



Wealth Creation in Rural Communities

PHASE ONE REPORTS

A Compendium of Clusters in Less Populated Places Circumstances, Interventions, and Outcomes

Regional Technology Strategies

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A Compendium of Clusters in Less Populated Places

Circumstances, Interventions, and Outcomes

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Format for Cluster Summaries

Although the information used to compile this data set of rural cluster is drawn from a wide variety of sources over a long period of time, we have attempted to describe each in a roughly similar format. Efforts were made to update, using Internet searches and phone calls, those clusters that were based on old information.

- Each vignette begins with a **description** of the approximate scope and scale of the cluster, the types and numbers of firms in the general cluster boundaries and along its local value chain.
- The **origin** of each is traced to learn when and how it started and grew.
- The **location** and general boundaries of the territory generally associated with the cluster are mapped.
- If the cluster has a particular **associational infrastructure**, it is described in terms of its focus and membership.
- The **development** of the cluster is based on the context and special conditions that prompted that helped the clusters mature. For example, was the cluster part of a larger public sector, a specific local government strategy, a strategy of a foundation or other external source of funding, or it was purely business led; and what special conditions prompted the development of the cluster, such as access to raw materials, special investments in research or recruitment, labor market skills, or pure serendipity.
- Based on best available knowledge, what **external interventions** or forms of support have been directed to the cluster and from what sources? This is presented in matrix form, with sources differentiated by regional or state government, national government, public education, foundations, or other sources. The types of services are those that have seemed to be most prevalent: networking, education & training, business services including entrepreneurial services, R&D or technology diffusion; marketing, and capital, and infrastructure.
- **Community engagement** describes ways that communities are involved with clusters or can influence practices. Since clusters are by definition private sector driven entities, community engagement must be by invitation or they have to bring certain resource to the table.
- The **outcomes** represent the most ambitious piece of the story and represents an initial effort to determine if and why affirms in a cluster aspire to or achieve the triple bottom lines—economic, social, and environmental impacts. Since almost no clusters began with a triple bottom line in mind, such outcomes either developed over time in response to conditions, pressures, or incentives.
- Finally, some of the **sources** of information are listed.

Glossary of Terms Used

Associational Infrastructure: The economic, social, or civic organizations, institutions, and venues that enable employers, employees, or artisans to come together, build trust, develop relationships, learn from one another, and form networks or consortia.

Cluster: A geographically limited critical mass (i.e., sufficient to attract specialized services, resources, and suppliers) of companies that have some type of relationship to one another—generally complementary or similar products, processes, or resources.

Clustering: The act of companies with similar interests or needs in a geographic region establishing new or closer relationships and linkages.

Cluster Initiative or Intervention: An activity that addresses the specialized needs of a set of companies or the entire cluster designed to enhance the competitiveness of the cluster.

Cluster Associations: A membership-based organization that collectively represents the needs and interests of members, provides services, and/or serves as a vehicle for members to associate and network.

Community: A loose definition that is generally defined by political boundaries or shared interests but in this compendium refers to a single or set of municipal boundaries.

Development: In this report, development refers to any special conditions that may have prompted the formation and further development of the cluster and the larger political and economic environment of the cluster, as for example, a public sector or foundation strategy, an independent, grass roots effort, or purely an entrepreneurial outcome

Externalities or Economies of Scale: Reductions in costs that result from increases in the scale of demand for valued services or resources. These economies are often discussed as "localization economies," which are the benefits that accrue to firms as a result of the clustering of similar firms, and "urbanization economies," which are benefits that are associated with population density.

Innovation: The transformation of knowledge into new products, processes, and services; the act of using something new. The innovation process consists of the steps through which something that is used moves from conceptualization to utilization.

Knowledge Clusters: Specialized networks of innovative interrelated firms that derive competitive advantages through accumulated, embedded, and imported knowledge among local actors about highly specific technologies, processes, and/or markets.

Location Quotient: The ratio of the relative concentration of establishments or employees in a cluster to total establishments or employees in the economy divided by the same relative concentration in the larger economy (state or nation). A location quotient of 1.0 represents average concentration, a quotient of greater than 1.0 a higher concentration, and a quotient of less than 1.0, a smaller concentration.

Network (formal): A contractual alliance or membership organization in which some number of firms agree to share resources, costs, or information. Some form of cooperation and some level of trust are required. Networks are often, but not necessarily, embedded in clusters.

Networking (informal): Informal interactions and relationships among firms and support organizations that are not contractual or membership based. They imply something more than simple proximity to like or related firms and deliver more than external economies.

Network Broker: An individual or organization that facilitates joint actions among groups of companies.

Region: A geographically bounded territory that has a common hub, labor market, or source of economic growth.

Sector Programs: Workforce development programs run by non-profit organizations that address the needs of workers and employers in specific groups of industries.

Social Capital: Stocks of social trust, norms and networks that people can draw upon to solve common problems. Networks of civic engagement, such as business and neighborhood associations and cooperatives are an essential form of social capital, and the denser these networks, the more likely it is that members of a cluster will cooperate for mutual benefit.

Soft Network: A group of companies that has some core competency, resource, or need in common that choose to form a local or regional association that enables them to share costs of services and information, interact, and/or influence policy.

Supply or Value Chains: All of the companies in the production stream that make the individual systems, parts, and services that eventually are incorporated into a final product purchased by an end customer or user.

Triple Bottom Line: Three sets of outcomes that are measured by (1) economic impacts, (2) social inclusivity and (3) environmental impacts

1. Cheese Artisans in Vermont

Description

Vermont is renowned for its award-winning cheddar cheeses, especially its widely distributed Cabot and Grafton cheddars. The state's cheese production cluster is not content, however, simply to rest upon these laurels. A host of smaller, artisan cheese makers are today broadening Vermont's reputation as a place for world-class, gourmet cheese, 35 featured on the Vermont Cheese Trail, a statewide wayfinding trail that promotes these producers and their 150 varieties of handcrafted cheeses to tourists. These producers make their cheeses from raw, unpasteurized milk, and some also use traditional techniques to age their cheeses. Many of them depend on networks of small farms, so that the cluster is much larger than just the cheese makers themselves. Vermont Butter and Cheese, for example, which produces 15,000 cheeses a week, supports about 20 family farms,

Origin

Vermont's cheese production cluster, which consists almost entirely of local farmers and capital, has a long history in the state. Consider Bardwell opened the state's first cheese factory as a cooperative in 1864 in West Pawlet. Crowley Farms, the oldest continuously operating cheese producer in the U.S., opened 18 years later about 25 miles away. Recently cheese has developed into a premier tourism attraction. Cabot Creamery, Crowley Cheese, and Grafton Village Cheese all are listed in *Watch It Made in the U.S.A.: A Visitor's Guide to Companies that Make Your Favorite Products*.

Location

Cheese makers are distributed throughout the small state of Vermont, although nearly all of the producing farms are located in very rural areas, mostly in villages and small towns. This strong rural emphasis allows tourists to visit four to five farms while lodging in small towns like Grafton (649) or Hartland (3,223).

Associational Infrastructure

The Vermont Cheese Council formed in 1998 with a grant from the Vermont Sustainable Jobs Fund to preserve the tradition of cheese making in Vermont by promoting farmers and enhancing accessibility to markets, especially non-resident tourists. The Council supports artisan cheese producers, contributes to research and expertise related to dairy and cheese products, and encourages the sustainability of the small-farm culture. It serves as the liaison with national industry organizations like the American Cheese Society, and in 2007 hosted its annual meeting in Burlington.

Development

By the latter half of the 19th century, an increasing demand for milk products, advancements in the transportation industry, and the growing presence of dairy farms throughout the state propelled Vermont's cheese making industry into becoming one of the most productive states in the union. Since then, however, cheese production has

waned, resulting in consolidation and decline in the numbers of dairy farms. Moreover, lower milk prices and rising fuel costs have prompted some farmers to turn to artisan cheese making as a “vehicle for the renewal of their community.” The Vermont Cheese Council helped create the statewide Cheese Trail to link tourism to the state’s cheese production cluster. Demand for artisan cheeses has grown substantially over the last decade, and the Council serves both to foster growth in this niche market and to promote indigenous products to non-local tourists.

Interventions

The Vermont Cheese Council assists small and large cheese makers gain access to markets and build a strong reputation for their products. It does not, though, represent all cheese makers in Vermont, only those making handcrafted artisan cheeses. Many of these farmstead cheese makers take part in the organization’s Vermont Cheese Trail, an emergent attraction that some compare to the “early years of winery tourism” in the Napa Valley. The number of participating farms increased from 20 in 2006 to 34 in 2008. Overall, Vermont’s cheese makers produce about 70 million pounds of cheese per year, much of it artisan or handcrafted. The University of Vermont provides education, research, technical services, and public service through the Vermont Institute for Artisan Cheese and its Cooperative Extension. The Windham Foundation in Grafton helped restore Grafton Village Cheese Company, a coop that burned down in 1912.

	<i>State Gov.</i>	<i>National Gov.</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Private</i>
<i>Networking</i>	X				
<i>Training</i>					
<i>Services</i>		X			
<i>R&D/T</i>		X	X		
<i>Marketing</i>	X	X			X
<i>Capital</i>				X	X

Community Engagement

Shelburne Farms, featured on the Cheese Trail, is described online as a nonprofit environmental education center. It offers seasonal programs to people of all ages.

Outcomes

<i>Economic</i>	Economic outcomes are strong (some cheeses command \$30/pound).
<i>Inclusion</i>	No explicit policies but initiatives aimed at small, marginal dairy farms.
<i>Environmental</i>	Highlight humane treatment of animals and some environmental education.

Sources

2006, Gene Sloan; 2008, Peggy Shinn; LINK: <http://www.vtcheese.com/>: <http://nutrition.uvm.edu/viac/>

2. Catfish Farming in the Mississippi Delta

Description

Catfish is the leading aquaculture farming industry in the US, and the Mississippi Delta is the most productive region in the country. Known as “the hub of the nation’s catfish industry,” it has a reputation for producing the highest quality catfish. As of 2006, the Delta region has over 144,000 acres of ponds, with an average size of 10 to 20 acres. Farming operations in the Delta are more specialized and, in many instances are single-enterprise operations. In 2003, the region had one-half of valued production, or approximately \$243 million. Yet, catfish farmers, unable to cope with the soaring cost of corn and soybean feed, are draining their ponds. Some producers switched to a feed based on gluten, a cheaper derivative of corn, to reduce costs.

Origin

Catfish started out as a local delicacy and part of the lore of the Deep South. Initially ponds were put on soil too dry for cotton. When they proved a superior crop, they replaced cotton. J. B. Williamson dug his first catfish pond in 1965 in Humphrey County. In the late 1970s, Governor Cliff Finch proclaimed Humphreys County “The Catfish Capital of the World,” a title it still holds today. The industry grew rapidly as traditional cotton farmers switched to catfish farms. In 1976, U. S. production totaled 55,000 acres, with Humphreys County leading all other counties in the U.S. with 6,000 acres. Today the County has over 35,000 acres under water.

Location

The Delta region is a relatively well-defined geographical area of the Mississippi River alluvial valley in northwest Mississippi. This 17-county region that is known for soils that have a high clay content and large farms that are about 430 acres in size.

Associational infrastructure

Cooperatives, trade organizations, and institutes represent all segments of the catfish farming industry. The Catfish Farmers of America (CFA) had represented interests of farmers, processors, feed mills, researchers and supplier industries since 1968. This local trade organization funds annual conventions, publishes periodicals, and sponsors trade shows. The Delta Pride cooperative was founded in 1981 by a group of Mississippi catfish farmers to process and market. Lastly, the Catfish Institute was founded in 1986 by catfish feed mills and their producer members with the goal of raising consumer awareness about the benefits of U.S. Farm-Raised Catfish.

Development

By the time the first catfish farm opened in the mid-1960s, many counties in the Delta region were economically depressed. This region had deep roots in agriculture, farming rice, soybeans and cotton, however, local farmers were looking to move away from traditional staple crops to a more profitable crop. With guidance and assistance from the

Mississippi Cooperative Extension Service and investors, catfish farmers of Humphreys County were able to maintain agrarian economy and established themselves as leaders in an industry that transformed the economy of the area.

Interventions/support

Historically, the Delta Council, constituted of local leaders, worked with congressional leaders and USDA officials to lobby for farmers in the region. The council also worked with commodity groups to persuade the U.S. Fish and Wildlife Association to confront economic losses due to catfish production caused by invasive waterfowl, especially cormorants. Recently, the Delta Council requested funding for a Delta Center of Technology Transfer and multi-million dollar fish disease program. Currently, the Delta Research and Extension Center houses research projects for areas include pathology, economics, fish behavior, nutrition, and water quality.

	<i>Regional Gov't</i>	<i>National Gov't</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Other</i>
<i>Networking</i>					
<i>Training</i>					
<i>Services/Entrepren.</i>	X				
<i>R&D/T</i>			X		
<i>Marketing</i>					X
<i>Capital</i>					

Community Engagements

None mentioned.

Outcomes

After 10 years of expansion, the industry contracted in 2002 and 2003 and faced competition from foreign imports that drove prices to record lows. The industry's decline accelerated when producers from Vietnam and China flooded the domestic market, putting a ceiling on prices. The current economic recession may spell disaster for more farmers as it drags on.

Economic	This is a poverty-persistent region, and raising catfish in artificial ponds was one of the few economic mainstays.
Inclusion	Labor is mostly low skill but also low pay.
Environmental	As pond become more crowded and require aeration, the increased waste creates off-flavor fish. New EPA standards are being set,

Sources

<http://msucare.com/aquaculture/catfish/index.html>

David Streitfeld, "As Price of Grain Rises, Catfish Farms Dry Up," *New York Times*, July 18, 2008.

Costs and Returns of Catfish Pond Production in the Mississippi Black Belt Area (MS Agriculture & Forestry Station September 2000)

<http://www.catfishcapitalonline.com/cfcapital.htm>
<http://catfishinstitute.com>

Doreen Muzzi, "Delta Council active in support of farms," June 22, 2001

3. Wine Cluster in Southern Washington

Description

This thriving wine cluster in a very rural region of southern Washington is home to 64 wineries, with new wineries starting up each year

Origin

The roots of the cluster are the Italians who began growing grapes and making wine in the early 1800s and by 1876 it was producing 2,500 gallons of wine. But the first post-prohibition winery was Blue Mountain Vineyards, which opened in 1950. In 1984 the Walla Walla Valley was federally recognized as a unique American Viticulture Area (AVA), the third area in the state to be so designated. In 1990 there were just six wineries in the Walla Walla Valley of the state of Washington but by 2005 there were 64 wineries.

Location

The region of Washington is on the southern border with Oregon and extends across Walla Walla, Benton, and Franklin Counties., about 30 miles from interstates I-82 or I-84.

Associational infrastructure

In 2000, the Walla Walla Valley Wine Alliance formed with 100% of the Valley's wineries and 98% of the Valley's planted acreage represented. But even before that social relationships had been developing. The growth of the cluster was based on close social relationships. For example, Waterbrook and other wineries shared space, equipment, and help to fledgling wineries, which generated close, personal relationships throughout the local industry.

Development

The wine cluster is part of a regional and state strategy based on wine, food, and art. In addition to the growth of the wine cluster, there are now 32 art galleries in the town. The climate, soil, history, and isolation that deterred industrial development all contributed to the growth of the cluster.

Interventions/support

The most significant intervention has been the Center for Enology and Viticulture at Walla Walla Community College, one of only two colleges in the nation producing wine for sale and the only one directly connected to a culinary arts program. The cluster was a regional strategy; The Center was funded by a combination of state, federal (USDA), local funds and private donations from 409 donors including dozens of foundations.

	<i>State Gov.</i>	<i>National Gov.</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Other</i>
<i>Networking</i>					
<i>Training</i>	X	X	X	X	
<i>Services/Entrepren.</i>				X	
<i>R&D/T</i>			X		
<i>Marketing</i>	X				
<i>Capital</i>					

Community engagement

Nothing noted

Outcomes

<i>Economic</i>	The cluster has created jobs directly and contributed to tourism and startups of six new wineries. It has also earned various distinctions such as one of 12 “Distinctive Destinations” named by the National Trust for Historic Preservation and <i>Sunset Magazine’s</i> “Best Main Street in the West.”
<i>Inclusion</i>	Students in the program tend to be older, better educated, and wealthier than typical community college students, many seeking a different career, but it has generated a strong culinary arts and hospitality program that attracts more lower income students.
<i>Environmental</i>	The programs contribute to and encourage a local food movement.

Sources

Articles, discussions, and presentations by Steve VanAusdle, President of Walla Walla Community College, including *Community College Journal*, July 2005.

4. Aquaculture along the coast of Maine

Description

This aquaculture industry cluster is recognized as a “major center of the industry in North America”. The industry is comprised of finfish, shellfish, and sea vegetable farms that employ over 1,200 people. These farms are known to produce “top quality Atlantic salmon, Steelhead trout, American oysters, and nori”. Firms range in size, from small, family-owned shellfish farms to large, multinational salmon farms. There are about 100 farms and 14 hatcheries.

Origin

Commercial fishing has supported coastal communities for hundreds of years but commercial farms did not come into existence until 1970. The first finfish farms, Maine Salmon Farms and Fox Island Fisheries, opened in 1970 and 1973, respectively. Both companies suffered debilitating losses after persistent untenable weather (e.g. the Superchill of 1976) depleted their fish stock and eventually closed. Shellfish farms opened around the same time but they lacked capital, seed stock, and optimal sites. The aquaculture cluster did not grow until farmers utilized techniques that were developed by local researchers. Once farmers adopted improved bottom culture and pen-rearing techniques, smaller companies reached a sustainable level of production and some even grew into larger companies.

Location

Counties along the eastern coast of Maine.

Associational infrastructure

The Maine Aquaculture Association (MAA) represents all aquaculture farmers (i.e. freshwater, marine, shellfish, and finfish). The association is the oldest of its kind and dedicated to growing the industry.

Development

This was a grass roots effort started by local oyster growers who founded this aquaculture trade association in 1976. This association is focused on improving the efficiency of production techniques, facilitating the diffusion of information throughout the cluster, and advocating on behalf of farmers.

Maine’s geographic advantage and existing infrastructure (e.g. value-added processing, research centers and universities) allowed for the cluster to reach critical point of sustainability. Additionally, the federal government designed national policy that encourages growth for the dual purpose of reducing the U.S. trade deficit and for replenishing depleted wild fish stocks.

Interventions/support

The Maine State Legislature financed the creation of Maine Aquaculture Innovation Center (MAIC) in 1988. MAIC plays an instrumental role in establishing industry-research partnerships and educating Maine’s leaders, entrepreneurs, and youth. Additionally, MAIC’s 12-person board is comprised of industry types, university representatives, and government officials. Other functions of the organization include serving as a clearing-house for information and assisting in the formulation of policies favorable to industry growth. The University of Maine’s Advanced Technology Center and Washington County Technical College also have a role in spurring innovation and entrepreneurial activity. Local researchers received funds from foundations like the A.W. Mellon foundation for their research programs.

	<i>Regional Gov’t</i>	<i>National Gov’t</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Other</i>
<i>Networking</i>					X
<i>Training</i>			X		
<i>Services/Entrepren.</i>			X		X
<i>R&D/T</i>	X	X	X	X	
<i>Marketing</i>					X
<i>Capital</i>					

Community engagement

The fish farmers are part of the local community and involved in community activities.

Outcomes

<i>Economic</i>	Capital investment in Infrastructure totals \$100 million. Salmon farmers produced \$78.9 million in 2000 and the value-added processing capabilities are growing.
<i>Inclusion</i>	None mentioned.
<i>Environmental</i>	The goal is to be “responsible stewards of the environment”. MAA and MAIC are working with farmers to develop innovative and sustainable farming methods. MAA has published a 14-point set of environmental guiding principles, cooperative bay management and a comprehensive code of practice,

Sources

RTS Cluster Industry Compendium and numerous websites.
www.maineaquaculture.org [Maine Aquaculture Innovation Center – Industry Profile]
www.maineaquaculture.com [Maine Aquaculture Association]
<http://aquanic.org/newsletters/state/maine/me1194.htm> [Aquatic Newsletter]

5. Fisheries in Nelson, New Zealand

Description

Nelson, New Zealand is the center of the country's seafood and fishing industry, with more than 20 seafood operators. About 70 percent of New Zealand's fishing quota is held by Nelson-based firms, and most of the country's aquaculture development is within a 60-mile radius of Nelson.

