BLUE PRINT FOR DETECTING AND DEVELOPING REGIONAL CLUSTERS

Report written in the framework of DIBIC/ Tower and FINE projects

Wim Heijman, Wim Hulsink, Pytrik Altena

February, 2007-02-16

Wageningen University and Research Centre (The Netherlands)

Table of contents

1. Clusters: lost, found and blossoming?

Introduction

According to Porter (2000: 15) clusters are 'geographic concentrations of interconnected companies, specialised providers, firms in related industries, and associated institutions (universities, standards agencies, trade associations) in a particular field that compete but also cooperate'. In this respect, two elements are key to his cluster concept: 'geographic' specifying the embeddedness of economic activities within regional production systems and 'interconnected' referring to contacts, transactions and other ties between firms. So interdependent companies and supportive institutions are linked by co-location, commonalities and complementarities: they work side-by-side in the same geographical area and simultaneously compete with each other (in some areas, such as design and process innovation) and work together in others (e.g. joint export promotion). These links among companies and between firms and supportive institutions are both vertical (buying and selling in chains), horizontal (complementary products and services), social (a proximate group of interlinked companies), and spatial (confined to geographic areas). One cannot equate a cluster with a single industry or region, because one misses the social networking and technological and geographic proximity of firms and their associate institutions and the crucial interconnections with other industries that strongly affect its overall competitiveness. So clusters have a sector (a particular techno-industrial domain), a region (a geographic place) and a social component (a shared community and identity).

Martin & Sunley (2003) have criticised the cluster concept, as popularised by Porter, as simply brand and place marketing for a region or an industry. Instead they prefer a less elusive concept such as local production systems. In discussing this fashionable 'cluster' concept they touch upon a sensitive nerve, namely the public relations, cultivation and socialization involved in building the brand of a particular techno-industrial district. A big part in this effort of raising awareness of a region's socio-

economic and technical strengths and the collective marketing of an industrial district is played by brokers and intermediaries who set up dialogues between all the economic and political actors involved. Furthermore they promote all kind of collective services for local firms (e.g. financial advice, marketing and design services) and establish links with relevant research and business support facilities. So in addition to identify weaknesses in existing value chains in an industrial region and to attract investors and businesses to fill those gaps, awareness, brand building, and best practices for promoting innovativeness and competitiveness matter too in the use of the cluster concept.

There is a vast literature on clusters, some of those studies are based on detailed and empirical descriptions of an industry or craft located in a particular region (with little use of the economic, geographic and sociological body of knowledge), others provide an impressive overview of the key theoretical notions and concepts mapping out ideal-typical and stylized models of them (and only to be supported by anecdotic evidence). A nice attempt to link ideal-typical models and apply them in the real world has been made by Gordon & McCann (2000); they propose three forms of clusters, namely agglomeration-based, industrial complex-based and social network/club-based districts. In the first case agglomeration-based industrial districts benefit from concentration and co-location, generating the individual participant's advantages in term of access to specialized labour pools, and poaching possibilities and a maximum flow of information and ideas as a consequence of competition. In the second case, industrial complex-based clusters rely upon economizing on spatial transaction costs, and customer attraction and concomitant input-output production within a confined geographical space. In the third case, social network-based clusters, a focus on social and economic linkages and with particular attention for shared intelligence, interaction potential and trust-based mechanisms within a spatially confined community, are central to the analysis.

Looking further into the emergence and evolution of clusters

One item in the field of clusters and their dynamics and performance has been under-researched, namely how they come into being (are they 'found' by some outsider looking in, or are they designed to be known to the outside world) and how do they grow (by trial and error and internal expansion or by strategic intervention from outside). This is precisely our contribution to the already existing literature on the subject matter, namely how do cluster emerge and evolve over time. In order to answer this question we interviewed 6 intermediaries working for a regional development agency, and asked them about the innovation projects they had carried out in their area, roughly between 2000 and 2005. Since these brokers often operate in teams of two-three people we interviewed them pair-wise. These interviews were taped and transcribed, and later analysed. Having listened to these interviews and heard them again, one is struck that the cluster as such was found and defined at an early stage by external agents and only at a later stage internalised by the cluster members themselves and then subsequently with their new identity, a fresh mind and novel ally, stretch the cluster's potential in terms of stimulating its innovativeness and competitiveness.

During the transcription and analysis of the 3 x 2 interviews on the 'innovation in a cluster' projects, we reached the conclusion that the emergence and further evolution of a cluster evolved through four stages: namely screening, selecting, intervening and monitoring (for a slide of this SSIM-model, see Figure 1), and then a reiteration of the same phases with new additional items to be adressed until the cluster reached a certain level with some maturity and heterogeneity. As such the cluster has evolved from 'dormant' and inwardly looking (already performing above average but not yet fully realizing its potential)l to 'dynamic' and externally oriented, trying to be innovative and to find new markets.

