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Gateway 2: Regional Restructuring

Clusters and Cluster policies in regions of structural change – comparing three regions in North Rhine-Westphalia

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1 Introduction

The window is open for clustering, in research as well as in practice. In this contribution we compare the results of six cluster projects that we have done in the last five years in three regions in North Rhine Westphalia.¹ The projects combined research and consulting. We studied existing and upcoming clusters in three regions and we discussed the question how to strengthen these clusters and the regional competencies by industrial development policies.

In our approach we see clusters as the concentration of functions of a sector resp. of a production chain. The degree of concentration differs from sector to sector but we need at least an over average spatial share of functions in the sector, when we talk about a cluster. Concentration not always means that there is interaction between the existing functions that are concentrated. When there is a certain density of interaction we call it an integrated cluster. The mode of interaction differs from cluster to cluster. Competition is a mode of interaction as well as co-operation or informal action.

We start the analyses from the sector because we want avoid “lock-in” effects (cf. Granovetter 1992). So in the key section of this paper we start to analyse the sector in NRW. After this we will discuss special features of clusters within this sector in the three regions. Further on we will look at the different ways of cluster management. Maybe to start with the sector is a restrictive way from the regional point of view. However this analytic focus helps us to get a better understanding of the limits and potentials of regional cluster management on the one hand, and it provides a framework for comparative analyses on the other hand.

In the concluding section we discuss the results of the comparative study in a systematic way. We discuss the influence of sectoral, regional and general aspects of cluster management.

2 Regions of investigation

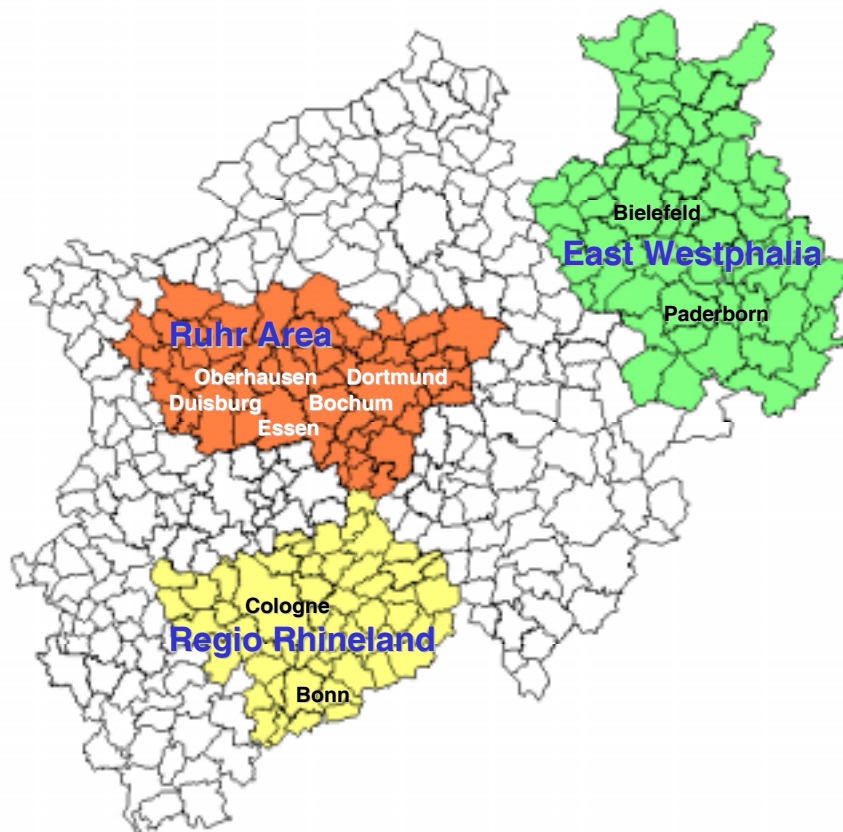
North Rhine-Westphalia (NRW) as one of the largest *Bundesländer* of Germany is also one of the most suffering ones concerning structural change. The economic profile of NRW and its different regions is characterised by diversity and change. The sectoral structure is wide. It comprises for example (brown) coal mining, energy, traditional industries like furniture and food-processing industry and modern service industries such as telecommunications and biotechnology. Since NRW was characterised by a high share of industry for decades, re-

¹ Cf. Rehfeld/Wompel 1997, 1999, Grote Westrick/Rehfeld 2002, 2003, Müller/Rehfeld 2002, Fernandez Sanchez/Rehfeld 2003.

gions changed a lot in the course of industrial restructuring. Still the regions are coping this restructuring, looking for new strategic concepts.

In North Rhine-Westphalia the cluster concept got population about five years ago. The state government of NRW focuses on cluster policies since. Correspondingly development funds are concentrated on the analysed clusters. But not only the state government makes effort on supporting clusters. More and more regions and cities themselves try to analyse their competencies to define clusters, which will be fostered especially. The three regions which will be compared in this paper, the 'Regio Rhineland', the Ruhr Area and East Westphalia, try to define their clusters as well. These three regions cover a large part of NRW and two of them cover the 'metropolitan' areas. As we will see they differ a lot regarding to their history and tradition and therefore to their economic structure today.

Figure 1: Map of NRW



Regio Rhineland

The Regio Rhineland covers about 4000 km² between in the South of NRW. The Regio Rhineland is defined in functional terms, based on two districts of the Chambers of Commerce. As a regional office it is responsible for activities like tourism and marketing. Latterly they try

to focus on regional development, as well. The main cities are Cologne, Bonn and Leverkusen. About 3 million residents are living in this region. Each city has its own history: Cologne has a long tradition as commercial town and clerical centre. Bonn stated booming in the 1950s when it became the capital of Germany. The main economic sectors in the region are the chemical industry, the automotive industry and electro-technics. In total there are 1.3 million employees in this region. One third is working in one of these sectors. The services-sector is still gaining in importance, especially the media and telecommunication sector, biotechnology and environmental engineering.

Ruhr Area

The Ruhr Area is located in the middle of North Rhine-Westphalia. It has an extent of about 4500 km² with 5.7 million people living there. The Ruhr Area is defined in functional terms as well. In 1920 a regional association of local authorities (Kommunalverband Ruhrgebiet/KVR) was founded. But although the KVR had large-scale responsibilities in the beginning, today's authorities are rather fractionally. Besides the Ruhr Area has no common history, neither in economic nor in cultural terms. The Ruhr Area is characterised by a great number of medium-sized and large cities in a smooth transition. With its 5.4 million residents, this region is one of the most densely populated areas in Europe.

The traditional industries of the Ruhr Area as an old industrial region are mining, steel production and energy industry. It is the historical industrial core of Germany, dominated by large companies. From the beginning of the 1960s, the region is facing deep industrial restructuring. Even if mining and steel production are still important industries, the tertiary sector dominates and is still gaining.

East Westphalia

This region is located in the north-east of North Rhine Westphalia and is contrary to the other regions rather rural. There are three bigger cities, Guetersloh, Paderborn and the Bielefeld. Over 2 million residents are living in East Westphalia, which It has an extent of about 6500 km². In contrast to the Regio Rhineland and the Ruhr Area, East Westphalia is sparsely populated. The 'East Westphalia Marketing GmbH' supports this region in terms of a general regional competition, including marketing, tourism and to some extent regional development.

The companies of East Westphalia fabricate high quality products, like domestic appliances, furniture and clothes. Health care, for example medical technology or clinics and engine construction are important economic sectors for the region as well.

3 Comparative analysis: Clusters and cluster policies in three regions

The comparative study will show, that each region has its special economic structure. Even if they are active on the same sectors, they have their own specification. In the following we will state three sectors that influence the regions economy more or less intensive: the Information and Communication Technology (ICT), Health Care Services and Industries and the Automotive Industry.