Origin

Fishing has been the staple of the economy for decades but only in the last 25 years has Nelson moved into fisheries management, marine sciences and engineering, and processing. The Port of Nelson operates with full services 24/7.

Location

Nelson, a city of just over 40,000 named for Admiral Nelson, sits on the Tasman Bay on the northern tip of the South Island, just across the bay from Wellington. It has many natural amenities, situated close to beaches, mountains, and plains. It has been called a "creative paradise."

Associational infrastructure

The Nelson Marlborough Seafood Cluster was officially "recognized" in 1996 at a meeting organized by Tradenz, New Zealand's economic development agency. It has a director who organizes meetings and facilitates networking. The Seafood Industry Training Organization is an association of all education and training providers in the region. There is also a New Zealand Seafood Council headquartered in Nelson, and the Sealord Group, a consortia of the largest seafood companies in the South Pacific

Development

The further development of the cluster, not the origin, is part of a continuing national cluster strategy that has survived changes in government. The government's quota system for fishing established in 1986 left Nelson with the lion's share of fishing rights.

The New Zealand government began its cluster approach in the mid 1990s after studies by Michael Porter. The government's early interest in networks (Joint Action Groups) and clusters lent support and some funding to public and private initiatives.

Interventions/support

In 2002, the government announced another modest program that supported a cluster facilitator. Education and training have been instrumental in the growth and expansion of the industry. The polytechnic's specialization in fisheries and marine sciences also contributed immensely. The cluster task force initiated an apprenticeship program and a Seafood Technology Pathway program. A \$150,000 grant to analyze seafood

industry training needs will help strengthen tertiary programs. Another \$150,000 matched by industry will be for research on adding value to the cluster.

	<i>Local Gov't</i>	<i>Nat'l Gov't</i>	<i>Public Educ.</i>	<i>Foundations</i>	<i>Private</i>
<i>Networking</i>		X			
<i>Training</i>		X	X		X
<i>Services/Entrepren.</i>		X			
<i>R&D/T</i>		X			X
<i>Marketing</i>					
<i>Capital</i>					

Community engagement

Unknown, especially with respect to Maori.

Outcomes

The region is not completely dependent on its marine industries and also has strong cultural assets, with a large arts and crafts community and wineries, attracting large numbers of tourists. Not clear how an energy crisis will affect shipping and tourism given the geographic isolation of the country.

<i>Economic</i>	The region appears to be thriving, both through this cluster and tourism, lower unemployment rate in 2006 than nation (4%)
<i>Inclusion</i>	Good employment opportunities. One in 8 in population are Maori (11% unemployment), and not known how well integrated they are into cluster although predominantly employed as laborers,
<i>Environmental</i>	New Zealand is concerned with sustainability and introduced the NZ Fisheries Quota Management System to limit harvests and conserve.

Sources

Site visits, Tradenz documents and minutes of cluster meetings.

6. Wine in North Carolina's Yadkin Valley

Description

Eighteen Wineries in Yadkin Valley, a growing wine producing region, spurring growth in supplies (Carolina Wine Supply in Yadkinville), wine bars, tourism and B&Bs, and food industry.

Origin

Wine making was part of the state culture since the earliest settlers but not until the 1990s when farmers began looking for alternatives to tobacco did it began to catch on, Before prohibition, NC was the nation's leading wine producing state. The state forms a grape council in 1986 Westbend Vineyards began growing grapes in 1972, and Shelton Vineyards in 1999. The areas is attempting to become a regional brand that attracts tourists, with Yadkin Valley shops in airports, maps, brochures, and it's own publications.

Location

Heart of cluster is Yadkin Valley, from Asheville northeast into the Appalachian foothills, with other wineries nearby in Piedmont region of the state.

Associational infrastructure

The Old North State Winegrowers Cooperative in Mt. Airy has 38 members (not all wineries) and operates as a cooperative with a membership fees and a committee and social structure.

Context

It is part of a state and regional strategy to develop the industry as a replacement for tobacco and to promote tourism.

Interventions/support

Surry Community College started offering courses in viticulture in 1999 and now offers a two-year degree in viticulture and enology. Grants from the Golden Leaf Foundation supported the growth of the Center and the State Department of Tourism helps market the region. Cooperative extension offers technical and marketing assistance.

	<i>State Gov.</i>	<i>National Gov.</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Other</i>
<i>Networking</i>					
<i>Training</i>			X	X	
<i>Services/Entrepren.</i>		X			
<i>R&D/T</i>					
<i>Marketing</i>	X	X		X	
<i>Capital</i>	X			X	

Circumstances

In 1986 the state began offering tax breaks to farmers to grow grapes but the major stimulus was the search to find ways to replace tobacco and subsequent grants from the Golden Leaf Foundation, which supported efforts to develop the cluster including Surry Community College and ongoing support for a wine industry association. The Appalachian Regional Commission and USDA also provided support to the cluster.

Community engagement

The wineries are mostly locally owned and integral to their communities. The Waldensian Heritage Wines, for example, are part of a tight community that traces its roots to Northern Italy.

Outcomes

<i>Economic</i>	Fast growing part of economy.
<i>Inclusion</i>	Requires capital for entry but good wages, opportunities for learning about industry
<i>Environmental</i>	Induces people to buy local products rather than imported products. Also offers a reasonable (dollar value) substitute for tobacco.

Source

State documents, Yadkin Valley & Carolina Wine Country News, News articles.

CREATIVE SECTORS

7. Leather and Related Crafts in Northeastern Wyoming

Description

This cluster includes about 25-30 companies and independent artisans who make or support leather goods. The cluster is well-known internationally, sells by phone, mail order, and Internet, and exports most of its products. Don King's Saddlery is the hub, largest employer and home to an extensive leather and western museum.

Origin

Leathercraft dates back to the 19th century when it was a staple of the western and horse riding attire, equipment, and accessories as well as shoes, belts, and holsters. The modern era began in the 1950s when Don King developed a unique style of complex patterns of wild roses in saddles using unusually deep stamping to achieve greater depth, which came to be called the "Sheridan-style." These saddles were acquired by Queen Elizabeth, Ronald Reagan, and the Crown Prince of Saudi Arabia as well as various art museums. Many who learned that style took off on their own and became independent leathercrafters, suppliers, or tool makers.

Location

The companies are mainly clustered in Sheridan and Johnson Counties in Wyoming.

Associational infrastructure

The social infrastructure is purely informal although each June Sheridan hosts the nation's largest leather trade show, the Rocky Mountain Leather Show, where leather crafters from the larger western region meet.

Development

The cluster has been completely driven by a desire to maintain a local tradition and western heritage, traditions passed on informally, through apprenticeships with no formal educational programs.

The only conditions were markets in the regional economy and western heritage, which includes a large number of ranches, rodeos, dude ranches that attract buyers, and tourists interested in western attire and culture.

Interventions/support

There have been no known interventions or sources of external support, although there is a current recommendation that Sheridan College establish a new certificate program for leather crafts that includes entrepreneurial skills.

	<i>Regional Gov.</i>	<i>National Gov.</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Private</i>
<i>Networking</i>					
<i>Training</i>					
<i>Services/Entrepren.</i>					
<i>R&D/T</i>					
<i>Marketing</i>					
<i>Capital</i>					

Community engagement

This cluster, other than the influence of Don King on tourism, retail shops and museum, is largely invisible to the local community, not part of any national, state, or local economy data analyses.

Outcomes

<i>Economic</i>	No measures of revenues; many operate on margins
<i>Inclusion</i>	The cluster is theoretically open to anyone with the skills to do the craft. There is no formal education necessary. There is concern about aging of crafters and ability to attract youth.
<i>Environmental</i>	Protection of environment necessary to keep ranges open,

Sources

Rosenfeld, et al, Tradition, Expression, and Recognition: New Opportunities for the Old West, 2008, plus personal interviews.

8. Seagrove Potteries in North Carolina

Description

About 80 potters live and work in Seagrove (246), the “Pottery Capital of North Carolina,” 10 miles south of Asheboro in the clay-rich Piedmont area. While Seagrove is the identifiable hub, more than 100 potteries stretch 25 miles into unincorporated towns in Randolph, Moore and Montgomery counties. Wares range from teapots and face jugs to whimsical animals and elegant, custom-made jewelry.

Origin

Seagrove’s pottery dates back 300 years, when Colonial potters, mostly from Staffordshire, England, began crafting earthenware milk crocks, churns, bean pots, storage jars, and whiskey jugs for everyday use. For decades the pottery was fired from the region’s heavy red clay and sold from covered wagons rolling through North Carolina. Others settled there after graduating from college or working as an apprentice elsewhere. Jacques and Juliana Busbee founded Jugtown Pottery and turned the area’s pottery making into an art form. To market these products, Juliana set up the Village store in 1918 in Greenwich Village, NY.

Location

Seagrove is a small town with fewer than 300 inhabitants south of Asheboro and about 40 miles from Pinehurst, the state’s golfing capital. It’s in North Carolina’s Piedmont region.

Associational infrastructure

Although there are strong family ties among some of the oldest pottery companies, most of the potters are not networked and, in fact, are often at odds with one another. A front-page article on the *Raleigh News & Observer* in June 2008 observed “In a community known worldwide for throwing clay, there's a lot of mud-slinging going on. A fracture has developed among Seagrove's famed potters.”

Development

The cluster is part of a tourism effort rather than a effort to promote a pottery cluster. The state uses the cluster as a magnet to attract tourists to the region.

Unlike the ceramic artists attracted to the mountains to be part of a network of artists, the regional tourist market for ceramic goods was the main draw for latest wave of Seagrove potters. Seagrove’s reputation draws customers, which in turn draws more potters.

Interventions/support

Montgomery Community College (MCC) offers AA Degree, Certificate in Professional Crafts: Clay; curriculum designed to prepare individuals for employment as professional potters or in pottery related fields; instruction includes technical knowledge, design skills and business essentials. With continuing education and degree/certificate options, the 17-wheel program serves potters at all levels of expertise from Randolph, Moore, Lee, and Montgomery counties. The North Carolina Pottery Center, Seagrove, NC has exhibits and educational programming on NC history and technology of pottery making; has information on pottery shops in Seagrove area and NC; preserves a collection of North Carolina pottery and related artifacts. There is also a competing Museum of North Carolina Traditional Pottery and part of the fight going on in the cluster is whether the cluster's pottery center ought to promote local traditional art of or the broader ceramics produced across the state

	<i>State Gov't</i>	<i>National Gov't</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Other</i>
<i>Networking</i>					
<i>Training</i>			X		
<i>Services/Entrepren.</i>					
<i>R&D/T</i>					
<i>Marketing</i>	X				
<i>Capital</i>					
<i>Infrastructure</i>	X				

Community engagement

The community is very engaged, but not necessarily in a positive way. Two different groups are organized but often act at cross purposes.

Outcomes

<i>Economic</i>	Successful businesses, strong brand, well developed.
<i>Inclusion</i>	Split in community that needs to be healed. Few, if any Latino potters though large Latino community
<i>Environmental</i>	Unknown

Sources

Site visits, Martha Quillan, "Some potters secede from annual festival," News & Observer, June 26, 2008

9. Handmade crafts in North Carolina's Toe River Valley

Description

The core of the cluster, which is invisible on any state employment database, consists of about 400-500 artisans producing functional and decorative arts, supported by dozens of galleries, gift stores, suppliers, and educators. Most are self-employed although a small number have employees.

Origin

The Appalachian Mountains have long been home to fine craft artisans and musicians, but the turning point for this area was 1929, when the Penland School of Craft was established to teach weaving skills to local women as a craft-based economic development program. As the school diversified into other crafts and grew, it attracted more and more artisans from other regions to teach, as resident artists (beginning in 1963), and to learn (1,200 per year), and today it attracts about 14,000 visitors per year. Many of the students and teachers have remained in the area to work, either in private or shared studios. Some have been accepted in a supportive Quaker-based cooperative community in Celo, formed in the 1950s.

Location

The Toe River Valley of the Black Mountains winds its way through Yancey (17,000) and Mitchell (14,000) Counties about 50 miles bordering Tennessee about 50 miles northeast of Asheville and connected to each other by State Highway 19E. The county seats are Burnsville (1,700) and Bakersville (800), respectively. Yancey County includes Mt. Mitchell, the highest mountain peak east of the Mississippi.

Associational infrastructure

The primary organization is the Toe River Arts Council (TRAC), which has offices in the largest towns of both counties, Burnsville and Spruce Pine. TRAC has two galleries and shows artists' work, organized semi-annual open studio tours, regular musical events, publishes a newsletter, is developing an e-commerce web site for members, and generally supports the communities. Other groups of artists operate collaboratively though, for example, the Glass Blowers of the Toe River, the Potters of the Roan Mountain, and the Celo Craft Cooperative. Penland is another central meeting place for the cluster.

Development

This is part of a larger western North Carolina regional strategy to supplement and replace manufacturing employment led by HandMade in America

The rapid loss of manufacturing employment, the staple of the economy that began in the late 1990s and no prospects for immediate employment for a displaced work force

with low levels of educational attainment, led the Counties to pay more attention to the crafts and its related potential for tourism.

Interventions/support

The region has received a number of federal, state, and foundation grants that have resulted in the EnergyXchange, which are glass, ceramics studios, and greenhouses powered by methane from the land fill on which they are located; artists and studio space in a former school building in Burnsville; a cooperative tile studio; and the “Home of the Perfect Christmas Tree” to sell local crafts related to a popular children’s book authored in the region. Other supported efforts include HandCrafted Architectural Products shows to encourage local builders and interior designers to use more local crafted parts.

	<i>Regional Gov’t</i>	<i>National Gov’t</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Other</i>
<i>Networking</i>				X	
<i>Training</i>			X		
<i>Services/Entrepren.</i>	X	X		X	
<i>R&D/T</i>					
<i>Marketing</i>	X	X		X	
<i>Capital</i>	X	X			

Community engagement

The cluster is heavily engaged in the community, donating crafts to fund raising events, playing music at celebrations, and participating on community committees and task forces, and join together on economic development. There is, however, a political chasm between the long time residents, many of whom are conservative evangelical Baptists, and the members of the cluster, who tend to be liberal, well educated, and secular. Further, the two counties, which fought on different sides in the Civil War, are more competitive than cooperative.

Outcomes

<i>Economic</i>	The economic output is difficult to measure because of bartering, underreporting, and other sources of income.
<i>Inclusion</i>	The crafts community is open and welcoming regardless of class, race, ethnicity, and actively seeks and values diversity.
<i>Environmental</i>	The cluster is very environmentally responsible and active in all conservation efforts.

Source

Rosenfeld, case study for North Carolina Rural Center, 2006; personal experiences and conversations with artisans.

10. Folk Art in San Luis Valley, Colorado

Description

The San Luis Valley, the poorest region in the state of Colorado based on reported wages, boasts (without citation) of the highest concentration of artists in the nation. There are more than 500 working artists based on a directory maintained by Monte Vista artists' group, including several nationally recognized contemporary, folk, and functional craft artists. The cluster is almost as large as the region's manufacturing sector, with 700 employed.

Origin

There is a long history of folk art in the region—particularly fiber art—but it was rediscovered as a more serious art form in the 1970s. The San Luis Valley also is widely considered to be one of America's most intriguing and mysterious geographic regions and an undeniable UFO hot spot, which has also led to an unusual art form (the crystal skull) and attracted tourists. Although some artists have been drawn to the area, most are natives who have developed their own talents over time.

Location

The valley covers six counties atop the Rio Grande Rift at an average elevation of 7,500 feet. In Southern Colorado bordering New Mexico, it includes parts of six counties but its hubs include the towns of Alamosa (15,000), Monte Vista (4,500), Antonito (900), and South Fork (600).

Associational infrastructure

A large geographic area, a variety of organizations promote cooperation and sharing. The Artes del Valle, started by and for Hispanic women in 1975 as a non-profit, helps with training, marketing, and selling. The San Luis Artists' Cooperative operating out of a historic convent does the same for its members, and also operates a bed & breakfast.

Development

Economic development planners recognize the value of the art as a draw for tourism and thus support promotion, training, markets and marketing, and cooperatives. The Valley is also known for its music, and has a number of major festivals and other events that promote both art and music.

The region has a strong tradition of entrepreneurship, with 30% of people working self-employed. Lack of employment opportunities has also driven people towards self employment.

Interventions/support

One main source of support is Adams State College in Alamosa, which has a strong arts program and the Cloyde Snook Gallery, has two theatres, and runs regular

workshop on art topics. The Colorado Arts Council awards small grants to support local arts councils and events, such as the Creede Arts Council, Crest Music Festival, and “Preserving and Protecting our Cultural Heritage.” The economic development agencies support the non-profits that market the arts.

	<i>State Gov't</i>	<i>National Gov't</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Other</i>
<i>Networking</i>	X				
<i>Training</i>			X		
<i>Services/Entrepren.</i>					
<i>R&D/T</i>					
<i>Marketing</i>	X				
<i>Capital</i>					

Community engagement

The artists represent the community.

Outcomes

<i>Economic</i>	Maintain a very rural economy without a significant manufacturing base
<i>Inclusion</i>	Many of the folk artists are Native Americans and Hispanics,
<i>Environmental</i>	Unknown

Sources

Beth Siegel, “Arts and Crafts in the San Luis Valley: Employment and Economic Development Challenges and Opportunities,” Boston: Mt. Auburn Associates, Unpublished paper, 199-; Wikipedia

11. Mata Ortiz Pottery in Northern Mexico

Description

The pottery of Mata Ortiz is sold in galleries throughout Mexico and the U.S. southwest and have developed a reputation and known brand across America. More than 400 potters create original functional pottery that rival and surpass New Mexico's better-known pueblo pottery. It is considered art not crafts because the work is not routinely produced with a repetitive style. The potters of Mata Ortiz combine both intellectual and aesthetic elements. Each artist has freely looked for his or her own form of expression, his or her own language through which to communicate. The clays are from the valley floor or the nearby foothills of the Sierra Madre Mountains and the paints are made from the clay or crushed manganese, also mined locally.

Origin

The original inhabitants of Mata Ortiz were part of the Casas Grandes civilization, a network of villages in Northern Mexico. Casas Grandes culture thrived from the eleventh century until about 1350. Near the present-day site of Mata Ortiz stood the city of Paquimé, whose achievements included hand-built ceramics featuring maze-like motifs, animal figures, and stone-polished surfaces. The people of Paquime mysteriously vanished around 1400, leaving behind a legacy of exquisite pottery. About 27 years ago, Juan Quezada began making and painting pottery based on the shapes and designs of the prehistoric Indians from nearby ruins of Paquimé in Casas Grandes. By 1976, he was selling the decorative earthenware to traders from El Paso.

Location

Mata Ortiz is a village of about 2,000 in Chihuahua in northern Mexico about four hours south of El Paso. The closest city (44,000) with tourist accommodations is Nuevo Casas Grandes, 27 miles away.

Associational infrastructure

The cluster is the community and is family based. The Posada de las Ollas in Mata Ortiz, gives visitors a chance to literally live with the potters. It's a block from the village center and surrounded by pottery families. The artists' children display their parents' latest offerings.

Development

The art has evolved over less than 30 years, from imitating pre-Hispanic designs to creative expressions. The artists are not satisfied with what they have accomplished and are constantly searching for new languages, new natural pigments, new clay, and techniques, which will make them grow as artists. Many believe that Mata Ortiz now has reached its classic period.

The cluster developed organically with skills passed down through families and friendships.

Interventions/support

There have been no interventions reported in the literature.

	<i>Regional Gov't</i>	<i>National Gov't</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Other</i>
<i>Networking</i>					
<i>Training</i>					
<i>Services/Entrepren.</i>					
<i>R&D/T</i>					
<i>Marketing</i>					
<i>Capital</i>					

Community engagement

The cluster is the community.

Outcomes

Much of the profit goes to distributors and galleries, but it provides a reasonable living and economic base for the community.

