“Metropolitan regions in Germany - The case of the Saxon Triangle Metropolitan Region”

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Abstract

Over the last two decades, the number of “metropolitan regions” in Germany has increased and major attention is paid to these regions. From the North to the South, several cities and their hinterland have positioned themselves as “metropolitan region”. But what does this term actually mean, what is the scope and how effective are metropolitan regions in practice?

This thesis analyses the development, importance and influence of metropolitan regions in Germany with special consideration of the East-German metropolitan region Saxon-triangle. The thesis assesses main reasons for past and current structural differences in the economic, cultural and historic development of the Saxon-triangle and compares these initial findings with the West-German region of Hannover – a region that is similar in terms of size, population and other basic indicators. To generate a comprehensive view and to define a proposal for the future strategy in a European environment, this thesis uses an approach around four distinct criteria: decision-making and controlling-, challenge and innovation-, gateway-, and symbol functions.

Based on this approach, strengths but also major weaknesses of the Saxon-triangle are identified. While the Saxon-triangle generally shows a strong setup in the challenge and innovation function – with a particularly high density of universities and research institutes –, the gateway- and decision-making and controlling function are major development priorities of the region. This thesis will conclude with some innovative ideas – like metropolitan governance and an increased collaboration between the cities – that may serve as key levers for an accelerated development and that may allow the region to catch-up to its peer regions in western Germany.
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List of Abbreviations

ARL: Academy for Spatial Research and Planning
BBR: Federal Office for Building and Regional Planning
BMW: Bayerische Motorenwerke
CeBIT: Centre of Office and Information Technology
Cf.: Confer (compare)
E. g.: Exempli gratia (for example)
ERDF: European Regional Development Fund
ESDP: European Spatial Development Perspective
EU: European Union
FRG: Federal Republic of Germany
GDP: Gross Domestic Product
GDR: German Democratic Republic
ICE: Inter City Express
MKRO: Conference of State Ministers for Spatial Planning
NUTS: Nomenclature des Unités Territoriales Statistiques
RTD: Research and Technological Development
SED: Socialist Unity Party of Germany
TIB: German National Library of Science and Technology
UNCED: United Nations Conference on Environment and Development
VNG: Verbundnetz Gas Aktiengesellschaft
VW: Volkswagen
Introduction

The idea to create metropolitan regions in Germany was initially defined in the early 1990s when the Action Framework of Spatial Planning Policy (first metropolitan regions) was approved. The primary objective of this framework was to reinforce the internal process of the German reunification and the development of the European Union. At the same time, the Conference of State Ministers for Spatial Planning (MKRO)\(^1\), that has the responsibility for spatial planning, acknowledged eleven metropolitan regions across Germany.

Figure 1: Metropolitan regions in Germany


\(^1\) English translation for „Ministerkonferenz für Raumordnung“.
To obtain the status metropolitan region, special functions have to exist. These are: the decision-making and controlling function, challenge and innovation function, the gateway function and the symbol function.

The fact that the metropolitan regions are distributed across all federal states in Germany is meant to emphasise the polycentric function of regions and to support the equality of the states, hence, supporting federalism in Germany. Yet regional disparities exist, in particular between the new and old federal states. In the eastern part, those differences are noticeable in lower paid jobs, economic imbalances, and social inequalities. As a consequence for example, out-migration of mainly young people and qualified labour has happened in recent years.

Apart from the Berlin-Brandenburg Metropolitan Region, the Saxon-triangle is one of the two metropolitan regions located in the newly formed German states. They both show a number of differences compared to the regions in West-Germany. Despite the efforts of the Saxon-triangle not to lag behind, disparities and differences are still very obvious. However, what can the Saxon Triangle Metropolitan Region\(^2\) do to catch-up to the same level of other metropolitan regions? What ideas and proposals are necessary to overcome current and future challenges? Furthermore, it needs to be determined what the influence of the eastern European expansion of the European Union is, especially the influence of adjacent countries - Poland and Czech Republic. Is this an additional challenge or does this generate new chances for the Saxon-triangle to recover?

**Goals and Primary Research Question:**

The aim is to study differences between metropolitan regions in the old and newly formed federal states in Germany. For this comparison, the western metropolitan region Hannover-Braunschweig-Göttingen-Wolfsburg will be

\(^2\) Hereafter, the terms Saxon Triangle Metropolitan Region, Saxon-triangle and Saxon-region will be used interchangeably.
investigated to find differences as well as similarities and to formulate ideas and a proposal for the Saxon-triangle.

As part of this analysis, the influence of the neighbour countries Poland and Czech Republic – as new EU-member states – will be assessed. Besides, the future prospects of the region in the European context will be analysed.

Another aspect to look at is the importance of metropolitan regions in Germany in general and further what their functions are and how effective they are. The main part of the thesis will be the analytical study of the strengths and weaknesses of the Saxon Triangle Metropolitan Region and the comparison with the Hannover-Braunschweig-Göttingen-Wolfsburg Metropolitan Region.3

The thesis is oriented towards central research questions which are subsumed into three main themes:

- The importance of metropolitan regions in general and what influence, development and also effectiveness they have.
- The history and development of the Saxon Triangle Metropolitan Region as well as the physical structure.
- The analytical study of the strengths and weaknesses of the Saxon-triangle and what can be done in the future.

The basis for this thesis is an analysis that describes strengths and weaknesses of the Saxon-triangle. The strengths and weaknesses analysis is subdivided into the four metropolitan functions and into further meaningful indicators. For these indicators, data and information from the federal office of statistics, strategic concepts, literatures and statistic reports will be used.

The analysis will make a comparison with the Hannover-region to identify the importance and the potential of the Saxon-triangle. On the basis of these results, the potential of the region will be identified and a new perspective will be developed.

3 Hereafter, the term “Hannover-region” will be used instead of the full name “Hannover-Braunschweig-Göttingen-Wolfsburg”.

9
1 Metropolitan regions in Germany

1.1 Metropolitan functions and effectiveness

Metropolitan regions assume important functions for the international and national development. These functions are considered “(…) stimulators for an economic, political, social and cultural development.”

However, to obtain the status of a metropolis or metropolitan region, cities or regions have to fulfil different requirements. These particular requirements are either functional or spatial. “In the functional way, a metropolitan region is a location (“Cluster”) with metropolitan institutes and with control-, innovation- and service-function. Additionally, they are the engine of regional and rural developments. In the spatial sense, a metropolitan region consists of one or more closely located, bigger cities including the hinterland.” In the spatial way a metropolitan region consists of one or several bigger cities in close proximity, including their surrounding regions. This is true as long as the surrounding regions have cities comparable to the main city. Further, two different types can be distinguished: monocentric and polycentric metropolitan regions. Monocentric metropolitan regions consist of one big core city together with its surrounding regions (e.g. Berlin-Brandenburg, Hamburg, Munich). Polycentric metropolitan regions, however, consist of similar core cities, which are connected with its suburban areas (Rhine-Ruhr, Rhine-Main).

Beyond that, further characteristics play an important role, for example highly efficient infrastructure, important political decision makers, the number of service companies or a certain number of inhabitants. According to a defini-
tion of the periodical report on comprehensive regional policy 2005\textsuperscript{8}, metropolitan regions are “(…) highly concentrated urban agglomeration with more than one million inhabitants and with a dynamic development regarding economic criteria like added value, economic potential or income.”\textsuperscript{9} The periodical report on comprehensive regional policy is published by the Federal Office for Building and Regional Planning (BBR)\textsuperscript{10} and deals with the spatial development of Germany based on facts, tendencies or forecasts. Furthermore, it describes plans and measures relevant to regional planning as well as the political influence of the spatial development in Germany.

The metropolitan regions were included in the “Guiding Principles and Strategies for Spatial Development in Germany”\textsuperscript{11}. Due to the continuously changing circumstances of spatial development, the guidelines and action-frameworks are constantly updated and modified. One particularly important update was agreed in 2006 when the Conference of State Ministers for Spatial Planning (MKRO) adopted the “Guiding Principles and Strategies for Spatial Development in Germany” and declared new priorities for the further spatial development over the next years.

The new “Guiding Principles and Strategies for Spatial Development in Germany” are meant to function as an orientation guide for a joint federal and state action. They focus on “growth and innovation, securing the provision of essential public services, and conserving resources, developing cultural landscapes”.\textsuperscript{12} Besides, they describe spatial common challenges and try to define development strategies. Furthermore, the guiding principles refer to various spatial areas (from rural area to metropolis), with emphasis on metropolitan regions.

\textsuperscript{8} English translation for „Raumordnungsbericht“.
\textsuperscript{10} English translation for „Bundesamt für Bauwesen und Raumordnung (BBR)“.
\textsuperscript{11} English translation for „Eitbilder und Handlungsstrategien für die Raumentwicklung in Deutschland“.
Moreover, metropolitan regions gain in importance and are decisive for the hinterland and the national and international development. They have significant roles and functions that distinguish them from other agglomerations:

- “(…) they improve the innovation and competitiveness of the country;
- they ensure the global economic integration of the country;
- they are centres of international cultural transfers and
- they are lighthouses of international and European transmission.”

To give a more detailed explanation of these functions, the economic theory of agglomerations may provide a useful approach. The theory is that spatial economic activities are not evenly spread in an area but activities appear in a rather cumulative way in one specific area. Furthermore, it is a pooling of similar and different branches of economy that raises a positive economy of scale – which is the price advantages that a business can realise through expansion. The advantages of the agglomeration are, for example, high capital- and labour productivity of companies, low transport costs, a large local market as well as the accumulation of knowledge and human capital. All these factors imply a higher competitiveness of a location or metropolitan region.