The SSIM approaches to cluster emergence & evolution

Screening

Selecting

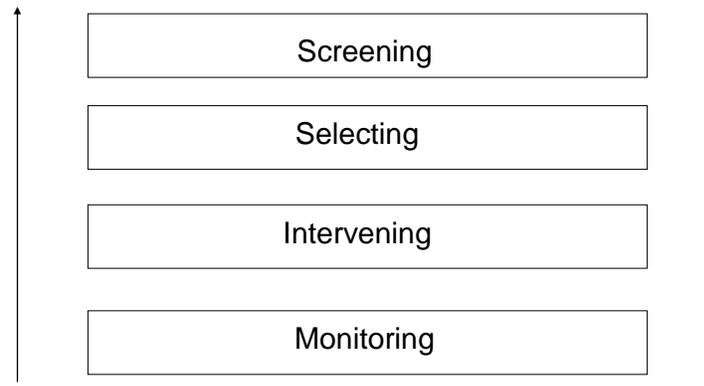| Intervening |
| :---: |

Monitoring

Figure 1: The Screening, Selecting, Intervening & Monitoring (SSIM) model.

In most cases of all the cluster projects we analysed, it started with routine-like scans of groups of firms, sets of industries and particular regional areas and their overall output and performance levels, carried out by the regional development agents. After having found a number of above-average performers in their initial screening exercise, the next step for the agents became to narrow these sectors, set of firms and regions down and select a couple of them, which were performing among the best, to look further into their strategic potential of this still 'nascent cluster' going beyond the regional market. In addition to outstanding performance criteria for the selection of these clusters to be targeted, sometimes bottlenecks in the local infrastructures were identified by the regional development agents and remedies to remove them, and hence stimulate economic activity, were proposed. After the 'nascent' cluster has been identified and earmarked by the development agent, two new things take place.

Firstly, the region and the cluster take on a dynamic of their own, having found a new destiny and identity and become (more) receptive to change, innovation and renewal. Only at a later stage, this was recognized by the internal cluster stakeholders, and they used this 'found' identity, labeled on them by the outsiders, for their own

advantage. By working actively together with the regional development agency in applying for funds and by organizing all kind of new activities and generating process or product innovations in the subsequent stage, the cluster gained momentum and moves to a higher level. Secondly, with the newly found cluster fresh on its radar, the regional development agency looks critically into the strengths and weaknesses of the cluster and the opportunities and threats it faces outside and proposes some interventionist measures, such as building knowledge groups and match-making to stimulate innovation, streamlining red tape and strategic infrastructural investments to further growth, and business café and social events to foster community building.

After the intervention stage, the cluster may gain a certain momentum with increasing levels of innovativeness and competitiveness and overall performance increase. In order to measure the impact of the intervention, the regional development agency seeks to monitor the cluster actively, before and after the implementation of the policy measures, and looks into detail – as part of the policy evaluation routine – what the mid-term and longer-term effects of new schemes, programmes and activities are for this newborn cluster. This monitoring exercise may evolve into a search for new business opportunities for the cluster to broaden its skill, technology and customer base, eventually leading to a growing and blossoming business community.

The remainder of this report is organised as follows. Chapter 2 is focussing on the screening phase of the model. In Chapter 3 we pay attention to the selection of a region, where in Chapter 4 the intervening and monitoring phase are studied. Finally, Chapter 5 contains the conclusions of the report.

2. Screening: Regional Cluster Quick Scan

Objective

Although the concept of regional clusters is important for both policy practitioners and regional scientists alike, there is no generally applicable framework to analyze regional clustering. At the moment the detection of clusters; the decisions of what sectors are included; and what the economic importance is of the cluster in the region are questions that can only be answered by case studies. The objective of the 'regional cluster quick scan' is to objectively and cost- and time efficiently determine the nature and development phase of clustering activities in any region of interest.

Through statistical analyses of the development of employment in the different economic sectors in the region, these questions can be answered. By applying the 'regional cluster quick scan' on the regional economy, one can determine whether or not a strong cluster is present in the region through determining the development phase of the cluster; and to determine the sectors constituting the cluster. The benefit of the approach developed in this research is the straightforward time- and cost efficient method to obtain an objective understanding of the economic performance of the sectors in the region of interest.

Method

The 'regional cluster quick scan' is based upon two statistical relations. The first is the relation between the strength of cluster formation on the one hand, and the level of competitiveness on the other. The second relation determines the relation between competitiveness on the one hand and regional employment development on the other. This regional employment development is analysed using Shift/Share analysis. The Shift/Share method will be further explained in the next section of this chapter.

Both relations are tested for there statistical relevance and their predictive power through linear regression- and descriptive analysis.

The following relations are estimated:

Cluster strength = a + b* Competitiveness

Competitiveness = a + b*Relative actual shift

Competitiveness = a + b*Relative proportionality shift + c*Relative differential shift

Cluster strength and competitiveness is calculated on national level data. The Shift/Share analysis is performed on both national and NUTS-2 level data.