Table 1:

	East Westphalia	Ruhr Area	Regio Rhineland
ICT			
Hardware	11,31%	21,61%	16,60%
Software	10,85%	25,27%	24,02%
Telekommunication	9,62%	26,09%	30,30%
AV Media	6,95%	17,39%	56,13%
Print Media	18,01%	21,52%	20,77%
Advertising	8,12%	16,91%	25,82%
Total	12,04%	21,80%	25,27%
Health Care			
Out-patient treatment	11,32%	26,75%	18,74%
In-patient treatment	13,51%	27,04%	15,90%
Hardware (e.g. medical engineering)	19,31%	23,44%	13,45%
Sports and Leisure	7,30%	32,18%	24,24%
Other Services	9,24%	30,91%	17,99%
Total	12,15%	27,89%	17,00%
Automotive Industry			
Automobile Manufacturer	0,16%	26,48%	46,88%
Automotive Supplier Industry (as far as possible)	19,49%	18,46%	19,97%
Trade and Services	12,58%	24,81%	19,25%
Total	12,14%	23,38%	24,65%
Share of NRW employees in each region	12,03%	24,62%	18,93%

Source: LAA 2002

Table 1 shows for example, that even if the total share of employees that work in ICT in East Westphalia is equal total share of all employees in this region, there are big differences within the single parts of ICT. As we can see, there are specifications in each region – specific parts of the sectors concentrate on single regions. In this chapter we will analyse these clusters and the appendant cluster policies and cluster management. After each subchapter the results will be summarised in a table.

3.1 The ICT-sector

Like in other countries and regions, the ICT-sector in NRW still attracts more attention than most other sectors. The reasons are not only the outstanding growth in the past and good predictions for the future but also technical innovations in single parts of this quite 'young' sector. Even if it is undoubted that ICT has good future prospects, it is not obvious where the actual and future development leads to. Contrary to many expectations and forecasts the single parts of ICT are emerging not to converge in the expected extent (cf. Europäische Kommission 1997, Nordhause-Jaz/Rehfeld 1999, BAW 2000, DIW 2002).

The ICT sector can hardly be defined. According to the European Commission ICT comprises telecommunication, media and informational technology. The following entities are part of it: telecommunication providers, publishing companies, printers, film producers, broadcasting stations, network providers, software developers and hardware companies. This wide definition is used for the following exposition.

In North Rhine-Westphalian regions single parts of ICT developed in a quite different way, depending on existing branches like electrical engineering, mechanical engineering, printers or state-run broadcasting stations. All in all, the three analysed regions have a share of about 60 % on ICT in NRW. In some branches like the Audio Vision Media the share of rest NRW only comes to 20 %. Looking in detail, enterprises are not scattered evenly throughout the state or throughout our analysed regions. There are single cities or small regions, in which ICT has crystallised clusters. In the following we will look at the three regions.

Regio Rhineland

Above all ICT in Regio Rhineland stands for media, software and telecommunication industry. These clusters are not only the strongest parts of ICT within the Regio Rhineland. Furthermore the Regio Rhineland is one of the most important sites within these sectors themselves (cf. Rehfeld/Wompel 1999, Geschwandtner-Andreß 1999, DIW 2002, Grote Westrick/Rehfeld 2002). The origins of these clusters lie in the cases of telecommunication (TC) and media in state-run enterprises. In the telecommunications it is the Deutsche Telekom, Germany's former national telecommunication supplier. In the media cluster – the audio vision media (AV media) is the strongest part – the origins can be found in state-run WDR (West German Broadcasting) and Deutsche Welle, Germany's Broadcasting abroad. The software industry profited from these clusters, expanding for more than 20 years now. Besides these influences and interdependencies, the software cluster broke free in an early stage and today Cologne as the core of this cluster, is the second biggest software site in Germany.

Within the Regio Rhineland the employees are not equally spread over the region. On the contrary the focus obviously lies on Cologne. Cologne, including a few smaller suburbs, is one of Germany's most specialised and clearly defined AV media sites with the emphasis on broadcasting. Founded on the basis of the two big broadcasting stations and on a wide culture and art scene, Cologne's media economy is booming since the eighties. Beginning in 1984 with the formation of RTL today there are five out of the 20 biggest television stations located in Cologne. Therefore special growth areas are therefore movie-, video- and television production with around 300 production enterprises and around 600 suppliers. Altogether about 45 % of NRW's media enterprises are located in Cologne.

The telecommunication cluster is the second outstanding field in the ICT-sector in the Regio Rhineland. The Deutsche Telekom, based in Bonn, surely gave an impulse after privatisation of the telecommunication cluster. New providers of fixed line networks and hundreds of TC- and IT-suppliers made Bonn and Cologne together with Duesseldorf (not belonging to the Regio Rhineland) to the leading axis of telecommunication in Germany. Whereas in Bonn the focus is the Deutsche Telekom, Cologne's TC scene is characterised by many medium sized businesses, like NetCologne, a local fixed line supplier. Most German mobile phone providers have their headquarters in Duesseldorf.

The software cluster is the third big part of ICT in the Regio Rhineland. Contrary to the other clusters, there are no big companies forming the source or the core of this cluster. Software enterprises in the Regio Rhineland, which are again concentrated mainly in Cologne, are rather small and medium sized. They cover a variety of subject areas so that core competencies can hardly be defined.

What constitutes these three clusters are not only the existing enterprises, covering production, supply and services, but all the other parts belonging to the production chain. These are overall especially a good infrastructure (e.g. specialised business services, capital investors), broad and distinguished training and education opportunities and qualified employees. Besides this general set-up, Cologne and the surrounding cities can be characterised as having formal and healthy contacts with universities and among each other. These favourable circumstances in combination with the existing pressure through innovation makes up working ICT clusters, especially in media and software. However, the telecommunication cluster is characterised by a stronger competition, deriving from the market situation: There are still basic innovations on the one hand and a huge market to divide on the other.

Analysing the starting point, the development and the constitution of these clusters, it turns out that although the set up is quite similar, the course is different within each cluster. The telecommunication cluster is still pretty much dominated by the bigger enterprises. The integration within the cluster is not very far-reaching. Although the Cologne Chamber of Com-

merce put some effort into building up networks, the enterprises do not use these advantages. Therefore there is no existing cluster management.

On the contrary the media and software clusters are marked by strong connections. There are varying reasons for this. The most important reason is the relatively long production chain leading to varied economic relationships. A second reason, we found in our interviews, is that people working in media seem to be very open-minded and sociable. In contrast to that, the telecommunication and software engineers are much more technical oriented and not as 'talky' as the media people are (Grote Westrick, Rehfeld 2003). Besides that, the media sector is strongly supported by several institutions like the Cologne Chamber of Commerce and the Cologne City Council, not just by fostering the cluster with (indirect) financial support, but above all by institutionalised business meetings and networks. Even if there seem to be too many different activities aiming to provide a cluster management and no main institution, the cluster itself works quite good. In our understanding this is an integrated cluster.

Although the software industry may not be as communicative as the media industry, they started up early to form alliances. In contrast to the media cluster, it was not initiated and supported top down, but was started bottom up – at a time, the cluster approach was not even being discussed in NRW. In an early stage the 'Cologne Online Hansa' was founded, which still exists nowadays. The software cluster is not as integrated as the media cluster, though.

Ruhr Area

ICT in the Ruhr Area originates in old technology oriented sectors like electrical and mechanical engineering. Technical competencies and the early application of telecommunication and computers in the iron and steel companies were decisive for the emerging cluster. With the increasing importance of IT infrastructure a lot of new businesses were founded by outsourcing. The core competencies in the Ruhr Area are therefore software services. In addition telecommunication (Nokia in Bochum) and Print Media are ICT cluster that are concentrated in this region (cf. Berger 2000, Rehfeld/Wompel 1999, Müller/Rehfeld 2002).

