



## Clusters – A key to Rural Prosperity

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## **EXECUTIVE SUMMARY**

This research provides an overview of cluster development in Canada and other countries of the world. It also encompasses the importance of the cluster approach, discusses what a cluster is, what makes a cluster successful, some of the concerns about the cluster approach and the effectiveness and benefits that clusters provide.

Cluster is a broad concept rather than a precise term. A cluster consists of firms and related economic actors and institutions that draw productive advantage from their mutual proximity and connections. Over the last 2-3 decades, clusters approach has drawn substantial interest from policy makers, legislatures, business leaders, academics, economic development practitioners and development agencies.

The cluster approach is not simply about strengthening or developing individual companies or organizations within a particular industry – it is about building that industry as a whole so that it is stronger, fitter and ready to take advantage of what the future brings. By developing an agreed strategy for development, the whole sector will be better placed to identify and take advantage of the opportunities that co-operation can bring. Clustering provides firms with access to more suppliers and specialized support services, experienced and skilled labour pools and the inevitable knowledge leakage that occurs where people meet and talk about business.

Common needs and interests, interdependent and overlapping, talent and creativity, and innovation are the necessary ingredients for developing a cluster. A variety of Cluster models have been adopted by various countries according to their requirements. In Canada, the National Research Council (NRC) has focused on building science and technology based innovation in areas of local and regional strength to foster economic growth and improve quality of life. Cluster formation has a significant impact on forestry, tourism, health, materials and metals industry and arts and culture activities in Canada.

Cluster development is also revolutionizing business, prompting economic development and increasing productivity across the globe. Cluster models have been implemented successfully in USA, Brazil, Italy, Japan, France and Finland.

Clusters are based on unique strengths, and unique products and services. In the past, the term “rural” was synonymous with agricultural clusters. Now, emerging rural clusters include tourism, information and communication technology, manufacturing, and renewable energy production. In rural areas, the economy based on cluster structures is becoming a meaningful development trend. Clusters are effectively working in the agriculture sectors of Poland, USA, The Netherlands, Sweden and Argentina.

Rural clusters are challenged with competition from less advanced regions, global supply chains, energy costs and environmental concerns, changes in population composition, expanding digital communications networks, new products and emerging markets.

There is no overriding cluster theory per se and clusters are generally viewed as an economic development process rather than a definite development theory. Approaches towards developing clusters vary significantly across different countries with some adopting a holistic cluster-specific approach while others adopt a less far-reaching cluster-informed approach. Cluster-based strategies have proven effective in improving the clusters’ ability to compete and, in many instances, have influenced regional and local growth patterns.

In short, the cluster model has become an important tool of many economic development initiatives across the globe. Clusters can play a significant role in creating rural prosperity and sustainability in Alberta.

## **1. BACKGROUND**

Over the last 2-3 decades, cluster approach has drawn substantial interest from policy makers, legislatures, business leaders, academics, economic development practitioners and development agencies. Many countries around the world have based their industry development strategies on cluster models. These countries have implemented cluster initiatives to position their businesses/economies to meet the challenges of the world's new economy. Those countries have adopted the cluster model as a way for improving productivity, competitiveness and export performance. Clusters exist in the economies of both developed as well as developing countries, large and small, urban and rural, and across jurisdictions (e.g., nations, states, metropolitan areas, regions and cities). Governments with widely differing ideologies and philosophies have instituted cluster promotion policies.

On the academic front, hundreds of cluster studies have been undertaken around the world<sup>1</sup>. This academic interest has been reflected in a wide range of policy innovation and experimentation, as practitioners have adopted the terminology and tried to make practical use of the concept.

At present, evidence suggests that the shape of economic policy and practice is changing significantly around the world. Globalization, rapidly changing technology, intense competition and the rising public expectations for a higher standard of living create significant challenges to conventional economic development approaches. Governments continually search for new tools and policy formulas to improve economic performance and create economic prosperity for all citizens. In this context a more proactive and strategic role for government in support of the cluster-based economic development model has emerged. There is a growing consensus that if done right, this model can provide a foundation for sustainable economic growth and the way forward to greater prosperity.

The cluster approach is not simply about strengthening or developing individual companies or organizations within a particular industry – it is about building that industry as a whole so that it is stronger, fitter and ready to take advantage of what the future brings. This is done through building on links between the component parts of the sector. By developing an agreed strategy for development, the whole sector will be better placed to identify and take advantage of the opportunities that co-operation can bring.

## **2. OBJECTIVES OF STUDY**

The objectives of this study are as follows:

- To collect information and review clusters development in Canada and other countries.
- To identify different types of clusters and provide an overview on effectiveness and benefits of clusters.
- To identify challenges and opportunities for rural clusters.

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<sup>1</sup> Van der Linde, C., 2001, “*The Cluster Profile Meta-Study: Preliminary Results*,” paper presented at the 4th Annual TCI Conference.

### **3. APPROACH AND SCOPE OF STUDY**

This study draws on previous research available on website and other documents. The research is not limited to Alberta but also reviews cluster development nationwide and in other countries.

The study focuses on a few key concepts of clusters, characteristics of clusters, the effectiveness and benefits that clusters provide, elements of cluster development, and some examples of Canada and other countries on cluster development.

### **4. CONCEPT OF CLUSTERS**

There is no widely agreed-upon definition of a cluster. Some authors define clusters as groups of companies and institutions co-located in a specific geographic region and linked by interdependencies in providing a related group of products and/or services<sup>2</sup>, while others define a cluster as ‘A spatially limited critical mass (that is sufficient to attract specialized services, resources, and suppliers) of companies that have some systemic relationships to one another based on complementarities or similarities’<sup>3</sup>.

Cluster is a broad concept rather than a precise term. A cluster consists of firms and related economic actors and institutions that draw productive advantage from their mutual proximity and connections. In more general terms, clusters can be defined as a group of firms, related economic actors, and institutions that are located near each other and have reached a sufficient scale to develop specialized expertise, services, resources, suppliers and skills<sup>4</sup>.

