives for different business processes.

The example of FBG Marktoberdorf illustrates the involvement of a local forest owner cooperative in different specialized subsidiaries. All of them are cooperative enterprises. FBG Marktoberdorf is engaged in the purchase cooperative "Forstbedarfsgenossenschaft Allgäu e.G.", the timber sales and logistics cooperative "in.Silva e.G." and the sawmill "Waldsäge Fuchstal e.G.". FBG Marktoberdorf itself provides a variety of services to its members, from forestry consulting to the full package of silvicultural services as well as education and information. Furthermore it offers forest valuation and support for game management. Recently it jointly sells energy wood as well (LWF, 2009).

WBV Holzkirchen, another local forest owner cooperative, was initiated in 1949 to provide information and education of members, to run a small tree nursery and for joint timber sales. From 1989 on it has been organizing together with the local State Forest district a course in silviculture for interested forest owners. Furthermore it is the main organizer of a regional submission for high quality timber. WBV Holzkirchen puts much emphasis on information and services for members and a close cooperation with the State Forest Administration (LWF, 2009). Auctions and submissions of high quality timber are a major tool to improve the income situation of private forests that offers much potential for cooperatives and collaboration with state forest enterprises.

Taxation

There are three main legal forms of forest owner cooperatives in Bavaria: e.V., w.V. and eG that are all taxed equally. As corporate entities they pay corporate income tax and business tax. However they are released from corporate income tax if they only service their members. Tax release on corporate income tax is only granted for services to members such as information, procurement of timber, buying and selling of timber, joint use of machinery, sale of goods for forest management. Furthermore the tax released activities need to be stated in the articles of association (Dintenfelder, 2009).

In the past forest owner cooperatives often charged 1-2 € per m³ of marketed timber brokerage fee. Since they are trading timber themselves they have turnovers of 50 to 80 € per m³. Forest owner cooperatives with annual turnovers of several million Euros are not an exception anymore. Therefore the importance of value added taxes on sales increased. Normally cooperatives do not have to pay corporate income tax (Dintenfelder, 2009 cited by Kölbl, 2009) but they have to pay full value added tax on sales (Kölbl, 2009).

Services to forest owners

A study within the INTERREG-project found that in 2007 about 70 to 90 % of all forest owners with holdings larger than 200 ha received forestry consulting. A third of them stated to be only consulted

by forest owner cooperatives. A slightly smaller proportion only relies on state foresters for consulting. A major component receives both consulting by a cooperative and free of charge consulting by the state. Private forestry consultants are active as well but do not play a significant role (Schreiber & Hastreiter, 2009).

Fusions and changes in legal form of cooperatives have led to higher market shares and more personnel and thus increased the cooperatives' attractiveness to forest owners. Especially a combination of silvicultural consulting from state foresters with professional timber marketing and forest management services by forest owner cooperatives can convince many forest owners to manage their forests more actively (Schreiber & Hastreiter, 2009).

A study on the business processes of cooperatives in Bavaria found that for timber harvesting and marketing the process of getting in touch with forest owners and consulting them takes a lot of time. Potential to improve this situation was found in a more intensive cooperation of forest owner cooperatives with the State Forest Administration, more local presence in the field and increased use of modern communication and IT technology. Improved cooperation with the State Forest Administration should concern the exchange of information on the acquisition of forest owners through regular meetings and joint consulting appointments. The cooperatives' local presence can be enhanced through local support by members. Furthermore it is recommended to increase the professionalism of membership management, particularly concerning the acquisition of forest owners and the documentation of services. The business segment for full forest management contracts can be improved by specifically disposing personnel for this task and improving contracts and work flow (Neuner & Lutze, 2009).

The most important contact persons for forest owners are the cooperatives' employees, the State Forest Administration's foresters as well as local silvicultural contractors. Cooperatives employ not only executives, field foresters and office staff but also members supporting the organization locally. Local presence, reputation and trust are decisive (Neuner & Lutze, 2009).

Full-service forest management contracts

Full-service forest management contracts offer the chance for cooperatives to establish themselves as professional service providers and create a competitive edge by not only organizing timber sales but providing complete and permanent support in all affairs. Forest management contracts are not only an important marketing instrument but also give cooperatives more control over timber acquisition and supply (Schaffner et al. 2009c). Forest owners get high quality forest management and cooperatives achieve higher flexibility to react to market developments and perform forest conversion in cooperation with the State Forest Administration (Heidobler & Einsiedler, 2009).

The extent of forest management activities that private forest owners do by themselves is going to decrease. In the future the demand for the full package of forest management services is expected to increase (Suda et al., 2009). Today many forest owner cooperatives offer full forest management contracts to address this new generation of forest owners who do not manage their forest holdings by themselves (Schaffner et al. 2009c).

A study within the INTERREG-project found that in 2007 only 1 % of the forest owners that were questioned had actually closed a full forest management contract. Many more have considered it, the more the larger their holding. Main motivations were given as the owners' lack of time, personal reasons such as high age or health, or a suggestion by a state forester. In general forest owners who sell their timber are more interested in full forest management contracts than forest owners that mainly harvest timber for domestic consumption. It was found that there were owners who have paid little attention to full forest management contracts yet but would be very interested because they live far away from their holdings and rarely inspect them or receive little or no income from their forest (Schreiber & Hastreiter, 2009).

Often one larger forest owner takes the initiative and then others follow. Especially after calamities many forest owners realize that they cannot manage their property all by themselves. There is a positive feedback in the acquisition of customers. The more forest area is already managed through full service contracts the more owners want to join. When forest owner cooperatives manage to offer professional full service forest management contracts and prove successful examples news spread among forest owners and new contracts are closed. The State Forest Administration can also be of great help by informing forest owners about this option when consulting forest owners (Schaffner et al. 2009c).

The 2005 reform of the forest sector facilitated the uptake of full forest management service contracts as the State Forest Administration did not service forests belonging to the church anymore that then needed new service providers (Schaffner et al. 2009c). Initially municipal forests were serviced free of charge by the State Forest Administration as well. Now a fee is charged that amounts to 60 % of the costs that the administration incurs. As a result forest management services for municipal forests are a free market as well and municipalities have often become members of forest owner cooperatives (Messmer, intv. 2012).

State foresters and cooperatives are competing for the service of municipal forests. Competition could further increase. State Foresters regard cooperatives as competition. Their classical monopoly in managing state forests and at the same time servicing private forests and municipal forests creates tensions and competition to activities and initiatives in private forests. One reason is that private forestry initiatives often are the sphere of activity of foresters that did not become civil servants and that have their own professional ethics (Suda, intv. 2012).

A critical competence for offering full service contracts is the ability to monitor the state of the forest health quickly and cost efficiently. For this task it can be very helpful to employ members as local wardens and involve them in the provision of services. It is crucial to be able to efficiently ensure forest protection in the field (Schaffner et al. 2009c). For smaller holdings the bundling of services across property boundaries significantly lowers the costs. For the service provider it is also important to have silvicultural contractors that offer services everywhere (Suda et al., 2009). This could make it recommendable for cooperatives that are active in this segment to found their own forest management subsidiary company to ensure service availability.

When organizing full service forest management contracts forest owner cooperatives first of all need to clarify how to organize the contracted services. Then they can decide how to charge fees. In order to determine what services can be provided the following steps can be helpful:

- Customer and cooperative visit the forest together, determine the estate borders and discuss the services.
- Individual planning of each contract.
- Documentation of provided services.
- Technological and IT-solutions to coordinate forest management within and among different contracts.
- Network of staff with divided tasks involving members as wardens, foresters, silvicultural contractors, etc.
- Seek to consolidate individual contracts to more coherent management units.
- Be prepared for crisis management in the event of calamities and forest health issues.
- Clarify the accountability for management activities (Schaffner et al. 2009c).

Responsibilities have to be clearly determined for issues such as applications for state support, forest protection and legal duties to maintain public safety as well as the accountability towards others (Schaffner et al. 2009c).

External services can be contracted in the name and to the account of the forest owner. Administrative services can be charged in different ways:

- All-inclusive price.
- All-inclusive price per ha. The same fee is charged for all forest land.
- All-inclusive price per ha depending on the forest structure. This has to be negotiated for each contract individually.
- All-inclusive price plus additional fee per parcel of forest land.
- Fixed price for a catalogue of basic services plus fees for additional services on request, either depending on actual costs or a fixed price list (Schaffner et al. 2009c).

Of course many more combinations and models are possible, for instance a calamity clause to account for exceptional costs in spite of an all-inclusive contract. The choice of an accounting system very much depends on the particular business case and there is no general recommendation. Basically contracts should be transparent and risks and administrative efforts should remain reasonable. Fees could be based on annual or quarterly reports of management activities or invoices after each individual measure. It is recommended that forest owner associations or other bodies draft a professional model contract that cooperatives can then modify according to each individual deal (Schaffner et al. 2009c).

Full service forest management contracts are not a profitable business segment. Especially in case of highly dispersed forest tracts costs are very high. For customer acquisition the dispersion and development of customer area has to be checked carefully which does not recommend the rapid expansion of this service. Forest owners should not get the impression that these contracts are the

right solution for everyone. Furthermore it has to be avoided that forest owners get the impression that these contracts only serve to gain control of the forest land (Schaffner et al. 2009c).

Therefore since 2007 detailed forest management contracts receive state support as well. Especially labor intensive contracts for small holdings receive compensation for structural disadvantages. So far 2,200 forest management contracts for 22,500 ha of forest area have been supported. However state support is not supposed to cover all expenses (Leitenbacher & Perfler, 2009a).

- ***FV Swabia e.V.***

FV Swabia e.V. is the umbrella organization of forest owner cooperatives in the government district of Swabia. FV Swabia provides services to 21,000 private and municipal forest owners on a forest area of almost 200,000 ha (FV Swabia, 2012). FV Swabia has 20 members of which 15 are consulted by advisors of the State Forest Administration. Messmer is advising the umbrella organization. Half of his post is dedicated to consulting FV Swabia but he also leads the State Forest Administration's district department (Messmer, intv. 2012).

Member cooperatives mostly have the legal form of associations (e.V. or w.V.). In order to include economically oriented activities 14 of the cooperatives have founded corporations as daughter companies, mostly in the legal form of a GmbH, but there is also a joint stock company. Furthermore several cooperatives are in one way or another involved in other business ventures, such as consumer or marketing cooperatives (FV Swabia, 2012).

Recently it is planned to change the articles of association so that forest owner cooperatives outside Swabia can join as well. This is due to the fact that there is a large common timber buyer, a paper mill of UPM, in Augsburg and cooperatives from upper Bavaria are interested to join to coordinate timber marketing (Messmer, intv. 2012).

