

A cross-border Technological Top euRegio: Cold feet or Real Challenge?

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0. Introduction

Knowledge does not recognise any frontiers and the intensification of cross-border cooperation can be helpful to realise and implement a region's visions and objectives. In this context the 'Peaks in the Delta South-Eastern Netherlands' innovation programme is interested to establish a well-founded basis for cooperation in the Dutch-German-Belgian Euregio. As an extension of the previously performed South-Eastern Netherlands (ZON) SWOT analysis³ describing the technological centres of gravity in the examined Dutch region a Euregional analysis has been carried out in a "tri-national cooperation"⁴ that aimed at identifying possibilities for further cooperation and offering insights into how to implement cross-border cooperation in practice. The following paper presents a concise summary of the mentioned analysis which is less focused on methodological questions and empirical results in detail but more on general results and their policy implications. Chapter 1 gives some basic information about the methodological framework of the analysis – regional classification, classification of branches and empirical tools used in the analysis. Chapter 2 outlines the framework conditions for success. It describes the most important economic insights by branches and by sub-regions and explains the framework conditions for economic development and cooperation in the analysed region. The final chapter 3 derives some recommendations for future activities, especially it lists the fields in which Euregional cooperation can 'reinforce' shared 'strengths' and it offers actions that should be taken to foster the process.

1. Some methodological considerations

The geographical focus of the analysis is a region called Technological topEuregio (see map 1). In addition to South-Eastern Netherlands (ZON) – which comprises the Dutch Province of Limburg and the largest part of the Dutch Province of Noord-Brabant – the Technological topEuregio geographically includes areas which are important for ZON, namely:

- Belgium: the Province of Limburg, Province of Flemish Brabant (Arrondissement of Leuven) and the Province of Liege (Arrondissement of Liege).

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³ Berenschot Group BV (Ed.), Pieken in de Delta, SWOT-Analyse Zuidoost-Nederland, 2006.

⁴ Policy Research, Antwerp, Belgium was the lead contractor for the project 'Technological topEuregio SWOT analysis' commissioned by the Province of Limburg, Province of North Brabant and Ministry of Economic Affairs in the Netherlands. Policy Research cooperated with the University of Applied Sciences, Mönchengladbach, Germany and E'til, Maastricht, Netherlands.

- Germany: German part of Meuse Rhine Euregio (area around Aachen-Jülich, North-Rhine Westphalia) and the German part of Rhine Meuse North Euregio (Krefeld-Mönchengladbach, North-Rhine Westphalia).

The areas considered in each country as parts of the Technological topEuregio are subsequently designated as TTR Netherlands, TTR Belgium and TTR Germany respectively.

