

THE STATUS OF AND OPPORTUNITIES FOR BUSINESS CLUSTERING WITHIN THE FOREST PRODUCTS SECTOR IN THE U.S.

Appendix B Case Studies of Successful Forest Business Clusters

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INTRODUCTION

Representative case studies were developed for each region of the U.S. to highlight clustering activities in the forest sector. Given the number and range of clustering examples that are available, these case studies only represent and illustrate a range of approaches and the

distribution of activity. The case studies include clusters in Maine, Ohio, Wisconsin, Virginia, Mississippi, Arizona, and Washington. Information is also provided about clustering in Finland and Sweden for international comparison purposes.

NORTHEAST: MAINE FOREST SECTOR CLUSTER

Cluster Development in a Mature Industry

CLUSTER PROFILE

Name: Maine Forest Sector Cluster

Location: Maine (statewide)

Duration: 150+ years

Legal Status: Many for-profit and no-profit organizations are part of the cluster

Umbrella Organization: No formal organization

Product Focus: Primary and secondary (value-added) products with recent emphasis on high technology enterprises

Number of Firms: >750

Key Strategies: Implement recommendations of statewide forest industry study; transfer research and development results to industry

Website: See websites listed in Reference section to Maine Future Forest Economy

Overview

Maine boasts the highest percentage of forestland in the country—90%. Private ownership dominates Maine with 95% of the state's forests in private hands. Total forestland in the state is approximately 17.7 million acres.

Maine's economy directly derives \$6.5 billion from the state's forest-based industry; accounting for indirect contributions, the industry's total impact is over \$10 billion. In 2002 the forest-based industry employed over 18,000 people, with forest products representing over 36% of the state's manufacturing output.

Employment in forest-based industries declined by 23% between 1997 and 2002. One reason for the drop in employment can be traced to technology efficiencies at processing mills and harvesting operations. However, worker productivity, average wage, and capital expenditures increased during the same time period. These trends, according to the Maine Forest Service, reflect the natural evolution of a mature industry going through transition and aiming to remain competitive in the global marketplace.

Cluster Development - Pre-colonial Through 20th Century

In the early 1600s, the estimated area of forest land in what is now Maine was 18.2 million acres. As settlement increased, forest land decreased, reaching a low of about 15 million acres in the early 20th century. Forested acres rebounded however, reaching a peak around 1971 and has been stable since then. The USDA Forest Service

estimates current forest acreage in Maine to be 17.7 million acres with 97% classified as timberland (land capable of producing commercial crops of wood and not restricted from harvest).

Logging and sawmilling have been important to Maine since the early days of European settlement. South Berwick, Maine is reported to have been the home of the nation's first sawmill in the early 1630s. Since that time numerous forest product related industries have contributed to the growth of Maine as well as the entire country. Wooden shipbuilding, for example, was important in Maine as its output of schooners—often more than 300 annually—lead the country many years between 1820 and 1890.

The development of wood pulp paper in the 1880s created a boom for New England's paper industry, including Maine. By 1900 the paper industry consumed nearly half of Maine's annual timber harvest. By 1919 the state's average paper mill employment numbers were more than double that of neighboring states. Paper production continued to increase during the first half of the 20th century, and by the 1950s accounted for 80% of the annual harvest. In fact, by 1970 one in every four Maine manufacturing workers was employed in the paper industry.

Maine has long been a prominent producer of turned wood products such as dowels, rods, pins, and other shaped products. Maine also had some of the nation's earliest oriented strand board (OSB) plants (1980s).

According to Irland (1999), "...from 1905 to 1991, the share of Maine manufacturing employment originating in the lumber and paper industries actually increased slightly,

while their share of the state's value of manufacturing production rose significantly.”

Forest-based Industry Cluster

Today, pulp and paper manufacturing serves as the backbone of Maine's forest industry cluster. However, many sub-clusters exist in addition to pulp and paper including sawmills, wood product manufacturers, forest ownership and management, timber harvesting, and biomass power generation. In addition, the cluster includes equipment manufacturers and distributors, university programs, financial institutions, government agencies, trade associations, forest-based recreation businesses, and transportation firms.

A strength of Maine's state-wide forest industry cluster is its depth and diversity. Markets for a wide variety of products are available including veneer, sawlogs, pulpwood and woody biomass. This diversity provides markets for the trees grown by landowners and the products harvested by loggers, and provides opportunities for landowners to practice sustainable forestry. Markets for low-grade wood—pulp mills and biomass facilities—are important in this regard.

As in other states, Maine's forest product manufacturers are facing challenges in an ever increasing global marketplace. Some firms have prospered in this competitive climate, whereas others have not.

During 2000-2005, output at paper mills and sawmills was at near record levels, although employment was down. As employment drops, fewer but more highly skilled workers will be needed. The good news, however, is that wages, worker productivity, and capital expenditures have increased during the period of falling employment numbers.

By volume, Maine is the second largest paper-producing state in the nation; and Maine sawmills (in 2005) were producing near record volumes of lumber. Maine has a diverse secondary wood products industry producing everything from furniture and pallets to golf tees and boats. However, the secondary industry has lost some high-profile labor-intensive “wood turning” product manufacturers in recent years.

The Advanced Engineered Wood Composites (AWEC) center at the University of Maine is considered a world-class research institute for developing new applications and uses for wood. One thriving Maine business has already been established based on research developed at AWEC (see section on Maine Technology Institute Cluster Initiative).

Maine has 10 facilities where biomass energy is the sole or primary product. Also, a large number of forest product manufacturers burn wood to generate heat, steam and electricity for internal use or sale. As noted earlier, these

firms are important to the entire cluster as they provide a market for byproducts or low value products, and present an opportunity for good forest management.

There are significant opportunities to produce bio-products in Maine since they can be produced at stand-alone facilities or integrated with existing pulp and paper mills.

Maine is a leader in forest certification. Currently, the state boasts more than 7 million acres certified to the American Forest Foundation's American Tree Farm System, the Sustainable Forestry Initiative (SFI) or Forest Stewardship Council (FSC) standards. Certification provides Maine industries with an opportunity to capture market share by distinguishing their products from non-certified products. The pulp and paper industry in Maine has been a driving force in the certification movement.

Moving Forward: The Maine Future Forest Economy Project

An ambitious task was completed in March 2005 to identify “what is needed to maintain Maine's existing wood-using industries and to identify what Maine State Government and the industry itself could do to improve the prospects for Maine's forest product industries” (Innovative Natural Resources Solutions LLC. 2005c). This project was an initiative of the Department of Conservation (Maine Forest Service) and the Maine Technology Institute. The participation of 300 individuals and firms supported the project in addition to an advisory group and forest industry experts from the private sector, government, and academia. The Future Forest Economy Project is part of Maine's state government ongoing effort to better understand and support the state's forest products industry. The final 474-page report from this project provides a roadmap for both state government and Maine's statewide forest-based industry cluster.

Recommendations highlighted by the Maine Future Forest Economy Project include:

- Encourage capital investment – through prospective elimination of the personal property tax on business equipment.
- Encourage entrepreneurial thinking to develop entrepreneurial capacity in the industry – including a focused continuing education program, “one-stop learning” to assist individual micro-businesses and encourage stronger micro-business networking, and stimulate cluster development.
- Distinguish Maine products in the marketplace – including building upon the existing Maine Made program for consumer products; and working with neighboring states to create a regional brand¹.

¹ Maine WoodNet is an example of a multi-county effort to support local forest-based manufacturing, wood use efficiency, and improved forest stewardship. Established eight years ago with funding from the Wilderness Society, WoodNet grew to over 80 members within the first two years including establishment of a WoodNet certified group. Many of the WoodNet companies became members of the “Maine Made” program, a group of over 1,000 producers creating items from wood, granite, field, and farm. WoodNet operated a successful sales gallery (11 owners and 40+ consignors) for over six years. Recently, however, all shares in the gallery were purchased by one WoodNet member. WoodNet recently lost its funding source and is looking for another funder to help support the program. According to Gary Krauss, an original WoodNet member, the organization technically no longer exists although many benefits continue to accrue to members.

- Invest in technology – including transferring research results at Maine universities into commercial applications; and focusing state financial support in areas most compatible with existing industries.
- Work collaboratively to create predictable and stable policies – including improving relations between government, industry, and other stakeholders; and work collaboratively to identify long-term roadmaps for issues of concern.
- Improve the ability of Maine forest products manufacturers to compete – including low interest loans for energy efficient investments, working with state and federal agencies to improve transportation efficiencies such as weight limits on roads, and improvements to environmental permitting and health care costs.

Maine Technology Institute Cluster Initiative

Efforts such as the Future Forest Economy Project do not just “happen” without individuals or organizations providing leadership. As noted above, the Maine Technology Initiative (MTI) partnered with the Department of Conservation (Maine Forest Service) to sponsor the Future Forest Economy Project. Both organizations provided a significant and unique commitment of resources to understand and support Maine’s forest-based industry. MTI describes itself as a state-funded nonprofit organization that offers early-stage capital and commercialization assistance for the research and development of innovative technology-based projects that create new products, processes and services, and generate high-quality jobs across Maine. Established by the legislature in 1999, the MTI targets seven technology sectors:

- Forestry and agriculture
- Aquaculture and marine
- Biotechnology
- Composite materials
- Environmental technology
- Information
- Precision manufacturing

A 2002 report funded by MTI concluded that the forest products industry demonstrated the strongest cluster characteristics of any sector in Maine. This report also concluded that the forest industry supported three sustainable clusters: forest harvesting and management, wood products manufacturing (shaping and fabricating wood), and pulp and paper.

In September 2008 MTI launched a cluster initiative program. This new program (which replaces a cluster enhancement awards program) will award over \$2 million per year with a maximum award limit of \$500,000. Matching funds are a requirement for program participants. Award funds can be used for a host of clustering activities including research, training, infrastructure and equipment

investments, attraction of capital, and network building.

An example of an MTI grant spurring local investment is Correct Building Products (CBP) of Biddeford, Maine. CBP has received MTI seed grants, a development award and one of MTI’s earliest performance grants to commercialize their engineered lumber deck board in 2000. CBF produces a composite decking line (CorrectDeck) that uses 60% scrap hardwood sawdust and 40% polypropylene plastic. A 2006 MTI publication reported that CBF had 57 employees, sales of approximately \$30 million, and distribution of their products throughout the U.S., United Kingdom, Japan, and many other countries. A CorrectDeck news release in August 2008 stated that company sales were up 40% from 2006 despite the slumping home market. In addition to benefitting from MTI financial assistance, CBF has received support from the University’s of Maine Advanced Engineered Wood Composites Lab, the Maine Patent Program, Small Business Development Center and the Maine Manufacturing Extension Partnership.

Research and Development

One of the strengths of the Maine forest sector cluster is its emphasis on developing advanced technologies that can be adopted by existing and start-up companies. One example of the state’s research and development (R&D) efforts is the Advanced Engineered Wood Composites Center (AEWC) at the University of Maine.

