Implementation of a Cluster Based Local Development Strategy:
A Comparative Analysis of Danish and American Experiences Based on the Medium Sized Town Regions of Eau Claire (WI) and Sønderborg

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Abstract

Processes of clustering and initiatives to promote the creation of clusters have become an important issue in regional business development policy in recent years. The concepts can be traced back to the classical notion of industrial districts, and the embedded mechanisms and features causing superior economic performance ascribed to firms within the districts. In the last decades the concept has become increasingly popular in regional and local business development policy. The current project provides a comparative assessment of cluster initiatives in two medium sized city regions in very different economic settings, Sønderborg in the southern part of Denmark, located close to the German border and Eau Claire in Western Wisconsin, USA.

The aim of the paper is to identify policy instruments and to compare the implementation and economic impacts of cluster promoting policies in a different economic and structural setting. Despite of differences, both regions also have similarities, facing severe challenges form economic restructuring with loss of traditional blue color employment and the transformation of the local economy toward service and it-based activities. The central research question is to identify cluster related instruments, to compare the policy setup in the two areas, and analyze how they interfere with the general economic development concepts of the country, state or region.

Keywords: Clusters, cluster strategies, regional development, Denmark - USA case study.
1. Introduction

Concepts and approaches to regional development have undergone significant changes in the last decades from growth pole oriented concepts to policies based on endogenous potentials, entrepreneurship and innovation stimulating initiatives on the local and regional scene (Audretsch, 2006; McCann, 2008). Common for all of them is an attempt to copy environmental conditions which have been favorable to generate economic growth and competitiveness in other regions. Among the most popular strategies in recent years are initiatives to promote the development of clusters. The cluster concept can be traced back to the classical notion of industrial districts, and the embedded mechanisms and features causing superior economic performance ascribed to firms within the districts.\(^1\) Regardless the fact that the archetypes of successful clusters or industrial districts either are historic e.g. the Marshallian examples from England and the classical Italian districts, or are linked to specific framework conditions which hardly can be copied elsewhere like Silicon valley, clusters are a component in most current regional and local business development programs. The typical successful cluster or agglomerated industry is characterized by a location in metropolitan regions or at least regions with larger urban centers like ‘Medicon Valley’ in the Øresund region, the 'Cambridge corridor' in England or the ‘Machinery cluster’ in Baden Württemberg in Germany. Nevertheless also less urbanized regions with a less specialized industrial structure have launched cluster strategies to promote regional development. The aim of this paper is to clarify under which conditions a cluster based development policy seems to be a realistic and fruitful policy option, and what type of instruments are needed. In continuation of this, the purpose of this paper is to identify and compare the implementation and economic impact of cluster promoting strategies in two remote regions with lower endogenous potentials than available in center regions, and which supportive measures, public or private, are necessary for a successful implementation of the cluster strategies. The paper is built on a comparative assessment of two medium sized regions in very different economic settings; Sønderborg in the southern part of Denmark, located close to the Danish-German border and the Eau Claire area in Western Wisconsin, USA.

The remainder of the paper is organized as follows. Section 2 provides a brief overview of the theoretical and empirical foundations of industrial districts and clusters with special attention drawn to the mechanisms facilitating economic growth and competitiveness. Section 3 aims at a comparative analysis of cluster strategies in two very different regions in order to identify and compare the implementation and economic impact of these cluster strategies. The paper ends with a conclusion where implications for further research are stated.

2. Theoretical foundations

The aim of this section is to summarize the most important theoretical arguments behind the presumably positive forces at work in clustered industries, and how these conditions might be duplicated by a targeted business development policy. Aiming at strengthening the ability to improve economic performance and competitiveness, the creation of ‘cluster or industrial district’ type of business environment became a central means in the toolbox

\(^1\) For an overview of cluster formation in a ‘bottom-up' perspective and the relevant literature see Atherton & Johnston 2008.
of regional economic development:

“There is currently a strong belief in many countries and regions that clusters can be the major vehicle for economic development and growth. If this belief is correct, it is certainly important to contemplate which model to apply in practical policy work. The question relates to the implications of the different models and how they can and should be used to guide the formulation and implementation of cluster policies” (Karlson et al. 2005, p.2)

In this context it is important to differentiate between types of clusters and industries (i.e. manufacturing, traditional service or knowledge based activities) and the size of the agglomeration or region. Central in this application of the cluster concept in an economic growth and development context is to take the characteristics of particular clusters and traditional industrial districts into consideration. According to Gordon and McCann at least three different types can be distinguished (Gordan & McCann 2000, pp.515-521): The classical agglomeration based model, an industrial-complex model referring to in particular commercial relations between companies and social network model focusing on trust and social relations. The latter can become particularly important for the understanding and implementation of a network based economic development policy:

“But, where the development of the social network is associated with the development of a place-specific industrial cluster, it is possible to view this model as exhibiting some of the characteristics of each of the two previous models of spatial industrial clustering. For example, the social network allows many of the external benefits to be internalised within the group, as in the case of the complex, although some of the benefits may be capitalised into local rental values, as in the case of a pure agglomeration.” (Gordan & McCann 2000, p. 521)

Nevertheless the central factor is the nature of systems of production with regard to regional and/or functional characteristics, the institutional set-up of a system as a supportive measure for cluster policy. The latter is particularly important in the broader concept of clustering used in recent studies of the performance of clustered industries and regions focusing on the presence of clusters or geographic concentration of industries linked together. According to Porter (2003, p.562), a cluster is defined:

“...as a geographically proximate group of interconnected companies, suppliers, service providers and associated institutions in a particular field, linked by externalities of various types.[ ....] Clusters are important because of the externalities that connect the constituent industries, such as common technologies, skills, knowledge and purchased inputs”.