If a region is well-known for a certain industry or product, the potential for a successful development of a metropolitan region increases. This is even more likely, if the products or competencies are particular or unique. Furthermore, agglomerations generally have a higher demand for and supply of labour. This generally comes along with higher labour compensations - especially for qualified and highly-skilled people. Due to the agglomeration of qualities, people and knowledge, the metropolitan region can be considered

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a special location and “lighthouses of international (...) transmission”\(^\text{14}\). With the pooling of different qualities and labour, new people will be attracted and ultimately the metropolitan region will gain in importance. This in turn may lead to “centres of international and cultural transfers”\(^\text{15}\) focusing on the exchange of knowledge, opinions, and cultural experiences.

In contrast to all these positive effects, negative sides of agglomerations exist. For example, a much higher competitive pressure, higher rental prices, or overburden infrastructure.

The analysis of the metropolitan functions is difficult due to generally insufficient data; however, there are concepts that offer an approach to assess the special function of metropolitan regions. A major researcher in this area is Prof. Dr. H. Blotevogel\(^\text{16}\) who was a driving force in developing these concepts. He distinguished between four metropolitan functions and proposed characteristics to verify these. According to his research, these functions can be classified into decision-making and controlling function, challenge and innovation function as well as gateway function. Based on recent considerations, a fourth function can be added, which describes the symbolic effects of a metropolitan region and is therefore called symbol-function. These functions are mutually dependent and can co-occur. All these functions point out detailed information about the efficiency and international involvement of metropolitan regions, and additionally serve as a basis for analysis of weak points. The eleven metropolitan regions in Germany cooperate and interact and their main task is to accelerate the integration-process. In the following each function will be described.


\(^{15}\) Ibidem.

\(^{16}\) H. Blotevogel is Professor of Spatial Planning at the University Dortmund and president of the Academy for Spatial Research and Planning (ARL).
1. Decision-making and controlling function

The decision-making and controlling function describes the number and the importance of headquarters of national and international companies in the metropolitan region. There are concentrations of business centres which can steer international activities in business and politics. Frequently, headquarters or important branches of major companies of a country are located in metropolitan regions. Normally such companies come from highly specialised service industries such as finance, including banks, insurance companies and stock exchanges as well as logistics companies. Furthermore, supranational organisations and non-governmental organisations are included in that function. Due to the multitude of important and decision-making headquarters this function is also called “headquarter-function” or “controlling-function”.

2. Challenge and innovation function

A metropolitan region is considered an engine for technical, social and cultural development. Therefore, the ability to create knowledge, attitudes, values and products is essential for that function. This can be achieved by the agglomeration of universities, research and developments services as well as cultural conditions. The co-operation and the networking of several institutions like universities with companies provide an exchange of knowledge and may lead to new concepts and innovations.

The knowledge-based economy becomes increasingly important. Hence, it is essential that a metropolitan region possesses a multitude of research and development institutions, universities as well as scientific service companies. Innovative and high-quality ideas are particularly important in order to survive in a competitive environment. For the implementation of these ideas two innovation groups can be classified: Firstly, economic and technical innovations exist, which include “research and development, activities of companies, universities, skill-intensive service provider, research-institutes, and in-
stitutes of knowledge and technology transfer.”17 Secondly, social and cultural innovations can be identified that contain “cultural condition (theatres, museums) and places for social communication and exchange (public spaces, catering businesses).”18

### 3. Gateway-function

Metropolitan regions are considered hubs and centres for exchange. This function describes the access to “services, information, knowledge, ideas and opinions.”19 To provide such access, an excellent developed transport infrastructure must exist. Air transport, high speed and motorway links that give easy access to and from other European and international centres are of particular importance. The gateway-function is seen as the most important function for the integration and to strengthen the awareness of metropolitan regions for international and global trade.

This function has to fulfil certain capacities, most importantly an efficient infrastructure as well as an easy accessibility. Furthermore, metropolitan regions need to be a “gateway to the world” providing access to services, information, knowledge and ideas. The access to knowledge is measurable on the basis of indicators like media centres (TV, radio and print media), conference centres, internet access or library inventory. Further important indicators are exhibitions and fairs that allow the metropolitan region to penetrate new markets.

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4. Symbol function

The fourth function is the symbol function and it ties a multitude of historical, political, cultural as well as architectonic important institutions and other places of interest. This function has a uniqueness and notoriety on the international stage. This is the reason why metropolitan regions generate a certain image and should reflect trends, values, examples but also representative buildings. All this factors create a special identity and recognition value for the region. The symbol function entails cultural institute (museum, theatre and art-galleries), special events, and architecture.

All these functions are not independent from each other, and rather complement and multiply their effects. They help metropolitan regions to increase their competitiveness and to intensive the social, economical and cultural development. Depending on region and size, metropolitan region generally fulfil all four functions.
1.2 Defining “metropolitan regions”

The term of “metropolitan region” is not exactly defined and it is difficult to give a “right” explanation. In Germany and in all other European countries, the concept of “metropolitan region” is utilised to describe "(…) areas characterised by a concentration of population and economic, political and cultural activities.”

For a long time these urban or suburban areas were nominated as city-region in Germany. The idea of metropolitan regions in Germany to rise-up was initially defined in 1995 when the Action Framework of Spatial Planning Policy

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**Figure 2: Metropolitan functions**

<table>
<thead>
<tr>
<th>Metropolitan Function</th>
<th>Derived Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Decision-making and controlling function</strong></td>
<td></td>
</tr>
<tr>
<td>Private industry</td>
<td>Headquarter of national and international companies, Finance: bank and bourse/stock exchange, Specialised Service contractor</td>
</tr>
<tr>
<td>State government</td>
<td>Government, authorities</td>
</tr>
<tr>
<td>Other organisations</td>
<td>Supranational organisation (EU, UN, etc) International Non-Governmental Organization</td>
</tr>
<tr>
<td><strong>Challenge and Innovation-function</strong></td>
<td></td>
</tr>
<tr>
<td>Generation and promulgation of knowledge, attitudes, values and products</td>
<td>Research and development institute, universities, knowledge- based service contractor</td>
</tr>
<tr>
<td>Economical-technical innovation</td>
<td>Cultural condition (theatre, museums, major events)</td>
</tr>
<tr>
<td>Social and cultural innovation</td>
<td>Social locations (restaurants, sport, etc)</td>
</tr>
<tr>
<td><strong>Gateway function</strong></td>
<td></td>
</tr>
<tr>
<td>Access to human</td>
<td>Long-distance traffic, especially air-traffic, ICE-nodes</td>
</tr>
<tr>
<td>Access to knowledge</td>
<td>Media (TV, print-media), congresses, libraries, internet-Server</td>
</tr>
<tr>
<td>Access to markets</td>
<td>Trade fair, exhibitions</td>
</tr>
<tr>
<td><strong>Symbol function</strong></td>
<td></td>
</tr>
<tr>
<td>Theatre, museums, major events</td>
<td>Culture (theatre, museums, art), media, events, architecture, image, townscape</td>
</tr>
</tbody>
</table>

(first metropolitan regions) was approved. The MKRO, that has the responsibility for spatial planning, defined a metropolitan region as: “regional and functional locations, with outstanding functions. They are deemed to be engine of social, cultural, technical development and they should maintain effectiveness and competitiveness for Germany and Europe and furthermore to intensive the integration-process of Europe. The accessibility is an essential characteristic of European metropolitan region.”

The primary objective of this was to reinforce the internal process of the German reunification and the development of the European Union. The concept of metropolitan regions tries to accelerate the development, which was initiated in the early 1990ies when the idea of metropolitan regions first arose.

Due to arising inter-regional competition, the state and federal government decided to link spatial allocated development potentials and establish a network to ultimately enhance the overall development opportunities. One reason for the interregional competition can be seen as a result of internationalisation and globalisation. This means that increasingly more companies expand their business activities in other countries, while other companies establish their business in new locations. Due to the constant change, increasingly more competition occurs at the European level.

Metropolitan regions are considered a “sub-set” of cities or regions and they do not represent a new spatial category. Metropolitan regions “(...) as high-density locations, take on hub functions within the global network of goods, capital, information and migration flows.” Furthermore, they are hinges between global networks and locally economic and social activities. To distinguish metropolitan regions from other area categories, spatial planning has

identified the four previously mentioned functions to determine the status of a metropolitan region.

**Spatial demarcation**

There is no commonly accepted definition for the size of a metropolitan region. Additionally, only few criteria exist to distinguish metropolitan regions from others: the close integration into the global urban system, the size with its different rural suburban zones and the national importance. According to Prof. Dr. H. Blotevogel, metropolitan regions are functionally interwoven conurbations and are considered Europe-wide growth poles. The numbers of inhabitants in the centre are at least approximately 500.000 inhabitants and 1-1.5 million inhabitants for the entire metropolitan region\textsuperscript{23}. Following this classification, there exist approximately 80 areas across Europe.

The size of the area of a metropolitan region is difficult to define. Since there is a connection between a city and the hinterland, this area is also part of the metropolitan region. Generally, administrative borders are less reasonable because of changing cooperation with different hinterland areas.

The constantly changing collaboration and size of the cities or urban districts indicates fragmentation of the region and a certain complexity of the stakeholders.

1.3 Spatial development and metropolitan regions

For the German spatial planning policy metropolitan regions did not play a significant role for a long time. In the 1960ies and 1970ies, the German spatial planning policy focused primary on the structure and the development of their own territories and generally the cities within a region competed against
each other. There was hardly any focus on establishing national or even global place-connectivity – a factor that becomes increasingly important due to globalisation.

The main focus of the spatial planning policy was on regional balance within the respective territory – which means an equal spatial distribution of growth. This way of spatial planning policy was pursued until the 1990ies in Germany. In the wake of the German reunification, new general conditions were established.

With the political change in 1989, the general conditions underwent a radical change. The fall of the iron curtain and the German reunification led to completely new political circumstances, with huge regional disparities between East- and West-Germany.

According to the European Spatial Development Perspective (ESDP) the strategic aim is to achieve “a Polycentric and Balanced Spatial Development in the EU” – while metropolitan regions assume responsibility for important functions.