AEWC is a research, education, and economic development center focused on material science and structural application of hybrid composites. Founded in 1991, AEWC achieved its first significant success in 1995 when it developed the first fiber-reinforced-polymer (FRP) timber ocean pier in the world. The 124-foot-long experimental pier used native Maine timbers and was 25% less expensive than steel. Due to the success of this project and the potential economic benefits for Maine, the Center attracted the attention of the composites and wood industry, the Maine legislature, the Maine Science and Technology Foundation, and Maine’s Governor’s office. Since 1991 AEWC has grown substantially and is now recognized globally as a leader in composites R&D and the next generation of cost-effective high-performance, wood-non wood composite materials.

Since 2001, the Center has received over \$17 million in research funding from governmental agencies and has done R&D work for over 150 private companies. In 2005, AEWC was awarded a U.S. Army multi-year contract of over \$6 million to develop high-strength structures for military applications. There has also been a recent major expansion of the Wood Plastics Composites Pilot Plant with funding from Maine industry and the MTI.

Currently, over 30 professional staff are affiliated with AEWC including numerous students and support staff. Products currently under development at AEWC include long strand structural lumber, FRP deck panels, low-grade

hardwood oriented strand lumber, advanced engineered lumber, advanced wood composite boat hulls, low-grade wood laminated molding, composite boat oars, composite popsicle sticks, and a composite skateboard.

With the growth and on-the-ground success of AEWFC in recent years, the Center is poised to contribute substantially in the future to the high technology needs of Maine's forest sector cluster.

Key Points and Factors for Success

Maine has a large, diverse, and relatively mature forest products industry. The state has recently adopted progressive strategies for nurturing its forest sector clusters. One course of action has been the development of the Future Forest Economy Project. This project and other inter-related initiatives have focused on keeping the industry strong, viable, and able to adapt to new technologies and a changing economy. Key points and factors for success for the Maine cluster are outlined below:

- Emphasize a broad forest sector cluster approach

to identify and create competitive advantage, capitalizing on the three sustainable sub-clusters in the forest sector (forest harvesting and management, wood products manufacturing, and pulp and paper).

- Emphasize a strong research and development effort, including technology transfer to industry.
- Support high-tech forest-based industries and innovations through public programs such as the Maine Technology Institute and the University of Maine's Advanced Engineered Wood Composites Center.
- Develop diversified and niche industries to counteract employment decreases in the pulp and paper industry.
- Capitalize on Maine's advantage over many states (particularly in the West) of reasonable access to the timber resource (95% in private ownership).
- Capitalize on Maine's certified forests and chain-of-custody companies.

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MIDWEST: OHIO

The Role of Cultural Identity in Forest Sector Cluster Development, Amish Furniture Industry

CLUSTER PROFILE

Name: Amish Furniture Cluster
Location: Ohio (Holmes and surrounding counties)
Duration: > 10 years
Legal Status: Non-profit (one sub-set of cluster is Hardwood Furniture Builders' Guild)
Umbrella Organization: Chamber of Commerce (for Guild)
Product Focus: Hardwood furniture
Number of Firms: >99
Key Strategies: Cooperation between manufacturers; focus on supply chains; brand image.

Overview

Holmes County, Ohio, (population 40,000) has the largest Amish settlement in the world (population 19,000). Traditionally, the Amish have engaged in agricultural-related occupations. However, as farmland has become scarce and more expensive, and as the Amish population has grown, more Amish are looking at non-farm occupations including several types of manufacturing. In Holmes County, Ohio, hardwood furniture manufacturing is on the rise, even at a time when domestic (national) furniture production is in decline. Today, there are about 500 small furniture makers, finishers, and distributors within the industry cluster in Holmes County and the surrounding area.

Cluster Development - Growth of the Furniture Cluster

In 1973 only 3% of Amish heads of household in Holmes County were employed in the secondary wood products sector (furniture manufacturing, for example, as compared to primary industries such as logging and sawmilling). By 1997, this number increased to 14% (conservative estimate). When combining overall manufacturing in Holmes County with primary and secondary wood products manufacturing, the employment percentage jumped to 35% of Amish heads of households. For comparison, agricultural-related occupations in Holmes County declined from 48% to 21% during this same time period.

The majority of Amish wood-based businesses operating in and around Holmes County are of a small size and established during the last 15 years. The median number of employees per firm for manufacturers, finishers, and wholesale distributors is between 4 and 6 workers. The

estimated total employment in the cluster is approximately 3,000 people.

Since the majority of the businesses in the cluster are small, they tend to specialize in production of a particular product. For example, one shop might make dining room chairs while another makes matching dining room tables. The separately-manufactured chairs and tables are sent to a finishing shop (often by wholesalers and retailers) and eventually are sold as single furniture sets.

High quality products are the focus of the Amish cluster. Many of the businesses use state-of-the-art machinery and equipment; others rely primarily on hand tools and manual labor. Businesses that run machinery use power sources such as pneumatics, hydraulics, or generators to produce electricity. Amish doctrine forbids members from connecting to the electric power grid.

The Holmes County cluster consumes approximately 44 million board feet of hardwood lumber annually which is equivalent to 11% of Ohio's total lumber production and 19% of the state's total 'grade' production. The cluster sources its lumber from three areas: (1) small Amish sawmills that exclusively serve the furniture manufacturers, (2) larger sawmills in the area that may or may not be Amish-owned and Amish-operated, and (3) distributors that procure lumber from other sources and serve as channel intermediaries to move the lumber to the Amish furniture makers.

The value of shipments for the Holmes County furniture cluster is nearly \$281 million. This figure represents almost 3% of the national furniture manufacturing total. Interestingly, the Holmes County cluster has fared relatively well during a volatile time in national furniture manufacturing.

Cooperation is a Key to Success

As in other industry clusters and sectors, the Amish furniture cluster centered in Holmes County, Ohio is a collection of independent but inter-related competitive businesses. One of the keys to success for this cluster is the ability to temper the competitiveness with a sense of cooperation. The cooperative spirit of the cluster is illustrated by three successful examples: Ohio Certified Stains Program, Hardwood Furniture Builders' Guild, and a network of distribution channels.

Ohio Certified Stains – The Ohio Certified Stains (OCS) group strives to ensure color continuity and consistency in the stains used to finish furniture made by cluster manufacturers. The group was formed in 2005 when the manufacturing cluster had four different suppliers of stains, and particular colors were not consistent from supplier to supplier. Since several small furniture makers were independently making pieces that might be part of a complete set of furniture, the individual pieces might end up with different hues of the same color. Consequently, the OCS group worked with local suppliers to establish a collection of 15 standardized stains. Seven suppliers are now licensed to provide stains to finish the cluster's hardwood furniture products. Manufacturers can now offer consumers different stain options on retail floors and then conveniently source the colors selected. Another advantage is that consumers can buy matching pieces at a later date.

The bottom line is that the OCS standard is a unique attribute and an excellent marketing tool for the cluster. The president of the OCS group has proudly noted that furniture manufactured overseas can not match the quality or consistency offered by the Holmes County cluster. Since "Amish" furniture is also produced in communities in Pennsylvania and Indiana, these 'out-of-state' producers have adopted the OCS standards since the same furniture retailers buy from producers in the tri-state area and require color consistency and continuity.

Hardwood Furniture Builders' Guild – The Guild was formed in 2006 and currently has about 200 member companies. The administrative work of the Guild is handled by the Holmes County Chamber of Commerce. The mission of the Guild is "to promote and market domestically manufactured home furnishings of unparalleled value and quality, while providing customers with superior service and integrity" (Terrerri 2008). The guild provides economies of scale when spreading the word about the cluster's existence and products.

The Guild has developed an identifier logo that is stamped on furniture coming out of Holmes County that meets certain standards of excellence. The goal is to inform retail furniture store chains (and ultimately consumers) of the high quality products coming from the

Holmes County cluster.

Also, the Hardwood Furniture Builders' Guild recently started their own 'furniture market' (similar concept to the High Point, North Carolina and Tupelo, Mississippi models). Over 700 furniture buyers attended the first exposition.

Network of Distribution Channels – Many dedicated Amish retail stores are located near Amish manufacturing centers in Ohio, Pennsylvania, and Indiana. These manufacturing and retail centers are near several major population centers, and, thus, potential markets. Holmes County, for example, is geographically located within a 90-minute drive of Cleveland, Columbus, Akron, and Youngstown, Ohio. Distribution is beyond just the local area. The Holmes County cluster primarily focuses on domestic customers with distribution today in nearly all 50 states. Interestingly, a few of the larger Holmes County businesses serve as distributors and marketers for smaller shops. This type of synergy and cooperation is one of the cluster's keys to success.

Key Points and Factors for Success

Can the Amish model work in other regions and other cultures? It would be easy to dismiss the Holmes County Amish furniture cluster as so unique that it has little relevance and limited application to other forest product industries. Clearly, the cooperative aspects of the Amish society and the commitment to furniture manufacturing as a way of life as farming becomes less viable are examples of the non-replicable nature of the Amish cluster model to most other situations. However, there are components of the Amish model that could be replicated in other regions of the U.S.:

- **Supply Chains** - the development of supply chains that can offer semi-customized furniture pieces from a manageable range of wood species, product styles, and finishes is achievable by other industries throughout the U.S.
- **Branding** - although many of the furniture producers in the Holmes County cluster do not specifically market their products as "Amish-made," there still exists a product brand image that denotes quality and workmanship—attributes that are transferable to other industries and other products.
- **Cooperation** - the Holmes County cluster also serves as a model by demonstrating that niche opportunities can be captured by cooperating with others to source components and services not easily produced in-house.
- **We-can-get-it-done Attitude** - the Holmes County Amish model demonstrates that government support in the form of grants, loans, and other financial incentives is not necessarily a prerequisite to develop and support a successful industry cluster.

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Thanks also to Matt Bumgardner, U.S. Forest Service, Delaware, Ohio, and Shasta Mast, Holmes County Chamber of Commerce, for providing valuable information by telephone.

LAKE STATES: WISCONSIN

The Role of an Economic Development Initiative in Forest Sector Cluster Development, Ladysmith Forest Industry Park

CLUSTER PROFILE

Name: Ladysmith, Rusk County; Wisconsin Forest Industry Park

Location: Wisconsin (City of Ladysmith and Rusk County)

Duration: > 10 years

Legal Status: Informal association

Umbrella Organization: Government

Product Focus: Secondary (value-added) manufacturing

Number of Firms: >10

Key Strategies: Prepare cluster feasibility analysis; build on existing assets; seek stakeholder cooperation; engage strong leaders.

Overview

The city of Ladysmith (population 3,500) is located in rural Rusk County (population 14,700) in northwestern Wisconsin. Rusk County is heavily forested (nearly 400,000 acres covering 68% of the land area) and has a long history of forest products manufacturing. When the idea of developing a cluster-based forest industry park in Ladysmith was proposed in the 1990s, numerous challenges had to be overcome. As an example, population growth in Rusk County lagged state and national growth rates. Also, the population was older and less wealthy than the state average. The county labor force participation rate was below both the state and national rates, and wages in Rusk County were below state averages. The county lacked a four lane highway (although Ladysmith is located at the junction of two northern Wisconsin's major rail lines). Also, Rusk County was not on a major industrial growth corridor. Consequently, given these and other socio-economic challenges, the development of a forest industry park appeared to be problematic.

