

ENHANCING THE GROWTH AND ECONOMIC
VIABILITY OF LANDOWNER COOPERATIVES TO
IMPROVE SUSTAINABLE FOREST MANAGEMENT
IN THE UNITED STATES

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EXECUTIVE SUMMARY

In many parts of the United States, land-use history has resulted in forest tracts consisting of a patchwork of private properties that have been inherited, sold, subdivided and consolidated many times over. Forest boundaries rarely follow prominent ecosystem features such as soil type and species composition, especially in areas where the landscape has gone from forest to field and back to forest. Often, short-term economic gain has driven forestry practices at the expense of long-term forest management, resulting in high-graded forests with reduced economic potential.

This land use pattern has resulted in a situation that is sub-optimal from many different perspectives. From a forestry perspective, smaller parcels offer less opportunity for long-term management and require forestry decisions to be based on political rather than stand boundaries. From a conservation perspective, small, independently managed parcels limit opportunities for landscape level management, restricting the potential to effectively protect sensitive areas and maintain ecosystem integrity while generating income from commercial-scale timber harvesting. From an economic perspective, both landowners and foresters lose the advantages of scale and have limited leverage to market logs from low volume timber harvests, resulting in lower forest-related income and higher pressure to capitalize on short-term gains from other uses, including development. From a social perspective, many communities that once derived a significant portion of their economic vitality and identity from forest products have lost comparative advantage and deteriorated in the wake of global economic forces beyond their control.

While some stakeholders have supported a regulatory approach to protect ecosystem integrity at all costs, others have pushed for market-driven approaches, including the formation of sustainable forestry cooperatives. Fledgling cooperatives have appeared in several states including Vermont, Massachusetts and Wisconsin, and while these organizations have been effective in promoting the ecological benefits of cooperative forestry, the commercial viability of their efforts remains unproven.

This paper examines the potential of sustainable forestry cooperatives to benefit landowners, rural communities and forest conservation. In light of economic theory and empirical evidence, I assess the potential of forestry cooperatives to improve economic returns for landowners, function as a catalyst for rural economic development, enhance the human and social capital of rural communities, and meet a range of environmental objectives.

Part I provides background concerning the benefits and challenges inherent in the cooperative organizational form, highlighting the rich history and economic theory of American agricultural cooperatives. Part II expands on the assertion that cooperatives have the potential to change the current economic, social and environmental landscape of forestry in the United States, addressing both the benefits and limitations of the cooperative business model as they apply to sustainable forestry cooperatives. Part III describes existing efforts in cooperative forestry in both the United States and Europe. In

part IV, I offer several recommendations for improving the growth and economic viability of forestry cooperatives, with the express purpose of enhancing the economic, social and environmental benefits of these organizations. Part V presents a vision for the future of cooperative forestry in the United States.

This analysis supports the proposal that sustainable forestry cooperatives have the potential to benefit landowners, rural communities and forest ecosystems. However, in order for forestry cooperatives to succeed and grow, they must recognize member economic benefits as the foundation of the cooperative business, facilitate broad-based membership, confront the challenges inherent in the cooperative model, build vertical integration of processing functions based on economic viability, and consider standardizing sustainable practices through forest certification. Only by addressing the economic realities of an increasingly globalized commodity market will sustainable forestry cooperatives achieve significant benefits for landowners, rural communities and forest ecosystems.

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1. BACKGROUND

In March 2003, eighty members of the Sustainable Woods Cooperative in Lone Rock, Wisconsin, voted to liquidate all assets and dissolve the business. After six years in operation, one of the few sustainable forestry cooperatives dedicated to helping non-industrial, private forestland owners achieve long-term ecological and economic benefits from sustainable forestry collapsed under the dual pressures of low capital and high debt. Most of the cooperative's assets went to pay off creditors, with members losing all of the value of their membership stock and equity investments.

Across the Atlantic, the Swedish forestry cooperative Södra continued to add landowners to its membership base of over 34,000, further expanding a land base that already includes 5 million acres, over half the forest area in southern Sweden. In the first quarter of 2002, Södra received over 300 applications for membership and successfully weathered excruciatingly low pulp and timber prices. The previous year, the cooperative harvested 6.9 million cubic meters of wood from member forests, and generated a 9% net return on capital investment, down from 30% in 2000 as a result of market and currency fluctuations.

The differing fates of these organizations illustrate a stark contrast. Despite legislation to support cooperative forestry and incentives including credits, grants, favorable taxation and free and subsidized consulting from government agencies since at least 1937, cooperative forestry remains in the fledgling stages in the United States (Shook et al. 2001.) Only about nine operational forestry cooperatives exist. Why? What barriers have prevented their formation, growth and success? What personal, social and environmental benefits do these organizations offer, and how can existing and emerging cooperatives grow and prosper? Before addressing these questions in detail, further background is needed.

1.1 *What is a Cooperative?*

Many cooperatives, especially those in agriculture, have become household names. Ocean Spray, Agway, REI, Land o' Lakes and Sunkist are all cooperative businesses. Cooperative banks, better known as credit unions, and electric utility cooperatives have also become commonplace in many communities. It is difficult to define cooperatives because the principles guiding each cooperative in its practices and organization may be quite different from one to the next, but cooperatives are often described as non-profit corporations or patron-owned corporations (Barton 1989). In general, a **cooperative** is a user-owned and user-controlled private business that distributes benefits to its members on the basis of use, and is distinguished from other businesses by democratic rather than investment-based voting. Often, membership is restricted to qualified members by a minimum membership entrance fee or required purchase of common, non-transferable stock (Barton 1989). Federal regulations also limit members' interest income from invested capital to a maximum of 8%, and stipulate that membership cannot be "artificially restricted with the aim of increasing the value of any proprietary rights and

interests” (Hind 1997). There are many variations on this foundation but the key characteristics are democratic voting, with one vote for each member regardless of equity investment, and distribution of profits based on use, rather than investment.

More simply, a cooperative is a business that exists for the benefit of its members, who derive benefits primarily from using the cooperative. For example, a group of farmers may form a supply cooperative to provide fuel, fertilizer and other agricultural supplies at prices that are lower than are otherwise available. Similarly, they may form a producer cooperative to buy, store and distribute wheat produced by members, with the objective of returning more profits to the farmer. The same farmers might even start a processing and marketing cooperative to turn semolina wheat into pasta, which they could market under a brand name. In each case, the financial benefits a member receives from the cooperative are dependent on how much business the member does with the cooperative.

For many people, the term “cooperative” conjures images of socialist farming **collectives**, which are employee owned and operated cooperatives. This makes it important to clarify that the organizational form of a cooperative is inherently an economic enterprise, fundamentally appropriate for a democratic capitalist system. It is a *business model*, not a socialist institution, although the cooperative model may be applied in socialist and protocapitalist societies. As an organization, the cooperative is distinctly different from formal associations, trusts and non-profit organizations. The cooperative is also distinctly different from other types of incorporated, private-sector businesses, including *proprietorships* and *investor-oriented firms* (IOF).

Cooperatives are often referred to as associations; however, this term includes any organization with a formal structure that unites people with a common interest for the purpose of collective action (Cobia 1989). A **proprietorship**, having a single owner or group of owners, is “a closed corporation in which the decision making and risk bearing functions are borne by the owner” (Porter and Scully 1987). **Investor-oriented firms** are primarily concerned with the value of stock and returns to investors, and often have managerial control separated from the risk bearing function of capital investment, that is, the managers of the company need not be the principle investors. Stock in IOFs is often transferable, where it is restricted to members in cooperatives. Additionally, Hind (1997) reveals that IOFs may be oriented more heavily toward corporate goals like profitability, capital growth, financial stability, and positive corporate image, while cooperatives are more likely to be focused on member-centered goals like providing quality services and supplies at the lowest price. These and other differences between proprietorships, IOFs and cooperatives are shown in Table 1.

BUSINESS FACTOR	PROPRIETORSHIP/ PARTNERSHIP	IOF CORPORATION	COOPERATIVE CORPORATION
Ownership eligibility	Dependent on acceptable equity investment	Purchase of one or more shares of stock, other restrictions possible	Minimum investment by qualified member
Voting eligibility	Proprietor/partners	Common stockholders	Members
Votes/voter	Based on equity	One vote per share	One vote per member
Transfer of ownership	Privately negotiated	Privately negotiated, may require corporate approval	Equity transfers highly restricted
Management	Managing partner or CEO selected/elected by proprietor or partners	Board of directors elected by stockholders; board selects CEO	Board of directors elected by members; board selects CEO
Income distribution based on investment	Unlimited	Unlimited	Limited to 8%, but very rare
Income distribution based on patronage	Permissible but rare	Permissible but rare	Very common and often required by law
Tax obligation	Individual rates	Corporate rates for company, individual rates for stockholders	Same as IOF, except that patronage refunds are subject only to individual rates
Patron eligibility	Unrestricted	Unrestricted	Generally unrestricted, but can be restricted to qualified members

Table 1. A comparison of different organizational models for business ventures.
Adapted from Barton (1989:9).

There is a tremendous amount of terminology associated with cooperatives and cooperative theory, but for the purposes of this paper I will limit the terminology to basic functions of the cooperative, the roles within the cooperative and the different ways financial benefits may be dispersed to members. The specific benefits that drive the formation of cooperatives are discussed in detail in section 1.2.

Generally, three broad categories of cooperative are identified in the literature. These include producer cooperatives, consumer cooperatives, also known as purchasing cooperatives or supply cooperatives, and worker cooperatives, also known as collectives (Shook et al. 2001). There may be significant crossover between these designations, but usually it is relatively easy to identify the primary focus of the business. For example, most food and electric co-ops are consumer based, while most forestry and agricultural coops are producer oriented. Consumer cooperatives can be devoted to providing services like health care, banking or education, or supplies like fertilizer and other agricultural inputs. Among producer coops we find a variety of forms depending on the extent of integration of different levels of the value chain of the product; these include bargaining, processing and marketing cooperatives. Producers may organize bargaining coops to leverage more favorable terms of trade for their raw products, typically negotiating directly with processors. Producers may also cooperate to take raw commodities like corn or timber and process these materials into value-added products

like animal feed and lumber. Once such value-added products have been manufactured, the cooperative may add marketing functions to sell products to wholesalers or even end consumers.

It is worth noting here that Cropp and Ingalsbe (1989) and others include bargaining, processing and marketing cooperatives under the single grouping of “marketing cooperative,” and use the term “production cooperative” to denote individual farms that are independently organized as cooperative corporations, similar to collectives, which are relatively rare in the United States. In this paper, cooperatives are variously described as bargaining, production, processing and marketing cooperatives depending on what level of production they capture, with integration of these functions discussed when appropriate.

The various kinds of coops breed an abundance of terms for members. Depending on the function and investment structure of the coop, members may be variously referred to as producer-members, patron-members, consumer-members, member-investors, member-owners, or simply “members.” Many authors also use the terms member-patron, non-member patron, member-producer and other permutations to distinguish among the different roles within a cooperative. This highlights an important distinction between members and non-members, especially in processing and consumer cooperatives. You may not have to be a member to sell or buy products through a cooperative, but only members receive the full benefits of membership. For example, you do not have to be a member of Recreational Equipment Incorporated (REI) to purchase equipment at this supply cooperative, but only members receive the added benefit of a patronage-based refund at the end of the year. In addition to members, cooperatives also typically have a board of directors elected by the members and may have various levels of managerial staff who are often, but not always, members.