Map 1: Technological topEuregio

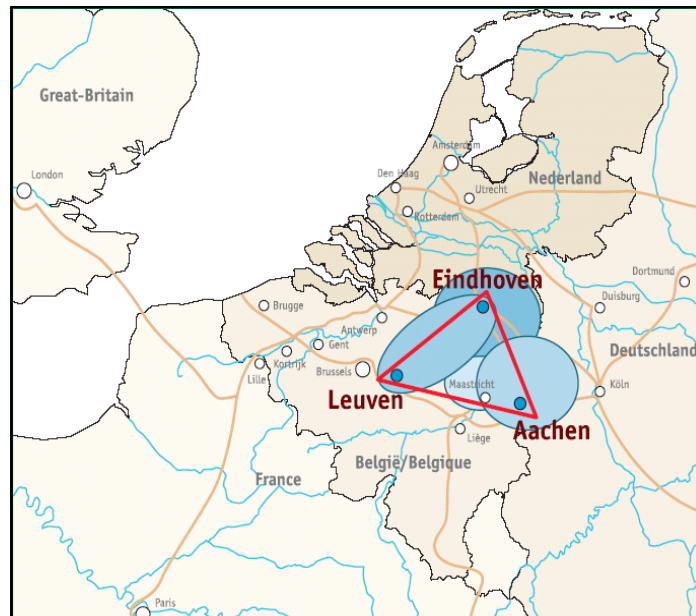
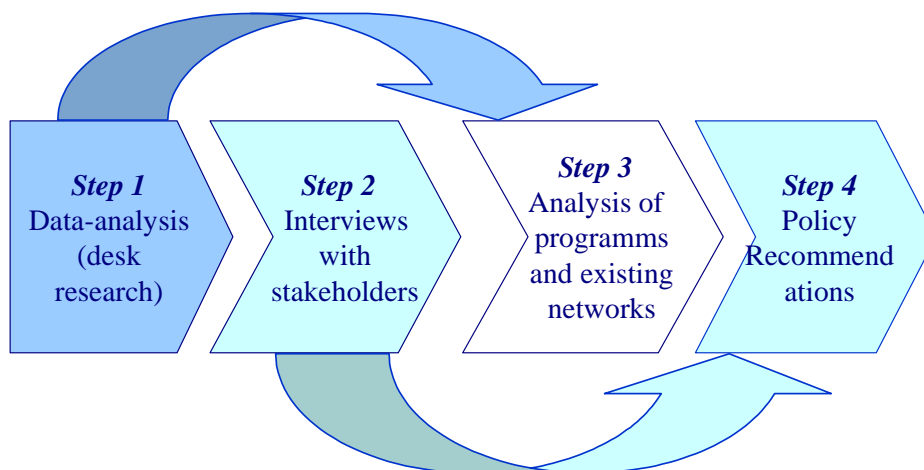


Diagram 1: Framework of the analysis



The analytical framework of the analysis is outlined in Diagram 1. In a first step (Data-analysis) existing official data concerning especially employment and value added is used to map economic and technological centres of gravity (peaks) in the ZON-surrounding areas abroad. In this data-analysis special regard was paid to the three sectors which are centrally

important for the ZON-region. In addition to the desk analysis a great number of so called “regional stakeholders” (persons involved in questions of regional economic affairs) were interviewed to get further information on the regional economic perspectives, on the possibilities for regional, interregional and cross-border cooperation and on the conditions for regional networking. Finally information on political programs and existing regional networks were analysed. This combination of analytical methods should help to form a picture of the Technological topEuregio that allows drawing conclusions and giving policy recommendations.

2. Framework Conditions for Success - Strong together in the Euregio?

Taking practical steps towards far-reaching (cross-border or non-cross-border) cooperation demands a multitude of factors which can most easily be summarised as: having the right people at the right places at the right time. Companies are usually the fastest and most able to make the right contacts for themselves and to do practical things, which means that it is chiefly important to help to resolve possible impediments that the business sector encounters. The role of the (provincial) government is thus mainly to level barriers between countries, institutes and people. Moreover the government can play a role in helping companies to adapt to rapidly changing circumstances. The more visionary and more active the government is, the more proactively the adaptations can also be made and the greater are the chances of reinforced economic development. In what follows the Technological topEuregio’s conditions will be described with these considerations in mind and with special regard to the three sectors High Tech Systems & Materials, Food & Nutrition and Life Sciences & Medical Technology.

2.1. Insights by sectors

Table 1: FACTS & FIGURES (ELAt)

	Area (km ²)	Inhabitants 2004	Active Inhabitants (aged 15-64) 2003	GDP in billion € 2003
Dutch part of ELAt	5 851	2 941 600	1 532 600	81.2
Belgian part of ELAt	4 893	1 687 200	732 400	39.5
German part of ELAt	3 525	1 289 300	556 100	27.9
ELAt	14 269	5 918 100	2 821 100	148.6*

* 2007 more than 155 billion (according to estimations)

The Technological topEuregio is a Dutch-German-Belgian border region with some 6 million inhabitants situated in the triangle between the cities of Aachen, Leuven and Eindhoven (see map 1 and table 1). About 20% (520,000) of the region's total workforce is employed in the three sectors that have been of special interest in this study – High Tech Systems & Materials, Food & Nutrition and Life Sciences & Medical Technology. The following part of the paper briefly outlines the significance of each of these three sectors in economic terms, its most important future expectations and challenges and the existing networks and initiatives for cluster formation in the different parts of the region.