The good news for Ladysmith and Rusk County was that during the early 1990s Wisconsin forest product industries invested heavily in new plants and equipment. For example, during the period 1990-1994 the forest products industry accounted for 40% of all manufacturing investments in the state. Four thousand new jobs in the forest products industry were created during this time period. Due to the diversity of the forest products industry including its technological sophistication and rapid growth rate during this time period, the state of Wisconsin targeted this industry sector for economic development.

Not only did the State of Wisconsin's economic development program target forest product industries, but

other organizations were important as well in spotlighting the industry. The Lake States Forestry Alliance (now called the Great Lakes Forest Alliance), the Northwest [Wisconsin] Regional Planning Commission (which includes Rusk County), Northern States Power (a primary power provider in Wisconsin), and Forward Wisconsin (the state's industrial marketing organization) all selected forest products as a target industrial sector in Wisconsin in the mid-1990s. This public and private recognition and support was beneficial in increasing the credibility of creating a forest industry park in Ladysmith.

Cluster Development

The Enterprise Center Network

The Northwest Regional Planning Commission (NWRPC) is a ten-county economic development district in Northwest Wisconsin. In the mid-1990s NWRPC faced a number of challenges including an unstable funding source, a lack of manufacturing space for businesses looking for new locations, a drain of entrepreneurial talent from the area, and existing industrial parks that were underutilized due to a lack of spec buildings into which a business could move within a year.

The Enterprise Center Network was developed as a series of multi-tenant facilities located within industrial parks throughout Northwest Wisconsin targeting specific industry focus areas or clusters in each community. The facilities were designed to provide flexible manufacturing space to start-up businesses and a revenue stream to support NWRPC operations and its centers. The concept was that once a business outgrows the multi-tenant facility, the flexible-building program would finance and build a larger building in the industrial park for the business. Initial funding of the

multi-tenant facility was obtained through a combination of primarily federal grants and loans. The flexible building programs were financed through grants, loans, and previously generated rent revenues from other buildings. Centralized technical assistance was provided to businesses in the multi-tenant facilities to increase their chances of success, and most of the industrial parks were tailored to a specific industry sector (cluster) to improve their attractiveness for like or complimentary industries and to capitalize on regional comparative advantage.

The Enterprise Center Network established in Ladysmith targeted the value-added sector of the forest products industry. The financing was put in place in 1997 with a total project cost of \$1.41 million (\$850,000 from the Economic Development Administration and \$560,000 from the Mining Impact Board). Construction of the 28,000 square foot facility was completed in 1998 and included bays of various sizes, a centralized dust collection system, a common-use wood concentration yard on rail, a joint-use paint booth and joint-use reception, lunchroom, and conference rooms. Grant money from the Wisconsin Department of Commerce was used to market the Center and provide technical assistance to prospective tenants, resulting in full occupancy by the end of 1999. Several forest products industries have been tenants including a start-up company doing painting and finishing and a cabinet company.

Infrastructure Upgrades

During the same time period the Enterprise Center Network was being planned and constructed, infrastructure upgrades were occurring in the Forest Industry Park. The Ladysmith City Administrator guided the decisions on extending utilities and building and upgrading several sections of road in the undeveloped part of the Forest Industry Park. Also included in the infrastructure upgrades was construction of a 20,000 square foot joint-use warehouse in the park.

The cost for extending utilities and upgrading roads totaled \$1.25 million. This total included \$500,000 from the Mining Impact Board and \$750,000 from the Economic Development Administration.

Anchor Tenant and Activities Prior to Creation of the Forest Industry Park

In many regards, the creation of the Ladysmith Forest Industry Park was the continuation of a series of activities targeting the forest products sector in Rusk County. For example, the state of Wisconsin has an extensive county-owned forest land base. In 1994, local officials contracted with the NWRPC forest resource specialist to conduct a study of past and future harvest levels from county-owned forestland. The study was used by existing industries contemplating expansion as well as the local logging association whose members were considering major expenditures on equipment.

Other activities in the early 1990s focusing on Rusk County included a study for a sawmill considering adding

kilns, preparation of a financial package to a start-up a sawmill, investigation of new wood product market opportunities for a sheltered workshop, and a waste wood audit for a local window factory. Also, and importantly, it was during this time period that a feasibility study was conducted to determine the forest product industries with the best chance for successful development in Ladysmith.

Another event in the early 1990s proved significant to the future development of the Forest Industry Park. In 1992, the Pope and Talbot paper mill in Ladysmith closed. Prior to the shutdown, several public and private entities explored options to keep the mill operating. When it was clear the mill would close, a consulting firm was hired (with grant funding) to develop a business prospectus for the paper mill. The prospectus was distributed to several existing pulp and paper industries but no buyer emerged. However, a 1991 start-up company (CityForest Corporation) did show interest in the mill and began working with Pope and Talbot. In 1993 CityForest purchased the mill and converted it into a recycled paper mill. Although the number of employees dropped from about 100 (Pope and Talbot) to 33 (CityForest Corporation), the reopening was considered a major success. Today the mill (named Cellu Tissue) is an anchor tenant of the Forest Industry Park.

Investment Summary for Creation of Forest Industry Park

The process that resulted in the creation of a successful cluster-based Forest Industry Park in Ladysmith, Rusk County, Wisconsin can be divided into two categories: (1) technical assistance to industries, and (2) project assistance to industries. The following is a brief summary of these two investment categories:

Technical assistance: \$403,200

Between 1990 and 2000, \$403,200 was invested in direct technical assistance to forest product industries in Rusk County. This does not include in-kind resources provided by government and the private sector.

This \$403,200 was primarily comprised of public funds (federal, state, and local) except for \$10,000 of private funds from the local power company. The federal funding was provided by the U.S. Department of Agriculture's Forest Service (State and Private Forestry) and the Economic Development Administration. State and local funding included the Wisconsin Departments of Commerce and Transportation, regional and local development corporations and planning commissions, and a local revolving loan fund. The funding was used to provide one-on-one technical assistance to companies as well as to fund feasibility studies and specific industry analysis. Examples of the latter include a secondary forest industry study and a paper industry study.

Project assistance: \$84 million

Between 1990 and 2000 public sector investments

totaled nearly \$15.5 million with private sector investments at roughly \$68.5 million.

The Economic Development Administration was the lead federal agency in supplying funds for infrastructure upgrades and the multi-tenant facility. Many of the same state and local units of government that funded technical assistance efforts (as noted above) also provided funds for project assistance. Also, the Mining Impact Board (established to generate tax revenue in anticipation of closure of the local copper mine) contributed over \$4.1 million to the project.

Private industry directly provided over 80% of the income needed for this project (\$68.5 million) which included business expansions such as renovating old buildings, constructing new buildings, and purchasing new equipment. The largest single private investment was made by CityForest on their paper mill expansion (\$60 million). Also, there were at least three firms that completed

Wood Products in Ladysmith produces custom wood fixtures and Jeld-Wen in Rusk County produces wooden windows (the two window manufactures in the county—Jeld-Wen and Weather Shield—employ approximately 1,700 workers). Rusk County is also home to two other sawmills in addition to the one in the industrial park. Independent logging firms are abundant in and around Rusk County².

Key Points and Factors for Success

Build on Existing Development Strategies – Rusk County, Wisconsin had a long history of forest products manufacturing prior to the establishment of the Forest Industry Park. A cluster of industries had existed in the county for many years. A decision to concentrate economic development efforts on the forest industry was made as early as 1988. The Forest Industry Park was, in many respects, the continuation or ‘next step’ in an economic development strategy to refine, strengthen, and expand upon the existing

Table 1. Firms located in Ladysmith Forest Industry Park, their products, and employment.

Firm	Product	Employees
Cellu Tissue (aka CityForest)	Tissue paper from recycled paper	80
Besse Lumber Co.	Hardwood lumber	20
Weather Shield	Windows	800
P.J. Murphy	Animal bedding	8
Conwed Designscape	Acoustic panels and accessories	94
Merit Wood Products	Framing lumber products	5
Allied Cabinet Corp.	Custom kitchen and bath cabinets	5
Dejnos Inc.	Trucking firm (collects/ships residue)	n/a
Indeck Ladysmith, LLC (Ground breaking scheduled soon.)	Wood pellets	est. 15-20

expansions without seeking assistance from economic developers, and consequently, their investments are not reflected in the above amounts.

The Ladysmith Forest Industry Park in 2008

In the fall of 2008 the Ladysmith Forest Industry Park was comprised of seven different firms manufacturing an array of primary and secondary value-added products. An eighth company is preparing to break ground in the near future. As noted above, Cellu Tissue is an anchor for the industrial park, although its physical location in Ladysmith is outside the area defined as the Forest Industry Park.

Also, Sappi Ltd. has a wood concentration yard in the forest industry park and ships pulpwood to its Cloquet, Minnesota paper mill. Sappi is planning to double the size of this yard from five to 10 acres.

In addition to the firms in the Forest Industry Park, BJ

forest products industry.

- **Capitalize on Existing Financial Resources** – all potential sources of funding to support the Forest Industry Park were investigated. Fortunately, many sources of funding—both public and private—were available. Many private firms acknowledged that public funding was critical for the project to move forward.
- **Stakeholder Cooperation** – it was important for the many ‘players’ in the Forest Industry Park project to work together. For example, local and regional governments and economic developers came together to coordinate funding packages. Also, since many of the efforts were interrelated and built off previous work it was important to have long-term and consistent support for economic development.
- **Retention and Expansion of Existing Businesses** – officials in Rusk County took the first step of doing

²Norse Building Systems, a manufactured housing builder, was located in Ladysmith from 1997 to 2006, when it fell victim to the housing slump. Norse had employed 94, and attracted National Coatings, which struggled and relocated after Norse closed its doors.

what they could to keep their existing industries, and secondarily, looked for start-ups and branch plant opportunities. The four new companies that originally located in the Forest Industry Park were all start-ups as well as the paper mill. None of them had relocated from somewhere else.

- **Supportive Public Policies** – the development of the Forest Industry Park occurred at a time when there was widespread recognition (from the federal to the local level) that the forest products industry was an excellent economic development target.

- **Cluster Feasibility Analysis** – Rusk County officials pursued funding for technical analysis work early in the project. Careful and thoughtful applied research was conducted on the existing economic base and development opportunities within the forest industry sector. The ‘homework first’ approach provided guidance regarding Ladysmith’s application for infrastructure development funding for the industrial park and established the overall direction for individual project efforts.

- **Secure Anchor Tenants and Build Off Their Operations** – In the case of the Ladysmith Forest Industry Park, the establishment of a paper mill in Ladysmith led to an opportunity to attract a wood/plastic composite manufacturer. A hardwood sawmill

led to a focus on establishing a dry kiln and cut stock operations. Two start-up companies began operations to provide services or products for existing tenants. In sum, anchor tenants provided spin-off opportunities for expansion and new industry creation.