The centres of these clusters are Dortmund, Essen and Bochum, three of the bigger cities in the Ruhr Area. In the following we focus on the software cluster in Dortmund, the only one that seems to be developing towards an integrated cluster.

On the basis of 900 enterprises with 13.000 employees the software cluster in Dortmund has become an important centre for software and IT-services in NRW. With its growth potential it is an integral part of the structural change in the city. The majority of enterprises has been

founded in the 1970s and 80s. The roots of these enterprises lie – besides the already mentioned iron and steel industry – in the environment of the university in Dortmund with the largest department for computer sciences in Germany. Available areas and floorspace close to this ‘knowledge infrastructure’ created special locational advantages of proximity (research potential and employment resource). The ‘Technology Park Dortmund’ has been build on this area in order to support research and innovation transfer and technologies and to nurture new settlements and spin-offs. Today the spatial core is around the university and the Technology Park, even though new foundations are scattered more and more all over Dortmund.

The strengths of the software cluster in Dortmund are in application software, containing preparation, strategical and functional analysis, macro and micro design, construction, implementation, training and system maintaining and further development. At present, electronic business and professional services such as the provision of customer based solutions are the most important business fields of the software and IT-companies in Dortmund.

The City of Dortmund is aiming to boost its software and IT cluster for several years now. The major event in this respect has been the Dortmund-Project. Initiated in 1999 by the City of Dortmund and ThyssenKrupp, with assistance by McKinsey & Company. Since its official launch in June 2000, the project team’s efforts have led to the creation of an extensive network of contacts. This enables enterprises, scientists and opinion leaders to share knowledge and experience with each other. The main task is to offer support for young high-tech enterprises – especially those in software, IT/E-commerce, microsystem technology and logistics.

The Dortmund-Project aims at building the basic foundation of infrastructure for IT enterprises. Besides at supporting rapid development and growth in high-technology industries. It involves activities like high-tech competition for young starters in information technology and e-commerce and an information exchange platform. Another base is the e-port Dortmund, which aims at developing and supporting new ideas in the fields of e-logistics, creating synergies between firms, developing co-operation and providing infrastructure and consulting services. Another major event has been the foundation of the first German Electronic Commerce Centre (ECC) close to campus. Over 400 employees in 19 specialised enterprises provide single solutions in E-commerce. The ECC-GmbH integrates these special solutions. Therefore the ECC-GmbH acts on the market as a general company, taking on the project management in co-operative projects. The City of Dortmund will invest around 65 million € in the Dortmund Project within ten years.

The goal to encourage corporate initiative and to provide ideal framework conditions for lucrative future investment seems to be quite successful. The number of new firms and em-

ployees have been rising for a long time. The established networks are under way, between politics, the business community and other involved actors.

East Westphalia

Compared to ICT in the Regio Rhineland and in the Ruhr Area ICT in East Westphalia is still at its beginning (cf. Heinze et.al. 1998, Fernandez Sanchez/Rehfeld 2003). Starting point and therefore origin of the ICT cluster in East Westphalia are two companies, multinational groups today. One is the Bertelsmann Verlag, founded 1835 in Gütersloh as a small publishing house. Today it is one of the biggest media groups world-wide, acting as a broadcaster, book-publishing group, music and trade information company, media services provider and much more. Headquarter is still Gütersloh even if there are several other important sites in the world.

The other company giving the start off for ICT in East Westphalia is Nixdorf, today Wincor Nixdorf International with its German headquarter in Paderborn. Contrary to Bertelsmann, the company is not in content media but in hardware. Core activities are IT solutions and products for retailers and banks, especially self-service equipment for payment handling.

Corresponding to these two big companies the outstanding ICT clusters in East Westphalia are media and hardware. And even if most of the time these two enterprises are the only ones that are recognised there are some activities going on besides these cores. Not as much in media – as Bertelsmann with its headquarter does not have too many effects on the region – but all the more in the hardware cluster and the related sectors of integrated IT-solutions and software. However this cluster – concentrated mainly in Paderborn, but also in Bielefeld and Gütersloh – is not comparable to those in the other described regions. In contrary to Bertelsmann, Nixdorf act as a catalyst for the region. There are many enterprises that have their roots in Wincor Nixdorf, covering all kinds of hardware and related sectors.

With reference to the existing quantity and range of companies, this cluster does not seem to be a promising future cluster for East Westphalia. But the ‘internal’ work of several actors is very active and there is a lot of effort made by institutions, too. In Bielefeld for example, there is a task force for Information that exists for over ten years now. In Gütersloh there are innovative cores like the ‘Media Factory’, the IT-Academy and the IT-Campus. These activities reflect the existing infrastructure that has been build up the last decades. Especially Paderborn has a good infrastructure with the university, the Heinz-Nixdorf-Institute, the C-LAB, the Paderborn Centre for Parallel Computing, the interdisciplinary Science Centre for Informatics, the Graduate School for Informatics and the Technology Park. In this context there are a lot of new enterprises, spin-offs which profit by settling down in this environment.

Even if East Westphalia is a traditional and not very 'communicative' region, contacts within ICT are quite good. There are many connections based on the mentioned infrastructure. All in all, ICT in East Westphalia is an upcoming cluster that promises to become basic service in the region. It will not have the power and quality to reach national impact and become an important cluster. Besides single promising enterprises, it will be rather important to support the existing quality-industries in the region. Therefore the emerging networks are thoroughly important.

Table 2: Summarising results

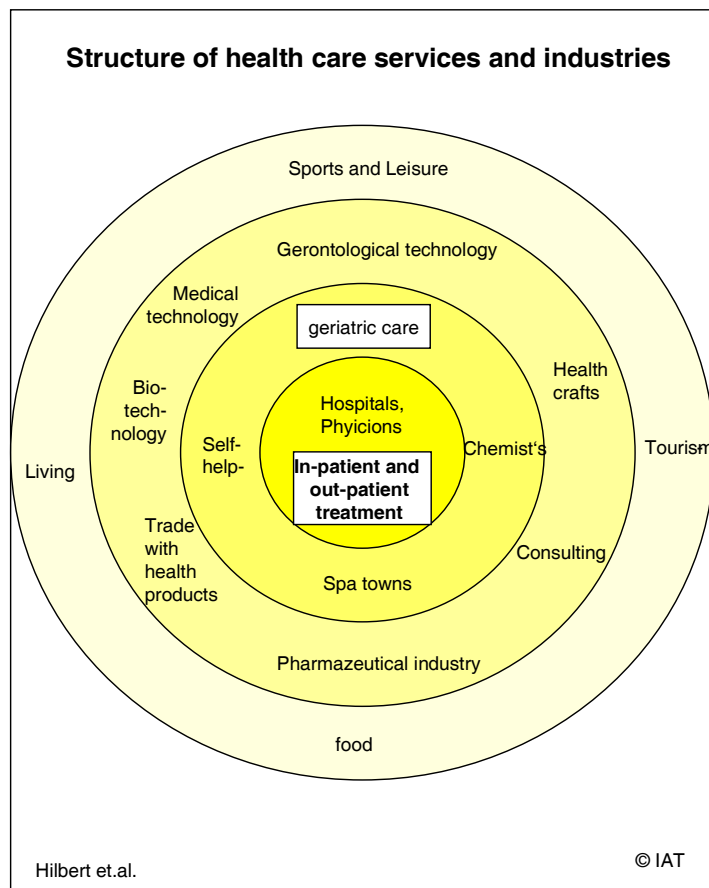
ICT	Regio Rhineland	Ruhr Area	East Westphalia
Roots	state-run enterprises	electrical and mechanical engineering, university	private-run enterprises
Specialisation	AV media, telecommunication, software	application software	hardware, (media)
Actors	a few big companies, mainly SMEs, various institutions	mainly SMEs, city and various institutions	two big companies, mainly SMEs
Networking	AV media and software very good telecommunication poor	good	good
Research Infrastructure	very good	very good	good
Cluster management	lots of different activities, partly bottom up, AV media and software self installed, telecommunication no CM	too many different activities main focus is missing	uncoordinated local initiatives

3.2 Health care services and industries

Health care services and industries as a broad sector is one of the biggest ones in North Rhine-Westphalia. At the end of the 1990s there were almost one million people working in this sector. In contrast to many other sectors, the employment development is very good as well: Between 1985 and 1998 175.000 new jobs have been created, equalling a growth rate of 22.4% (MfJfG 2001). There are several reasons for this dynamic development, especially socio-demographic development, new social and employment guidelines and economic and medical improvements (cf. Nefiodow 1996, Hilbert/Ittermann 1998, Fretschner/Hilbert 2000, v. Bandemer/Hilbert 2001).