Several factors like the European integration, the European single market, the currency union as well as the EU-East enlargement created a new spatial situation of Germany. The spatial planning policy was responsive to the new general conditions and led to a readjustment of their normative direction, leading to the United Nations Conference on Environment and Development (UNCED). Also known as the Rio conference in 1992, general principles towards a sustainable spatial development were defined, focusing on three pillars – ecological, economical and social.

A further change – in accordance with the Lisbon strategy in 2000 – was to emphasise more the objectives of economical growth and to improve the international competitiveness. The goal of the Lisbon strategy is “to become

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the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion.\textsuperscript{25} A result of this new strategic goal was that metropolitan regions become a main subject in the spatial planning policy. Besides, the metropolitan regions in Germany launched an initiative (Initiativkreis Europäische Metropolregionen in Deutschland - IKM) in 2001 to better communicate their interests towards EU and the Federal Government. However until today, little progress can be observed since most metropolitan regions are merely a concept rather than truly functional regions.

\subsection{1.4 The significance of spatial planning policy for metropolitan regions}

Since the 1990ies, metropolitan regions have played a major role in the German spatial planning policy and have continuously gained in importance. They developed from a vague (analysis-) subject in regional planning reports to a main subject in general principles and plans of spatial planning. In 1993, the concept relating to regional planning policy of the European metropolitan regions was already drawn up in the Spatial Planning Policy Guidelines by the Federal Ministry for Regional Planning, Building and Urban Development. These guidelines were developed in collaboration with the Conference of Ministers for Spatial Planning.\textsuperscript{26}

In the 1993 Spatial Planning Policy Guidelines, five guiding principles for spatial development and a Germany-wide strategy was captured. The principle aim of these five guidelines is to encourage "(...) equivalent living conditions throughout the country and integrate the fundamentally altered situation in Europe (complementation of the internal market, the opening up of Eastern


\textsuperscript{26} COMMIN the Baltic Spatial Conceptshare (ed.), 2007. Spatial Planning Policy Guidelines and Spatial Planning Policy Framework for Action, COMMIN the Baltic Spatial Conceptshare. Available at:
Europe) in a model for spatial development. Polycentric spatial and settlement structures are to be safeguarded and developed, and natural resources protected.”

The concepts of European metropolitan regions are formulated in the Spatial Planning Policy Guidelines of 1993 as well as in the 1995 Action Framework for Spatial Planning Policy.

The Action Framework for Spatial Planning Policy clearly defines the 1993 guidelines of the Spatial Planning Policy which was then adopted by MKRO in 1996. The document is a “(...) medium-term working and action programme with ten specific bundles of measures.” It deals with subjects like “(...) regional development concepts, city networks, European metropolitan regions, strategies for structurally weak rural areas and cross-border cooperation.”

The Action Framework established the first seven metropolitan regions in Germany: Berlin, Hamburg, Munich, Stuttgart, Rhine-Main, and Rhine-Ruhr. The MKRO made a decision on the Action Framework for Spatial Planning Policy which classified the Saxon-triangle – including the cities Halle/Leipzig, Dresden and Chemnitz – as a "potential European metropolitan region". According to a resolution by the MKRO in 1997, the Saxon-triangle was accepted and consequently received its official status as metropolitan region.

As result of further discussions, four other metropolitan regions were defined in 2005: Bremen-Oldenburg, Hannover-Braunschweig-Göttingen, Rhine-Neckar, and Nuremberg.

To evaluate this new spatial concept, a special indicator-based analysis of the metropolitan regions had to be made. The analytical results were used for the new formulated Guiding Principles and Strategies for Spatial Development in Germany.


27 Ibidem.
28 Ibidem.
29 Ibidem.
The new three Guiding Principles and Strategies for Spatial Development in Germany focus on “growth and innovation”, “securing the provision of essential public services” and “conserving resources, developing cultural landscapes”.\(^{30}\) Furthermore, they concentrate on economic, social and environmental problems and address mainly to decision maker of federal and state as well as regional planning agencies, municipalities and associations of local government.\(^{31}\)

The three Guiding Principles and Strategies for Spatial development are valid for all types of areas from peripheral area to capitals. The Guiding Principles describe spatial planning priorities and provide guidance for joint state action.

Finally, an increasing perception of metropolitan regions of European scale is noticeable. Today, these regions are taken into account in policies, programmes and discussions of the European Commission or other institutions. These metropolitan regions are likely to have an advantage over cities that are not part of such regions and it needs to be carefully monitored that non-metropolitan regions will not fall behind. In this context, major threats exist for rural areas.

### 1.5 The significance of space research for metropolitan regions

The analytical approach of metropolitan regions in Germany and Europe is still difficult because of lacking data and changing intensities of cross border collaborations. A great number of metropolitan regions distinguish between core areas and rural suburban zones, which often drives further cooperations.

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To draw a comparison to other metropolitan regions, various data is necessary. For that reason the Federal Institute for Research on Building Urban Affairs developed a regional monitoring in 2006, which should measure the concentration of the metropolitan-functions on the basis of 28 indicators. According to data on economic efficiency and dynamic, a wide range of regions can be determined – from leading to lagging regions.

This clarifies that metropolitan regions are first of all normative concepts that make statements on future targets. Based on these differences, the principle goal of being “engine of social, cultural and economical development”\(^{32}\) has not yet been achieved. Not all metropolitan regions are growing, and not all growing regions are metropolitan regions. Hence, it is of great importance to identify the most critical success factors to determine efficiency and to measure empirical results.

2 Description of the Saxon-triangle region

2.1 Physical structure

The former Saxon Triangle Metropolitan Region originally consists of the cities Chemnitz, Dresden, Halle, Leipzig and Zwickau, including its rural districts. Until 2005, these five core cities collaborated with the neighbouring federal states Saxony-Anhalt and Thuringia. Then, the metropolitan region decided to expand its reach and, hence, added partner-cities in Thuringia and Saxony-Anhalt.

Figure 3: Map of the metropolitan region Mitteldeutschland

In the course of this transition, the metropolitan region changed its name from “Saxon-triangle” into “metropolitan region Mitteldeutschland”\textsuperscript{33} in 2009. Apart from the capital region Berlin-Brandenburg, it is the only metropolitan region in eastern Germany.

Figure 3 shows that the metropolitan region Mitteldeutschland is bordered to the North by the federal state Brandenburg, to the East by Poland and Czech Republic, to the South by the federal state Thuringia and to West by the federal state Saxony-Anhalt. It stretches an area of approximately 12,000 square kilometres and has a polycentric structure, given its five central cities.

The polycentric structure is quite unusual for a metropolitan region in Germany. The structure arises from the cooperation of the three conurbations Chemnitz-Zwickau, Dresden and Leipzig-Halle and is characterized by a decentralised structure. Apart from the Rhine-Ruhr metropolitan region, it is the only region that shows a significantly decentralised structure.

The distance between the core cities is relatively long since they are located in different parts of the region. These parts can be seen as the three edges of the triangle and the former name “Saxon-triangle” was meant to reflect the decentralised structure. Most of the bigger cities are situated in these corners as well as edges of the region. Mostly smaller towns are located between these bigger cities, which makes these gaps more peripheral. Along with the name change in 2009, the spatial structure of the region changed and expanded.

The population of the core areas is approximately 3.8 million\textsuperscript{34} and hence is ranked among the medium-sized metropolitan regions in Germany. When adding the other partner cities in Saxony-Anhalt and Thuringia, the region has a population of approximately 4.7 million.\textsuperscript{35}

\textsuperscript{33} German term for “Middle-Germany”.
\textsuperscript{35} Ibidem.
The conurbations of Dresden and Leipzig are the most densely populated areas with 1.560\textsuperscript{36} and 1.733\textsuperscript{37} inhabitants per square kilometre. In comparison to this, Chemnitz and Magdeburg are less populated with approximately 1.100 inhabitants per square kilometre. The other partner cities of the region – Erfurt, Gera, Jena, Weimar and Zwickau – have population densities between 650 and 900 inhabitants per square kilometre.

However, the region has significant structural gaps: for example, there are districts in which population density dropped below 100 inhabitants per square kilometres.

### 2.2 The German Democratic Republic (GDR) period (1960-1989)

Leipzig is the largest city in the federal state of Saxony. It has a population of 517.142\textsuperscript{38} and is well-known for its university and its exhibition centre. Major industries are automotive, health and medical science as well as power generation and environmental technologies.

Prior to the Second World War, Leipzig was the fifth largest city in Germany – with almost 750.000 inhabitants. During the Second World War, the city became a major production site for the German air force. In the course of the war, Leipzig was hence attacked by the British air force. In December 1943, Leipzig faced its hardest air raid and was almost completely destroyed, losing more than “44.000 apartments, huge parts of the industry and 80% of the exhibition buildings.”\textsuperscript{39} Moreover, many important buildings like printing

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\textsuperscript{37} Ibidem.


\textsuperscript{39} Leipzig-Sachsen-de (ed.), 2009. Die Geschichte der Stadt Leipzig von 1900, der 1. und 2. Weltkrieg, die DDR, die Wendezeit bis heute, Leipzig-Sachsen-de. Available at:
houses, publishing trade and further representative constructions disappeared.

On 18 April 1945, American troops occupied Leipzig.\textsuperscript{40} Three months later, the city (after the conference of Yalta) became part of the Soviet occupied zone. As a consequence of this political change, a democratically constitution was oppressed and the city was unable to move forward with its former economically progress. Due to this new affiliation, the economical importance of the city was declining.

With the foundation of the German Democratic Republic (GDR) in 1949, the federal state of Saxony was dissolved and the district of Leipzig was formed. However, the attempt failed because of the prevalent economic system of the GDR. This is also reflected in the declining population: in the 1960ies Leipzig had around 590.000 inhabitants, while this number dropped to around 530.000 at the end of the 1980ies.