The REI example illustrates one way in which cooperatives distribute financial benefits to members. A **patronage refund** is a net income allocated to members in the form of either cash or investment in the cooperative that is disbursed based on the value of a member’s patronage (Cobia 1989). The more you buy or sell, the greater the refund you receive. Many cooperatives secure capital for operations and investments by keeping a portion of the proceeds from processed or marketed products, or by adding a premium to supplies they sell. This is called per-unit **capital retain, unit retains** or simply **retained patronage**. Financial benefits may also be reflected in lower prices for supplies and services or higher prices paid for products. These and other benefits are discussed in detail in the next section.

1.2 General Benefits of the Cooperative Business Model

Why would anyone, producer, consumer or worker, want to organize a cooperative business? What benefits encourage cooperative formation? For some people the distinctive characteristics of cooperatives are benefits in themselves. A business organization that is member-owned, member-operated and democratic in nature appeals

to many people's sense of community, especially at a time when globalization has disconnected investment and management from the location of operations. While social and community benefits are important, the primary benefits of cooperatives are economic. In general, cooperatives are formed because they allow members to do things they cannot do when acting independently. Members can work together to negotiate favorable terms of trade, combine capital resources to finance value-added enterprises, secure guaranteed markets for their commodities, and share the risks involved in growing and managing a business (Cropp 2001; Barton 1989; Schrader 1989).

Schrader (1989) identifies eight primary economic benefits. First, cooperatives can **combat market failure** that arises when one or a few sellers (monopoly/oligopoly), or one or a few buyers (monopsony/oligopsony), gain enough market strength to distort competitive free markets and tip prices in their favor. Under such market failure, producers pay higher than market prices for supplies and receive lower than market prices for their products. Many early agricultural cooperatives were formed to provide an alternative to a single regional processor that existed as the primary or sole buyer of agricultural output.

Second, cooperatives allow many smaller-scale operations to unite and **take advantage of economies of scale** through horizontal integration. Fixed management, storage and processing costs generally dictate that the larger an operation gets, the more these costs are distributed over a larger production volume, resulting in lower costs and more profit per unit volume. While there are some exceptions to this rule, over the last fifty years there has been tremendous consolidation and collaboration in many commodity sectors, including industrial forestry, toward decreasing the total number of firms and increasing the size of remaining firms (Fulton and Andreson 2001).

Cooperatives also provide an opportunity for **vertical integration** into additional levels of the value chain of production. As mentioned previously, by pooling capital resources and production volume, producers may capture additional profits from processing functions, whether this means turning logs into lumber or pigs into pork. Schrader's fourth advantage is that these businesses often **provide missing services** that have been unavailable, as in the case of rural electric cooperatives and some marketing cooperatives. Fifth, to a limited extent cooperatives can **stabilize markets** for members by assuring a buyer for their products or a seller of the supplies they need. This is especially important in commodity markets that experience dramatic price fluctuations, or "boom and bust" cycles. Sixth, these businesses achieve financial gains by **coordinating aspects of production**, effectively matching processing to demand, production to processing, and production to required inputs. This coordination helps prevent over or underproduction, as well as overstock or scarcity of inputs.

With benefits come risks, but cooperative businesses clearly **reduce risks** to individuals by pooling resources and stabilizing returns. For example, profits from combined production, processing and marketing functions are likely to be more stable than any one component alone, especially in cyclical commodity systems (Schrader 1989). Schrader's eighth reason is somewhat of a departure in that it exploits, rather than prevents, market

failure. Members of a cooperative may organize to **gain market power**. Large cooperatives that control significant portions of their market may use market power to command higher than market prices for the benefit of members. Though federal laws governing coops expressly prohibit “undue” price enhancement, some cooperatives have clearly used market power to their advantage.

At this point, it is necessary to clarify how cooperatives differ from IOFs and other firms in terms of taxation and anti-trust laws. Under existing anti-trust laws, companies are prohibited from colluding to limit competition, fix prices and gain market power. The Capper-Volstead Act of 1922 provides cooperatives with limited anti-trust exemption and expressly allows independent agricultural producers to act together and gain countervailing bargaining power. In 1937, Congress passed the Cooperative Farm Forestry Act to link forestry activities to this legislation and encourage the formation of new forestry cooperatives (Shook et al. 2001). However, under Capper-Volstead, an organization of agricultural producers must be focused on providing mutual benefits for member farmers. Additionally, cooperatives must be democratically controlled and cannot pay dividends in excess of 8% per year on capital invested in the coop, independent of patronage refunds. Over 50% of the value of products handled by the business must come from coop members. For example, a log-buying cooperative can buy logs from non-members, but the value of these purchases cannot exceed 50% of total purchases.

Cooperatives are not exempt from prohibitions on predatory practices and price discrimination, and must adhere to the anti-trust regulations that apply to other types of firms (Volkin 1985). For example, coops are prohibited from “unduly” enhancing prices, a potential result of establishing dominant market power. Exemptions from anti-trust regulations allow a cooperative to form, but once the business exists, it is required to follow anti-trust regulations just like any other firm. There is a fine line here, especially given that members want to enhance the price they receive for their products. They can do this, as long as it remains in the context of a competitive market.

In addition to limited exemptions to anti-trust laws, cooperatives enjoy other advantages over IOF and proprietary businesses. As Porter and Scully (1987) point out, “in modern times, the cooperative form of business has been consciously nurtured as a matter of public policy.” Cooperatives receive favorable tax treatment because income from the business not taxed at the corporate level, only at the individual level of members’ personal income tax. Thus, they can pass on the advantages of scale while avoiding taxation at both the corporate and individual levels. Cooperatives also benefit from loans at below-market rates and access to grants and other funding (Hanson 2001), as well as free and subsidized consultation and assistance from federal and state agencies, universities and non-profit organizations interested in supporting cooperatives. For example, organizations like the *Community Forestry Resource Center* in Minneapolis and the *University of Wisconsin Center for Cooperatives* provide support through publications, meetings and consultation.

1.3 Variations on the Cooperative Model

While consistently democratic and member oriented, there are a broad range of structural variations within the cooperative model (Cropp and Ingalsbe 1989). Variations depend on size, geography, capital structure and degree of centralization, among other attributes. For example, in stock cooperatives, members own shares of common stock that represent a share of the capital equity of the business and are generally only transferable to other members or qualified patrons. In non-stock cooperatives membership fees provide equity capital. Both types of cooperative may raise additional capital through the issue of preferred stock or capital certificates, respectively, which can often be sold to both members and non-members. Non-stock coops may also issue capital certificates that represent retained patronage refunds. In general, non-members who hold preferred stock or capital certificates cannot vote. Many other financial structures are also possible.

Some coops are centralized, with individual members holding direct membership and interacting with a single central office or local branch offices linked to a central office. Other cooperatives are federations of smaller, local coops. Federated cooperatives are owned by other coops, not directly by members. Not surprisingly, centralized coops generally correspond to smaller, more local operations, while federated coops are likely to cover larger areas and manage larger product volumes. Again, there is a broad range of organizational structures that combine different levels of centralization and federation.

Given such wide variations in financial and organizational structure, two different generalized cooperative models are worth discussing in detail: the **traditional cooperative (TC)** and the **new generation cooperative (NGC)**. The generic image of the coop portrayed thus far corresponds nicely with the traditional cooperative. These businesses usually require minimal up-front capital investment, often in the form of low membership fees. Members receive patronage refunds, which typically represent no less than 20% of the net margins from patronage and are based on the amount of their business with the cooperative (Cropp 2001). Business functions are largely capitalized by the remainder of net margins in the form of retained patronage, which can be kept as equity capital allocated to specific members based on patronage and formalized through preferred stock or capital certificates. Management and expansion, including vertical integration into value-added processing and marketing, is financed by membership fees and retained patronage.

New generation cooperatives are quite different. The NGC is best described as a “value-added processing, closed-membership cooperative” (Fulton 2001:11). Unlike traditional cooperatives, which depend on retained patronage refunds to build equity capital, NGCs are typically capitalized by significant initial investments by members (Cropp 2001). NGCs can also offer preferred stock to raise capital. This means that the membership drive is essentially an equity drive, stressing the importance of a clear business plan to attract member-investors. Entry fees are high, membership is generally restricted to initial member-investors, and profits are distributed based on shares (Hanson 2001). Overall, the NGC is similar in structure to a limited liability company (LLC) – some authors have used the terms interchangeably (Merrett and Walzer 2001) – but there are

subtle differences in how each of these organizations is structured, taxed and managed (Hanson 2001).

Patronage in NGCs is typically restricted through delivery shares, which are purchased by the producer and commit the member to delivering a specified volume of product and, conversely, commit the cooperative to purchasing the specified volume at an agreed price (Fulton 2001; Nadeau and Wilson 2001). These delivery commitments/rights may be tradable, and in the event that a producer cannot deliver the product or trade the rights, he must buy product to make up the difference. Most often the coop purchases the product, adds value to it, then sells it and returns a percentage of the profits to members in the form of cash or capital stock.

Proponents of the NGC have highlighted several other distinctions. Egerstrom (2001) contrasts the passive investment of IOF stockholders and the opportunistic patronage of the traditional coop members with the active investment and contractual patronage of NGC members. NGCs may also represent cooperatives taking an offensive rather than a defensive economic posture, though this characterization is controversial (Lang 1995). For example, many of the over 200 NGCs in the upper Midwest have been mobilized to capture value-added income rather than address market failures and supply problems (Merrrett and Walzer 2001). NGCs also strengthen the property rights of members, which have been criticized as being problematic in traditional cooperatives (Cook 1995). Lang (1995) believes that cooperatives in general must be more aggressive in marketing and exploiting market opportunities proactively if they are to survive, and NGCs promote such an approach.

With so many benefits, why don't cooperatives dominate the economic landscape? The challenges inherent in cooperative organizations are discussed in detail in Part 4, but it is already clear that, on a fundamental level, cooperative organizations are most appropriate for certain sectors of the economy, especially agriculture and other sectors where a significant portion of the commodity flow is represented by independent suppliers.

1.4 Sustainable Forestry Cooperatives

Many of the concepts discussed thus far can be easily applied to the forest products sector. If we think of forest owners as tree growers, it is easy to envision a producer cooperative consisting of independent landowner-members. On the most basic level, a forestry cooperative might pool and market the logs harvested from members' forests. If parcels were large enough, this could happen entirely on paper without concentrating the raw materials in a central location. Coop representatives could bargain with log buyers and mills to obtain favorable prices in return for larger volumes of wood, minimizing transaction costs. As we integrate this hypothetical cooperative horizontally by adding new members, and vertically by adding additional levels of the value chain, the organization gets more complex. Our forestry cooperative might supply forestry services, like management plans, timber inventory and harvest management, or it might facilitate logging and trucking services through preferred contractors. If sufficient capital

were available, the business might integrate value-added functions like milling and drying, or even add marketing services targeted at wholesale or retail markets.

Such a cooperative could easily adhere to the cooperative business principles presented here, and could result in significant economic gains for the landowners by capitalizing on the benefits discussed in the last section. But something else must be included to distinguish a forestry cooperative from a “sustainable” forestry cooperative. A **sustainable forestry cooperative** is a cooperative business organized to improve economic returns for landowner-members engaged in active forest management within the context of socially and ecologically responsible business and forestry practices. As a private business, a sustainable forestry coop is organized expressly for the economic gain of its members, but it provides economic benefits without damaging the ecological integrity of the forest or the capacity of the forest to provide long-term benefits to either the landowner or the community. Essentially, it is an economic enterprise with social and ecological compass. What exactly constitutes “ecological integrity” and “socially and ecologically responsible business practices” is open to interpretation, and discussed in more detail in Part II. With this model in mind, it is time to focus our attention squarely on forests, forestry and forest products.