2.1.1. High Tech Systems & Materials

Table 2: “PEAKS” OF “TECHNOLOGICAL topEUREGIO” (TTR)

Employment	HTSM	FONU	LSMT	SUM
TTR NL	127 000	92 000	19 000	238 000
TTR BE	58 000	39 000	7 000	104 000
TTR DE	104 000	58 000	16 000	178 000
TTR	289 000	189 000	42 000	520 000

HTSM: High Tech Systems & Materialen
FONU: Food & Nutrition
LSMT: Life Science & Medische Technologie

Bron: Policy Research, Hochschule Niederrhein, Etl

Policy Research Corporation, Hochschule Niederrhein, Etl

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Economic key figures (see Table 2): Following the definition of this analysis the High Tech Systems & Materials sector includes chemical products manufacturing, rubber and plastic products manufacturing, metal products manufacturing, machines and devices manufacturing, the electro-technology industry, the transport systems industry, related wholesaling, research and development work as well as design and consultancy. According to this broad definition the sector accounts for a direct employment of 289,300 people in the Technological topEuregio (TTR). Two thirds of these employees (or well over 190,000 people) are employed in industry; the other third (about 100,000 people) is made up of companies operating in wholesaling or services (research and development work, design and consultancy). Machine and device engineering and the electro-technology industry stand out in particular, with 50,200 and 58,300 people in the TTR. The transport systems industry and metal products industry are also significantly represented and account for 37,200 and 27,000 employees. Rubber and plastic products manufacturing, on the one hand, and chemical products, on the other, employ a further 14,100 and 5,100 people. The added value produced by the companies in the High Tech Systems & Materials sector is approximately € 20.4 billion on an annual basis. TTR

Netherlands' share of this is 45.8% (over €9.3 billion), TTR Belgium's 19.6% (approximately €4 billion) and TTR Germany's 34.6% (almost €7.1 billion).

Most important future developments: The general key issue of attention for the High Tech Systems & Materials area is frequently that of setting standards, generally acknowledged principles that enlarge the interoperability between systems. Establishing platforms for the exchange of good practices and the access to these platforms are decisive here.

The trends in the sub-sectors are divergent. The materials (metal, rubber and plastics) and electro-technology industries are characterised by an increasing shift of production to low wage countries and increasing pressure from energy and raw materials prices which cannot always be passed on easily to the customer. Materials and electro-technology continue to be important enablers for machine and device engineering on the one hand and the transport systems industry on the other. The search for new applications appears to offer opportunities in particular. The transport systems industry (in this case car assembly) is experiencing overcapacity worldwide, along with major uncertainty concerning the number of production plants. An opportunity arises primarily from the continuing tightening of emission standards, the increasing demands for fitting electro-technical systems as well as the implementation of information and communication technologies.

The sub-sectors in the field of High Tech Systems & Materials which offer the greatest opportunities for developing supra-regional initiatives are:

- Semiconductor and optronic devices,
- Semiconductor and electronic production equipment,
- Medical and optical systems,
- Automotive,
- Food processing systems and
- Enabling technologies and materials.

The semiconductor and optronic devices and medical and optical systems sub-sectors are two peaks for the ZON region which could become even stronger with support from the outside of the ZON-region. The automotive sector is strongly represented in all regions and further mutual exploitation of partners' qualities can deliver a win-win situation. Food-processing systems manufacturing has a large number of top and niche players, while the strengths of the German mechanical engineering industry can offer further opportunities for the ZON region in particular. The strong presence of the chemicals industry (plastics) and the knowledge and expertise in plastics, rubber and metal products are evident. Developments in the area of enabling technologies (embedded systems, nano-technology) also have a worldwide reputation. A combination with the strengths in the surrounding regions could offer opportunities for further reinforcement here.