An explanation for the unsuccessful attempt was the general lack of money and the low income, which was determined by the GDR government. All companies were nationalized and the industry and economy suffered from the new policy. The population was responsive to political events and started with demonstrations and strikes. In 1952, the biggest protest against the Socialist Unity Party of Germany (SED) policy happened. Finally, in 1989 the biggest demonstrations took place and initiated the end of the GDR. Thousands of people protested against GDR politics and required freedom of speech or free elections.

Dresden is the capital of the federal State Saxony and is – with a population of 513.557\textsuperscript{41} – the second largest city in the metropolitan region. The city has

\textsuperscript{40} Ibidem.

a long cultural, economic and educational history. Dresden’s economy is based on local industries and the integration of research and industry. The most important industries are micro-electronics, information- and communication technology, nanotechnology and biotechnology.

During the Second World War, the city was completely destroyed by several air raids and after the German capitulation in 1945, the Red Army took control of the city.

After the Second World War, Dresden belonged to the GDR and was rebuilt as a socialist city. The impact of the social era significantly changed the city. The historical city centre was reshaped and historical buildings were replaced by new socialist buildings.

As a consequence, all East-German federal states were resolved and replaced by smaller administrative districts (‘Verwaltungsbezirke’). Dresden lost its status as state capital and became capital of the district (‘Bezirk’) of Dresden.

With the political and economical change after 1945, almost all companies were expropriated and Dresden emerged as an important hub in the GRD. The main fields of competence were engineering, micro-electronics, pharmaceutics, aircraft industry as well as optics.

However, with a state directed economy, huge differences between East and West Germany arose. The economy in East German grew at a much lower pace and salaries were at a much lower level.

While Dresden did great efforts – like establishing new industries (for example, computer science) – to become again a successful industrial location, it failed and was unable to gain its old importance. Although most of the traditional industries were able to continue their businesses, they experienced great losses. However, Dresden was able to safeguard its efficiency in some ways because of this many well-known universities. Dresden was the only core cities of the Saxon-triangle that increased its inhabitants between 1960 and 1989 – from 490.000 to approximately 500.000.
With a population of 243,014\textsuperscript{42}, Chemnitz is the third largest city in the federal State Saxony behind Leipzig and Dresden. The manufacturing industry and service sector are quite dominate in this region and most of the skilled personnel work in these sectors or in related industries like automotive, metal-processing, microsystems technology as well as plant-construction. In GDR times, the East German city was called Karl-Marx-Stadt – named after the political theorist of socialism and communism. From the beginning of the industrialisation until the end of the Second World War, Chemnitz was one of the most important cities in Germany. The city specialised in mechanical engineering and the manufacturing industry – already at the end of the 19th century, 60 percent of all Saxon mechanical engineering factories and companies were located in Chemnitz. After the Second World War, the city advanced its economy and became the centre of the GDR mechanical engineering. A high share of all industrial plants and industry employees of Saxony were located in Chemnitz at that time. The number of inhabitants increased from around 280,000 (1961) to around 300,000 inhabitants at the end of the 1980ies, which was the highest number since World War II. Chemnitz became the major industrial centre in the GDR and continuously gained in importance.

2.3 The Federal Republic of Germany (FRG) period (1989 to present)

In July 1990, Saxony regained its status of Free State and the formal district-capital Leipzig became again an urban commune. "On the first of July 1990 the social-economic- and monetary union between Federal Republic of Germany (FRG) and German Democratic Republic (GDR) came into force."\textsuperscript{43} As a consequence of this convention, the FRG resumed power over the financial system and assets of the GDR and the D-Mark became the only valid cur-

\textsuperscript{42} Ibidem.
\textsuperscript{43} Leipzig-Sachsen-de (ed.), 2009. Die Geschichte der Stadt Leipzig von 1900, der 1. und 2. Weltkrieg, die DDR, die Wendezeit bis heute, Leipzig-Sachsen-de. Available at:
rency. With the monetary union the whole economy of the GDR collapsed and especially the industrial sector and the state-controlled trade was hit. Until now, Leipzig struggles with this collapse what is reflected in the high number of unemployment and the migration especially of young people.

In 1990 when the Wall came down, the reconstruction of a democratically state started in the whole former GDR-area. The economy of Leipzig underwent major structural changes and managed to attract new important companies and investors, such as Porsche, BMW, Amazon, etc. With these changes, new jobs in trading, service and commerce sector have been created.

Besides that, the city has a long tradition in education and with the 600-years old university and other research institutes, and is today an important location in the Saxon-triangle. The construction of a new exhibition centre was an attempt to pick up old traditions and re-gained its international importance. Furthermore, important infrastructural changes like the expansion of the airport or the redevelopment of the main-station have fostered the economic development of the region.

In the last years several constructions took place to enable an accelerated urban development. The constructions of the city-tunnel, the stadium or the expansion of the university are the most recent changes in Leipzig. The general growth is also noticeable in a continuously increasing number of inhabitants. Today, Leipzig is considered an important location of science, media and fair-exhibition. However, the influence of the city is below the level prior to the Second World War.

A similar development was seen in Dresden. After the reunification, Dresden became again state capital of the newly founded Free State of Saxony. The city was among the important agglomeration of mechanical and electrical engineering as well as pharmaceutical sectors in Germany. During the first 10 years after the reunification, the city continuously struggled with migration

because job-opportunities and living conditions were better in the old-Federal States of Germany. Since 2000 the population is growing again, primarily due to a stabilizing economy. Further changes were noticeable; the economy of the city has shifted from a traditional engineering and pharmaceutical industry towards a scientific centre with modern industries like IT and communication technology or biotechnology. The tourism sector is also quite important: with the restoration and reconstruction of destroyed buildings in the historic inner city, Dresden emerged to one of the most popular vacation areas in Germany.

Although Dresden has recovered since the socialist era, many important companies like Audi or Dresdner Bank left the region (with the beginning of GDR-era) and never returned. The lack of company headquarters is a major weakness of not only Dresden but of the entire region. But with the development of urban infrastructure and its international airport and the direct motorway links to Warsaw and Prague, Dresden has the setup to leverage its position in the international market. Today, Dresden has developed into a well-known cultural, educational, economic and scientific centre of Germany.

In 1990, Chemnitz was still an important location for mechanical engineering, however, it had to be subsidised by the old federal states to catch up with western companies and to increase competitiveness. The political and economical change resulted in the recoupment of its old name “Chemnitz” and local self-government and efficient industrial plants were established. Similar to Dresden and Leipzig, Chemnitz had to cope with an extensive decline in its population, in particular among young and skilled professionals who migrated to the western parts of Germany. Since 1990 a continued out-migration happened, leading to a shrinking and aging population as well as falling birth-rate.

As a consequence of these historical structures, the economy of the whole region has undergone several changes over the last 15 years resulting in the addition of new and quite young industries like biotechnology or microtechnology. The city has developed towards a more knowledge-based service economy with a close connection to the industry and regional science
sector. In and around the city of Chemnitz, medium-sized companies with heavy industries sector of mechanical engineering, microsystem-technology, metal processing, automotive manufacturing and biological technologies constitute the core sectors of economic activity. To strengthen this development and the entire region “more than 50 universities and scientific institutions and a host of companies collaborate in all kinds of networks that are of relevance to the automotive industry.”

Although job losses in the traditional sectors could not be completely offset by modern sectors, Chemnitz has become one of the most industrialized regions in East-Germany. Until now, it is considered an important mechanical engineering location and many firms are operating in this core field of business.

These progresses have boosted the city and strengthened the infrastructure networks. Since the reunification the national infrastructure connections have been constantly extended. However, Chemnitz is still missing an airport of international scale, though, is in close proximity to the airports of Dresden or Leipzig/Halle - each in 80km distance. Although the city has good national infrastructure-links, connections to neighbouring countries (Czech-Republic and Poland) are still poor.

3 The Saxon-triangle region – as metropolitan region

Metropolitan regions are considered to play a major role for future development of regions and cities. They are seen as important pillars for innovation and competitiveness of countries and furthermore should help to establish a region or city on the international market. The Conference of Ministers for Spatial Planning (MKRO)\textsuperscript{45} has acknowledged 11 metropolitan regions across Germany of which two of them are located in the newly-formed federal states. These are, firstly, Berlin-Brandenburg and, secondly, the Saxon-triangle region.

Berlin-Brandenburg has an exceptional position because it is not only the German capital but also the largest city in Germany. Furthermore, given its capital status, most of the important political headquarters are located there and hence has much more significance than other regions.

However, both East-German metropolitan regions have special positions. Firstly, they are seen as important opportunities to accelerate the development of the still economically weak East-German states with a generally poor infrastructure. Secondly, they are meant to provide a gateway to the Eastern neighbour countries Poland and Czech-Republic, in particular since the EU-expansion in 2004.

In contrast to the capital-metropolitan region Berlin-Brandenburg, the Saxon-triangle is, however, in a more difficult situation. This is primarily due to its economically weak structure – and a successful positioning on the market would require a stronger economy and a strengthening of the region’s key capabilities. For the Saxon-triangle, the positioning is a particular challenge because the three original core areas - Chemnitz-Zwickau, Dresden and Leipzig-Halle - are located in far distances to each other – spread over two different federal states. While covering two federal states might be a chance

\textsuperscript{45} German abbreviation for „Ministerkonferenz für Raumordnung“.
to expand the reach and impact of the metropolitan region, it however also generates a more complex situation. Specific laws or regulations of two states need to be considered and more stakeholders will need to be involved in order to form a consensus.

Given this, it will be necessary to map out strategies to increase the economic potential of the entire metropolitan region as well as that of all five individual cities. Moreover, collaboration should be intensified by uniting different qualities and strengths of the entire region. As a consequence, this may lead to a boost of already few existing clusters and cooperation.