Various definitions of clusters exist to suit different country’s competitiveness however United Nations Industrial Development Organization (UNIDO)<sup>5</sup> provides a fairly comprehensive definition of cluster. According to UNIDO:

"Clusters are sectoral and geographical concentrations of enterprises that produce and sell a range of related or complementary products and, thus, face common challenges and opportunities. These concentrations can give rise to external economies such as emergence of specialized suppliers of raw materials and components or growth of a pool of sector-specific skills and foster development of specialized services in technical, managerial and financial matters. Networks are groups of firms that cooperate on a joint development project complementing each other and specializing in order to overcome common problems, achieve collective efficiency and penetrate markets beyond their individual reach."

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<sup>2</sup> This definition builds on Porter (1996, 1990). For discussions see Doeringer/Terkla (1995), Rosenfeld (1997), and European Commission (2002).

<sup>3</sup> Rosenfeld (2002) includes a list of cluster websites for examples.

<sup>4</sup> See the report of the US Council on Competitiveness (2007) Innovation America - Cluster-Based Strategies for Growing State Economies, which is available at <http://www.nga.org/Files/pdf/>

<sup>5</sup> United Nations Industrial Development Organization

## **5. CHARACTERISTICS OF CLUSTERS**

Clusters have some characteristics by the type of products and services they produce, the location dynamics they are subject to, their development stage, and the business environment that surrounds them, to name a few. The clusters may have the following characteristics:

### **5.1. Common needs and interests**

Companies may cluster around types of needs and interests. There are clusters in automotive, in financial services, in tourism, in ceramic tiles, and many more. More recent research on clusters indicates that even within a given field there is room for many different successful clusters, each taking a unique, individual role. Clusters are differentiated by their specialization in a particular stage of their field's value chain, by their focus on specific geographic areas, or by targeting selected customer needs or market segments.<sup>6</sup> For example in footwear Industry, Northern Italy is home to a very successful, high wage cluster, serving the world market and focusing on design, brand building, and high value production. Portugal is home to another cluster, focused on footwear manufacturing and short production runs serving fashion-conscious markets in Europe. Timisoara, Romania, is emerging as another cluster, functioning as an offspring of the Italian cluster focused on production in the low- to medium value product range<sup>7</sup>.

### **5.2. Interdependent and overlapping**

Companies can be in more than one cluster, depending on whether the relationships are similarities, commonalities, or complementarities. The ongoing convergence of technologies is making it even more difficult to pigeonhole a particular company. An advertising company could be considered part of design, multimedia, and information technology clusters. A winery could be included in food processing, tourism, or biotech clusters.

### **5.3. Talent and creativity**

Clusters also depend on talent and creativity. In today's global economy, companies depend more than ever before on highly educated and/or creative employees who are problem solvers and idea generators, sometimes called the "creative class. Talented people, be they scientists, managers, artists, or designers, tend to choose to be near others with common interests and lifestyles and where cultural and recreational amenities are plentiful<sup>8</sup>.

### **5.4. Innovation**

Innovation, imitation, and entrepreneurship are the main drivers for competitive clusters. Usually, the success of a firm depends on its ability to protect its own technological advances, new products, or designs. However, the success of the cluster in which it operates may depend on widespread diffusion, access to innovations and information of new enterprises.

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<sup>6</sup> Ketels, C.H.M. 2003

<sup>7</sup> This example draws on research by Claas van der Linde and student teams at Harvard Business School.

<sup>8</sup> Cluster-Based Strategies for Growing State Economies 2002, the Council on Competitiveness and the National Governors Association (NGA) 12 Survey of Talent, "The Battle for Brainpower," *The Economist*, October 7, 2006.

The Innovation Statement prepared in 2003 by the Government of Victoria, Australia<sup>9</sup> identified six key attributes that would facilitate innovation and upgrading the competitiveness of the economy:

- ⇒ Building an educated and skilled workforce.
- ⇒ Becoming a leader in knowledge creation and innovation.
- ⇒ Developing linkages, clusters and networks to become a more integrated and networked local economy.
- ⇒ Fostering enterprise formation and business growth.
- ⇒ Becoming a globally focused and internationally integrated economy.
- ⇒ Creating a business environment and infrastructure base that facilitates business success.

## 6. EFFECTIVENESS AND BENEFITS OF CLUSTERS

The cluster model is effective for the following reasons:

**First**, conventional economic development approaches, such as a sector or industry-specific strategy are compartmentalized and isolated activities. In contrast, the cluster approach is integrative, bringing coherence to disparate activities and projects. Clusters are defined by interdependencies and are inclusive of other economic development approaches.

**Secondly**, clusters drive innovation and innovation drives productivity. Porter and Stern<sup>10</sup> note that, ‘Innovation and the commercialization of new technology takes place disproportionately in clusters’. Clusters provide the critical mass for this to occur by facilitating interaction by participants. Few companies have all the necessary skills to develop unique products and services by themselves, therefore clusters, rather than single companies or industries, are the sources for income, jobs and export growth.

**Thirdly**, clusters provide benefits to all involved. From a firm’s perspective, firms in a cluster share hard and soft infrastructure, energy, transportation, R&D, and health and safety standards. It provides them with access to all players, attracting brainpower, expertise and local suppliers. In turn, it makes the industry more innovative to adopt technology and enables them to develop and export unique products and services.

According to Jocelyn Ghent-Mallet<sup>11</sup>, ‘clusters are attractive for many reasons. They catalyze economic transformation. They drive growth and enhance stability. Once they are rooted, they are remarkably self-generating. In the recent downturn in the information technology sector, the Ottawa community lost 25,000 jobs and then quickly recovered almost all of them. Clusters look like a good bet for economic success as follows:

- A study conducted at the USDA<sup>12</sup> Economic Research Service found that average earnings in rural counties with high shares of particular industry classifications, defined as clusters, were higher than rural counties without “clusters.”
- A more recent study across Canada found that between 1998 and 2005, both employment and average income in clustered industries in “city-regions” grew more than twice as fast as in non-clustered industries<sup>13</sup>.