Definitions

Clusters:

"Clusters are geographic concentrations of interconnected companies, specialized suppliers, service providers, and associated institutions in a particular field that are present in a nation or a region"
(Porter 1990)

Competitiveness is defined as:

The degree to which a country can, under free and fair market conditions, produce goods and services which meet the test of international markets, while simultaneously maintaining and expanding the real incomes of its people over the long term".
(OECD)

Shift/Share analysis

The Shift/Share analysis is a well established method to analyze economic development in a region in respect to a larger economic unit, in most cases the country (Heijman 2002). In this research employment development per sector on country level and regional (NUTS-2) level is compared to average European performance per sector.

$$\text{Relative actual shift (RAS)} = \frac{\sum_i W_{ijt} - \frac{W_t}{W_0} \sum_i W_{ij\,0}}{W_{ij\,0}}$$

$$\text{Relative Differential Shift (RDS)} = \frac{\sum_i W_{ijt} - \frac{W_{it}}{W_{i0}} W_{ij0}}{W_{ij0}}$$

$$\text{Relative proportionality shift (RPS)} = \frac{\sum_i \frac{W_{it}}{W_{i0}} W_{ij0} - \sum_i \frac{W_t}{W_0} W_{ij0}}{W_{ij0}}$$

Where:

W_{ij0} = Employment sector $_i$ in region $_j$ in year 0

W_{ijt} = Employment sector $_i$ in region $_j$ in year t

W_{i0} = Employment per sector total economic area in year 0

W_{it} = Employment per sector total economic area in year t

The relative actual shift

The actual total shift shows the change in employment per sector of the region relative to the change in employment per sector on the national level. The actual shift is measured by taking the total economy growth factor in employment and relating this to the employment development of the region. This shows whether the region has grown faster or slower in employment compared to the total economy. This is the first indicator that relates the relative growth in employment as measured by the Shift/Share analysis to the competitiveness of the region. If the total growth in the region exceeds the total growth in employment on the national level, the region has performed better than could have been expected given the national employment development; indicating that positive factors for economic development are present in the region. The actual shift is composed of two components; the structural component shift and the region specific shift.

The proportionality shift

The structural component of the Shift/Share analysis, also called the proportionality shift, explains how the industrial structure of the regional economy contributes to overall employment growth performance. It indicates the growth of employment in the region, relative to the development in employment on the national level, to estimate the contribution of fast growing industries to the regional economic development. If the region is overrepresented by fast growing industries in the initial year, the growth

should exceed the national growth rate of the economy as a whole. To calculate the structural component, base year employment in each local industrial sector is multiplied by a marginal rate of growth. The marginal rate is the difference between the national average rate for that sector and the national average rate for all sectors. A positive industry mix component means the county has a relatively high concentration of employment in sectors growing more rapidly than the national economy as a whole. A negative industry mix component suggests the county has employment concentrated in sectors growing more slowly than the overall national economy. This structural shift tells us something about the competitiveness of the region derived from the type of economic activity over represented in the region. A fast growing sector that is relatively well represented in the region increases regional development.

The differential shift

The region specific component, also called the differential shift shows how firms in the country or region perform relative to national averages for firms in those same industries. This differential shift is also known as a measurement of competitiveness of the region. To calculate the competitive share component, base year employment in each local industrial sector is multiplied by the margin between the local sector growth rate and the national average growth rate for that sector. If this shift is positive, it means that the region has attracted relative more activity in the sector than the national economy. If the growth is negative, the region has not done well in attracting economic activity to the region. This differential shift is the component of competitiveness that indicates the region specific elements that contribute to the competitiveness of the region. If the differential shift is positive, there is something pulling economic activity to that specific location. Without saying anything about these specific indicators that pull the economic activity, it is clear there are positive indicators contributing to regional economic development.

Data sources

Strength of clusters

The strength of clusters is determined with the data set provided by the Global Competitiveness Report 2004/2005. In this report special attention is paid to the state of clusters in national economies. The strength of clusters is measured using the results

from the Executive Opinion Survey in the same Global Competitiveness Report. This section of the report provides the answers on the research questions regarding the quality of clusters on the national level. This data allows the measurement of the strength of clusters on the national level as perceived by the respondents of the survey. The ten questions and the answers provided a ranking for the quality of national clusters. To provide an average overview of the cluster strength on the national level an average of the scores was taken and the countries were re-ranked according to this average score.

Competitiveness

National level data on competitiveness used in this report is provided by the Global Competitiveness Report. Both the Global Competitiveness index and the Growth Competitiveness index are used to test for the significance and strength of the relations. Regional level competitiveness on NUTS-2 level is provided by the Huggins Institute for the year 2004.

Employment data

National and regional employment data is provided by Eurostat for the European data. In the specific Dutch analyses data was used from Statline. Data from Eurostat is collected for the years 1999 as the base year and 2004 as the final year of analysis. For the case of Southwest Gelderland in respect to the Netherlands the base year is 1998 and the final year is 2005.