<i>Economic</i>	Some growth but still modest incomes
<i>Inclusion</i>	Inclusive in this homogeneous community
<i>Environmental</i>	No known negative effects.

Sources

Web searches.

12. Visual Arts in Salt Spring Island, British Columbia

Description

Salt Spring Island is known as “the island of the arts,” and over ten percent of its residents are estimated to be involved with the arts in some capacity. Downtown Ganges, located in the center of the island, is the island’s commercial center, and the location of the popular Saturday Market. There are also many festivals throughout the year. Salt Spring also prints its own alternative local currency, 100 percent backed by Canadian national currency.

Origin

The Island has become more popular over the past ten years, as tourism and population has increased. While the island has always been a haven for artists and those seeking an “alternative lifestyle,” it has become more “known” recently. Its studio tours have become “must attend” events.

Location

Salt Spring Island, British Columbia. The island is just east of Vancouver Island, and is only accessible by ferry or floatplane.

Associational infrastructure

The Salt Spring Arts Council provides “funding, material and organizational support to a broad range of groups and individuals,” and notes that it “fosters a positive environment for visual and performing artists, artisans, writers and performers — enriching the lives of all Salt Spring Island residents.”

Development

The cluster has developed organically, as residents move to the island. Most residents express a desire for a “simpler life.” Residents note the entrepreneurial spirit of the area, as well as the support from fellow artists.

Pending additional information

Interventions/support

Unknown

	<i>Regional Gov't</i>	<i>National Gov't</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Other</i>
<i>Networking</i>					
<i>Training</i>					
<i>Services/Entrepren.</i>					
<i>R&D/T</i>					
<i>Marketing</i>					

<i>Capital</i>					
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Community engagement

The community seems to be close-knit and have similar ideals. Robert Bateman, a well-known artist, founded ArtSpring, an 11,800 sq. ft. building that contains a 5,200 sq. ft. exhibition/multi-purpose area and a 6,600 sq. ft, 259-seat theatre. ArtSpring hosts many cultural events and is the only professional year-round presenter of concerts and other events. The locally produced Salt Spring Islands \$\$ Dollars expire after two years, at which time the “profit” is used to fund community projects. Local artists donate their work to appear on the currency.

Outcomes

<i>Economic</i>	The area is growing more popular in terms of people moving there, and visitors attracted. Artists are finding a larger commercial venue for their works.
<i>Inclusion</i>	Open to anyone. Supportive environment.
<i>Environmental</i>	Great concern for the environment.

Sources

- <http://www.saltspring.cc>
- <http://www.saltspringmarket.com>
- <http://saltspringstudiotour.com>
- http://seattletimes.nwsources.com/html/travel/2001952305_saltspring13.html
- <http://www.ssartscouncil.com/index.html>

RECREATION & TOURISM

13. Music-Based Tourism in Branson, Missouri

Description

The cluster consists of a concentration of predominantly but not entirely country music venues that attract visitors from around the world. *60 Minutes* calls Branson “the country music capital of the universe;” others have dubbed it “the live music capital of the nation.” Visitors can attend to a wide variety of music venues: country, pop, gospel, bluegrass, western, rock, classical jazz, or Broadway. The town has 53 theaters containing about 60,000 seats. Approximately 8.4 million people visited in 2007 and spent about \$1.8 billion. Overall last year over 500 shows featured 70 different artists. Nearby lakes, 13 golf courses, a theme park, and shopping centers are available to fill up visitors’ time.

Origin

Harold Bell Wright wrote a national best seller called *The Shepard of the Hills* in 1896. He derived part of his inspiration for writing the book from his visits to Branson’s scenic areas. As a result of the popular book, by 1906 a tourism industry was well established. After the construction of the town’s first performance theater in 1952, entrepreneurial activity increased substantially. Most theaters were family-run and showcased local talent. Around this time, country legend Red Foley moved to Springfield to host the “Ozark Jubilee.” The Presleys built the first theater along Highway 76 (“The Strip”) in 1967, followed by the Mabe Brothers, now known as the Baldknobbers, who built their theater in 1968.

Location

Branson (7,453) is located on the southwest corner of Missouri, near the borders of Oklahoma and Arkansas. The majority of theaters are located along Highway 76. The town is also surrounded by three prize-winning fishing lakes: Taneycomo, Table Rock, and Bull Shoals. Today, Historic Downtown Branson remains as a center for community activity, shopping and hosts a variety of events year round.

Associational infrastructure

The Branson Lakes Area Chamber of Commerce represents numerous multinational companies and locally owned businesses and theaters in the town.

Development

The chamber has been instrumental force in fostering economic development, bringing the businesses together, and marketing the cluster.

In the 1950s, local talent and support from local businesses, citizens, and government officials helped the cluster grow. But the most important factors that fueled the cluster

growth are accessibility and marketing. About one-quarter of the nation’s population lives less than one day’s drive from Branson and a recent survey of tourist revealed that 65 percent of visitors live at least 300 miles outside the town. Ever since Time magazine ran an article on their “discovery” of Branson in August of 1991 and 60 Minutes featured Branson in a piece in December 8, 1991, the number of attractions in Branson have more than doubled.

Interventions/support

The city’s economic development department supports the cluster by recruiting new businesses, advocating for improvements for the city’s infrastructure, and expanding capital investment for projects like the new Convention center. The Downtown Branson Main Street Association, Inc. (DBMA) leads revitalization efforts for Branson’s historic business district. DBMA has working relationships with the City of Branson, the State of Missouri Department of Economic Development, the Missouri Division of Tourism, and the Lakes-Area-Not-for-Profit Council.

	<i>Regional Gov’t</i>	<i>National Gov’t</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Other</i>
<i>Networking</i>					X
<i>Training</i>					
<i>Services/Entrepren.</i>	X				X
<i>R&D/T</i>					
<i>Marketing</i>	X				X
<i>Capital</i>	X	X			

Community engagement

There is an exceptionally high amount of community participation in the town’s annual festivals and parades. Every year since 1948, the town comes together to celebrate the story of Christmas. The Branson Veteran’s Task Force is responsible for providing festivities such as Veterans Homecoming held during Veterans Week in November, Independence Day celebration, and Memorial Day ceremonies.

Outcomes

<i>Economic</i>	Local government officials expect employment, investments in local attractions, tourism spending and the number of visitors to increase substantially during the following years.
<i>Inclusion</i>	Unknown
<i>Environmental</i>	During the last decade city government spent millions of dollars to improve roads, expand highways, and develop along lake front property.

Sources

Small Towns, Bid Ideas: Case Studies in Small Town Economic Development by Will Lambe

<http://www.cityofbranson.org> [City of Branson Official Government Website, Branson Profile]

<http://www.explorebranson.com> [Branson Lake Area Chamber of Commerce]

14. Casino Gambling in Tunica County, Mississippi

Description

Tunica County is known as “The South’s Casino Capital” and can boast about having the third largest gaming destination in the nation. The casinos are classified as dockside gambling resorts that are housed on floating barges. Overall, the cluster made the top ten list for annual gross revenue in 2007 for bringing in the \$1.24 billion. Local resorts employ over 12,000 people, while other industries employ 7,000 people. The casinos are also responsible for drawing between 14 and 16 million visitors annually.

Origin

This is a young cluster that emerged soon after Mississippi’s state legislature legalized gambling in 1990. Splash Casino opened as the premiere casino in 1992 in Mhoon Landing. In 1993, three more casinos opened in the same town and established the first gaming cluster in the state. Since the opening of the first casino, several casinos have folded or relocated to other towns in the county. Currently, ten casinos, numerous hotels, and two golf courses are concentrated in the northern part of the county. The cluster’s growth is directly attributable to \$3 billion of gaming and resort-oriented investments.

Location

The cluster is located in the northeastern region of Mississippi in Tunica County. All of casinos are situated along the Mississippi River, in Robinsville (now called Tunica Resorts). The casinos are a short 45-minute drive from the Memphis, Tennessee, metropolitan area and even closer to Interstate 55, a major North-South thoroughfare.

Associational infrastructure

The executive director of Tunica Chamber of Commerce lobbied the county government and the state legislature to create the Tunica Convention & Visitors Bureau in 1997. This organization was specifically created to “put all tourism entities together” and increase visitation by marketing the area.

Development

The opening of the visitor’s bureau was part of a larger public strategy to capitalize on the success of cluster and further develop the area as a tourist destination spot.

The development of the cluster was part of a local economic development sector strategy to develop an area that was once known as “America’s Ethiopia.” The per capita annual income for resident was \$5,500 (nominal) and the unemployment rate was 13.1% in 1990. The Mississippi state legislature picked Tunica County as the

location for the first casino in order to inject revenue, growth, and income into impoverished former cotton county.

Interventions/support

The original investments were made by the state and the state markets the region as part of a tourism strategy. Due to the pervasive abject poverty throughout the county, the state opened a casino-oriented training class in 1996, with the goal of feeding trained workers into the casino. Most, if not all, of these workers were former welfare recipients. The state provided incentives and infrastructure to attract and keep the casinos and markets it as part of its tourism strategy.

	<i>State Gov.</i>	<i>National Gov.</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Other</i>
<i>Networking</i>					
<i>Training</i>			X		
<i>Services/Entrepren.</i>					
<i>R&D/T</i>					
<i>Marketing</i>	X				
<i>Investment</i>	X				

Community engagement

None mentioned in the report but community residents participated in job -training programs.

Outcomes

Economic	Before casinos opened, federal assistance provided for half of the population. After they opened per capita income tripled and the unemployment rate decreased by more than half. Visitation increased after Hurricane Katrina. The presence of casinos have “stimulated the regional economy, but with uneven effects.”
Social	The cluster has provided much better jobs to an impoverished region the number of crimes almost doubled and other sectors have not grown as predicted.
Environmental	With no countywide sewer and water authority, developers invested millions of dollars to upgrade public infrastructure, restore the county lake, and preserve housing for the elderly. All of the infrastructure problems have not been addressed, but the tax revenue improved some.

Sources

Case study by RTS; James Thomas Snyder, “The effects of casino gaming on Tunica County, Mississippi: A Case Study 1992-1997,” Mississippi State University Social Science Research Center, September 1999; Tunica Miracle – 2006 annual report.

<http://www.tunica-ms.com> [Tunica Casino]

<http://www.americangaming.org> [American Gaming Association]

ENERGY AND ENVIRONMENT

15. Mining in Sudbury, Canada

Description

Sudbury has 14 producing mines and two major smelters, 270 mining supply and service firms, specialized tertiary service sector including environmental services, lawyers, accountants, and consultants who understood the industry, and mining research institutions. Employment in the mining itself, 27,000 in the 1970s, was reduced by automation to 6,000 in 2004 but at the same time use of local suppliers increased.

Origin

The city began in the 1880s (as a small railroad junction), and timber was the main industry. Copper and nickel were discovered during railway construction in 1883, and prospectors flooded in from all over the world. The first copper smelter opened in 1880s. The Sudbury Basin, formed by a fallen meteor, provides about 16 per cent of the world's nickel, as well as significant amounts of copper and platinum metals.

Location

Though a relatively large “small” city (93,000) in northern Ontario, this cluster is included because Sudbury only recently grew to its present size and still has a small town atmosphere. In 2001 Greater Sudbury was formed by amalgamating outlying towns and villages, but most of the added population remains classified as rural. The city has 330 lakes within its borders. A branch of the Trans-Canada highway connects the region to other major cities in Ontario.

Associational infrastructure

Firms interviewed in 2003 were not aware that they were part of “cluster” in part because there were no strong associations or leaders. The formal structure tends to serve individuals, not companies. The region is home to Canada’s largest branch of the Canadian Institute for Mining Metallurgy and an active branch of Professional Engineers.

Development

The availability of critical resources industry created the demand and caused the cluster to form and grow.

Sudbury relied on only mining for its economy in the 1970s, when consultants concerned about too over specialization recommended diversification. The sector grew organically because of its natural resource based but public sector looked for alternatives. The cluster grew despite lack of attention.

Interventions/support

Investments in R&D have been important contributions. The move of the Ontario Geological Survey to Sudbury also gave the cluster a boost by attracting exploration companies. The Province also started the first PhD program in Precambrian and mineral geology there. Just recognizing the industry as a cluster also strengthened it.

	<i>Regional Gov't</i>	<i>National Gov't</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Private</i>
<i>Networking</i>		X			
<i>Training</i>			X		
<i>Services/Entrepren.</i>					
<i>R&D/T</i>		X			X
<i>Marketing</i>	X				
<i>Capital</i>					

Community engagement

The community has been engaged informally, first when the environmental impacts became known and then more recently after the national government funded the cluster analysis.

Outcomes

Local smelting of the ore releases sulfur into the atmosphere where it combines with water vapor to form sulfuric acid and contributes to acid rain. As a result, Sudbury was considered for many years as a wasteland. In parts of the city, vegetation was devastated both by acid rain and logging to provide fuel for early smelting techniques. But in 1992, Sudbury was one of twelve world cities given the Local Government Honors Award at the United Nations Earth Summit for the city's community-based environmental reclamation strategies. More recently, the city has begun to rehabilitate slag heaps that surround the Copper Cliff smelter area with the planting of grass and trees. Skilled labor is a continuing issue and problem for the cluster despite a high unemployment rate, suggesting a gap in education and training or low interest in the work.

<i>Economic</i>	Continues to be the driving force of the region's economy
<i>Inclusion</i>	Large mines control much of cluster but opportunities for working class unknown.
<i>Environmental</i>	Recognition of environmental effects have led to new measures and an environmental services sector.

Sources

David Robinson, "Sudbury's Mining Supply and Service Industry: From a Cluster "in itself" to a Cluster "For Itself" in David Wolfe and Matthew Lucas (Eds), *Global Networks and Local Linkages*, Montreal: McGill-Queens University Press, 2005. Web searches

16. Wind Farms in Western Texas

Description

This cluster is composed of wind farms. Only four foreign countries produce more wind energy than Texas. The region supplies more than 25% of U.S. wind energy production. FPL Energy, a subsidiary of FPL Group, Incorporated, is a leading clean energy movement with several 200+ MW wind farms.

Origin

This emerging cluster was founded in 1994 when the first wind farms, Wind Power Partners and Buffalo Gap II, went on line.

Location

The region spans 22 counties in the Texas panhandle, Rolling Plains, Permian Basin, and Texas Mountains.

Associational infrastructure

The West End Texas Energy Consortium is made of business leaders in the power company industry.

Development

Retired energy attorney, Greg Worthum, and current mayor of Sweetwater, is a panhandle local that wants to revitalize industry in the region by facilitating strong effort to maximize economic benefits. This consortium distributes monthly newsletter, holds monthly meetings, coordinates advocacy services, and organizes trade fairs.

The cluster did not grow until the state legislature designed a Renewable Portfolio Standard (RPS) that mandated the construction of certain amounts of renewable energy. It prompted the industry to rapidly accelerate production on Texas sites and required electricity companies to support renewable energy generation. The RPS also ensured that the public benefits of renewable energy, such as wind and solar, continue to be recognized as electricity markets become more competitive. The state of Texas estimates that more megawatts of renewable energy came on-line as a result of the RPS program than has in the past 100 years. After the RPS was implemented, Texas wind corporations and utilities invested \$1 billion in wind power.

Interventions/support

T. Bone Pickens, a Texas oilman and billionaire corporate raider, plans to invest between \$6 billion and \$10 billion in his Mesa Power company. He confidently forecasts that this wind farm and others like it will not only reduce the demand for oil but create thousands of construction and operating jobs. Texas regulators have approved a \$4.93 billion wind-power transmission project, providing a major lift to the

development of wind energy in the state. If completed, the farm would generate more than five times the 735 megawatts produced at the present largest such farm near Abilene, according to Susan Williams Sloan, spokesman for the American Wind Energy Association. On August 16, 2007, Pickens' Mesa Power announced that it had filed documents with the state of Texas to add four thousand megawatts of electricity to the state grid. The filing with the Electric Reliability Council of Texas (ERCOT) projected that the project would be completed in 2011 and would include up to 2,700 turbines on up to 200,000 acres (810 km²) in Roberts and adjacent counties in the Texas Panhandle.

Texas State Technical Community College West Texas offers two certificate and one AAS degree in Wind Energy Technology (but does not yet offer a degree) to meet hiring demands.

	<i>State Gov't</i>	<i>National Gov't</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Private</i>
<i>Networking</i>					X
<i>Training</i>			X		
<i>Services/Entrepren.</i>					X
<i>R&D/T</i>					
<i>Marketing</i>					
<i>Capital</i>		X			X

Community engagement

Some communities are fragmented because wind turbines pit farmers against farmers. Some farmers believe that if tax subsidies for the industry end, the communities will be left with thousands of “monsters”.

Outcomes

Texas is already the largest producer of wind power in the nation, with the power capacity exceeding 5,300 installed megawatts.

<i>Economic</i>	Cattle farmers struggle to break even and oil industry on the decline. Ranchers earn extra revenue from leasing land to power companies. Average industry pay is 2-3 times higher than the local average. County governments are seeing substantial increases in tax revenues.
<i>Inclusion</i>	Community college degrees are focused on developing skills among people displaced by farming or other failing industries. Very few locals have experience.
<i>Environmental</i>	Each turbine can power up to 500 homes.

Sources

New York Times articles (July 22, 2008 editorial, July 18, 2008 article by KATE GALBRAITH), CBS Sunday Morning feature
Website for TSTC West Texas and West Texas Energy Consortium
[<http://www.westtexaswind.us/>]
American Wind Energy Association [<http://www.awea.org/projects/>]

17. Coal Methane in Gillette, Wyoming

Description

Gillette promotes itself as the “Energy Capital of the Nation,” which is in the seal of the city. Never studied as a “cluster”, the county boasts of producing more than a third of all the nation’s coal-based electricity. Coal bed methane (CBM), a means to extract natural gas from coal, is the fastest growing segment of this cluster. The core consists of 16 mining companies, 11 mining equipment and supply companies, 5 mining consulting companies, 10 trucking/transportation companies, and some 240 companies without employees. About 6,000 are employed in the cluster.

Origin

Early homesteaders found to use in heating their homes. Starting in 1909, small mines were built around the county. The first major coal mine in the County was Wyodak, the first surface mine in the west. In the 1970s coal companies built large surface mines in Campbell County, shipping it by train to coal-fired power plants in the Midwest. In 1999, Campbell County produced 95% of Wyoming’s coal. Production of coal bed methane began in the late 1990s.

Location

Gillette is a small city of almost 20,000 in Campbell County, Wyoming. Set in the northeast quadrant of America’s least populated state, its closest neighbor cities are more than 100 miles away, but none much larger than Gillette.

Associational infrastructure

Western Fuels Association and Northeast Wyoming Contractors Association are two business associations, remainder is informal in city dominated by industry.

Development

The state of Wyoming is dependent on energy and is committed to developing its resources, a “cluster” strategy without the label.

Billions of tons of coal lie undeveloped in Campbell County. Future growth will come from existing coal mines and gas exploration and development. The energy crisis and coal bed methane technology, and business-friendly, not very regulated political environment led to the growth of the cluster.

Interventions/support

Most of the development has been industry led, but supported by research at the University of Wyoming. With growing labor shortages, the major public sector interventions are workforce related. Wyoming economic development officials and company representatives aggressively recruit auto workers from Michigan to meet labor needs. Several hundred have moved to the state. Project Lead the Way is a pre-

engineering program in the high school in Gillette to get local youth into the technical career pipeline. Students use the community college laboratories for some of their work. Wyoming, assists with technology transfer and commercialization in new energy technologies.

	<i>State Gov't</i>	<i>National Gov't</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Other</i>
<i>Networking</i>					
<i>Training</i>		X	X		
<i>Services/Entrepren.</i>					
<i>R&D/T</i>			X		
<i>Marketing</i>					
<i>Capital</i>					

Community engagement

The industry is in control.

Outcomes

CBM product water has a moderately high salinity hazard and often a very high sodium hazard based on standards used for irrigation suitability. Irrigation with water of CBM product water quality on range or crop lands should be done with great care and managed closely. With time, salts from the product water can accumulate in the root zone to concentrations that will affect plant growth.