- **Coordinate Efforts Through a ‘Leader’ or ‘Leadership Team’** – Bernice Dukerschein was Chair of the Rusk County Board of Supervisors during the time period when major strategies were developed and decisions made regarding the development of the Forest Industry Park. She was the catalyst, champion, and visionary that kept the project focused and on track. She was assisted in her efforts by two dedicated individuals — Al Christianson, Ladysmith City Administrator and Jan Hacker, Northwest Regional Planning Commission Forest Products Specialist. Christianson handled the day-to-day economic development activities in Ladysmith and Rusk County. His work was supported by the technical data and industry expertise provided to him by Hacker and her network of experts. These three leaders — chair of board of supervisors, city administrator, and forest products specialist — were the nucleus for coordinating all development efforts. All three were critical to the success of the project.

References

This report relied substantially on a 2000 report (see reference below) written by Jan J. Hacker of the Northwest Regional Planning Commission. Telephone interviews were also conducted with Jan Hacker (currently President of Resource Analytics in Roseville, Minnesota) and Al Christianson, City Administrator of Ladysmith, Wisconsin.

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EAST: VIRGINIA

The Role of Family Forest Landowners in Forest Sector Cluster Development, Blue Ridge Forest Cooperative

CLUSTER PROFILE

Name: Blue Ridge Forest Cooperative

Location: Virginia

Duration: 1-5 years

Legal Status: Cooperative

Umbrella Organization: Financial assistance and donated services from non-profit, academic and government economic development organizations

Product Focus: Primary and secondary (logging, sawmilling, and value-added processing)

Number of Firms: 14 members, 2,500 acres

Key Strategies: Leverage member investments and forest-based resources to support local value-added processing and responsible forest management practices, FSC certification.

Overview

The Blue Ridge Forest Cooperative was incorporated as a Virginia agricultural cooperative in 2004. The Blue Ridge Forest Cooperative is a member-owned cooperative of family forest owners selling quality wood products from Virginia's Blue Ridge Mountains. Landowners in Virginia with at least 10 acres of forest are eligible to buy stock in the co-op. Members also pay an annual membership fee and any fees associated with the preparation of a forest management plan and other co-op services. Members must agree to patronize the co-op for the harvesting and sale of timber and other forest products.

The Blue Ridge Forest Cooperative is similar to and representative of several other family forest landowner initiatives around the country, including cooperatives and other forms of landowner associations in Washington, Oregon, Minnesota, Wisconsin, Iowa, Vermont, Massachusetts, Maine, North Carolina, and other states. Each of these groups is similar in that they are working to support responsible forest management practices through the marketing of local value-added products.

Cluster Development

What is a Forest Owner Cooperative?

A forest owner cooperative is an incorporated business that is owned and democratically controlled by the member landowners who directly use its services. The primary purpose of the business is to provide benefits to its members, including but not limited to financial benefits. Most states have distinct business statutes for cooperatives as compared to other types of for-profit legal entities and

non-profit organizations. Cooperative business structures offer some benefits over other types of legal entities. Namely, cooperatives are better designed to carry out business and profit generating activities than non-profit organizations. A cooperative can divide profits generated from its activities among members in proportion to the level of business conducted by each member of the cooperative. However, cooperatives do not have the same opportunities to access public and private grants as non-profit entities and may find it difficult to build the capacity to support education and technical assistance activities within their business model. In the past, laws that restricted the rights of non-members to invest in cooperatives limited their ability to raise capital. However, in recent years, several states have adopted updated cooperative laws to provide, among other things, greater flexibility in non-member investor relationships.

Importance of Planning

The planning for the Blue Ridge Forest Cooperative began several years before the co-op was incorporated. With assistance from a number of different non-profit organizations, universities and government agencies, the founding members and advisory board investigated alternative approaches before deciding to form and incorporate a cooperative business.

The planning process included participating in national meetings attended by members of numerous forestry cooperatives and landowner associations to share lessons learned and help identify solutions to current challenges. Started in the late 1990s, these collaborative meetings have been hosted with support from various organizations,

including strong leadership from Cooperative Development Services and Rapid Improvement Associates, Inc. in Wisconsin and the Community Forestry Resource Center in Minnesota. The Blue Ridge Forest Cooperative also developed a detailed business plan and the prospectus required by state law to be incorporated.

Value-added

The Blue Ridge Forest Cooperative provides economic benefits to its members by adding value to the timber that is harvested from member properties. The co-op adds value by handling, processing, and marketing the member’s forest products. The co-op has also established a group certification

paneling. The cooperative has also produced charcoal and wooden toys, and is exploring the sale of carbon credits and ecosystem services from member lands.

Key Points and Factors for Success

Over the past decade, forest owner cooperatives have experienced resurgence in the United States. Cooperatives and other forms of landowner associations provide opportunities for forest sector cluster development that includes primary producers and small-scale raw material suppliers. Forest owner cooperatives can also engage local small businesses. However, despite the interest in landowner producer groups, there are several points that need to be considered if the cluster is to be successful:

Table 2. Products produced by the Blue Ridge Forest Cooperative and tree species utilized in their production.

Wood Products	Wood Species
Flooring	Yellow Poplar
Trim and casing	Red and White Oak
Crown molding	White Pine
Custom-profile millwork	Hickory
Solid wood paneling: v-groove, beaded	Maple
Stair treads, shelving, etc.	Cherry
EnviroSafe+ treated decking	Black Locust
Lumber for custom cabinetry and case work	Walnut
Solid wood siding and trim	Beech
Construction timbers, blocking, mats, shoring, formwork	Birch
Toys (Appalachian block sets)	Sycamore, and others
“Real” hardwood charcoal	
Carbon sequestration credits, stream restoration credits	

program to allow members to certify their forests and products as meeting the standards of the Forest Stewardship Council (FSC). The co-op has identified marketing opportunities for FSC-certified products, including building projects that receive recognition from various green building programs for the use of FSC-certified wood. The range of services offered by the cooperative to its members includes forest management planning, timber harvest planning and sale administration, wood product processing, and marketing.

Cluster Industries and Products

The cooperative currently produces a range of wood products, including flooring, custom millwork, and solid wood

- Member expectations need to be managed through effective communication and education (for example, Charter membership fees should be raised with explanation that their purpose is to support feasibility studies and charter members may not receive any initial direct benefits).
- Cooperatives need to focus on marketing and need to know their products and customers. This may mean hiring or contracting with consultants or other specialists who have appropriate marketing skills.
- Networks between cooperatives and other landowners associations can help support successful development and avoid repeating common mistakes.

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Thanks to Harry Groot, Blue Ridge Forest Cooperative, for his assistance in compiling this case study.

SOUTH: MISSISSIPPI

The Role of Entrepreneurship in Forest Sector Cluster Development, Northeast Mississippi Furniture Cluster

CLUSTER PROFILE

Name: Northeast Mississippi Furniture Cluster

Location: Mississippi

Duration: 1948-Current (60 years)

Legal Status: Mix of various entities

Umbrella Organization: None official – many are members of the Mississippi Furniture Association; entities that assist industry include Community Development Foundation, Mississippi State University’s Franklin Furniture Institute, and Itawamba Community College.

Product Focus: Upholstered furniture

Number of Firms: 160

Key Strategies: Utilize clustering as a competitive advantage, encourage participation in the local Tupelo Furniture Market; utilize universities and community colleges for technical expertise, education, and research; pursue funding for education, training and support of programs to help the cluster; upgrade skill levels of the available labor pool; utilize smart integration of all major transportation modes; encourage more cooperation among the industry, and public and private non-profit.

Overview

Northeast Mississippi is known as the “Upholstery Capital of the World.” The industry began in 1948 with one company. Over the course of 60 years the Northeast Mississippi Furniture Cluster grew to as many as 250 companies employing approximately 31,000 workers during 1999 and 2000. In recent years, the cluster has seen a reduction in the number of firms and employees. Although productivity has improved, the decreased activity is directly related to competition from low wage countries such as China and the recent downturn in demand for furniture as a result of difficult domestic economic conditions. Many manufacturers are sourcing components and raw materials from foreign countries. This has led to a decline in employment for manufacturers and suppliers to the industry. Finished products are also being imported into the U.S. and some firms are relocating production to low wage countries such as those in the Pacific Rim. Although the Northeast Mississippi furniture industry is undergoing transformation and consolidation, there is still a core group of strong manufacturers and suppliers engaged in this cluster. They plan to survive and thrive in the new global marketplace when the current economic environment improves.

Cluster Development

The Role of Entrepreneurship in Creating the Cluster

Morris Futorian was a Russian immigrant living in Chicago in the 1940s. He believed that upholstered furniture could be made more affordable by adopting mass production techniques used by the automobile industry. Futorian was turned away by the North Carolina furniture industry but fortunately for Mississippi, George McLean, founder of the award-winning Tupelo-based Community Development Foundation, and five other local businessmen convinced Futorian to locate his furniture plant in Mississippi. Although the group pushed for Tupelo as the new location, Futorian chose the nearby town of New Albany because of better rail access. Futorian found in Northeast Mississippi three key ingredients: access to abundant raw materials, available and low cost labor including a strong work ethic, and a community and region which welcomed him with open arms and incentives. The company grew from the original 50,000 square foot plant in New Albany to a 28-acre complex, which was at the time the largest upholstery manufacturing company under one roof in the entire world. Futorian was subsequently known as the “father of the upholstered furniture industry” and also as “The Henry Ford of Furniture.” By some accounts Futorian revolutionized the

American upholstered furniture industry. At least 12 major upholstered furniture companies trace their roots directly back to the original Futurian plant. As many as 30 other furniture manufacturers have strong ties to this one company. Producing what became known as “promotional” furniture, these companies focused on mass produced low- to mid-priced upholstered furniture for the masses, rather than highly stylized designer furniture of North Carolina.

With the exploding growth of the early furniture industry, the cluster grew and attracted other companies producing similar furniture and parts, suppliers, and support services. Throughout the area frame shops and foam fabricators sprang up to supply the factories that were shipping furniture as fast as it was produced. Key raw material and component suppliers were recruited by community leaders to supply the lumber, foam, fabric, mechanisms, and frames to these fast-growing companies. Although Johnston-Tombigbee Furniture in Columbus produced (and still produces) case goods, the majority of the industry has always consisted primarily of upholstered manufacturers.

Today Mississippi’s upholstered furniture industry is still characterized by mass production methods, whereas the North Carolina industry uses more flexible, modular production techniques. This is beginning to change as more companies are turning to just-in-time production schedules, embracing lean manufacturing techniques and offering more customized products.

Growth of the Cluster

There has traditionally been reluctance on the part of manufacturers in the cluster to work together because they did not want to disclose proprietary information. Also, since most of the companies have roots to the original Futurian plant, they have been extremely competitive with each other. This attitude is slowly changing because of the necessity of working together to continue to stay competitive during difficult economic conditions and the increasing share of inexpensive imports. The cluster has, however, benefited from many cooperative and collaborative efforts between industry, educational institutions and governmental agencies at the local, state, and federal levels. These inter-relationships have been important to the growth of the cluster.