If the collaboration is not successfully intensified, there is a significant threat that the metropolitan region might lose its focus and inner structure, leading to a divergence within the region. Eventually, the metropolitan region itself might have to question its status.

### 3.1 Development of the Saxon-metropolitan region

The history of the Saxon Triangle Metropolitan Region started in the early 1990ies when the region was acknowledged by the Conference of Ministers for Spatial Planning (MKRO) as seventh metropolitan region.

In 1994, the Saxon state government formulated in its regional development plan the principle aim to develop the cities Chemnitz-Zwickau, Dresden and Leipzig into a “European City Region Saxon Triangle”. “The overall objective of this regional planning strategy was to increase the competitiveness of Saxony within Europe.”

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“In 1995, the Conference of Ministers for Spatial Planning (MKRO) passed a resolution on the Action Framework for Spatial Planning Policy which classified the urban region as a “potential European region.”47

In 1997, the most important step for the region was taken, when the Conference of Ministers for Spatial Planning (MKRO) determined the status of the Saxon-triangle as European Metropolitan region.

In 1999, “the regional development plan for Saxony-Anhalt declared the aim to develop the conurbations of Halle and Leipzig into a metropolitan region of European significance.”48

In 2002 the work group “metropolitan region Halle/Leipzig-Saxon triangle” was founded by representatives of the Saxon regional centres Dresden, Chemnitz, Leipzig as well as the Saxony ministry of internal affairs. This working group was set up based on a proposal by the Saxon government. The Saxon-triangle was admitted to the association “European Metropolitan Regions in Germany.

In 2003, the “European metropolitan region Saxon-triangle” was declared a major objective in the revised regional development plan of Saxony.

In 2004 and 2005, the preparation of the metropolitan region-action plan was initiated. In addition, the city Halle/Saale and the federal state Saxony-Anhalt were involved to jointly drive the execution of the regional action-plan.

In summer 2005, the regional action plan for the Saxon Triangle Metropolitan Region was finalized and the cooperation agreement between the cities Dresden, Leipzig, Chemnitz, Halle and Zwickau was set up. This was the beginning of concrete actions to achieve an accelerated development of the Saxon-triangle metropolitan region. It was agreed to initiate certain projects to improve the awareness of the five cities as consisting parts of the Saxon-triangle throughout Germany and Europe in the long term.
In 2005, the prime ministers of the federal states of Saxony, Saxony-Anhalt and Thuringia agreed to integrate the efforts of both states in the activities of the Saxony-metropolitan region.

In 2006, the first joint project was represented at the “Euregia Trade Fair” in Leipzig and at the Expo Real in Munich by the co-operation partners Magdeburg (Saxony-Anhalt), Jena and Erfurt (Thuringia) as well as the “Economic Initiative for Central Germany”. This fair was an example of the continuous collaboration between the neighbouring federal states Saxony-Anhalt and Thuringia as part of the Saxon Triangle Metropolitan Region that was established in 2005.

In July 2007, the co-operation partners in Thuringia (Gera, Erfurt, Jena, Weimar) have been granted the right to actively influence the decisions of the metropolitan region. At the same time, the two cities Magdeburg and Dessau-Roßlau (Saxony-Anhalt) have an observer status in the decision making bodies of the metropolitan region.

In November 2007, the first conference of the metropolitan region was held in Leipzig with more than 150 stakeholders participating from the three cooperating federal states (Saxony, Saxony-Anhalt and Thuringia). The principle aim of this conference was to achieve collaboration in the Saxon-triangle and to improve the position on the market.

In 2009, the second conference of the metropolitan region was held in Chemnitz and more than 200 participants attend the conference.

In the same year, the mayors of the core cities (Chemnitz, Dresden, Halle Leipzig, Zwickau) decided on a new name for the metropolitan region. The name “Saxon Triangle” was changed into “metropolitan region Mitteldeutschland” on the grounds that the wider reach of the cooperation should be reflected in its name. The new name should emphasise the close collaboration between the cities and states. The main focus has been on the domains of science, economy and research – areas that have been considered major strengths and potentials of the region. At the same time, Jena and Magdeburg were accepted as a full member.

In this thesis the original name “Saxon-triangle” will be used instead of the new name “Mitteldeutschland”.

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3.2 Advantages and challenges of being a metropolitan region

Establishing a metropolitan region provides a number of advantages and chances for all involved cities and federal states. The potentials and strengths of the Saxon-triangle are (historically) characterised by the “automotive industry, biotechnology, medicine, renewable energies, mechanical engineering and microelectronics.”49 To further increase the importance of the metropolitan region, collaboration between the cities within the region needs to be strengthened and existing industries need to be leveraged.

Cooperation and the pooling of potentials and competences will make a region more attractive to investors, which will in turn improve the competitiveness of the region. Furthermore, the co-operation and division of labour between the cities of the metropolitan region enables cost savings and strengthens the region endogenously.

Even smaller cities of the Saxon-triangle as well as surrounding areas, will be more involved and may have the potential to attract more attention at the national and international level. The metropolitan as a whole provides better chances to establish itself on the international market rather than every city or company by itself.

These are all positive effects of a metropolitan region and its potential for future achievements. However, it takes a long way to get to this point. As of today, little has been achieved in the region and the collaboration between the core-cities is still facing major challenges. Depending on three different federal states (metropolitan region Mitteldeutschland) makes it in several aspects relatively difficult for the region. In comparison to other metropolitan regions, the chosen spatial structure of the Saxon-triangle is more spacious and spatial connections are difficult to arrange. Due to the new partner cities (Dessau, Erfurt, Gera, Jena, Magdeburg, Weimar) the inner complexity of the

region has increased leading to more complex decision making processes and making effective monitoring and controlling of the development more complicated. Furthermore, the wide structure makes it much harder to build an external image of the entire region. At the same time, a predominance of Saxon cities can be identified - Halle is the only core city not located in Saxony. This predominance was also visible in the former name “Saxon-triangle”.

3.3 Consequences of the eastern European expansion of the EU

Since the EU-expansion, new conditions have been created for the Saxon-triangle. In 2004, the neighbouring countries Poland and Czech Republic became members of the European Union determining a cornerstone in the development of the Saxony-region.

Already since 1991, the entire federal state Saxony has been supported by EU structural-funds and was “objective 1” in the period 1994-1999 and 2000-2006. The classification as “objective 1” made Saxony eligible for the highest financial government and EU aid. The aim of the European Structural-Funds is to correct the imbalances between poorer and richer EU-regions. In the current period 2007-2013, Saxony is eligible for funding covered by the Convergence objective. The Convergence objective entails all “regions at level 2 of the NUTS (Nomenclature des unités territoriales statistiques) classification whose GDP (Gross Domestic Product) per inhabitant is less than 75% of the Community average are eligible for funding under the Convergence objective.”

Furthermore “the European regional development fund (ERDF) focuses its intervention on modernising and diversifying economic structures as well as safeguarding or creating sustainable jobs, with action in the following

50 Halle is located in Saxony-Anhalt.
areas: research and technological development (RTD) innovation and entre-
preneurship, information society, (…)"\textsuperscript{52}

The administrative districts (Regierungsbezirke) Dresden and Chemnitz are
eligible for more support than the administrative district Leipzig that lost its
status in 2007. Leipzig is now in the phasing-out system under the Conver-
genence objective. "Under the phasing-out system, funding is granted to those
regions which would have been eligible for funding under the Convergence
objective if the threshold of 75\% of GDP had been calculated for the EU at 15
and not at 25 (…)\textsuperscript{53}

A reason for that change was the enlargement of the EU with new East-
European-countries in 2004. As a consequence, the average gross domestic
product (GDP) of the EU declined. The loss of the objective-1-status resulted
in the fact that important smart money for infrastructure or other necessary
goods will no longer be available for the Saxon-triangle.

In addition, the enlargement created further changes and challenges for the
region. Many companies and firms relocated their production plants to adja-
cent East-European countries. This relocation has led to a decline in jobs and
resulted in movement of labour. Especially small-sized-businesses have
been hit by these changes because the Eastern neighbour countries are
considered as local business competition since costs of production are lower.

However at the same time, the EU-Enlargement is also a major chance for
the Saxon-triangle. While the region might be hit by higher unemployment in
the short-term, the region is ideally located to benefit from the new markets in
the medium- and long-term. Hence, the region has the opportunity to pene-
trate into new and bigger markets thereby benefiting from cross-border col-
laboration.

\textsuperscript{52} European Commission (ed.), 2008. European regional development fund, European
Commission. Available at: http://ec.europa.eu/regional_policy/funds/feder/index_en.htm,
accessed 20 February 2010.

\textsuperscript{53} European Commission (ed.), 2008. Which regions are affected, European Commission.
February 2010.
To achieve this objective, the entire region has to focus more on a co-operation in the economy-, information-, and knowledge sector. Although the region can be considered a gateway to Eastern Europe, the region is still lacking collaboration with its neighbour countries.
4 Strengths and weaknesses-analysis

4.1 Description of the Hannover-Braunschweig-Göttingen-Wolfsburg Metropolitan Region

The Hannover-Braunschweig-Göttingen-Wolfsburg Metropolitan Region is located in the north of Germany and compromises half of the federal state Lower-Saxony. The polycentric structured region expands over an area of 18,600 square kilometres and consists of the four main cities Hannover, Braunschweig, Göttingen and Wolfsburg including the surrounded hinterland, municipalities and outlying districts.

Figure 4: Hannover-Braunschweig-Göttingen-Wolfsburg metropolitan region

It has approximately 3.9 million inhabitants. Based on its size, it is classified as a medium urban area in Germany.