Empirical analysis

Obtaining the answer as to what the 'regional cluster quick scan' should look like and how applicable the tool is, involves two relations to be tested. The first relation is the link between the state of cluster development on the one hand and the competitiveness of the economy on the other hand. Quantitative analysis shows a positive correlation coefficient of 0.836 with a significance of the 0.01 level between the strength of clustering in national economies and the global competitiveness ranking of these countries. The growth competitiveness ranking, a less complicated version of the global competitiveness ranking, gives a correlation coefficient of 0.752 with a significance of

the 0.01 level. The more competitive a nation, the more likely it is there is stronger clustering of economic activities. The linear regression analysis:

Cluster strength = 9.945 + 0.606* Growth Competitiveness Rank
(N= 58 With T-values of 3.568 and 8.528, R^2 adjusted is 0.557)

Cluster strength = 7.424 + 0.686* Global Competitiveness Rank
(N=58 With T-values of and 3.169 and 11.384 R^2 adjusted is 0.693)

The second relation is the relation between competitiveness on the one hand and the relative Shift/Share analysis on the other hand. Does competitiveness indeed relate to a relative stronger growth of the economy in terms of employment? And what components are responsible for the stronger growth? This relation is tested both on national level data and regional level data. On the national level it is the relative proportionality shift that indicates competitiveness with a correlation coefficient of -0.747 and -0.626 with a significance of 0.01 for the global competitiveness rank and the growth competitiveness rank respectively. The strongly negative relation indicates that the stronger the relative proportionality shift, the stronger the structure of the economy and the more competitive the country is.

National level:
Global Competitiveness Rank = 22.184 - 641.309* RPS
(N =23, With T-values of 8.361 and -5.141, respectively for the coefficients 22.184 and -641.309. R^2 adjusted is 0.536)

Finally the relation between the Shift/Share analysis and the regional competitiveness index was estimated. This allows for a much more detailed analysis for regional development and allows for more cases to be entered. On the regional level competitiveness is significantly determined by all three shifts: the strong and negative relative proportionality shift, and the strong and positive relative differential- and relative actual shift with correlation coefficients of -0.567; 0.697 and 0.628 respectively, all significant to the 0.01 level.

Regional Competitiveness Rank = 101.742 -514.658* *RAS*

(N= 44, With T-values are 15.270; -4.566 respectively for the coefficients 101.742 and -514.628. R² adjusted is 0.316.)

Regional Competitiveness Rank = 95.951 + 1612.541* *RPS* -394.594 * *RDS*

(N= *44 With* T-values of the variables are 17.186; -4.128; 3.476, respectively for the coefficients 95.951; 1612.541; -394.594. R² adjusted is 0.543.)

Regional cluster quick scan

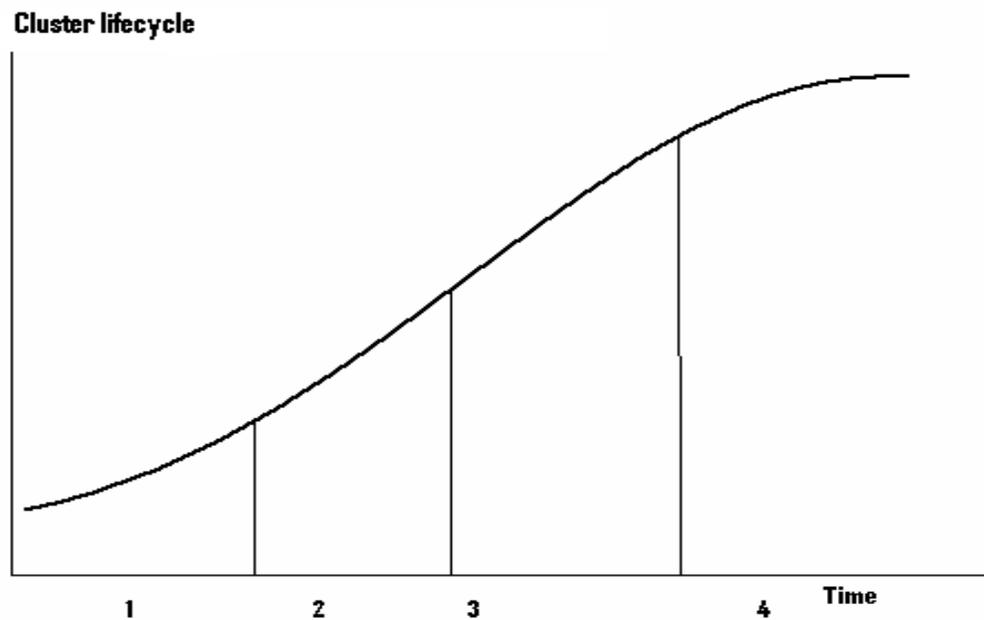**Shift/Share results and the cluster lifecycle**

Figure 1: Shift/Share results and the cluster lifecycle

Table 2.1 Shift Share results and the cluster lifecycle

	Embryonic phase	Developing phase	Mature phase	Declining phase
Proportionality shift	< 0	< 0	>0	>0
Differential shift	> 0	> 0	<0	<0