<i>Economic</i>	Currently booming economy with job opportunities but dominated by small number of large companies,
<i>Inclusion</i>	Hires immigrant workers but Wyoming is a right to work state
<i>Environmental</i>	Harmful to environment but increasing pressure for controls

Sources

Sheridan College proposal to U.S. Department of Labor, various web sites found including <http://www.ultimatewyoming.com/sectionpages/sec3/Gillette/gillette.html>

18. Wind Energy in Minnesota

Description

This is a small “opportunity” cluster scattered across southern Minnesota. At present it is a small number of companies and suppliers with strong public sector support for growth and a ready market. It is not a “brand” yet but hopes to be.

Origin

The cluster is quite new. Xcel, the largest producer of wind energy in the U.S. is expected to anchor the cluster. It has 19 wind turbines in Pipestone (9,400) and Dodge (19,800) Counties and is planning a 100-megawatt wind farm in Mower County (38,700), Minnesota. Five other companies manufacture wind turbines, four install them, and others repair them. Suzlon Rotor Corp., for example, began making wind turbine blades in 2006.

Location

Although the cluster is statewide, most of the manufacturing at present is in southern part of Minnesota.

Associational infrastructure

The social infrastructure is statewide and generally headquartered in large cities, with a number of trade associations and non-profits such as Wind on the Wires and the Minnesota Renewable Energy Society in St Paul, Community-Based Energy Development, etc.

Development

This cluster is based on the fact that global wind energy production has more than quadrupled in the past seven years and Minnesota, with its connections to Scandinavia where much of the research is taking place and its government support, is well positioned.

The state of Minnesota has a long history of being out in front on social responsibility and wind farms are a natural outgrowth of its farm economy.

Interventions/support

Minnesota has a large grant from the U.S. Dept. of Labor (WIRED) that includes research and training for the wind power cluster. The state is working toward a relationship with Vestas Wind Systems in Denmark, the world’s largest producer of wind turbines. Agricultural cooperatives, including Southwest Minnesota Renewable Energy Marketplace, advocate and support renewable energy. West Minnesota Community College offers a wind energy mechanic diploma, wind energy technician associate degree, and windsmith certificate.

	<i>State Gov't</i>	<i>National Gov't</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Private</i>
<i>Networking</i>					
<i>Training</i>	X	X	X		
<i>Services/Entrepren.</i>		X			
<i>R&D/T</i>		X			
<i>Marketing</i>		X			
<i>Capital</i>					X

Community engagement

Engagement is mainly through environmental groups that are supporting these efforts.

Outcomes

<i>Economic</i>	It's too soon to judge outcomes, but to succeed it will have to meet economic (or be subsidized).
<i>Inclusion</i>	Unknown
<i>Environmental</i>	By definition, aimed at decreasing reliance on fuels

Source

Study carried out by a five-person team for a workshop on clusters conducted by the Hubert Humphrey Institute at the University of Minnesota, 2008

19. Renewable Fuel in Northern Iowa

Description

There are 32 plants that produce over 2,500 million gallons of ethanol per year. Ethanol is one renewable alternative energy source made from Iowa corn. Ethanol has been considered an alternative to gasoline since the Model T, built to run on both. Biomass refers to organic material such as crops, crop wastes, trees, wood waste and animal waste. Examples of biomass include wood chips, corn, corn stalks, soybeans, switchgrass, straw, animal waste and food-processing by-products.

Origin

The first biodiesel processing plant opened in 1996 in Ralson, Iowa.

Location

Although the cluster is defined as a state wide, most of the current plants are concentrated in the northern part of Iowa.

Associational infrastructure

The Iowa Renewable Fuels Association (IRFA) brings together Iowa ethanol and biodiesel producers to foster the development and growth of the state's renewable fuels industry through education, promotion and infrastructure development. IRFA is committed to making Iowa a leader in producing renewable fuels and value-added co-products.

Development

This is part of a national effort to reduce dependence on foreign oil by shifting to alternative sources. Iowa, as one of the nation's largest agricultural states, especially as producers of corn and hogs, is well positioned to convert the corn and hog waste.

Interventions/support

In the 1970's, ethanol seemed an answer to energy and environmental problems alike. It is clean-burning and is produced from home-grown corn, so the federal government instituted a series of tax breaks to encourage ethanol production. Ethanol-blended gasoline is taxed 5.4 cents less per gallon than pure gasoline, and most experts agree that the ethanol industry would disappear without that advantage.

The Iowa Energy Center leads the state in providing accurate, usable information on renewable energy such as wind, solar and biomass energy. The renewable energy data the Energy Center has gathered is used by the full spectrum of Iowans including utilities, farmers, manufacturers, municipalities, school districts and even neighboring states and the national energy laboratories. The Energy Center's record of delivering valuable research and base-line information on Iowa's renewable energy resulted in the

Iowa State Legislature choosing the Energy Center to manage the its Alternate Energy Revolving Loan Program.

Community engagement

Outcomes

The future of ethanol production depends upon three key factors...The first is U.S. energy policy. Now policy is friendly to ethanol production, but in 1981 plans for alternative fuels projects were quickly shelved when the political winds shifted. Second is the economics of ethanol production itself. With corn at \$2 per bushel and crude oil at \$70 a barrel, ethanol was very profitable. With corn hovering around \$4 and oil in roughly the \$80 range, the picture is a great deal different. Third, the future of ethanol is heavily dependent upon technology.

Economic	“Ethanol is keeping gas prices at least 50 cents lower at the pump, lowering dependence on foreign oil, creating jobs for lowans, attracted over \$3 billion in investments in Iowa, and keeps money in the pockets of hard-working Americans.” But the overall on the price of gas and food are debatable	
Inclusion		
Environmental	Ethanol lowers harmful carbon monoxide (CO) emissions by 30 percent and reduces carbon dioxide (CO2) emissions by 27 percent. Studies have found that ethanol poses no threat to groundwater. Since ethanol is a naturally occurring substance produced during the fermentation of organic matter, it is expected to rapidly biodegrade in essentially all environments. The U.S. Environmental Protection Agency credits reformulated gasoline containing ethanol with reducing and controlling hazardous emissions. The use of 10 percent ethanol blends reduces greenhouse gas emissions by 12 to 19 percent compared to conventional gasoline. According to Argonne National Laboratory, vehicles that use ethanol help to offset fossil fuels’ “greenhouse gas emissions,” which contribute to global warming, by 35 to 45 percent.	

Source

<http://www.biodieselmagazine.com> [Biodiesel Magazine]

<http://www.greenfuels.org>

http://www.greenfuels.org/images/maps_ethanol_lg.jpg

(<http://www.cbc.ca/canada/story/2005/06/17/ontario-ethanol050617.html>)

<http://www.iowarfa.org/> [Iowa Renewable Fuels Association]

<http://www.nwicc.com/pages/continuing/business/ethanol/tabcont.htm>

Neil Harl on the Ethanol Boom (posted 10/16/07) [<http://www.iptv.org/iowajournal/story.cfm/81>]

<http://www.renewable-energy-group.com> [Renewable Energy Group, Ames, Iowa]

<http://www.eia.doe.gov/kids/history/timelines/ethanol.html>

WOOD PRODUCTS & FURNITURE

20. Chairs in Udine, Italy

Description

This is a very well known cluster that, just a few years ago (before the competition from China) made a third of all the chairs sold worldwide. In 2002, the 1,200 small companies in the industrial district produced half of all European chairs. A seven-story chair weighing 23 tons sits in the heart of the town. The cluster is composed of very small highly specialized companies, e.g., varnishing, leather upholstery, that operate as networks to produce final products. Ninety percent of the 1,000 or so firms have fewer than 20 employees. In recent years, firms have begun to outsource some functions to Eastern Europe to meet Chinese competition.

Origin

The production skills date back to the 8th century when the town made altars, with large scale chair production in the 1800s. But the mass production came after World War II when distributors began buying in bulk. In 1927 there were 96 companies, in 1951, 127, and in 2002, 1,200.

Location

The cluster is centered in the town of Manzano (population 7,000) and about ten surrounding towns in the Friuli Venezia Giulia Region of Northeastern Italy near the Slovenia border but includes two other towns in what is known as the “Chair Triangle.”

Associational infrastructure

The social infrastructure is informal, with all companies locally owned with long-term familial and social relationships. The various production networks form another type of social infrastructure.

Development

The District, which existed for decades, officially became “cluster” under Regional Law n. 27 that in 1999 established Industrial Districts. A District Committee representing the 11 municipalities organizes and coordinates projects and the social and political forces.

Gradual development of skill base, markets, networks and reputation over long period of time. The huge increase in demand in the 1980s, however, and the shift from large to very small inter-related highly specialized companies contributed to the fast growth.

Interventions/support

Business associations with government subsidies/matching provide real service such as marketing, training, capital, business advice, and technical assistance. Current support

is helping the district find ways to brand itself and distinguish its products from Chinese imports.

	<i>Regional Gov't</i>	<i>National Gov't</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Other</i>
<i>Networking</i>	X				
<i>Training</i>			X		
<i>Services/Entrepren.</i>	X				
<i>R&D/T</i>	X				
<i>Marketing</i>	X				
<i>Capital</i>					

Community engagement

The cluster is the community in Northern Italy; there is little serration of economic and social life.

Outcomes

The cluster is facing still competition from China, and lost about 30 percent of its firms in last few years, down to about 900 companies producing fewer and fewer chairs. Most of the products are easily imitated. Some remaining companies subcontract more of their work to Eastern Europe.

<i>Economic</i>	The future is still unclear, and may depend in the district's ability to produce higher end goods at higher prices, but even those companies are outsourcing more functions. It's not clear yet where the economy of the cluster will level out.
<i>Inclusion</i>	One of the reasons for the reorganization of the cluster into smaller firms in the 1980s was to reduce employee protection given by larger companies. The biggest economic opportunities were entrepreneurial, not promotions up career ladders.
<i>Environmental</i>	Sustainability is not an explicit goal but because the production occurs in the communities where the owners live and have lived for many generations, they make more effort to avoid pollution and degradation of the environment.

Sources

Written for a site visit for participants in a 2002 conference on clusters of the Organization for Economic Cooperation and Development held in Grado, Italy, supplemented by a 2005 web article in TimeAsia by Peter Gumbel titled "Twilight in Italy". Discussions with representatives of district in 2008.

21. Furniture in Lahti Region, Finland

Description

This furniture cluster comprises more than 100 companies, 90 of which have fewer than 20 employees. This represents about half of Finland's Furniture industry and employs about 3,000 people with another 2,300 in related wood industries in the value chain, e.g., sawmills, plywood factories, paper, and loggers.

Origin

Since the 1920s, the region has been Finland's leading producer of furniture, largely because of the abundant supply of high quality birch in the nearby Lake Paijanne area, skilled carpenters, the tradition of strong craft education, and good transportation. The two largest companies are ASKO Furniture, started in 1918, and ISKU, started in 1928. Decades earlier, the region was a major exporter of wood bobbins, and the carpentry and furniture developed from that earlier cluster.

Location

The cluster is in the region surrounding Lahti (98,000) in southern Finland.

Associational infrastructure

Pro Puu is an association of more than carpenters, designers, and architects organized to link craftsmen and designers, improve craftsmanship, quality control and networking among professionals, preserve traditional woodworking techniques and craftsmanship, and promote the use of Finnish wood in furniture, interiors and buildings. In 2001, Pro Puu was named Designer of the Year by the Finnish Association of Designers. Government efforts to encourage networking among businesses in late 1990s.

Development

The growth of the cluster has been driven by employees and managers of the two large firms finding niche markets but with strong support from the Chamber and regional government. Since the cluster is characterized by low investment in R&D, it depends heavily on external public sector support for much of its technological innovation,

In the 1990s, the cluster became less competitive because it lacked indigenous design resources, effective cluster organization, and the legacy of a bi-lateral trade agreement with the former USSR. Unemployment in the region was up to 25%. It responded with more design and cooperation among firms, training to increase productivity, developing an image of sustainability through its careful harvesting of lumber, looking for new export markets.

Interventions/support

In 1996, a year after Finland became a member, the EU Social Fund supported, through the Chamber of Commerce, the Lahti Furniture Technology and Design Project. It enabled 55 companies to identify training needs, develop a training plan and train 700 employees, and promote lifelong learning. The project was also aimed at increasing cooperation among the networks of suppliers, logistics firms and manufacturers and highlighting the environmental and quality aspects of the cluster. The Lahti Institute of Design educated furniture designers, and the Lahti Polytechnic educates engineers for the furniture cluster and has a unit that does furniture testing and approval. Higher-level education occurs at the Lahti Center of Helsinki University. Salpaus Further Education & Training (FET) trains carpenters, artisans, and builders of wooden houses in wood processing, surface finishing, and upholstery. The faculty of the Polytechnic, through the TUPAS program of Tekes, the National Technology Agency of Finland, provide research in the wood processing automation for SMEs.

	<i>Regional Gov.</i>	<i>National Gov.</i>	<i>Public Education</i>	<i>Foundations</i>	<i>EU</i>
<i>Networking</i>					
<i>Training</i>			X		X
<i>Services/Entrepren.</i>			X		X
<i>R&D/T</i>			X		X
<i>Marketing</i>					
<i>Capital</i>					

Community engagement

With wood a strong craft tradition in the region, the community has a strong interest in the cluster.

Outcomes

<i>Economic</i>	Provides employment but in cluster that will most likely see further contraction and outsourcing to Eastern Europe before leveling off in design intensive companies.
<i>Inclusion</i>	The education and training efforts are aimed at lowest achieving population
<i>Environmental</i>	Cluster looking for brand associated with sustainability and environmental responsibility.

Sources

Mika Kautonen, "The Furniture industry of the Lahti Region, Finland, at the turning point," in Mark Lorenzen, *Specialisation and Localized Learning*, Copenhagen Business School, 1998; current Lahti web sites

22. Motion Furniture in Northeastern Mississippi

Description

This cluster is composed of more than 200 manufacturers specializing in recliners and incliners plus many of their suppliers of springs, hardware, fabrics, stuffing, and finishing.

Origin

The birth of the cluster was 1948, when Chicagoan Morris Futorian chose New Albany (7,600) as a site for the plant to mass produce upholstered furniture. That one factory spawned dozens of imitators and suppliers, which in turn spawned dozens (called the graduates of Futorian University”) and began attracting manufacturers of springs, filling, and fabrics.

Location

The firms cover a multi-county area in Northeastern Mississippi with the highest concentrations of companies in Pontotoc, Chickasaw, Lee, Tippah, and Prentiss Counties.

Associational infrastructure

The social infrastructure is informal, with most of the companies owned by friends and neighbors. Most firms belong to the American Furniture Manufacturers Association but this organization is not very active locally.

Development

This is a regional strategy that is no longer receiving attention or support as the region seeks to diversify into health care and now automotive with the successful recruitment of Honda assembly plant—that will undoubtedly offer high wages than furniture.

Mississippi is the first state to offer tax relief to attract manufacturing, acquired Futorian. Proximity to lumber sources and low cost surplus labor a major factor. A very aggressive and world renowned non-profit Community Development Foundation attracted suppliers.

Interventions/support

Large employers and equipment manufacturers jointly established Advanced Technology Center for Furniture Upholstery in 1984. The center closed in about 2004 due to lack of demand for graduates with associate degrees. Other cooperative efforts include joint showrooms in Tupelo and annual furniture fairs. Mississippi State University’s Furniture Research Unit provides technical advice.

	<i>Regional Gov't</i>	<i>National Gov't</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Private</i>
<i>Networking</i>					

<i>Training</i>			X		
<i>Services/Entrepren.</i>				X	
<i>R&D/T</i>			X		
<i>Marketing</i>				X	X
<i>Capital</i>					

Community engagement

The companies and employees are the community, and most of the socialization is through churches and civic organizations.

Outcomes

Facing increased competition from low wage areas. Currently importing parts but assembling on site because of bulk and difficulty on easily packaging. If this obstacle is overcome with new packaging technology, however, the outlook is bleak. Competition for labor is keen, and companies often poach each other's workers for small salary increases.

<i>Economic</i>	Future uncertain in this low-end non-innovative cluster that has competed on the basis of cost. It is already importing parts from China and only the bulkiness of the products have kept assembly in Mississippi.
<i>Inclusion</i>	The cluster has brought wages above rest of state and unemployment levels but still low compared to national averages. Cluster does offer employment to those with low educational levels, whose main chance for advancement is as an entrepreneur.
<i>Environmental</i>	Uses lumber in large quantities, increasing imports from China adding carbon footprints.

Sources

Studies by S. Rosenfeld for the Aspen Institute (1996), Sloan Foundation (1998), USDA (2000), Mississippi State University (2002), and ARC (2004) plus site visits.

23. Log Homes in Montana's Bitterroot Valley

Description

The cluster manufactures log homes in an area well known for this industry and is sometimes called "Log Home Alley." From 1988 to 1998, 37 new companies started up. In Ravalli County, despite reductions in logging activity on national forest land, 75 percent of all of the manufacturing employment is in lumber and wood products.

Origin

In the 1930s the Civilian Conservation Corp operated was in the Rocky Mountain forests, and in 1938 when the program wound down, a few entrepreneurial corpsmen discovered a market in log homes. In 1946, National Log Construction established a milled log home company that generated new markets and businesses and ultimately expanded in size. Prior to then, companies produced log cabins but not family-size homes. Proximity to the lodgepole pine forests and logging plus the growing interest in mountain homes contributed to its growth.

Location

The cluster mainly runs along I-93 through Ravalli County in western Montana's Bitterroot Valley.

Associational infrastructure

In this close-knit community, "everybody knows everybody" in the industry.¹ As one owner told this author, "we used to think we were all enemies...now the best thing about our organizations are in learning what someone else is doing and what may be beneficial to you. [We] still compete but understand the value of cooperation." Sawmills develop long-term network-type relationships with loggers, loggers with haulers, and log homebuilders with design and engineering firms. Most of the association occurs when the local development agency organizes workshops, through chamber of commerce events, or in association sponsored events. In the Bitterroot Valley, for example, a "leads" group of business people meets semi-monthly, exchanges

Development

This cluster developed as a result of private sector investment decisions, not public policy interventions to intentionally create a cluster. It was "discovered" during a cluster analysis for the Montana Governor's Office in 2002.

The easy availability of lumber and chance to add significant value to it created the climate. Availability of capital and local banks that understand and appreciated the

¹ Much of the information came from personal and telephone interviews in 2003 and 2004 and from meetings in which the authors participated.

industry, participate in its associations, have met most of demands for venture and working capital.

Interventions/support

There has been no systematic overall cluster-targeted “program” until 2004. But results from certain cluster-specific interventions that developed in response to demand and an emerging strategy to strengthen the cluster can be described. The Montana Manufacturing Extension Center, the Agricultural Extension Service, and the University of Montana Business School as examples, have all helped individual companies in various ways—the first with direct assistance to companies, the last with research and information about markets and the industry, and the agriculture extension service with some of both.

	<i>Regional Gov.</i>	<i>National Gov.</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Other</i>
<i>Networking</i>					
<i>Training</i>					
<i>Services</i>					
<i>R&D/T</i>		X	X		
<i>Marketing</i>					
<i>Capital</i>					

Community engagement

The industry is the community in this dense cluster.

Outcomes

Generally thriving industry with little foreign competition.

<i>Economic</i>	Increase in sales, with a growing market for homes.
<i>Inclusion</i>	Although there are no explicit social goals, the low educational levels allow easy access to the cluster for ambitious entrepreneurs.
<i>Environmental</i>	Mainly negative outcomes due to the energy consumed getting the logs to site and shipping the homes out (prefabricating homes on site, disassembling, and then shipping to locations at what was about \$1 per mile when gas costs were half what they are now). Further, when Canadian dollar was weak many companies brought logs from Canada, adding significant energy consumption. Also an ongoing struggle between environmentalists and loggers over how much old growth should be removed.

Source

Paper written by Stuart Rosenfeld in 2004 for the Organization for Economic Cooperation and Development in Paris based on earlier research conducted by Rosenfeld for the Office of the Governor of Montana.

24. Paper Products in the Fox River Valley, Wisconsin

Description

Fox River Valley is home to the world's largest concentration of paper mills and is the number one paper producing region in the nation. (It's been called the "toilet paper" capital of the world) Local firms employing some 46,000 people contribute to the state's overall production of 5.3 million tons of paper each year. The cluster offers the highest paid occupations in manufacturing in the stat—about 60% above the state average.