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<sup>9</sup> ‘Victorians. Bright Ideas. Bright Futures’ 2003 Government of Victoria, Australia

<sup>10</sup> Porter and Stern (2001)

<sup>11</sup> Jocelyn Ghent-Mallet (2002),

<sup>12</sup> Robert M. Gibbs and G. Andrew Bernat, Jr. “Rural Industry Clusters Raise Local Earnings,” *Rural Development Perspectives* (No.3) 1997.

- The International Institute for Labour Studies assessed the impact of Valencia, Spain's efforts to imitate the cluster technology centers in Emilia Romagna's industrial districts and found success in expanded services to small firms and increased demand for services. Among the lessons learned were that the centers required continuing public subsidies to remain in an industry leadership position, they should be located within the cluster, and they worked best in collaboration with other similar institutes<sup>14</sup>.
- A variety of evaluations of networks and cluster organizations across the United States, the United Kingdom, and Australia all found that firms networked primarily to increase employee professional learning and knowledge.

## **7. ELEMENTS OF CLUSTER DEVELOPMENT**

While cluster development must be private-sector driven, government agencies play a core partnership role in the process of cluster development. This strategic planning process may include, but is not limited to the following elements and approaches:

### **7.1. Legitimacy**

Cluster initiatives need both leadership (provided mostly by private sector) and legitimacy (provided mostly by public sector). Government may legitimize a cluster initiative; it needs to guarantee the quality of the cluster development process, in the sense of openness, transparency, and democracy.

### **7.2. Cluster facilitator**

Facilitators can play a central role in the process of cluster development. Cluster development can be 'sparked' by a facilitator, providing their integrity, honesty and trust-worthiness are evident. It may take a considerable time before the spark turns into a self-sustainable process of cluster development, especially in clusters that are more traditional and conservative in character.

### **7.3. Association**

Association encourages and facilitates business networks and cluster-specific business associations by supporting facilitators and collaborative projects. It assumes that firms operating in a strong associational environment will discover shared interests and competencies, that they will aggregate their resources and collectively express their needs, and that their scale will give them greater visibility as a cluster.

### **7.4. Support**

Establishing integrated public sector support for a cluster is not an easy achievement. This alignment may need to reach across functional agencies (including export development, investment attraction, R&D, education) and across local, regional and national agencies. Further, the private sector needs to earn the control position, so separate government agencies do not have to individually second guess the cluster's priorities.

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<sup>13</sup> Greg Spencer and Tara Vinodrai, "Measuring creativity & innovation from clusters to city-regions," ISRN Annual Meeting, Toronto, Canada, May 4, 2006.

<sup>14</sup> Frank Pyke, *Small firms, technical services and inter-firm cooperation*, Geneva: International Institute for Labour Studies, 1994.

## **7.5. Specialization**

Most clusters have been boosted by some variation on specialization strategies. The “specialization,” influences the use of public or private sector resources or services in ways that make them more directly relevant to a particular kind of industry. Specialization affects business and technical assistance, research and development, market assistance and information, and often most importantly education and training, shaping it to the particular needs of the companies in the cluster. The export specialization of the cluster needs to be highlighted at an early stage in the cluster development process. For example, rather than ‘timber processing’ focus on ‘outdoor furniture’; not ‘horticulture’ but ‘organic kiwifruit’; not ‘biotech’ but ‘animal remedies’. The initial scoping of a clustering initiative may well start at the broader ‘engineering’ level, but subsequently a core competency in ‘automotive engineering’ highlighted and the cluster development initiatives that follows then focusing on this specific corner of the broader engineering cluster.

## **7.6. Collaboration**

Clustering is one form of collaborative engagement. Complementing this within clusters are other forms including soft and hard networks, and value/supply chains. With some clusters the initial opportunities for collaboration may well not be at the cluster level, but lower down, e.g. in developing a common pack house, or encouraging a group of saw millers to co-invest in a processing plant for export. These other forms of collaboration also benefit from having a neutral facilitator.

## **7.7. Building the cluster’s culture**

Many clusters are more dysfunctional clumps than proactive, densely networked clusters. They consist of isolated firms, and a remote publicly funded infrastructure. The firms have limited ability to build whole-of-government alignment to meet their specific needs. There is no quick fix to changing this.

## **8. WHAT MAKES A CLUSTER SUCCESSFUL?**

Success of clusters generally depend upon the availability of venture capital; critical mass; technical infrastructure; presence of higher education and research institutions; entrepreneurial drive; influence of champions; presence of an anchor firm(s); networks and quality of linkages; social capital; and, diversity. An intriguing aspect is that the factors that distinguish ‘over-achieving’ from ‘under-achieving’ clusters are so-called intangible assets.

Ideally the following pre-requisites are needed for effective clusters:

- Good input conditions (such as skills and knowledge, raw resources, products, soil, climate, and natural resources).
- Supporting industries (like venture capitalists, market research companies, and R&D companies).
- Demand (sophisticated customers who can distinguish different qualities and brands and demand high standards).
- Rivalry (competition) and the desire to work together. Effective clusters involve a combination of pressure (competition) and support.

## **9. CLUSTERS IN RURAL AREAS**

Clusters are based on unique strengths, and unique products and services. In the past, the term “rural” was synonymous with agricultural clusters<sup>15</sup>. Now, emerging rural clusters include tourism, information and communication technology, manufacturing, and renewable energy production. In rural areas, the economy based on cluster structures is becoming a meaningful development trend.