Understanding health care as a new and expanding sector, in our definition all related services and industries belong to this sector. In North Rhine-Westphalia, there is a wide range of health care services and industries, covering all parts of the following 'Health Onion'.

Figure 2: Health Onion



This model is not oriented at the traditional differentiation between prevention, treatment and rehabilitation, but at enterprises and institutions along the production chain. The 'Health Onion' shows that there is a central part of in-patient and out-patient treatment including hospitals, treatment and rehabilitation facilities, medical and dental practice, physiotherapists, pharmacies and others. Within the ancillary health care industry there are pharmaceuticals, medical and gerontological technologies, biotechnology and genetic engineering, health crafts and wholesale and retail trade of medical and orthopaedic products. Finally there are the fringe services and services related to other sectors. These are shown in the outer circle of the onion-model. There are great opportunities in these services for realising the financial potential of this sector. Therefore health tourism, wellness movement, health-conscious sports and leisure amenities and new forms of living are promising sectors.

Within North Rhine-Westphalia the mentioned services and industries are again scattered all over the state. There are centres of pharmaceuticals as well as centres of health tourism and

spa towns. More and more regions and towns try to foster health care and medical services, to sharpen their national image as a health or wellness region. They try to combine these activities with regional development to ensure long-term employment. Because of the actual general impetus, this strategy seems to be very popular right now – not just in general health care, but also in biotechnology (cf. Prognos 1997, Ernst & Young 2000, 2002, The Boston consulting Group 2001, Bio-Gen-Tec-NRW 2001).

Regio Rhineland

Although the Regio Rhineland covers almost all parts of the ‘health union’, there are only a few parts that are outstanding (cf. Grote Westrick/Rehfeld 2003). Within the Regio Rhineland there are two distinct clusters, the pharmaceutical cluster and the biotechnology/gene technology cluster. These clusters originate from the chemical industries, which characterises the region for decades. The pharmaceutical cluster is therefore deeply rooted in the region and expanded in the early stage of the last century. Still it is mainly characterised by medium-sized enterprises. There are only a few big businesses in the Regio Rhineland. Besides the big businesses only a few of the smaller ones act on the world market. Therefore only a few enterprises do their own basic research to put new drugs or active substances on the market. Instead, most of them try to take a niche of the mass market, producing generics, diagnostics and new drug delivery systems. Applied research is therefore necessary for all enterprises.

The pharmaceutical enterprises are located along the River Rhine, exceeding the ‘borders’ of the Regio Rhineland. The core within the region extends from Leverkusen in the North to Cologne and some smaller cities in the South and it covers manufacturing enterprises, ancillary industries, wholesale trade, packaging industries and specialised service providers. Most infrastructure is concentrated in the bigger cities like Cologne, Bonn and Leverkusen. There are quite a lot of faculties and departments dealing with pharmaceuticals, medicine, biology and chemistry. Besides this infrastructure, several German state associations are located in Bonn.

Searching for existing networks it came out that the pharmaceutical cluster is not very busy in networking. The first reason is, that a lot of enterprises pursue an international strategy. A second reason is that their products are very research-intensive and therefore there is a great innovation pressure.

Although this pharmaceutical cluster does not seem to be very capable of becoming an integrated cluster, the state of NRW established the state-run initiative ‘Health Care NRW’, which is fostering research and development projects, co-operation and spin-offs in the pharmaceutical industry. With special co-operation projects, networks and meetings the Health Care

NRW tries to co-ordinate this cluster in the region (and the whole of NRW), but the success is quite poor. This shows that not only certain regional conditions are necessary to build up an integrated cluster, but also the sectoral conditions.

Looking at the biotechnology and genetical engineering, it can be seen that this cluster – even if it has parts of its roots in the pharmaceutical industry – has a completely different structure. Biotechnology as a typical cross section sector has its applicability in medicine, agriculture, food industry and in environmental and marine technologies. Biotechnology as a generic term for different technologies like biochemistry, molecular biology, genetics and pharmacology is actually a very old technology that received new interest in the past ten years as research produced new results. Corresponding to the pharmaceutical industry most biotechnological enterprises in the Regio Rhineland have a specification in red biotechnology, which is more and more connected to the pharmaceutical cluster. Core cities are again Cologne, Leverkusen and a couple of smaller cities around.

On the basis of the mentioned research infrastructure and the pharmaceutical cluster the biotechnology grew quite fast in the Regio Rhineland. But the decisive impulse was a national competition on biotech-regions, carried out in 1996, not only for the Regio Rhineland, but for all German activities in biotechnology. Since that time more than 80 enterprises have been founded in this region, originating from research institutes (universities) or (pharmaceutical) enterprises. More than 3300 employees are working in Entrepreneurial Life Science Companies, focusing on platform technologies. Regio Rhineland is therefore one of the four biggest biotech-regions in Germany.

Besides the universities there are several institutes like the Max-Planck-Institutes and Fraunhofer-Institutes that are active in biotechnological research. This altogether is the breeding ground for several spin-offs and innovations in existing enterprises. However, biotechnology in Germany is not as advanced as it is in the USA for example. There are almost no marketable products yet.

Apart from some bigger enterprises which have their basis in the pharmaceutical industry, most enterprises are small or medium sized, employing a maximum of two or three dozens of people. This small-sized structure, the common basis (university or research institute), a couple of geographic knots (bio-technology centres) and the necessity for mutual help in a 'new sector' leads to a specific co-operative environment. Not only networking but working together in projects characterises this cluster – not only in the Regio Rhineland.

Knowing that biotechnology is one of the key technologies in this century, political actors foster it massively. In Regio Rhineland several initiatives were introduced after the region won the BioRegio competition. The organisational core is the State Initiative Bio-Gen-Tec-NRW, founded in 1994. The Initiative is committed to the promotion of biotechnology and

genetic engineering in the whole state, but has in fact a special focus on the strong areas (Regio Rhineland plus cities like Duesseldorf, Wuppertal and Aachen). The Initiative sees itself as “a central port of call for consulting and co-ordination and the driving force behind co-operation between basic research and commercial application” (www.bio-gen-tec-nrw.de). In fact, this is the most complete co-operation network, but in our understanding, the focus of this initiative is too broad. Because the Regio Rhineland didn't feel sufficiently taken into account, they partly started their own initiatives, for example BioCologne and BioTecErft. As a result we noted that there were too many initiatives being active in this region. Although the co-operation and networking within this sector is good, many politicians try to interfere in this process instead of co-ordinating their efforts.

Besides these clusters there are competencies in health care services (specialised hospitals, research, specialised medicine and health care conferences) in Bonn and the surrounding area. Although these competencies are known and although first activities in the form of conferences took place, there are no active persons who would speed up these activities.