It is important to note that Porter explicitly stressed that an industry can become a part of several clusters, which can cause problems in the empirical assessment of cluster performance (i.e. with regard to employment). From a conceptual point of view the issue is solved by a distinction between narrow and broad cluster definition. The former is based on the strongest geographical and location ties of a particular industry. Broad clusters include all industries in the cluster (Porter, 2003, p.563). In this sense, a cluster shares many features with the more general concepts of production systems or innovation systems. It can be questioned whether the geographical precondition is necessary, or whether it is possible to take advantage of the potentials of positive pecuniary

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2 Based on a survey of cluster and network literature Pickernell et al. (2007), identified eight types of cluster frameworks. The eight types include: Industrial complex, Hub & spoke, Italianate district, Marshallian, Urban Hierarchy, Social network, Virtual organization, and Satellite industrial platform. In particular the last two seem to be relevant in policies aiming to link regional clusters to global systems of production. For a brief summary of the eight types, see table 1 p. 343 in Pickernell et al. (2007).
externalities ascribed to clusters or industrial districts in a space-less or virtual context, in particular when dealing with clusters of the third category (the social network type) mentioned above\(^3\). Globalization and outsourcing have lead to changes in the production system also in original clustered industries with significant and often dominant production taking place outside the geographical cluster. However, firms in the clusters often remain at the core of the value chain and become engines of commercial growth and industrial renewal.

**Figure 1: Cluster entities and relations**
Source: Cornett & Ingstrup 2010 p.58, based on Etzkowitz & Leydesdorff (2000)

From a policy point of view the task is to create conditions facilitating the dynamic development of the industrial clusters, to support the transition of the value chain. This has to be done by taking the regional context into account, which means the locational dimension of clusters or industrial districts.

A core element in a cluster based policy is to facilitate that the policy takes the **nature of clusters** into consideration, i.e. co-location of firms and other relevant actors. Furthermore the **dynamics of cluster development**, i.e. the cumulative path dependent evolution of the process and the possibilities to create location advantages by policy measures (Karlsson et al.\(^3\)). Finally it is important to take the life cycle of clusters and the relationship between (competing) clusters into consideration. The former is closely related to technology and innovation which can make cluster advantages obsolete, the latter can cause competition for factor inputs in a particular region from other faster developing clustered industries or individual companies.

Figure 1 above sketches principal actors and entities in a development set up based on a cluster development strategy embedded in a ‘Triple Helix’ cooperation

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\(^3\) See also Pickernell et. al. 2007.
framework. With regard to the Danish case (presented in section 3.2) the role of a large anchor company within the cluster area is of particular importance. This leads to the central issue addressed in this paper, how, and to what extent are the policy options in regional development agencies determined by the real economic environment, or the institutional and political framework in a given society. The remaining part of the article will shed some light on this based on two regions in a very different setting.

3. Empirical evidence: two case studies

Policy applications of cluster concepts often highlight the intangible aspects of clusters and industrial districts rather than focusing on the more mixed empirical evidence of the better performance of business and industries located in or adjacent to a cluster (see Engelstoft et al. 2006). This view is often supported and reinforced by the fact that policy instruments in particular can affect these components, i.e. the triple helix related activities highlighted in the previous section4.

Clusters can be defined in many ways, for an overview see Karlsson (2008, pp.1ff) with different focal points. In an analysis with focus on economic development and the impact of clusters on economic performance it is important to distinguish between different types of clusters and the economic performance of the involved industries or sectors. This calls for a profound assessment of the potential of a cluster based policy and their limitations.

Figure 2 distinguishes between 4 (8) principal outcomes. With regard to the cluster perspective the first and the third quadrant are of special relevance. Regions with clusters characterized by positive change in the location quotient in a good performing sector have the best development perspective. Regions with clusters or industries in quadrant 3 are less well off, but at least they are not threatened by economic decline due to poor performance of industries belonging to mature or shrinking clusters. In this case a low location quotient does not indicate a disadvantage, rather the contrary from a development point of view.

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4 In a policy context this type of measures are supply side oriented, which implies that the focus mainly is on the input side rather than on the outcome, i.e. economic growth and employment.
The situation in quadrant 2 and 4 is more complex. The former indicates that a region has a lower density of the most promising industries, and that an active cluster promotion policy could make sense to stimulate existing firms as cores for new emerging clusters (see Cornett & Ingstrup 2009 pp. 52-54) Quadrant IV represents the classical case for economic restructuring in region with a declining and outdated industrial base in a cluster perspective. The sketched classification of clusters in a development potential perspective in figure 2 gives a first hint for the prospects of a cluster based regional development strategy, anchored in the existing industrial base. The following two case studies aim at providing empirical insight into regional development initiatives at least partly based on tools aiming at the creation of a business environment providing some of the condition often attributed to clusters or industrial districts in the literature.

3.1. Eau Claire & West Central Wisconsin

The first area of interest is the Eau Claire Metropolitan Statistical Area (Eau Claire MSA) located in West Central Wisconsin. It is made up of two counties – Eau Claire and Chippewa – and consists of about 150,000 people. The city of Eau Claire, population 65,000 people, is the primary city.

Eau Claire, in the confluence of two rivers (Eau Claire and Chippewa) started as a lumber town in the 19th century. The advent of the automobile provided the impulse for other activities such as tire production. Chippewa Falls was the site of one of the very first tire making plants and in 1917 Eau Claire became the home of a tire plant, which quickly became the largest employer and the backbone of the local and regional economy. The plant, under different ownership – Gillette Safety Tire Co., U.S. Rubber Co., and Uniroyal Goodrich Co. – closed in 1992 and left Eau Claire scrambling for solutions. The large labor pool combined with transportation advantages – the easy access to the Interstate Highway System, the presence of a regional airport and railroad – as well as an aggressive campaign by local economic development officials successfully
attracted new businesses such as Hutchinson Technology Inc., a computer parts manufacturer that created 1,400 jobs, marking a new era for Eau Claire. It helped that Chippewa Falls was the hometown of Seymour Cray and the site for Cray Research, the first supercomputer company, later acquired by Silicon Graphics (SGI). In addition, this area has also developed into a major retail trading center and a regional medical and educational center. Eau Claire is home to the University of Wisconsin-Eau Claire and the Chippewa Valley Technical College.