Networks: The High Tech Systems & Materials sector has traditionally been solidly anchored in the region and has relatively strongly developed networks in each of the countries. A number of initiatives have been started up or are operating on a cross-border (or inter-regional) basis, but their added value alongside the national networks is (still) not completely clear.

Some of these networks were launched so that European (inter-regional) resources could be used.

Some examples of active cross-border networks are listed below:

- Semiconductor and optronic devices: IMEC/Holst Centre, DSP Valley,
- Medical and optical systems: Heartbeat of Life Sciences in Europe Meuse Rhine Triangle, Eucomed,
- Automotive: AutomotiveNet, CAR e.V., Network of Automotive Regions, NEAC, TCAS, BeLCAR and
- Enabling technologies: DSP Valley.

2.1.2. Food & Nutrition

Economic key figures: The Food & Nutrition sector has a large variety of sub-sectors: agriculture, hunting and services to agriculture and hunting, food and drinks manufacturing, wholesaling in food, drinks and stimulants, related research, related testing, inspections and auctions. The foodstuffs industry is usually the most technological, albeit it involves rather low technology applications on average in the considered region. The Food & Nutrition sector accounts for a direct employment of 188,800 people in the Technological topEuregio. Almost 45% of them (or 82,600 people) work in agriculture. Well over 63,000 people work in the food industry and over 40,000 people work in wholesaling. Approximately 2,500 people work in auctions, testing and inspections or research. The added value produced by food & nutrition companies amounts to over €8.9 billion on an annual basis. TTR Netherlands' share of this is 46.5% (almost €4.2 billion), while TTR Belgium accounts for 24.8% (slightly over €2.2 billion) and TTR Germany 28.7% (over €2.5 billion).

Most important future developments: According to the study the convergence between chemistry, nano-electronics, pharmacy and food offers opportunities in the food & nutrition sector. An increasing amount of attention is being paid to the functionality of food, the relationship between food and health as well as food quality. This is leading to new trends such as functional food and slow food. Internationally operating producers dominate in many food product groups. Although the share held by agriculture in Food & Nutrition in the different TTRs is still large, the position of agriculture is rather weak compared with wholesale and/or the supermarket chains. The developments relating to functional food are almost completely ascribable to the specialist expert institutes TIFN – Wageningen University (outside the region) or large food groups. The question is to what degree knowledge that becomes available through public institutes can be used by the (partly still small-scale) food industry to launch new products successfully in the market. Perhaps an equal degree of opportunity can be found for the region in slow food, especially by increasing the quality and beneficial value of food. Local products, specific varieties, demonstrable freshness and an emphasis on comfort and convenience offer room to create extra added value. Nonetheless, the necessary initiatives already exist at this level.

Networks: The food & nutrition networks are heavily nationally and regionally oriented. Closer ties are being considered or realised between a number of networks. Thus, Flanders'

Food is showing an interest in starting joint initiatives with a number of Dutch networks or expert institutes in particular.

2.1.3. Life Sciences & Medical Technology

Economic key figures: The life sciences & medical technology sector includes many different sub-sectors, in particular: the manufacturing of pharmaceutical raw materials and products, trade in pharmaceutical raw materials and products, medical and pharmacological research and development work, medical devices/instruments and orthopaedic and prosthetic articles manufacturing, hospitals and other institutes offering curative health support services. The life sciences & medical technology sector accounts for a direct employment of 42,500 people in the Technological topEuregio. Almost 17% of these people (7,100) are employed by the pharmaceutical industry. Medical devices manufacturing employs 6,600 people. 10,000 people work in wholesaling, 14,900 in hospitals and 3,900 people in research. The added value produced by life sciences & medical technology companies is €2.8 billion on an annual basis. TTR Netherlands' share of this is 44.5% (almost €1.3 billion), while TTR Belgium represents 16.9% (almost €0.6 billion) and TTR Germany 38.6% (over €0.9 billion).