In the initial stages of cluster development, in the embryonic phase, overall employment development is smaller than the national average, represented by the negative relative actual shift. The structure of the economy, represented by the relative proportionality shift is weak. The overall fast growing sectors of the national economy are not well developed in the region. The relative differential shift however is positive, indicating a favourable employment development due to region specific elements. As the cluster continues to increase in strength, in the developing phase of the cluster, the cluster is becoming more important and faster growing in employment compared to the national level, as represented by the relative actual shift. This relative strong position of the region in the national economy is completely attributed to the relative differential shift. The relative proportionality shift, representing the structural development of the region is still weak. In the mature phase all shifts are positive, indicating strong relative employment development of the region due to a strong economic structure and favourable region specific elements. Finally a decline in importance of the cluster will set in, whereby the relative structure of the economy will maintain its importance, but the fast overall employment development will loose its importance relative to the national economy.

3. Selecting: Clusters in Southwest Gelderland

Regional clusters

Identifying clusters

The concept of regional or industrial clusters is very important in policy practice and academic research alike. From the 1990 publication "the competitiveness of nations"[1] onward, the notion that strong clusters in regions are responsible for strong competitive advantage of those regional economies enticed policy practitioners and academic researchers. The influential book promised a new tool to improve a region's economic development; by improving clusters. A vast amount of policy practice and academic research resulted from this. Although in both development practice and theoretical research on development of regions the attention for clusters is large, the understanding of what a cluster actually is and why it helps to stimulate the economy and maybe more important for policy practitioners, how cluster development can be stimulated is still difficult to grasp. The main issue in the world of regional developers is the question how cluster development can be stimulated. In the academic world however there is still much debate going on about what exactly a cluster is and how it can be defined. As Feser (1998, p.19) rightly points out, "there is no theory of industry clusters, per se."

The main objective of this chapter is to present a method to analyze a region for the presence of regional clusters. The 'region cluster quick scan' as developed in this research will be empirically tested on the area Southwest Gelderland. The question is whether or not the tool as designed here can identify possible clusters in the area and determine the nature of the cluster. The tool will be applied at the regional economy and will be checked for consistency with the clusters identified in the report "Clusters in the Betuwe" (Hilhorst and Westerlaken 2003)

---

[1] Porter M.E. *The competitiveness of nations,* The Free Press 1990

The area Southwest Gelderland

The area of our interest; South West Gelderland, is generally known as a part of the Betuwe. The map shows the location of the area as the darker area at the bottom left. This area is located in the centre of the Netherlands, with good accessing possibilities by road, railway and river. The economic structure of the area is characterized by a relative importance of agriculture as the traditionally strong sector. The main agricultural products are cut flowers, fruits (apples and pears), plants (for gardens and pots), mushrooms, trees (non-production trees), vegetables (sweet peppers, strawberries and cucumbers).

Gelderland

In the report "Clusters in the Betuwe" (Hilhorst and Westerlaken 2003) the presence of clusters of horticulture production in the area is discussed. With the help of quantitative and qualitative analysis the existence of clusters is determined. The report

shows the presence of clusters: mushrooms in Maasdriel and Zaltbommel; apple- and pear production in Geldermalsen and Buren; pot- and garden plants in Bemmel; and finally avenue- and park trees in Kesteren. The report considers these four different activities as clusters because of the concentration of production and the presence of backward and forward linkages in the horticultural production chain. The linkages taken into account are the input side of horticultural production, the output side of horticultural production, the marketing of the output, employment, logistic services and knowledge. Knowledge about these clusters will be used to validate the 'quick scan' tool as developed in this research.

The shift and Share analysis and South West Gelderland

Shift Share results for the region

Table 3.1 represents the relative changes in employment in the region compared to the changes in employment in the Netherlands. The relative actual shift, the relative proportionality shift and the relative differential shift are calculated. Each of these shifts gives information about the success in economic performance of the region compared to the Netherlands as a whole and on the possibility of identifying a cluster. When the data as presented in this table and the 'regional cluster quick scan' are combined together an analysis about the existence and nature of clusters in the area can be made.

Relative actual shift

The total performance in employment is represented by the relative actual shift. This shift immediately shows whether the region has experienced more or less growth in employment relative to the larger unit. The total employment change in the region indicates that the region performed better than the national average. The total change in employment represented by the relative actual shift shows that the region had in increase in employment that was 7% higher than the national average. Total increase in employment was 7% better than could have been expected given the national growth.