Cognizant of the problems being encountered by the rural economies, in the increasingly competitive global economic climate, economic development policy makers and practitioners actively seek ways of conceptualizing and explaining successful, high-performance economies. This is true in both urban and rural economies. By understanding the fundamental mechanics of these economies, they seek effective strategies and policies to promote the economic and community vitality of the places where they live and work.

## **10. CLUSTER DEVELOPMENT IN CANADA – SOME EXAMPLES**

A number of clusters have been established in the various provinces of Canada. The following section provides an overview of some initiatives of Government and examples of clusters in terms of their contribution to the economy and the critical success factors which were instrumental to their growth.

### **10.1. National Research Council of Canada (NRC)**

Through the National Research Council of Canada (NRC), the Government of Canada has made a series of investments in clusters. Recognizing that innovation can be encouraged as part of a deliberate strategy to improve productivity growth and Canadians’ standard of living, the Government of Canada launched a national Innovation Strategy in 2002<sup>16</sup>. The Strategy included an assessment of Canada’s innovation performance, proposed national targets to guide stakeholder efforts, and identified where the government could act to improve the nation’s innovation.

#### ***NRC cluster initiatives***

NRC cluster initiatives have focused on building science and technology based innovation capacity in areas of local and regional strength to foster economic growth and improve quality of life. The process involves: engaging in community consultation; providing specialized research infrastructure and highly qualified personnel; supporting the creation, growth, and attraction of firms; facilitating the development of external linkages; and supporting the cluster in attracting new resources.

NRC has played a key role in the growth of two of Canada’s better known technology clusters: the biopharmaceutical cluster in Montreal and the agricultural biotechnology cluster in Saskatoon<sup>17</sup>. Recognizing that stronger innovation performance in Canada’s regions and communities is integral to national growth, and in response to the federal government’s vision for innovation, commercialization and economic development, NRC launched a number of technology cluster initiatives to support the growth of new clusters.

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<sup>15</sup> Prepared by Alexander Schejtman for the Workshop on Fostering Rural Economic Development through Agriculture-based Enterprises and Services Berlin 20-22 Novembre 2002

<sup>16</sup> [www.innovation.gc.ca](http://www.innovation.gc.ca)

<sup>17</sup> Niosi and Bas, 2000; Ryan and Phillips, 2003

Eleven locations across Canada are currently following this cluster approach. Initiatives include ocean technologies, e-business, IT and life sciences in Atlantic Canada; nanotechnology in Alberta; fuel cells and hydrogen in British Columbia; nutraceuticals and sustainable infrastructure in Saskatchewan; biodiagnostics in Manitoba; aluminum transformation in Québec; photonics in Ontario; and programs built upon NRC strengths in other regions (National Research Council, 2002a)<sup>18</sup>. Many of these cluster initiatives involve partnerships with local universities and regional development agencies. Through its community focused approach, NRC and its partners encourage networked clusters of innovative firms, supported by strong research programs and technology assistance services. These unique technology-based clusters are focused on matching local and regional strengths to national and global economic opportunities.

### **10.2. The Ag Tourism Cluster Alberta (Tourism & Culture)**

The Ag Tourism Cluster Development project was initiated by Alberta Agriculture and Rural Development along with Travel Alberta in 2003<sup>19</sup>. An Ag tourism cluster is a group of like-minded stakeholders and operators who come together to increase the profile for their operations and geographic area, along an Ag tourism theme in Alberta. The basis of these clusters were to bring operators together in specific regions to discover ways of partnering along an ag tourism theme, to increase exposure and awareness to their offerings, pool marketing resources and ultimately experience increased income at the farm gate. The Cluster Projects include:

- FAM (Familiarization) Tours
- Driving Tour Events
- Agri-Food Events
- Operator Showcases
- Driving Guide
- Packages

### **10.3. The Canadian Forestry Cluster (Agriculture/Natural Resources)**

The forestry sector is a major component of the Canadian economy. Three hundred fifty (350) communities across the country are deemed to be 'dependent upon the forest industry. Considering direct, indirect and induced jobs together the forestry cluster creates one of every 17 jobs in Canada. Exports are valued at \$39.0 billion CDN and the balance of trade is \$38.1 billion CDN<sup>20</sup>. The value of manufactured shipments is \$56.5 billion CDN.34. This cluster has a strong sawmill industry component. Canadian pre-fabricated housing manufacturers have penetrated the international market with great success. Supporting industries such as forest fire fighting, water bomber aircraft and chain saw blades have an international presence.

### **10.4. The Canadian Materials and Metals Cluster (Energy & Environment)**

Canada's mining cluster has generated a number of benefits for Canada. Its fortunate endowment of mineral wealth and a wide range of activities have evolved to utilize mineral resources for Canadian economic growth. The cluster generates 386,000 direct jobs and domestic exports valued at \$44.0

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<sup>18</sup> *Int. J. Technology Management*, Vol. 46, Nos. 3/4, 2009 263

<sup>19</sup> Alberta Agriculture, Food and Rural Development. *Ag Tourism Cluster Development*. September 2004.

Programs in agriculture, natural resources, 4-H youth development, family and consumer science, and resource development. University of Tennessee Institute of Agriculture, U.S. Department of Agriculture and county governments cooperating. UT Extension provides equal opportunity in programs and employment

<sup>20</sup> "The State of Canada's Forests: The People's Forests 1997-1998, Natural Resources Canada.

billion<sup>21</sup>. Sudbury, Ontario, has evolved from a frontier mining town to a significant 'mining metropolis' and the Sudbury area became a technological leader in high productivity and environmental technology<sup>22</sup>. New enterprises producing newer equipment, machinery and parts and providing a wide range of services to the mining sector have emerged. The major firms, Inco and Falconbridge, have maintained and improved their competitive position in the Sudbury basin and support from the provincial and federal governments has contributed to this growth. The sector has benefited from world class consulting and engineering as well as specialized contracting and engineering firms based in Canada.