Ruhr Area

Thinking of the Ruhr Area most people wouldn't associate health care services and industries with this region. In fact the share of people working in health care and social services in the Ruhr Area is higher than the share in NRW in total. This has to do with the above-average decline of industrial employees in the last decades, which could not be compensated by the creation of new jobs in private enterprises, like in other regions. However, health care services and industries made a big contribution to the structural change in the Ruhr Area. Some even call this sector the 'hidden' hero of structural change (Hilbert, Rohleder, Roth 2001). Corresponding to Table 1 almost 28 % of the employees working in health care in NRW are working in the Ruhr Area – compared to a total share of employees of only 24.6 %. The outstanding sectors in a statistical sense are sports and leisure and other services – but both are not really conspicuous or discernible (cf. Berger 2000, Grote Westrick/Rehfeld 2002, Müller/Rehfeld 2002).

Within the scope of structural policy the state of NRW has defined six 'Fields of Competencies' (clusters) for the Ruhr Area. Although the responsible consultants pointed out that the Ruhr Area does not play an important role in Germany's market, medical engineering was defined as one of these 'Fields of Competencies' (MWMEV 2001). This decision was made, despite an under-average amount of enterprises, the lack of key players and a low degree of linking-up and co-operation. In addition there is no image as a medical engineering-region yet. Basis for this cluster is firstly an outstanding degree of innovative enterprises. Secondly a specific key person, professor at the University Witten/Herdecke and director of the Insti-

tute for microtherapy. Thirdly there is the 'Competence Centre for Medical Engineering Ruhr (KMR)', founded in 2001 by the Federal Ministry of Education and Research. Fourthly this cluster was defined because politicians in the Ruhr Area believe in outstanding, promising technologies, like medical engineering. Although this cluster was quite surprising for the actors in the region and was set up by political intention, it received a lot of attention since. One can not tell how this cluster will develop in the future. However if the Ruhr Area wants to establish itself in medical engineering, especially networking and co-operation have to be supported. This has started already with the foundation of the 'BioMedTec-Ruhr', university driven association, fostering activities in biomedical technology. Further training and research offers have to be increased. All in all, this initiative could give new impulses for the Ruhr Area, which is absolutely essential.

Besides these technology based activities, the Ruhr Area tries to profit from the general rise of health care services. Not only single communities but also the co-ordinating authority of development funds (Projekt Ruhr GmbH) try to push the idea of the 'Health Care Area Ruhr'. According to the statistics there are outstanding competencies in sports and leisure, services and in-patient as well as out-patient medical care. Corresponding to a high share of elderly people, there are specialised hospitals and also precaution and rehabilitation facilities. But even if these figures seem to be very favorable, it would be quite difficult to create an image as a 'health care region'. Therefore the target group of this cluster is constituted rather by the residents of the Ruhr Area than from elsewhere.

In summary it may be said that even if there are no special competencies yet, the Ruhr Area should continue focusing on this cluster for two reasons: first of all forecasts for health care services and industries are still very good. The Ruhr Area should not miss this opportunity. Secondly the Ruhr Area has to take advantage of its huge potential of residents. Being attractive and offering good and modern treatment will be important for more and more people, especially for the older ones.

East Westphalia

Many regions in NRW are trying to promote their health services and industries lately. In contrast, East Westphalia has been supporting this sector for a long time already. Therefore the regions is very distinguished, especially in health care services. This is not surprising, because there are several old health resorts and spa towns in the region (cf. Fernandez Sanchez/Rehfeld 2003).

At first sight, there is a wide range of services offered in East Westphalia but no core competencies are perceptible. Although there are not many competencies, a lot of high quality services and industries exist.

Quite a number of institutions and organisations belongs to the mentioned core part of the health union. These are e.g. the 'von Bodelschwingschen Anstalten Bethel', a large diacotate facility for disabled people, the outstanding heart and diabetes centre NRW and several health resorts. Besides there are some enterprises working on medical engineering and medical aid. These competencies are also shown in Table 1: Over 19 % of the employees working in NRWs 'hardware'-health care are working in East Westphalia – compared to a total share of employees of only 12 %.

Because of this wide range of competencies and despite a detailed analysis, it is not possible to define even a small number of core centres. The non-existence of a core might also be due to a weak infrastructure related to health care. Even if there is one of the best departments of Health Care Science at the University of Bielefeld, it has no special effects on the region. This is because the activities are concentrated on research and teaching and not very much on applied and practically oriented projects. There are not many impulses given to the region yet. The Bertelsmann foundation, too, is well-known all over Germany with its research and activities on several topics like education, economic and social affair, international relation and health. But again, projects do not have very high structural impacts on the region because of their national focus. Last but not least there is no medical university and therefore no medical basis in East Westphalia. This missing infrastructure leads to another unfortunate situation: there are not many new settlements in the region, neither in the narrow health care sector nor in the ancillary industries.

In trying to strengthen the support of this sector, there are two activities that should be mentioned. One is the 'East Westphalia Marketing' which is the general marketing agency of the region, that focuses on particular themes. Secondly there is a 'Centre for Innovation', focusing on health care services and industries. Both initiatives are active in promoting health care in East Westphalia. They are accepted as qualified and neutral institutions. Besides these initiatives there are other co-operation projects. But even if there are single institutions and projects, often an extensive management is missing. There are two obstructive factors for the development of the cluster: parish-pump politics and managers who are rooted in the public health care instead of fostering economic growth sectors.

All in all East Westphalia has good qualifications, compared to other 'health care regions' in Germany. Taking the small and medium sized enterprises in the core sector as a basis, there are other fields to develop, especially biotechnology (red and grey biotechnology) and food-processing.

Table 3: Summarising results

Health Care	Regio Rhineland	Ruhr Area	East Westphalia
Roots	chemical industry	key person	spa towns
Specialisation	pharmaceutical industry biotechnology/ gene technology	medical engineering	medical 'hardware' services and hospitals
Actors	a few big companies, mainly SMEs, various institutions	university and research departments, a few enterprises	across the board
Networking	pharmaceutical industry: non biotechnology: very good	moderate	good
Research		moderate,	
Infrastructure	either very good	partly competitive	partly good
Cluster management	pharmaceutical industry: state-initiative (not working) biotechnology: several different initiatives, no main CM	state-initiated 'Field of Competence'	two main actors, concentrated activities

3.3 Automotive Industry

The automotive industry as a key sector for the economic miracle has still a high economic impact on the globalised world where mobility and transport are keep growing. As a key sector, the automotive industry is the most important lead-user and therefore very important for the development of new technologies like information and communication technologies and new materials like plastics, ceramics and new compound materials (cf. Verbundinitiative Automobilindustrie NRW 1996, Automotive Engineering Partners 2002).

In Germany the automotive industry is still one of the most important sectors, almost 10 million automobiles were produced in 2001, most of them cars. In the same year there were 752,000 people working in the core automotive industry, 301,000 in the wider automotive supply industry (Grote Westrick, Rehfeld 2003). About 20 % of these employees are working in North Rhine-Westphalia, but estimated 25 to 33 % of supply enterprises are located here (MASQT 2001).

Looking at the production chain in NRW, there are automobile manufacturer, automotive component suppliers and all of the other mentioned suppliers. These are based on metal and engineering industry, electrical components, textile and chemicals industry – each a traditional industry of NRW. Three main automobile manufacturer are located in this state, the headquarter of Ford Europe (Cologne), and branch plants of Opel/General Motors (Bochum) and DaimlerChrysler (Düsseldorf). Ford and Opel will be relevant in this paper, as they are both producers of motorcars. Besides these plants there are about 800 suppliers in NRW,

most of them medium-sized enterprises (less than 500 employees), which are quite flexible and innovative. They cover most parts of the supply chain, especially automobile components, automobile electrical equipment, ferrous and non-ferrous metal, steel working, foundry and plastics and interior fittings. Missing parts are especially drive systems and tire manufacturing (cf., Rehfeld 1991).

Within North Rhine-Westphalia there are mainly three dominating regions: the Ruhr Area, Regio Rhineland and the Sauerland, which has not been analysed. In most other parts of NRW there are single enterprises related to the automotive industry but they do not really characterise the economic structure.