2. WHY COOPERATIVES IN FORESTRY?

2.1 Surveying the Ecological, Economic and Social Landscape

Over the last 100 years the northeastern United States has experienced a tremendous revival of its forests. After being almost entirely converted to agricultural fields and pasture by the late 19th century, forest cover in New England has returned to levels not seen since colonial times. Currently, 84% of New Hampshire is forested, up from about 20% in 1900. Similar trends hold throughout the Northeast, with Maine gaining 4 million acres of forest over the last century to become 89% forested (Irland 2000), Vermont increasing from 35% to 80%, and more populous states like New York, Massachusetts and Connecticut showing significant, though more modest gains (McKibben 1995; Darr 1995). Parts of the Midwest have also experienced significant reforestation. Wholly 52% of the nation's forestland grows east of the Great Plains.

While some herald this transition as a triumph for the regenerative powers of nature, it would be a mistake to overlook the threats confronting today's forests. In many parts of the United States, land-use history has resulted in forest tracts consisting of a patchwork of private properties that have been inherited, sold, subdivided and consolidated many times over. Forest boundaries rarely follow prominent ecosystem features such as soil type and species composition, especially in areas where the landscape has gone from forest to field and back to forest. Often, short-term economic gain has driven forestry practices at the expense of long-term forest management, resulting in high-graded forests with reduced economic potential.

Many forests are fragmented and degraded, and non-native, invasive species have dramatically altered the species diversity and richness of many forests. Diseases like chestnut blight and beech bark disease, insects like the hemlock woolly adelgid and the gypsy moth, and plants like Japanese barberry and multiflora rose, have had especially significant impacts. Even some native species, like the white tailed deer, have had significant negative impacts on forests ecosystems as a result of human-induced changes in biodiversity and trophic structure. Other threats are largely social. The pressure to clear forests to grow crops and provide wood for industrialization has been replaced by pressure for development and subdivision, especially in urban and suburban areas. Most recently, Massachusetts and Connecticut have experienced an overall decline in forest cover due to development pressure (Barten et al. 2001). Conversely, many rural areas that depend on timber harvesting and other extractive industries have experienced economic hardships at the hands of global economic integration, and are experiencing population declines due to outmigration to urbanized areas, which generally provide more employment opportunities.

According to the USDA Natural Resources Conservation Service, of the approximately 617 million acres of forest in the United States, about 400 million acres are owned by 10 million private landowners, with about 308 million acres classified as non-industrial,

private forestland, or NIPF (NRCS 2001). Thus, non-industrial private landowners control about half of the total forest acreage (Figure 1). In many states this percentage is much higher (Barten et al. 2001). Nearly 15 million acres of NIPF will be subject to timber harvest between 2000 and 2010. Overall the trend within this ownership group has been toward increasing subdivision and high ownership turnover, while trends on public lands have been toward increasingly strict regulation.

Much of the literature of cooperatives is focused on agricultural cooperatives, but how relevant are the experiences of agricultural producer coops to sustainable forestry cooperatives? In many ways the two groups are quite similar. Forestry and agriculture both support many small-scale private producers as well as large-scale industrial operations. Overall, small operations must compete with increasingly fierce competition in a globalized business climate dominated by large corporations. While few small-parcel private landowners derive all of their income from forest products, those that do grow and sell timber are confronted by volatile commodity markets and uncertainty surrounding prices and buyers for their products. Both forestry and agriculture are also dependent on a complex network of interconnected businesses, all exploiting different levels of the value chain (Table 2).

Based on these similarities, forestry may be ripe for the formation cooperative enterprises. Ben-Ner (1984) points out that cooperatives are most effective in marginal industries where members can gain higher than market wages from cooperative involvement. The recent formation of new generation (NGC) agricultural coops in the Midwest was largely driven by low commodity prices as well as a sense that vertical integration was necessary for survival for producers (Hanson 2001:41). Similar pressures are acting on private forest owners and have been superimposed on changes in land-use patterns and economic conditions. In an analysis of the viability of forestry cooperatives in eastern Maine, the Hancock County Planning Commission concluded that, “the fragmentation of forestland ownership in Maine appears to be conducive to formation of a cooperative mode of organization” (HCPC 1999). Other authors have also pointed out the applicability of the cooperative model for forestry (Nadeau and Wilson 2001).

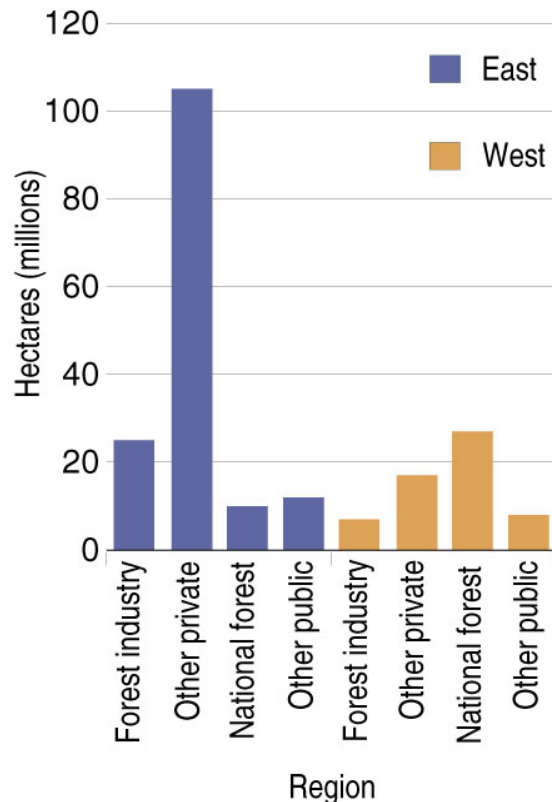


Figure 1. Timberland ownership patterns by regions, 1992. (Powell et al. 1993; reprinted from Darr 1995).

Regardless of this potential, it is clear that we are confronted with several alternative visions for the future of forests and forestry in the United States. On one hand, forests within driving distance of major urban areas may succumb to development pressure, resulting in a fragmented landscape with reduced potential for forest management and compromised ecological integrity. In rural areas, the decline of the forest products sector may reduce employment opportunities and income, further depressing areas that have already experience significant stagnation in income and precipitating further subdivision and sell-off of forestland. Landowners confronted by economic hardship may capitalize on short-term gains from ecologically damaging forest practices.

VALUE CHAIN	OPERATIONS		
Services	Timber Stand Improvement	Forest Management Plan	Other Forestry Services
Production	TIMBER PRODUCTION		
Harvesting	Harvest Management	Logging	Trucking
Marketing I	Possible Concentration Yard	Marketing to Log Buyers	
Processing	Milling/Raw Processing	Drying	Manufactured Products
Marketing II	Secondary Processors/Manufacturers	Wholesale	Retail
Consumers	CONSUMERS/END USERS		

Table 2. Components of a forest products system.

On the other hand, forestland may stay forested, and in the hands of rural people, with the revival and strengthening of domestic forest products industry serving as a platform for rural economic development. Domestic wood can supply domestic markets, meeting a demand that has been climbing steadily for much of the last century.

If we assume that a promising future balances economic goals with social and ecological concerns, the growth and proliferation of sustainable forestry cooperatives throughout the U.S. may be the most promising path. In order for this transition to occur, the economic, environmental and social effects of such an approach must be tangible and achievable.

2.2 Economic Benefits for Members

In general, sustainable forestry cooperatives have the potential to provide many benefits to members, non-members and communities. While some benefits are tangible, others are difficult to quantify. Of these benefits, explicit economic returns to members are most important. In a purely economic sense “the cooperative’s objective is to minimize per-unit costs in a purchasing cooperative and to maximize per-unit returns in a marketing [or producer] cooperative” (Porter and Scully 1987). Obviously many landowners have significant or even paramount interests in the environment and local communities, but the majority of non-industrial private forestland is held as an asset, or part of the landowners wealth, and almost all landowners in this demographic cite the preservation and growth of equity as an important objective of land ownership (Naka et al. 2000). Increased profitability may encourage private landowners to keep land forested rather than develop or sell the land, especially if future returns outweigh the costs of holding onto the land (Naka et al. 2000).

There are three possibilities for individual economic outcomes as a result of participation in forestry cooperatives: the landowner can be better off, break even, or be worse off. Economic theory is grounded in the idea that people will not consciously make economic choices that leave them worse off, and there is strong evidence that this rule extends to cooperatives (Schrader 1989). In order for forestry cooperatives to be successful, landowners must be better off acting as members of the coop than acting as individuals. The fact that many landowners consider community and environmental factors to be important benefits of forestry coops complicates a purely economic analysis of decision making in this case. Studies focused on the feasibility of these coops has shown that while economic returns are critical, landowners must have confidence that their participation will not result in negative environmental impacts (HCPC 1999). Nonetheless, economic benefits provide the foundation for social and environmental benefits.

If cooperatives must make their members better off financially to survive, how can forestry cooperatives make landowners better off than they would be if they were operating as individuals? The answer to this question can be framed according to the same benefits discussed in Part I.

Address Market Failure

In the forest products market, as well as other commodity markets, market failure is a strong incentive for producers to act collectively (Crook 1995). Economists have identified several sources of market failure, including monopoly/monopsony power, externalities, public goods, imperfect information and rent seeking. Of these, monopsony, or the ability of a single buyer to manipulate market prices, is probably most relevant to forestry cooperatives. Over the last 100 years, wood processing in both Canada and the United States has been characterized by increasingly concentrated ownership of processing facilities (Krogman and Beckley 2002). This sets the stage for potential monopsonistic price distortion, especially in regions where low-value products

like pulp wood must be trucked considerable distances to competing mills. Transportation costs effectively limit the number of buyers, and if a mill is the only regional buyer, it can pay lower prices for wood.

Cooperatives can combat this type of market failure in several different ways, both direct and indirect. The coop may exist as a new buyer, purchasing, processing and/or marketing logs from its members. While a new landowner cooperative is unlikely to integrate vertically into capital-intensive, low margin pulp and paper operations, it may be realistic for a cooperative to own and operate some type of value-added processing facilities, including a lumber mill. In this way, coops encourage more competitive markets directly. But coops can also combat price distortions indirectly by pooling resources, gaining market power through collective action, and negotiating favorable terms of trade, even under failed market conditions. The more wood a coop has to sell, the more potential it has to negotiate for favorable prices.

Capture Profits from Another Level

Even if market failure from monopoly or monopsony is not an issue, members of a cooperative may want to pursue vertical integration to capture profits from additional levels of the value chain. Vertical integration can take place in either direction, down the chain (backward) into management and pre-harvesting functions like timber stand improvement (TSI), or up the chain (forward) into processing and marketing functions. Sustainable forestry cooperatives can potentially integrate landowner education, management plan services, mapping and surveying, accounting and legal services, reforestation and TSI, marking, harvesting, road improvement, log concentration and marketing, trucking, milling, drying, market research, and marketing of processed products to wholesale and retail markets.

In some cases, consumers have become increasingly interested in and connected to the source of what were traditionally undifferentiated commodities like vegetables and lumber. This presents an interesting opportunity for producers who, as Lang (1995) observes, “retain increasing control over factors affecting the final product value.” Producers, rather than processors, have increasing control over certain qualities of the end product, whether this means providing organic produce or locally grown, sustainably harvested wood. Lang (1995) goes so far as to say that in order to survive, “cooperatives must add more value to their product as they compete in more refined consumer markets with many different partners in a global marketplace.”