3.1.1. Economic and institutional structure

The Eau Claire MSA is now home to a vibrant high-tech community, while still holding on to remnants of its rich economic past creating an interesting and unique mix of businesses and industries as shown in Table 1. Over the last ten years the industries that grew faster include natural resources and mining as well as services like financial activities, professional and business services, education and health services, and leisure and hospitality.

Table 1: Employment in the Eau Claire MSA for the period 2001-2009

<table>
<thead>
<tr>
<th>Industry</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>Index 2001=100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Resources and Mining</td>
<td>210</td>
<td>195</td>
<td>243</td>
<td>230</td>
<td>235</td>
<td>241</td>
<td>269</td>
<td>275</td>
<td>305</td>
<td>145</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>11,555</td>
<td>11,279</td>
<td>10,947</td>
<td>10,487</td>
<td>10,966</td>
<td>11,479</td>
<td>11,239</td>
<td>10,041</td>
<td></td>
<td>87</td>
</tr>
<tr>
<td>Trade, Transportation, and Utilities</td>
<td>16,917</td>
<td>15,201</td>
<td>15,199</td>
<td>15,854</td>
<td>16,420</td>
<td>16,655</td>
<td>16,842</td>
<td>16,195</td>
<td>15,641</td>
<td>92</td>
</tr>
<tr>
<td>Information</td>
<td>1,228</td>
<td>1,268</td>
<td>1,198</td>
<td>1,224</td>
<td>1,232</td>
<td>1,212</td>
<td>1,202</td>
<td>1,185</td>
<td>1,050</td>
<td>86</td>
</tr>
<tr>
<td>Financial Activities</td>
<td>2,631</td>
<td>3,469</td>
<td>3,473</td>
<td>3,673</td>
<td>3,772</td>
<td>4,042</td>
<td>4,348</td>
<td>4,477</td>
<td>4,437</td>
<td>169</td>
</tr>
<tr>
<td>Professional and Business Services</td>
<td>5,809</td>
<td>6,462</td>
<td>6,669</td>
<td>7,167</td>
<td>7,527</td>
<td>8,319</td>
<td>8,433</td>
<td>8,749</td>
<td>7,800</td>
<td>134</td>
</tr>
<tr>
<td>Education and Health Services</td>
<td>10,558</td>
<td>10,946</td>
<td>11,268</td>
<td>11,457</td>
<td>11,594</td>
<td>11,866</td>
<td>12,179</td>
<td>12,589</td>
<td>12,789</td>
<td>121</td>
</tr>
<tr>
<td>Leisure and Hospitality</td>
<td>7,084</td>
<td>7,355</td>
<td>7,399</td>
<td>7,317</td>
<td>7,375</td>
<td>7,507</td>
<td>7,600</td>
<td>7,464</td>
<td>7,517</td>
<td>106</td>
</tr>
<tr>
<td>Other Services</td>
<td>2,404</td>
<td>2,418</td>
<td>2,483</td>
<td>2,364</td>
<td>2,387</td>
<td>2,430</td>
<td>2,315</td>
<td>2,347</td>
<td>2,437</td>
<td>100</td>
</tr>
<tr>
<td>Unclassified</td>
<td>NC</td>
<td>NC</td>
<td>NC</td>
<td>NC</td>
<td>NC</td>
<td>NC</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>61,684</td>
<td>61,638</td>
<td>61,988</td>
<td>62,940</td>
<td>64,634</td>
<td>66,967</td>
<td>68,008</td>
<td>67,360</td>
<td>64,810</td>
<td>105</td>
</tr>
</tbody>
</table>


Figure 3 illustrates the relationship between the Location Quotient (LQ) and the rate of growth in employment in these industries. Deller (2010) in Porter’s tradition suggests that industries in Quadrant I (strong) and Quadrant II (weak) which are growing in terms of employment are potential clusters for economic growth and should be the focus for economic targeting efforts.

Industries that have experienced negative changes in employment, such as manufacturing, trade, transportation and utilities, construction, and information might have been hit harder by the Great Recession. Employment is the variable of choice to measure economic activity due to data availability. The U.S. Economic Development Administration has adopted Porter’s cluster approach and has provided many tools based on employment. This data is also available at the county level and for metropolitan areas.
statistical areas, allowing for easy and convenient comparisons. If we use percentage changes in Location Quotient on the vertical axis instead of changes in employment, we can see that manufacturing moves from the fourth quadrant to the first quadrant whereas education and health services, in turn, moves from the first to the fourth (Figure 4).

Figure 3: Strong and weak industries in Eau Claire MSA (2001-2009) in terms of changes in employment
Note: bubble size represents relative importance of the industry in terms of employment, 2009
Source: based on data from U.S. Bureau of Labor Statistics

Figure 4: Strong and weak industries in Eau Claire MSA (2001-2009) in terms of changes in location quotient
Note: bubble size represents relative importance of the industry in terms of employment, 2009
Source: based on data from U.S. Bureau of Labor Statistics

It may be of interest to disaggregate these sectors for a better picture, particularly in manufacturing, which still accounts for about 16 percent of employment in the Eau Claire
MSA. Data is available for supersectors (highest aggregation level) as shown in Table 1 and Figures 3 and 4, as well as for sectors (two-digit level) and subsectors (three-digit level). The industry coding used is the 2002 version of the North American Industrial Classification System. Sectors with relatively high Location Quotients for 2009 are: retail trade (NAICS 44-45) with 1.18; health care (NAICS 62) with 1.26; management for companies and enterprises (NAICS 55) with 1.73; and finance and insurance (NAICS 52) has an LQ of 1.13.

The geographical distribution of industry concentrations in West Central Wisconsin is outlined in Figure 5. This map published, by the West Central Wisconsin Regional Planning Commission, one of several federal level commissions in the state, is based on industries with more than 100 employees in the region. It excludes concentrations for government, public schools, retail, financial, and business service.