### **10.5. Visual Arts on Salt Spring Island, British Columbia (Creative Economy)**

The visual arts cluster of Salt Spring has developed organically at Salt Spring Island, as new residents, including artists, move to the island. Salt Spring Island and is known as “the island of the arts. More than 10 percent of its residents are involved with the arts in some capacity. There are many arts festivals throughout the year. The local population and tourism have increased due to attractive location and many arts festivals throughout the year. As the Island’s popularity has grown, more arts-related events and groups have been established on need basis. They celebrate the entrepreneurial spirit of the area, as well as the ongoing network of support from their fellow artists. The Salt Spring Arts Council provides “funding, material and organizational support to a broad range of groups and individuals. A spin off group, the Island Arts Centre Society, formed in 1989 with the mission to build and operate an arts center, which they have done successfully. The provincial and national governments, as well as several foundations, provide arts funding<sup>23</sup>.

### **10.6. A Cluster of Networks**

A cluster of Networks is a good example of coordination/collaboration in Quebec. The agri-food sector works on this development model, as each network is a sub-cluster of the bio-food cluster. This concept is becoming more popular and getting a lot of interest in the other Canadian provinces. It also allows participants from other agri-food sectors to share and implement dynamic strategies to increase their market share and make breakthroughs into new markets in Quebec. There are 24 identifiable networks in Quebec. Out of which 9 are animal networks (goat, sheep, pigs, cows, horses, veal, poultry, rabbit, large game), 8 are agricultural networks (processed vegetables, potatoes, garden products, ornamental horticulture, apples, grains, fodder plants, greenhouse gardening), and 7 are other networks (maple syrup, organic, eggs for consumption, beekeeping, agri-food, dairy, herbal medicinal plants)<sup>24</sup>.

### **10.7. Ontario's Natural Health Products (Technology Clusters)**

Natural Health Products Technology Cluster of Ontario focuses on natural health products such as herbal remedies, vitamin and mineral supplements, aroma therapy, sports nutrition and homeopathic remedies. Technological advances for activities such as harvesting, processing and quality measurement will result in a competitive advantage. This cluster is in a location ideally suited for its growth. The City of Guelph and surrounding areas have core natural health products businesses including growers, manufacturers, processors, importers and exporters, distributors and retailers. The University of Guelph

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<sup>21</sup> "Canada's Minerals and Metals Industry: An Economic Overview," Natural Resources Canada, September, 2001.

<sup>22</sup> Archibald R. M. Ritter, Mineral Sector Development and the Community: Some Canadian Experiences, Carleton University, 2000.

<sup>23</sup> Pucci, Carol. "Salt Spring Island: It's the place where art is life." The Seattle Times. 11 June 2004.

<[http://seattletimes.nwsources.com/html/travel/2001952305\\_saltspring13.html](http://seattletimes.nwsources.com/html/travel/2001952305_saltspring13.html)>

<sup>24</sup> [www.cmm.qc.ca](http://www.cmm.qc.ca)

and the Ontario Ministry of Agriculture, Food and Rural Affairs provide research, training and analytical facilities.

## **11. CLUSTERS IN OTHER COUNTRIES – SOME EXAMPLES**

This section provides examples in other countries of established and new resource based clusters in terms of their contribution to the economy and the critical success factors which were instrumental to their growth.

### **11.1. Product, Process and Management Innovation Cases**

#### ***11.1.1. Specialty cheese in Ecuador, Peru and México***

Rurales of Las Salinas in Ecuador where a coop of traditional fresh cheeses changed as a result of technical assistance received from the Swiss to the production of a variety of specialty cheeses. Its well known products are distributed through the coops own shops and through the supermarkets. Beyond that they have become a school of cheese making. A very similar experience can be found in Arequipa Peru with the Coop La Campina and as a project in process of development in Ocosingo Mexico where the idea is to upgrade a traditional cheese to become a certified original product with all the technical, legal and marketing implications.

#### ***11.1.2. Cashew Nuts in Brazil***

Cashew is the main crop in Serra does Mel, Rio Grande do Norte and provides a large part of the income of the rural population. Before the project, beneficiaries sold cashew *in natura* to a cooperative created with assistance from a government program. The cooperative processed the cashew with a large scale technology, classified, and packaged it. Through the initiative of a government extensionist, a new project introduced small-scale technology that was used by individual farmers that had a low cost, produced a significant reduction of broken nuts (from 20% to 5%) and improvement in quality due to family processing. In addition, they learned to carry out a first classification before sending the nuts to a newly created cooperative. As a result of the project, farmers have substantially increased their revenues from US\$1.66 per kilogram to US\$4.80/kg.

#### ***11.1.3. Wood artisans in Argentina***

The winches artisans (an indigenous people of the Northern provinces) used to sell their wood works in the internal market for more than 20 years to tourists and to nationals. The country economic crisis reduced drastically the purchases by Argentineans so that the need to export became an urgent necessity. In order to achieve that, a catalog of more than 300 different designs was produced and exports began to grow; to further this trend, an arrangement was made with an Internet page linked to some free trade kind of organizations as a means to sell both at retail and wholesale levels, there is a strong possibility that sales will grow even faster than in the last two years<sup>25</sup>.

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<sup>25</sup> Micro and SMEs development in rural areas in Latin America: Dr. Alexander Schejtman, 2002

## **11.2. Rural Clusters**

### ***11.2.1. Farmers Groups in Poland***

Rural clusters have been developed in Poland for two main reasons: to improve socio-economic status of farmers and to combat unemployment in rural areas. Farmers groups are legally operating organizations whose main aim is to market its products and services. There are about 110 groups in the Lublin region, Poland. Practically, there are typical associations of fruit and vegetable producers whose best clients are, predominantly, domestic and international supermarkets and wholesalers<sup>26</sup>.