It is important to point out that, if monopsony is not an issue, vertical integration, *all else being equal*, is unlikely to provide landowners with higher returns for their logs. This may be somewhat counter-intuitive, especially since higher returns have been consistently touted as a benefit to vertical integration. Coop members may realize additional profits from the processing and marketing functions of the business, but *in a perfect market*, if landowners receive higher prices for their timber, it is because profits from the processing and marketing functions of the business are subsidizing higher than market prices for logs. In other words, a cooperative may pay higher stumpage prices

because market failure has resulted in depressed prices, but if market failure does not exist, additional profits come from processing activities, not higher timber value. This distinction is discussed in more detail in Part IV.

Benefit from Economies of Scale

There is a wide range of reasons why bigger is often better in an economic sense. Many management, transportation, storage and processing costs are fixed. A large business can effectively distribute fixed costs over larger volumes of product. For example, the same office overhead, including computers, phone lines and rent, may be required to manage 10 thousand board feet of wood as is required to manage 10 times that volume. Larger mills typically use less labor per unit output, and larger storage facilities cost less per unit capacity (Schrader 1989). The benefits of size also apply to transaction and decision-making costs, as well as information gathering and contract monitoring and enforcement.

Provide Missing Services

Services may also benefit from economies of scale. While individual landowners can pay existing businesses for forestry services, members of a cooperative may secure discounts on these services if they coordinate and guarantee demand. Management plans, marking and managing timber sales, and even forest certification are more efficient, and less expensive, for larger operations. Sometimes cooperatives provide services that would be otherwise unavailable or unaffordable. Many individual landowners forgo accounting, legal, management and record keeping services, but would benefit from these services as members of a cooperative (HCPC 1999). Additionally, landowners could take advantage of the distribution of market information to improve profitability without investing time and resources in understanding the complexities of timber markets and timber pricing. Timber stand improvement services, including planting and thinning, have also been absent from the management of most small-parcel private forests.

While coops have the potential to provide these services, a major caveat is required. It is possible that no other business is providing the needed service because the service is not profitable. The benefits of scale may help address this problem, but the problem deserves attention if the cooperative is to avoid supporting unprofitable ventures.

More Secure Supplies and Markets

A group of producers acting collectively is also likely to get higher quality supplies at lower prices than individuals, primarily due to volume discounts issued by suppliers. In many cases, in order to obtain secure supply or purchasing agreements from buyers and sellers, an organization must represent a certain volume of business. Individual small-parcel landowners are unlikely to represent enough business volume to receive volume discounts, favorable delivery arrangements and terms of credit. But by representing a larger volume of business, cooperatives can provide these opportunities, resulting in lower transaction costs, more secure supplies and markets, and more profit for the landowner.

Gain form Market Coordination

Forestry on non-industrial, private forestland is characterized by “spot market” transactions, with individual landowners harvesting timber on a rotation, with harvesting events often separated by 10 to 30 years. The landowner’s relationship with foresters, loggers and mills is often spotty, with periods of intense activity separated by years of inactivity. Cooperatives have the potential to increase profitability by providing an opportunity to move away from this dynamic and toward the use of contracts and other business arrangements to secure relatively long-term supply and purchasing agreements for high volumes of wood, with specified quality, quantity and price (Fulton and Andreson 2001).

This coordination of different levels of the supply chain can happen through vertical integration within the cooperative, or by entering into contracts with other businesses. Contracts stabilize business relationships, significantly reduce transactions costs, and are made possible by the high volume of purchasing and production provided by a cooperative relative to individual landowners acting alone. For example, if a cooperative can guarantee to deliver a certain quality and quantity of wood, harvested from many different properties over a specified time frame, a mill may be willing to pay more for the wood to reduce the uncertainty surrounding its log supply. As mentioned previously, NGCs gain coordination by issuing secure delivery rights in which the landowner is locked into providing a specific product and the coop is locked into buying the product at a specified price.

Information is a critical component of value chain coordination. According to Fulton and Andreson (2001:133), “the coordination that we are observing along the value chain increasingly has information transfer as an important objective.” Quality information about products, sales, inventory and supplies can make sure that supply meets demand efficiently, without excessive inventory of either supplies or products. For example, a mill, either IOF or part of the coop, can let the coop know exactly what it needs and, likewise, the coop can let the mill know exactly what it has available, either in the form of logs or standing timber. Obviously, this happens to a large extent already, through both market prices and contracts, but the idea here is that coops may be able to enter into formal agreements, further reduce information and transaction costs, and efficiently coordinate harvesting and processing activities better than individual landowners.

Risk Reduction

Unpredictable market conditions are a strong catalyst for cooperation and may even be a requirement for cooperatives to exist. In regards to agriculture, Fulton (1995) theorizes that as markets become more predictable through technology and other changes, family-oriented cooperatives should decline. The same might be said for forestry coops, but empirical data are inconclusive. In general, risk exists on many levels for forest landowners, especially those engaged in infrequent, spot-market transactions. Some of

the risks associated with markets and harvesting can be reduced by membership in a cooperative.

Depending on how the business is organized and how patronage refunds and capital certificates are issued, coops may provide landowners with an opportunity to maintain a stream of income from their forests rather than a single pulse based on a single harvest every 10-30 years. This may restrict a landowner's ability to take advantage of the market when it peaks, but also insulates landowners somewhat from unforeseen market downturns. In this case, reduced variation of returns for the individual acts in both directions. Coops also reduce risk by formalizing liability at the corporate level, and by establishing long-term contractual relationships with suppliers, processors, foresters, loggers, truckers, and other contractors.

Gain Market Power

Landowners may also profit from deliberately distorting the market through cooperation. This benefit is somewhat notorious, but tangible nonetheless. While the Capper-Volstead Act prevents cooperatives from "undue price enhancement" (Volkin 1985), it is conceivable that large cooperatives could control enough of the wood flow to shift power away from wood processors, toward wood suppliers and consumers. This would be facilitated by a transition toward logs as "identity preserved" commodities, rather than pure commodities. In this case, tree growers have control over certain attributes of their wood that consumers can readily identify in end products. Forest certification, discussed in Part 4, is firmly grounded in the promise of this transition. This gives landowners, and forestry cooperatives, more market power. Large coops might also enhance prices by limiting the supply of wood, however, they are expressly prohibited from restricting the production of their members (USDA 1990). Coops need not buy all the wood members have to sell, but they cannot prohibit members from selling wood to other businesses. This limits their ability to fix prices by limiting production.

Additional Economic Benefits to Members

In addition to the economic benefits discussed so far, and as discussed earlier, forestry coops provide other benefits in the form of favorable taxation, access to loans at below market rates, and access to better terms of credit than are offered to proprietary and IOF firms. A forestry coop can also take advantage of free or subsidized consultation from a variety of federal and state agencies, universities and non-profit organizations interested in supporting cooperatives. They also offer a platform for political action. Coops may represent the interests of a large group of landowners, advocating actions and policies that benefit coop members and non-industrial, private landowners in general. This might include encouraging more favorable taxation, or influencing state and local buying practices.

2.3 Economic Benefits for Communities

The potential economic benefits of cooperatives are not limited to members. Cooperatives in general have been shown to provide substantial economic and social benefits in rural communities, and have the potential to function as a conduit for rural economic development (Nadeau and Wilson 2001; Merrett and Walzer 2001). Overall, rural communities in the United States continue to experience a wide gap in average income compared to metro areas, with median incomes of the rural poor actually in decline in many areas (ERS 2002). Though exceptions exist, in general, urbanized areas have significantly lower poverty rates than nonmetro areas, with the most rural communities experiencing the highest rates of poverty. Nationwide, non-metro poverty rates have been in decline, but the Northeast has shown an increase in rural poverty over the last 10 years. Forestry cooperatives have the potential to help close this gap by influencing local economies both directly and indirectly.

In many communities in the Midwest, agricultural producer cooperatives have provided local communities with higher average incomes, higher paying jobs, and a stronger tax base (Nadeau and Wilson 2001). Coops often represent new markets for non-members by purchasing wood from non-member producers, which is allowed as long as it does not exceed 50% of the value of products handled. These businesses can also provide indirect benefits by supporting local retail businesses and service providers, resulting in secondary income and employment, also known as the “multiplier effect.” Because profits are returned to members not shareholders, savings and income that landowners and foresters earn through the cooperative are likely to be spent locally (USDA 1990). A large processing coop could also serve as an anchor business in a community, encouraging other businesses to locate in the region.

While cooperatives may provide significant economic benefits to local communities, cooperative development is not the same thing as community development. As Nadeau and Wilson (2001) make clear, “community development is intended to address the broader well being of a community, while cooperative development is intended to establish a member controlled organization designed to meet the needs of its members.” Community economic development of rural areas is a secondary effect of cooperatives, with the primary benefits going directly to member-owners, or member-patrons (Egerstrom 2001). Thus encouraging cooperatives as a development tool may be controversial to some people because it embodies a “trickle down”, rather than “percolate up” approach to development. Even so, there is evidence that consumers will pay more for goods produced by a coop than by other types of firms to support community development efforts (Shook et al. 2001).

Two other community economic benefits are worth noting here. First, as I have already established, the presence of cooperatives in the market can limit monopsony power held by existing processors. The benefits of this effect extend beyond the coop members to the community in general. For example, if a coop is buying wood for a higher price, competing wood buyers may pay higher prices to their patrons to avoid losing wood to the coop or to avoid boosting coop membership. This positive externality, which

benefits *patrons of competitors* of the coop, is called the “yardstick effect” (Sexton and Iskow 1993). Efficiency gains here can be argued either way (Porter and Scully 1987), but as long as membership is open, the yardstick effect should happen, though empirical evidence is limited.

There is also evidence that cooperatives may help counteract the “race to the bottom,” or “smokestack chasing,” in which communities offer significant tax or zoning incentives or relaxed environmental regulations to attract industry to rural areas (Egerstrom 2001). Communities may also offer significant assistance or incentives to keep failing mills from moving or closing operations (Press Office 2002). Increasing globalization often means that multinational corporations headquartered far away from processing facilities have little stake in local communities. Cooperative ownership may create a climate where the business is more closely tied to the community and makes decisions that take employment as well as profitability into account. Unlike the investors of multinational corporations, cooperative members are likely to be members of the local community, and as such, are more likely to be sensitive to the needs of the community.

2.4 Social Benefits

Individualism is often cited as one of the primary barriers to the formation of cooperative enterprises, especially in the case of landowner cooperatives (Fulton 1995). Even though they fully retain their private property rights, landowners may not want to give up any decision making power when it comes to dealing with their land. Additionally, landowners may believe others will benefit from their involvement without sharing equally in risk and capital investment. For example, in addition to patronage refunds and retained patronage for growth and investment, profits from a cooperative may be used to finance collectively owned property and collective benefits such as subsidized services. Effectively, a member’s individual patronage may result in capital investments that are owned collectively by all members (Fulton 1995), which may cause some potential members to resist cooperation.

Given this attitude, it may seem paradoxical that many cooperative members cite being part of a community as one of the main reasons for being involved in a cooperative. In fact, it is often the social aspects of a cooperative, including a sense of community and solidarity, which enhances productivity, especially in producer cooperatives and collectives (Ben-Ner 1984). Members enjoy being part of a team effort, and working with and learning from other like-minded people. Research on NGCs indicates that linking the activities of the coop to the welfare and well being of the members may actually be critical to NGCs in distinguishing themselves from their IOF/LLC counterparts (Fulton 2001). Based on member surveys, member welfare will almost certainly include social values and community goals, in addition to economic goals. In the case of forestry cooperatives, it is also important to stress sustainability and environmentally sound practices.