Table 3.1: Shift and Share analysis for South West Gelderland

Sector	Regional employment 1998	Regional employment 2005	National employment 1998	National employment 2005	relative differential shift	relative proportionality shift	relative actual shift
Agriculture, forestry and fishery	2.5	3.3	94	97.3			
Mining	0	0	10	8.6			
Industry	14	11.9	924.5	835.3			
Public utility	0	0	38	25.2			
Construction	6.1	5.9	374.5	371.9			
Repair consumer articles and trade	16.3	17.9	1075.8	1152.4			
Hotel and catering industry	1.8	2.5	207.2	255.5			
Logistics, transport and communication	4.3	6.1	400.4	424.3			
Financial services	1.3	1.7	231.1	257.8			
Rental- and business service	8.5	12.5	987	1185.4			
Public administration, social assurance	2.4	3.5	449.2	500			
Education	3.5	4.8	397.9	468.9			
Health	6	8.9	840.7	1116.1			
Culture, recreation, public transport	2.1	2.3	231.4	276.6			
Total	68.8	81.3	6261.7	6975.3	0.10	-0.03	0.07

Source: Statline.

Relative proportionality shift

The relative proportionality shift indicates the growth resulting from the structure of the regional economy. The structure of the economy entails the distribution of employment over the different economic sectors in the initial year. A strong economic structure in the region indicates that the distribution of employment is relatively biased to the overall fast growing sectors of the economy. The reason for growth is not found in the relative proportionality shift; the shift that explains the growth in employment caused by the structure of the economy. The relative proportionality shift shows the change in employment caused by the distribution of employment over the sectors. A positive shift indicates that employment is concentrated in those sectors that perform well on average; for example the financial sector or the services. For the area of Southwest Gelderland the relative proportionality shift is negative (-0.03), indicating that the causes of growth in employment in the area are not found in the strong structure of the economy.

Relative differential shift

The relative differential shift is also called the competitiveness indicator of the region. This shift indicates that part of employment development caused by specific regional characteristics. These characteristics are not further specified by the analysis. The causes of growth in South West Gelderland are found in the relative differential shift; the shift that shows the development in employment caused by region specific elements that cause growth. The relative differential shift is strong with a positive 10%, indicating that the region performed 10% better than the national average because of the (not specified) region specific elements.

The sectors of growth

The results from the shift and share analysis are consistent with the conclusion drawn in the previous chapter; for a developing cluster the structure of the economy does not have to be well developed yet, but the region specific elements make the region grow faster than could have been expected given the national average growth. This means that we can say that an emerging cluster is present in Southwest Gelderland.

Table 3.2 shows the total changes in employment caused by the differential shift; the region specific elements, per sector in Southwest Gelderland in the time frame 1998-

2005. Employment has decreased for industry; construction; and cultural, recreational and public transport services. All other economic sectors have experienced some growth. The most noteworthy sectors are transport, storage and communication (1540) and rental- and business services (2290). These sectors have experienced the fastest growth in the area.

Table 3.2: total relative differential shift per sector

Sector	total change in employment caused by the differential shift (absolute numbers) 1998-2005
Agriculture, forestry and fishery	710
Mining	0
Industry	-750
Public utility	0
Construction	-160
Repair consumer articles and trade	440
Hotel and catering industry	280
Logistics, transport and communication	1540
Financial services	250
Rental- and business service	2290
Public administration, social assurance	830
Education	680
Health	930
Culture, recreation, public transport	-210
total	6840

The total employment changes in absolute numbers in the region per sector show the importance of two sectors in the region; logistics, transport and communication and the Rental- and business service. The employment development in the region relative to the development in the Netherlands is presented in Table 3.3.

Table 3.3: relative changes in employment of the region compared to the Netherlands (2005-1998)

Sector	Relative change region (%)	Relative change Netherlands (%)	Difference relative Changes (%)
Agriculture	32.00	3.51	28.49
Mining	0.00	-14.00	0
Industry	-15.00	-9.65	-5.35
Public utility	0.00	-33.68	0
Construction	-3.28	-0.69	-2.58
Repair and trade	9.82	7.12	2.70
Hotel/ catering industry	38.89	23.31	15.58
Log. Transp. and comm.	41.86	5.97	35.89
Financial services	30.77	11.55	19.22
Rental/ business service	47.06	20.10	26.96
Public administration	45.83	11.31	34.52
Education	37.14	17.84	19.30
Health	48.33	32.76	15.57
Culture	9.52	19.53	-10.01

Table 3.3 shows the relative changes of employment per sector in both the region and the Netherlands as a whole. The relative changes can be compared and the analysis of the fast growing sectors in the region can be more specified. The table clearly shows that almost all sectors in the region have grown faster then the national average growth; hence the positive relative actual shift, the employment in the region over all sectors grew about 7% more than the national average, but some sectors have grown remarkably more when looking at relative growth. The most remarkable sectors of growth relatively speaking are the transport, storage and communication sector and the public sector; 35.89% and 34.52% more growth than the national average. Secondly the growth in agriculture and rental- and business service shows remarkable growth. Whereas the growth in agriculture on average is only 3.51% the regional employment grew by 32%; 28% more than the national average. For rental- and business service the

regional growth is about 27% more than national average. Furthermore the financial services; hotel and catering industry; and public services showed a remarkable increase in employment growth, all from 15%-19% more than national average.