FVS' tasks are the information and education of members, the coordination of timber sales, market conform harvesting and storage of forest products, the acquisition and operation of machinery and public relations for the forest, forest owners and wood as raw material (FV Swabia, 2012).

Concerning full forest management service contracts FV Swabia is leading among the umbrella cooperatives in Bavaria. Forest management contracts are all-inclusive contracts for all forest management activities. Once every year the cooperative plans the operations together with the forest owner. FV Swabia's member cooperatives are managing 15,000-16,000 ha of private and municipal forests via such contracts with around 1000 ha per cooperative. This occupies about half of one of their forester's posts. The rest of his time the forester is concerned with forest management for members without a full service contract or timber sales. Contracts for full forest management service also receive state support. There is a fixed basic payment and for larger holdings there is an additional area dependent amount. Forest management contracts were initiated ten years ago when church forests were not managed by the state anymore. Since then church forests have practically been managed exclusively by cooperatives (Messmer, intv. 2012).

In the past forest owners sold most of their saw logs by themselves because the saw mill industry had smaller structures as well. Furthermore saw mills were mostly located outside Bavaria for instance in Baden-Württemberg or Austria. Therefore marketing routes were diverging in different directions. As a consequence local forest owner cooperatives marketed their members' timber separately from each other. Thus in the past framework contracts were in most cases only made for pulp wood. FV Swabia and its predecessors have had framework contracts with a local paper mill for almost 40 years (Messmer, intv. 2012).

The main problem in timber marketing is the lack of commitment on the forest owners' side. The framework contract with the customer is closed by FV Swabia. It first consults the local cooperatives via their internal online platform. Even within these framework contracts FV Swabia is not held accountable but instead the local cooperative closes an individual delivery contract with the customer. The distinction between framework and delivery contracts makes it possible to act only as a broker. In case of a lawsuit however problems might arise since the accountability is actually not entirely settled (Messmer, intv. 2012).

Throughout Bavaria timber marketing by FVs is organized differently. In any case member cooperatives and forest owners maintain their marketing autonomy and are free to choose their customers. This is also the case if they are members of specialized marketing cooperatives like in.Silva. Some FVs market certain amounts of their member's timber by themselves which amounts for instance in the case of FV Upper Palatinate to about half of its members' harvested timber volume. In upper Swabia timber sales to major customers are handled through in.Silva. Deals with smaller, local saw mills are mostly arranged directly by the local cooperatives. Furthermore some member cooperatives of FV Swabia reject dealing with in.Silva altogether (Messmer, intv. 2012).

Timber mobilization in some cooperatives is facilitated by local forest wardens. These are mostly members of the cooperatives themselves and act as contact persons who acquire new harvestable timber from other members, measure and sort harvested timber and supervise timber transports. Sometimes they receive a commission, sometimes a fixed moderate salary (Messmer, intv. 2012).

FV Swabia is member of the specialized timber marketing cooperative in.Silva. In.Silva is a daughter company of FV Swabia's member cooperatives in the Allgäu and therefore it does not make sense for FV Swabia to market timber via other channels or even establish a competing organization. FV Swabia has a framework contract with in.Silva. This still allows state support for timber marketing, since the local district cooperatives that are eligible close the delivery contracts. The granting administration approves of this constellation because it serves the political goal (Messmer, intv. 2012).

FV Swabia is also involved in the cooperative sawmill "Waldsäge Fuchstal eG" (Messmer, intv. 2012).

Medium-sized customers, mostly sawmills, often appreciate the factory gate deliveries that the cooperatives can provide. Very large customers however show a tendency to rather boycott marketing cooperatives. Forest owner cooperatives basically regulate the conflicts of interests between forest owners and timber buyers. Forest owners are interested in maximum timber

revenues while the timber industry requires steady prices and reliable and cheap timber supply (Messmer, intv. 2012). Cooperatives have customer relations to both parties which is an operative challenge but also a unique selling point and competitive advantage.

Large timber buyers like UPM have their own initiatives to service private forests that have some similarities with the offers of cooperatives. UPM has a daughter company that buys stumpage but does not offer the full forest management package. It is specialized on thinning operations to mobilize pulp and energy assortments. Messmer understood that these operations usually obtain comparatively high pulp wood shares (Messmer, intv. 2012). Timber assortment structures serve as a price basis for stumpage fees and therefore this may place forest owners at a disadvantage. Since external service providers conduct harvests according to their own needs their operations do not necessarily maximize the forest owners' benefits for instance by maximum timber revenues from optimal assortments or considerations of forest health and nature conservation.

Messmer (intv. 2012) suspected that there might have been strategic marketing activities. It occurred that timber buyers had been offering timber prices above market level to gain market shares. It occurred that timber buyers used the autonomy that members of marketing cooperatives have to launch marketing campaigns, trying to limit the cooperatives' supply to gain price control (Messmer, intv. 2012).

Messmer (intv. 2012) identified members' satisfaction as the critical internal success factor for forest owner cooperatives. He explained that a lot of effort is put in the relations to members for instance by forest walks concerning silviculture and hunting and even excursions abroad. His impression was that economic incentives were not that decisive as long as break-even was reached and costs were covered. Surplus is often used to build up funds for investments or to cover payment default. Therefore forest owner cooperatives seek to be the first contact for forest owners in all forest related matters. Trust and transparency are decisive and a competitive advantage compared to other service providers and timber traders (Messmer, intv. 2012).

Efficient, reliable and transparent logistics and payment solutions as provided by marketing cooperatives like in.Silva are very important as well. The time it takes until harvested timber is transported from the forest and revenues are paid into the owner's account is a key issue for forest owners and offers much potential for cooperatives to create a competitive edge. Buying timber directly from the forest owner is an important step. Furthermore larger supply volumes often result in a higher number of customers which allows optimized transport distances and routing. Marketing cooperatives like in.Silva have been very successful in this. They also help address the main external success factor which is the mobilization and supply of timber, in a way that is effective and reliable both in terms of volume and price (Messmer, intv. 2012).

A.2.6 Austria

The private forest sector in Austria

Globalization and international concentration processes have markedly changed the structure of the forest industry in Austria. Today, fewer but larger sawmills have much more capacity than ever before. But the structures in forestry did not develop in a similar way. Nevertheless the Austrian forest sector recognized the need to evolve new structures that meet the demands of its globally active forest industries. Therefore forest owner cooperatives have assumed a key role in concentrating the timber supply from small private forests to improve their market position. In Austria even larger private forest owners have recognized the advantages of cooperation and either joined forest owner cooperatives or founded their own (Rauch 2007).

Private forests in Austria have high potential for the domestic timber supply. The Austrian forest owner association (Waldverband Österreich, 2009) outlines the main reasons for high timber stocks in private forests:

- A high number of private forest holdings are small and fragmented. 56 % of forest holdings are smaller than 5 ha. This leads to small harvestable volumes per property and infrequent forest management.
- Structural change with rising numbers and changing objectives of private forest owners.
- Lack of time and capacity for independent forest management by private forest owners combined with a low willingness to receive forest management from external service providers.
- Underestimation of the potential utilization of a particular holding and high number of forest holdings where timber is harvested for domestic consumption only (Waldverband Österreich, 2009).

Strategies for the development of forest owner cooperatives in Austria

In 1999 the Austrian forest owner association and the Austrian Chamber of Agriculture jointly developed strategies for cooperation among private forest owners to meet the challenge of increased concentration processes in the forest industry and protect the forest owners' income situation. These strategies included:

1. Horizontal cooperation between small forest owners and forest enterprises to ensure a good utilization rate of expensive forestry equipment, to improve the service quality and to increase timber supplies to the wood industry.
2. Vertical cooperation with the wood industry to implement new technologies and to gain cost cuts along the supply chain. Forest owner cooperatives mainly concentrate on customer-oriented timber supply. In this case vertical integration is limited to long-term contracts with wood buyers and contractor companies.
3. Additional services, such as the coordination of fully-mechanized harvesting technology and silvicultural measures in conjunction with the basic joint timber sales service. New services such as the provision of all-inclusive forest management contracts for absentee owners should be developed as well.

4. Forest owner cooperatives should be managed by full-time professionals to be able to continuously expand the service portfolio and raise timber sales volumes (Rauch 2007).

Since the year 2000 forest associations have been active on provincial level throughout the country. They operate in close coordination with the Chamber of Agriculture's consulting foresters. A network of local forest owner cooperatives with a growing membership base has developed into regional timber marketing units and complements the activities of the provincial forest associations (Waldverband Österreich, 2009).

Forest associations continuously improve the business processes in timber harvesting, logistics and marketing. They coordinate harvesting activities in their members' forests according to their customers' needs and have proven to be able to acquire higher timber volumes from private forests. The forest associations' joint timber marketing has developed dynamically in recent years. Since 2004 this development has been further promoted by new, successful acquisitions of harvestable timber and coordinated support in the event of calamities such as windthrows (Waldverband Österreich, 2009).

Concentration processes and capacity increases in the Austrian wood industry are a substantial logistical challenge. Industrial timber assortments in Austria are now purchased by a few organizations only. Even though timber markets are dominated by large companies small- and medium-sized sawmills remain very important for the local timber marketing activities of forest associations (Waldverband Österreich, 2009). Therefore it may be recommendable to involve forest owners and their cooperatives in smaller, local wood industries through joint ventures or the acquisition of shares. This could improve the economy and the timber supply of smaller sawmills and may promote that part of the industry that has such an important effect on forestry incomes and rural employment.

The Austrian forest owner association highlights a number of long-term trends that will affect the development of forest owner cooperatives:

- Transportation costs will generally continue to rise. This will lead to more regional processing activities for products with relatively high transportation costs. Globalization trends will mostly affect processed goods with high value-added.
- The highest potential for increased timber mobilization lies in organized, small private forests. They are the only option to significantly increase timber supplies.
- A secured local raw material base is going to be a decisive factor for a forest industry business location. If secure supplies cannot be ensured timber processing capacities will be moved towards easier accessible raw material sources.
- More and more forest owners live in urban environments. Forest management services need to be adapted to their needs and objectives and will meet increasing customer demand.

Furthermore they will become even more important to ensure a continuous raw material supply.

- Currently managed forests will be neglected in the future if they are not able to provide income from forestry (Waldverband Österreich, 2009).