There are several additional more nebulous but well documented social and community effects of cooperative businesses operating in rural communities. Rural communities

where forest-based extraction and processing facilities represent major sources of employment are likely to experience increased social problems, including increased suicide, alcoholism and spousal abuse, if the collapse of these industries leads to high unemployment. This phenomenon has been well documented in other industries (Coker et al. 2000). A large cooperative with integrated processing marketing functions owned and operated by members with close ties to the community can help provide a community with a sense of worth and a positive outlook on the future by providing stable employment and by returning profits to the community (Merrett and Walzer 2001).

Further, cooperative membership has the potential to build leadership and civic capacity in rural areas by providing opportunities for members to act as directors, managers, employees, and business leaders (USDA 1990). In 1976, Former Secretary of Agriculture Earl Butz highlighted this point in his comments about the impacts of cooperatives by saying, "I think there is no better training ground for democracy in this country than in the self-management and operation of these cooperatives. That, to me, has been the great contribution that cooperatives have made in the last 50 years and I think it will be the great contribution they will make in the next 50 years."

2.5 Conservation Benefits

Thus far the focus has been almost entirely on the economic benefits of cooperatives, and has neglected earlier claims that cooperatives also offer significant potential to meet certain environmental objectives, including forest conservation. Given the traditional polarization of economic and environmental interests, with economic goals often diametrically opposed to environmental goals, how is it possible that improving economic gains through cooperative organization can result in environmental gains?

Forest ecosystems face significant pressures from multiple directions. First, in some areas forests may be under considerable development pressure, especially if they are within driving distance of major metropolitan areas or are close to popular vacation destinations (Barten et al. 2001). From an ecological perspective, development translates into habitat degradation and fragmentation. Subdivision and development of parcels that are currently contiguous forest can result in more roads, more buildings and less continuous habitat. An abundance of research supports the conclusion that habitat fragmentation can have negative effects on forest ecosystems (Laurance et al. 2002; Debinski and Holt 2000; Harrison and Bruna 1999). These effects include, but are not limited to changes in species richness and diversity, elevated tree mortality, increased encroachment of invasive species, changes in microclimate conditions, invasion of disturbance adapted plants, reduced understory bird abundance, reduced recruitment of forest interior species from adjacent habitat patches, increased susceptibility to environmental stochasticity, changes in trophic structure, changes in pollination, and changes in nutrient cycling.

For those landowners under pressure to develop their land, gaining favorable tax status and earning income from active forestry may reduce the opportunity costs associated with

keeping land covered with trees instead of condominiums. In this way, by enhancing the economic benefits of active forest management, cooperatives help encourage landowners to pursue management options that keep the land forested, or at the very least, undeveloped.

But it would naïve to assume that as long as forestland remains undeveloped it remains ecologically intact. Destructive logging practices on both small and large scales can also result in habitat fragmentation and degradation. Industrial forestry has a spotty track record in regards to environmental responsibility in both the US and abroad, but destructive practices are not limited to large-scale operations. Landowners in rural areas with no development pressure and limited income opportunities may be even more likely to take advantage of short term gains from destructive forestry practices, including high grading valuable timber at the expense of future production. Active forest management may simply be the lesser of two evils unless forestry practices balance economic and ecological concerns.

Cooperatives can help improve forestry practices in many ways. First, landowner education has been a central theme in many of the existing efforts in cooperative forestry. Teaching landowners the difference between good and bad forest stewardship can help improve forest practices. Often acceptable forest practices are formalized in a forest management plan, which is a document prepared by a forester who generally describes the condition of the forest, as well as short and long-term management objectives in varying degrees of detail. It has been estimated that only 5 to 10% of the over 300 million acres of non-industrial, private forestland in the United States undergo any kind of planned management (Padgham 2002). Cooperatives can encourage and facilitate the development of clear management objectives and formal management plans.

To be clear, active management is not limited to timber oriented management objectives. Management plans often include objectives like wildlife habitat enhancement, control of exotic invasive species, development of recreation opportunities, and assessment and protection of ecologically sensitive areas. In many states, formalizing active management through a management plan allows landowners to enroll in “current use” programs that reduce property tax liability on land that is actively engaged in forestry and farming activities.

Cooperatives can also help make responsible forestry practices more profitable. Some practices naturally maintain long-term forest productivity and profitability. Minimizing erosion, controlling residual stand damage, and maintaining seed trees and roads can be viewed as investments in productivity rather than financial sacrifices to meet environmental objectives. Forestry cooperatives can help make these practices even more profitable by providing access to forest certification opportunities, which are discussed in more detail in Part 4. Certification can serve as a way to formalize and standardize good forest practices across many diverse parcels and landowners, stressing long-term management over short-term economic gains.

A hierarchy of objectives is suggested by this analysis. First, keep land forested by providing economic incentives to resist development pressure in suburban areas, and to resist capitalizing on short-term gains in rural areas. Second, promote local economic development grounded in active forest management and the production of forest products. And third, improve forest practices to incorporate ecological sustainability. This analysis has left out a major option for forestland: preservation, without any active harvesting activities. It is important to reiterate that the approach offered here is in the context of non-industrial, private forests. The cooperative business model is clearly not the right model if forest preservation is the primary goal of an organization, and is inappropriate for landowners who are not interested in active forest management.

Removing forest land from production clearly has conservation benefits, however in order for this to be effective, in many areas land must change hands from private ownership by individuals who require income from the land, or at least own land as their primary asset, to individuals, organizations or governments who would receive relatively minor economic benefits from active forestry. While this approach may achieve maximum preservation, it ignores the economic realities confronting many rural communities, and is likely to have local economic benefits only in areas with high tourism potential.

As a producer-member oriented business, sustainable forestry cooperatives offer a balance of ecology and economics. While cooperatives can supply many of the benefits discussed here, it is very difficult for a cooperative to be all things to all members. Likewise, members should have expectations for benefits grounded in the economic, ecological, social and organizational realities of their situation. But the sustainable forestry cooperative may be unique in its potential to balance economic, social and environmental outcomes.

3. EXISTING FORESTRY COOPERATIVES

Nationwide, the USDA has identified nine operational forestry landowner cooperatives, four fledgling cooperatives and seven associations interested in pursuing the cooperative model (USDA 2002), though this figure does not account for the recent demise of the Sustainable Woods Cooperative or the birth of the Massachusetts Woodlands Cooperative. Forestry cooperatives also exist in many other parts of the world, in both developed and less developed countries. In general, these organizations represent a broad diversity of size, scope and objectives, ranging from large-scale operations focused very intensely on improving profitability for landowner-members, to small organizations interested in fostering forest stewardship through education and capacity building.

A detailed review and organizational analysis of existing cooperatives is beyond the scope of this paper. However, this section presents a sample of some of the relevant and representative organizations currently involved in cooperative forestry. It is not intended to dissect the successes and challenges of these organizations, but offers examples of the broad range of efforts that currently exist. These examples also provide an empirical context for the recommendations in Part 4.

3.1 *The Midwest*

The Midwestern United States has a strong history of cooperative enterprise in agriculture, and is home to a number of forestry cooperatives functioning at varying levels of success and development (Nadeau and Pingrey 2001). Over two-thirds of the timberland in the Midwest is owned by non-industrial private landowners, only a small fraction of which is currently managed in existing forestry cooperatives. Wisconsin in particular has a strong forestry coop presence, including the Hiawatha Sustainable Woods Cooperative, the Living Forest Cooperative, the Kickapoo Wood Cooperative, the Prairie Ridge Forest Stewardship Cooperative, and the Washington Island Cooperative. Several of these coops have committed to expanding processing and marketing functions, though so far, these efforts have taken place on a limited scale. Other cooperative efforts include Wisconsin Family Forests, the Sustainable Woods Cooperative, and the Western Upper Peninsula Forest Improvement District, in Michigan.

While not a true cooperative business, Wisconsin Family Forests (WFF) is focused on teaching landowners about sustainable forestry and good forest practices and has close ties and overlapping membership with cooperatives in this region. As an association with several hundred members, WFF uses a grassroots approach to help landowners learn from each other and from forestry professionals. Padgham (2002) suggests that such organizations may be precursors to cooperative organizations, and WFF has been closely allied with cooperatives and cooperative development in Wisconsin.

Before its unfortunate dissolution in March 2003, the Sustainable Woods Cooperative included 154 private landowners in 11 counties in Southwestern Wisconsin and was one

of the largest suppliers of certified wood products in the region. Founded in 1998, its mission was “to maximize the long-term aesthetic, ecological and economic benefits from our area forests by means of environmentally responsible practices, landowner and consumer education, and local manufacturing of value-added Forest Stewardship Council-certified wood products” (SWC 2003a). Its primary goals were to provide forest management services, integrate processing and marketing services, and provide education to members and customers. SWC operated several value-added components including a 4.5 acre concentration yard, a solar kiln for drying lumber, and a sawmill and hardwood manufacturing facility. The coop was also involved in the marketing of products produced at these facilities

A board of directors elected by coop members controlled the cooperative. All members had access to educational services and were required to pay \$100 for one share of membership stock and an additional \$2 per acre of enrolled land. Additionally, members who wanted access to forestry, processing and marketing services had to buy market stock amounting to \$100 per 1000 board feet of wood (Padgham 2002). While taking advantage of expanding markets for certified forest products through value-added operations was a central platform of SWC’s approach, SWC became insolvent largely due to low capital and high debt before these benefits could be realized (SWC 2003b).

The Western Upper Peninsula Forest Improvement District (WUPIFD) is a large coop in northern Michigan focused on management, harvesting and timber sales rather than value-added enterprises. Its mission is to provide members “with sound forest management, healthy forests and economic gain; to provide these services at the most economical cost; and to ensure area forest resources are sustained for future generations” (WUPIFD 2003). Since its establishment in 1985, WUPIFD has provided forestry services on over 230,000 acres for over 1000 landowners, currently conducting about 70 timber sales per year (WUPIFD 2003). The current membership of over 900 government and non-industrial private landowners can take advantage of a suite of services provided by the coop including management plan development, forest inventory and appraisal, timber sale preparation and administration, and timber harvesting, as well as timber sales and marketing. While management practices are in compliance with certification standards under the Sustainable Forestry Initiative (SFI), a certification program developed by the American Forest and Paper Association, this coop is clearly focused on improving economic returns for its members and views SFI certification as one way to help meet this goal.

3.2 The Northeast

Cooperative forestry does not have a strong presence in the Northeast, but several efforts are worth summarizing here. Though Vermont Family Forests (VFF) describes itself as “a non-profit family forest conservation organization” and is not a true cooperative, it is often cited as a successful example of cooperative forestry. VFF includes 5,074 acres of forestland certified by SmartWood under Forest Stewardship Council guidelines, and an additional 6,000 non-certified acres. Forest parcels range between 26 and 1750 acres in

size and are all managed in accordance with VFF management principles, even if they are not certified. Currently, 34 of the 42 parcels included in the VFF land base are certified.

Economic returns to its members are clearly a secondary focus for VFF, taking a back seat to conservation, education and community benefits. Its mission is “to conserve the health of the forest community, and when appropriate, to promote the careful cultivation of local family forests for community benefits” (VFF 2003b). In general VFF considers education to be its primary “product and purpose.” VFF has provided significant educational benefits to its members and the public with seminars and workshops on many aspects of forest ecology and management. That said, the organization has also been involved in small-scale timber harvesting and processing, including lumbering with portable saw mills and solar wood drying kilns. Most of its harvesting and processing functions have been contracted to independent local loggers, truckers and mills.