While analysing the automotive industry one has to differentiate between manufacturer and supply industry – more than in other industries. The interesting questions are, in which way the manufacturer as a key player is embedded in the regional economy (supply industry existing) and which role single regions play in the globalised automotive industry. Our thesis was that even if there is an automobile manufacturer surrounded by a wide range of suppliers, the probability of finding an integrated cluster is much smaller as it is in other industries with key players. In our understanding the reason for this can be found in the very stable structure within the automobile industry: It had been established in the 1930ies and no fundamental change happened until today (cf. Born/Rehfeld 1996)

Regio Rhineland

The Regio Rhineland, or parts of it, is one of the centres of the automotive industry in North Rhine-Westphalia. There are two outstanding clusters, that will be analysed in detail. One is Cologne with the Ford production and several other supply industries and the other one is the 'Bergisches Land', the rural eastern part of Regio Rhineland, where one can find a wide range of suppliers.

The Ford-Werke AG in Cologne is the German and European headquarter of Ford, founded in the 1930s. Important suppliers are located right next to this works, which has been modernised in the past years. With the erection of a new industrial park and the settlement of twelve new suppliers this site gained even more attraction for the automotive industry. Complex modules and components are mounted in close connection with the Ford production. But still, Ford is an international business with lots of international suppliers, being at least as important as the suppliers on the spot. Besides production Ford and its suppliers are excelled by their high potential of development. Most of them have extensive R&D-divisions, which are in part very good in innovative long-term development. In addition there is a de-

partment for automotive engineering at the university of applied science in Cologne and a research centre in Aachen, not far from Cologne (cf. Grote Westrick/Rehfeld 2003).

On the other hand, there is the rural eastern part of the Regio Rhineland, the Bergisches Land (including Leverkusen and partly the Rhein-Sieg-Kreis), which is traditionally characterised by small and medium-sized crafts and industries. This region has a very long tradition in the metal and metal processing industries. Emerging from these abilities the electrical industry and electrical engineering rose constantly in the last decades. Producing for different sectors, the automotive industry is one of the most important ones. There are several suppliers producing parts of engines, brakes, coolers, coupling, shock absorbers, axles and other parts. With their high potential of development these enterprises play a key role for innovation in this region and sector. As high-qualified suppliers with a long tradition most of the enterprises have steady connections with one of the automobile manufacturers or other key suppliers. Hence the need of (net)working together is not especially necessary. Since almost every enterprise is embedded in international business, there is indeed no 'integrated' cluster in this sub-region, even if there are good conditions.

Looking at the connections between the Cologne automotive cluster and the one in the Bergisches Land, there are not very strong connections either. The main reason is, that Ford has its own suppliers as one branch of the world wide company. Suppliers in the surroundings did not even get a chance of co-operating with Ford. In the 1990ies, when standards changed and the automobile manufacturers changed their strategies and working methods there was a 'window' opened for the supply industry, to benefit from this change. Unfortunately the enterprises in the Bergisches Land did not grasp the opportunity to get into this business.

Public actors in Cologne realised that establishing networks and co-operation in the automotive cluster is not very easy. Now they try to establish integrated traffic systems by fostering projects with this goal. But so far, it has not been very successful.

Ruhr Area

The structure of the automotive cluster in the Ruhr Area is similar to the structure in the Regio Rhineland: With Opel in Bochum there is one big automobile manufacturer and there are several SMEs and – contrary to Rhineland – big corporate groups that are active in this sector. However, due to the hegemony of the steel industry, the automotive supply cluster in all is not comparable to the Rhineland – neither in range nor in size (Doleschal 1991).

The plant of Opel in Bochum was founded in the 1960s. In certain terms it is like the well known "cathedral in the desert" – until today only very few further up- and downstream in-

dustry followed. Although Bochum dismissed thousands of employees in the last couple of years, it is still the core of the automotive cluster in the Ruhr Area.

Looking at the supply industry, steel enterprises still dominate. They especially produce ferrous and non-ferrous metal parts and steel working. Besides that there is some glass and tire industry and automotive electric and electronic industry (Dortmund). Big companies like Thyssen and Krupp dominated the supply industry for a long time, even if they did not pay close attention to this cluster. But when they changed their strategy a few years ago, it seemed to become more innovative. A couple of companies sifted out their automotive divisions, which gave new impulses.

Like in the Regio Rhineland, the connections between supply industry and manufacturer are not very distinct for similar reasons: Opel moved to Bochum in the 1960ies, where both, their own and the connections of the suppliers were set already. In the beginning of the 1990ies only 10 to 15 % of obtaining materials were received from inner regional suppliers. Other than Opel and Ford, that have the same low share of inner regional suppliers as Opel does, companies like Daimler-Benz (39,4%) and Audi (19,1%) have a much higher share in their home regions (cf. Doleschal 1991). This shows the different effects of enterprise relationships or rather the degree of embeddedness depending on the time of location.

Similar to the Regio Rhineland the Ruhr Area tries to concentrate on new promising technologies. Within the mentioned 'Fields of competencies' there is also one called 'Traffic and Logistics'. Besides public transport and logistics, a high qualified and differentiated cluster, the Ruhr Area tries to foster telematics in this field. But the competencies in this field are rather plans for the future than reality.

East Westphalia

Corresponding to its small and medium-sized enterprise-structure, East Westphalias automotive cluster is also characterised by specialised SMEs, which have their roots in the metal industry. Increasingly enterprises with roots in plastic industry and electronics play an important role. But compared to North Rhine-Westphalia and Germany the share of employees in this sector is below average. In 2000 there were only 9000 people working in the automotive supply industry, 1.2% of all employees. Therefore automotive industry as a whole does not play an important role in this region, also since there is no automobile manufacturer located in East Westphalia (cf. Fernandez Sanchez/Rehfeld 2003).

The main area of production lies in automotive component production. Integrated systems and components are either delivered directly to the automobile manufacturer or enterprises produce machines and tools for both, the automobile manufacturer and the supply industry.

But even if single suppliers of integrated systems exist, whose activities partly cover former key areas of manufacturers, there is no shared identity as a region of automotive supply industry. The existing enterprises do not cover just one or two special parts of the production chain, but single enterprises cover different parts. This means that the enterprises are active in areas that are hardly connected with each other. This shows, that inner regional connections are seldom, connections within the production chain dominate. Corresponding to this structure, the existing enterprises are not concentrated in a few parts of the region, but are widely scattered. For all these reasons, the automotive supply cluster is not an 'integrated' cluster in East Westphalia.

This assessment will be confirmed by looking at the research and development infrastructure: there are no activities, which are specialised on automotive industry, neither pioneer technology nor special services for the automotive industry. Besides there are no special efforts to support the existing enterprises. Fields of co-operation can rather be found in related areas like traffic and mobility. There are some projects going on at the University of Paderborn ("New Railway Technology") or the advanced technical college of Bielefeld (new driving technologies)

Table 4: Summarising results

Automotive Industry	Regio Rhineland	Ruhr Area	East Westphalia
Roots	metal and electrical industry	steel industry	metal and electrical industry
Specialisation	Ford, supply industry	Opel/GM supply industry (steel treatment)	supply industry
Actors	Ford, several SMEs, City of Cologne	Opel/GM several big and medium-sized steel companies	SMEs
Networking	poor	poor	poor
Research Infrastructure	good	moderate	poor
Cluster management	several trials, but none succesful	several trials, but none succesful	non

4 Conclusions – Cluster management between improvisation and professionalisation

As we have seen in chapter 3 clusters and cluster management differ from region to region as well as from sector to sector. Cluster management in the automotive industry had been discussed in all three regions, but no region succeeded. Cluster management in the ICT sector is successful in those regions which have developed a clear profile, the software cluster in Dortmund and the media cluster in Cologne. In fact there are rather informal networks in other cities like Paderborn and Essen. In the segment of telecommunication cluster management failed due to the high level of competition.