Origin

The region's papermaking tradition began in 1853 in Appleton (70,217) with a rag-paper manufacturing mill. Two decades later, Colonel H.A. Frambach and his brother revolutionized the industry by utilizing Germany's Keller ground wood process, a process that allowed for paper to be made from wood pulp. They opened their first mill, Eagle Mill Flour and Paper, in Kaukauna (12,983) in 1872. This mill acted as a catalyst for the cluster's growth and it still exists today. After undergoing numerous rounds of technology upgrades and product diversification, today companies produce high value-added products like tissue, specialty paper, paperboard, printing paper, and writing paper.

Location

Fox River Valley lies along the eastern and central portion of Wisconsin just south of Green Bay. Eight mills are located along the Lower Fox River, the portion that connects Lake Winnebago to Green Bay, and 12 are located along the Upper part.

Associational infrastructure

In 1950, the Wisconsin Paper Council was established as a trade association to represent the state's pulp, paper, and allied industry in public affairs and government relations. The council also has a role in disseminating information and acting as a center for the exchange of ideas. Appleton's Institute for Paper Chemistry (now called Institute for Paper Science) was founded in 1933 as a center for pulp and paper research. The Institute was a strong regional asset until it was recruited in 1988 (with incentives from the state) to Georgia Tech University.

Development

The creation of the Institute was the industry's response to the environmental problems created by sulfide byproducts.

The region is ideal due to its abundance of trees and fresh water, and hydrological power. These geographic features .in addition to the region's proximity to printing and publishing industries, and the ready supply of skilled labor allowed papermaking companies to thrive and increase their edge over international competitors.

Interventions/support

Paper is one of ten clusters the state of Wisconsin identified in 2003, but with no additional funding, just the promise of priorities in existing programs. The state Department of Commerce appointed a cluster coordinator to facilitate communications among companies and serve as a liaison with the government. University of Wisconsin offers undergraduates a bachelor's of science degree from the Steven's Point Paper Sciences program. Historically, about half of the program's graduates work in the state's industry.

	<i>Regional Gov't</i>	<i>National Gov't</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Other</i>
<i>Networking</i>					X
<i>Training</i>			X		
<i>Services/Entrepren.</i>					
<i>R&D/T</i>					X
<i>Marketing</i>					
<i>Capital</i>					

Community engagement

None mentioned.

Outcomes

Firm consolidation and mergers have resulted from a number of economic challenges, i.e. increased competition from foreign competitors, outdated technology, economic recession, and dampened demand.

<i>Economic</i>	Some firms are cutting back on high-wage (\$17/hour) jobs. Industry experts expect firms to reclaim the regional market as energy prices drive up transportation costs.
<i>Inclusion</i>	The workforce is highly skilled and most jobs do not require college degrees.
<i>Environmental</i>	The use of recycled materials is growing and firms are working with the government to reduce the amount of pollutants in the Fox River. The local community has advocated for the reduction in contaminated sediments like PCBs that are dumped in the river.

Sources

RTS Industry Cluster Compendium; The State of Wisconsin Paper Industry, Wisconsin Paper Council

www.biofiles.us/west/GW.201-235.pdf [Prominent Men of the Great West, Colonel H.A. Frambach]

<http://www.wipapercouncil.org/history.htm> [Wisconsin Paper Council, History of Papermaking]

<http://www.focol.org/kaahs/Paper-history.htm> [Kaukana Area Historical Society - Paper Mill History]

25. Houseboat Manufacturers on Lake Cumberland, Kentucky

Description:

The cluster is high-end luxury houseboats and has about four fifths of the market nationally. Firms build “full aluminum hull” houseboats with many “home-like amenities.” Most firms are moving towards building larger, customized, and more luxurious houseboats. The cluster is thought of as “the most significant for the industry” since it has the largest agglomeration of firms. The cluster includes firms making high-end wood furnishings and cabinetry.

Origin:

It began in 1953 with Somerset Houseboats, and developed from there as a “home grown” cluster almost entirely dependent on local entrepreneurs and local capital. Before that, the economy was mainly agricultural. After Somerset closed temporarily, a former employee and several partners started their own firm, Stardust, which eventually spun-off several start-ups after the owner’s ties weakened due to conflict.

Location

The cluster is in a very poor four county area, Clinton, Pulaski, Russell, and Wayne, in south-central Kentucky. It’s on the western edge of the Appalachians and on the banks of Lake Cumberland, one of the ten largest lakes in the US. The total four-county population was 105,072 in 2000.

Associational infrastructure

Although all of the firms are locally owned there are no networks or associations due primarily to the fact that competition among owners has created a highly competitive environment (for employees and markets) with no room for collaborations. The case study reports that the biggest impediment for the cluster is lack of trust and strained relations between firms. Litigation among firms is common.

Development

As the cluster gains visibility, economic developers are increasing efforts to foster more collaborative projects amongst firms and support entrepreneurial ventures.

The firm’s location (which fueled demand), “familial” relationships, and skills acquired on the job spurred the cluster’s growth.

Interventions/support:

When Kentucky was supporting manufacturing networks, it created a program at the Center for Rural Development at Somerset Community College to encourage collaboration in training among companies. Although the educational alliance did not develop as hoped, houseboat firms employ graduates from local welding and industrial maintenance programs. The National Marine Manufacturers Association started a

houseboat committee to focus the manufacturers on issues of mutual concern (i.e. participating in a cooperative/apprenticeship training program, exploring joint purchasing, developing a shared/collective vision for the cluster). In addition, the federal government designated Empowerment Zones within the counties, which has made subsidized loans from venture capital funds and federal tax credits or \$3,000 each accessible to a limited number of firms.

Bluegrass State Skills Corporation played a key role in funding worker training programs and Somerset Community College offers continuing education classes to houseboat firm employees.

	<i>State Gov't</i>	<i>National Gov't</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Private</i>
<i>Networking</i>	X				X
<i>Training</i>	X		X		
<i>Services/Entrepren.</i>					
<i>R&D/T</i>					
<i>Marketing</i>					
<i>Capital</i>		X			

Community engagement

The only temporary engagement has been through the Rural Development Center at the Community College, which had state funding to work with the companies collectively.

Outcomes

<i>Economic</i>	The goals of this cluster are purely economic. Depend on growth of highest end markets.
<i>Inclusion</i>	Wages are relatively low for the skills required.
<i>Environmental</i>	Only if demand for “green” boats develops. Both shipping the boats to their final sites and operating them consumes considerable fuel.

Source:

Study conducted for the Tennessee Valley Authority in 2000 by RTS by Stuart Rosenfeld, Cynthia Liston, Marcia Kingslow, and Eric Forman.

26. Pencil Manufacturing in Middle Tennessee

Description

In the 1950s, Governor Buford Ellington declared Shelbyville, “Pencil City, U.S.A”. Lewisburg, located about 20 miles west of Shelbyville, is widely recognized as the “Pencil capital of the world.” Local pencil makers manufacture a diverse assortment of high-end art pencils, designer pencils and writing instruments that are used for schools, offices, and specialty advertising. The cluster employs more than 3,000 people and is capable of producing lead filler, imprinting advertisements, and packaging the final product.

Origin

During the late 1800s, northern pencil makers identified middle Tennessee as a place to open wood mills to gain access to Eastern red cedar market. In the 1894, the American Lead Pencil Company opened the first mill in Lewisburg, Tennessee. Colonel James Musgrave opened the first mill in Shelbyville twenty years later. Both companies served as anchors for the pencil manufacturing industry in their respective cities but Musgrave put forth considerable effort to establish a cluster in the region. After enduring years of prohibitions for imported German lead filler during World War I, Colonel Musgrave set his sights on developing the industry to the point that the entire wood cased pencil production could occur in Shelbyville. During his tenure as head of Musgrave Pencil Company, he nurtured the establishment of other local pencil manufacturers and the specialty advertising imprinting industry.

Location

Lewisburg (10,698) is located in Marshall County and Shelbyville (16,105) is located in Bedford County. Both cities are located in the southern most portion of middle Tennessee and are both manufacturing hubs in the cluster. Both towns are less than 100 miles from Chattanooga and less than 40 miles from the Tennessee-Alabama state border.

Associational infrastructure

There are no formal networks but the establishment of a strong value chain in Shelbyville’s allowed local firms to develop strong informal ties.

Development

While establishing the cluster, the founder of the Musgrove Pencil Company, sought to establish and nurture “close-knit” relations among manufacturers.

Middle Tennessee was an ideal choice for pencil manufacturers in the early 1900s due to the abundance of red cedar forests, growing manufacturing industry, and Louisville & Nashville Railroad. Both domestic and international pencil makers preferred the “aromatic, splinter-resistant” red cedar wood for quality pencil casing in the early 20th

century. Around the same time, Shelbyville and Lewisburg were considered important stops on the Louisville & Nashville Railroad line.

Interventions/support

Although some of the firms are locally owned, nearly all manufacturers rely on the national government and national trade associations to promote their interests.

	<i>Regional Gov't</i>	<i>National Gov't</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Other</i>
<i>Networking</i>					X
<i>Training</i>					
<i>Services/Entrepren.</i>					
<i>R&D/T</i>					
<i>Marketing</i>		X			X
<i>Capital</i>					

Community engagement

None mentioned in articles or websites.

Outcomes

The cluster has substantially decreased in size since the early 1990s due to strong competition from low-priced imports produced in China and Thailand. In addition, manufacturers nearly exhausted the local supply of Tennessee red cedars by the 1930's. Thus, local firms turned to Californian forest for incense cedar; a "fast-growing, plentiful, and renewable substitute" for pencil casing.

<i>Economic</i>	Most manufacturers either closed or consolidated during the early and mid 1990s. Newell acquired 3 pencil companies with firms in the area
<i>Inclusion</i>	Unknown
<i>Environmental</i>	Colonel Musgrave devised one of the most successful recycling schemes when Musgrave Pencil Company first opened, made pencils from recycled cedar fence posts. Other notable schemes included the invention of pencils created from reprocessed newspaper and cardboard boxes in 1992 and "sustainable yield" in 1993.

Sources

Websites and articles relating the history of pencil making in the US.

<http://www.lewisburgtn.com> [Lewisburg city website]

<http://www.shelbyvilletn.com/industry.html> [Shelbyville Chamber of Commerce - Industry]

http://www.tnhistoryforkids.org/places/musgrave_pencil [Tennessee History for Kids]

DURABLE GOODS MANUFACTURING

27. Metal manufacturers in western Minnesota

Description

The cluster is composed of about 110 manufacturers, most of whom specialize in some form of metal fabrication or assembly.

Origin

The origin of the metals cluster was a need to find something to replace the gradual but steady loss of agriculture. No information is available about first companies, but they were most likely companies that were providing parts and supplies for agriculture or farmers with strong mechanical skills. The group of metal companies self-identified as a cluster in the late 1980s when a half dozen manufacturers recognized a need to have a forum to discuss common problems and opportunities and decided to organize an association.

Location

The cluster covers an area of about a 75-mile radius in western Minnesota, with Fergus Falls near the center, and extending across the border into North and South Dakota. Distance is not a barrier for companies, whose owners are willing to drive long distances to meet.

Associational infrastructure

The Tri-State Manufacturers Association was formed in 1989 with a small grant from the West Central Minnesota Initiative Fund. It hired a full-time director and assistant, who set out to identify new markets and products. TSMA holds social events, conducts plant tours, and offers workshops.

Development

The growth of the organization was part of a systematic foundation effort to support networking and cooperation among rural SMEs and strengthen rural economies and create opportunity for youth.

The companies were too far from the Twin Cities, the center of the state's economic power, to develop the relationships and find the assistance they needed. Their isolation was the main reason for organizing. When they received their grant, a survey of members of the value of the association placed learning from one another first, above joint activities like finding new markets developing new products.

Interventions/support

Following a startup grant, the Association received a \$300,00 three-year grant from the Northwest Area Foundation to support the association and encourage more networking among members.

	<i>State Gov't</i>	<i>National Gov't</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Other</i>
<i>Networking</i>				X	
<i>Training</i>			X	X	
<i>Services/Entrepren.</i>				X	
<i>R&D/T</i>					
<i>Marketing</i>				X	
<i>Capital</i>					

Community engagement

The association meetings were public meetings, many of which were held at the Elks Club, that attract people from across the community.

Outcomes

<i>Economic</i>	The association led to a number of collaborative activities, including the development of new products, joint marketing at trade shows, a purchasing network, and joint ISO 9000 and other technology training at Alexandria Technical College. The organization grew from 55 members, when it received its grant, to more than 200. After the grant expired, it decided not to pay a full-time director but the association is still active 20 years later.
<i>Inclusion</i>	The only social outcome was the indirect strengthening of isolated towns with high unemployment rates and outmigration of young people. TSMA is a leader in the national "Dream It, Do It: campaign to increase youth employment opportunities. There were no measures, however, of effects on such measures.
<i>Environmental</i>	Sustainability was not a concern for these firms in the 1990s.

Source

Evaluation of TSMA for the Northwest Area Foundation by S. Rosenfeld, summarized in *Research Policy* in 1996, and subsequent evaluation by Paul Sommers.
<http://www.tsma.org/newindex.htm>

28. Toys in Ibi, Spain

Description

The cluster consists of about 85 manufacturers of mostly plastic children's toys. Its major competition in Spain comes from the Basque region.

Origin

The original company, Paya Hermanos, was a tinsmith that made some toy dolls and supplied ice cream companies (when the population of Ibi was only 3,000). In 1910, it produced the first toy with a spring mechanism. When the firm produced a successful tin toy horse and cart in 1912, it turned to a range of miniature products for children, the early toys and employed 100 workers. Its first cart is commemorated by a statue in the town, along with a statue to the ice cream makers of Ibi. A second toy company, Rico S.A., followed and the cluster grew as employees in turn founded new companies to produce different types of toys. During the early years, companies traveled to Germany to buy toys they could imitate and then adapt to Spanish markets. During the Spanish Civil War the companies were socialized and temporarily turned to making military products. After World War II a shortage of metals caused the firms to plastics and convert to plastic manufacturing technologies.

Location

The town of Ibi (22,000) is located in the mountainous Province of L'Alcoia in the central part of the region of Valencia in southeastern Spain.

Associational infrastructure

The city is home to an office of AEFJ, the Spanish Association of Toy Manufacturers. The Toy Technology Center also brings businesses together for collaborative projects. The city also supports an Entrepreneurs Association that includes other sectors but gives new and prospective toy companies a chance to learn from one another. In addition, the culture supports a high degree of informal socialization.

Development

The cluster grew on its own accord, largely as a substitute for poor agricultural performance. But over the past two decades, government programs have been enacted to strengthen Valencia's clusters, particularly with technology adoption and training. The Office for Economic Promotion works to attract additional companies to the cluster. The city also uses this to promote tourism, and the city is home to a toy museum.

The initial impetus was converting an existing competence, tinsmithing, to a new set of products and different markets. The cluster had to overcome distance from raw

materials, poor communications (no post office until 1925) and very low levels of education.

Interventions/support

In 1986, the regional development agency IMPIVA (Institute for Small and Medium Valencian Industries) supported a Toy Technology Center (AIJU) as part of a larger program to support technology centers and networking for industrial districts similar to those in Emilia Romagna. The government- and member- supported Centers provide training, technical assistance, technology diffusion and a toy testing laboratory. It publishes a catalogue of the city's children's products. They are governed by a board of 10-13 entrepreneurs plus representatives of IMPIVA, and the national or regional government. In 1992, local consultants were trained to facilitate networks among toy manufacturers, and a subsequent evaluation by IMPIVA showed that 6 networks formed and were awarded grants for joint activities. Because of the nature of the industry, firms must continually innovate and develop new toy designs.

	<i>Regional Gov.</i>	<i>National Gov.</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Other</i>
<i>Networking</i>	X				
<i>Training</i>	X		X		
<i>Services/Entrepren.</i>	X				
<i>R&D/T</i>	X				
<i>Marketing</i>					
<i>Capital</i>					

Community engagement

As in Italy, the economy and community are intertwined and the economy represents the community.

Outcomes

<i>Economic</i>	The cluster has been successful but with increased competition, production and number of firms have decreased. As a result, the city is seeking ways to diversify its economy. Although the initial success of the cluster was based on cheap female and child labor, work is now more technical and wages relatively high.
<i>Inclusion</i>	The city is still quite homogeneous. The apprenticeship program is a pathway for those with little formal education.
<i>Environmental</i>	No information

Sources

Literature from Ibi, Personal OECD-sponsored site visit in 2001, ILO studies in 1999, undated IMPIVA documents.

29. Ceramic Tiles in Sassuolo, Italy

Description

The cluster is the world's leading producer of ceramic tiles, with 114 firms employing some 20,000 make about 80% of the tiles made in Italy, 75% of which is exported. The cluster includes the final tile producers, glazers, design companies and decorators, and engineering companies. The cluster was highlighted as benchmark in *The Competitive Advantage of Nations*. Marazzi is the largest company and part of a consortium of large producers that exerts considerable control on smaller firms and markets.

Origin

The ceramic tile cluster can trace its roots back two centuries to the Rubbiani firm but expanded in 1924 when a new firm, Industria Cermica Veggia, introduced a less expensive glazing technology and then replaced that with an even more effective zircon glaze called "Sassuolo White" and a production process using pouring rather than pressing. The single fire process for floor tiles, developed in the 1970s, was another important innovation. Growth was from employees able to buy new equipment and start new businesses.

Location

The cluster is centered in the cities of Sassuolo (20,000) and Fiorano (15,000) in the Province of Modena in the region of Emilio Romagna in Italy.

Associational infrastructure

The social structure is mainly informal although it is supported by the National Confederation of Artisans, which provides business services, training, and capital, and Assopiastrelle, the cluster's main membership organization, provides a wide range of services and promotes and markets the companies collectively. Networking is common among firms in the supply chain, and among producers to meet large orders. Assocargo is a consortium that coordinates transportation for groups of companies. The cluster is highly secretive about its innovations, however—which both protects advantage but cuts off access to other forms of intelligence.

Development

Cluster developed independent of any intentional policy but when Italy formed regions in 1972, it was the first industrial district to be recognized and supported. This is a communist-governed region that has developed one of the world's leading early, and free, childhood education programs.

The availability of the red clay was the prime reason for the cluster's growth but the entrepreneurial climate and, in recent times, the development of the automated equipment by engineering firms, particularly the company System, used worldwide gave the area its edge.

Interventions/support

The regional government supported the cluster through a number of Regional Laws that funded collaborative activities, including the Centro Ceramica Bologna, the Ceramic Tile Research and Testing center at the University of Bologna supported by ERVET, the region's economic development agency. Assopiastrelle hosts the largest ceramic tile trade show, Cersaie, which attracts more than 100,000. Between 1980 and 1987, it spent \$8 M to promote the cluster's tiles in the U.S. Tile Italia - Ceramic World Review is published in Sassuolo. Assopiastrelle also provides education and training, technical standards, statistics, and handles labor relations.

	<i>Regional Gov.</i>	<i>National Gov.</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Assoc.</i>
<i>Networking</i>					X
<i>Training</i>			X		X
<i>Services/Entrepren.</i>	X				X
<i>R&D/T</i>	X				
<i>Marketing</i>					X
<i>Capital</i>					X

Community engagement

The district is the community and the companies are fully integrated into community life and community politics. All companies are family owned, mostly families with deep roots in the community.

Outcomes

The industry today is more concentrated than in the past with around 30 cases of mergers of large firms into powerful consortia and acquisitions in the past decade. In 1996, 39 firms collectively owned 102 plants. The five largest groups in the cluster represented around 55% of production in 1999. The main competitor for tiles had been Spain but more recently it is China.

<i>Economic</i>	Now facing increased competition from Spain and China, still holding on due to branding and early access to new technology.
<i>Inclusion</i>	Wages are higher than average in the district. But in recent years, there has been increasing discrimination against immigrants that may be affecting the cluster.
<i>Environmental</i>	No information.