A key to their success is that they are able to provide large volumes of standardized quality. It is impossible for a single farmer to achieve such a success and level of profit; conversely it requires the dynamics of a group. As a joint body, farmers are able to establish modern storage facilities and refrigeration warehouses, as well as quality assessment procedures. These clusters add value to the fruit and vegetable production by developing more processed food beyond the basic line. Examples are preserves, sliced or peeled products, frozen products and more.

### ***11.2.2. Agritourism Clusters in Poland***

Agritourism has a long tradition in Poland: it used to be colloquially called “vacation under the pear tree”. In Poland, as in other European countries, agritourism has a good prospect to continue to grow. There are about 5,000 agritourist farms in Poland, approximately 2,000 of which are members of the Polish Federation of Agritourism called “Hospitable Farms”. The Federation is made up of local associations which may be considered as cores of agritourism clusters. There are eight associations of this kind in the Lublin region. A big advantage of agritourist farms and associations is their potential to activate country women, whatever age or educational status, to find ways to earn money. Thus women’s traditional skills and knowledge, involving household, traditional cooking, handicraft, folklore, etc., are preserved.

An agritourism association “Ziemia Lubartowska” (The Lubartow Country) may serve as an example of an agricultural cluster. The Lubartow region is attractive for its lively folklore, numerous cultural monuments, lakes and vast areas of unpolluted forests and meadows. The association above forms the core of the cluster. The member farms, although they compete with each other, are willing to cooperate, for example in coordinating their specialization, investment plans or mutual assistance. The cluster is also connected, informally, with other bodies, such as: neighboring farms (which supply visitors with local produce and additional services), museums, the Regional Centre for Agricultural Consultancy, and church organizations.

## **11.3. Wood Products**

### ***11.3.1. Wood Industrial Cluster in Japan***

Processing of wood logs and production of wooden boxes for packing is the mainstay of the wood industries in Maniwa, Okayama Prefecture. This region has a population of 52,000 and is home to about 75 wood based small businesses. The production process generates waste such as wood trimmings and shavings. An inter-firm network of various businesses in the supply chain realized the commercial value in such waste products and explored options of wood as a biomass fuel, extraction of ethanol and wood-based concrete. Technologies such as boilers enabled the process to be carried out, and

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<sup>26</sup> The Role of Clusters in Setting up Regional Governance in Poland Stanisław Walukiewicz 2003

knowledge/information was brought in by the University of Tokyo and Okayama University. Taking leadership and participation by business in community based social capital networks increased the availability of market information and lowered its transaction costs. This also led them to reach collective decisions and implement actions together. Maniwa City promoted a “biomass town” initiative encouraging businesses with several kinds of funds and subsidiaries<sup>27</sup>.

### ***11.3.2. Chairs in Udine, Italy***

This is a very well known cluster that until just a few years ago made a third of all the wooden chairs sold worldwide<sup>28</sup>. In 2002, the 1,200 small companies in the Province of Udine’s industrial district produced half of all chairs sold in Europe. The cluster comprises many very small highly specialized companies, e.g., varnishing, leather upholstery—that operate as networks to produce final products. Ninety percent of the firms have fewer than 20 employees. In recent years, these firms have begun to outsource some operations to Eastern Europe to meet Chinese competition. The Italian Industrial Chair District officially became a “cluster” in 1999. A District Committee representing the 11 municipalities organizes and coordinates both projects and the social and political forces. The District has experienced gradual development of its skills base, markets, networks and reputation over long period of time.

## **11.4. Agriculture, Livestock, Forestry and Aquaculture**

### ***11.4.1. Cheese Artisans in Vermont***

Vermont’s cheese production cluster, which consists almost entirely of local farmers and capital, has a long history in the state<sup>29</sup>. 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. 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 way finding trail that promotes these producers and their 150 varieties of handcrafted cheeses to tourists. Vermont Butter and Cheese, for example, which produces 15,000 cheeses a week, supports about 20 family farms.

The Vermont Cheese Council formed in 1998 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. The Council also assists small and large artisan cheese makers gain access to markets and build a strong reputation for their products. The University of Vermont provides education, research, technical services, and public service through the Vermont Institute for Artisan Cheese and its Cooperative Extension.

### ***11.4.2. Wine Cluster in Southern Washington***

The thriving wine cluster in the Walla Walla Valley, a very rural region of southern Washington, located on the state’s southeastern border with Oregon in the foothills of the Blue Mountains is home to nearly 90 wineries, with more new wineries starting up each year. Recent cluster growth has been explosive: In 1990 there were just six wineries in the Walla Walla Valley, but by 2004 there were 70 wineries<sup>30</sup>.

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<sup>27</sup> See Anbumozhi, 2007

<sup>28</sup> Gumbel, Peter. “Twilight in Italy.” Time Magazine. 21 March 2006.

<sup>29</sup> Axelrod, Karen, and Bruce Brumberg. Watch It Made in the U.S.A: A Visitor’s Guide to the Companies That Make Your Favorite Products. Emeryville, CA: Avalon Travel Publishing, 2002 & Vermont Cheese Council Newsletter. Vermont Cheese Council Members—Growing Up & Out. 6 (Spring, 2006).

<sup>30</sup> VanAusdler, Steven L. “Changing times for rural prosperity through wine, food, and art.” *Community College Journal* 75:6 (June/July 2005): 10-14. <http://www.aacc.nche.edu/Publications/CCJ/Pages/default.aspx>

Today there are close to 90. The growth of the cluster has been based on close social relationships. For example, Waterbrook and other wineries provided space, equipment, and help to fledgling wineries, which generated close, personal relationships throughout the local industry. Local growers and vintners also seek to be good stewards of the local environment. They work together through a local group called VINEA.