An analysis of changes in both location quotients and employment data suggests that food, paper, and plastics, three well established clusters in the area, as well as in the region and state, appear to be declining in terms of employment. However, given the relatively small changes in employment and the 2008 recession, it may be premature to draw any far-reaching conclusions. On the other hand, fabricated metal, printing, and beverages appear to be growing stronger. Furthermore, in the area of services there appears to be an emerging cluster in professional and business services, namely in the area of management of companies and enterprises.

5Wisconsin is the largest paper producing state in the nation. For more see http://www.wipapercouncil.org/documents/StateReport.pdf
The Organizational Set-up of regional development policy in the state of Wisconsin (see figure 6 below) is headed by the Wisconsin Department of Commerce (DOC) soon to be transformed into the Wisconsin Economic Development Corporation. At the national level we have the U.S. Economic Development Administration (EDA), an agency within the U.S. Department of Commerce, created 45 years ago, whose mission is:

“To lead the federal economic development agenda by promoting innovation and competitiveness, preparing American regions for growth and success in the worldwide economy.” [http://www.eda.gov/AboutEDA/Mission.xml]

The EDA has 6 regional offices and Wisconsin falls under the umbrella of the Chicago Regional Office, along with Illinois, Indiana, Ohio, Minnesota and Michigan. In Wisconsin, the EDA has seven Regional Planning Commissions which coordinate the federal and local planning efforts. These agencies are “charged with the responsibility of planning for the physical, social, and economic development of the region. To accomplish this mission, the Commission conducts area wide planning and provides technical assistance to local governments.”

The Eau Claire and Chippewa counties fall under the West Central Regional Planning Commission, along with Barron, Clark, Dunn, Polk and St. Croix counties. Another regional economic development organization serving west central Wisconsin is Momentum West. Momentum West, previously known as Momentum Chippewa Valley, is a regional economic development organization that brings together economic development and other interested local leaders in an attempt to promote economic development in a region composed of ten counties: Barron, Chippewa, Clark, Dunn, Eau Claire, Pepin, Pierce, Polk, Rusk, and St. Croix. Its mission is “to develop partnerships and leverage the resources in West Central Wisconsin to market the region and grow the economy and its goals are: 1) market and brand West Central Wisconsin; 2) serve as economic development support conduit in West Central Wisconsin; and 3) advocate for the accomplishments of regional initiatives.”

At the county level the Eau Claire MSA includes the Chippewa County Economic Development Corporation (CCEDC) and the Eau Claire Area Economic Development Corporation (EDC). The Chippewa County Economic Development Corporation is a non-profit organization, which is funded by public and private sources. The local governments and private business people select the Board of Directors. Their mission is to recruit businesses, assist existing businesses with expansions and develop projects that support the economic growth of Chippewa County. The Eau Claire Area Economic Development Corporation (EDC) is also a non-profit organization that “consists of public and private sector organizations, which have joined together for the purpose of promoting growth and expansion of businesses to enhance the general economic well-being of the residents in the communities of Eau Claire County.” Their activities fall under the following categories: critical talent, business recruitment, area business development, and community and investor relations. At the city level, and serving the city of Eau Claire, there is an Economic Development Division, which is credited with much of the local economic development success over the last two decades. There is cooperation between

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6 The Department of Commerce is to be replaced by the Wisconsin Economic Development Corporation (WEDC) a public-private corporation that will lead Wisconsin's economic development efforts, under the newly elected Walker Administration. For more details see: http://www.commerce.state.wi.us/wedc/docs/WEDC-StrategicPlanDraft-2011-03-23.pdf
7 http://wcwrpc.org/ accessed May 1st 2011
8 http://www.momentumwest.org/ accessed May 1st 2011
the Eau Claire Area Development Corporation and the city of Eau Claire Economic Development Division as to avoid duplication of efforts.

Figure 6: Economic development organizational set-up

3.1.2. Cluster strategies and programs

The U.S. Council on Competitiveness published a report in October 2001 promoting clusters as a competitiveness and innovation enhancing strategy. In 2002, the National Governors Association, in turn published “A Governor’s Guide to Cluster-Based Economic Development” in which they outlined their policy recommendations to support competitive clusters under the following categories: 1) organize and deliver government-supported services to clusters; 2) target investments to clusters; 3) strengthen networking and associative behavior; and 4) develop human resources for clusters.

The EDA has funded research on clusters during the last two decades and has compiled a series of best practices and tools available to state and local economic development agencies. They also administer a series of economic development assistance programs, including Revolving Loan Funds (RLF). Presently, the EDA is promoting the so-called Regional Innovation Clusters (RICs) initiative. RICs are defined as “geographic concentrations of firms and industries that do business with each other and have common needs for talent, technology, and infrastructure” (http://www.eda.gov/AboutEDA/RIC/).

“Clusters, from EDA’s perspective, typically cross political boundaries (representing the ‘economic’ region), and include related or complementary businesses, with active channels for business interactions and that share specialized infrastructure, labor markets, and services. Moreover, such regional clusters draw on the expertise of local universities and related institutions to serve as centers of innovation and drivers of regional growth, building upon the region’s unique competitive advantages through the promotion of innovation and entrepreneurial activity.” (http://www.eda.gov/AboutEDA/RIC/).
The Federal Government’s role is to help self-organizing, bottom-up RIC participants, by identifying (but not creating) existing RICs, convening stakeholders, providing a framework to support networks of clusters, disseminating information, and targeting capital investments. Some of the recommendations include: a bottom-up approach, involvement of private and public partnerships at all levels (i.e. local, regional, state, and federal), building unique clusters on the basis of local strengths, and linking with relevant external efforts (including regional economic development partnerships and cluster initiatives in other locations).

The fiscal year 2010 budget allocated $50 million to the EDA to support clusters: 1) by developing a national research and information center to begin mapping clusters to assist economic development practitioners; and 2) by developing a comprehensive competitive grant program to promote cluster efforts across the country. Implementation support for cluster programs could be conducted through the agency’s existing Economic Development Assistance Programs but it would be more effective if it could be linked to targeted clusters identified through research. Figure 7 summarizes the process. At the state level, the state of Arizona is generally seen as the leader in cluster economic development, but other states, including Minnesota, Iowa, and Wisconsin, have also targeted clusters in their recent economic development efforts.