The Tupelo Furniture Market

One reason for the success of the Northeast Mississippi Furniture Cluster is the marketing support provided by the Tupelo Furniture Marketing Association, Inc. This non-profit corporation is governed by a 25-member Board of Directors and oversees an annual operating budget of over \$500,000, used mainly to increase buyer attendance at the semi-annual Tupelo Furniture Market (TFM).

In the early 1980s local entrepreneurs saw a niche for a trade show that would focus on promotional lower-priced furniture, such as that manufactured in Northeast Mississippi. The result was the Tupelo Furniture Market. Started in 1987

with 35 exhibitors at a Ramada Inn, the TFM grew into the second largest furniture market in the country behind High Point, NC. The TFM has been successful in a relatively small town (population of 36,000) that is not on a major interstate highway or waterway. One reason that the TFM was not located in a larger and more accessible city, such as Memphis, was that Tupelo was the center of the furniture cluster and provided opportunities for the buyers to visit the plants and see firsthand the quality of the products and work ethic of the employees. However, the TFM fell to 3rd place among domestic markets when the Las Vegas Furniture Market opened in July 2005. Las Vegas provides more than 5 million square feet of exhibit space for 1,500 exhibitors.

The TFM has contributed to the success of the Northeast Mississippi Furniture Cluster. However, domestic downsizing of the industry and competition from Las Vegas and High Point have greatly affected the TFM. It has become more of a regional market for mainly promotional upholstered furniture but is still highly regarded as the go-to place for “mom-and-pop” retailers as well as large national chains looking for great prices and guaranteed deliveries.

Community Development Foundation

As mentioned previously, the Community Development Foundation (CDF) played a major role in bringing the first furniture factory to North Mississippi. The CDF continues to actively recruit new industries and suppliers to the area. As the economic development entity for Tupelo/Lee County, the CDF houses a workforce program which assists existing area businesses and provides a key link to available training opportunities and resources for existing industry and prospective companies. CDF staff assist with the development, implementation, marketing, and enrollment of training programs with CDF’s consortium partner, Itawamba Community College (ICC). In June, 2008, a partnership consisting of the CDF, Itawamba Community College (ICC) and the Franklin Furniture Institute (FFI) at Mississippi State University was honored with the Multi-Community/Regional Award in the under-200,000 population category from Business Retention and Expansion International (BREI) for its workforce training and development program targeting the North Mississippi furniture industry.

Mississippi Furniture Association

The Mississippi Furniture Association (MFA) was established in 1997 as a loose-knit organization of furniture manufacturers, suppliers, and other related businesses. The organization struggled in the beginning because the furniture industry was, and still is, in many ways, fragmented. In 2005, the organization combined forces with the North Mississippi Industrial Association’s Furniture Cluster Group. This group was similar to the MFA in that its members worked to promote the industry and encouraged collaboration as a collective group to negotiate better prices for raw materials, better economical insurance rates, etc. The new MFA elected

a president and membership has since grown from 23 to 77 members. Consisting of manufacturers, fabric producers and other suppliers, the association serves as the watchdog for the state's furniture industry. The MFA actively lobbies local, state, and government entities to protect and serve the interests of the industry. Incentives that the group is pursuing in Mississippi include tax credits for companies that bring cut-and-sew jobs back from low wage countries and foreign-trade-zone status for Mississippi furniture manufacturers and suppliers.

Institutional Support

A successful cluster is typically supported by institutions such as educational entities, trade associations, and technology networks. The Northeast Mississippi Furniture Cluster has extensive support from universities, community colleges, and state Workforce Development Centers. Three examples of institutional support are discussed below:

- ***Itawamba Community College*** - in the late 1980s a group of industry leaders went to Texas to observe some automated fabric cutting and material handling equipment. As a result of this trip, ICC established the nation's only technology center for upholstered furniture. An associate degree and certificate programs were offered in Furniture Manufacturing Technology by ICC. The center was opened with government support through the Appalachian Regional Commission, Tennessee Valley Authority, and the State of Mississippi. The center included a range of computerized equipment that enabled students to keep up-to-date with the changing technology in the upholstered furniture industry. Unfortunately, the enthusiasm and optimism of the ICC technology center was not (or could not be) readily embraced by the entire industry. First, only the larger and a few mid-size companies invested in new technologies, thus diminishing the demand for the expertise created by the technology center. Second, manual labor still dominates most of the work in furniture upholstering and requires minimal skills. Third, a diminishing image of manufacturing as a career path made it more difficult to recruit students during the 1990s. In 1997, the college had 50 students enrolled in its program, but by 2001 the number had dropped to only 10. Today, the Furniture Technology Manufacturing program does not exist at the college as a stand-alone program. Rather, components of the program have been incorporated into other specialty areas (the Drafting and Design program, for example, focuses on CAD, which has application in the furniture industry). The upshot is that the ICC furniture manufacturing technology center was created in a cooperative and collaborative spirit to fill an educational and training void that is typically needed by successful

clusters. However, as described later in this report, the upholstered furniture industry in Northeast Mississippi had been contracting in recent years and caused a negative ripple effect throughout other sectors of the cluster.

- ***Workforce Development Centers*** - as of 2002, each of Mississippi's 15 community colleges had a Workforce Development Center. Each center is responsible for responding to industry training needs and raising the skill level of the state's workers in order to meet the needs of a modern industrial economy. The Centers were created in 1994 through state legislation. In 1999, the workforce development conducted by the state's vocational technical schools was transferred to the Centers and merged with the community college-based programs. In 2001, the state's Workforce Development Centers enrolled almost 291,000 trainees (multiple headcount) in 23,000 classes at a cost of \$10.4 million provided by the state. Of these numbers, there were 810 classes attended by nearly 9,000 students in furniture production with 96% of the furniture trainees from Northeast Mississippi. Surprisingly, the vast majority of training was in safety, not skill upgrading.

- ***Mississippi State University's Franklin Furniture Institute*** - in 1987, the Mississippi legislature recognized the importance of the furniture industry to the state of Mississippi and established the Furniture Research Unit in the Department of Forest Products at Mississippi State University. The mission of this unit was to provide research, education, and technical assistance to furniture companies and suppliers to this industry. The unit has now evolved into the Franklin Furniture Institute, which continues to provide these services to the industry. The institute works with faculty and staff of the Bagley College of Engineering; the College of Architecture, Art, and Design; the College of Business; and the College of Forest Resources at the Mississippi State University to bring an interdisciplinary approach to problem solving. The overall mission of the institute is to sustain and grow the furniture industry in the state and region. The institute provides assistance in all areas related to furniture from concept to delivery to the final customer including design, manufacturing, management, marketing, logistics, and customer satisfaction. In addition, the institute maintains an independent testing laboratory for components, frames, fabric, and foam. Cooperation with outside agencies and institutions is also very important to the mission of the institute. A recent Department of Labor grant through the institute provided workforce training to the cluster

members in the areas of ergonomics, computer skills, soft skills, and health promotion with assistance of Itawamba Community College and the Community Development Foundation.

Out-of-state Resources

Many of the furniture companies in the Northeast Mississippi cluster benefit from membership in the American Home Furnishings Alliance. This Alliance is a trade organization serving the home furnishings industry, dedicated to fostering the growth and global well-being of its member companies. The organization serves as the industry’s advocate for elected officials and regulatory agencies, provides education and training, promotes member company’s products to consumers, and identifies and provides research data to meet the needs of members and industry stakeholders. Other resources include North Carolina State University, High Point University, and the North Carolina Department of Commerce.

Logistics and Transportation Infrastructure

Transportation infrastructure is of prime importance to the success of a viable industry cluster. The furniture cluster in Northeast Mississippi can attribute part of its success to a variety of intermodal transportation options available for cost effective logistics planning. Due to proximity to a large intermodal hub in Memphis, TN, the cluster has accessibility to rail and highway transportation and the benefits of containerization and truck load shipping which reduces logistics cost. With the advent of globalization, the transportation infrastructure has allowed the Mississippi furniture industry to compete globally and helped to keep jobs in the cluster. With current focus on logistics cost, it is imperative that all transportation modes be included in the cluster planning process. With NE Mississippi’s location

to Gulf Coast ports of entry and the availability of inland waterways like the Tennessee-Tombigbee Waterway, the cluster is positioned to maintain its competitive advantage by using “smart integration” of highway, rail, and container-on-barge.

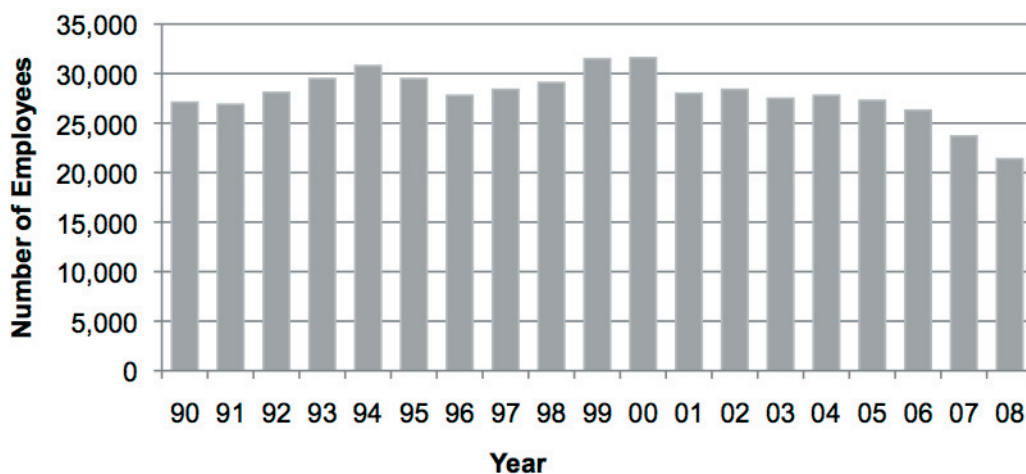
Cluster Contraction

In 1960, Mississippi employment in furniture manufacturing was 6,300 and it peaked in 2000 with more than 30,000 jobs directly tied to the furniture industry. Figure 1 shows the trend in furniture employment in the state since 1990.

During the period 1994-2000 the industry sectors of lumber and wood products, paper, and furniture lost 8,556 jobs in Mississippi. Of this total, over 3,000 job losses occurred in the furniture sector. In the 10-county area surrounding Tupelo, the number of furniture jobs totaled 20,827 in 2001 and 17,826 in 2007 (a loss of 3,001 jobs). The number of firms in this area dropped from 206 to 176 (a loss of 30 firms) during this same time period. Some of the job loss can be attributed to improved efficiencies in the industry. However, industry analysts concluded that globalization, resulting in increased competitive pressure, has contributed substantially to industry contraction and job losses.