Source

Site visit by Rosenfeld, Report to Aspen Institute, Extensive research by Margherita Russo 1987-2000, District literature; Christenson, et al, Case study, Cleveland: Shorebank Enterprise Group, 2002, Assospiastrelle reports

30. Plastics in the Berkshires

Description

The diversified plastics cluster in the Berkshires consists of more than 40 companies that produce or support the plastics industries. At its peak, it employed about 3,000 people and generated \$180 million in annual revenue.

Origin

General Electric has operated in Pittsfield since the early 1930s, initially manufacturing Bakelite parts for its appliances, a plastic it first licensed in 1909 (although the first plastics companies in the Berkshires date back to the 19th century). The expansion was largely due to entrepreneurial efforts of employees—many were downsized employees of GE's Plastics plant in Pittsfield beginning in the 1940s and 1950s after the company eliminated mold making and processing from its operations. The new companies both supported the needs of General Electric divisions in the region (transformer, military, chemical) and serve growing new markets.

Location

The cluster is in the Berkshires, a multi-county region of Western Massachusetts, extending slightly south over the Connecticut border with Pittsfield, Mass. its hub.

Associational infrastructure

In 1986, 43 independent plastics companies (97% of the plastics companies in the region) formed the Berkshire Plastics Network (BPN), which became a widely cited and studied national benchmark for other efforts to develop manufacturing networks—although it more closely resembles an industry association than a network, and has also been studied as a model “cluster.” In 1999, BPN members contributed more than 2,000 unpaid hours.

Development

This was initially a grass roots industry driven efforts of a handful of companies (Association of Plastics Industries) to address their labor shortage problems by creating an apprenticeship program. But it quickly became integrated into the state's official policy to form manufacturing networks and later its cluster strategy.

Opportunities surrounding GE's plastics division was the original stimulus but labor market shortages led to the organization of the companies in the cluster.

Interventions/support

The main intervention was support of the BPN, allowing the Network to determine what they needed. Results have been additional trade programs in the schools, seminars for members, a brochure and common web site with matrix showing all members' capabilities, and assistance with accessing benefits. The BPN received continuing

support from the state’s network program plus individual grants such as \$200,000 from the Commonwealth of Massachusetts in 1992 to attend trade and design shows in order to promote regional development.

	<i>State Gov.</i>	<i>National Gov.</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Other</i>
<i>Networking</i>	X				
<i>Training</i>	X		X		
<i>Services/Entrepren.</i>					
<i>R&D/T</i>					
<i>Marketing</i>	X				
<i>Capital</i>					

Community engagement

Only documented community involvement was through the K-12 school system and close association with the Chamber of Commerce.

Outcomes

<i>Economic</i>	The cluster has had ups and downs, smaller in number of companies (about 30 now) but many growing. GE auctioned off its plastics unit to a Saudi company, and the implications are not yet known.
<i>Social</i>	The network, never fully self-sufficient, became over-dependent on grants and disbanded in 2001 when their \$65,000 in state funding was cut in half.
<i>Environmental</i>	No indication of environmental impacts—although personal experience in the past was that the industry can be quite polluting if not carefully controlled (GE’s resins polluted a lake so badly this author never dared to put a hand into it.)

Sources

Studies by RTS, Shorebank, Economic Development Administration, RTS’s *Firm Connections*, BPN Newsletters, telephone conversations, and personal experience working in cluster.

32. Plastics in Montachusett Region of Massachusetts

Description

This is one of the oldest and most concentrated plastics clusters in the U.S., the site of the origin of celluloid plastics. Leominster (11,000) was dubbed “Pioneer Plastics City” and “Comb City” in the early part of the 20th century. The state has the fourth largest plastics industry in the US, much of it in this region and the Berkshires. Anchored by Dupont and Foster Grant, the region was also the center of the first injection molding in 1930. In 2003, there were still 103 plastics companies employing 6,700 plus mold makers, packaging, printing, and other suppliers, down some from 150 companies a decade earlier but still large.

Origin

The cluster originated with the manufacturing of combs in Leominster, originally out of tortoise shell. In the early 1900s, the city began shifting to celluloid and became the U.S. national center of celluloid manufactured products, especially high fashion design products like jeweled combs. It also became the center for plastic presses, molds, and fixtures. A very strong entrepreneurial culture of Italian immigrants, most of the companies were spawned by Foster Grant and Dupont. The cluster quadrupled in size during the ten-year period following World War II. About 95% of companies surveyed in the late 1990s indicated they originated in the region.

Location

This is a 500 square mile area of North Central Massachusetts called Montachusett.

Associational infrastructure

There are no formal associations representing the cluster but because so many companies are locally owned and the cultural heritage so strong, trust is high and informal networking common.

Development

This cluster is purely industry driven and has not been a part of any intentional regional or state strategy other than generic development policies. It's also part of a tourism strategy centered on the cluster's rich history. Leominster since 1972 has been home to the National Plastics Center and Museum, including the pink lawn flamingos and Styrofoam cup, and Saranwrap, all invented in Leominster.

Innovations in the area have driven the growth of this cluster. First it was the celluloid process, then a patented one-operation die for producing multiple combs, and then injection molding.

Interventions/support

The cluster was recognized in a study undertaken for Massachusetts Governor Weld in 1993 but it led to no action. There has been virtually no government supported programs targeted to this cluster, and they have been ignored even by the technical schools and universities despite the large employment. The large companies do their own training and research, which eventually filters down to the smaller companies.

	<i>Regional Gov't</i>	<i>National Gov't</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Other</i>
<i>Networking</i>					
<i>Training</i>					
<i>Services/Entrepren.</i>					
<i>R&D/T</i>					
<i>Marketing</i>					
<i>Capital</i>					

Community engagement

The cluster is a community, since it represents the community’s cultural heritage and most companies are family owned and passed down from generation to generation. Company owners and managers are integrated into the larger community.

Outcomes

<i>Economic</i>	Workforce is aging with few new entrants, struggling to compete against lower cost areas.
<i>Inclusion</i>	Unknown
<i>Environmental</i>	Unknown

Sources

“Cluster-based Development Strategies: Lessons from the Plastics Industry in North Central Massachusetts,” by Edward Murray, EDQ 13 (1999)

33. Steel in Mississippi County, Arkansas (Incomplete)

Description

Mississippi County is the second largest steel producing area in the United States. The county had 10 primary metal manufacturers and 12 fabricated metal manufacturers in 2006. The State projects that its steel sector will grow by 50 percent by 2014. Arkansas is also a leader in recycled steel production and its firms reach national and international markets.

Origin

In 1988, Nucor Yamato Steel Company, a joint Japanese and American steel venture, opened a second Nucor plant opened in 1992. Since then, a number of satellite plants have opened in the area, and other manufacturers, fabricators and steel-related businesses have also opened.

Location

Mississippi County (52,000), a micropolitan county, is located in the northeast corner of Arkansas. Most businesses are located around Blytheville. The area offers all modes of transportation, road, water, rail and air.

Associational infrastructure

Development

Interventions/support

	<i>Regional Gov't</i>	<i>National Gov't</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Other</i>
<i>Networking</i>					
<i>Training</i>					
<i>Services/Entrepren.</i>					
<i>R&D/T</i>					
<i>Marketing</i>					
<i>Capital</i>					

Circumstances

Blytheville was a historically agricultural area, focusing on cotton, until the 1980s. The 1980s brought a period of industrial growth, and once steel manufacturers and fabricators began moving to the area, other companies that utilized steel began to grow

as well. Companies cite the logistical advantage of locating near steel suppliers, and the ability to quickly move products once manufactured.

Community engagement

Outcomes

<i>Economic</i>		
<i>Inclusion</i>		
<i>Environmental</i>		

Source

<http://www.arkansasedc.com/> and Arkansas EDC printed materials

<http://www.misscoeda.com/>

<http://www.osceolachamber.net/osceola/pub/economic-development-main.shtml>

<http://www.entrepreneur.com/tradejournals/article/179031788.html>

34. Ceramics in Salzkammergut, Austria

Description

This ceramics industry cluster includes three industries that produce dishes, china, and ceramics (ornamental). Firms in this area also produce sanitary fixtures but they do not have strong linkages to the aforementioned firms; additionally, these firms rely on completely different production technologies & end markets (i.e. high quality/high price markets). The cluster is described as a “final-market industry cluster”, with design-protected niches. The region’s products compete in “medium quality/medium price” markets. Firms are known to produce average quality earth ware dishes with individual traditional designs (“Grungeflamtes”- “unique” painting techniques that dates back to the 17th century). Most of the china and dishware are sold through established foreign distribution channels, while the ornamental ceramics and sanitary fixtures are exported to regional/selective markets.

Origin

Ornamental ceramics tradition dates back to the 16th century. As of 1991, only 12 firms that make up the entire traditional industry (established in the early 20th century or before) still remain in the area. The premiere firms in the ceramics industry opened in Gmunden due to the area’s abundance of clay and plethora of salt mines. After approximately 200 years, the fortuitous location allowed for firms to import salts and export products. (Unknown researcher recognized this cluster)

Location

Salzkammergut (57,000) is located in the “heart of Austria”; the area includes seven towns [Gmunden (capital of ornamental ceramics), Ebensee, Bad Ischl, Bad Goisern, Bad Aussee, Altaussee, Hallstatt] and numerous municipalities that are located along Route 145 and on/within close proximity to the Traun River.

Associational infrastructure.

No associations, clubs, or networks. But about 120 firms and artists participate in the annual ceramics market help to maintain Gmunden’s position as “heart of the Austrian ceramic industry”.

Development

The main strategy involves promoting the industry’s products to tourists and identifying strategies that will allow firms to stay competitive but Upper Austria has taken a very active role in promoting clusters and has tried to brand itself in its industrial literature as “Clusterland.”

The cluster grew as ceramic firms collocated in and around Gmunden. The area’s artisans, natural resources (i.e. clay & salt), and close proximity to the Traun River (connects to the Danube River) allowed the firms to prosper for hundreds of years. The area is also a tourist destination.

Interventions/support

The City Council and cultural office in Gmunden work to strengthen connections between firms, promote the industry to tourists, and provide financial resources for collaborative projects. The local museum and educational institutions also serve to educate the public about the history of the industry. Kammerhofmuseum exhibits the history of ceramics in Gmunden and local tourist offices design tours that feature ceramic businesses. Upper Austria publishes and circulates promotional materials for the ceramics industry. Various educational institutions partner with local artists with primary schools & offering ceramics classes for local residents. Gmunden City Council funds and promotes projects initiated by the largest firm—Gmunder Keramik and Gmunden Cultural office organize the annual ceramics market.

	<i>Regional Gov't</i>	<i>National Gov't</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Private</i>
<i>Networking</i>	X				X
<i>Training</i>			X		
<i>Services/Entrepren.</i>					
<i>R&D/T</i>					
<i>Marketing</i>	X				X
<i>Capital</i>					

Community engagement

Unknown

Outcomes

<i>Economic</i>	Still competing against lower cost areas protected by regional branding.
<i>Inclusion</i>	Open entry to cluster
<i>Environmental</i>	Unknown

Sources

Report the status, organization, and makeup of Austrian ceramics industry cluster (i.e. description, market scope, performance, organization, governance, and supportive organizations). Author & publishing date unknown

35. Cutlery in Maniago, Italy

Description

Maniago is an industrial district specializing in the production of knives. The approximately 200 enterprises that employ 1,000 people produce 50 percent of all knives made in Italy, with 60 percent exported. Almost half of the companies are artisan firms with only one or two employees and only 6 percent of firms have more than 20 employees. About half are final producers, 16% components, and 30% contractors. It was designated an industrial district according to Italian Law n. 27 in 1999. Half the firms produce finished products, the rest supply or support those firms.

Origin

The region, known for its metalworking capabilities, began producing scythes and axes, and butcher knives in the middle ages. In 1435 an artisan began making knives, hooks, and sickles and generations followed. In the 18th century, it shifted to more refined cutting tools like penknives, scissors, dinner knives, and surgical knives. Just before World War I, a German entrepreneur, Albert Marx, built the first industrial factory to produce knives, and it became the model for future factories. The growth came from spinoffs by entrepreneurial employees.

Location

Maniago is a district and town of about 12,000 in the foothills of the Province of Pordenone in the Friuli region of Northeastern Italy. It is not easily accessible by any major highway system or near an airport.

Associational infrastructure

The Consorzio Coltellianai Maniago (Maniago Cutlery Consortium) supports the cluster and provides a collective voice for companies and promotes its brand. The regional trade associations also provide a framework for cooperation. But most associational activity is informal, taking place at social and civic events and gatherings.

Development

The district developed spontaneously—although access to water power was an important asset— but has been included in a national policy to recognize industrial districts as sources of culture and productive relationships and to brand their products as the official Italian goods. The town is home to a Cutlery museum displaying and explaining the history of the cluster.

The metal working skills of the population led to the production of cutting instruments, somewhat accidentally. The expertise and experience of residents in the cluster developed over centuries. The town views itself as Italy's "Cutlery City."

Interventions/support

The National Institute for the Promotion of Foreign Trade assists the cluster with finding export markets and marketing. A local technical school provides specialized training in the metal industries for the employees and technical staff. The Maniago District Committee plans for the cluster and submits proposals to the Regional Government.

	<i>Local Gov't</i>	<i>National Gov't</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Private</i>
<i>Networking</i>	X				
<i>Training</i>			X		X
<i>Services/Entrepren.</i>					
<i>R&D/T</i>					
<i>Marketing</i>	X	X			
<i>Capital</i>					

Community engagement

As in other Italian industrial districts, the businesses and their families comprise the community and firms and residences are intermingled. Businesses are fundamentally engaged.

Outcomes

Under increasing pressures but brand and design (using designers from across Europe) have helped maintain position.

<i>Economic</i>	Appears to be holding its own despite increased competition.
<i>Inclusion</i>	Open access for employees and entrepreneurs
<i>Environmental</i>	Unknown

Sources

Rosenfeld, OECD Study Visit in 2002, web sites, Catalogue and manual produced for visit. www.maniagodesign.it; www.distrettodelcoltello.it.

TECHNOLOGY-RELATED

36. Eye Glasses in Belluno, Italy

Description

This is one of Italy's best known clusters, with 606 enterprises employing almost 12,000 people producing glasses or parts for them, including 479 small artisan firms. It includes some of the world's most prestigious manufacturers including Ray-Ban, Luxottica (which acquired Ray-Ban), Safilo, Marcolin, and LensCrafters and produces major name brands such as Gucci, Ferrari, Ralph Lauren, Christian Dior, and Burberry as well as its own name brands. More than 80 percent is exported.

Origin

The cluster dates back to the 14th century and in 1878 the first glass factory was built and from there artisans began making spectacle. But the region did not become a major fashion center until the 1980s and glasses and sunglasses became major fashion statements.

Location

Belluna is a small city (35,000) located in the Veneto region of Northeastern Italy very close to the Alps and the National Park of the Dolomites. The Piave River provides water power.

Associational infrastructure

Much of the associational behavior has been informal but the system of inter-firm networks for smaller firms appears to be in trouble caused by a form of lock in with old technologies and methods easily shared but without a means to access the research and information needed to compete globally. The cluster is becoming more hierarchical.

Development

There was no special strategy at first, although it is now part of the national system of industrial districts, which protects its brands from EU imitators.

Competencies in making spectacles developed over centuries were the main driver but for the most part there were no special circumstances that caused this region to specialize as it did.

Interventions/support

The government created a technical school associated with Padua University, a certification institute, a technology and information center, an observatory to monitor trends, and an industrial museum to draw attention to the regions pre-eminence. In 1993, a local Committee of Action composed of private and public sector leaders

decided to transform and brand the northern Italian town of Belluna as the world leader for spectacle production.

	<i>Regional Gov't</i>	<i>National Gov't</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Private</i>
<i>Networking</i>	X				X
<i>Training</i>	X		X		
<i>Services/Entrepren.</i>					
<i>R&D/T</i>					
<i>Marketing</i>	X				X
<i>Capital</i>					

Community engagement

The cluster is well integrated into the community informally but there are no special relationships.

Outcomes

Although the number of companies has decreased but to outsourcing and competition, it is still a vibrant cluster and has seemed to stabilize for now. Yet four lead firms account for 70 percent of the turnover and there is a danger that they will choke off or absorb some of the smaller firms. Some have their own outlets and other have arrangements with Sunglass Hut or Lenscrafters. There is a dichotomy developing between the lead and smaller firms seen by researchers as unhealthy. Chinese employment in glass manufacturing has grown to 90,000 but the Asian competition targets the low end of the market. The high-end fashion production is still dominated by Italy.

<i>Economic</i>	Strong support for innovation and growth
<i>Inclusion</i>	Unknown
<i>Environmental</i>	Ongoing research in nanotechnology to make production processes greener and products more disposable.

Sources

Arnaldo Camuffo. "Transforming Industrial Districts: Large Firms and Small Business Networks in the Italian Eyewear Industry," *Journal of Industry Studies*, 2003, web sites and presentations.

37. Wireless Technology in Southeast Minnesota

Description

The cluster consists of electronic component manufacturers, wireless telephone service provision, and regional wireless service providers. The region is viewed as a “strong base of engineers and technicians with experience and expertise,” and local firms are cultivating new and creative niches.

Origin

E.F. Johnson, a manufacturer of two-way radio systems started in 1923 and recruited engineers and technicians who specialized in radio frequency technologies. Eventually, these employees branched out on their own firms.

Location

The cluster is located in the Southeastern region of Minnesota, centered in the small city of Mankato (35,000), which is about 70 miles from the Minneapolis/St. Paul metropolitan area.

Associational infrastructure

Informal institutions like the radio club have been important in facilitating networking & social capital among individuals knowledgeable in wireless technologies. In 1992, the Wireless & Communications Technology Alliance was formed in order to provide leadership and organizational capacity but it does not seem to exist any longer.

Development

Although efforts have been made to provide a strong educational infrastructure to foster the growth of the cluster by educating engineers and technicians with an inclination for wireless & communication technologies, there really have been no interventions targeted to this cluster.

After the first firm opened, the region has cultivated its base of highly skilled engineers and technicians. Firms like Midwest Wireless (founded in 1990) and HickoryTech (founded in 1898 and headquartered in Mankato) started out as an independent telephone operator and evolved to be telecommunications specialty firm.

Interventions/support

New alliances and the educational infrastructure have worked to foster the region specialized skills base by providing leadership, organizational capacity, producing engineers & technician. The bulk of public sector support has been provided by local universities and technical colleges. Minnesota State University & South Central

Technical College provide basic & advanced informational training about wireless technology at the Institute for Wireless Education. The Wireless & Communications Technology Alliance provides leadership and organizational capacity to the cluster.

	<i>Regional Gov.</i>	<i>National Gov.</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Other</i>
<i>Networking</i>					
<i>Training</i>			X		
<i>Services/Entrepren</i>					
<i>R&D/T</i>					
<i>Marketing</i>					
<i>Capital</i>					

Community engagement

No information.

Outcomes

<i>Economic</i>	No evidence of any particular economic outcomes attributable to the cluster
<i>Inclusion</i>	Increased social capital claimed to be outcome
<i>Environmental</i>	Unknown

Sources

Study in 2002 by the Hubert Humphrey Institute at the University of Minnesota, Lee W. Munnich, Jr.; Greg Schrock; Karen Cook;

38. BioScience in Bozeman, Montana

Description

Montana has a diverse and growing life science sector. Although without a medical school, Montana has a strong infrastructure that includes several medical/bioscience research institutes, hospitals with research and clinical trials capacity, and a very strong life sciences and related engineering presence and interest within its two major universities. It is also home to a number of successful start-up and spin-off companies, notably LigoCyte in Bozeman.

Origin

Perhaps the largest influence on the cluster is the presence of the National Institute of Allergy and Infectious Diseases's Rocky Mountain Laboratories. Completed in 1928, RML has focused on vector-borne diseases such as Rocky Mountain spotted fever and Lyme disease. Now a Biosafety Level 4 research facility, it spawned a spinoff that was later acquired by GlaxoSmithKline.

Location

Bioscience firms are located throughout the state, although most are concentrated in the areas around the universities (Bozeman and Missoula). Bozeman (population 27,509) is home to Montana State University.