Although the positive growth of the governmental sector is substantial, the area of our interest is in the private sector development. From the percentage shift we can say that the sectors agriculture; transport, storage and communication; rental- and business service; and financial services grew more than could have been expected given the national growth average. Employment in these sectors in the region grew by about 25%-30% more than the employment grew in these sectors in the Netherlands as a whole.

4. Intervening and Monitoring: Expert consultation meeting

Setting

Present:

Interviewers:

Wim Hulsink	(WUR & EUR)
Wim Heijman	(WUR)
Pytrik Altena	(WUR)

Experts:

Jans Hoekman	Project: A1: Protein highway
Linze Rijswijk	Project A1: Protein highway
Frank Eetgerink	Project A15
Wils Kloos	Project A15
Joep Koene	Project Food valley
Charles Crombach	Project Food valley

Date: October 30th, 2006.
Venue: Oost NV Arnhem

Objective of the meeting

The objective of this meeting is to consult development practitioners of Development Agency East (Oost NV.) on their experiences with the development of clusters. All participants are involved in cluster development projects under the DIBIC/Tower projects and gained experiences in cluster development. The practitioners will be asked about their experiences in the development of clusters; the role of the agency in the process, the activities of the agency, the role of the private sector and government institutes, the private/public cooperation and the best and worst practices of cluster development. The findings of this meeting will be used to formulate a 'blue print' for

cluster development. This 'blue print' gives insight in the development of clusters and the role a development agency like Oost NV can fulfil in this.

Process of the meeting

Practitioners were interviewed in groups of two, according to the projects they worked on. All groups were asked the same questions in the same order. The three important aspects of cluster formation projects; the input, throughput and output were discussed. The general outline of the semi-structured interviews is included in annex 1.

Input side Development Agency East

The working definition of clusters among cluster-practitioners Development Agency East contains the following elements:

- A cluster is a centre of national importance and international competitive power (for a successful cluster).
- A cluster consists of interlinked activities among the participants in the cluster.
- The private sector is the primary actor in the cluster formation process.
- The fundamental driving force behind clustering is well understood self-interest   in cooperation.
- There is synergy among participants is important in the cluster.
- A cluster does not stay within the boundaries of the own sector, but requires multiple sector involvement.
- Private sector initiated clusters arise from a 'sense of urgency'.
- A cluster has a momentum.
- A cluster is a policy concept.

Throughput Development Agency East

Origins of cluster development

A cluster can originate either bottom-up, initiated by the private sector, or a cluster can be implemented top-down. The former is caused by a 'sense of urgency' within the private sector; caused by an external threat experienced by the sector or by

opportunities arising from cooperation, whereas the latter arises by third party involvement like the government or a developing agency.

The private sector is the key actor in regional clusters. Clusters should arise and thrive because of private sector involvement. Viable and sustainable clusters are those that serve private sector interest. The lion's share of clustering activities should therefore be initiated and especially maintained by private sector involvement.

Added value of the non-private actors

The added value of a third party like Oost NV is the agency's presence as an independent actor. Especially in the initial phase of cluster development the third party can organize private sector linkages. The agency can arrange meetings, host events and raise publicity for the cluster. The advantage is that Oost NV has the overview over the economic status quo and development of the region and the means to raise awareness of the special situation among the possible cluster actors. Secondly the agency can create awareness among policy practitioners of 'something special going on' and involve government institutes in the clusters. Especially media attention is important for the development and strengthening of the clusters. Media attention raises awareness that something special is going on in the region and stimulates individuals to become part of the cluster.

Facilitating cluster development

Although the agency has no instrumental means to organize parties, they have the time, knowledge and people to start the initial phase of clustering; to establish private sector linkages and government involvement. In the initial phase the agency is the actor that organizes the meetings, the agenda's, regional analyses etc. In this phase the agency is clearly the initiator of the cluster, a role that should be reduced when the cluster grows stronger. Eventually a cluster should be completely operated by the private sector; the principal actor in the cluster.

The main focus of the agency is on the private sector; private sector links will have to be established and maintained. It is eventually the private sector that will have to be the

core of the cluster. Private-public cooperation is inevitable but the results are varying; appropriate government involvement can stimulate cluster development.

Output Development Agency East

Monitoring results

Successful projects are the projects where the role of Oost NV is declining because the private sector becomes the key driver behind regional clustering. Success is defined by private sector involvement in the clusters; in terms of investment of financial means and time. The initial objectives are met when well functioning clusters are formed in the region. No quantitative impact studies are performed.

Best practices for successful cluster development:

- Although a cluster can be identified and facilitated by the non-private sector,   it   is crucial to get the private sector involved in the early stages of cluster development.
- Although the idea of clustering and cooperation within the private sector comes from third parties, they should not be the project owners in later stages of cluster development.
- The private sector is required to take an active role, as it is the key player in the   clustering process. Time and financial resource investments are required from the private sector.
- This can only happen when there is a sense of urgency and/or an understanding   of common interest among the private sector parties. The shared acknowledgement   of the importance of cooperation and the benefits from this collective action is required.
- The government involved should support the cluster through the creation of appropriate policy.
- The role of the consultant as a third party is to raise awareness of the existence,   or possible existence of the cluster; the idea of 'something going on'.   Furthermore   the cluster development can be facilitated through non-private effort.
- Media involvement helps raising this awareness and helps to get people together.
- Balanced input is required from the third parties, depending on the stage of cluster development. Financial means, knowledge and labour inputs should provide   a   start-

ing point for fruitful cooperation among the cluster participants but should not hinder the private sector involvement.