Most important future developments: The interplay between hereditary factors, the environment and food patterns is increasingly being searched for in healthcare. The growing demand for measurement devices and the more central position of diagnostics in the medical sector are a related trend. Moreover, more ageing is also ensuring a required expansion of support services such as home care tools, wellness concepts and e-health. In contrast, the many different laws and regulations applying to pharmaceutical products and medical devices on the national levels as well as the long time-to-market still have a hampering effect.

Networks: The Life Science & Medical Technology sector is receiving a special high amount of attention and the number of initiatives and network meetings to develop activities in this sector is substantial. The regional and inter-regional networks operating in the different TTRs inside the Life Sciences & Medical Technology area of attention include:

- LifeTech Network, Human Health, Life Sciences Limburg,
- VIB, Flanders' Bio,
- LifeTech Limburg,
- BioWin,
- BioLiège,
- Bundesverband der Pharmazeutischen Industry,
- BioRiver Life Science Cluster,
- LifeTech Aachen-Jülich,
- Aachener Kompetenzzentrum Medizintechnik and
- Heartbeat of Life Sciences in Europe Meuse Rhine Triangle.

2.2. Insights by Regions

A number of insights by region are combined here to supplement the overview by sector in the previous chapter. The relative interest of the examined sectors is indicated with respect to the different regions. The economic key figures per TTR are supplemented by a synthesis of the most important specialisations and peaks. The most important government programmes for innovation and regional development are also listed, while agreements and differences are named.

Economic key figures: 520,000 people in the TTRs work in the branches of attention being considered here. In TTR Netherlands this amounts to 237,700 employees, 104,400 in TTR Belgium and 178,500 in TTR Germany, producing an added value of €14.8, €6.8 and €10.6 billion respectively. Employment in food & nutrition is six times higher than in life sciences & medical technology, but the relative regional distribution of the working population among the different sectors is similar. As regards R&D expenditure, North Brabant holds a relatively important place in TTR Netherlands (partly thanks to the presence of Akzo Nobel, Philips, ASML and DAF) while companies such as Océ and DSM set the tone in Limburg. R&D expenditure is concentrated around Limburg in TTR Belgium. The cities of Aachen and Krefeld are centrally important for R&D in TTR Germany.

Specialisation and peaks: The three sectors high tech systems & materials, food & nutrition and life sciences & medical technology are broadly defined, which makes it difficult to refer to specialisations or peaks at sector level. Nevertheless a brief comparison of the agreements and differences between the regions might give further insights⁵:

- With respect to the **high tech systems & materials sector** TTR Belgium scores relatively more weakly in the electro-technology industry than TTR Netherlands and TTR Germany. TTR Germany is very strongly oriented towards machine and device engineering. Shared thrusts across the regions include the use of new materials and material applications and ‘new’ technologies (microsystem technology, nano-technology, mechatronics, embedded systems) in electro-technical devices and instruments. Core engineering skills facilitate work with a strong orientation towards applications (automotive, medical systems, new materials).
- In the **food & nutrition sector** it appears that agriculture carries relatively greater weight in TTR Netherlands than in the examined regions in Belgium and Germany. Agriculture comprises a relatively smaller share of food & nutrition in the arrondissement of Liege, the arrondissement of Leuven and in the Meuse Rhine region than in North Brabant. The growing attention paid to the functionality and quality of food, including in relation to health, is translating into trends such as functional and slow food. For the vast majority of food & nutrition companies in the region, their effects on the company’s own position are still uncertain. The region is home to many traditional, well-known companies which are currently less oriented towards promoting innovation.
- In the **life sciences and medical technology sector** the manufacture of medical systems is a peak in TTR Netherlands and TTR Germany while the development of pharmaceutical

⁵ Please refer to the underlying report for greater detail (Policy Research Corporation / Hochschule Niederrhein / E’til, 17 December 2007).

products tends to be found more in TTR Netherlands and TTR Belgium. The use of ICT and system technologies in this field is characteristic for all TTRs.