#### ***11.4.3. Food Processing Cluster, Southeastern Ohio***

The food processing cluster in southeastern Ohio is comprised of an eight-county region in Appalachia. It was part of an initiative to add value to the area's agricultural assets; promote a sense of "place;" and support local entrepreneurs. The cluster grew from less than a dozen specialty food businesses to over 100, and several entrepreneurs have spun off several businesses. Its boundaries are "very fluid." Additionally, businesses began to work together to promote the area, both to locals and tourists, and a regional brand has been established<sup>31</sup>.

There is an ACENet, the Appalachian Center for Economic Networks, which aims to build a healthy regional economy through the support of small business. ACENet developed a kitchen incubator and farmers market; increased access to markets for food and farm entrepreneurs; and created regional branding programs for farm and processed products. ACENet also designed the program Entrepreneurship in Action, funded by Appalachian Regional Commission, to foster entrepreneurship among youth and designed an on-line curriculum for the food and arts clusters.

As the food program became more creative in its packaging and marketing, the program expanded into the arts as well, developing arts and tourism to complement the artisan foods.

#### ***11.4.4. The US Poultry Raising Cluster***

This cluster is now an example of one of the most complete and sophisticated clusters. The focus is not on machinery and equipment, but on developing bio-technological advances to improve the fattening and egg laying capacity of poultry.

#### ***11.4.5. The Dutch Flower Cluster***

The Dutch Flower Cluster is most commonly touted as a leading, flourishing cluster that has created competitive advantage in the growth, production and marketing of flowers throughout the European market<sup>32</sup>. The Netherlands continues to produce flowers, as well as import them for re-export. The comparative advantage lies in the development of new varieties, and the competitive advantage lies in marketing the product outside the country.

#### ***11.4.6. The Swedish Forestry Industry Cluster***

The Swedish Forestry Industry Cluster is an example of one of the strongest clusters. Swedish forestry exports, at over \$10.1 billion USD, were enough to cover all of the country's oil imports, food, clothing and cars. Twenty-three per cent of the Swedish manufacturing sector's turnover and 27% of its added value are created in the country's forestry industry cluster. 26% of Sweden's industrial workers are employed by the forestry industry cluster and, with the companies themselves; they pay \$2.9 billion

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<sup>31</sup> Holley, June. "Appalachian Kitchens: and other stories of the economies of place." YES! Magazine. Spring 1999 & Local dish and Dispatches from our food economy. Appalachian Center for Economic Networks.

<sup>32</sup> Cluster Programs: Promote the Economy, Employment and Entrepreneurship," 2000

USD in taxes. Thirty-three percent of Swedish industrial investments are made within the cluster -- the forest industry alone invests \$1.1 billion USD per year in Sweden.

#### ***11.4.7. The Argentinean Oil Seed Cluster***

The Argentinean Oil Seed Cluster generates 25% of Argentina's exports and has experienced extremely rapid growth. An important processing industry has grown from converting agricultural inputs such as soybeans and sunflower seeds into oils and oil byproducts. A domestic industry has also been established which produces 90% of the machinery required by the processing plants. The international competitiveness of Argentina's oil seed cluster demonstrates success in penetrating the most demanding markets.

### **11.5. Tourism and Culture**

#### ***11.5.1. Music-Based Tourism in Branson, Missouri***

The music-based tourism cluster consists of a concentration of predominantly 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 a wide variety of music venues: country, pop, gospel, bluegrass, western, rock, classical jazz, and Broadway. The town has 53 theaters, and many of them offer two or three shows each day. Approximately 8.4 million people visited in 2007 and spent about \$1.8 billion<sup>33</sup>. Nearby lakes, 13 golf courses, a theme park, and shopping centers lure visiting tourists. The Branson Lakes Area Chamber of Commerce represents numerous multinational companies and locally owned businesses and theaters in the town. The Chamber has been an instrumental force in fostering local economic development, bringing together the music performance businesses and helping to market the cluster.

#### ***11.5.2. Montolieu, France, village of living books***

Montolieu, France, is one such book town that seeks to extend the idea of book culture to the creation of a town that is a “living book”. Montolieu markets itself as a comprehensive book village, encompassing all elements of writing and graphic arts<sup>34</sup>. In 1989, Michel Braibant, a bookbinder from a nearby region, retired to Montolieu with the intent of creating a book village. Braibant established the Conservatoire Européen des Métiers et des Arts Graphiques, (Academy of the Trades and Arts.) The academy was established to be a cultural center, tourist attraction and tool for the creation of jobs. In subsequent years, Braibant solicited support from writers, merchants, local government officials and citizens to firmly establish Montolieu as a book town. Montolieu now boasts fifteen book shops, a gallery of 100,000 titles, a museum, craft shops, and bed and breakfasts.

### **11.6. Finland**

Finland has shown how coherent and mutually supportive policies and programs can achieve economic growth, environmental protection and social progress for all its citizens. It is no coincidence that its standard of living was recently ranked as number one in the world<sup>35</sup>. Finland's most recent Cluster Programs identified seven programs including three natural resource based clusters to: improve the

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<sup>33</sup> Lambe, Will. *Small Towns, Big Ideas: Case Studies in Small Town Economic Development.* Raleigh: North Carolina Rural Center, 2009

<sup>34</sup> Abrassart, J. *Montolieu village of books and graphic arts & Merfeld-Langston, A. L. The Villages du Livre: Local identity, cultural politics, and print culture in contemporary France.* Thesis. The Pennsylvania State University, The Graduate School, Department of French and Francophone Studies 2007

<sup>35</sup> "Cluster Programs: Promote the Economy, Employment and Entrepreneurship," 2000.

competitiveness of forestry and forestry industries; promote the utilization of renewable resources; and produce more out of less thereby reducing the waste of natural resources. Over and above enhancing the competitiveness of Finland, the Finland cluster program will in itself be of vital societal significance.