![Figure 7: EDA’s regional innovation strategies initiative](http://www.eda.gov; RIC’s Overview, March 1, 2010)

In Wisconsin, two major economic development initiatives were formulated in the last decade: Governor Doyle’s “Grow Wisconsin” and the Wisconsin Technology Council’s Vision 2020: a Model Wisconsin Economy. Vision 2020 is based on three core ideas: building Wisconsin’s Technology Clusters, establishing Research Centers of Excellence, Incubators and other Business Infrastructure, Projects that Reflect RIC Best Practices, and Revolving Loan Funds Aligned with RIC Strategies. Data and Results for Implementation Projects are Gathered. Data and Results Used to Create and Refine Research Questions and Provide Data for Further Research.

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9 On February 8, 2010, the first-ever White House-led Interagency Taskforce on RICs published a Multiagency Funding Opportunity Announcement (FOA) of up to $129.7 million over five years, to support a regional innovation cluster that will develop and commercialize new building efficiency technologies for national and international distribution.

10 See [http://www.hhh.umn.edu/centers/slp/economic_development/industry_cluster_studies.html](http://www.hhh.umn.edu/centers/slp/economic_development/industry_cluster_studies.html) for a list of cluster studies in the United States.

11 The Wisconsin Technology Council is the science and technology advisor to the Governor and the Legislature. Four University of Wisconsin sponsored “economic summits” from 2000 to 2003 produced two reports that mapped where the state’s economy should go and how to get there. A cluster-based approach to economic development was part of that vision and a series of key recommendations were offered to that effect. [http://www.wisconsin.edu/summit/archive/2000/papers/](http://www.wisconsin.edu/summit/archive/2000/papers/)
and creating an Institute for Interdisciplinary Research.

“Technology clusters combine the market knowledge and expertise of businesses within the industry with the shared resources of technological research, education and workforce development, and regulatory relationships with all levels of government.” (Vision 2020, p.25)

These technology clusters were conceived as community based, private sector driven, with a core of 10 to 15 independent public and private businesses, surrounded by 10 to 12 small emerging companies, led by 1 to 3 anchor companies, and supported by local angel network and local legal, financial, and consulting services. The defining feature of these clusters is their connection to a Research Center of Excellence. These Research Centers, in turn, would link the clusters to the Institute for Inter-Disciplinary Research, which would develop plans and strategies for Wisconsin. Vision 2020 identified the following potential statewide clusters in knowledge-based industries: healthcare, workforce education, media & design, and information & data management.

The Wisconsin Department of Commerce (2003), on the other hand, identified 7 established clusters statewide (dairy, food products and processing, paper, plastics, printing, small engine manufacturing, and tourism) and 3 emerging clusters (biotechnology, information technology, and medical devices). In that document Cory Nettles, the Secretary of Commerce, states that clusters are not a government program, but promises that the:

“Wisconsin Department of Commerce (Commerce) will help build a more formal structure to promote the state’s important industry clusters. Commerce will play a role in removing barriers to cluster formation and helping provide a forum for businesses in targeted clusters to voice their concerns, identify their challenges and explore their opportunities. […] Clusters can help government be more responsive to the needs of business and put industries in a position to take advantage of their strengths.” (Wisconsin Department of Commerce, 2003 p.2)

The Wisconsin Department of Commerce pledged to support those 10 clusters by funding cluster-specific programs (such as the Dairy 2020 Early Planning Grant which helps dairy farmers find professional assistance in preparing business plans and the Milk Value Production which helps financing expansion of production), promoting the creation of cluster councils like the Wisconsin Paper Council, and identifying industry leaders that would act as “champions.” Commerce staff members were appointed as “cluster coordinators” to work together with the industry champion and other relevant stakeholders.

Later, small engine manufacturing was dropped from the list of established clusters and replaced with wind energy and biotechnology moved into the established category according to Forward Wisconsin,12 a non-profit corporation founded in 1984 on the recommendation of the Governor’s Strategic Development Commission, whose mission is to market Wisconsin as a location for out-of-state businesses.

At the regional level, Momentum West hired a consulting group in 2008 (GSP Consulting Corp.) to conduct a Technology, Talent and Target Industry Assessment study for west central Wisconsin. This study identified the following regional clusters: emerging sectors (bio-agriculture, bio-energy, and sensors), existing sectors (computers and electronics), supporting sectors (medical devices, plastics and packaging, healthcare and education), and enabling sectors (chemicals and nanotechnology).

\[http://www.forwardwi.com/ accessed May 11th 2011\]
At the local level there are no cluster-specific initiatives but in the Eau Claire MSA there are initiatives that promote collaboration and clustering, such as industrial parks and various public and private partnerships, between businesses, local government, and educational institutions. Public and private partnerships are at the core of the city’s development, as illustrated by loan consortiums of local lending institutions and industrial parks. The city of Eau Claire has four industrial parks, two of which are partnerships between the city and Xcel Energy, the local and regional energy provider13 (Gateway West and Gateway Northwest), one is wholly public owned (Sky Park) and one is totally private (Chippewa Valley Industrial Park). These industrial parks cater to different types of businesses, clusters in a broader sense. The Eau Claire Area Economic Development Corporation was instrumental in forming the Gateway Industrial Park Corporation with the City of Eau Claire and Xcel Energy. It served as the original manager of Gateway Industrial Corporation and coordinated large acquisitions of parcels, which now are part of the Gateway Industrial Park. This was a very important example of successful collaboration that helped this area at a difficult time. In addition, the Eau Claire MSA’s educational institutions have long collaborated with the business community (and the community at large) in many different ways. Important initiatives include the NanoRite Innovation Center at the Chippewa Valley Technical College and the Materials Science Center at UW-Eau Claire. The NanoRite Center is an incubation center that caters to businesses, both startups and well established, in the areas of micro-fabrication and nanotechnology. Local business partners include MN Wire and OEM Micro. The Materials Science Center offers state-of-the-art instrumentation and researchers’ expertise in the fields of materials characterization, microscopy, and elemental analysis, to promote industrial research and development in this region.