Government Programmes: Policy formation in the innovation and regional development field is reasonably parallel in the different TTRs, but differences can be noticed in terms of thrusts, approach and speed (of transition). Innovation is a relatively new policy field and it still appears to be difficult to steer it in a targeted way. A multiplicity of initiatives exists, but the greater proportions are less easy to assess because they are highly input oriented. The initiatives that are oriented towards output are mainly found in the area of measuring scientific publications or patent applications. The question that arises is whether the output yardsticks offer an adequate guarantee of sufficient dissemination of knowledge to the direct region. After all, development of knowledge primarily offers added value when it can be linked to the parallel development of the regional business sector (SMEs).⁶ Additionally, the government can work in a targeted way on developing the knowledge present in the region, especially by bringing expert institutes and companies together. This has mainly occurred at university level so far, e.g. via the Strategic Research Centres in Belgium, the Technological Top Institutes in the Netherlands and the Fraunhofer Institutes or Jülich Research Centre in Germany. There is a growing feeling that the power and expertise of universities of applied sciences must be value-enhanced further. In Belgium practical steps are currently being taken to establish an association of universities and other tertiary education establishments, while some more room is being given for tertiary education establishments to undertake research in Germany.

2.3. Conditions for regional development

The regional conditions by branches and the enterprises behind these branches are one important part a region's capability to adapt to structural change; another important point are the formal and informal framework conditions for economic activity. In what follows these framework conditions in the Technological topEuregio are examined concisely and then the fields which are viewed as the most promising for further steps towards cross-border cooperation based on the insight into the region's peaks and clusters are listed. Of course only the conditions for cooperation can be created. The options for future cooperation which can be explored further will have to become clear from practical contacts between companies or expert and research institutes.

The framework conditions for regional development can be divided into five categories:

- Regional characteristics,
- Regional cooperation and network activities,
- Innovation, entrepreneurship and regional development,
- Intellectual capital and labour market and
- Governmental policy.

The observations relating to these framework conditions summarised below mainly result from interviews and discussions with "regional stakeholders".

⁶ To obtain an overview of the government programmes and contact partners for policy formation and policy execution, please refer to the underlying report.

Regional characteristics:

- Strengths at the level of space, environment and the availability of or access to qualified workforce are still being exploited and promoted on a limited basis;
- A shared identity does hardly exist (the “Eindhoven, Leuven, Aachen Technology Triangle – ELAT – is still hardly recognised or known);
- Cultural and language differences are still more a barrier and seldom used as an “opportunity”;
- Impediments relating to borders are still in work (postal traffic, company start-ups, differences in social security systems, etc).

Regional cooperation and networking activities:

- A traditionally strong internal focus exists in the analysed parts of the region (the Dutch Province of Limburg being most open); this means that a stepwise development of external contacts focusing on the most promising projects and ideas is most advisable;
- A total strategy is lacking, which should be more comprehensive than just focusing on innovation; unequivocal and clear communication from a common long-term perspective is lacking as well;
- Overcoming “cultural differences” needs a strong ability to adapt to other values in addition to enthusiasm and motivation;
- Cooperation is highly personalised; moreover, cooperation from a regional perspective is usually not a goal in itself for companies (although the regional climate can also make the difference for them);
- A leading role played by core players with local decision-making power is required to ensure the success of networks or cluster formation.