VFF has also been effective in expanding markets for certified wood in Vermont and elsewhere, most recently through its involvement in several high-profile projects including supplying certified lumber for Bicentennial Hall at Middlebury College in Vermont. In keeping with its commitments to help develop local economies, VFF strongly promoted the use of local harvesting and trucking services for this project. Additionally, seven of the landowners involved in VFF are in the process of raising capital and coordinating the logistics of launching a commercial entity to market VFF’s Family Forest brand of forest products. This business is expected to be operational by summer, 2003.

Drawing on the successes and challenges of both the Sustainable Woods Cooperative and Vermont Family Forests, the Massachusetts Woodlands Cooperative (MWC) was incorporated in 2001 after a two-year period of organization and feasibility assessment, which included landowner surveys. Currently, 25 members representing over 3000 acres are pursuing a mission “to maintain the environment and character of western Massachusetts through the protection, enhancement and careful economic development of one of the region’s most plentiful resources, the forest” (MWC 2003).

The primary objectives of the cooperative are to (1) create or enhance access to markets for low-value wood; (2) produce value-added products; (3) build local economies; (4) manage cooperatively to improve wildlife habitat, water quality protections and recreational opportunities; (5) organize as a group for grant opportunities and political influence; (6) provide educational opportunities; (7) barter equipment and services; (8) explore green certification; and (9) provide a mechanism for land protection (MWC 2003).

This is clearly an ambitious list of objectives, but MWC has already made considerable progress toward meeting these goals. The cooperative expects to receive Forest Stewardship Council group certification from SmartWood in May, 2003, after which it can begin harvesting FSC certified timber and possibly producing other certified products from 15 of the 25 properties included under the coop. Forestland owned by the remaining 10 members is expected to be added to the certified pool within a year.

Currently, MWC is not engaged in any direct value-added processing, but expects to use contracted processing and eventually transition into coop owned value-added operations.

Organizationally, MWC is managed by a board of directors elected by members. Members pay a \$250 initial membership fee and an annual fee (around \$80), which is set by the board of directors each year. In addition to stumpage fees on harvested timber, members receive patronage refunds on any profits earned by the cooperative. New members are added by the invitation of a selection committee, after a process that may include interviews, site visits and references.

Though long defunct, the Forest Products Marketing and Management Cooperative, Inc. (FPMMC), operated in the Dover-Foxcroft, Maine, area during the 1980s. At its peak, this cooperative included 85 landowners and 12,000 acres of land. At a time when wood prices were relatively low, the cooperative hoped to increase the market leverage of members in a down market. In the end, the coop dissolved because it was unsuccessful in getting better prices for its landowners and had internal pricing difficulties, as well as transportation problems (HCPC 1999).

3.3 Europe

Land ownership patterns in Europe vary dramatically both within and between countries, but in many European countries forestland is fragmented into small parcels similar to the situation in the eastern United States. In Scandinavia over two-thirds of productive forestland is privately owned, much of it owned by non-industrial, private landowners (Naka et al. 2000). Sweden is home to some of the largest, most successful forestry cooperatives including Mellanskog, with 28,000 private landowner-members and over 3.7 million acres in central Sweden, and Södra Skog, with 34,000 private landowner-members, 3100 employees and a land base of over 5 million acres in southern Sweden. This may not be surprising given that non-industrial, private landowners account for 80% of the forestland in southern Sweden.

Södra's orientation is clearly toward large-scale, intensive forestry, with a primary objective of "creating value from forestry" (Södra 2002). In 2001, the organization harvested over 6.9 million m³ of wood from member forests, yielding sales of 10 billion SEK (1.2 billion USD), a net income of 584 million SEK (70 million USD), and a return on capital investment of 9%. Södra operates a variety of large-scale, value-added operations including lumber, pulp and paper mills. While these figures represent an unambiguous commitment to production and profitability, some of Södra's operations, including forestry and timber, have been certified under the Pan-European Forest Certification system, a certification umbrella organization active in many parts of the world. Södra's pulp and paper operations are not yet certified.

3.4 Wood Products Cooperatives

On the marketing end of the spectrum, many forest products cooperatives specialize in linking local craftspeople and manufacturers of wood products to wood suppliers and consumers at the wholesale or retail level. One such operation, the ForestCraft Marketing Cooperative in Idaho, links 19 members and 97 consignees to retail markets through a retail outlet in Moscow, Idaho (Shook et al. 2001). Other woodworker cooperatives in the northwest include Northwest Woodworking in Seattle, with 28 members and hundreds of consignees, and Artwood in Bellingham, Washington, with 12 members and 70 consignees (Shook et al. 2001). Larger, woodcraft-oriented cooperatives also exist in many other parts of the country, including the South and Southwest.

4. IMPROVING COOPERATIVE VIABILITY

Formal agricultural cooperatives have been a part of the American economic landscape since the 1920s. By the mid 1980s, fifteen agricultural cooperatives appeared on Fortune magazine's list of the 500 largest corporations in the United States. Brand names from many of these companies are common on store shelves throughout the country. While many of the ventures discussed in the last section have potential for growth and long-term stability, why have small-scale, non-industrial forest products producers failed to organize on the same scale as agriculture producers in the United States, or landowners in Scadanavia? This section addresses many of the factors that can work toward or against cooperative formation and success, and offers recommendations to improve the economic viability of sustainable forestry cooperatives and enhance their ability to achieve economic, ecological and social objectives.

4.1 Prioritize Objectives and Choose the Appropriate Organizational Model

Landowners and forestry professionals interested in collective action can choose from a variety of organizational models including formal and informal associations, land trusts, non-profit organizations, proprietary and investor-oriented companies, and cooperatives. Which of these models a group chooses is highly dependent on the mission and objectives of the group. Objectives can cover a broad spectrum from landowner education, social interaction, and land preservation, to active forest management and conservation, to economic gain for members or investors. While organizations often juggle many of these goals simultaneously, it is important to choose the model that is most appropriate for achieving the primary goals of the organization.

While forestry cooperatives have the potential to provide broad economic, environmental and social gains, personal economic gain is absolutely central to the concept of the cooperative business model. It is the glue that holds the organization together and without it, other objectives, including ecological and social goals, cannot be met by the organization. As a result, a cooperative may not be the most efficient organizational model if the primary goals of a group are to preserve forestland or educate landowners. Nor would it be the right model for landowners who are indifferent about economic gains, or drains, from their land. However, forestry cooperatives can effectively use economics to achieve conservation and social benefits, as long as economic goals are met. Conversely, a non-profit organization is clearly not an appropriate organizational model for business ventures, largely because earnings cannot be distributed to members but must be retained within the organization, and in the event the organization is dissolved, equity is typically distributed to another nonprofit (Frederick 1996).

While economic gain is a central tenet of the cooperative organization, within the context of for-profit business, cooperatives offer a unique opportunity to balance many other objectives, objectives that are often in concert with one another. For example, forest

management that pays attention to ecological integrity and natural capacity of the forest to regenerate after disturbance is in the landowner's best *economic* interest, as well as in the ecological interest of the forest. If economic gains from timber harvesting are one of the landowner's primary management goals, reducing residual stand damage and erosion, encouraging recruitment and seedling establishment, preventing the invasion of exotic species and engaging in timber stand improvement activities, including culling diseased and damaged trees, are all in the landowner's best long-term economic interest. In this case, there is reduced conflict between economic gain and sustainability and practicing sustainable forestry is an investment, not a sacrifice. The same could be said for many of the community economic and social benefits offered by cooperatives.

It would be simplistic to imply that all objectives can be maximized. For example, if a value-added processing cooperative pays excessively high wages to impart economic benefits to the community at the expense of its members, it will likely fail. But it is possible to minimize potential conflicts between economic and other objectives. The main point here is that a cooperative is foremost an economic animal, guided by economic principles and economic gains that serve as the foundation for education, resource protection, social interaction, and community development (Barton 1989). It is important to point out that economic gains do *not* have to be the primary motivation for members to join a cooperative, in fact, members often join for other reasons (Schrader 1989), but the economic benefits of members should be the primary objective of a cooperative business.

Even within the cooperative model there are significant choices that can influence the ability of an organization to meet its goals. New generation coops are well suited to larger-parcel landowners who can produce a regular flow of wood, buy yearly delivery quotas, and invest a significant amount of capital to jumpstart operations. A more traditional model is better suited to a large group of small-parcel landowners who sell wood infrequently, possibly once every 10 years, but need various services like management planning and timber stand improvement. A small group of small-parcel landowners may have significant difficulty starting and maintaining a cooperative under any model.

As with any organization, cooperatives are not static; ideals may change significantly over time. As Hind (1997) and Craig (1980) describe, as a cooperative grows, managers dedicated to organizational gain may move the coop increasingly toward a corporate orientation and goals of profitability, capital growth, financial stability and positive corporate image. This may come at the sacrifice of member-oriented goals such as providing low-cost services and supplies. In this transformation a cooperative may become more like an IOF. Evidence shows that coops do tend shift goals in this direction and can become more corporately oriented though time (Hind 1997). One way to avoid this drift is to maintain a close connection between the managers and the members, encouraging managers to strike a member/corporate balance. If the business is too lopsided in either direction it is likely to fail as a cooperative. Weak cooperatives tend to liquidate their assets and fold, while strong cooperatives often transition and restructure into IOFs (Cook 1995).

Cooperatives may also drift toward the corporate end of the member/corporate balance by replacing member labor with hired wage laborers. Ben-Ner (1984) points out that replacing expensive member labor with relatively inexpensive wage laborers may maximize members' personal income in many cases, but tends to compromise the cooperative principles of the organization. A gradual increase in the number of non-member laborers in a processing cooperative represents a "slow erosion" of the cooperative principles of the business. There is significant evidence that this led to the transition of cooperative plywood enterprises into IOFs in the 1960s (Bellas 1972, 1975). Ben-Ner discusses this as a major source of pressure for coops to transition into IOFs, with members eventually becoming shareholders in an IOF enterprise. He also goes so far as to say that this is why producer cooperatives "will exist only in marginal industries that cannot sustain capitalist firms but nonetheless can provide personal incomes in excess of market wages to workers who are PC members." This hazard is more relevant to worker collectives, but is a hazard for producer cooperatives as well.

4.2 Facilitate and Encourage Broad-based Membership

Despite the longevity of many of the largest agricultural cooperatives, local agricultural cooperatives have been in decline across the country since the 1980s (Cropp and Ingalsbe 1989). While the reasons for this trend are complex, scale is at the core of this decline. Many of the economic benefits of cooperatives are enhanced by larger membership. For example, in a traditional cooperative, high membership provides more opportunities to raise capital for and benefit from value-added ventures. The "threshold membership" depends on objectives and operations, but almost all of the benefits of cooperation, including both economic and social benefits, can be stifled by low membership. To some extent, new generation cooperatives get around this problem, but require members who can provide a high volume of patronage and a large initial capital investment.

Scale is especially important in an environment of global-scale corporate consolidation. It is true that identity-preserved commodities marketed to local and regional niche markets may help relieve some of the pressure for growth, but the fact remains that cooperatives must be large to survive and take advantage of the benefits of cooperation. Based on this fact, existing cooperatives and new ventures should facilitate rapid, broad-based membership development to the extent possible. One course of action would be to focus on providing services through preferred contractors and marketing logs to existing proprietary businesses until membership reaches a level where it can initiate and sustain the product volume and capital investment necessary to integrate processing functions. Regardless of the organizational path, forestry coops need to achieve scale in membership to achieve the benefits of scale.