Associational infrastructure

Founded in 2004, the Montana BioScience Alliance was established to serve as a hub for the state's bioscience companies and workers. They act as an "information clearinghouse" and produce a quarterly newsletter, host a variety of networking events and conferences, and act as an advocacy group for its members. It also acts as the state affiliate for the Biotechnology Industry Organization. It has grown steadily in the years since its inception and has members throughout the state, although there are also members from the western United States. The Alliance is funded largely by an Economic Development Administration grant, with additional funding by the Governor's Office.

Development

The cluster is bolstered by the Montana BioScience Alliance and is also supported by the Governor's Office. Intensive state support for the cluster began in 2004 as part of a new strategy to pursue cluster-based economic development.

Many of the bioscience firms in Bozeman (and in Missoula) are spin-offs from research completed at the university.

Interventions/support

The cluster support was the result of a cluster analysis conducted by RTS for the

Governor’s Office of Economic Opportunity 2002-2003, which focused on six clusters including biotech. RTS has provided on-going support for the cluster since 2004, including assisting with its web site, meetings, and publications. The state received a \$15M grant from the U.S. Department of Labor to support the training needs of the bio cluster by creating “cluster hubs” at technical colleges, but that focuses on the more rural eastern region of the state

	<i>State Gov’t</i>	<i>National Gov’t</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Other</i>
<i>Networking</i>					
<i>Training</i>					
<i>Services/Entrepren.</i>					
<i>R&D/T</i>			X		
<i>Marketing</i>					
<i>Capital</i>	X	X			

Community engagement

Events are generally open to the public; close ties with post-secondary public education system. The Alliance’s members tend to be relatively active in their communities. One of the goals of the Alliance is to improve and enhance networking in the bioscience community.

Outcomes

<i>Economic</i>	Cluster is growing, Opening of GSK facility may spur other global companies to establish a presence. New, large venture capital funding of local firm in 2008.
<i>Inclusion</i>	Firms have high barriers to participating in the market. However, they are anxious to attract new employees and give employment opportunities to native Montanans.
<i>Environmental</i>	Unknown.

Sources

Regional Technology Strategies, Inc., “Clusters of Creativity: Innovation and Growth in Montana - The Life Sciences Cluster, A Report to the Montana Governor’s Office of Economic Opportunity” (2004)

Montana BioScience Alliance website, <http://www.montanabio.org>

39. Mobile Communications in North Jutland, Denmark

Description

The cluster is approximately 35 firms maritime & mobile communications equipment employing about 3,900 people. The region developed a strong image as a hub for software and hardware development for mobile phones and maritime equipment. Two local firms were among the first in the world to introduce Global System for Mobile Communication (GSM) phones. Numerous multinational companies (i.e. Motorola, Nokia, Siemens, Flextronics, Ericsson) also have a stake in the region after moving in and acquiring incumbent firms that struggled with declining markets and limited capital.

Origin

This is a regional cluster that dates back to the 1948. SP Radio (now called EuroCon Industries) was the first firm to begin developing maritime radio equipment because its owner was an active yachtsman. In the 1970s and 1980s, engineers from SP Radio who wanted to start their own maritime communications companies founded numerous spin-offs. Some eventually branched out into new and growing field of mobile communications and quickly jumped to the forefront of development on the first and second-generation mobile phones.

Location

The oldest firm, SP Radio, was founded in Aalborg when the population was about 60,000. Most of the companies are located within a ten-mile radius of Aalborg. Since 1989, the local science park (NOVI) has been the home for new companies and subsidiaries of foreign multinational companies.

Associational infrastructure

In 1997, wireless communication firms came together and partnered with knowledge institutions like Aalborg University (AAU) to establish Norcom. This formal network has numerous goals; the most important involve improving business conditions within the industry, fostering cooperative and networking opportunities among managers and specialists, and facilitating industrial growth, business development & innovation. This association of wireless and mobile industries is divided into two fields: mobile communications equipment/components and maritime communications equipment/components. As multi-nationals that relied more on internal expertise entered the cluster, however, cooperation diminished and networking lagged.

Development

Many firms have formed extensive partnerships and strong informal ties without the help of formal networks. It appears that the presence of formal associations are apart of a grass roots effort intended on "boosting horizontal networking.

An important component of the cluster's growth can be attributed to the spin-offs that were established as a result of management disagreements with parent companies. In fact, the first three firms founded after the opening of SP Radio were spin-offs. But in the 1980s, an EU study of the potential of the industry led Aalborg University to target research to it. Expansion in the 1990s came mostly through new investment by foreign multinational companies. As a result of the change in the ownership structure, much of the decision-making power for research and development activities shifted outside of the region, and some of the largest employers are now moving to lower cost regions.

Interventions/support

The mainstay of support comes from the Aalborg University (AAU), which was founded in 1972 to provide postsecondary education to the area. Although there are several "technical" knowledge institutions, AAU is the most significant contributor to the supply of specialized labor and basic research. Through Norcom, the University has developed courses with help from firms and participated in joint initiatives for promoting the cluster politically. In 1988, the region received a grant from the EU's social fund targeted to lower income regions (NordTek) to develop an incubator and science park NOVI that served the cluster, a direct result of a successful venture by private and public partners. In 1989, the region participated in the Danish Network program. Aalborg Technical College trains the mid-skilled technical employees.

	<i>Regional Gov.</i>	<i>National Gov.</i>	<i>Public Education</i>	<i>Foundations</i>	<i>EU</i>
<i>Networking</i>		X			
<i>Training</i>			X		
<i>Services/Entrepren.</i>	X		X		X
<i>R&D/T</i>	X				X
<i>Marketing</i>					
<i>Capital</i>					

Community engagement

No mention of community involvement.

Outcomes

<i>Economic</i>	The region has a small local labor force and high wages when compared to other telecommunications clusters. At present, the cluster is rebounding from the movement of multinationals to lower cost regions.
<i>Inclusion</i>	Created opportunities in what was then a depressed region of Denmark.
<i>Environmental</i>	No information on cluster but Denmark has some of Europe's strongest environmental policies.

Sources

DRIUD working papers by Michael Dahl & Christian Pederson and by Mark Lorenzen & Volker Mahnke; Rural Industry Cluster Compendium, RTS
<http://www.norcom.dk/>, RTS visits to region, Unpublished paper by Lars Gelsing.

40. Defense Contractors in Florida's Panhandle

Description

The cluster consists of mainly metals, plastics, and electronics companies that serve the needs of and draw on the technologies of Eglin Air Force Base, Pensacola Naval Station, and the federal labs. The precise number is unknown but more than 30 have organized into an association.

Age and origin

The origin is mainly former military officers who became entrepreneurial defense contractors and consultants in the 1970s and 1980s.

Location

The firms are in and around Fort Walton Beach (20,000) and Okaloosa County in Northwestern Florida.

Associational infrastructure

Technology Coast Manufacturing & Engineering Network (TeCMEN), formed in 1990, has become the forum for companies to share ideas and develop partnerships for writing proposals and is really a cluster association. Networking forms are distributed at meetings to encourage firms to act collaboratively. Okaloosa-Walton Community College was the other part of the social infrastructure, hosting TeCMEN, economic development offices plus activities that attract cluster members. The college hosts monthly TeCMEN meetings.

Development

The organization was a local effort led by the Economic Development Council and an educational institution. The development of this cluster was driven by public sector funding opportunities but private enterprises.

The cluster depended on government contracts and the size of the military budget. The real stimulus for collaboration was a major cut in the defense budget in 1991, making firms realize they had to work harder to compete

Interventions/support

The primary intervention occurred through Okaloosa-Walton Community College, the main source of employees and training for the cluster. In 1990, the college hosted a conference on networks and industrial districts organized by the Consortium for Manufacturing Competitiveness (SGPB). Speakers from Italy and Denmark explained the concepts and the private sector participation led to the formation of TeCMEN. A resourceful dean was able to obtain funds from the legislature (the speaker of the

Legislature was an employee of the college) and a grant from RTS (Alfred P. Sloan Foundation) to develop “networking activities”

	<i>State Gov.</i>	<i>National Gov.</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Other</i>
<i>Networking</i>	X			X	
<i>Training</i>		X	X		
<i>Services/Entrepren.</i>					
<i>R&D/T</i>	X			X	
<i>Marketing</i>					
<i>Capital</i>					

Community engagement

There was no community engagement other than working with the community college—which is a community, but public, institution.

Impacts

<i>Economic</i>	The members were able to leverage each other’s strengths to get new contracts, bid cooperatively, design new products together (e.g., a swamp boat), and access the technologies of the federal lab collectively.
<i>Social</i>	Then fact that the community college creates a pipeline for a lower income work force to find jobs is the major social outcome. Networking has become a way of, life for the cluster.
<i>Environmental</i>	None known.

Sources

Rosenfeld’s files and <http://www.florida-edc.org/TeCMEN.htm>

41. Electronics in Sønderborg, Denmark

Description

This cluster comprises more than 30 companies plus suppliers including a dozen software companies, or about three-fourths of the manufacturing base of this small city in southern Jutland. The largest company, Danfoss, employs about 8,000 in the region.

Origin

Danfoss, one of Denmark's first, and now largest, electronics firms opened in the region in 1933 and seeded the cluster. Other firms were started by its managers and engineers.

Location

Sønderborg is a city of about 30,000 about 120 miles south of Århus in a region that until 1920 was part of Germany.

Associational infrastructure

Most association is through supply chain relationships, the technical colleges, and informal friendships in a cluster where most companies and managers are local.

Development

The cluster developed on its own, with the same support available to all Danish firms purchased from the Danish Technological Institute and research centers. In about 2003, however, Danfoss, which was beginning to outsource more production, contributed about \$4 million to contract with Michael Porter for a cluster study and plan for diversification into other clusters. One of the results was a regional competitiveness council.

Due to the high costs of doing business in Denmark and its small domestic market, companies must compete with very high skills and continual innovation. They must also operate internationally. This cluster produces high quality and high end products and depends on a very highly skilled labor force.

Interventions/support

	<i>Regional Gov't</i>	<i>National Gov't</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Private</i>
<i>Networking</i>		X			X
<i>Training</i>			X		
<i>Services/Entrepren.</i>		X			
<i>R&D/T</i>					
<i>Marketing</i>					X
<i>Capital</i>					

Community engagement

The primary engagement is through the associations formed around the new cluster strategies.

Outcomes

<i>Economic</i>	Cluster in some decline due to increased outsourcing to low-cost regions.
<i>Inclusion</i>	Based on national policies to ensure access to education and employment.
<i>Environmental</i>	Based on national policies and a very environmentally conscious regional government.

Source

Rosenfeld, authored articles for Community College Research Center and Economic Development Quarterly, site visits, and available documents.

TEXTILES & APPAREL

42. Carpets in Dalton, Georgia

Description

Dalton is often referred to as the "Carpet Capital of the World," home to 150 carpet plants and approximately 100 carpet outlet stores. The industry, which produces about 80% of the carpets made in the U.S., employs more than 30,000 people in the Whitfield County area.

Origin

The carpet industry in Dalton can be traced back to a tufted bedspread given as a wedding gift in 1895 by a teenage girl, Catherine Evans Whitener, to her brother. In 1900, she made the first sale of a spread for \$2.50. By the 1930s, demand became so great that local women had "haulers" who would take the stamped sheeting and yarns to front porch workers. Nearly 10,000 area cottage "tufters," men, women, and children, were involved. Income generated by the bedspreads was instrumental in helping many area families survive the depression. Chenille bedspreads became amazingly popular all over the country and provided a new name for Dalton: the Bedspread Capital of the World.

Location

Dalton is a small city of about 30,000 in Whitfield County in northern Georgia.

Associational infrastructure

The Carpet & Rug Institute, a national organization, is based in Dalton, and offers regular training programs and events. It began as a community effort and still operates collectively, with a common shared web site for all companies in the area.

Development

Cluster evolved naturally as individual skills in making bedspreads were converted to skills for carpet industry, from small scale home based industry to large scale automated mass production industry. When a form of mechanized carpet making was developed after World War II, Dalton became the center of the new industry due to the fact that specialized tufting skills were required and the city had a ready pool of workers with those skills

Mechanization ultimately pulled workers from their home-based work into the tufting mills. Tufted chenille eventually gave rise to mats and rugs. Synthetic fibers and more advanced tufting machines allowed Dalton's mills to mass-produce rugs and carpet comparable in quality to and cheaper than the woven wool products produced in the

Northeast, whose factories also generally used less efficient and more expensive production techniques. Has become increasingly automated.

Interventions/support

Dalton State College does the education and training, but there have been few targeted interventions—only general statewide services available to all such as the Georgia Manufacturing Extension Service.

	<i>State Gov.</i>	<i>National Gov.</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Private</i>
<i>Networking</i>					
<i>Training</i>			X		
<i>Services/Entrepren.</i>					
<i>R&D/T</i>	X	X	X		
<i>Marketing</i>					
<i>Capital</i>					

Community engagement

The cluster grew out of a community based, home based industry.

Outcomes

<i>Economic</i>	Employment has risen from about 32,000 to more than 40,000 since 1997. The concentration also attracts tourists to the outlet stores creating jobs in that sector as well.
<i>Inclusion</i>	An influx of Hispanic workers starting in earnest in the early 1990s largely remedied any labor shortages. More than half of the students in Dalton's public schools now Hispanic. Mexico's University of Monterrey, brought Spanish-speaking teachers to Dalton to help in the city's schools and sent Dalton teachers to Mexico to learn Spanish. But Mohawk fighting lawsuit alleging they hired illegal aliens to suppress wages.
<i>Environmental</i>	Raw materials mostly petroleum-based, e.g., nylon, yarn and polypropylene. But industry now offers Green Label testing program for carpets and adhesive products to meet criteria for low chemical emissions and help improve indoor air quality. In cooperation with California's Sustainable Building Task Force and Department of Health Services, Indoor Air Quality section, the cluster voluntarily enhanced its Green Label program for carpet and adhesives to meet testing protocol used by Collaborative for High Performance Schools.

Sources

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43. Textile (Lace) in Lustenau, Austria

Description

The regional textile cluster represents 35% of Austria's textile firms and employees. Almost all of Austria's embroidery producers and a sizeable portion of clothing and textile producers are located in the state. The firms do spinning, weaving & dyeing of textile fibers, and manufacture knitted & crocheted articles and embroideries. The region's products compete in "high quality/high price market" segments. Approximately 80% of total textile production is exported, with nearly two-thirds of goods to EU markets. The region is considered a "high wage location" and leading firms worked together to create a cluster trademark, "Made in Vorarlberg" and high quality producers of embroidery also use the label "Austrian Embroideries"

Origin

Textile tradition dates back to the 13th century; firms (1st mechanical spinning mills) in the industry opened in the 19th century. Textile families like Getzner, Hammerle, Rhomberg, & Ulmer modernized the industry in the early 20th century.

Location

Vorarlberg is a Bundesland (state) on the very west of Austria. It borders Germany, Switzerland, and the Principality of Liechtenstein. About half of the firms are located in Lustenau, a small city (20,500) on the Rhine River in the western area of the state. This town is located about four miles west of Dornbirn (10th largest city in Austria & largest city in Vorarlberg) & three hours away from Milan by car.

Associational infrastructure

This cluster does not have a formal club or association, although in Austria the Chambers of Commerce, which requires membership, serves that purpose and the cluster has a subgroup called Stickereiverband. Firms have increased the amount of collaborative endeavors during the last decade. For example, embroidery firms have committed to partner in common product presentations and textile firms contract out production capacity to their competitor firms.

Development

The main strategy involves fostering the industry's creativity, innovation, and rationalization, and collaborative efforts among firms.

Due to intense international competition from low-wage producers, EU regulations, and the lack of support from the state, firms have reorganized and increased collaborative efforts.

Interventions/support

State government support diminished as the cluster declined during the 1980s & 1990s. The local Chamber of Commerce responded by launching small projects to increase cooperation between firms that were undergoing restructuring. The Chamber's Stickereiverband has helped to increase the competitiveness of the embroidery industry by uniting high quality producers of embroidery under the label "Austrian Embroideries" and representing both clients and firms on the international level. In addition, firms joined together to start a textile school initiative (HTL Textil Dornbirn) that offers students grants and workplace guarantee. In addition, the Chamber of Labor organizes workshops on innovation; the Technology Transfer Center Vorarlberg supports research & technology diffusion; the Vorarlberg Institute for Economic Development supplies technical assistance and training; and Innovative Management Concept Incorporation advises firms on financial aid programs.

	<i>Regional Gov't</i>	<i>National Gov't</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Other</i>
<i>Networking</i>	X				
<i>Training</i>	X		X		
<i>Services/Entrepren.</i>	X				
<i>R&D/T</i>	X		X		
<i>Marketing</i>	X				
<i>Capital</i>					

Community engagement

Through the chamber, which operates as a community organization.

Outcomes

<i>Economic</i>	The cluster is still competitive, although declining.
<i>Inclusion</i>	In a relatively homogeneous region, it does provide opportunity for small enterprises and part time employment, and wages are high.
<i>Environmental</i>	Unknown

Source

Unpublished paper in files.

44. Hosiery in North Carolina's Catawba Valley,

Description

About three-fifths of all men's hose made in the U.S. comes from within a 60 mile radius of Hickory, organized as griegge (whites), finishing, and integrated mills plus many of the suppliers of yarns, needles, and services. Well over 100 companies produce men's socks, from low-end for discount stores to fashion socks. The area is well-known for its clusters in hosiery and in furniture.

Origin

In the 1930s and 1940s, North Carolina recruited textile and apparel plants to move from the Northeast with cheap labor and right to work laws. Hosiery plants settled along the Catawba River, including Fruit of the Loom and Sara Lee, which subsequently moved out. Many of the many current locally owned companies were spawned by the employees of the original branch plants.

Location

The Catawba Valley is in the foothills of the Appalachians, on the western edge of the Piedmont. Hickory (25,000) is the central city in this region of small cities and towns. It lies along a major east-west Interstate I-40 and is close to I-81, a major north-south interstate.

Associational infrastructure

The Catawba Valley Hosiery Association was formed in 1959 to provide a forum for discussing common problems, identifying new markets, branding, and training. In 1988, the members were able to lobby the legislature for support of a Hosiery Technology Center (HTC) at Catawba Valley Community College (without the support of the college system). The HTC also facilitated association among members. In 1990, after learning about networks in Italy, they used networks as a theme for their annual meeting and made marketing and production networks a strategic goal. The networking also gives companies more leverage with their larger customers. In about 2002, the association renamed itself the North Carolina Hosiery Association for more political strength and to recognize members from outside the Valley.

Development

This began as an industry effort but once its success was evident, the state government and community college system recognized it as a replicable model for cluster and workforce development centers.

State subsidies, cheap unorganized labor, and access to power were the original reasons for the formation of the cluster. It was also part of a larger textile apparel cluster across that was recruited into the Carolinas and into Alabama and Georgia.

Interventions/support

The most important support was for the establishment of the HTC at the community college, for both training and demonstrating new technologies to SMEs. In 2007, the legislature finally authorized continuing support. The cluster received grants from the state to form a network and develop a strategic plan. In 1996, a grant from the German Marshall Fund allowed 15 owners and others to travel to Castel Goffredo and Carpi in Italy to observe industrial districts, which resulted in the redesign of the HTC to include a testing lab, quality standards, design capabilities, and new connections to the Italian machine builders. The state industrial extension program was an engineer assigned to the cluster. A U.S. Department of Labor grant helped train immigrant workers.

	<i>State Gov't</i>	<i>National Gov't</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Private</i>
<i>Networking</i>	X			X	X
<i>Training</i>		X	X		
<i>Services/Entrepren.</i>	X				
<i>R&D/T</i>	X	X	X	X	X
<i>Marketing</i>	X				
<i>Capital</i>					X

Community engagement

The cluster is engaged in the community and takes its civic responsibility seriously. The association has social events and invites others to the meetings. One key to its success is its familiarity with and in the community, which helps companies secure loans from local banks and

Outcomes

The cluster has been hit hard by pressures from big boxes to cut prices and take back unsold goods and by new foreign competition from Chinese clusters, where one city, Datang, produces 9 billion pairs of socks a year. North Carolina's response has been to move upscale and develop niche products, such as Thurlo's action socks or the mismatched socks of Vermont's "Sock Lady."