In 2005, the region around the cities Hannover, Braunschweig, Göttingen and Wolfsburg was acknowledged by the MKRO as a metropolitan region. The idea to become a metropolitan region arose quite early, but the initial concept only mentioned Greater Hannover as a metropolitan region. Although the wider area of Hannover gained in importance especially with the Expo 2000 world fair in 2000, the region did not receive the status because it was too small. After the Expo 2000 the area included more cities in the region. Now, it compromised not only the wider area of Hannover but also cities in close proximity like Salzgitter, Braunschweig and Göttingen. Based on the new concept, the area encompassed a large part of south Lower-Saxony and collaborations between the cities were initiated. Finally in 2005, the MKRO acknowledged the region as a metropolitan region.

In 2008, the resolution of the metropolitan region executive committee defined to include the name of the city Wolfsburg in the title of the Hannover-Braunschweig-Göttingen metropolitan region.

The core sectors of economic activity in the region are mainly based on the service sector and manufacturing industries. Automotive constructions, transport technologies and logistics are main fields of the economy and industry especially around Braunschweig/Wolfsburg. Many international important companies like automotive supplier Continental AG, TUI or Salzgitter AG are based in the metropolitan region. The largest and best known group is Volkswagen AG with its headquarter in Wolfsburg.

Apart from the service sector and manufacturing industries the region has several universities as well as research facilities. Furthermore, the German Aerospace Centre (Deutsche Zentrum für Luft- und Raumfahrt) is located in


55 Expo 2000 was a world fair in Hannover from June 1 to October 31, 2000.
Göttingen and Braunschweig as well as several federal institution and institutes which are also responsible for research and development.

The metropolitan region is also well known for its leading fair trade CeBIT—the world’s largest computer expo held every year on the fairground of Hannover. Beside the CeBIT there are also other fairs in Hannover and the city Göttingen evolves into a place with international congresses. But also culture and art are represented with many museums, exhibitions, theatres and concert houses.

### 4.2 Strengths and weaknesses analysis – a comparison

The following analysis describes strengths and weaknesses of the Saxon Triangle Metropolitan Region. The analysis is subdivided into the four metropolitan functions (decision-making and controlling function, challenge and innovation, gateway, symbol) and further appropriated indicators.

The analysis will compare the Saxon-triangle with the West-German Hannover-region to evaluate its position and future potential. A similar area size, number of inhabitants as well as the polycentric structure with five respectively four core cities of both regions allows for a meaningful comparison. Figure 5 gives a first overview of basic indicators for both metropolitan regions.

The strengths and weaknesses analysis focuses on the three original core cities (Chemnitz-Zwickau, Dresden and Leipzig-Halle) of the Saxon-triangle rather than the entire metropolitan region Mitteldeutschland. Each chapter will start with an overview of the function highlighting the derived features.56

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56 The overview is formatted in italic and the derived features are underlined.
4.3 Decision-making and controlling function

Metropolitan regions are considered important national and international spatial units. Therefore, the main focus of the decision-making and controlling function lies on the number of international and national important headquarter. Apart from the manufacturing sector - which often has its headquarter but not its production plant in the region - specialized service contractors are of main importance, for example banks, stock exchanges, insurance companies or logistics companies. On the other hand, seats of governments, parliaments, supreme authorities and Supreme Court and seats of transnational organisations are central indicators for the decision-making and controlling function. Additionally, associations, chambers and non-governmental organizations are included. According to its main emphasis on decision-making and controlling, this function is also called “headquarter-function”.57

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The sub-function “private industry” carries great weight since it describes to which extent headquarters of national and international companies are located in the metropolitan region. This in turn influences the creation of value, research and development activities in the region and the formation and expansion of companies or other business activities. The decision-making and controlling function depends also on the presence of banking and finance companies, which not only play an important role in the creation of jobs, but also stimulate the start-up of new companies.

In the last years, the economy of the five newly formed federal states in Germany continued to emerge, with Saxony taking a leading position. An important factor for this development is the new BMW-automotive factory in Leipzig. Beside, semi-conductor and chemical companies in Dresden have been essential for the growth.

Within the newly formed federal states, the Saxon-triangle ranks high and has a leading position in decision-making and controlling function. In total, 35\textsuperscript{58} companies of the 100 biggest Eastern German companies are located in the Saxon-triangle of which 25 are situated in one of the five corners.

In this ranking, the city of Dresden has the best position – with 13 of the top 100 companies. A further advantage of Dresden is that fact that these companies belong to eight different industry sectors, helping to diversify its Dresden’s economy. Furthermore, many other important companies are located in the vicinity of Dresden. A further advantage for the Metropolitan region is the European Energy Exchange in Leipzig that was initiated in 2002. The Energy Exchange is an opportunity for the region to establish itself as a renowned trade fair centre.

Comparing the five core cities of the Saxon-triangle, major differences concerning the distribution of companies become apparent. There is a high con-

centration of companies in and around the cities Dresden, Leipzig and Chemnitz whereas in Zwickau and Halle merely one bigger company is located. This shows less distinct decision-making and controlling in Zwickau and Halle and is also an indication for the little attractiveness of this area.

Although the Saxon-triangle already has a leading position in the decision-making and controlling function within the newly formed German states, it is of only little importance Germany-wide. When comparing the Saxon-triangle with the Hannover-region huge differences are noticeable. Especially when evaluating the 100 biggest companies\(^\text{59}\) it ranks quite low and ranks extremely behind the Hannover-region: only one company that is headquartered in the Saxon –triangle, the energy company VNG – Verbundnetz Gas Aktiengesellschaft – in Leipzig, is represented in the ranking at the 80\(^\text{th}\) position whereas the Hannover-region ranks first with the Volkswagen AG\(^\text{60}\). Furthermore, the Hannover-region has in total five strong-selling companies of which four are located in Hannover. The large number of companies in this region gives strong evidence for the strong influence and distinct decision-making and controlling function.

Reasons for such huge differences are manifold. Firstly, the proximity of the Saxon-triangle to Berlin might hinder the attraction of corporate headquarters. Besides, its peripheral position in the East of Germany makes it hard to enter cooperation with western metropolitan regions. Moreover, the region’s GDR history has made it almost impossible to establish a market with comparable sales like in the western metropolitan regions, which have a more mature market.

Another indicator for the decision-making and controlling function is the finance sector, including the number of important credit institutions or insurance companies. In this section, a similar pattern can be identified. Also here, the Saxon-triangle has little influence due to the small number of important credit institutes or insurances. According to the ranking of the 100 biggest

\(^{59}\) Based on revenue.
\(^{60}\) Headquartered in Wolfsburg, Lower Saxony.
banks in Germany (published by the Association of German Banks\textsuperscript{61}) the Saxon-triangle is placed on the 78\textsuperscript{th} rank. Again, merely one bank of the Saxon metropolitan region is represented, while three banks of the Hanover-region can be found in the ranking – with one bank on rank12.\textsuperscript{62}

The Saxon Triangle Metropolitan Region shows deficits in the decision-making and controlling function and has little recognition and importance on the international and global market. Especially when comparing it to the Hanover-region its weaknesses become apparent. The rather unsuccessful and quite young industry reflects the history as a part of the former GDR. Just few industries from that era have been successful in the new competitive situation. To a large extent, the growth of the region is depending on direct investments from companies with their headquarters in the western part of Germany. This handicap will persist until some of the companies decide to relocate controlling and consequently decision functions to the Saxon-triangle. Another possible chance could be that some of the young and small enterprises grow big, which however will be a slow process over decades and hence unlikely to achieve in the early future. Hence, it will be difficult to attract new corporate headquarters or to establish an economic zone in the Saxon metropolitan region.

The sub-function government and authorities and supra-national organisations describes to what extent these indicators are distinct in the region. Furthermore, it describes how many of these organisations are located in the region and how their influence its development. Figure 6 shows that this function is quite dominate in the Berlin-Brandenburg metropolitan region because

\begin{flushright}
\textsuperscript{62} Most headquarters of leading investment and financial institutions are located in Frankfurt in the Rhine-Main-Metropolitan Region. Moreover, the leading German stock exchange has it’s headquarter in Frankfurt.
\end{flushright}
of its capital-status. Therefore, most of the institutions of the Federal Republic or international agencies are located in Berlin. In the Berlin-Brandenburg metropolitan region this function is hence significantly higher than in any of the other ten metropolitan regions in Germany.

**Figure 6: Federal authorities and public bodies in chosen metropolitan regions**

![Bar chart showing the distribution of federal authorities and public bodies in selected metropolitan regions.](source)


However, the Saxon-triangle has also important regional and international decision-making and controlling functions. Several institutions of the Federal Republic are distributed to the cities of the metropolitan region. For example, the Federal Administrative Court and the Federal Court in Leipzig, the Federal Institute for Occupational Safety and Health in Dresden or the German Federal Cultural Foundation in Halle.

Especially Dresden has a special position in the decision-making and controlling function due to its capital status of the Free State of Saxony. Consequently, most of the state ministries and most of the state-wide government agencies have their main office in Dresden. Apart from Dresden, state agen-
cies can also be found in Chemnitz and Leipzig. Moreover, the Saxon Triangle has several diplomatic missions from EU-, Asian-, and American countries.

However, in comparison to the Hannover-region, the region shows major differences in the number of federal authorities. The Hannover-region has many more federal authorities than the Saxon-triangle. But it is also noticeable that both regions have a higher number of federal authorities than Berlin-Brandenburg.

Based on figure 6, it is also noticeable that there are less federal institutions or public bodies than in the Hannover-region. This implies that the Saxon-triangle is not considered a political important location. According to this position it is not attractive for new companies with strong influence in decision-making and controlling function.

In the sub function politics, the Saxon-triangle has a strong position as the political centre of the federal State Saxony. Due to its state capital status, most of the public institutions or public bodies at state level are located in Dresden.

The region also has some of federal institutions and a number of diplomatic missions, which can serve as a proxy for its international influence. In comparison to the Hannover-region, the Saxon-triangle has only few federal authorities making it less attractive for further political institutions like ministries or commissions. This can partly be explained by its GDR-history and its long publicly owned plants. During that period it was impossible to establish private enterprises and the whole economy was depending on the GDR.