Furthermore the Austrian forest owner association sets a number of long-term goals for the development of forest associations and their associated forest owner cooperatives:

- The increase of timber sales volumes has to be in accordance with the market situation. The quality of forest management services needs to be ensured and prioritized over the mere acquisition of additional timber.
- Currently about 37 % of small private forest holdings are organized in forest associations and forest owner cooperatives. Until 2020 it is the goal to involve half of all small private forest owners.
- Forest associations seek to supply their customers according to supply agreements. The sustainability of forestry as well the timber market situation and the members' individual income requirements receive high consideration.
- Forest associations are among the largest roundwood suppliers in Austria. Their supply seeks to be customer oriented and to reach customers of different capacities.
- The long term goal is to reduce the forest industry's timber imports through increased utilization of domestic timber stocks. This would strengthen Austria as a business location for the forest industry.
- The forest associations' core competencies should be further promoted. This mainly concerns the planning and implementation of harvesting activities and the coordination of logistics and timber marketing.
- To avoid long, environmentally deficient and inefficient transport distances the coordination of timber supplies seeks to minimize transport distances (Waldverband Österreich, 2009).

The Austrian forest owner association sets a number of objectives for the development of forest associations:

1. Enhanced internal cooperation. The cooperation of forest associations beyond provincial borders is planned to increase. So far it has been achieved to improve the efficiency of timber supply chains, organize submissions for high quality timber, establish brands for high quality timber assortments and fire wood and develop management concepts for small private forests. Country-wide uniform brands seek to create a competitive edge over imported timber and advertise special product quality. Since the Austrian forest industry cannot depend on domestic suppliers only, Austrian forest associations plan to cooperate and exchange knowledge with forest owner organization within the larger business region

such as Bavaria, Slovenia, Hungary, Slovakia and Czech Republic. Particular segments will be addressed with a product oriented branding policy.

2. Optimization of marketing structure. The establishment of regional timber marketing units that achieve relevant sizes and are managed by full-time professionals will be continued.
3. Enhanced cooperation with customers. Certain aspects are especially important for forest associations:
 - Timber transports in time.
 - Continuity and reliability in timber assortments. Timber quality assessment has to be oriented on the potential raw material use.
 - Fulfillment of contracts also in case of changing market situation, for instance in case of calamities.
 - Appointment conform payments.
 - Flexibility in accepted timber volumes in case of calamities to achieve faster market consolidation.
 - Payment insurances and bank guarantees.
 - Improved logistical administration process.
 - Short waiting times for timber deliveries.
 - Acceptance of timber mensuration from the forest.
 - Improved timber mensuration at the factory.
 - Possibility for long term timber supply agreements
 - Long- term contracts with silvicultural contractors and transport companies to optimize the utilization of equipment. While forest associations organize forest management activities and timber marketing there are machinery organizations for the provision of machinery.
4. Enhanced service provision. Forest associations and forest owner cooperatives cooperate closely with the Chambers of Agriculture to provide all forest management services according to their members' needs.
5. Business segment biomass to energy. Energy wood is a segment of increasing importance. Forest associations have been providing rural heating facilities with energy wood for a long time and successfully expanded their customer base to larger combined heat and power plants. Increasingly forest associations act as exclusive suppliers.
6. Forest protection and nature conservation. Forest association give high consideration to careful forest management operations by qualified silvicultural contractors, promote PEFC certification and seek to increasingly cooperate with environmental NGOs.
7. Research and development. Forest associations order and participate in research projects.
8. Education. Forest owner cooperatives offer education to their members. Events and advice in the forest that involve groups of owners are seen as the most effective measure. Forest associations seek to initiate new training programs for forest workers to maintain a sufficient, qualified and well paid work force.
9. Participation in the Ministry of Agriculture's action plan for the optimization of timber supplies (Waldverband Österreich, 2009).

The Austrian forest owner association outlines a number of measures in the forest associations' environment:

1. Transparency of timber reception and mensuration at factory gate. Important improvement would be photo-optical registration systems.
2. PEFC-certification. In the long run certification will become a market-entry requirement. Therefore forest associations already promote PEFC certification.
3. Cooperation forum for the forest and wood processing sector. Austria's forest owner association as the umbrella organization of the provincial forest associations is actively involved in this forum and the initiation of sector-wide working groups. Forest associations in cooperation with the Chambers of Agriculture are the pace makers of many projects for an improvement of timber supply chains.
4. Legal environment. The protection of ownership rights is the primary political task of forest associations (Waldverband Österreich, 2009).

The Austrian forest owner association highlights a number of benefits that forest associations and their associated forest owner cooperatives provide for their members and customers:

Benefits for members:

- Permanent control of timber measurements at the factory through documentation of transported timber volumes and IT-supported control of mensuration lists to avoid income losses.
- Up to date market information to ensure market conform behavior in case of changing market conditions.
- Qualified consulting in close cooperation with the Chambers of Agriculture's consulting foresters.
- More value-added. A concentration of timber supplies and market conform deliveries achieve improved timber prices. Members of forest associations are more active in forest management and the utilization of the income potential from their forests. Forest associations help them detect and realize these potentials.
- Coordinated crisis management in case of calamities. In emergency situations after calamities forest associations support their members to efficiently implement all necessary measures and significantly mitigate income losses.
- Secure payments. Forest associations check their customers' credit history and close payment default insurances. Their members are assured to receive their payments (Waldverband Österreich, 2009).

Benefits for timber buyers:

- Concentrated timber purchase. A concentration of timber supplies from small private holdings reduces the costs of timber acquisition. Joint settlement of accounts by forest associations saves administrative costs.

- Timber supply chain management. Timber buyers gain access to timber stocks that without the activities of forest associations would not reach the market.
- Reliable timber deliveries. Coordination of timber deliveries by forest associations ensures that contract agreements are met. The possibility for long- term agreements and supra-regional adjustments of deliveries improve the reliability of timber supplies.
- Information transfer. Forest associations can effectively distribute information to forest owners which allows flexible adjustment to the customers' needs.
- Efficient logistics. The forest associations' delivery network allows cost- efficient utilization and control of transport capacities (Waldverband Österreich, 2009).

A.2.7 Sweden

In Sweden there is a long tradition of cooperation among private forest owners. They have founded associations to improve their market position and receive higher timber prices. Thus cooperation has mainly focused on timber transactions and has a long and successful history (Kittredge, 2003).

In the 1930s large companies from the Swedish forest industry were aggressively purchasing small forest holdings from local farmers. A few large companies also dominated the timber markets. This encouraged cooperation among small private forest owners to improve their market position. These associations were initially relatively small and run by local farmers who managed their forests by themselves. With diversifying forest ownership Swedish forest owner associations developed as well. They have increased their economic effectiveness and gained a lot of influence on domestic and international markets (Kittredge, 2003). Forest owner associations in Sweden have consolidated their resources through merger of smaller and more local associations. This has led to the evolution of a few larger forest owner cooperatives out of many smaller organizations. While forest owner associations had been initiated to improve the forest owners' market position the larger organizations that emerged later have expanded their activities beyond timber marketing to their own wood processing industries to capture added value. They offer a variety of services to their members from joint purchases to timber marketing, forest management services, information, education and political representation. They employ their own staff but also hire external contractors (Kittredge, 2005).

In Sweden there are four regional forest owner associations with about 88,000 members. They operate as producer cooperatives and are owned and managed by their members (LRF, 2012). The members of all associations own more than six million ha of forest. About 44 % of all private forest owners in Sweden with holding sizes of more than five ha are member in an association. In 2002 about 28 % of all annual timber harvests were coming from the associations while they produced 12 % of the Swedish sawmill capacity and 40 % of the raw pulp capacity (LRF Skogsägarna, 2002 cited by Kittredge, 2003).

Each member of a Swedish forest owner association has one vote in his organization, irrespective of the size of his holding. The associations are divided into smaller districts of about 150 to 300 forest owners. Each of these districts has its own elected board or council and sends representatives to the

association's annual meeting where its board of directors and management are elected (Kittredge, 2003).

Forest owners invest in a capital share, usually depending on the size of their holding, to become member of an association. Otherwise there are no regular membership fees. Sometimes the share is based on a percentage of the property's assessed value. Shares do not have to be paid at once as there are also possibilities to realize them progressively. The share is fully refundable on withdrawal from the association. The member's capital share is an investment in the association and potentially grows in value, depending of the association's profitability. It is not based on an individual member's harvesting activity. As forest owners are shareholders in the industrial association they also share the industry's profits. In profitable years the associations may pay a dividend to members who harvested in that year. In some associations members can choose to either be paid their dividend directly or deposit it in a separate interest-bearing account on which they can draw for future expenses for harvest administration, planting or other forest management services (Kittredge, 2003).

The forest owner associations have district foresters who are responsible for forest management locally and who work with forest owners and silvicultural contractors. Their central administration is in charge of timber marketing, coordination of the supply chain from forest owners to timber buyers and overall administration. Forest owner associations employ from 50 to well over 300 people (Kittredge, 2003).

Associations were originally formed to competitively market timber from private forest owners and timber sales services remain their primary function today. They buy timber from members and even non-members, arrange harvests, haulage and coordinate timber transports to the mills. The associations' district foresters procure timber from forest owners and also arrange the harvesting and timber transports. While initially associations bought timber roadside from their members they nowadays mostly buy stumpage. However members can still sell timber roadside. Furthermore members are not obliged to sell timber to the association. With external timber buyers the associations have six- or 12-month contracts for specific timber volumes and grades. The association administers all transactions. It charges the forest owners silvicultural expenses paid to the contractor, administrative expenses for timber sales, possibly a contribution to realize the owner's capital share if obligations are not yet fulfilled and provides him with independent estimates of delivered timber volumes and the net revenues. The administrative fees for timber sales are generally based on cost per unit volume. Buyers may grant cooperatives bonuses for meeting contract obligations and thus associations may offer price incentives to member to provide logs at times of low supply. Additionally associations also provide forest management planning, silvicultural services and tax advice through their district foresters. Members are not obliged to receive forest management planning from the association's foresters (Kittredge, 2003).

All six major Swedish associations offer and promote PEFC-certification to their members. For marketing reasons they are very interested to achieve a high share of certified forest among their members and one association offers its member an incentive premium on certified timber (Kittredge, 2003).

Associations benefit economically from increased efficiency and economies of scale in timber marketing, bonuses for contract reliability and value-added from the operation of their own wood processing industries. The associations' members benefit from competitive timber prices while they maintain their marketing autonomy. They can receive full-service forestry and pay reduced prices for forestry supplies and education. Members may benefit from annual share growth and potential annual dividends to forest owners who sell timber. At the same time they pay no annual membership fees and stay flexible to withdraw from membership and take their capital share (Kittredge, 2003).

- **Södra**

Södra is the largest forest owner association in Sweden and its members own about half of the private forest area in Sweden. Södra's major strength is paper pulp production where it is one of the world's largest companies and the largest exporter. The other forest owner associations do not operate pulp mills but concentrate on sawmills that require smaller investments (Birchall, 2009).

The improvement of private forest owners' timber market position has been the driving force for cooperation among forest owners since the 1920s. Originally county-level associations were formed. They later started to merge and form larger associations increasing their geographic sphere of activity. In case of Södra as recently as 2007 two more provinces became part of the association (Södra, 2012).