- Finally the identification and involvement of 'the critical success actor' in the clustering process is important. A private sector person with an outstanding reputation of knowledge and vision should be involved in the process. This is the person that can fill in the role of the social leader.

5. Conclusions

The blue print as presented in this report is intended to be a practical guide for regional cluster development for policy- and development practitioners. Four crucial steps for successful regional cluster development have been identified and discussed in the report. Screening, selecting, intervening and monitoring are key to successful cluster development.

Screening

The 'regional cluster quick scan' intends to be an objective and cost- and time-efficient tool to screen the region of interest for the presence of regional clusters. By applying Shift/Share analysis on the regional employment development the development phase and the nature of regional clusters can be identified. By screening the region of interest policy-and development practitioners have an improved understanding of the regional economy: initial sectors of interest can be identified.

Selecting

After the screening of the regional economy, the next step is to gain more insight in the identified cluster. The development phase and the sectors constituting the regional clusters are known. A more in-depth analysis of the identified sectors gives insight into the potential cluster participants at firm level. It is most likely to search for the best performers in the sectors and look for their potential beyond the regional market.

Intervening

After the potential cluster participants have been identified, it is time for efficient and effective intervention. The primary role of the agency is to raise awareness of the potential cluster among the identified firms. By identifying opportunities and initiating networks among the potential cluster participants the agency can facilitate cluster development.

Monitoring

Monitoring the success of regional cluster development entails both monitoring of the success of the cluster in the economy as well as the monitoring of the process of the

agency. Successful projects result in a sustainable network and increased competitiveness of the regional activities.

Reference list

Altena, P. (2007), 'A dynamic approach towards the determination of the presence, nature and development phase of strong regional clusters' , *Wageningen University and Research Centre, Master Thesis.*

Feser, E.J. (1998), 'Old and new theories of industry clusters', in Martin, R. & P. Sunley (2003), Deconstructing clusters: chaotic concept or policy panacea', *Journal of Economic Geography* 3 (1): 5-35.

Gordon, I.R. & P. McCann (2000), 'Industrial clusters: complexes, agglomeration and/or social networks', *Urban Studies* 37 (3): 513-532.

Heijman, W.J.M. (2002), **'**Regionale Economie: Van vestigingsplaats naar regionale ontwikkeling', *Eburon*

Hillhorst, P. & R. Westerlaken (2003), 'Clusters in de Betuwe: analyse van plantaardige agro-clusters in het rivierengebied', *Wageningen University and Research Centre, Master Thesis*

Martin, R. & P. Sunley (2003), Deconstructing clusters: chaotic concept or policy panacea', *Journal of Economic Geography* 3 (1): 5-35.

Organization for Economic Cooperation and Development (OECD), in Budd, L. & A. K. Hirmis, (2004), 'Conceptual framework for regional competitiveness', *Regional Studies* 38 (9); 1015-1028

Porter, M.E. (1990), 'The Competitive Advantage of Nations', *New York: Free Press*,

Porter, M.E. (2000), 'Location, competition and economic development: local clusters in a global economy', *Economic Development Quarterly* 14 (1): 15-34.

Annex 1

Questions and accents on behalf of the Expert Consultation Meeting DIBIC/TOWER projects

Created by: Wim Heijman (WUR) en Wim Hulsink (WUR & EUR)
Wageningen, October 2006

Input side: what were the contributions from Oost NV and different parties?

o What is the working definition of regional clusters for you?

o What were the cluster projects you have been involved in over the past years? (For example: A1, A15, Food Valley, Triangle.) In what sectors are these clusters involved? (For example: trees, fruit, horticulture and mushrooms?)

o What was the time frame of the project?

o Who were involved in the project? (How many companies, parties, funds and personnel were involved? What was the role of Oost NV, both the developing and participation side of the agency?

o Were the initial objectives fulfilled?

Through put: Organisation and processes

o What is/ was the added value of a third party like Oost NV in the cluster forming process?

o How did the private/ public cooperation work out?

o To what extent were the agency's means of directing in the project functional and effective?

o How much effort was required from the project coordinator?

Output: criteria for success

o What were the final results from your projects?

o Did the efforts result in durable cooperation between different parties and did this lead to a substantial reduction of costs for the parties?

- Did the efforts lead to process or product innovations that would not have occurred without the project?
- Did the project result in new companies or new employment?
- What are the best and worst practices you have experience in the projects and are there any 'lessons learned'?
- What do you personally consider to be successful projects? What criteria and conditions will have to be fulfilled?