In the course of the German reunification the entire region collapsed due to a lack of private capital. The Saxon-triangle is still suffering from its GDR-history and needs to be supported by the German and European government. It will need much more time to build a strong position as decision-making and controlling function.
4.4 Challenge and innovation function

The core of the innovation and development function lies in the generation and spreading of knowledge, attitudes, values and products. To survive in a competitive environment, it is necessary to put innovative ideas into practice. These ideas could be subdivided into two groups: on the one hand there are technological and commercial innovations of research and development institutes, universities and knowledge-based service contractors. On the other hand there are social and cultural innovations that includes cultural condition like theatres, museums but also social locations like restaurants, sport etc.63

The sub function economical-technical innovation describes the number of research and development institutes, universities as well as knowledge based service contractors. The role of universities or non-university research institutes is not only considered traditional functions for science and research, but also a crucial stimulus for the development of regions.

Therefore, it is of main importance for a region to have access to human capital, science, and technical progress. Furthermore, these are essential parts of the economic development of regions.

The Saxon-triangle region shows a high concentration of universities and research institutes with a strong focus on science and engineering. The region has several public universities and shows a leading position in this field. Each of the core cities has large universities - except the city Zwickau where a university of applied science64 is located.

The city Dresden has the highest density of both public and private universities, of which some are specialised in a particular field like the Officer Candidates School or the University of Cooperative Education. The main emphasis

64 Corresponds to the German term „Fachhochschule“. 
of the university in Leipzig is also on technical and engineering subjects. Leipzig and Dresden combined account for the vast majority of registered students in whole Saxony. In the winter term 2008/09, the technical University Dresden had 33,212 students\textsuperscript{65} which is the highest number in the entire region. With this high number, the Technical University Dresden belongs to the group of only eleven universities in Germany that have more than 30,000 students. This clearly shows the educational opportunities in the region and the high reputation and quality standards of these universities. The second largest university in the Saxon Metropolitan Region is the University of Leipzig with 26,299 students in the winter semester 2008/09\textsuperscript{66}. Nevertheless, this fact also has to be critically judged because none of the public universities in Saxony – or any other in the newly formed states – have college tuitions and hence, generates high costs for the state. In contrast to Saxony, college tuitions are compulsory in Lower Saxony, which may make the region less attractive for students, however, gives the universities a better financial basis.

The Saxon-triangle has 24 universities, which is eight more than the Hannover-region. Of these 24 institutions, six are universities, ten are universities of applied science and eight schools of art and music. In the Hannover-region, there are in total 16 academic institutions, seven of which are universities, seven universities of applied science and two schools of art and music.

The Georg-August University in Göttingen had approximately 24,000 students in the winter semester 2008/09, making it the biggest university in the entire metropolitan region. The Gottfried Wilhelm Leibniz University in Hannover is the second largest university with approximately 20,000 students. The other 14 universities in the region had between 3000 and 13,000 registered students.


\textsuperscript{66} Ibidem.
Despite the poly-structured form of both regions, the distribution of universities is quite different. In the Hannover-region, an academic centre can be identified where universities are close to each other. In contrast to this, universities in the Saxon-triangle are more distributed across the region.

Comparing the research institutes and activities in both regions, the number of Max Planck institutes, the Fraunhofer Gesellschaft (Fraunhofer Society) and the Leibniz-Gemeinschaft will be used. These institutes are widely considered the leading research societies in Germany.

The Max Planck Society for the Advancement of Science is a German research institute and does “basic research in the interest of the general public in natural sciences, life science and the humanities”\(^67\). The main research fields of the Max Planck Society focus on biology and medicine, humanities, chemistry, physics as well as technology.

A further German research organisation is the Fraunhofer Gesellschaft which conducts research in different fields of applied science. Especially the contract research is a central field of its business activity. Moreover, it focuses on requirements of industry, society and government.

The German research institute Leibnitz Gemeinschaft is also leading in Germany. It encompasses several research institutions from various fields of study. The main researches of the Leibnitz Gemeinschaft are natural science, social science, humanities, engineering and environmental science, economics, as well as infrastructure research.

These three research institutes are responsible for basic as well as applied research in different fields of sciences and have strong collaborations with numerous universities across Germany. Hence, they can serve as a strong indicator to show the innovative potential of a region.

Figure 7 shows that in no other city, the Fraunhofer Gesellschaft operates as many institutes as in Dresden. In comparison to other important research locations like Munich, Stuttgart or Berlin, Dresden has 12 institutes. Beside Dresden, Fraunhofer institutes are also located in Halle, Chemnitz and Leipzig. Fraunhofer institutes are an important research organisation in microelectronics and put the region into a leading position in this field.

**Figure 7: Fraunhofer institute across Germany**

The Max Planck and Leibnitz research institutes are also well represented in the Saxon-triangle. The main focus is again only on the core cities and not in smaller cities or surrounding areas. Nevertheless it is visible that the Saxon-
triangle has its focus on research and science and there are considerable more institutes than in the Hannover-region.

In this field the Saxon triangle has a significant advantage over the Hannover-region, which has a total of 17 research institutes.\textsuperscript{68} The spatial distribution of the research and development institutes concentrate on just three cities: Hannover, Braunschweig and Göttingen. There is a strong focus on Max Planck Institute in Göttingen – with six institutes Göttingen has the highest density of research institutes in the entire metropolitan region. The Fraunhofer Society and the Leibnitz Gemeinschaft are situated in each of the three cities but to a lesser extent than in the Saxon Metropolitan region.

In comparison, the Saxon-triangle has in total 32 research and development institutes. With a total of 19 research and development institutes, Dresden is heading the Saxon-triangle for this indicator.\textsuperscript{69} Also in comparison to the Hannover-region Dresden is leading. In summary, this confirms the strong focus of the Saxon-triangle on research and development especially in the range of microelectronics and techniques.

Despite of the high number of research and development institute and universities, the Saxon-triangle also shows weaknesses in the field of patent applications. Compared to the Hannover-region, the Saxon-triangle has fewer patent filings in the technical field relative to the higher number of institutes. This indicator confirms that the region has not succeeded to leverage its knowledge base for process innovation to generate incremental economic growth. However, a region’s drive for innovations cannot only be measured based on patent application since there are also non-patent ideas or other possibilities that help a region develop inventions.

One possible explanation for fewer patent applications could be based on that fact that there are relatively small companies located in the region with lower investments in research and development. Small companies likely

\textsuperscript{68} Ibidem.
show less interest in investing in research and development, resulting in fewer tradable innovations. This again evokes stagnation of the small enterprises and no progress of the entire region.

Furthermore, several research and development institutions are little connected with the corporate sector which results in less research and development activities of companies in the Saxon-triangle. This again is the impact of the little distinct decision-making and controlling function due to the fact that research is usually conducted at the corporate headquarter. Furthermore, there are just too little cooperation between research and development activities and the economy of the region – not making sufficient use of research and development in the region.

The Saxon-triangle has a large number of research and development institutions and universities. Based on the number of students and universities the region is quite attractive for education. As shown above, this is however also partially due to the non-existence of college tuitions – a key advantage of the Saxon-region. Besides, the focus on the main areas of science and engineering can be considered a long-term advantage and indicates the high potential of the region. In comparison to the Hannover-region, the Saxon-triangle has a generally better position in this area. Despite such strong research and development institute and universities, the impact on the region’s economy is however limited. Due to primarily small companies in the Saxon-triangle it is difficult to pursue potential investment opportunities. The Saxon-triangle seems not to sufficiently leverage its potential which could put additional pressure on the region in the long-term.

4.5 Gateway function

The gateway function describes the access to human, knowledge, markets: metropolitan regions are considered important traffic junctions. They characterise a full developed infrastructure especially in air-traffic, high-speed train
and motorway links. This should provide fast accessibility from and to other European and non-European agglomerations. The access to knowledge – what becomes increasingly important in the knowledge-based society – is measurable based on media (e.g. TV, radio, print-media), congresses, internet server, as well library stocks. Fair trades and exhibitions have a huge attraction and allow penetrating new markets.\textsuperscript{70}

The sub-function “transport connection and mobility” describes the access of the population to the transport system and also how well the region is equipped in terms of transport systems. The state of this function in a region can be determined by the access to long distance transportation – especially to air-traffic or fast railway (e.g. ICE-nodes in a region). A good infrastructure is important since it connects not only the areas within a region, but to other agglomerations. Hence, a good traffic connection to national traffic system, good access to nearby agglomerations, and sufficient communication and information infrastructure is of essential importance. Otherwise the mobility of people, information and goods will not be possible.

The Saxon metropolitan region has a traffic system that makes the region accessible by car, train, plane as well as boat. All five core cities in the region are connected with main motorways and the inner area of the Saxon-triangle is connected with several roads to the main cities. Furthermore, Leipzig, Chemnitz and Dresden are hubs to the rest of Germany as well as Poland and the Czech Republic.

\textsuperscript{70} Paraphrase:Bundesministerium für Verkehr, Bau und Stadtentwicklung (ed.), Bundesamt für Bauwesen und Raumordnung (ed.), 2007: Metropolregionen in Deutschland, in:
Figure 8 shows that the region is accessible from East to West to the motorway E4 that passes through the entire region up until the Polish border. In the area around Dresden and Chemnitz, the E4 connects with the E14, which leads in the North to Leipzig, Halle up to Magdeburg. From Halle, the metropolitan region is connected with Göttingen, the southern part of the Hannover-region.

In the South West, the E4 connects with the motorway A72 with direction to Nuremberg. In the West, the E4 continues to Erfurt and further to Frankfurt am Main. Besides, the A9 links the area around Leipzig and Halle with the cities Berlin, Nuremberg and Munich.