During the Second World War Södra was an important contributor to Sweden's energy supply. When fuel demands after the war dropped as the availability of fossil fuels improved again Södra's management decided to invest into the pulp industry to improve the timber market and maintain the high raw material demand. From the late 1950s to the early 1970s Södra built three pulp mills. It reached international markets and established sales offices in a number of countries. Södra pursued an expansive policy and heavily invested in product development, especially concerning environmental innovation. In 2000 Södra bought wood processing operations in Norway (Södra, 2012).

During the major economic crisis during the late 1970s and early 1980s the Swedish government supported Södra by buying up over 40 % of the shares in Södra's industrial section. Later when the situation had stabilized again Södra redeemed these shares (Södra, 2012).

Södra is an economic association and democratically governed. In annual meetings members elect representatives for the central assembly and the board and get the opportunity to forward business related ideas and suggestions (Södra, 2012).

Södra's products include paper pulp, wood products and energy wood that are mainly sold on international markets. Södra's members supply the raw material at market price. They benefit economically because they collectively own the forest industry operations. Dividends to the members are based on the capital contributed through their shares and the timber delivered for the given year (Södra, 2012).

Södra's membership includes 36,000 forest properties and 51,000 members. It is very diverse and changing its structure with more and more absentee owners. The affiliated forest area in 2011 amounted to 2,373,000 ha. The timber that Södra's harvests for its members comprises about 13 % of the annual harvested volume in Sweden. During 2011, 25,395 members delivered 8.8 million m³ of wood to Södra with a total value of 4,245 million SEK. The average delivery per property amounted to 510 m³ with a value of 246,000 SEK. In 2011 Södra employed 3,830 people and achieved net revenue of 18,191 million SEK (Södra, 2012).

Furthermore Södra is also representing the interests of its members on political level (Södra, 2012).

Södra's business vision is to promote the economic profitability of its members' forests management through long-term growth by:

- Sales and processing of raw materials from the forest.
- Development and marketing of processed forest products.
- Pursuing an active industrial strategy.
- Provision of forest management services (Södra, 2012).

Södra's business strategy includes:

- International orientation of sales.
- Representation of members' interests both in their role as forest owners and raw material suppliers.
- Customer orientation, efficient industrial production and forest management.
- Productivity improvement based on the employees' suggestions
- Energy is gaining importance in many of Södra's business segments (Södra, 2012).

Södra is organized in four business units:

- Södra Skog for timber and forest management services
- Södra Timber for wood products
- Södra Cell for paper pulp
- Södra Interiör for interior wood products (Södra, 2012).

Södra Skog provides Södra's members with the full range of forest management services from silviculture to nature conservation. Södra Skog purchases timber mainly from members but also from external suppliers. This timber is mainly supplied to Södra's own processing operations. Södra Skog has about 550 employees and works with long-term contractors and modern machinery to ensure

high forest management standards and environmental consideration. Södra Skog is divided in 19 local forestry areas in Southern Sweden with its own local forest inspectors and network of reliable contractors (Södra, 2012).

Södra's timber procurement strategy leaves forest owners the choice to harvest timber on their own and sell it roadside to Södra or to sell stumpage. Timber purchased as stumpage is logged and transported within a strict time frame, enabling Södra to exactly plan and direct the wood supply to the mills. The timber prices that Södra pays vary with the harvest volumes and high handling costs of small volumes lead to lower prices. Södra owns only some forestry machinery and timber trucks to maintain a certain control over capacities and operating costs and to have a price reference for contract negotiations (Rauch 2007).

Södra Skog operates five subsidiary companies:

- A subsidiary AB trading in biofuels. It handles the group's total range of biofuels as well as external products.
- A subsidiary AB for tree nursery operations.
- A subsidiary AB for the loading and unloading of ships transporting Södra's goods.
- Subsidiaries in Estonia and Latvia to procure timber for Södra's wood industries.
- A subsidiary for the sale of equipment to forest owners and contractors (Södra, 2012).

Södra Timber operates eight sawmills in Southern Sweden and produces and sells sawn and planed wood products mainly for construction and housing. The domestic market is most important but it also exports overseas. Wood products are manufactured in high quality and according to the customers' instructions. Much emphasis is put on reliable deliveries, logistics and product development. All roundwood for Södra Timber is accredited by FSC and PEFC (Södra, 2012).

Södra Cell is a leading manufacturer of paper pulp and focuses on pulp alone. It does not manufacture paper products and thus only advanced through part of the paper production chain. Södra Cell operates customer oriented and offers them a range of additional value services. Since the pulp production process generates substantial energy electricity and district heating have become important business segments. Södra Cell strongly invests into product development and research for cellulose fibres (Södra, 2012).

Södra Interiör manufactures specialized wood products for interior use and markets its products through the construction trade. It operates at six locations in Sweden and three in Norway (Södra, 2012).

A.2.8 Finland

The private forest sector in Finland

Private forest ownership in Finland is characterized by rather small holdings (Saastamoinen & Pukkala, 2001). In 2001 there were over 900,000 private forest owners in Finland owning 62 % of the total forest area, 69 % of the growing stock and 72 % of the annual increment. The average size of a private forest holding was 26 ha (Lillandt, 2001).

Forestry and related sectors are important contributors to the national economy, employment and exports. Private forestry plays a key role in the domestic timber supply. It has many economic and social benefits to society and has substantial regional and rural impacts (Saastamoinen & Pukkala, 2001). Private forest ownership and forestry incomes have had considerable effects on rural livelihoods. Country-wide income opportunities from forests have resulted in a populated countryside. Many Finnish forest owners still live in sparsely populated rural areas but a large and growing proportion of the owners now live in urban areas and do not depend as much on income from forestry as in the past (Lillandt, 2001). As small-scale forestry has to fulfill both important economic and social functions in Finland it is not an easy policy task to achieve a compromise between the interests of private forest owners and the needs of the national economy (Saastamoinen & Pukkala, 2001).

Challenges to forest policy and small-scale forestry in Finland

Until 1997 Finland had a legislation that favored the sale of agricultural and forest land, which has contributed to a slightly imbalanced development of forest ownership (Saastamoinen & Pukkala, 2001). It resulted in an increase in the number of small and large forest holdings on the expense of medium-sized ones (Ripatti, 1999 cited by Saastamoinen & Pukkala, 2001). This development may become problematic for cooperation among private forest owners as medium sized holdings can provide the necessary cohesiveness for organizations that seek to address all forest owners. If laws that promote the consolidation of forest holdings achieve an imbalanced distribution of holding sizes this may negatively affect the social cohesion among private forest owners and consensus on common goals.

Finland has been facing a persistent dilemma to facilitate large-scale forest industries under the conditions of small-scale private forest ownership. This has always been the main focus of Finnish forest policies. They included four major policy packages:

5. Legal and other support to local forest management associations.
6. Regional control, extension, training and planning services for private forest owners.
7. Financial support for forestry measures that improve the forest condition.
8. National forest programs that seek to balance forest resources and the demand of the forest industry (Saastamoinen & Pukkala, 2001).

This task becomes more demanding due to the increasing number of forest owners, structural changes of ownership and decreasing dependency on income from the forest. At the same time the globalizing forest industry has been developing towards larger structures. This also brought an

increase of wood imports that increased competition on timber markets, impeded wood demand and lowered timber prices for private forest owners (Saastamoinen & Pukkala, 2001). More effective organizational structures in private forestry do not only enhance the availability and reliability of wood supply for the industry but also strengthen the market power and income situation of private forestry on increasingly international and concentrated timber markets.

The state and functioning of roundwood markets have been of major concern for Finnish private forestry in recent years. A problem for private owners has been the end of bilateral price agreements between the national association of forest owners and the forest industry association. EU and national competition laws in timber trade apparently favored large companies at the expense of smaller actors such as private forest owners, smaller silvicultural and transport companies and small- and medium-sized sawmills. Small forest owners were not too much affected by this development as they depend less on the income from timber sales than the forest industry on a stable wood supply. Likely the smaller actors in logging, transport and processing have been most affected which makes partnership relations desirable (Högnäs, 2000 cited by Saastamoinen & Pukkala, 2001). Concerning the power structure the larger companies of the Finnish forest sector have shown to negotiate with rather than opposing the smaller actors. Apparently small-scale forest owners have been able to exert some market power (Saastamoinen & Pukkala, 2001).

The Finnish National Forest Programme 2010 seeks to enhance employment in the wood energy sector, through the promotion of small- and medium-scale value-added wood processing and of entrepreneurship based on multiple forest uses (Saastamoinen & Pukkala, 2001). Employment tends to be higher in a sector with smaller and medium sized businesses and forest owner cooperatives can be a major contributor to a more decentralized and smaller structure of the wood industry.

Changing objectives of private forest owners have created a need to develop forest management planning in private forests from rule-based planning towards customer-oriented multi-criteria decision analysis. Furthermore planning needs to be developed from holding-level to an integration of regional landscape-scale considerations (Pukkala, 1997 cited by Saastamoinen & Pukkala, 2001). Therefore the major challenge is to develop owner- and forest-specific management instructions rather than base planning on external instructions. This requires changes in planning practices that acknowledge the owner's preferences by multi-objective planning and also address non-economic goals. Landscape level planning can improve the regularity of harvests and even-flow of timber as well as ecological management and consideration of habitat requirements. In private forests however landscape-level planning has to be integrated with conventional methods to coordinate forest management operations in a way that considers the landscape-level and the owners' interests at the same time. It has become a challenge to apply new needs for nature conservation and landscape planning to the institutional settings of small private forest ownership (Saastamoinen & Pukkala, 2001).

Forest certification is a challenge for small-scale forestry. The focus of PEFC has been the development of group certification of small private forest owners which has also been offered by

FFCS. Already in 2000, 90 % of the Finnish forest areas were certified (Saastamoinen & Pukkala, 2001).

Cooperative entrepreneurship and cooperation among private forest owners

In Finland cooperation helped develop the newly established market economy and became an important part of the country's history and its struggle for national independence. The foundations of the Finnish cooperative movement lie in rural areas. There, cooperation has played an important part in adapting the rural population and economy to the market economy and rapid industrialization. Cooperation was an integral part of all major structural and societal changes in Finland during its transition from an agrarian national economy into an industrial one and further on into a post-industrial welfare state. Cooperative enterprises often ensured that these often rapid changes took place in an economically and socially more controlled and sustainable way. The wide-ownership base and bottom-up network organization of democratic cooperation in Finland had a socially and economically stabilizing effect (Skurnik, 2002). Therefore the Finnish case demonstrates the potential of cooperative entrepreneurship for the sustainable development of the transition economies of former centrally planned economies.