3.2. Sønderborg, ‘the border triangle’ & the region of Southern Denmark

The Sønderborg area, here defined as the recently founded new municipality of Sønderborg based on the city and 6 previously independent municipalities in the vicinity. The municipality and town are located on the island of Als and Southeast Jutland around the Als sound. The area has a long industrial history with a particular stronghold in machinery and electronic equipment etc. (see figure 11 below), also forming the base of the recent cluster development strategies. Historical the industrial and commercial development of the area in the last 50 years to a large extent was influenced by the Danfoss company, located approximately 30 km northeast of Sønderborg, and spin offs from the firm. The company (one of the largest manufacturing firms in Denmark) has to a large extent served as an industrial and commercial anchor of development in the region, compare figure 1 above), and has also actively taken part in the overall development of the industrial and general knowledge infrastructure of the area.

3.2.1 Economic and institutional structure

The set-up for the local and regional business development system in Sønderborg follows

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13 Xcel Energy has regulated operations in 8 Western and Midwestern states, and revenue of more than $9 billion annually; and own more than 35,000 miles of natural gas pipelines. It is also the No. 1 wind power provider in the nation and is ranked no. 5 for solar power capacity. They engage in significant economic development efforts and community activities through the Xcel Energy Foundation.
the general pattern in Denmark. The local activities are organized in a separate unit with close ties to the municipality and in particular the committee for culture and economic development. Currently the operational entity is named ‘Centre for business and tourism development’, a merger of two former independent agencies.

The units are partly responsible for local initiatives; partly they act as coordinating and counterpart units for the regional initiatives organized by the so-called ‘Growth Forum’, the regional cornerstone for economic development policy, see Figure 8 below for a summary of the main features of the business development set-up in Denmark.

![Diagram of the regional business development environment Growth Forum and its Partners of Cooperation](source: Adapted from Danske Regioner & Kommunernes Landsforening, 2007.)

The dependence on the general and regional Danish setting is supplemented by local cross border initiatives partly supported by and integrated in the Danish-German EU cross-border ‘Interreg programs’. Locally the so-called Border-Triangle cooperation founded by the municipalities of Flensburg in Germany and Aabenraa and Sønderborg in Denmark is of importance in the current context. In a cluster and regional development perspective the cooperation between knowledge institutions and business development agencies across the border constitutes an important building block in a local triple helix setup, facilitating the existing and emerging clusters, see also section 3.2.2 below.
Overall the development of the local labor market has been stable from the late 1990s until the financial crisis, but significant structural shifts have occurred, weakening the traditional manufacturing strongholds in the area, a tendency reinforced by the financial crisis. Recently also public sector employment has been affected by the tighter budgets.

The main challenge for the future to cope with is that most if not all lost low skill blue color employment not will return even after an economic recovery, and that the knowledge based strategy will not solve the short and medium term unemployment problem in the local area as well as the country as a whole.

The strongest assets for the Sønderborg region in a development perspective is that much of the employment reduction took place within companies with a broader skill and competence base, and with good potential to recover, as recent economic accounts have shown.
Table 2 Employment in New Sønderborg municipality since 1997 (workplaces)

<table>
<thead>
<tr>
<th></th>
<th>1997</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>Index 1997=100</th>
</tr>
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<tbody>
<tr>
<td>Agriculture Fish, Mining etc</td>
<td>1482</td>
<td>1263</td>
<td>1252</td>
<td>1261</td>
<td>1179</td>
<td>1154</td>
<td>1121</td>
<td>1091</td>
<td>1068</td>
<td>72</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>12367</td>
<td>12388</td>
<td>12236</td>
<td>11619</td>
<td>10981</td>
<td>11456</td>
<td>11602</td>
<td>11948</td>
<td>11669</td>
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<td>Electricity, gas and water supply</td>
<td>205</td>
<td>171</td>
<td>186</td>
<td>196</td>
<td>152</td>
<td>153</td>
<td>155</td>
<td>146</td>
<td>152</td>
<td>74</td>
</tr>
<tr>
<td>Construction</td>
<td>1514</td>
<td>1643</td>
<td>1670</td>
<td>1556</td>
<td>1522</td>
<td>1642</td>
<td>1628</td>
<td>1682</td>
<td>1637</td>
<td>108</td>
</tr>
<tr>
<td>Trade, Hotels etc</td>
<td>6271</td>
<td>5795</td>
<td>5768</td>
<td>5754</td>
<td>5925</td>
<td>5714</td>
<td>5960</td>
<td>6045</td>
<td>6040</td>
<td>96</td>
</tr>
<tr>
<td>Transport</td>
<td>941</td>
<td>919</td>
<td>985</td>
<td>871</td>
<td>849</td>
<td>821</td>
<td>795</td>
<td>789</td>
<td>842</td>
<td>89</td>
</tr>
<tr>
<td>Mail, Financial services etc</td>
<td>1428</td>
<td>1355</td>
<td>1356</td>
<td>1450</td>
<td>1387</td>
<td>1355</td>
<td>1374</td>
<td>1416</td>
<td>1394</td>
<td>98</td>
</tr>
<tr>
<td>Business activities</td>
<td>1321</td>
<td>1865</td>
<td>1920</td>
<td>1892</td>
<td>1786</td>
<td>2155</td>
<td>2448</td>
<td>2481</td>
<td>2353</td>
<td>178</td>
</tr>
<tr>
<td>Public service</td>
<td>10628</td>
<td>10900</td>
<td>11128</td>
<td>11014</td>
<td>10854</td>
<td>10853</td>
<td>10994</td>
<td>11154</td>
<td>11094</td>
<td>104</td>
</tr>
<tr>
<td>Associations, culture and refuse disposal Activity not stated elsewhere</td>
<td>1474</td>
<td>1499</td>
<td>1440</td>
<td>1414</td>
<td>1480</td>
<td>1497</td>
<td>1450</td>
<td>1415</td>
<td>1695</td>
<td>115</td>
</tr>
<tr>
<td>TOTAL</td>
<td>37631</td>
<td>37798</td>
<td>37941</td>
<td>37027</td>
<td>36115</td>
<td>36800</td>
<td>37527</td>
<td>38167</td>
<td>37944</td>
<td>101</td>
</tr>
</tbody>
</table>