All regions have started to organise cluster management in the health care sector. East Westphalia already started with those activities in the early 1990s and has developed a certain level of professionalisation. The Regio Rhineland started in the late 1990s without any visible result yet. The Ruhr Area as a latecomer started around 2000 and – as usual in this region – a lot of initiatives resp. networks have been initiated since. Lately they try to coordinate the different activities in order to avoid intra-regional competition. The biotechnology as the most dynamic part of health care has a longer tradition of cluster management in the Regio Rhineland. In this case the Ruhr Area and East Westphalia are latecomers. Biotechnology was not defined as a 'Field of Competence' in the Ruhr Area. However some actors try to promote it through the back door of health care (biomedicine) or new chemistry. East Westphalia failed in organising cluster management but started a second effort recently.

The picture of cluster management is therefore confusing, it looks more like a patchwork than a result of strategic activities. Nevertheless, in this concluding chapter we will ask for systematic reasons. Of course, as we will point out, individual factors are often decisive for the successful establishment of long standing cluster management. But there are systematic factors to be discussed, too. As stressed in our introduction, we will start again looking at sectoral factors, assuming that the windows for cluster management are more or less open from sector to sector. After this we will take a look at the regional factors. Are there specific regional factors that enable or hinder successful cluster management? Are there aspects of collective learning that enforce cluster management in the course of time? Finally we will take a look at general factors influencing cluster management, especially political ones. Doing this we will leave the sectoral and regional level, entering a macro-economical point of view.

Sectoral aspects

Cluster management depends on the assumption that there is a chance to strengthen the regional nodes in the web of global sector flows. Strengthening regional nodes depends on factors that are strongly related with the regional level. These factors have to provide comparative advantages for enterprises. In former times material linkages like supplier-user relations had been very important. We can find the roots of those linkages in some automotive clusters or in chemical sites. Today, more informal factors are crucial to establish a strong regional node: a wide range of qualified workforce, the existence of research facilities in the neighbourhood in the case of technology based sectors like biotechnology, the location of specialised service companies and last but not least the chance to meet high qualified information from a broad range of related sectors or technologies.

From a company's view, regional co-operation or networking is not self-evident in any means. Companies are involved in different spaces (cf. Camagni 1991): the market, the companies, the sector and maybe the region. Whatever the setting is in detail, companies have the choice to move from space to space. Looking at the sector there are three aspects of interest facing the opportunities for cluster management.

Firstly, the **age of the sector** is important. Young companies are more open for regional contacts than elder ones. They are strongly depending on an established regional setting that enables the foundation and the further development. Further they often start with strong relations to lead-users in the neighbourhood. In the case of technology sectors they need high-qualified employees, especially from the universities. In the case of the ICT and the biotechnology sector this is very important. Facing this situation cluster management can contribute to sector-formation (professionalisation, standardisation and so on), it can provide an institutional setting and attract further enterprises.

Due to cluster management, the challenge is to identify the windows for new sectors and the related regional competencies as early as possible. This has been the case in the media cluster in Cologne and the software cluster in Dortmund. With certain respect this can also be said for the biotechnology cluster in the Regio Rhineland and the ICT Cluster in Paderborn. These clusters actually have a self-enforcing dynamic and late-comers have a lot of difficulties to compensate this advantage. Nevertheless, again and again we find cluster projects that try to imitate the success of other regions without reflecting the sectoral situation. In the mid of the 1990ies Dortmund tried to compete with Cologne as the leading media location and failed. According to this we suppose most ICT and biotechnology activities in the three regions outside the leading clusters fail as well.

Secondly, the **dynamic of the sector** is important. In contrast to new sectors, mature sectors are based on explicit knowledge. They have a long-established division of labour.

Therefore in the first view there is little need and chance for regional co-operation or for cluster management. A high level of concentration often leads to contacts/communication in the world wide division of labour, often on the level of enterprises. Nevertheless, from time to time the window for cluster management is open in mature sectors, as well.

This had been the case in the automotive industry in the early 1990ies when the division of labour between automobile producers and suppliers changed in a fundamental way. Facing the destruction of long established supplier-user relations a lot of suppliers started a search for new orientation. Following this way in the early 1990ies their interest in regional co-operation rose. Some regions like the Steyermark in Austria used this window and established a well running cluster management. Meanwhile the relation between automobile producers and suppliers are back on a stable way and the window for cluster management is closed. That is the reason why in all three regions there are a lot of difficulties in establishing cluster management in this sector. Caused by these difficulties all three regions changed their strategic orientation: They are all reflecting on traffic and mobility combined with new ICT technologies. In all three regions we find single projects or conferences. But again the establishment of cluster management is supposed to fail because the big players and lead users are organised on a sectoral, not on a regional level. Therefore the related networks are on a European if not even a global scale.

The health care sector is in a lot of aspects a mature sector, too. Recently there is strong pressure on restructuring. Reasons for that are various: general trends like the ageing of society, the rising awareness of health and wellness and an inevitable need to restructure the health care system in order to reduce public costs,. Facing this trend, a lot of regions have started projects to improve and to modernise the health care sector, hoping to create regional job growth. Health care clustering therefore is 'trendy'. In certain terms the health euphoria can be compared with the trends in micro-electronics in the 1970ies, in environmental technology in the 1980ies and in biotechnology in the 1990ies. In a strong sense health is quite different from cluster policy because most functions of health care are spatially spread. This is because the health system has an infrastructural function and there is need for a strong neighbourhood of customers. Therefore all regions have a basic fitting with health care functions and all regions can claim to be competent in healthcare. For the same reason, no region can really hope to promote the health care system in a way that attracts outside-investors.

The third aspect concerns the internal **structure of the sector**. Cluster management would work well if the division of labour inside the sector would be a complementary one. In contrary cluster management becomes difficult in a highly competitive environment. This is the case in the telecommunication part of the ICT sector. Due to privatisation and deregulation

telecommunication can be regarded as a young sector characterised by strong dynamics. Competition in the telecommunication sector focuses on the core market, which is facing expensive infrastructure investments like UMTS in combination with standardisation and strong price competition. This is the reason for quite big difficulties in cluster management in this sector. No wonder that the different approaches in the Rhineland never left the status of general statements.

Regional aspects

The sectoral aspects refer to the question whether there is a window for cluster management or not. The regional aspect concerns the question whether there is a chance to use the window and the way the chance is utilised (cf. Benz et. al. 2000).

The most important regional aspect concerns the institutional framework. The question is whether there is a superior regional institution that has the competencies and the resources to initiate and support the framework for different clusters. Or there are single institutions for each cluster management. The situation is quite different in the three regions discussed in the contribution.

In East Westphalia we have a fitting administration on the regional level (Bezirksregierung) and two strongly co-operating chambers of commerce. But there is no regional economic development agency. Nevertheless, the crucial factor is the 'Initiative für Beschäftigung'. This is a network of regional actors that is co-ordinated by the Bertelsmann foundation, a foundation of one of the largest regional companies. This network can be seen as activator and promoter of issue-related networks and projects. Consequently, cluster management in this region depends on informal networks and projects without any strong institution.

In the Regio Rhineland there are two chambers of commerce, too. But in contrary to the Ruhr Area they do not have a strong tradition in co-operation. Further on, the Bezirksregierung is not congruent with the region. In contrast to East Westphalia there is a regional development agency. However this agency has very few competencies in economic development and cluster management. Therefore cluster management is more driven by the single cities in the region and is very different from city to city and from sector to sector. If there is on overall feature at all, cluster management in this region bases on round tables. There are only a few examples (media, biotechnology) for a well established cluster management.