In its early years cooperative entrepreneurship in Finland helped educate the population in democracy as cooperative members learned to work together, elect their own representatives and monitor their performance. Sector-based organizations like the Pellervo Society, education, information and training as well as a control system with statutes and model rules helped promoting cooperative development from the beginning. Through this system elected managers of cooperatives were trained which helped develop cooperative societies (Skurnik, 2002).

The general ideological motivation for cooperative entrepreneurship was in case of Finland supplemented by nationalism as a political motivation. Cooperatives were seen as a tool to enhance the Finnish population's economic control and thus strengthen its independence when Finland was still part of the Russian empire. Particularly in rural areas, where the majority of the Finnish population was living, economic progress was inhibited by poor access to credit, mainly caused by the small-scale of individual credit needs and asymmetric information which lead to a perception of high risk among lenders. Cooperative banking offered a solution to these problems as it addressed the problem of asymmetric information. However these initiatives had to rely on the state for important financial contributions (Kuusterä, no year cited by Skurnik & Vihriälä, 2012). Therefore, historically cooperatives in Finland served as a tool to mitigate asymmetric information and manage risks. They enabled the rural population to gain control over their own resources and develop their economic activities more independently.

Finnish cooperation has a long history and although society changed a lot over time and cooperation had to adapt too, the membership base of cooperative societies had been growing steadily (Skurnik, 2002). Today Finland has a very strong culture of cooperative entrepreneurship as almost 60 % of the population is member in at least one cooperative (Skurnik & Vihriälä, 2012). Cooperative societies have not only grown in number of members but also addressed new groups of people and expanded

their activities into new business areas (Skurnik, 2002). Finnish cooperatives typically have had strong management and relatively passive members. Nevertheless modern cooperatives need a governance structure that allows both management and members to be actively involved. Therefore Finnish cooperatives should seek to redesign their governance structures, consider supervisory boards and redesign the role and composition of the boards of directors to help maintain the power of governance in the hands of the members. A simple imitation of corporate structures may place cooperatives at a disadvantage. Instead they should create wider approaches and specialized strategies for entrepreneurship in the future (Tainio, no year cited by Skurnik & Vihriälä, 2012).

The Finnish economy has developed a bipolar structure shaped by the two competitive environments of the domestic and the international markets. This bipolar economic model in Finland is a distinctive mixed approach to capitalism succeeding the closed, regulatory economy. Finnish corporations are increasingly deriving turnover and profits from operations abroad and contribute less to the domestic employment. Their stronger orientation towards global markets increases risks and vulnerability towards external influences that are more difficult to assess and control. Cooperatives on the other hand have developed differently. While their share of the country's Gross Domestic Product decreased over the last decades their share of direct employment markedly increased during the same period. Cooperatives have exhibited a domestic orientation and risk-averse strategies and thus stabilized the domestic economy. The widespread membership in cooperative organizations facilitates social cohesion and stability (Skurnik & Egerstrom, 2007).

To adapt to high competition in the modern market environment farmer and forest owner cooperatives in Finland have pursued competitive advantages in niche markets in terms of product categories and geographical markets and focused on the development of value chains to become market leaders in their respective niches (Skurnik & Egerstrom, 2007).

In the early years of the Finnish independence the wood industry organized their timber procurement jointly. Wood processing plants coordinated distinct procurement areas and common timber price policies among themselves while the forest owners were lacking corresponding organizations to counterweight the wood industry's power on timber markets. As a result timber prices were extremely low and most benefits went to the wood industry. Therefore initiatives to organize forest owners by agricultural organizations started in the beginning of the 1920s. Initially one limited liability company was founded that practically worked in the cooperative system. It intended to act as a central umbrella organization, collaborating with local, independent subsidiary companies that would supply timber. However during the economic crisis of the 1930s the company collapsed, its subsidiaries split off and disintegrated. Another organization that evolved into today's Metsäliitto Cooperative was initiated right at this time when real stumpage prices had fallen very low. Forest owners started to sell their timber jointly for export which led to the foundation of a timber sales company, owned by the Central Association of Agricultural Producers (Pakkanen, 2012).

Forest Management Associations- a private forestry initiative and forest policy tool

Forestry in Finland has been based on family forestry since the beginning of the 20th century and has long tradition. Silvicultural advice and the cooperation between private forest owners in Finland have long tradition as well. Already in 1907 after the Finnish independence the first Forest Management Associations (FMAs) were founded. Especially in the 1930s many more of them were founded and in the 1940s there were already about 300. At the beginning of 2001 there were 206 FMAs with a membership of almost 330,000 estates. Forest holdings smaller than 5 ha are not legally required to join a FMA (Lillandt, 2001). Today 136 local Forest Management Associations are governed and financed by their 330,000 members and provide them with practical advice, different services and attorney wood sales. As FMAs are controlled by forest owners they can almost be considered cooperatives even though legally they are not (CEPF, 2008).

In 1950 the Forest Management Association Act was passed and addressed key issues such as financing of their operations in order to make training and advice available to every forest owner. In 1999 an updated Act on forest management associations was passed. Advisory and extension services have been basic tools for the promotion of active forest management and motivated forest owners to set-up and join associations (Lillandt, 2001).

FMAs have a democratically chosen administration. They have been established and are financed and administered by the forest owners themselves. According to the Act of Forest Management Associations every forest owner pays a forest management fee and automatically becomes member of the local FMA where the forest holding is located. Otherwise membership is free of charge. Around 20 % of the FMAs' turnover comes from forest management fees while the rest comes from the provision of services. Forest owners can decide to quit membership in a FMA. In that case they still have to pay the forest management fee but do not have a vote in the association's elections anymore. The Council is the highest authority in the association and all members of association have equal opportunity to nominate candidates and elect its members by absentee voting (Lillandt, 2001). 9 Regional Forest Owners' Unions guide and develop FMAs in their activities, guide and assist the marketing of forest products and represent forest owners politically on regional level. These Unions are regional central organs of the local FMAs and financed primarily by membership fees paid by the FMAs. Furthermore the regional Unions are members of MTK, the Central Union of Agricultural Producers and Forest Owners that represents Finnish forest owners politically through its national Forestry Council (CEPF, 2008). MTK guides the activities of Regional Unions of FMAs, protects the interest of the local FMAs and develops cooperation between forest owners (Lillandt, 2001).

FMAs cooperate closely with private forest owners in all forest related matters. FMAs offer training, advice, professional forestry assistance and help with timber sales. FMAs do most of the planning and implementation of forestry measures, timber sales planning and help in actual transactions. About 80-90 % of timber production activities in private forests and 70 % of the preliminary planning of timber sales are carried out by FMAs. Furthermore forest owners can grant FMAs the power of attorney in wood sales and deliveries. Changes among forest owners and their decreasing ability and willingness to perform forest management themselves have increased the FMAs power of attorney in forest management and timber sales. Around 40 % of timber sales from private forests are based on attorney sales (Lillandt, 2001).

Lillandt (2001) describes stages of the decision-making process for operations involving FMAs:

- The forest owner decides on a forest management operation.
- The FMA provides advice and services to help the owner plan the operation.
- Operations are based on plans prepared by the FMA.
- The FMA often executes operations or supervises contractors on the owner's behalf (Lillandt, 2001).

FMAs are important to provide work and income in rural areas. They employ about 1600 forestry professionals, including 600 forest workers. They also promote forest management activities that forest owners can do by themselves (Lillandt, 2001). However it has recently been discussed if obligatory fees that forest management associations in Finland receive from forest owners distort the market for forest management services and inhibit the development of private service providers (Kolström & Harstela, 2005 cited by Niskanen et al., 2007b).

The consolidation and globalization of the forest industry can lead to imbalances in timber markets. The three leading forestry companies in Finland, among them Metsäliitto and UPM-Kymmene, buy more than 80 % of their wood from private forests. In pulpwood this share is even 98 %. In the sawlog market there is more competition as there is a high number of small- and medium-sized sawmills. However the three largest companies control 70 % of the sawmilling capacity through integration. Therefore private forest owners need to have sufficient knowledge on timber markets and benefit greatly from the help of FMAs in timber sales. FMAs also seek to improve timber marketing from private forests through new roundwood pricing methods, information systems and e-commerce solutions (Lillandt, 2001). Therefore it can be assumed that under similar market conditions the participation of private forest owners in wood processing in the form of joint ventures could enhance the diversity of the saw log markets and significantly improve the market position and timber prices for forest owners.

Almost all FMAs have started quality and environmental management systems to control their operations. 95 % of forests in Finland are certified under the FFCS umbrella. FFCS was endorsed by PEFC which was developed for small-scale forestry and respects democratic procedures. The Finnish certification system is based on regional group certification. The regional Union of FMAs applies for certification for the area of the FMA. The certification group includes forest owners, relevant organizations and other parties operating within the FMA's boundaries. Participation to certification is voluntary for everyone (Lillandt, 2001).

Because of the crucial role of private forestry in Finland the government has sought to influence the forest management decisions of private forest owners. In consequence the FMAs' activities were legally regulated and they were supported to provide training and advice to forest owners. This had been a cornerstone of the whole forest sector's development. Changes in forest ownership structure have created a risk in neglect of active forest management and decreasing wood supply. Therefore

FMA's have to evolve their traditional structure and activities into a more market oriented approach. New and better services need to be offered to address the changing and diverse interests of forest owners. They need to merge into larger and more effective units, which is on the way as the number of FMA's had already been reduced from around 300 to around 200 by 2001 and was planned to further decrease to 100 by 2005. Also the number of Regional Units was planned to decrease from 14 to 5 by 2005. Furthermore the transfer of information has to be improved through better uptake of information technology (Lillandt, 2001).

Economic incentives are the basis for private forest policy as it is assumed that only monetary profits can motivate active forest management (Lillandt, 2001).

Just like the whole Finnish national economy, forestry and forest industries have been undergoing a transition and liberalization towards increased globalization since 1995. The socio-economic environment of private forest owners have changed substantially. FMA's are still important to promote the economic viability of private forestry. With increasing urbanization and globalization the role of FMA's might even increase (Lillandt, 2001).

- ***Metsäliitto Cooperative***

Metsäliitto Cooperative is by turnover the biggest forest owner cooperative in Europe with over 130,000 members. The group operates in 30 countries. Metsäliitto Cooperative's main task is to refine the members' timber to capture added value and increase their capital. It seeks to be one of the world's biggest companies within its sector and profitable as a market leader within specific product areas in Europe (CEPF, 2008).

Metsäliitto Cooperative today is owned by its approximately 125,000 members who own about half of all private forests in Finland. Private forest owners or private organization can become member if they own at least 3 ha of forest in Finland (Metsä Group, 2012).