4.3 Confront the Challenges Inherent in the Cooperative Model

Many authors, including Fulton (2001), Crop (2001), Cook (1995) and Cobia (1989), have exposed the challenges inherent in the cooperative organizational form. Some of these challenges, like insufficient capitalization, can be exceedingly obvious. Others are more subtle, like the tendency for members to maximize short-term gains in the form of patronage refunds, rather than invest in equity through capital retains. In order for sustainable forestry cooperatives to succeed, they must recognize and confront these challenges. This section highlights some of the most daunting challenges from both a theoretical and empirical perspective.

High Initial Transaction and Organization Costs

As many of the existing sustainable forestry cooperatives have encountered, the costs of organizing a new business can be substantial. It takes time and money to identify and secure membership commitments, establish market relationships, and coordinate production through a centralized organization. Cooperatives can incur major costs in transactions between members and contractors, decision-making, information gathering and contract enforcement and monitoring (Porter and Scully 1987). Even if many of these costs are provided in-kind by the membership through volunteer effort, they still represent substantial uses of energy and resources, which cannot be diverted elsewhere and should certainly be taken into account. High transaction and organizational costs are likely to be unavoidable and may significantly reduce the efficiency and profitability of the business (Porter and Scully 1987). This makes it all the more imperative that a new cooperative raise sufficient capital before starting operations.

Undercapitalization

With cooperatives, as with many other types of organizations, the presence of adequate capital does not guarantee success, but the lack of adequate capital does guarantee failure. Cropp (2001:37) is blunt about the role of capital in cooperative success: “an undercapitalized business is bound to fail.” Fortunately, forestry cooperatives have several opportunities to secure capital. First, initial capital investments through membership fees can provide operating funds, or even funds for vertical integration in some models. Second, the coop can retain a percentage of patronage to finance operations and build capital equity. In this case, more production equals more retained patronage equals more capital available for investment. If a cooperative is to finance vertical integration through capital retains, it is vitally important that the business achieve a level of patronage, and a volume of sales, that makes this option possible. In other words, if capital is to be raised from retained patronage the coop will have to cut and sell a large volume of timber before integration is possible.

A cooperative can also capitalize integration through the purchase of preferred or capital stock in the cooperative. If large amounts of capital must be raised from members, the NGC approach is a more appropriate model. NGCs can also facilitate integration by

securing timber sales from members through the purchase of delivery rights. This allows the NGC to make commitments to processors, or retailers if processing functions are already integrated. Obviously, such high initial capital investment and the required purchase of delivery shares limits participation by small-parcel land owners, but it may be possible to encourage the collective purchase of delivery shares by several small-parcel owners.

Borrowing money may be an option, but banks typically require 30 to 40% or more in investor equity to reduce the risks of a business loan. Grant programs may also require significant member capital investment. The opportunity to finance some cooperative ventures with borrowed capital also highlights the necessity of an economic business orientation, as banks are unlikely to finance projects that place ecological or social concerns above economic returns.

The Control Problem and Inadequate Management

While lack of capital can severely limit the potential for growth and vertical integration, so can lack of leadership and managerial ability (USDA 1990). One challenge in particular can compromise leadership ability in a cooperative. In IOF companies, the efficiency and profitability of the organization is reflected in the price of its shares. In contrast, because membership fees and stock prices are set by coop management and/or membership, and because membership rights and stock have limited transferability, problems with a cooperative company's performance may go undetected. This is known as the "control problem." Consequently, a rift may develop between management and membership, and between management actions and business performance. As mentioned earlier, management may drift toward increasing corporate focus, potentially compromising the goals of the membership.

This problem is often exacerbated by increasing size and complexity (Cook 1995; Staaaz 1987) and highlights the need for experienced, competent management. While it may be idyllic and inexpensive to have cooperative members take on management functions, especially in a volunteer capacity, there may be considerable advantage to having professional management staff take on most complex functions, including securing capital investment and conducting a feasibility study (Cropp 2001). In either case, management should address the control problem. In some cases influential members or management may also make decisions that benefit them personally, especially if the business is engaged in a wide range of activities, has relatively centralized decision making, and has membership with diverse interests (Cook 1995). This is known as the "influence costs problem." Cook also strongly recommends that cooperatives make use of paid advisors and consultants, and secure strong management in the first few years of operation, when the business is in its most critical stages.

The Free-Rider Problem

In economic theory, a free rider is "a member of a group who obtains benefits from group membership but does not bear a proportional share of the costs of providing the benefits"

(Albanese and Van Fleet 1985). The free rider problem has the potential to manifest itself in several ways in forestry cooperatives. First, some systems of retained patronage result in individual patronage financing collectively owned assets. This can create a situation in which some members can obtain benefits independent of their patronage, and therefore receive benefits subsidized by other members. Additionally, if members receive certain benefits independent of patronage, from an economic point of view they may be reluctant to provide additional capital investments if such investments are going to provide benefits to free riders. This can contribute to a chronic shortage of capital and a resistance to increasing capital retains to increase the equity capital of the business. Keeping benefits closely tied to patronage helps address this problem. It may also be advantageous to have different categories of membership that provide different services and offer different benefits, as was the case in the Sustainable Woods Cooperative.

Horizon and Portfolio Problems

Even if the free rider problem is addressed, there are several reasons why members may vote to increase short-term returns in the form of patronage refunds rather than increase equity in the cooperative through patronage retains. First, landowners often have competing needs for capital, and must balance capital investment in the business with other investments and needs for cash (USDA 1990). Second, because the price of membership and equity stock is fixed, it cannot be adjusted by the market to reflect the expected earnings of long-term investments, as can shares in an IOF (Fulton 2001). As a result, many members move to maximize short term gains from patronage rather than risk uncertainty. This is closely tied to the portfolio problem. Because members' investments in the cooperative are not in the form of transferable and liquid assets, members can not adjust their personal investments to match their own risk aversion. This may further encourage members to minimize patronage retains in favor of patronage refunds.

Other Challenges

Democratic voting is integral to all cooperatives, and is often cited as a desirable quality, but decision making by large numbers of stakeholders has the potential to be inefficient and costly. Cooperatives can help reduce these effects by establishing clear and efficient channels for decision-making. In fledgling stages of development, many cooperatives depend on volunteer involvement to support critical functions of the business. While volunteer involvement is positive, over-reliance on the goodwill of members has the potential to damage the organization if members get burned out or neglect volunteer duties. In general, coops should not underestimate the value of members time and effort, and should not use volunteer labor as a substitute for the capital investment required to hire dedicated staff and strong management. Capable managers with broad decision-making authority can reduce decision making costs, but members should maintain close communication with managers to reduce the possibility of corporate drift.

4.4 Build Vertical Integration Based on Economic Viability

Vertical integration is an inherent part of the cooperative organizational form. But the decision to integrate new functions into a cooperative is complex, and often a decisive moment in the life of a cooperative. Vertical integration can quickly burn limited capital, resulting in high opportunity costs for failed ventures. Landowner cooperatives often have the opportunity to integrate a variety of service, processing and marketing functions, all of which pose significant risks if assumptions are made about markets, including existing or potential demand for products. Quality information is critical in limiting the risks associated with vertical integration.

From an economic perspective, in order for a value-added enterprise to be a rational business choice, the next level of the value chain must earn larger returns on capital investment than existing operations. For example, if milling does not provide larger returns on capital than growing and selling logs, a cooperative would be better off focusing all its attention on growing and selling logs. Or, if a cooperative can make more money by marketing processed products through intermediary marketing firms rather than integrating marketing functions, it should do so. If trucking is not as profitable as milling, a cooperative would be well advised not to integrate trucking functions because returns on capital investments would be higher without investment in trucking.

It should be apparent that the basis of decision making here is market information, not ideas about what a cooperative “should” do. Fulton and Andreson (2001:135) offer this assessment: “in order to compete in today’s marketplace it is vital to understand both the structure of the underlying value chain and how the value chain functions...[Firms] must evaluate the nature of the competition and determine whether a new entrant might result in retaliatory action on the part of existing players.” These authors present three questions that must be addressed in evaluating the potential for vertical integration:

1. What technological advancements are changing the nature of the value chain and how can you best position yourself as an investor to be competitive in the long run?
2. Is the nature of competition changing at any of the stages in the value chain as a result of consolidation and collaboration?
3. Who are the key players and what businesses are going to survive?

Matson (2000) further elaborates on the feasibility of integration, urging cooperatives to consider performing an explicit and detailed feasibility study before undertaking any cooperative ventures. The decision to integrate should be grounded firmly in data describing anticipated prices for inputs and outputs, anticipated sales volume, total size of the market, and information about both competitors and potential collaborators.

Other issues are specific to the level of the value chain that a cooperative targets for integration. The integration of service functions may be more straightforward than processing and marketing functions because landowners need many of these services

already, including management of timber sales and harvesting services, even if they manage their forest independently. However, integrating processing and marketing functions can be much more challenging.

Integration of Processing Functions

Two conditions are primarily responsible for spurring vertical integration into processing operations: an inefficient capital market, that is returns on capital could be higher than are currently being achieved, or market failure due to monopoly or monopsony (Schrader 1989). In effect, cooperatives can either capture the profits that are going to other firms in a distorted market, or capture profits from capital investment in another level of the value chain. If market failure does not exist, then additional profits to the landowner are not coming from getting a higher price for raw materials, they are coming from the physical act of processing raw materials and selling processed products. If market failure does not exist, and if processing firms are not garnering larger returns on capital investment than log suppliers, vertical integration of processing functions is unlikely to provide members with higher returns on investment. Therefore it is imperative that cooperatives document these market conditions before integrating processing functions.

It is quite possible that processing activities have profit potential. For example, in 1999 Golden Forest Ag Fibers, a straw particleboard cooperative in Kansas, built a profitable factory to convert waste wheat straw to particleboard, a previously unexploited value-added opportunity (Associated Press 1999). In forestry, Södra's processing activities, including pulp, lumber and paper operations, have greatly increased members' returns on capital investment. However, members will only receive additional profits from processing if *the cooperative's* value-added operations are profitable. This tautology reinforces the idea that vertical integration must not only target a profitable level of the value chain, it must build a profitable, well-run business. This is especially true in the wood products industry, which can be an inherently "low-margin, risky business," as the Sustainable Woods Cooperative observed first-hand (SWC 2003b). In fact, a cooperative may actually compromise its profitability with value-added enterprises, especially if benefits from large-scale production are bottlenecked through small-scale or inefficient processing facilities. For example, if horizontal integration results in a large land base and large wood volume, it would be inefficient to process this wood in a small-scale concentration yard, portable mill or solar kiln, simply for the purpose of integrating value-added processing. Economies of scale apply in processing functions just as rigorously as in production functions.

Integration of Marketing Functions

Two levels of marketing apply to forestry cooperatives: marketing raw logs and marketing processed products to wholesalers or consumers. Forestry cooperatives may realize the most immediate returns from marketing large volumes of raw materials to wholesalers or processors. Compared to individual landowners, cooperatives have a high capacity to research market data, search for the most appropriate buyers for specific products, and enter into formal contracts for delivery to reduce uncertainty and increase

profits. Retained patronage from these activities can help finance future integration into additional processing and marketing functions.