Source: Danmarks Statistik Statistikbanken 2011

Traditionally regional business development policy was the responsibility of the counties in Denmark who also were in charge of cross border cooperation. Now the responsibilities are shared between the region and the municipalities leading to a more dispersed configuration of interests and can cause potential policy conflicts since business development initiatives usually not can be limited to a certain administrative defined area. This is of particular importance in the field of cluster development since many initiatives can be dated back to the former counties. Furthermore the relevant business environment is larger than the newly formed municipalities, with important linkages to the surrounding economy.
Figure 10: Strong and weak industries in Southern Jutland (1992-2001)
Source: Monitor Group analysis, here Quoted from Martens 2008.

The figures above summarize the situation in cluster relevant sectors and industries before the current initiatives took place, i.e. high employment service sectors and sectors in emerging and new technologies. Compared to the region of Sønderjylland the situation
in these sectors overall is better in the Sønderborg area.\textsuperscript{14}

![Graph showing share of workplaces in mechatronic related industries in Sønderborg area](image)

**Figure 11: Share of workplaces in mechatronic related industries in Sønderborg area (y-axis % of national cluster, x-axis share of workplaces in municipality)**

Note: the large change from 2008 to 2009 in electronics and electric equipment is probably due to an organizational split up in a large company. Source: Danmarks Statistik, Statistikbanken 2011.

As indicated in figure 10 the Sønderborg area has in particular a national stronghold in electronics and electric equipment, both central in the two most prominent local cluster initiatives, mechatronic and cooling, see above.

3.2.2. Cluster strategies and programs

In order to support the strongholds and cluster activities described above, a range of cluster policies at national, regional, and local levels have been implemented in Denmark. For the most part, the cluster policies have been implemented at the regional level but within the boundaries of a larger national policy framework. The conjunctions of this national policy framework go back to the early 1980s where a number of studies regarding industrial complexes and knowledge distribution in innovation systems were

\textsuperscript{14} Due to the regional and municipality reform in Denmark fully comparable data are not available but for the period until 2006 the figures for the County of Sønderjylland and Sønderborg are: Total: 97/100 Agriculture Fishing, Mining etc.: 76/72, Manufacturing: 85/94, Electricity, gas and water supply: 76/64 Construction: 108/104 Trade, Hotels etc: 95/103. Transport: 84/88, Mail, Financial services etc.: 96/92, Business activities: 185/158, Public service: 103/100 Associations, culture and refuse disposal Activity not stated elsewhere: 98/100 (Source: Danmarks Statistik Statistikbanken 2011)
made (Drejer et al., 1999). The objective of these studies was in particular to identify and describe the competitive stand and structures of the Danish economy. In the wake of this, Michael Porter did in the mid-1980s a study in ten nations, including Denmark in order to explore the competitive advantages of these nations and the circumstances causing their competitiveness. The study showed among other things that Denmark had five clusters: a shipping cluster, a technical cluster, a pharmacy and biotech cluster, an agro-food cluster and a mink cluster (Porter, 1990). These findings stressed the importance of clusters for the Danish economy, and started a general debate about the competitiveness of Danish firms and how to strengthen their competitiveness for the benefit of the economy in general (Drejer et al., 1999). One of the outcomes of this debate was the definition of eight and later six resource areas or meta-clusters on which Denmark should focus its industrial policy. The six resource areas are: food, consumer goods and leisure, construction/housing, communication, transport and supplying industries and medico/health.

The mapping and definition of these six resource areas back in the 1990s have been one of the few attempts to set-up national meta-clusters and formulate related cluster policies. But it was first with the establishment of the five regions in Denmark and their growth forums in 2007 that clusters and cluster policies have been truly and intensely dealt with in Denmark. The regional cluster policies departures among other things from the national policy framework mentioned above but they are also inspired by a number of national and regional cluster policies around Europe. In the case of the Region of Southern Denmark which includes the cluster activities in Sønderborg and the border triangle region, the cluster policy draws to a great extent on the experiences and learning from the Norwegian NCE cluster programme (Ingstrup et al., 2009). Besides that, a number of cluster studies and cluster mappings have added to this base of experience and all together it constitutes the policy platform from which the cluster efforts and activities in the Region of Southern Denmark are embedded.

Based on these experiences, the cluster policy in the Region of Southern Denmark, which is integrated in the regional business development strategy, stands on three pillars: a dominating bottom-up approach to cluster development, a life cycle perspective on clusters, and a triple helix platform. These three pillars are together a guiding line for all of the cluster policy initiatives launched and they are believed by the regional policy-makers and politicians to be a promoter of strong and competitive clusters. The goal of the regional cluster policy is to create 15 percent value added growth within existing clusters and to create 15 percent more jobs in new potential clusters (Syddansk Vækstforum, 2009). To meet these two overall goals, the Region of Southern Denmark has invested ca. 220 mill. DKK from 2007-2010 in cluster development and it has put forward several support programs, including financial support programs and support programs for improving cluster facilitation and cluster cooperation. So far, most of these efforts have been directed towards supporting the growth of potential and emerging clusters in the region, but initiatives to launch a food cluster, a transportation cluster, an energy cluster, and a welfare-tech cluster has also been taken combined with a range of other projects like the establishment of REG X which is a national center for cluster development, and the local initiatives like the Sønderjylland based programs, including the border triangle initiative.