Metsäliitto Cooperative's seeks to procure market and process wood at its own facilities to enhance its members' assets. Furthermore it provides its members with forest management services, assistance with timber sales and investment opportunities in different additional shares. Additionally to their obligatory members' capital share members can purchase different additional shares on both of which the cooperative pays interest according to annual decisions by the Representative council. The members' obligatory capital share is determined by the size and location of the forest holding. (Metsä Group, 2012).

A member may invest assets received from timber sales with Metsäliitto or share interest paid by Metsäliitto in A additional shares. The subscription is made in connection with the recording of timber sales. When using share interest, subscription takes place by notifying Metsäliitto's contact person. A member may invest in Metsäliitto's B additional shares without restrictions. The investment does not have a minimum or maximum amount. C additional shares may be subscribed for by all members of Metsäliitto Cooperative whose members' capital share is paid up and who have

subscribed for A or B additional shares or who subscribe for new A or B additional shares within the subscription period (Metsä Group, 2012).

Metsäliitto Cooperative is the parent company of Metsä Group. Metsäliitto Cooperative's administrative structure consists of the Representative Council, the Supervisory Board, the Board of Directors and the CEO. Currently Metsäliitto Cooperative's CEO is President of Metsä Group at the same time. Metsä Group's executive management is chaired by the president and CEO and assists him in business planning. It prepares proposals to the Board of Directors (Metsä Group, 2012).

The Representative Council is the highest decision-making body of the cooperative and consists of democratically elected members, giving forest owners the control. The council is comparable to the shareholder meeting of a limited liability company. It decides on financial affairs like the financial statement and the distribution of profits to members, controls the other administrative bodies and elects the Supervisory Board. A minority of the members in the Supervisory Board are elected by the cooperative's staff as well. The supervisory Board supervises corporate governance and ensures that the cooperative is managed in accordance with the member's interests and the decisions of the Representative Council (Metsä Group, 2012).

Metsäliitto Cooperative's Board of Directors ensures compliance with corporate governance and makes strategic management decisions. Operational management decisions lie with the acting management. The Board of directors consists of democratically elected members of the cooperative as well as its president and CEO. The Board of directors ensures that management decisions comply with the decisions of the Representative Council and the Supervisory Board. It monitors the CEO, appoints the management and decides on their remuneration, approves and supervises the strategy and the annual budget of the cooperative and the group, reports to the Supervisory Board, decides on business operations and their sale, merger and acquisition, strategic and unusual management decisions for the cooperative. The cooperative's rules recommend not electing the CEO as chairman of the Board of Directors (Metsä Group, 2012).

Metsäliitto Cooperative developed from its original role as a roundwood exporter to a forest industry group with operations in Europe and product markets worldwide. Streamlining of the company's structure over several years has made the companies within Metsäliitto Group major players in the forest industry in Europe and beyond (Vaajoki, 1999).

According to Vaajoki (no year, cited by Skurnik & Vihriälä, 2012) Metsäliitto Cooperative had been restructured in a relatively short time from a roundwood exporter to a diversified, yet focused, industrial conglomerate with operations in Europe and international markets for a range of products. During the 1990s the structure of Metsäliitto Group had been streamlined and the market position of the companies within the group has been strengthened in specific business segments. The forest industry is consolidating rapidly which puts Metsäliitto under existential competitive pressure. In this process Metsäliitto seeks to develop its competitive advantage in being a major forest industry company owned and controlled by forest owners (Vaajoki, no year cited by Skurnik & Vihriälä, 2012).

When Metsäliitto was established it bought and sold timber from the forest owners to enhance their marketing control. Later it sought to participate in the forest industry, partly to give forest owners a better information base on the industry's cost structure. Today Metsäliitto cooperative is involved timber supply, logistics, wood processing, manufacturing and marketing of end products globally. Metsäliitto's business idea is to integrate procurement, transportation, processing and marketing of forest products starting from the forest owners' supply side to the customers. Therefore Metsäliitto has two main fields of activity. One is to procure and market competitively its members' wood to the industry, the other is to run a holding to actively participate in developing the forest industry to improve its members' economic situation (Vaajoki, 1999).

Metsäliitto Cooperative's roots lie in the cooperative movement in Finland around the beginning of the 20th century. Back then forest owners started to cooperate to achieve a stronger market position for timber sales. With higher timber revenues they could improve forest management practices to the benefit of the forest resource. Cooperation among forest owners resulted in a sufficient and stable supply of good quality timber and thus promoted the development of the forest industry (Metsä Group, 2012).

In the beginning of the 1930s regional initiatives for joint timber sales in the South-West of Finland led to the foundation of Metsäliitto Oy to coordinate the export of timber to Central Europe. Succeeding Metsäliitto Oy in 1947 Metsäliitto Cooperative was founded. It sought to increase its membership base among forest owners to increase its timber sales volume. Already at the end of its first year the cooperative had 33,000 members with a forest area of 1.7 million ha (Metsä Group, 2012).

Metsäliitto Cooperative entered the wood processing industry through acquisition of sawmills in the late 1940s, shortly after it had become a cooperative (Metsä Group, 2012). In 1952 the purchase of its first plywood mill followed (Vaajoki, 1999). This improved the company's added value compared to its former focus on roundwood sales and improved the marketing conditions for its members as other forest industries in Finland preferred to source their timber from forest owners who were not members of cooperatives. Operations expanded to the chemical forest industry in the 1950s with the foundation of Metsäliiton Selluloosa Oy. This new company was financed through shares and a marketing campaign encouraged forest owners to invest and quickly acquire the shares. From the 1960s to 1980s the Finnish forest industry grew and became more international. Metsäliitto Cooperative played a key role in this development. Mergers and new company foundations led to the expansion of both mechanical and chemical wood processing operations (Metsä Group, 2012).

In 1986 Metsäliitto founded a merger with the family owned pulp and paper company Serlachius. At that point the public company Metsä-Serla was established in which initially Metsäliitto did not have a majority ownership position. Later a joint venture pulp producer was founded together with UPM-Kymmene, another major Finnish forestry company (Vaajoki, 1999).

Historically, both the high demand for fuelwood during the Second World War as well as the post-war construction boom might have positively affected the economic development of Finnish forest

owner organizations and vertical integration of wood processing operations. Via purchases Metsäliitto integrated first mechanical and then chemical wood processing. Thus the forest owner cooperative Metsäliitto developed through the acquisition of wood processing operations, shares and voting rights, mergers and joint ventures with existing industries into a vertically integrated industrial conglomerate.

Metsä Group

In 1992 Metsäliitto Group was founded including Metsäliitto Cooperative, Metsä Board, Metsä Fibre and Metsä Wood. After its foundation Metsäliitto Group expanded strongly through major investments in Finland but also aimed at foreign markets, growing into an international forest industry group. This development started in 1996 with the acquisition of pulp mills in Germany in alliance with another Finnish company and continued with newly established operations in several European countries (Metsä Group, 2012).

In 1990 a major restructuring program started and the panel producer Finnforest was founded. At first it was part of Metsä-Serla and later spun-off into a separate company owned by Metsäliitto. In 1992 the Metsäliitto Group was formed. The Metsäliitto cooperative acquired the majority of the voting rights of Metsä-Serla and thus consolidated it into the Metsäliitto Group. In 1995 a similar process to the foundation of Finnforest in the panel business took place in sawmilling as the sawmill operations of Metsä-Serla were taken over by a separate, Metsäliitto-owned company, Metsä Timber. In this restructuring process Metsä-Serla became one of the few clearly focused large forest industry companies as it concentrated on pulp, paper and paperboard and separated from panel products and sawn timber (Vaajoki, 1999).

The Metsäliitto Group in 1999 was divided into two groups. One of those is Metsä-Serla, a Paper, Paperboard and Pulp Industry Group which is a public company in which the cooperative Metsäliitto holds 64 % of the voting rights and almost 40 % of all shares. The other group is active in the building products industry and comprises the panel producer Finnforest and the sawmill operation Metsä Timber which are both almost exclusively owned by Metsäliitto cooperative (Vaajoki, 1999).

A major part of the assets of Metsäliitto Group is in the pulp, paper and paperboard company Metsä-Serla. The rest of the assets are bound in Metsäliitto cooperative through shares of companies within the group and to equal parts in Finnforest and Metsä Timber. A majority of operating profits came from the pulp and paper sector (Vaajoki, 1999).

In 1999 about 60 % of the timber volume delivered by the forest owners went to the pulp, paper and paperboard industry while 40 % went to the sawn timber and panel industry. Stumpage prices are very important for forest owners' income. The price of saw logs is much higher than that of pulpwood and thus 44 % of the stumpage income came from logs for sawn timber and panel production, only 45 % of the stumpage income came directly from the pulp, paper and paperboard business and 11 % came from wood chips that were a by-product of the sawmilling and panel production and used as raw material for pulp and paper production (Vaajoki, 1999).

Metsä Timber is one of Europe's major sawmill operators. Following Metsä Timber's consolidation into an independent company a restructuring program has substantially improved operational efficiency. Metsä Timber's markets are worldwide but it concentrates mainly on Europe (Vaajoki, 1999).

Finnforest produces plywood, LVL and particleboard products but the biggest part of its operation is in product marketing. Its main strategy has been to wholesale panel products to be more able to make informed investments decisions and expand its own business in Finland. Finnforest's production facilities are located all over Finland and its merchant subsidiary Interpan is a large panel product distributor active all over Europe (Vaajoki, 1999).

The public company Metsä-Serla is the biggest and most complex part of the Metsäliitto Group. Intense competition has resulted in extensive restructuring programmes that have changed the company's operations and profile. While Metsä-Serla's manufacturing operations were previously located in Finland they later expanded to central Europe as well to be able as a local operator to better service and keep in touch with customers. In 1999 more than half of Metsä-Serla's 16,000 employees were employed abroad and correspondingly around half of the production capacity was located and half of the turnover was generated outside Finland. Since customer service and market shares are key elements of Metsä-Serla's marketing strategy it was important to move closer to the customers. As Finnish raw material resources were becoming limited further expansion in Finland did not seem an attractive strategy anymore (Vaajoki, 1999). This could of course hold some potential for an expansion of Finnish business ventures in the Baltic countries that could possibly include and promote cooperative business approaches as well and allow the participation of local forest owners.

Metsä-Serla concentrates on the printing and packaging business while it buys pulp produced in joint ventures with UPM-Kymmene. Furthermore Metsä-Serla has spun-off its tissue operations into a public company in which it holds a controlling interest which has made new capital available to further expand in Europe. In paper Metsä-Serla has formed an alliance with a Finnish family owned company that includes a worldwide joint sales network. Acquisitions, internal growth and strategic alliances in the paper business led to rapid growth and high market shares. Metsä-Serla has also invested and made acquisitions in Finland and abroad, building and modernizing paper mills. Metsä-Serla's restructuring process has led to both acquisitions and divestments that focused optimization on business segments and company structures rather than turnover and sales only. This has resulted in rapid growth, increased profitability and higher competitiveness. In spite of all these changes Metsä-Serla maintained a balanced equity ratio and good liquidity which gives it the flexibility to participate in the ongoing consolidation process of the forest industry (Vaajoki, 1999).