It is often suggested that value-added processing and marketing functions can help landowners get higher value from traditionally low-value species and low-value logs, thus providing them with a higher return and more opportunities for profitable timber stand improvement. This claim can be evaluated on two levels. First, the lower value of certain species and grades of lumber may be the result of what is essentially a marketing problem. The integrity of the wood may be identical to other grades, but the appearance of certain species or grades of wood may not be desirable because the consumer is unfamiliar with the product and its quality. It is possible that this value “deficiency” could be addressed through an effective marketing campaign, and what are traditionally low-value products could yield higher returns for the landowner and processor, cooperative or not.

It is also possible that certain species and grades of lumber are low-value because it takes more time and energy to process these logs, yielding less product per unit of labor. More time spent processing means less profit and lower value to the landowner and mill. It is also possible that the quality of the wood is poor, or that the wood itself has structural attributes that make it less desirable. No amount of marketing short of deception can increase value in this situation. It is essentially a technology issue. New technologies are required to reduce the amount of labor it takes to extract boards from low-value logs. In other words, no value-added operation can turn lead into gold, or market lead as gold. Many new technologies are available to maximize the yield of a log, even logs of lower quality, but these technologies are typically capital intensive, reinforcing the necessity of adequate capital investment in vertical integration.

The marketing of processed products also has the potential to provide coop members with higher returns on investment. In the commodity sector, marketing coops must focus on promoting the quality characteristics of their product and maintaining product identity. In the case of sustainable forestry cooperatives, this may mean taking advantage of brand identity through certification, or establishing an independent brand to make sure consumers know the product has come from a sustainably managed forest. Such niche markets have been an important driver in the establishment of many agricultural cooperatives, especially those involved in organic agriculture, and may be a profitable approach for sustainable forestry cooperatives (Hanson 2001).

Niche markets require special attention to coordinating production and processing and necessitate special marketing capacity. They also present several hazards. Small-scale production with spot marketing to targeted clients may capture niche markets, but it is inherently inefficient and requires high premiums to be profitable, as in the case of the VFF project with Middlebury College (VFF 2003a). In this case Middlebury offered a premium of at least 13% to obtain locally grown, FSC certified lumber for the interior woodwork of Bicentennial Hall. Niche markets also offer limited opportunities for growth, as these markets are often focused on small or local markets that can become saturated quickly. Similar to the issues surrounding small-scale processing operations, a

focus on local marketing may put a bottleneck on value-added profits. If coops are going to market their wood as “locally produced,” they should make sure that “local” includes large markets. That said, local markets can drive cooperative success. The greatest demand for value-added products from Midwestern cooperatives has come from local and regional markets (Family Forest Foundation 2003).

Alternatives to Integration

If building a new mill to integrate wood processing is not a viable option for existing cooperatives, there are other options that allow landowner coops to capture profits from additional levels of the value chain. Most simply, a cooperative could buy and hold stock in an investor-oriented processing firm. A coop might also increase coordination along the value chain through contracts and agreements, joint ventures and strategic alliances with other firms (Fulton and Andreson 2001). In this case, most of the profits from processing would go to other firms, but the coop could receive some profits from value-added processing through favorable prices. A cooperative could also purchase and upgrade an existing mill. Krogman and Beckley (2002) describe worker buy-outs of two paper mills in Canada as a path to community based forestry. This approach may have applications to forestry cooperatives.

The Feasibility Study

It is worth taking a closer look at the feasibility study as a means to assess the potential of a cooperative to succeed in the forest products industry. Any value-added enterprise requires a thorough feasibility study to address the many questions raised in this section. The results of this study should include a thorough economic analysis of the proposed venture and should show that the returns involved are worth the risks. This applies as much to cooperatives as to proprietary businesses and investor-oriented firms. The costs of such a study might be high, but will likely be much less than building an unprofitable mill and squandering member equity, and good faith, on efforts that were likely to fail from the start.

Feasibility studies also establish the set of assumptions used to validate the enterprise and calibrate member expectations to market realities. Additionally, they expose the tendency for a new enterprise to affect multiple levels of the existing operation. For example, human resources may have to be diverted to new business functions. Matson (2000) highlights four major questions the feasibility study should address: (1) is the project needed? (2) What is the support base for the project, including both membership and product volume? (3) What is the competitive outlook for the project? And (4), what are the organizational needs for the project? Other authors, including Cobia (1989) and Merrett and Walzer (2001), have highlighted additional requirements for cooperative feasibility. Whatever protocols are used, it is important that vertical integration within a cooperative be based on economic viability supported by a thorough feasibility study. This will protect capital investment, from both members and lenders, and is especially critical for cooperatives, which typically face significant capital constraints.

4.5 Standardize Sustainable Practices through Certification

Over the last ten years, forest certification has gained significant ground in the United States and around the world as a voluntary mechanism to promote and reward sustainable forest practices. In general, “certified” forests are managed in accordance with specific standards designated and verified by an independent certifying body. It is important to emphasize that at its core, any forest certification framework is a market-based mechanism for change, not a regulatory strategy. In theory, owners of certified forests are rewarded with access to certified markets, access that is denied to owners of non-certified forests. By preserving product identity through product labeling, certification facilitates direct consumer action against non-certified companies in favor of certified ones, potentially offering a premium to purveyors of certified wood products. Evidence indicates that up to 70% of certified companies, managers and landowners expect a premium for certified wood (Haward and Vertinsky 1999), though in many cases this premium has not materialized, often because markets and value chains for certified products are still underdeveloped.

Currently, several forest certification options are available to landowners in the United States. The Forest Stewardship Council (FSC) has developed a certification system that is administered through independent organizations including both for-profit companies like Scientific Certification Systems (SCS), and non-profit groups like the SmartWood Program of the Rainforest Alliance. FSC certification standards include directives designed to improve the economic well being of those involved in forestry and the wood products industry, including local communities, without compromising the ecological integrity of the forest. FSC certification has been the most popular among forestry cooperatives in the United States, in part because certifying organizations have made it easier for groups of small-parcel, non-industrial private landowners to have their property certified under a group certification or under a certified resource manager who manages many different properties.

Several other organizations including the International Standards Organization (ISO), the American Tree Farm System (ATFS) of the American Forest Foundation (AFF), and the Sustainable Forestry Initiative (SFI) of the American Forest and Paper Association (AFPA), also offer certification programs that have been widely implemented throughout the United States. These programs vary in terms of the specificity of their standards, monitoring and evaluation practices, and in access to market opportunities based on the promotion of a specific brand identity.

Which of these systems is most appropriate for a sustainable forestry cooperative will depend on the values, goals and objectives of the members. Naka et al. (2000) identify three general groups who are involved and interested in certification: those with a general interest, those with a political interest, and those with a financial interest. Coop members may fall into all three categories. While many cooperatives have latched onto certification as a given, it is quite possible that a forestry cooperative with strong environmental commitments could implement forest practices that meet and exceed forest certification standards without ever being certified. In other words, forest certification is

not necessarily a requirement of businesses that wants to meet high standards for ecologically responsible forest practices. Other reasons must drive the investment in certification.

Sustainable forestry cooperatives derive two primary benefits from having member forests certified through an accredited certification system. First, certification can standardize and verify consistency in practices across a diverse membership. To formalize environmental commitments, a cooperative might spend resources developing its own set of standards that embody the membership's commitment to sustainable practices. Compliance with these standards could either be voluntary and unmonitored, or the business could spend additional resources monitoring member compliance. It may be much more efficient, i.e. less expensive, to adopt a set of standards already established by a popular certification system, then make the investment in certification to provide third-party verification of compliance. This approach is obviously less relevant for a coop with a relatively small number of members, or a limited range of member ideals and values, but as a cooperative grows, the standardization of sustainable practices may become more critical.

Second, certification offers access to certified markets and the potential to improve returns from timber and processed forest products. From this market-based perspective forest certification is essentially a value-added enterprise, and should be evaluated as such. As with other value-added operations, a decision to integrate certification into production and marketing functions should rest on sound economic projections supported by a thorough viability study. If economic returns are to be used as a justification for investment in certification, the potential for returns should be carefully evaluated before the investment is made. In particular, capital and management requirements, market size, demand and prices, potential product volume, competitive forces, and opportunities for strategic alliances should be appraised, and financial benefits should outweigh the financial risks (Matson 2000). The members of a cooperative may choose to pursue certification to support the growth and development of certification systems in general, and to support a certifying organization's mission to improve forest management practices around the world, but it is useful to distinguish between this principle-based decision and a decision based on the potential of certification to yield economic returns on capital investment.

Certification may offer several additional economic and non-economic benefits. Certification provides an independently verified commitment to sustainable forestry that may enhance the public perception of a cooperative, even if certification only formally recognizes forestry practices that are already being implemented. This may add to political power and gain recognition and status in circles that support forest certification. Certification might also serve to galvanize member commitments to long-term forest management, as well as balance potentially conflicting interests between multiple stakeholders within the cooperative. Whatever the potential benefits, a cooperative should clearly identify the reasons for certification, and the objectives members hope to achieve. Certification should be pursued based on its potential to meet these objectives at an acceptable cost to the cooperative and its members.

5. OPPORTUNITIES FOR THE FUTURE

It is easy to imagine a deterministic future for America's 300 million acres of non-industrial, private forestland. The forces of global economic integration will continue to erode both the profitability of these forests and the ability of local communities to control their own economic destiny. Of the 10 million individuals and families who own this land, those who can afford to do so will simply stop active forest management in favor of preservation. Others, faced with a bleak economic outlook for income from forest products, will cash out. Landowners who are close to urban centers will sell land for development and recreation, transforming working forests into condominiums, vacation homes and bedroom communities. Those who own land with high conservation value may benefit from buyouts by government agencies or non-government organizations. Those who own forest with little development or conservation potential will capitalize on short-term gains from intensive harvesting, further compromising the long-term economic potential of the land. Communities that once derived a significant portion of their economic vitality and identity from the forest products industry will either transition into a tourism-based economy, or fade in the shadow of economic decay and rural outmigration. Meanwhile, the country will continue to increase imports to meet its voracious demand for wood products.

An alternative vision for these 300 million acres might include a revitalization of rural communities based on supplying domestic needs with domestic wood harvested sustainably from local forests and processed by local businesses. The financial benefits of active forest management will translate into economic, social and conservation benefits for local communities. Profitable timber harvesting and processing, in the context of standardized and carefully monitored sustainable forest practices, will reduce the pressure for landowners to develop or otherwise compromise the forested character of their land, while at the same time protecting the ecological integrity of the forest.

In 2003, we stand somewhere between the dramatized vision of ecological fragmentation and community decay, and the idealistic future of economic and ecological values balanced on the fulcrum of sustainable forestry. A new generation of sustainable forestry cooperatives has the potential to move us toward a more balanced future, a future that uses economic incentives to encourage private landowners to work together to improve forest management for their own economic and social gain, as well as for the benefit of local communities and forest ecosystems.

To achieve this balance, new and existing forestry cooperatives must be guided by a commitment to provide members with new opportunities, allowing landowners to improve their well being in ways that would otherwise be impossible. Cooperatives should also facilitate and encourage membership growth, confront the many challenges inherent in the cooperative business model, build vertical integration based on economic viability, and formalize and standardize conservation commitments through forest certification. As existing cooperatives grow, and as new cooperatives emerge, additional opportunities to combine forces through collaboration and the formation of federated

cooperatives will become a reality. Ten million prospective members and 300 million acres of forestland embody the enormous potential for a significant shift toward cooperative forest management in the United States.

If forestry cooperatives are successful in providing ecological and community benefits based on the economic gains of non-industrial, private forest landowners, they will accomplish a much more elusive goal than simply changing the landscape of forest management. They will help bridge the deep divide that currently separates human economic aspirations from the physical and ecological limits of our world.

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