Recent plant closings in the Northeast Mississippi furniture cluster bring the current number of operating firms down to approximately 160. The collapse of the housing market and the downturn in the U.S. economy has affected the demand for furniture and the ability of consumers to obtain credit to purchase furniture. This is causing severe stresses on the cluster firms as they simply try to survive. Many are using this time to obtain training in order to upgrade skill levels and are reorganizing their systems for greater efficiencies. These firms are adapting to the changing economic conditions and will be in a good position to grow their businesses when the economy rebounds.

Figure 1. Number of employees in the furniture industry in Mississippi during 1990-2008.



Is More Cooperation Possible?

Despite the history of not working closely together, the industry does seem to be coming together toward a common goal – survival. There are many opportunities for collaboration and cooperation which will benefit all furniture stakeholders.

A 2002 report noted that the forest products industries in Mississippi are concentrated more around the forest resource than concentrated to support cluster linkages. The report specifically noted the level of formal clustering in Northeast Mississippi specifically for purposes of promoting synergies and maximizing external economies appears to be limited. With increased outsourcing to China, there is a fear that the furniture industry might consist primarily of retailers of imported products. Recently, however, there is anecdotal evidence that many furniture manufacturers are sourcing domestically. Hidden costs of outsourcing are being recognized. With difficulties in delivery, time lags, quality issues, and damaged products from low-wage countries, some manufacturers are realizing that domestic sourcing can be just as cost effective. If the tax incentives for cut-and-sew jobs being promoted by the MFA are passed, more sewing jobs will return to Northeast Mississippi.

There is a concern among analysts that interactions between firms, trade associations, and educational and research organizations are limited by various factors, and do not contribute to cluster efficiencies. The recent collaboration among Mississippi State University, Itawamba Community College, and the Community Development Foundation in Tupelo, offering free workforce training to the industry dispels some of these fears. In addition, a new Export Resource Service is being launched by the Franklin Furniture Institute in cooperation with the Mississippi Development Authority and the U.S. Department of Commerce's Mississippi Export Assistance Center, with the goal of helping Mississippi furniture companies gain market share by increasing exports. Mississippi Furniture Association works closely

with Mississippi Manufacturers Association and Franklin Furniture Institute to make the industry aware of assistance programs that will benefit their bottom line. Finally, all of the above mentioned entities work to promote the Tupelo Furniture Market and all Mississippi furniture products. In sum, dynamic relationships are emerging throughout the industry and between firms and government and institutions. However, more cooperation and collaboration is needed for the 'players' in Northeast Mississippi to capitalize on all the advantages of an industry cluster.

Key Points and Factors for Success

- Stakeholders throughout the entire value chain of furniture and home furnishings including suppliers, manufacturers, logistic entities and retailers need to be educated on the benefits and efficiencies of clustering.
- The close proximity of furniture suppliers, manufacturers and retailers in one geographic area should be used as a selling point to enhance participation in the local Tupelo Furniture Market.
- Industry associations and public entities such as universities and community colleges within the cluster areas should be relied upon to provide technical expertise, education, and research to benefit cluster members.
- Funding from state and federal sources should be pursued to provide needed assistance for workforce development, training and education vital to upgrading the skill levels of the available labor pool.
- The furniture cluster has access to all major modes of transportation including water, rail, and highway. Smart integration of these modes is needed to ship products quickly and efficiently.
- Clustering can be a competitive advantage used to combat severe industry challenges, such as the struggling economy and the competition from low wage countries, especially when it includes cooperation among the industry and public and private non-profit institutions.

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SOUTHWEST: ARIZONA

The Federal Role in Forest Sector Cluster Development, Arizona White Mountain Stewardship Contract

CLUSTER PROFILE

Name: White Mountain Stewardship Contract

Location: Arizona (White Mountains area: Apache –Sitgreaves National Forest)

Duration: 1-5 years

Legal Status: Non-profit but managed by a for-profit company

Umbrella Organization: Industry association support

Product Focus: Primary and secondary (logging, sawmilling, and value-added firms)

Number of Firms: 10-24

Key Strategies: Use federal policies and investments as springboard; involve multiple stakeholders early in cluster development.

Overview

In August 2004 the Apache-Sitgreaves National Forests (A-SNF) awarded a 10-year Stewardship Contract to thin 150,000 acres of primarily small-diameter ponderosa pine trees, emphasizing wildland-urban interface (WUI) areas surrounding communities in the White Mountains of Eastern Arizona. The contract was awarded to Future Forest LLC, a local partnership of WB Contracting, and Forest Energy Corporation. The contract is designed to restore forest health, reduce the risk of fire to communities, reduce the cost of forest thinning to taxpayers, support local economies, and encourage new wood product industries and uses for thinned wood fiber.

As of December 2007, the White Mountain Stewardship Contract (WMSC) industry cluster involved 14 “economic engine” businesses directly working on the contract that supported almost 300 full-time jobs in the local area. The 14 businesses spend over \$12 million for goods and services in the local White Mountains region. The forest was awarded the Governor’s Award for Excellence in Rural Economic Development in August, 2006.

Cluster Development

What is Stewardship Contracting?

Stewardship contracting is a tool used by the U.S. Forest Service and Bureau of Land Management (BLM) to blend the need of restoring and maintaining healthy forests with the need of working closely with communities. Unique features of stewardship contracting include: using multi-year contracts (up to 10 years), trading goods for services, selecting a contractor on a ‘best value’ basis, retaining receipts and applying to needed service work, transferring receipts to other approved projects, using less than full and open

competition, designating trees without marking, and treating large landscapes.

Priority projects for stewardship contracts include prescribed fire, vegetation removal, non-native invasive species control, watershed restoration and maintenance, wildlife and fish habitat, road and trail maintenance, and soil productivity. The overall goal of stewardship contracting is to provide social, ecological, and economic benefits to public lands and nearby communities.

Stewardship contracting assigns responsibility for a particular tract of land to a qualified organization or company. Some contracts specify exact treatments and responsibilities that result in ecological restoration. Other contracts trade timber in payment for fire prevention treatments, such as thinning of small diameter trees and brush clearing. Legislation for stewardship contracting became law in 2003. The legislation enables the Forest Service and BLM to enter into stewardship contracts until September 2013.

Importance of “Pre-work” and Collaboration

Although the White Mountain stewardship contract was awarded in 2004, much pre-contract work and collaboration had been done over the previous decade. In 1997, a diverse group of community members (Forest Service personnel, city and county officials, University of Arizona cooperative extension service, Congressional representatives, Conservation League members, etc.) formed the Natural Resources Working Group. Working group members were drawn together in the midst of an 18-month National Forest timber harvesting injunction. One of the goals of the working group was to look for opportunities to work together and build consensus on forest restoration. This working group met on a regular basis (and continues to meet regularly 10+ years later)

and was committed to moving forward on natural resources management issues.

The working group's first project to blend the diverse needs of a wide range of stakeholders was the 19,000 acre Blue Ridge-Morgan Ecosystem Management Area in the Apache-Sitgreaves National Forests. The result was a consensus approach that established three different forest management prescriptions: a "no cutting" prescription and 9-inch and 16-inch maximum cutting diameter prescriptions. However, due to the lack of bidders on the small diameter "Blue Ridge" timber sale offerings, the Forest Service created an "imbedded service contract" within the traditional timber sale contract. The service contract concept (trading goods—timber—for services) was successful and enabled 2,000 acres to be treated over a 3-year period. Ultimately, the success of the Blue Ridge collaborative project was critical in building community support and trust for the concept and development of the 10-year White Mountain Stewardship Contract.

Involvement of Stakeholders

The WMSC is being implemented in an arena of significant public input and oversight. The stewardship legislation authorized the USDA Forest Service to convene a multi-party community monitoring board. The purpose of the board is to recommend monitoring activities to the Apache-Sitgreaves National Forests to assess the social, ecological, and economic impacts of the contract. The monitoring board is composed of 14 members from across the geographic area of the forests. Representatives include interests from local, county, and state governments and various resource interest groups and organizations.

Stakeholder collaboration fosters understanding of the issues, incorporates new science findings into the project, and results in better forest management. It also provides an opportunity to monitor landscape level issues not addressed in project level monitoring. The stakeholder monitoring board has been instrumental in recommending ways to accomplish the project as well as providing feedback for future projects. This has a positive impact on the adaptive management strategies used by the Apache-Sitgreaves National Forests.

In addition to the multi-party community monitoring board, there are other stakeholder groups with active roles in the WMSC project. The Southwest Sustainable Forests Partnership (SWSFP) is an Arizona and New Mexico partnership comprised of federal, state, and local agencies. The SWSFP promotes healthy forests and community and tribal-based enterprises through programs that include technical assistance to entrepreneurs, capacity building, business development coaching, and assistance in the formation of clusters such as the WMSC. Another initiative of the SWSFP is the encouragement of industry trade associations such as the Northern Arizona Wood Products Association (NAWPA).

NAWPA has approximately 55 members and was founded in 2003 to help rekindle the regional forest products

industry. NAWPA is an economic development initiative of the White Mountain Regional Development Corporation. The goal of NAWPA is to promote forest restoration and wood utilization. Most of the members of NAWPA are active in the White Mountain region and include artists, crafts people, manufacturers, producers, sawyers, mill operators, distributors and anyone who derives a substantial portion of their livelihood from adding value to small diameter wood. NAWPA sponsors events and workshops, provides technical assistance, and encourages wood products manufacturing and development among its members. NAWPA plays a key role in supporting the WMSC industry cluster.

Other stakeholders that have played key roles in supporting the WMSC include the Small Business Development Center at Northland College and the Little Colorado River Plateau Resource, Conservation and Development District.

Federal Investments

The Federal government has played a substantial role over many years in facilitating the development of the White Mountain effort. In addition to being the major source of raw materials for the industry cluster, the Federal government (Forest Service) has provided numerous grants to local firms to assist them in their efforts to develop viable businesses, and consequently ensure success of the WMSC.

Nine Forest Service woody biomass grants of \$250,000 each were awarded to White Mountain-based businesses between 2005 and 2008. These grants totaling \$2.25 million were used as "seed money" by businesses to purchase equipment and technologies necessary to utilize and manufacture value-added products from small-diameter wood. The Federal funds invested in the local enterprises reduced the cost of forest restoration treatments and made landscape-scale treatments possible. Prior to the stewardship contract, forest restoration costs were up to \$1,100 per acre; thinning costs today average approximately \$550 per acre.

Cluster Industries

Today there is a range of 14 primary and secondary (value-added) industries comprising the White Mountain Stewardship Contract industry cluster. These industries are concentrated in two communities. Current industries include a logging contractor, sawmill, pellet mill, molding manufacturer, log home manufacturer, post and pole plant, preservative treatment plant, animal bedding producer, woody biomass electrical generation, and various small craftsmen and artists. Nearly 100% of the material used by these industries is small-diameter ponderosa pine.

The industries have a synergistic relationship as they depend on one another for both raw materials and markets. Of critical importance to this relationship is the role played by Future Forest LLC since this company has the 10-year stewardship contract with the National Forests.