<i>Economic</i>	Working together to meet challenges and holding own, but with come attrition and consolidation. HTC converted to more general technology center in anticipation of decline.
<i>Inclusion</i>	Educates and employs immigrants and tries to find career paths.
<i>Environmental</i>	Clusters tests and certifies it products as free of formaldehyde, used in most imported socks

Sources

Rosenfeld, Industrial-Strength Strategies, Aspen Institute, 1995, study tour to Italy in 1997, subsequent visits to Center.

45. Hosiery in Castel Goffredo, Italy

Description

This town is the center of Europe's largest women's hosiery (calza) cluster. More than 200 companies produce about 70 percent of all women's hosiery sold in Italy and 40 percent all sold in Europe, but foreign competition has cut into its markets. In the larger region of Mantova, about 400 firms (half in Castel Goffredo) employ 6,000 workers in all phases of production (knitting, dying, packaging, marketing) and turn over 932 million Euros per year in addition to the supply chains. The equipment producers, a key competitive advantage, also were nearby, in Brescia. The region has its own brand, or mark and is well known for its high fashion hosiery

Origin

The area was agricultural in the early 1900s but near the silkworm industries of Mantova. In 1927 Noemi, a German firm, moved to Castel Goffredo to make hosiery and by 1930 it employed 300 people. In the economic crisis after World War II, residents were able to buy cheap equipment from the struggling machine builders and many, aided by a Rural Cooperative Bank and local farmers, started their own companies and undercut Noemi's prices. After Noemi went out of business in 1962, employees bought the equipment and started even more companies.

Location

Castel Goffredo is a small city of less than 8,000 in the Province of Mantova in Lombardia, Northern Italy. The nearest "big" city is Castiglione, (15,000) and it is not near any transportation hubs or major highways.

Associational infrastructure

The cluster has a tight but informal social structure, with many of the owners' former classmates and even relatives. Owners joined together in 1985, for example, to conduct a joint needs assessment that led to a new technology center.

Development

The cluster was almost entirely entrepreneurially driven to take advantage of skills, access to technology in Brescia, and market opportunities.

Proximity to the silkworm cluster, the investment and subsequent closure by a German hosiery manufacturer, and an economic crisis all contributed to the development of the cluster. The cluster's big break, however, was the new miniskirt styles following World War II, which created a very large new market for pantyhose and stylistic stockings.

Interventions/support

Regional policies boosted the cluster by providing infrastructure, promoting the reuse of old buildings, and a Government-supported Center for Education, Innovation, and Training that provides short 200 hour courses and longer 600 hour courses for graduates of secondary schools. In 1985, business leaders recognized the need for cluster-wide standards and a local Rural Cooperative Bank built a new Centro Servizi Calza (Center for Services for Hosiery) for the cluster to conduct tests, set quality standards, certify products, and support fashion design and information. The Regional Government purchased the equipment and trade associations paid membership fees. One of the largest firms, Golden Lady, has become a major player in North Carolina's hosiery cluster.

	<i>Regional Gov't</i>	<i>National Gov't</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Private</i>
<i>Networking</i>					X
<i>Training</i>	X		X		
<i>Services/Entrepren.</i>					X
<i>R&D/T</i>	X				X
<i>Marketing</i>					
<i>Infrastructure</i>	X				

Community engagement

Because this cluster is so dominant, it in effect represents the community, but most likely with some class structure and immigrants not represented.

Outcomes

The major competition had come from Turkey and South Korea, but now China has entered the picture. But the cluster views China as a market opportunity with 100 million potential affluent buyers and has already set of a Lombard hosiery district in Shanghai.

<i>Economic</i>	The cluster depends on its technology, fashion and style, with rapid changes.
<i>Inclusion</i>	The unions in Montova and Milan claimed that young local women and immigrants are being recruited into low wage, dangerous, repetitive jobs. However, organizing efforts have failed.
<i>Environmental</i>	New firms encouraged to reuse old buildings. Centre Sevizi Sheath verifies the perfluorooctane sulfonates (PFOS) content of materials

Sources

Two site visits and Interviews by Rosenfeld; Costantin Cipolla, *The Castel Goffredo Model*, Cassa Rurale Ed Artigiana di Castel Goffredo, 1991. www.centroservizicalza.it/

46. Shoes in Sinos Valley, Brazil

Description

In 1995, there were 1,800 firms employing about 150,000 in the footwear cluster in Brazil's Sinos Valley in the state of Rio Grande de Sul. The cluster includes aspects of the value chain from the tanneries, chemicals, truckers, equipment manufacturers, and designers to the distributors. The cluster exported about \$1 billion per year

Origin

Between 1940 and 1950, the number of shoe companies in the area doubled and, in the 1960s, some grew large enough to become major exporters. It was a very poor region with limited capital but some of the largest companies formed partnerships with entrepreneurs. Much of its growth has been the result of cooperation and trust, with established companies helping new startups (often relatives and friends), who shared their knowledge and resources freely to build the cluster

Location

The small towns of the Sinos Valley within about a 35-mile radius of Novo Hamburgo, constitute the heart of the cluster. The area is in the most southern part of Brazil.

Associational infrastructure

The Valley is home to six industry associations—of shoe producers, tanners, machinery suppliers, export agents, component manufacturers, and general businesses— and two professional associations that support the cluster. The informal social structure among the German-Brazilian population that allowed free exchange of knowledge in the earlier period became more structured with growth.

Development

The origin was private sector initiative but scaling up was part of a national and regional strategy that built the support infrastructure that eventually allowed the cluster to react to customer pressures for lower costs and Chinese competition.

The formation of an industrial community of the Valley promulgated mainly by German immigrants drove the growth of the cluster. By the 1960s, the community was aware that it was creating a powerful economic sector and that the companies were interdependent so that competition was tempered by the desire for collective growth.

Interventions/support

The government played a major role, starting the SENAI School of Shoe Design and Manufacturing in 1947, a shoe fair (FENAC) in 1963, a tannery school in 1965, a technical school in 1966, and a Technology Center for Leather, Shoes, and Related Industries in 1966.

	<i>Regional Gov't</i>	<i>National Gov't</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Other</i>
<i>Networking</i>					
<i>Training</i>		X			
<i>Services/Entrepren.</i>		X			
<i>R&D/T</i>		X			
<i>Marketing</i>		X			
<i>Capital</i>					

Community engagement

There is no evidence of engagement of the wider community. The roots of the cluster came from German immigrants who came to Dos Iramos but never fully integrated into the Brazilian culture. The strongest community involvement came from the immigrant community.

Outcomes

In the early 1990s tariff reductions and the entry of Chinese footwear reduced investments and the number of tanneries, component producers, machinery and equipment manufacturers. While firms were going bankrupt, exporting agents left the Valley. Once the initial impact of the crisis had passed, Sinos Valley rebounded through market diversification and a change in business culture. Businesses turned to the Latin American and domestic market, and invested in product development, constructed their own identity (brand) and made logistical improvements. Increased managerial training and trade promotion, more participation at selected international trade fairs, and a permanent footwear showroom in Miami in April 2001 all helped. The machinery, equipment and component manufacturers have also invested in marketing and promotion and recently launched the brand *By Brazil*. The tanneries are thinking about introducing a quality seal; a supply chain program for the leather and footwear industry in operation since 1999 now has 167 firms.

<i>Economic</i>	Stability at a new level after responding to competition
<i>Inclusion</i>	Still opportunities for entrepreneurs but don't know how the native population is treated.
<i>Environmental</i>	No evidence

Sources

Khalid Nadvi, "Industrial Clusters and Networks: Case Studies of SME Growth and Innovation," University of Sussex. 1995; Luiza Bazan and Hubert Schmitz, *Social Capital and Export Growth: An Industrial Community in Southern Brazil*. Institute of Development Studies, University of Sussex, 1997; Brazil's footwear cluster: Sinos Valley: Innovation Master Class, www.innovationmasterclass.com

TRANSPORTATION EQUIPMENT

47. Heavy Lift Helicopters in Southern Oregon

Description

Oregon produces about 90 percent of the nation's heavy lift helicopters, a \$1 billion industry for the state. It employs about 3,000 and 75% of its revenues come from out of state.

Age and origin

The cluster began in the early 1970s response to the needs of the wood industry, i.e., to lift the logs out of the forests in difficult terrain. They specialize in their ability to lift 5,000 pounds or more. Operating and maintaining them requires highly specialized skills.

Location

Although the cluster is statewide, most of the manufacturing is in southern Oregon. Three large companies are located in the Willamette Valley, four others in Jackson and Josephine Counties—in Central Point (16,000), White City (5,000), Grants Pass (29,000), Aurora, Corvallis (49,000), and McMinnville (30,000).

Associational infrastructure

A Heavy Lift Helicopter Consortium was formed with state support that has led to many cooperative practices such as sharing vendors for common needs like fuel and addressing regulations.

Development

Companies are having trouble recruiting employees to rural areas and they are looking to the state for support. A few members are beginning to move some functions to Dallas, a climate more supportive and less regulated. The cluster is also facing growing competition from China.

The growth is undoubtedly connected to the Northwest's large wood industry and needs to move lumber.

Interventions/support

The major intervention has been special education and training programs at Rogue Community College in Grants Pass and Medford, including a 30-month apprenticeship program in airframe and power plant technicians that includes job shadowing in the companies, a need identified by and implemented as an industry consortium, not individual firms, and supported by a grant from the Governor's set aside of the

Workforce Investment Act. The Consortium markets itself as an industry, not individually.

	<i>State Gov't</i>	<i>National Gov't</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Other</i>
<i>Networking</i>	X	X			
<i>Training</i>		X	X		
<i>Services/Entrepren.</i>					
<i>R&D/T</i>					
<i>Marketing</i>					
<i>Capital</i>					

Community engagement

There is little direct community engagement, other than realizing the reliance of the community on this cluster. .

Outcomes

<i>Economic</i>	The economic outcomes are strong for the industry.
<i>Inclusion</i>	To the extent that regional workforce boards are working to upgrade skills of local work force, the companies pay very good wages.
<i>Environmental</i>	There is no indication of any consideration of sustainability or environmental concerns. Most members want fewer regulations, the cluster needs large volumes of fuel, and the market depends on increased logging.

Sources

Oregon Department of Economic and Workforce Development, notes from meetings of industry alliance, trade magazines, and web searches.

48. Recreational Vehicles, in Lane County, Oregon

Description

This is a small cluster of companies manufacturing motor coaches. Lane County has the second largest concentration of RV manufacturers in the nation and all manufacturers build luxurious class-A recreational vehicles. Their products are described as “world-class manufacturer of luxury motor coaches.”

Origin

This mini-cluster began in 1968 when Monaco Coach was founded by three men in Junction City, Oregon. This company was originally named Caribou Coach and it started as a pick-up camper manufacturer. Country Couch was founded five years later, after Bob Lee broke with his two partners from Monaco Coach. Other new firms spun out, despite high startup costs.

Location

Lane County is a metropolitan county because it contains Eugene (137,893) and Springfield (52,864) but 90% of the county is forested. All three major firms are located close to Interstate 5 and within 10 miles of one another. Country Coach is located in Junction city (4,721), while Marathon Coach and Monaco Coach are located about 10 miles away, in Coburg (959).

Associational infrastructure

The RV consortium of three motor coach manufacturing companies, the Lane Workforce Partnership, and Lane Community College was established in 2005. Although the main goal of the consortium is to promote workforce development projects, other goals include building trust amongst firms, allocating funds from the Governor’s grant, identifying common needs and interests, facilitating talks between public partners and the RV firms, and organizing joint projects like career fairs.

Development

When the Governor used his discretionary WIA set aside WIA funds to retain Country Coach, he stipulated that the RV manufacturers had to join an industry training consortium in order to receive the grant. At the time, there was no mechanism or trust that would allow for the firms to work together and all of the manufacturers were struggling to recruit and retain workers.

The governor’s grant served as the impetus for the development of the consortium, but the industry’s struggles with staffing challenges (i.e. recruiting and retaining workers) and workforce challenges (i.e. changing technologies and demographics, globalization) was also a strong motivating factor.

Interventions/support

After the Governor committed part of a \$500,000 grant to the development of a consortium the Oregon Economic and Community Development Department and Lane Metro Partnership met to lay the groundwork for the RV consortium. The consortium was designed to focus on numerous issues, but the primary one dealt with the industry's workforce needs, as to prevent other manufacturers from leaving. The Governor Funded the industry consortium; Lane Community College hosts career fairs and offers expertise in business development; and the Lane Workforce Partnership serves as fiscal agent and convener.

	<i>State Gov.</i>	<i>National Gov.</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Other</i>
<i>Networking</i>					
<i>Training</i>	X		X		
<i>Services/Entrepren.</i>					
<i>R&D/T</i>					
<i>Marketing</i>					
<i>Capital</i>					

Community engagement

The founder of Country Coach plans to open "Country Coach University," where employees, dealers and customers could learn more about how to build, sell and service RVs.

Outcomes

The alliance “created a unified voice to address workforce and training needs”, “lower training costs due to bulk buying power, resource sharing, and the sharing of collaborative information”, “increased public awareness and visibility”, “stronger partnerships and increased collaboration” (i.e. faculty, counselors, students, career centers, high schools, community colleges) & change perceptions about manufacturing jobs

<i>Economic</i>	Undetermined
<i>Inclusion</i>	Undetermined
<i>Environmental</i>	Unknown

Source

Robin Onaclea and Dave Oatman, “Best practices” guide for RV Consortium in Lane County, Oregon Department of Community Colleges and Workforce Development.2007. The Register Guard-Eugene, April 1, 2007.

49. Automotive in Northern Alabama

Description

Automotive assembly and supplier cluster anchored by Daimler Benz, Honda, and Hyundai. The northern part of the state has about 150 suppliers, including transmissions, exhaust systems, stamping and casting, and engine parts and components. It has specialized support services, training, and associations

Origin

Daimler Benz opened its plant in Huntsville in 1998 and Honda opened in the more rural Lincoln in 2001. Although both were heavily recruited and received large subsidies, the basis for the cluster existed in the state's older steel and metal working cluster and engine assembly plants. Each employs well over 1,000 and buys from dozens of small local second and third tier suppliers. For years, Birmingham and the surrounding counties were synonymous with the steel industry, dating back to the 1860s when they supplied the Confederate army with ammunition. After World War II, Japanese competition took over much of the industry but the region retained a large number of metalworking companies.

Location

Northern Alabama, in and around assembly plants in Huntsville and Lincoln, but with additional companies and a Hyundai plant in Southern Alabama. Its proximity to the assembly plants in Tennessee has generated a base of experienced suppliers.

Associational infrastructure

The industry is not organized locally around automobile although there is a very active Alabama Automobile Manufacturers Association with 462 members, a committee structure, conducts study tours, quarterly meetings. There is some organizational activity around the German and Japanese cultures associated with the two assembly plants.

Development

This was a well-orchestrated and funded state effort to build the cluster that had earlier failed in an effort to land a Saturn plant. Local development offices, community colleges, and the University of Alabama were all part of the effort. Part of a planned, coordinated, and heavily subsidized (state and local) strategy to become the automotive center of the nation.

Interventions/support

The state offers specialized training programs (Alabama Industrial Development & Training) and the community colleges offer credentials that prepare for more advanced positions. Gadsden Community College has an Advanced Manufacturing Technology Center that has been instrumental in attracting companies. Currently, Lawson State

Community College, a historically black college, is establishing the Alabama Center for Automotive Excellence, which will open up opportunities it is for minorities from surrounding rural areas. The state provides manufacturing assistance through the MEP at the community colleges and universities, and business assistance.

	<i>State Gov't</i>	<i>National Gov.</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Private</i>
<i>Networking</i>					X
<i>Training</i>	X	X	X	X	
<i>Services/Entrepren.</i>	X	X			
<i>R&D/T</i>		X	X		
<i>Marketing</i>					
<i>Capital</i>	X				

Community engagement

The business community is heavily involved but not the larger community and not the rural communities.

Outcomes

Alabama has become the nation's new "Detroit," with three major assembly plants and hundreds of auto suppliers

<i>Economic</i>	Job growth has exceeded expectations and grew 43% between 2003 and 2006. Most of the suppliers are existing businesses and there is little entrepreneurial activity within the cluster (although there probably is a result of employment growth). We found no analysis of the benefits versus costs to the state.
<i>Inclusion</i>	The jobs pay higher than average wages for the state and good benefits but are non-union. In addition, Lawson Stare, a 2-year HBCU, is doing training to get African Americans higher skill jobs. There is a very heavy reliance on foreign capital, which has little local commitment.
<i>Environmental</i>	The Daimler Benz vehicles are large and given fuel costs, demand may be reduced. No information on impact of the environment other than effects of fuel consumed.

Source

Research conducted by RTS for the Appalachian Regional Commission in 2004.

50. Marine Trades in the Water Counties of Eastern North Carolina

Description

The cluster includes boat building and other maritime-related companies, Water counties are home to 20 percent of marine trades firms and 40 percent of employment in the marine trades industry in North Carolina. The types of boats building firms range from “small custom-built shops to large mass-production facilities”. The product line is equally as diverse—patrons can shop for yachts, sports boats, fiberglass boats, fishing boats, or wooden boats. Owners prize these boats for their functionality and showpiece quality, while professional sportsmen buy them to compete in million-dollar national fishing tournaments.

Origin

Craftsmen’s have been building recreational boats in these counties for over 100 years. In Carteret County, sport-fishing boats evolved from the sharpie, a flat-bottom boat imported from Long Island Sound in the 1870s.

Location

Water Counties (Carteret, Pamlico, Onslow, Jones, and Craven) align the middle of the eastern coast of North Carolina.

Associational infrastructure

Firms exhibit a high level of interdependence and have a symbiotic relationship with local community colleges and NC MARTEC, but they “lack the social fabric that promotes interaction among workers and employers is weak.”

Development

Companies are linked through a strong value chain.

The cluster’s location is one factor for its success. It’s halfway between the big markets of the North and the big markets of the South. It’s just more cost-effective in handling the distribution of the boats. North Carolina offers competitive incentives, low taxes, and waterfront land zoned commercial or for manufacturing and building.

Interventions/support

Various centers, community colleges, and agencies support the cluster. North Carolina Marine Training and Education Center (NC MARTEC) is a comprehensive marine technology training facility for local workers in marine manufacturing and service industries. This center offers advanced training to incumbent workforce and is the cornerstone of the industry. NC MARTEC is operated by Carteret Community College in Morehead City, N.C. and is the only comprehensive marine technology training facility in the Mid Atlantic region. The Small Business and Technology Development Center’s

Boating Industry Services is a statewide, special market development service supporting business and employment growth for the state's marinas, boatyards, boat dealers, boat builders, marine construction firms, and product/service providers.

	<i>Regional Gov't</i>	<i>National Gov't</i>	<i>Public Education</i>	<i>Foundations</i>	<i>Other</i>
<i>Networking</i>					
<i>Training</i>			X		X
<i>Services/Entrepren.</i>	X				
<i>R&D/T</i>			X		
<i>Marketing</i>					
<i>Capital</i>	X				

Community engagement

The North Carolina Maritime Museum in Beaufort aims to preserve the states' maritime history. The museum also offers introductory boat buildings classes to the public.

Outcomes

Waterfront development is undermining the cluster's growth and "industry efforts promoting boating lifestyles". Boatyards are closing or converting, while city officials are struggling to maintain public access to parking/docking stations. New residential development yields higher property tax revenues than commercial uses so there is a strong push to rezoning waterfront from commercial to residential. For boat builders, the calculations of the amount of volatile organic compounds and the ability to know what degree of compliance you're in are extremely complicated. Air-quality regulation is divided up into regions, and some regions are more familiar with boat building than others. Water quality regulations affect mostly boatyards and boat repair.

Economic	"Firms cannot find the workers they need"; "firms refuse to invest in general training for workers"; generally, average wage is higher than state average
Inclusion	The increase in the cost of boat-related needs may push boaters with lower incomes out of the market and make boat activities accessible only to those with very high incomes.
Environmental	Firms are having some difficulties with sometimes conflicting environmental regulations. Additionally, the loss of land that provides water-dependent land uses is changing the region.

Source

Articles, websites, and the Leveraging Marine Trade in North Carolina Water Communities report.