The group's growth outside Finland was a new challenge for wood procurement. Therefore Metsäliitto Cooperative acquired a wood procurement company specialized on Russia and the Baltic countries and later merged it with its own procurement operations in Finland. The resulting company was divided into four geographical areas: Finland, Russia, Baltic countries and Western Europe. However the majority of timber procured by Metsäliitto Cooperative's wood products industry is purchased from members of Metsäliitto Cooperative in Finland (Metsä Group, 2012).

After the turn of the century the group continued to undergo major restructuring processes through sales, mergers and acquisitions to create a more unified group structure and concentrate its activities on selected business segments. Unprofitable operations outside the group's core business segments were divested, including single production units as well as investments in wood industries, wood procurement companies and forest holdings in Finland and abroad. Interestingly enough this process included the merger of a former subsidiary with Metsäliitto Cooperative to simplify the group's structure, creating Metsä Wood as its core business (Metsä Group, 2012).

However the group did not only divest and cut back its activities but also invested in new operations particularly abroad. Apart from major investments throughout Europe one of the groups companies that is jointly owned with a major international pulp and paper company set up a large pulp mill in Uruguay. Later this was sold completely to the other corporation. In the beginning of 2010 the group also established a separate business line in wood energy as part of its wood supply operations. Finally, in 2012, Metsäliitto Group changes its name and corporate image into Metsä Group, marking the final stage of the development into a unified and competitive forest industry group. The result of this restructuring process are new functions and ownership arrangements in a group that focuses its core business segments on wood products, pulp, board, tissue and cooking papers, and wood supply and forest services. Metsäliitto Cooperative as the group's parent company remains of course a cooperative (Metsä Group, 2012).

Today, Metsä Group focuses on its core business segments through five separate companies, Metsä Tissue, for special papers, Metsä Board for boards, Metsä Fibre for pulp, Metsä Wood for wood products and Metsä Forest for wood supply and forestry services. Furthermore Metsä Group's purchasing services the other companies of the group. It employs about 12,500 people and operates in about 30 countries (Metsä Group, 2012).

Metsä Group is active in research and development to enhance and diversify their product portfolio and become more efficient in the utilization of timber (Metsä Group, 2012).

Metsä Group sees a unique competitive advantage in its ownership base and business structure which also results in a long-term orientation of its operations. Metsäliitto cooperative's membership base own significant forest resources which provides Metsä Group with a stable and long-term raw material basis for developing its operations (Metsä Group, 2012).

The forest industry is consolidating rapidly. It is a major challenge for any forest product company to maintain its position in the industry. This creates a need for permanent structural change and increase in internal efficiency (Vaajoki, 1999).

A.2.9 USA

Examples and ideas of cooperation among private landowners in the USA

The success of forest owner cooperatives in the USA has been very limited. The wide diversity of ownership objectives and a tendency for a very active forest land market combined with a strong sense of independence among private forest owners have been very problematic for cooperation

among non-industrial private forest owners (Rickenbach et al., 2005 cited by Niskanen et al., 2007b). Nevertheless there are interesting initiatives that differ substantially from traditional approaches to cooperation among private forest owners and that hold potential for application elsewhere.

Previous efforts to establish forestry cooperatives in the US had mixed results (Dempsey, 1967; Rickenbach, 2006b cited by Blinn et al., 2007). The first cooperatives from the 1900s were quite diverse. This first wave of cooperatives failed because of lack of member support, capital, business volume and management skills (Dempsey & Markeson, 1969 cited by Blinn et al., 2007). Today a second wave of cooperatives is occurring that involves forest owners, consultants, wood processors and others to create economic benefits for members and at the same time improve common welfare in ecologic and social respect (Nadeau et al., 2002 cited by Blinn et al., 2007). Thus forestry cooperatives re-emerge in response to growing interests in sustainable forest management, including certification, and in increased profit opportunities from timber processing (Blinn et al., 2007). Nonbinding and low-commitment strategies of cooperation are being developed as hybrids of partnerships. They address quality control and management efficiency as well as leadership, organization and management infrastructure. Forest owners today seem to be willing to surrender some control for trusted advice and affordable services (Hull & Ashton, 2008).

Different strategies of cooperation beyond traditional management approaches

Hull & Ashton (2008) portray four forestry cooperatives from the US that illustrate different strategies of cooperation beyond the traditional wood supply chain. Their different cooperative strategies involve forest owners, forestry professionals, silvicultural contractors, wood processing enterprises and markets (Hull & Ashton, 2008).

ASD is a nonprofit organization that runs an organic food cooperative and a forestry cooperative. ASD has set forest management standards similar to FSC standards. A consulting forester develops a forest management plan for forest owners according to their objectives but adhering to ASD standards. This plan is paid for not by the forest owner but by ASD. ASD pays a premium for stumpage harvested according to a forest management plan that adheres to ASD standards. This is intended to compensate forest owners and loggers for lower volumes and more demanding management practices that result from the higher standards. ASD arranges harvests through detailed contracts with local silvicultural contractors. Owners can still sell their forest products without the involvement of ASD but in that case they pay a nominal fee for the forest management plan. The forest management plan and the stumpage premium are financed by profits from direct purchase of logs, local processing, products from traditionally lower value species and a premium for ASD's own product label. ASD's receives help from a marketing specialist to sell their wood products to wood manufacturers. ASD markets its services to landowners via personal recommendations, free education and recreation activities, advice, literature and media (Hull & Ashton, 2008).

BRFC is a profit oriented producer cooperative that provides its members with forest management advice, low-impact-harvesting as well as processing and marketing of value-added forest products. The cooperative's board of directors has decided on a self-imposed minimum capitalization to ensure

BRFC's viability. However it has not been reached yet. Participation in the cooperative is possible as member or just as an investor. The cooperative recruits them through personal recommendations, educational programs, community meetings and local press. Investors purchase preferred stock. They receive a dividend and are refunded first should the cooperative fail. Investors are members, environmental groups and investors with social considerations. Members need to be residents of the local state, commit a minimum forest area, purchase a minimum of common stock, pay an annual membership fee and pay for an FSC certified forest management plan and a fee for supervision of harvest operations. BRFC is pursuing FSC group certification which will reduce associated costs. Forest management plans are paid for by the owners as well but therefore reflect their individual goals. Each member has one vote on the company's policy. Members receive profits proportional to sales generated on their behalf. They must patronize the cooperative for harvesting and timber sales. The foundation of BRFC's clients and infrastructure lies with a separate, forest products harvesting, processing and marketing company that is run by BRFC's director. BRFC has an advisory board, providing advice from agency, industry and capacity building sources. The cooperative receives financial support from local forest resource centers and active support from a foundation to develop a legally required business prospectus. BRFC has intentionally pursued private investors rather than public support to put the cooperative to the test for economic viability. BRFC intends to use profits from timber processing to finance low-impact-harvesting, stand improvement and restorative forestry that is interesting to its members and may improve long-term profitability (Hull & Ashton, 2008).

CFP was founded by The Nature Conservancy. The initial idea was to create a for-profit Forest Bank in which forest owners would deposit their harvesting rights in exchange for an annual payment. The bank was to be funded by profits from harvests and forest management would consider environmental goals set by The Nature Conservancy. Legal requirements resulted in high bureaucracy and limited contract flexibility for the bank. Therefore the Forest Bank was reorganized through conventional easements and CFP was created. The annuity to landowners is guaranteed to never decrease. It reflects the value of standing timber and is revalued every ten years or after a harvest. CFP contracts a forestry consulting firm to develop FSC-certified management plans. The forest owner only receives the annuity when all management activities adhere to this plan. Management costs as well as the risks of forest damage and price variation lie with CFP. CFP receives tax advantages granted to conservation easements. CFP was by the time of the study not recruiting new members in spite of continued interest. However it was still lacking part of the estimated membership area needed to achieve returns high enough to meet annuity obligations. CFP received a private grant for its initiation while The Nature Conservancy funds staff and administration (Hull & Ashton, 2008).

MWC is a limited liability company that operates like a traditional cooperative. Each member has one vote and profits are proportional to patronage. MWC founded a non-profit sister organization that receives contribution like foundation grants. During a five-year initiation phase a steering committee conducted market research on forest owners' interests, product design and placement, developed a marketing strategy and a business plan, pursued FSC certification and applied for grant money. They

also worked in the fields of added value, partnerships with local contractors and a database for management and inventory. Initial grants were provided by the US Forest Service and local foundations. Further working capital grants came from the United States Department of Agriculture. FSC principles were important as the members' shared values. Since existing certification offers did not suit MWC's needs FSC helped it to create MWC's own group certification helped by a private foundation's grant. FSC is making this scheme more widely available. Under this scheme the cooperative itself is certified, approves members' management plans and monitors compliance. Thus certification costs are lower and members are not obliged to work with a few certified consulting foresters. Furthermore MWC has chain of custody certification. Members give MWC first right of refusal to timber sales. The cooperative offers above market value bids for low to mid quality timber, as it can add value to these assortments through local processing. High value timber is sold through conventional bids or contracts as the cooperative is less competitive in conventional timber markets. The cooperative's finished wood products are sold to local customers and revenues from timber processing cover MWC's overhead. Landowners pay a fee upon joining the cooperative of which they receive 80 % back if they leave. They also pay an annual membership fee (Hull & Ashton, 2008).

BRFC and MWC encourage members to independently hire a forester to develop a management plan for them. However the cooperative expects access to timber according to the plan that forest owners finally submit. BRFC members do not retain their timber marketing autonomy while those of MWC do and generally pay higher administrative costs, partly because it is not as subsidized as MWC. CFP membership comes with a substantial loss in property rights as forest management decisions are turned over to the organizations and land use becomes restricted. With ASD the only commitment is a nominal fee for the forest management plan if members decide not to market their timber through the organization. The management of all four cooperatives gave high consideration to the needs of their members (Hull & Ashton, 2008). Apparently most members were willing to trade some autonomy and income for affordable and reliable management with special consideration of reduced risks and the environment (Kendra & Hull, 2005 cited by Hull & Ashton, 2008).