In 2004, the Forest Service awarded Future Forest LLC the White Mountain Stewardship Contract (the contract

was awarded following a competitive Request for Proposals process). Under the contract, Future Forest is charged with managing the treatment (thinning) of approximately 5,000 to 25,000 acres of forest land per year over the 10-year contract period. To accomplish this work, Future Forest contracts with logging companies to thin the forest; Future Forests then markets the wood to local businesses. One of the major objectives of the thinning is to reduce the number of trees, particularly in the wildland-urban interface (WUI), so the threat of catastrophic fire is minimized, and the remaining trees can better resist drought and insects.

A study conducted in December 2007 by Dr. L. Gibson of the University of Arizona found that the 14 firms comprising the “economic engine” of the cluster directly and indirectly support 296 full-time employees who live in the White Mountain region. Three-fifths of these employees (117) have their jobs because of Future Forest. These numbers, according to Dr. Gibson, have the potential to grow as Future Forest increases its production over the term of the stewardship contract.

Key Points and Factors for Success

The 10-year White Mountain Stewardship Contract is focused on federal land management that depends on a successful “industry cluster” for implementation. Since federal land management is often a contentious issue, the following key points and factors for success should be evaluated in light of the uniqueness of this industry cluster:

- Prior to committing to a long-term contract, community support and acceptance of treatment methods must be in place.
- All stakeholders (government, industry, non-governmental organizations, etc.) must be willing to

work together to avoid potential crippling appeals, objections and litigation.

- It is helpful to have industry in place before embarking on a long-term stewardship contract. Once industry is gone, the expertise, workforce, and equipment needed to treat vegetation are gone too.
- An existing road system in place prior to the contract is important.
- Markets and the logistics of marketing must be developed prior to, or in conjunction with, the stewardship contract. A wood products support group is important in this regard.
- Industries not directly involved with the contract could be excluded from receiving raw materials from the Forest Service. Cooperation between industries (sharing of raw materials and forest products) is important to ensure a viable cluster.
- The long-term treatment goals and type of vegetation by-products generated should determine the suitable industry and product types.
- Stewardship contracting (and the resulting development of an industry cluster) requires the formation of a multi-party citizen monitoring board.
- Community Wildfire Protection Plans are excellent starting points for determining what the community desires for vegetation treatments.
- Vegetation treatments must be analyzed to determine if they will only support a short-term supply of material for a temporary industry, or a long-term (sustainable) supply for a permanent industry.
- Federal funding in the form of direct grants to industry help jump start the industry and reduce the riskiness of the project.

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PACIFIC NORTHWEST: WASHINGTON

Integrating Across Industries, Port Townsend Wooden Boat Cluster

CLUSTER PROFILE

Name: Port Townsend Wooden Boats

Location: Washington (Community of Port Townsend and Jefferson County)

Duration: 30+ years

Legal Status: For profit and non-profit entities

Umbrella Organization: Wooden Boat Foundation (non-profit) in collaboration with other organizations and private businesses

Product Focus: Wooden boats and related products and services

Number of Firms: 50-99

Key Strategies: Focus on high quality products serving a specialty market; non-profits work closely with businesses to support and promote boating industry and lifestyle; provide value-added products and services to customers to encourage repeat business.

Overview

Port Townsend, Washington (population 8,500) is located in Jefferson County on the northeastern tip of the Olympic Peninsula. The town is the center for repair and construction of commercial and recreational wooden boats, and fiberglass and composite yachts. In 2005, Jefferson County's Marine Trade Industry directly employed 420 persons with a total payroll of \$17.6 million and gross product value of \$54.9 million. Including indirect impacts of the industry, total workforce is over 1,000 with a payroll greater than \$41 million and gross product value of nearly \$100 million.

The 2008 directory of the local Marine Trades Association (MTA) lists 80 members which specialize in vessel repair and related services. Of nearly two dozen towns in Washington, California, Oregon, and Alaska that have large-vessel haul-outs, Port Townsend has developed a niche by having a cluster of full-service boat repair firms.

Different types and sizes of companies, service providers, government entities, non-profit organizations, trade associations, and boat enthusiasts have contributed to the development of the Port Townsend cluster. From the standpoint of forest sector clusters, Port Townsend is somewhat unique in that the "wood component" of the cluster is fully integrated with another industry sector, i.e., marine trades. Furthermore, the cluster has a strong recreation and tourism component that enables it to flourish beyond just a traditional manufacturing perspective.

Cluster Development

Port Townsend has supported a maritime industry for

many decades. However, during the 1970s there was an influx of boat builders and recreational boaters to the area. Many of these individuals were active in community affairs and promoted the boating industry. Also, Port Townsend rented business space at below market value, providing small businesses with easy market entry that ultimately attracted larger firms to the area. Public and private non-profit organizations contributed to cluster development by encouraging and promoting the boating industry, training workers, and organizing interactions with firms in other regional markets. Port Townsend's location helped draw visitors to the area and its semi-rural lifestyle attracted both craftspeople and potential customers. All of these factors combined to produce a concentrated industry during a 30+ year time period.

Business Environment

The larger firms in Port Townsend tend to be full-service wooden and fiberglass boat builders and repair firms. However, the cluster is much more than a collection of these firms. Many niche firms have developed over the years that provide specialized products and services to the market and fill in the services that the larger firms do not provide.

Port Townsend is known as a one-stop location for high-quality workmanship. Although the boat service businesses are not cheap, it's the quality of work that draws customers to the area. Referrals between businesses are quite common. This high level of cooperation between businesses and community organizations has maintained the cluster's positive reputation. Individuals or businesses which do low or sub-standard work quickly become known among other business owners and

consumers as such.

Business referrals from outside of Port Townsend also contribute to the business environment. These referrals include recommendations from former customers, affiliated businesses, trade shows, advertising in trade shows, and MTA involvement. While most businesses serve a regional customer base, some firms market products nationally and internationally. Edensaw Woods, for example, offers over 60 species of domestic and exotic woods (some of the woods are Forest Stewardship Council certified), and draws much of its business from national sales. Pygmy Boats, self-described as the largest and oldest manufacturer of precision pre-cut wood kayaks in North America, markets nationally their 15 sea kayak models, rowing skiff, and canoes. Port Townsend Sails produces hand-hewn sails which are internationally known for their quality workmanship (the company also offers services such as consulting, seminars, and speaking engagements). The opportunity for these and other firms to expand to more distant markets appears to be related to providing a distinctive or new product. Cooperation of firms in a cluster contributes to the ability to identify and expand into new product or service niches and to the success of the entire cluster.

Workforce Specialization

The workforce in Port Townsend is as specialized as its range of businesses. The diversity and flexibility of the workforce have contributed to the cluster's ability to adapt to market changes. A three-tier workforce is one method of categorizing the different businesses in the cluster.

The first tier is the full-service boat builders and repair businesses. Baird Boat Builders fits into this category. They do woodworking, welding, plumbing, propulsion, rigging, painting, and a host of other tasks including new boat construction in wood, steel, or aluminum up to 120 feet. The first tier boat builders and repairers range in size from a couple employees to more than 100. Some of these firms also subcontract to independent crafts people.

The second tier consists of firms that produce components, supplies, or provide specialty services. Edensaw Woods and Port Townsend Sails (as briefly described above) are examples. Integrated Marine Systems, a manufacturer of refrigeration systems for fishing boats also fits into this category. Most of the second tier companies employ less than 20 workers.

The third tier consists of very small (often one-person) businesses who serve as independent contractors. These firms have little overhead except for their tools and are often referred to as "tailgaters". The tailgaters work in a variety of specialties ranging from interior woodwork to boat restoration. Many of these businesses tend to overlap with second tier firms. However, the third tier businesses tend to be more informal and prefer flexible hours and seasonal downtimes as it fits better with their lifestyles.

Innovation and Flexibility

While the cluster had its beginning in the mid-1970s

because firms were attracted to the area, the ability for spin-off firms to take seed and grow has been a boost to recent cluster growth. For example, Artful Dodger, a custom canvas shop, was started by an employee of Port Townsend Sails. Similarly, Baird Boat Builders, a well-established firm in Port Townsend, was started when an employee left Port Townsend Boatworks. Also, the Port Townsend Shipwrights' Cooperative is the result of its founding members leaving Port Townsend Boatworks to start their own operation.

Logging restrictions and the declining supply of old-growth timber eliminated Port Townsend's lumber price and supply advantage. Since wooden boat repair requires high-quality raw materials, second growth timber with a high ring count was deemed unacceptable for use. This created an opportunity for a member of the business community to identify and develop a niche lumber business—Edensaw Woods. Currently, Edensaw Woods has business operations in both Port Townsend and Kent, WA.

A significant area of innovation involves regulatory changes. When fishing regulations required fishing boats to fish further from shore, a need was created to insert midsections to boats to make them larger. Port Townsend boat builders responded to this challenge. Also, when fishing revenue declined in the area, businesses expanded their focus to include recreational boats. Port Townsend continues to attract large numbers of recreational boaters through the popular Wooden Boat Festival (see next section). In recent years, the locale has become an increasingly popular venue for yachting as international destinations become more dangerous.

Role of Associations, Institutions and Governments

Numerous organizations have played major roles in cluster development and support. Other groups are in their infancy but are nonetheless making a positive contribution to the cluster. A select number of these groups are highlighted below:

- **Northwest School of Wooden Boatbuilding** – this organization, started in the 1980s, is the community's primary training organization. The school offers six and nine-month diploma programs and a 12-month Associate Degree program in addition to noncredit programs and workshops. The school draws an international student base and teaches wooden boat construction plus cabinetmaking, finishing, and sail making. Although most students in a given class do not enter the local workforce, over time the numbers have been significant. Because of the school's reputation, attention and business are drawn to Port Townsend. Since local business owners are regular instructors at the school, interaction is promoted in the business community.
- **Wooden Boat Foundation** (which is a part of the Northwest Maritime Center) – founded in 1978, the Wooden Boat Foundation (WBF) has grown over three decades to annually serve nearly 150,000 people in its educational programs, events, and services. The Foundation plays a critical role in connecting people

of all ages with Port Townsend's talented wooden boat community. WBF carries out its mission through a variety of sources including its annual Wooden Boat Festival. In 2008, the festival, in its 32nd consecutive year, drew 30,000 people from numerous countries for three days in September³, including approximately 250 boats in the water plus land boat exhibits. The foundation also offers educational events including family boat building classes, longboat corporate and business team building workshops, sea camps for 7-10 year olds, sail training, and leadership training for high school students. The WBF also supports a 600 square foot Chandlery (soon to expand to 2,000 sq. ft.) that is a hub for some of the best wooden boat inventory in the world including wooden blocks, woodworking tools, pine tar, bronze hardware, copper nails, rigging supplies, and wooden boat books.

• **School of Woodworking** – the Port Townsend School of Woodworking offers one, two, three, five, and ten-day courses on woodworking, cabinet making, furniture making, historic preservation, and traditional woodcrafts. Skill level of the classes range from beginner to advanced. One of the founders of the School (Jim Tolpin) worked professionally as a boat builder, timber-frame housewright, and custom cabinet maker.