### 3.3 Similarities and differences

For the Eau Claire case we can conclude that despite the efforts that went into
formalizing a cluster centered development strategy the State failed to follow through on key recommendations and it is now apparent that the cluster strategy has not been successfully implemented (Hefty & Torinus 2009). This failure is acknowledged in the Strategic Plan released on March 2011 to convert the Wisconsin Department of Commerce into the Wisconsin Economic Development Corporation (WEDC). It states under Strategy 4 – *Implement a focused target industry advancement capability*:

“Too often, target industry or cluster initiatives are top-down, too broadly defined, with vague objectives, insufficient resources, and limited industry leadership. The results are predictably disappointing and typical of what has happened in Wisconsin. Our strategy is to focus state resources on industry-led efforts that have the opportunity to create 25,000 jobs or more and where the injection of WEDC-led efforts will make a difference. Rather than a generic ‘industry cluster’ strategy, we will mobilize resources and provide custom solutions to advance select business consortia opportunities. The result will be significant job growth and advancement of key Wisconsin industries.”

Clearly the lack of a comprehensive economic development plan and the fragmentation of economic development efforts are major issues.

Similar tendencies have been visible in the Danish case, regardless the fact that the cluster strategies tried to take advantage of existing bottom-up processes by focusing on potential and emerging clusters (Cornett & Ingstrup 2010). The regional cluster policy in Southern Denmark, integrated in a broader regional development program, is rather young and large amounts of funding and political prestige have been invested. However, to a certain extent it has been local or sectoral initiatives, like the Sønderborg examples that have transformed the strategy into practice. At least compared to most other Danish regions the program is relative explicit with regard to purpose and targets (Cornett, 2008, p.229-232).

In a comparative US-perspective Wisconsin’s industry cluster policy can be contrasted with Iowa’s, which, contrary to Wisconsin, is considered a success. Hefty & Torinus (2009) suggest the following reasons. First, Iowa hired an independent national consulting company – Batelle Memorial Institute – to study its economy and make recommendations. Wisconsin relied on institutions such as local councils and universities which are politically connected or directly funded by the state. Second, Iowa actually adopted Batelle’s recommendations and implemented a clear cluster economic development strategy, in accordance to a statewide economic development plan, Wisconsin hasn’t. Third, Iowa has focused more on industries with growth potential, successfully attracting and retaining businesses in computers and financial services for example, whereas Wisconsin is trying to preserve industries of the past.

Conversely, economic development efforts at the local level, however, have been highly successful. At the city level the most effective tools in economic development in the last twenty years have been TIFs (Tax Incremental Funds) and SPEC (speculative) buildings. TIFs have been used to build industrial parks and to develop blighted blocks in the downtown area. In the case of TIFs the city issues bonds which are used to pay for infrastructure improvements to attract businesses, whose taxes are in turn used to pay back those bonds. As for SPEC buildings, which are built in the expectation of being occupied by businesses looking for immediate occupation, four of the five buildings built by the city were eventually bought by their temporary tenant businesses and one is currently leased.

15 http://www.commerce.state.wi.us/wedc/docs/WEDC-StrategicPlanDraft-2011-03-23.pdf
Also the Danish local (municipality based) initiative have positive results, in particular with regard to fostering ‘Triple Helix’ type relations between knowledge institutions, the public authorities and companies. In both cases the impacts has to be found in individual partnerships rather than in statistical significant creation of employment or additional economic growth on the regional macro level. Furthermore both the Eau Claire and Sønderborg based cluster initiatives are anchored in ‘Triple Helix’ type of relations and policies aiming at creating regional innovation systems in particular field and initiation the dissemination of knowledge. In Denmark as well as in Wisconsin the regional development policies have tried to identify existing and emerging clusters as point of departure for cluster based development initiatives. In both areas existing industries or branches are important anchors for development initiatives within or outside the formal cluster initiatives.

One significant difference appears to be the level of commitment to a cluster development policy in both regions (Southern Denmark and West Central Wisconsin). In Denmark this approach has brought together more entities resulting in a more comprehensive and better funded policy effort. In Wisconsin, the cluster policy to economic development is very recent and has been poorly structured, highly sensitive to political changes. Moreover, there is little coordination among regions within the state and no cooperation among states, of the type of the Border-Triangle cooperation effort, even though the local economies are well integrated with neighboring states such as Minnesota and Illinois.

4. Concluding remarks and perspectives

The aim of this paper was to shed some light on the regional and local application of cluster oriented local development initiatives and under which conditions a cluster based development policy seems to be a realistic and fruitful policy option. Based on a case study of two medium sized city regions and their cluster-initiatives, the local implementation and instruments have been discussed. In both cases the results are rather mixed. Both areas have take point of departure in existing relative industrial strongholds and set up a triple helix type of cluster facilitating policy, where the local university and knowledge institutions are important assets. In particular instruments targeted at the improvement of innovation capabilities are important.

The paper is not assessing the general potential of cluster stimulating policies, but at least we can conclude that the macro level impact of the implementation of cluster promoting strategies in two non metropolitan regions with limited general endogenous potentials compared to center regions is hard to identify. Interviews indicate that in specific cases the picture may differ, and that initiatives can be fruitful. Further analysis is needed, in particular on the impact of clusters on economic growth.

However the crucial issue in both regions is the limited potential of a policy primarily addressing the long term change of the local economic base, to cope with the short term employment and income decline caused by the economic cycles (i.e. the financial crisis). Furthermore the overall alteration of the international production system away from low skill physical production in the mature western economies reinforces the structural problems.

Nevertheless the comparative assessment of local business development in two medium sized regions in different economic systems: Sønderborg in the southern part of Denmark, and the Eau Claire area in Western Wisconsin, shows interesting similarities.
First of all cluster initiatives have been very popular on the policy level, but the practical and in particular financial support has been more limited in both cases. Secondly both examples prove that in practice the policy instruments have to be used with the point of departure in the existing economic base, which make the instruments less feasible to cope with fundamental changes in the local economy in a short and medium term perspectives. Common is also to use the local knowledge institutions to improve the knowledge base in business and industry. A problem in that regard is that the local universities and other knowledge institutions in both regions do not provide an overall academic and technological coverage of the relevant fields.
References