BRFC, MWC and ASD capture added value through handling, processing and marketing of forest products. However vertical integration adds management complexity. Conceptual extremes of integrating value-added activities may consist of the cooperative managing the whole supply chain all by itself or contracting parts out. ASD has adopted a hybrid strategy. Timber harvesting and transport are contracted out. A sawmill is owned by ASD. Sorting and grading of logs are done by ASD's mill manager. The sawyer however is contracted too and paid by volume sawn. ASD dries the wood, which is then further processed by a contracted mill and delivered back to ASD or its clients. ASD handles the logistics of processed timber. The advantage of this strategy is that ASD does not have to provide all necessary staff and capital for all steps of timber processing. Furthermore ASD does not have to provide the full volume needed to support its facilities as the contracted sawyer accepts timber from other customers as well. Then ASD retains flexibility to contract with other millers and its supply chain is not dependent on one mill. Thus ASD's capital, staff and expertise are spread over various functions (Hull & Ashton, 2008).

To acquire the necessary capitalization CFP, ASD and MWC receive public and private grants for initiation. They use external support to build necessary infrastructure that allows the companies to sustain themselves from their own profits. BRFC at first intentionally minimized subsidy to become more independent and approached private investors. However it has to reconsider this strategy to meet subsequent capital needs. Small forestry enterprises that integrate product processing face cash flow challenges because of the time lapse between harvests and sales, during which timber price, harvesting and processing have to be covered. The cooperatives have reacted to this by building more inventory and processing capacity. ASD sought to increase its cash flow through a low interest loan to purchase more standing timber and build another kiln for drying. CFP reacts to these challenges by contracting operations out. However this is more feasible and attractive for larger properties than for smaller (Hull & Ashton, 2008).

To address market development as one key success factor of cooperation, BRFC, MWC and ASD are active in niche markets for certified sustainable, local, character wood products. MWC took high efforts in market research, building and campaigning. ASD hired a marketing specialist to promote its products and acquire customers that were willing to pay a premium (Hull & Ashton, 2008).

MWC has the most advanced management infrastructure. With the help of grants and volunteer aid it developed its own inventory system (Hull & Ashton, 2008).

- ***The American Tree Farm System***

ATFS (American Tree Farm System) is a program by the American Forest Foundation and has for more than 70 years promoted environmental certification among family forest owners in the US (ATFS, 2012). It has been organized by the American Forest and Paper Association. About 65,000 private forest owners with almost 10.5 million ha of forest land are enrolled. The American Tree Farm System requires a management plan and periodic inspection of the enrolled forest land (American Tree Farm System 2001 cited by Kittredge, 2005). The benefits are information and education (Kittredge, 2005).

ATFS is a network for the promotion of environmental values in forest management. Its administration relies on voluntary committees on state and local level, governmental agencies, ATFS inspectors and forestry consultants, natural resource professionals and the forest industry. It receives public and private grants and donations. ATFS is governed by an elected committee that determines the strategic orientation and the initiatives within the scheme. It includes forest owners and representatives from forestry associations and the forest industry, state foresters, sponsors and volunteers from state-level committees (ATFS, 2012).

ATFS relies on more than 4,400 volunteer ATFS Tree Farm Inspectors who are foresters or natural resource professionals who provide consulting to forest owners. Volunteer Tree Farm Inspectors are private forestry consultants, public agency foresters or industry foresters. For private forest consultants their engagement helps them to reach new clients. Furthermore ATFS provides their clients with a cost-free access to forest certification. For industry foresters engagement in ATFS may help them acquire certified timber from non-industrial private forests (ATFS, 2012).

Participants in the ATFS must own a low minimum forest area, adhere to a forest management plan and fulfill the American Forest Foundation's forest certification standards, which is audited by an ATFS forester. The management plan has to consider environmental values as well as forest protection (ATFS, 2012).

The benefits that ATFS provides its participants consist of networking, information and education. ATFS provides information material that includes templates for forest management plans, local contacts to public and private forestry consultants, certification standards for the ATFS certification program and guidance for their practical implementation. ATFS's own certification scheme includes three different certification options to better address the individual needs of private forest owners. Furthermore ATFS provides online seminars on forest-related issues for forest owners. It also provides training and education for its voluntary forest inspectors. Furthermore ATFS organizes recreational activities for families and conferences for its members (ATFS, 2012).

ATFS promotes the Family Forest Action Network which represents the interests of private forest owners politically, even on national level (ATFS, 2012).

The American Forest Foundation operates an online platform with tools and information for private forest owners. After creating an account forest owners have access to a management planning tool that helps them map their property and set goals for it. Forest owners receive information and guidance on how to use the tool (My Land Plan, 2012).

The planning tool has the following functions:

- Mapping of the property
- Marking of features and special sites
- Setting of goals and planning of management activities
- Information concerning the owner's management intentions
- Recording management actions in an individual forest journal that owners can also share with other users (My Land Plan, 2012).

The online platform provides owners with information and recommendations what they can do to meet specific goals and allows them to exchange information with other users and forestry professionals. Information and recommendations acknowledge the individual objectives of the owners and consider aspects such as timber production, nature conservation, recreation, forest protection and forest health as well as amenities. The platform also allows forest owners to contact local private or governmental forest consultants and service providers (My Land Plan, 2012).

- ***Oregon's watershed councils***

Ecological boundaries often contrast with landownership patterns. At the same time access to the landscape is a prerequisite for nature conservation schemes that affect larger numbers of private holdings. Therefore nature conservation on landscapes with a high proportion of private ownership often requires cross-boundary cooperation. The State of Oregon proposed watershed councils to protect the habitat of the Coho salmon. Watershed councils aim to foster enhanced stewardship of waterways and riparian areas. They lack regulatory power but seek to facilitate collective action within the watershed towards restoration activities through education and financial incentives. Watershed councils facilitate cross-boundary cooperation by private forest owners to improve stream habitat conditions (Rickenbach et al., 2004).

The 83 watershed councils in Oregon work as stakeholder- driven collaboratives that seek workable solutions through consensus-based decision making. They are voluntary collaboratives formed by local communities to broadly represent the variety of interest within a watershed (Rickenbach et al., 2004). The councils' membership should broadly represent those living and working in the watershed, typically including local government, environmental groups, forest product companies, private landowners, agricultural producers and state agencies. Watershed councils include a variety of stakeholders such as ranchers, farmers, National Forest managers, private forest owners, homeowners and the forest industry (Rickenbach 1999 cited by Rickenbach et al., 2004). The watershed councils studied by Rickenbach et al. (2004) cover thousands of has and encompass hundreds of non-industrial private forest owners, communities, public lands and a great variety of interests.

Oregon's watershed councils are locally-organized collaboratives that represent diverse interests within the watershed. A typical council includes about 10-20 members and represents local government, environmental organizations, forest industry, state and federal agencies, landowners, farmers, to provide a mix of opinions and expertise. They serve as a framework with broad stakeholder representation. Members perform collaborative planning themselves, setting priorities, approve grant proposals and may participate in the implementation of council activities. Members who own land may allow council activities on their property. However on privately owned landscapes watershed councils' activities must extend beyond their membership to promote nature conservation as membership is constrained by group dynamics and workable processes (Rickenbach et al., 2004).

Watershed councils have to be recognized by the local government. Many of them develop a mission statement and draft bylaws. Some create a watershed action plan which often serves to set priorities and acquire funds (Rickenbach, 1999 cited by Rickenbach et al., 2004).

Consensus-based decision- making also constrains the scope of the efforts and councils tend to avoid controversial topics (Rickenbach et al., 2004). More than half of Oregon's watershed councils make decisions consensus-based, while other follow a modified approach that allows majority rule if consensus cannot be achieved (Rickenbach et al., 2004). Rickenbach (1999 cited by Rickenbach et al., 2004) describes three distinct models of linkage among councils:

1. Several adjacent local watershed councils make group decisions on activities jointly, without having an institution that regulates joint decision making.
2. A centralized watershed council coordinates local river-basin councils, directing and fostering their activities. The centralized watershed council approves local basin initiatives (centralized approach).
3. Local watershed councils jointly found a multi-basin council to organize joint activities. The local councils approve the multi-basin council's activities in a decentralized approach (Rickenbach, 1999 cited Rickenbach et al., 2004).

Differing conditions led to the evolution of locally adapted variations of the council model. The North Coast has a decentralized approach while the South Coast has a more centralized model. In decentralized models local councils shared the information and resources of a larger coordinating committee. In a centralized watershed council model a larger council sought funds, assisted local councils in meeting their goals and cooperated with traditional landowner organizations. It could be observed that within the centralized model the local councils worked more like local landowner associations than broadly representative groups. It better allowed the participants to contribute their ideas and then seek technical and financial support from the larger council which made it more attractive for private landowners to participate. The decentralized approach placed much of the burden to not only contribute ideas but also to seek support on the local councils themselves. This was also a competitive disadvantage in seeking funds as in the decentralized model each local council had independent proposals while the centralized model bundled the ideas of different local councils into a single proposal with greater impact. The organizational structure of the centralized approach made communication and cross-boundary cooperation easier (Rickenbach et al., 2004).

Landscape recovery efforts depend heavily on communication within that landscape. The study found factors that inhibited the success of watershed councils. One of them was non-participation in the council's activities by individual landowners of properties that are essential to the salmon's recovery. Another problem was a council's disconnection from its land base as new residents in a council's watershed were more attracted to it than the established owners, who owned much of the riparian area than the new owners but were underrepresented in the council and started to lose interest. This made the council ineffective. A very effective example of cross-boundary cooperation could be observed in a council which attendance in meetings was low. For joint management projects however the council was able to mobilize effectively all land owners that owned land alongside a particular stream, most of whom were nonmembers. The council's members had good knowledge of neighbors and personal relationships to select and implement its projects. While the council coordinator organized the external resources for a fencing project for pasture land along the stream such as grants, equipment and labor the council members talked to their friends and neighbors along the stream, recruiting other owners for cooperation. To involve multiple owners participation has to extend beyond the council members. When external resources are in place council members have it easier to recruit the participation of other landowners in the watershed. Instead of being involved in the discussion and planning process of the council, which they might find cumbersome, these owners simply had to allow the measures on their land and maybe lend a hand

(Rickenbach & Reed, 2002 cited by Rickenbach et al., 2004). This example illustrates that in some situations and for some owners innovative and flexible forms of cooperation can motivate landowners for joint activities while permanently binding, institutionalized forms of cooperation cannot.

It is likely that among many private landowners voluntary stakeholder-driven processes will be preferred over regulatory solutions. Their effectiveness will depend on the ability of collaboratives to motivate action by individual owners and cross-boundary cooperation by many owners. This will need support through financial incentives and relationship building with other landowner organizations. It is also recommendable to cooperate with consultants and contractors involved in land use activities within the watershed and not only focus on the owners (Rickenbach et al., 2004). Forest owner cooperatives in place may initiate watershed and nature conservation councils that include a broader representation of a variety of stakeholders.

Merely creating institutions like watershed councils with political legitimacy will not be sufficient. They also need to recruit participants and cooperators in a spatially intelligent way that allows shaping the landscape (Rickenbach et al., 2004).