### **11.7. Small and Medium Enterprises Clusters**

Many countries such as Canada, Japan, Korea and France gain their competitive advantage through the utilization of clusters development. A cluster may contain many Small and Medium Enterprises (SMEs) operating in the same or similar industry strongly connected with each other to produce goods and services. Most governments, as facilitator, support cluster to encourage SMEs' linkage to reach the concept of industry cluster. Knowledge sharing is one of the most important key success factors of cluster management to gain collaboration among SMEs since there are abundant of explicit and tacit knowledge within each SMEs in a cluster.

### **11.8. Industry Clusters**

Industry clusters are prominent in urban areas, with the classic examples of Silicon Valley and Detroit. Industry clusters also exist in rural areas, for example houseboats in Kentucky, furniture in Mississippi, and log homes in Montana. The rapid job growth in some industry clusters has encouraged many states and communities to include cluster promotion as an economic development strategy<sup>36</sup>.

## **12. NEW CHALLENGES AND OPPORTUNITIES FOR RURAL CLUSTERS**

In the 21st Century, clusters operate in a different economic environment. Globalization has taken on a different meaning for clusters and local economies. The market opportunities are still there, but the threats to employment can no longer be met with new technology and higher productivity. Scores of regions around the world are now able to acquire advanced equipment and have a work force skilled enough to use it. Overnight deliveries combined with the Internet have elongated and extended supply chains. An increasing number of suppliers are global, particularly those that require little face-to-face interaction and whose tasks can be codified and transmitted electronically<sup>37</sup>. Information is accessible and shared on the Web in milliseconds.

Technology and capital are highly mobile. Some of the new influences on rural clusters include: competition from less advanced regions; global supply chains and increased functional integration; energy costs and environmental concerns; immigrant workforce and more heterogeneous communities; consumer preferences for product and location; expanding digital communications networks; and new products and emerging markets.

On the other hand the effects of climate change resulting from increased energy consumption, the impact of the new industrial competencies in previously less developed regions, and the accelerating use of digital communications and the Internet are having a considerable impact on rural clusters in terms of:

- ⇒ The value of proximity
- ⇒ Taking advantage of convergence and new interdependencies
- ⇒ Becoming distinctive
- ⇒ New sources of competitive advantage
- ⇒ The business side of sustainability

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<sup>36</sup> Community Economics Newsletter November No. 325, 2003 ,Department of Agricultural and Applied Economics; Community, University of Wisconsin-Extension, Cooperative Extension Service)

<sup>37</sup> Richard Baldwin, The Great Unbundling(s), Brussels: European Union, Prime Minister's Officer, Economic Council of Finland, 2006.

### 13. FINAL THOUGHTS

Cluster-based strategies have proven effective in improving the clusters' ability to compete and, in many instances, have influenced regional and local growth patterns.

The key to success in a global, dynamic, knowledge-based economy is innovation. Innovation is most likely to occur where talent, skills, technology and businesses are clustered and are organized to respond to competitive forces and to take advantage of opportunities. A regional approach to understanding and addressing the issues facing knowledge clusters has the potential to make regions more competitive in a global marketplace.

There is no overriding cluster theory per se and clusters are generally viewed as an economic development process rather than a definite development theory. Approaches towards developing clusters vary significantly across different countries with some adopting a holistic cluster-specific approach while others adopt a less far-reaching cluster-informed approach.

It is important to recognize that clusters change very rapidly, not least because the rapidly changing nature of technology, and thus require a constant redefinition and focus. This reinforces the need for extensive discussion and development work with members of clusters prior to devising cluster strategies.

The advisability of pursuing a cluster strategy depends on the current state of cluster development in the regional economy. *First*, communities with no distinct industry cluster (or a cluster in a declining industry) will likely find little success in a clustering strategy. *Second*, rural communities with small industry clusters or communities located near metro areas with industry clusters may wish to pursue a cluster strategy if it is not too costly to provide the supportive services and infrastructure. *Third*, for communities with a well-developed cluster, programs to expand the cluster will be a good strategy for industrial development. Stuart Rosenfeld recommends three initiatives for "high potential" communities:

- Communities can support, through public leadership and financial incentives, the development of industry organizations that help firms develop a shared vision, identify similar interests, and pursue new opportunities.
- Communities can assist in creating services that help firms discover what they need and where to find it. Services include analyzing market and technology trends; encouraging cooperation in marketing, sales, and input purchases, and providing applied research and labor training.
- Communities can provide a publicly subsidized center that focuses on the needs of a specific industry cluster. Services of such centers include training in technologies and management techniques, sponsoring generic research, and providing access to information.

American prosperity and well-being are intrinsically tied to rural America's ability to thrive in the new global economy; to build and attract an educated workforce and expand its population base; and to use its diverse and abundant natural resources to provide food, fiber, forest products, energy, and recreation. The expansion of high-speed, high-capacity internet to connect rural America to the "digital superhighway" of global commerce is a key infrastructure priority. E-connectivity for rural America is essential for ensuring America's economic competitiveness and enabling all Americans to be plugged in to a world of opportunity. Yet, this prosperity has not been evenly spread throughout the world. There remain considerable differences between and within regions, countries and societies. Too often, growth has left significant segments of the population behind. This is particularly the case for women and young people. At the same time, one consequence of the current patterns of industrialization is their considerable environmental footprint. No country has yet fully resolved the issues of effective waste management and proper control of soil, water and air pollution. I cannot emphasize enough the importance of promoting Commercial Internet Connectivity in every village

Towards Rural Prosperity Ashok Jhunjhunwala TeNeT Group, IIT Madras, Chennai, India ashok@tenet.res.in - . The Dream Current Rural GDP in India = Rs 700,000 Crore For a Population = 700 million people GDP / Person = Rs 10000 Rural Prosperity DOUBLING Rural GDP Rs 20000 / Person September 2003 2 Rural Micro-Enterprises are the Wealth Creators ± Micro-enterprises need ĩ Finance ĩ Knowledge and Training ĩ Buying & Selling ĩ Insurance ĩ Can Communications Enable these ?