• **Port Townsend Woodworker's Show** – the Woodworker's Show was held in the 1990s with the final run in 1999. A group of six individuals—called the Splinter Group—formed in 2006 to revive the tradition of the show. The purpose of the show is to introduce people to the community of diverse and talented woodworkers that exist in the area, and provide an opportunity for the woodworkers to present their work directly to the public. The Splinter Group is aiming for a themed Show in 2009 or 2010 that will exhibit furniture or art from locally harvested and milled trees including storm-felled trees.

• **Port Townsend Shipwrights Co-Op** – the Shipwrights Co-Op is included here because of its rather unique situation. Formed in 1981 as an employee-owned business by eight boat builders, the Co-op now stands at 12 experienced members (owners). The members originally came together to share a common workspace. An interesting feature of the co-op is that each person contributes their personal tools and expertise to the co-op; expensive pieces of equipment are purchased by the co-op. After expenses are paid (costs of goods, cost of building, overhead, etc.), the “profits” are divided among the co-op members based on “hours worked”. The more hours worked in a week, month, or year, the more income one receives. Another feature of the co-op is that customers can work on their particular project side-by-side with co-op members. Today, the co-op

includes a metal fabrication shop, three woodworking shops, a 2,800 square foot workshop, and offices. Four of the current co-op members are graduates of the Northwest School of Wooden Boatbuilding.

• **Port of Port Townsend** – this countywide municipal corporation (independent government entity) is charged with responsibly developing property and facilities that encourage job creation, private investment, local economic stability and diversity. Early in the development of the cluster, the Port rented business space at below market value to enable individuals to open businesses with relatively little capital. This strategy was a way to “jump start” business activity and growth.

• **Olympic Economic Development** (formerly Economic Development Council of Jefferson County) – in the past, the Economic Development Council was the only organization in the Port Townsend area with the main purpose of business development. Business counseling, export assistance, and educational programs were three of its focus areas. Today, Olympic Economic Development (OED), a private non-profit corporation, is dedicated to attracting and creating new businesses on the Olympic Peninsula. One of OED's current projects, in conjunction with the Port Townsend Chamber of Commerce, is sponsorship of a Northwest Boat Builder's Exposition in nearby Hudson Point.

• **Magnet Center** (currently defunct) – the Magnet Center was a free training program held at the local high school to teach people in the community practical work skills. One of the four components of the training program was marine trades. The Center was valuable to the community during the early 1990s since it provided a place for loggers and millworkers displaced by logging restrictions to receive re-training. After funding for the Center ended, the Economic Development Council (see above) and the USDA Forest Service (\$46,000 from State and Private Forestry), funded the program for a short time. The Center officially closed in the mid-1990s.

Key Points and Factors for Success

The success of the Port Townsend Wooden Boat Cluster can be attributed to various factors:

• **Access to Markets** – one of Port Townsend's strengths is its proximity to strong regional markets. This was especially important in the early development of the cluster when boat builders and boating enthusiasts moved to the area and “set up shop”. Today, the cluster has a national (even international) reputation and markets many of its products across the country. The success of expanding the customer-base to include national markets had its beginning, however, from a local/regional perspective.

³ In addition to the WBF festival in September, the WBF in 2009 will host the 17th Shipwrights' Regatta and the 26th Classic Mariner's Regatta.

- **Quality of Work** – the cluster has built a reputation on high-quality workmanship. One source reported that Port Townsend has reached a positive tipping point—the cluster is recognized as “the place” to come to for wooden boat repair.
- **Innovation** – the cluster has adapted to changes in innovative ways. Businesses have been able to spawn new businesses (spin-offs) and individuals have been attracted to the Port Townsend area to fill niches, develop specialties, and invest in new economic ventures.
- **Strong Network of Support Organizations** – entities such as the Wooden Boat Foundation and the Northwest School of Wooden Boatbuilding have for many years supported and promoted the area’s boat builders, repairers, and ancillary businesses. These organizations, and many more, effectively serve a public relations role for the cluster by attracting visitors, customers, and new businesses to the area. The organizations also play a significant role in education—both within and outside the cluster.
- **Complementary/Integrated Businesses** – the Port Townsend cluster is beyond just being a “forest business” or “forest industry” cluster. In essence, the Port Townsend cluster is focused on “marine industries” with a wood-

based sub-set that is an integral component of many larger firms (with wood as a specialty or niche for some of the smaller firms that contract with the larger ones). Firms that build and repair boats are specialists in many fields including welding, plumbing, propulsion systems, and woodworking. The woodworking component of the cluster complements other aspects of the cluster, and vice versa, such as sail making, refrigeration systems, and the like (each would have difficulty existing without the others). The ability of these seemingly dissimilar business niches to be integrated within and between firms appears to provide the cluster stability during economic uncertainty.

- **“Full Circle” Cluster Concept** – the uniqueness and strength of the Port Townsend cluster can be described as a “full circle” concept. The cluster not only manufactures boats but it also markets and repairs them, trains individuals in boat making (novice and experienced) and related skills, sponsors educational events and activities, and serves as a recreational hub for the cluster’s main product (boats). Consequently, customers return again and again to Port Townsend, supporting various businesses in the cluster whether they are builders, repairers, educators or recreation-oriented enterprises.⁴

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This case study benefitted from the excellent report prepared by Braden et. al on clustering in the Pacific northwest (see reference below). Thanks also to Jerry Fry of the Wooden Boat Foundation and Suzie Barnes of the Port Townsend Shipwrights Co-Op for providing, via telephone, valuable information and excellent observations for this report.

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⁴ In a traditional forest-based business cluster centered in one or more small communities, there are limited opportunities for “full circle” clustering since the product (primary or secondary) is often exported out of the region, never again to return. For example, a furniture manufacturer might have its products sold in dozens of states to thousands of customers. If these same customers need future repair work done on a particular piece, it will likely not be returned to the distant manufacturer. Furthermore, customers seeking information (vocational training for example) on furniture building will likely seek this out in their home community or region, not at the manufacturing plant or cluster area where their particular piece of furniture was originally produced. The uniqueness of the Port Townsend Wooden Boat Cluster is that all of these manufacturing activities and services are offered within the cluster, and not easily replicated elsewhere.

INTERNATIONAL COMPARISON: FINLAND & SWEDEN

Examples of Forest Sector Cluster Development

Overview

Finland and Sweden are recognized as having the most developed forest clusters in the world. Both clusters evolved from firewood and tar production over 500 years ago to the current era of sophisticated products such as printing and writing paper.

In Finland, the forest cluster is about 10% of Gross Domestic Product (GDP), 30% of industrial production, and 40% of net export income. Although Finland has less than one percent of the world's forest resources and only 5% of global forest production, the country is a major forest products exporter (paper/paperboard – 15%, printing/writing paper – 25%, and new paper machines – 30%). Companies and organizations within the cluster employ 200,000 people in Finland and abroad.

Sweden employs approximately 76,000 workers in their forest industry cluster with an additional 8,000 indirect employees. Similar to Finland, the Swedish cluster is export oriented and ranks number three in the world in sawn timber exports and number four in pulp and paper exports. In 2004, 20-25% of Sweden's industrial investments occurred in the forest industry cluster.

Cluster Development

The development of timber-based forest clusters in Finland and Sweden first started with establishment of sawmills in suitable locations providing power (first, water-driven power and later, hydropower on rivers) and transport conditions (water transportation). In the late 1800s, the best sawmill-based growth centers grew further with the establishment of pulp and paper mills. After reaching a critical mass, these growth centers attracted related industries and services. The growth continued during the first half of the 20th century.

In the second half of the 20th century, producers focused on value-added paper grades. This decision involved close cooperation with related and supporting industries, especially the machinery industry. Companies also had to develop significant project management and engineering skills. Consequently, the forest cluster in Finland is today fairly complete and highly competitive in the core products of paper, paperboard and sawn wood. Further, Finland has emerged as an important producer of related and supporting industries such as timber harvesting machinery (handling and processing of wood), pulp and paper making machinery, paper chemicals, and forest industry consulting.

Governmental Policies

The post-World War II era was an important time for the development of Nordic forest clusters. Export markets for forest products were expanding, whereas an available and accessible forest resource base was sustainably managed for increasing production targets. There was relatively free access to new production technology and innovations, and availability of adequate risk capital was also an important component. In addition to these factors, the role of government was of key importance. In general, government policies supported the expansion of the forest products sector. This support included spin-off industries as well as related input, and service providers. The effort by government helped forge a genuine forest cluster over time.

It is important to recognize that forest industries were high on the national economic agenda as the cluster matured. Some economic policies were even deliberately manipulated to assist the cluster and keep it competitive. Currency exchange rates and liberal export trade policies are examples of direct government intervention. Also, public support was provided for education, training and extension, and research and development (see following section). The bottom line is that a conducive environment was created by government that supported collaboration between all cluster stakeholders.

Research and Development

One of the keys to success for both Sweden and Finland is their commitment to research and development (R&D). This commitment has led to an excellent network of research and educational institutions that provide expertise and train skilled employees at all required levels: academic, technical, and vocational.

Both countries are part of the European partnership for research and development (Forest-Based Sector Technology Platform) and have a National Strategic Research Agenda (NRA). The NRA provides support to the clusters and includes industry, forest owners, government, and the research community. In Sweden, the NRA is distinguished by four "process groups" that include forestry, wood, pulp and paper, and bio-energy.

Finland has a Finnish National Support Group composed of cluster companies and public financiers. This support group has developed a Finnish Forest Cluster Research Strategy (2006) and a Strategic Center for Science, Technology and Innovation of Forest Clusters (2007). It is interesting to note that in Finland, R&D expenditures from industry are four times greater than from universities and research institutions.

Forest Land Base

In Finland, 68% of the forest area is in private non-industrial ownership with 8% and 24%, respectively, owned by industry and government. In Sweden, about 50% of forest land ownership is privately held with 38% company owned, and 12% in public forests. In both Finland and Sweden (as in the Midwest and eastern U.S.), many small landowners feed the wood market providing a “smooth” flow of wood fiber. Forest harvests do not “cycle” as in western regions of the U.S. that are dominated by public land ownership.

Key Points and Factors for Success

The success of forest-based business clusters in Sweden and Finland have important lessons for the U.S. The following are key points and factors for success from Nordic countries in developing and sustaining their

forest clusters:

- Cluster building is a long-term effort.
- Cluster building benefits from an economic development strategy supported by government.
- Key stakeholders must be committed to the cluster.
- Cluster building must use the competitive advantages of the region (natural resources, technical expertise, transportation systems, etc.)
- Strong clusters are formed to withstand global competition.
- Foreign capital investments and “outside technology” must be encouraged to enter the country (or region/state/county).
- Research and Development (R&D), including education, is vital to the long-term viability of the cluster.
- Raw materials must flow from forest to factory in a reliable manner.

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This case study relied heavily on the “Nordic countries’ section” of a Latin America-focused report prepared by Jaako Poyry Consulting (see Bonita et al. 2002).

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