Innovation, entrepreneurship and regional development:

- Regional economic policy and innovation policy are only interwoven on a limited basis; effort from an innovation perspective is strongly directed towards ‘top-of-class’ and thus implicitly towards core players; (‘fast-follower’) innovation support for smaller companies is given (too) little attention;
- Medium-sized enterprises are not always nurtured and the upward growth of such (mature) companies is given little attention;
- Communication about success stories is rather limited;
- Cooperation is not ‘feasible’ without adequate underlying strategic corporate interests.

Intellectual capital and the labour market:

- Euregional training and labour mobility is limited and there is a lack of a targeted strategy;
- The organisation of knowledge sharing in the region and between the regions is still in its infancy; adjusting and coordinating research and development in sub-sectors is useful to avoid possible duplicate work;
- For the majority of companies the need for knowledge is mainly located at tertiary education establishments’ level; access to the newest, practically applicable knowledge is the basis for the success of most SMEs.

Government policy:

- Cooperation efforts are frequently (too) strongly steered by supply;

- SMEs usually have a greater need for practical ‘action’ (an exchange of thoughts on content matter or an idea) than for help to submit applications for subsidies within predetermined frameworks;
- The approach to generic company-location factors (education, the employment market, ageing) is often less proactive;
- Innovation policy is usually (too) input oriented (cf. R&D expenditures as % of turnover).

2.4. Conditions for Cooperation and Clusters

Cooperation in the examined region has different dimensions and speeds. The Netherlands are oriented towards relationships with both Germany and Belgium, while Belgium and Germany look for considerably less mutual contact. The relationships between the Flemish and Walloon regions considered are very weak, and so are the relations between the German regions Rhine Meuse North and Meuse Rhine. Cooperation with ‘TTR Germany’ or ‘TTR Belgium’ will therefore not be able to take place on a geographically comprehensive basis, but rather will have to be developed through extension along existing axes.

Cross-border cooperation is currently positioned along the Eindhoven – Leuven axis (in addition to cooperation between Belgian and Dutch Limburg in the form of the transnational University of Limburg). The inflow of medical staff from Belgium into the Netherlands must also be mentioned here. All of the necessary cooperation existed in the past between Maastricht, Aachen and Liege from an Interreg perspective. Interaction between Maastricht and Aachen is increasing being fostered at present.

Moreover it should be mentioned that the three sectors considered are recognised as important in the separate parts of the Technological topEuregio; so they receive separate policy attention in the different regions, too. This additionally fosters the strong internal orientation that already exists especially in Belgium and in Germany.

3. Recommendations

Recommendations for the future can be divided into three parts: General recommendations, most promising fields of cooperation and required actions to be taken.

3.1. General Recommendations

Some general recommendations result from experiences of other regions and their problems:

- Reinforce and use the regional characteristics (use strengths, recognise weaknesses);
- Consider regional cooperation as a stepwise process with possibly different speeds of the single steps;
- Allow support for innovation to match regional development and regional conditions;
- Stimulate Euregional exchange in all fields of (economic) life;
- Organise cooperation in a demand-oriented way.

3.2. Most Promising Fields of Cooperation

Cooperation opportunities flourish best in sub-sectors where there is a joint starting position with equal-quality players and a similar fund of knowledge. Keeping in mind this and the results of the previous chapter the following sub-sectors – differentiated by the necessary intensity of technological knowledge – can be seen as the most promising fields for Euregional cooperation⁷:

High intensity of technological knowledge:

- **Semiconductor and optronic devices; semiconductor and electronic production equipment:** This sub-sector has a strong knowledge base in the region with companies such as Philips, ASML and IMEC. Potential for cooperation lies mainly in reinforcing relationships with Germany, both in terms of research (Jülich Research Centre, RWTH) and industrial partnerships (in Rhine Meuse North as well as Meuse Rhine).
- **Medical and optical systems:** The medical and optical systems sub-sector is also a promising field, especially for vertical cooperation. Interaction is concentrated between TTR Netherlands and TTR Germany. There is only a very limited medical system construction sector in TTR Belgium. However, significant medical knowledge exists in this TTR.
- **Enabling technologies (electro-technology: nano-technology/mechatronics):** Cross-sector activities (transport, medical systems, mechanical engineering) also offer opportunities in the enabling technologies sub-sector. It is important to use possible complementarities effectively. Opportunities for cooperation with TTR Belgium can mainly be sought in Flemish Brabant and Liege (optics) and in Mönchengladbach and Aachen (RWTH, ZKM) in TTR Germany.
- **Materials (applications, design, new materials (polymers, steel, aluminium, textiles)) and biomedical materials:** Few cross-border initiatives can be found yet in the (biomedical) materials sub-sector. It is advisable to launch cross-sector activities (medical systems, mechanical engineering, transport) as well as to exploit the synergy between the different TTRs. Targeting of the examined regions in Belgium and Germany can be done from TTR Netherlands.

Average intensity of technological knowledge:

- **Automotive:** The automotive sub-sector is also a promising field for cooperation, but many inter-regional and European initiatives are already underway here. In this field it is possible to examine whether more targeted cross-fertilisation can be promoted between the different TTRs (in terms of supply, electronics and assembly) or also cross-sector activities (including space applications, new materials and enabling technologies). A link can be sought from TTR Netherlands with TTR Belgium (Limburg) and TTR Germany (Krefeld, Aachen). Liege can offer potential in particular for cross-fertilisation relating to space applications.
- **Food Processing Systems.**
- **Functional food and ingredients.**

⁷ Due to the attention particularly paid to high-technology matters by 'Peaks in the Delta', these sub-sectors and the automotive sector (where some of the activities in its supply industry are also high-tech) are dealt with in some more detail.

Low intensity of technological knowledge:

- **Home care applications.**

3.3. Required Actions to Be Taken

The authors believe that a step-by-step approach based on the strengths present and on common interests seems to be the most promising strategy for pushing and improving cross-border cooperation. In doing this the challenges for the different sub-regions are parallel: how to take advantage of increasing internationalisation as effectively as possible, how to work towards stimulating the capacity to innovate and how to organise training and development of expertise to match future needs.

The following ten actions have been proposed to the ‘Peaks in the Delta South-Eastern Netherlands’ Programme Committee or other relevant (policy) actors for consideration:

- The relationship between support for innovation, scientific policy and regional development should be reinforced, in particular to stimulate innovation in both large and small companies (with practical actions such as bringing together expertise centres in workshops or the exchange of researchers between institutes, and over time the possible joint financing of research institutes or R&D projects).
- It is necessary to take practical steps towards a better integrated Euregional labour market, for instance by actively stimulating cross-border exchanges of students and researchers (Ph.D.s).
- A Euregional labour market monitor should analyse the needs as to quality and quantity of inflowing workforce and the needs for workers to be filled in the medium and long run. These information should be supplemented by a Euregional vacancy database.
- The regions’ core companies should be brought together, e.g. by establishing visionary workshops dealing with leading contemporary topics;
- Where necessary, core companies should be stimulated to cooperate (further) with the expert institutes and SMEs located in the region; mutual cooperation among these should be encouraged;
- A vision and special measures to improve the situation of ‘fast following’ SMEs should be developed;
- Cross-border Euregional cooperation should happen in a more demand-oriented way and not in the hope of getting public funding (Interreg) for financing projects that normally pursue regional but no cross-border interests.
- The possibility of a cross-border Venture Capital Fund in cooperation with banks (having regional interest) from each of the countries should be investigated, not only to support new start-up companies, but also to facilitate structural adjustments and renewal in small and medium-sized enterprises;
- Privately and jointly financed network or cluster formation might be helpful especially if the core companies are willing to support them;
- The (pro-active) transfer of knowledge and the cross-fertilisation between experts or educational institutes and companies must be improved (e.g. training placements, practical assistance, R&D-projects).