The institutional setting in the Ruhr Area is confusing: Despite of common problems there was no co-ordinating agency until two years ago. Cluster management took place in single parts of the Ruhr Area, corresponding to the different chambers of commerce. Two years ago the 'Project Ruhr GmbH' had been founded by the North Rhine-Westphalian state gov-

ernment in order to promote economic development, especially cluster management. The Project Ruhr GmbH has an initiating and co-ordinating function. However acceptance is still missing and they still need to demonstrate what they are good for. Cluster policy in the Ruhr Area is highly decentralised and in some fields it is competitive. This means that different cities in the Ruhr Area promote cluster management in the same sector, basing on financial support from the EU structural funds. Therefore cluster management in the Ruhr Area has to do with infrastructure and with public financed network projects.

The second regional aspect to be discussed here refer to the **learning capacity**. In general there is a long tradition in cluster policy in North Rhine-Westphalia, especially in the Ruhr Area. In certain terms the Ruhr Area is a laboratory of experiments in cluster policy. The younger tradition goes back to the early 1990ies. The elder one leads to public private partnership institutions that had been founded in the 1920ies (KVR) and 1930ies (environmental planning, water management). The experience in the Ruhr Area diffused all over North Rhine-Westphalia, promoted by the state government. Nevertheless, there is no accumulated knowledge about the why, when and how of cluster management. Professionalisation is low and a few well established examples for cluster management go hand in hand with a lot of uncoordinated and short running activities. All in all, the reality of the learning region is still in an infantile phase.

So, despite of different institutional settings and various regional best practices, cluster management in the three regions strongly depends on **individual factors**. In some regions one can find single persons that stand for clusters or cluster management: Founder of successful new companies like Nixdorf in Paderborn or Materna in Dortmund, who is now president of the chamber of commerce. A further example is the well running Dortmund Project. It bases on the support of a local steel producer in order to compensate job decline in the steel sector. Recently, cluster management has been promoted by institutions that are under pressure and that are in search of new functions. This is especially true for the Bezirksregierungen, the chambers of commerce and in the 1990ies for the trade unions as well.

General factors

Today, cluster management has high priority on the agenda in most agencies that are concerned with local or regional economic development. This is not self evident in any way because a long time a sceptical attitude against cluster management dominated. Regions like East Westphalia, dominated by small and medium-sized enterprises, wanted to prevail their diversified economic structure to avoid the dependence on single leading sectors. The Ruhr Area suffered from the decline of the steel, energy and mining cluster and has the vision of

thousand flowers. They wanted to avoid new economic concentration because they did not want to become depend on a dominating sector again.

The general change towards cluster management has to do with **public programs**, firstly. EU structure policy changed from the promotion of small and medium-sized enterprise-networks towards sector specific networking and clustering. On the national level, cluster policy now has a prominent place in the context of innovation and technology policy. And the North Rhine-Westphalian state government requested all regions to identify and define competencies as a focus for future structure policy.

This new direction in economic development policies is basing on the spread of **best practices**, too. The media policy in Cologne, the Dortmund project or the networking by the 'Initiative für Beschäftigung' are very different approaches and are well known in North Rhine-Westphalia. Not at least, consulting agencies that did initiate or promote such best practices have great interest to promote these in order to get new projects (cf. McKinsey 2002).

Taking all these aspects together, cluster management has reached an own dynamic. We suppose that it is not only the matter of regions any longer but the **focus of a new division of labour** in economic policy in general. Strongly supported by the EU, this new focus is basing on a shift from the federal to the regional level, a shift from regulation and financial support to activating and moderating, a shift from public service to public private partnership and self organisation, maybe to activate civil society.

All in all the window for cluster management is therefore wide open recently. As pointed out the situation is different from sector to sector, from region to region, but in general cluster policy can be seen as a new direction of regional policy. The challenge is now to keep the window open and to establish a professional, sustainable infrastructure of cluster management. Four steps are needed to implement a long running self organised cluster management:

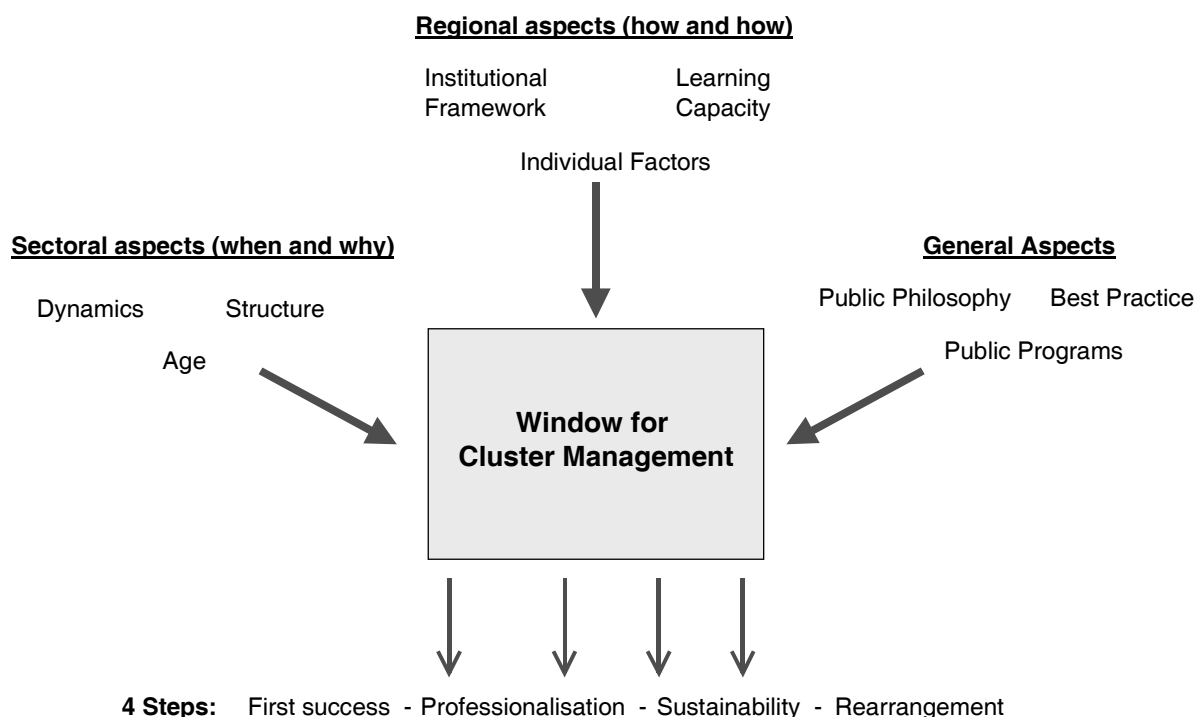
- Cluster management needs first success to demonstrate the benefits of cluster management for politics as well as for enterprises.
- Cluster management needs professionalisation, routines, and institutional change, especially in local and regional development agencies.
- Cluster management needs a sustainable institutional setting, whatever this setting is. If it is not able to demonstrate the benefit for companies, and this means that after an initiating stage companies are ready to pay for it themselves, cluster management will stay in a very unstable situation.

- In the long run, cluster management needs to establish learning capacity in order to manage rearrangement and adoption and in order to sustain a stable node in a global web.

Most activities studied in this contribution are still waiting for the first step. Enterprises are still interested but there are first hints that show a rising sceptic. Only some agencies have faced the new tasks and began to reorganise themselves. Professionalisation and learning capacity is still far away. And there is a future task for research, too. Meanwhile, we know a lot about the way clusters work, but still we know few about the when, why and how of cluster management. As long as there is a high insecurity about the realistic potentials and the needed competencies cluster management remains in an experimental stage.

In economic terms, clusters are depending on concentration and a high density of internal interaction. The problem is that cluster management becomes a general imperative without clear strategic orientation and professional framework. If each region tries to organise a cluster management of its own, cluster management runs danger to undermine the further development of clusters from a macro-economic point of view. The result is that no region will be able to provide the amount of concentration and density that is needed to be competitive on a global level.

Figure 3: Windows for Cluster Management



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