Only five main motorways exist in the Saxon-triangle. The reason for this is the polycentric structure and the long distances between each city. A further
problem caused by this polycentric structure is the underdeveloped link to the hinterland and – in particular – to smaller cities. In most cases the access of the hinterland to major roads or other transport means is limited. Furthermore, the distances to other metropolitan regions in Germany are quite long and only the Berlin/Brandenburg- and the Hannover-region is in closer proximity. This aspect also gives an advantage to the Hannover-region since it is much closer to the Rhine-Ruhr and Hamburg metropolitan region and has approximately the same distance to the Berlin/Brandenburg-region.

A further problem concerning the inner construction of the Saxon-triangle is the insufficient coordinated local politics. This leads to the fact that each conurbation of the Saxon-triangle has its own transport system. In contrast to this, the Hannover metropolitan region negotiates to develop a common metropolitan ticket. This ticket will be available for the whole metropolitan region and will further strengthen the common effort to be considered a coherent region.

Concerning the rail traffic, several weaknesses can be noticed in the Saxon-triangle. There are indeed hourly express trains which connect all conurbations of the Saxon-triangle. Yet there is no long distance traffic connection between the main cities Chemnitz and Leipzig. This shows the insufficient accessibility of the region and supports the image of an incoherent metropolitan region. In comparison, the entire Hannover-region is linked together with long distance traffic as well as fast trains. Furthermore, the region plans to launch a metropolitan-ticket which will be valid for the entire metropolitan region.

The Saxon triangle region has two international airports: one is located in Leipzig/Halle and the other one in Dresden. Additionally, further local and private landing fields exist. With two terminals and more than 2 million passengers per year, the Halle/Leipzig airport is the biggest airport in the region. The airport plays an important role for charter flights and tourism and a minor role for air cargo. The Dresden airport has one terminal and approximately 1.7 million passengers and is more focused on air cargo.
Both airports in the Saxon-triangle have almost the same commercial relevance for the metropolitan region. Apart from the jobs created by the airports themselves, they have attracted companies in their vicinity that are integrated in the international air traffic. In 2009, around 130 companies with almost 3000 employees were directly linked into the airport system. Moreover, the airports are an important location and economic factor for both cities because they provide links to important German and European economic centres.

While the Saxon-triangle is equipped with two airports, the Hannover-region has just one major airport. However, this airport counts more than 5 million passengers per year. The airport in Hannover shows a much higher flight frequency and also offers a wider range of flight destinations – both airports of the Saxon-triangle have just few national and international destinations. Besides, the bigger size of the Hannover airport might also offer cost advantages and economies of scale, making the airport – from a pure business perspective – more competitive than the two airports in the Saxon-triangle.

Concerning the Gateway function, the Saxon-triangle is accessible by all standard transport means: by road, train, air as well as boat. Especially the connection to Czech Republic and Poland makes the region attractive. However, the Saxon-triangle shows many weaknesses especially in terms of connectivity for all transportation means. In particular the air traffic – which can be considered the most important gateway to connect to other metropolis – shows several weak spots. The insufficient gateway function concerning the air traffic makes the Saxon-triangle difficult to access for international and national business travellers or tourists. Apart the international connectivity, the Saxon-triangle shows some development needs within the region itself. The inner traffic system fails to directly connect all major cities by train. This incoherent traffic system is also evident in the fact that each conurbation has its own transport system, working relatively independently.

In summary it can be concluded that the transport system is overall adequate, however, the region does not make use of its full potential.
In comparison to the Hannover-region, the Saxon-triangle has a weak position. In the compared region, a connected traffic system exists and current efforts try to harmonise and link it even further by introducing a common metropolitan ticket. These efforts give the Hannover-region a common profile and drive it into the direction of a coherent metropolitan region.

To measure the access to knowledge, libraries will be used as an indicator since they are deemed to provide information and knowledge. Libraries will be measured based on their size and book stock.

Based on this approach, the Saxon-triangle has good access to knowledge. The region has in total ten bigger libraries with national and regional relevance. One of the largest libraries is the German National Library which has one of its three locations in Leipzig. It has a long tradition and is also connected with the Leipzig Book Fair which is the second largest fair in Germany after the Frankfurt Book Fair.

Comparing the book stock, the Hannover-region has a better position; the region has in total 19 national wide libraries with internationally important book stocks.

The German National Library of Science and Technology (TIB) in Hannover belongs to one of the three special libraries in Germany and encompass around 7.8 million books. The TIB is part of the German National Library and focuses on all areas of “(...) engineering as well as architecture, chemistry, information technology, mathematics and physics.”

Generally, both metropolitan regions are well equipped in terms of libraries, which are evenly spread across the respective regions. Nevertheless most of the libraries are concentrated around universities.

The indicator of libraries should however be critically judged because the increasingly importance of unrestricted access to information through the internet, makes libraries lose in importance. Due to the technical growing importance of information and communication technology, various forms and sources to access information exist. Consequently, the relevance of the location of libraries is decreasing since information can be accessed regardless of one’s geographic location.

Fairs of national and international scale allow access to new markets. They function as positive image for a region and also increase the awareness. The Leipzig Trade Fair is the oldest trade fair in Germany and has a broad range of exhibitors and themes of international importance. Based on the Association of the German Trade Fair Industry, seven international trades and 19 national trades were held in Leipzig in 2009. The Leipzig Book Fair and the Leipzig Mobil International are the best known events.

In comparison, the Hannover-region is also in a better position for this indicator. The German Trade Hannover has the biggest fairground in Germany and belongs to the best known fair in Germany. According to the Association of the German Trade Fair Industry, the Hannover-region has 24 trade fairs a year, of which 19 are international fair trades. While this is in total less than in the Saxon-triangle, the focus on international fairs puts Hannover in a favourable position. This international direction promotes the awareness of the Hannover-region and allows a better access to new markets.

The best known trade fairs in Hannover are the CeBIT and the Hannover Fair. The Hannover Fair belongs to the world’s biggest industry fairs and has major international relevance. It focuses mainly on industry and technology

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73 Ibidem.
and has worldwide co-operations. The CeBIT focuses on computer and information technology and is the world’s biggest fair on new technologies.

The Saxon-triangle has good access to knowledge based on the indicator “libraries”. Furthermore, Leipzig has a long tradition in letterpress and book selling. Especially the National German Library and the Leipzig Book Fair are strengths of the region in this field. Besides, the access to markets is quite good in the Saxon-triangle. An important factor in this regard is the Leipzig Trade Fair which provides such access and increases the level of awareness. Yet, the insufficient number of major international trade fairs needs improvement. In particular because fairs promote adjacent industry sectors like tourism, service, gastronomy or transport. For the Saxon-triangle it will be difficult to catch up to Hannover because of fewer international or even national trades. This situation will persist unless some of the international exhibitors decide to relocate to the Saxon-triangle and to establish a trade fair of international relevance. This however seems little likely also because of the lacking industry and the less advanced infrastructure.

### 4.6 Symbol function

Metropolitan regions have certain symbolic effects, which reflect – for example – their level of awareness. Metropolitan regions are able to evoke status-symbols, labels, trends as well as values and paragons. But on the other hand also spatial or architecturally symbols like representative buildings or parks are able to generate such identity-establishing effects. The metropolitan identity spreads out into the world and on the other side attracts people, which in turn boost the characteristics of metropolitan regions.74

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Based on the symbol function, the social and cultural amount of a metropoli-
tan region is described best by theatres, museums, art or other major events. 
Further indicators like important architecture or townscape are as well rele-
vant for this function. This function pools a high degree of historical, political, 
cultural and urban significance.

The Saxon-triangle is well positioned in this function especially due to the 
cultural richness of Dresden and Leipzig. However, all other core cities of the 
Saxon-triangle also have a long tradition in culture, music, architecture and 
art. Dresden and Leipzig are well known for their cultural and architecturally 
sights. In Leipzig, the Völkerschlachtdenkmal (Battle of the Nations Monu-
ment) or the Museum of Fine Arts are of main importance. The Saxon state 
operas (Semperoper) as well as the Lutheran church Frauenkirche are the 
main tourist attractions in Dresden and have international relevance. This 
high attractiveness is also reflected in the number of yearly visitors. In 2008, 
1.501.200\textsuperscript{75} people visited Dresden with approximately 3.2 million overnight 
stays. Based on the number of guests, the city Leipzig is – after Dresden – 
the second strongest city in the Saxon-triangle and counted 1.003.703\textsuperscript{76} 
guests and 1.8 million overnight stays in 2008. Apart from the cultural attrac-
tiveness, Leipzig’s high count of guests is also driven by its status as trade 
fair city. In comparison to these two cities, Halle, Chemnitz and Zwickau are 
less attractive for tourists – with less than 300.000 guests combined, there is 
a huge gap within the region and shows that cooperation joint projects with 
Dresden and Leipzig are limited.

Comparing the overnights stays of tourists in both metropolitan regions, Han-
nover is the strongest city. In 2008, Hannover counted almost 6 million 
guests. However, the other cities in the metropolitan region are far behind. 
The number of overnight stays in the other cities was between 40.000 and 
400.000 guests. This shows that most of the visitors stayed in Hannover – a

\textsuperscript{75} Statistisches Landesamt des Freistaates Sachsen (ed.), 2009. Beherbergungsstätten, 
Gastbetten und deren Auslastung sowie Ankünfte, Übernachtungen und 
Aufenthaltsdauer der Gäste 2008 nach Kreisfreien Städten und Landkreisen, in: 

\textsuperscript{76} Ibidem.
possible explanation for this are the numerous fairs in Hannover. This explanation is supported by the fact that the Hannover-region is not well known for major cultural or touristic sights. A reason for this is the complete destruction of Hannover and other major cities in the region during the Second World War. Hence, the Hannover-region has not this cultural and historical heritage for which Dresden is known.

A further indicator for the attractiveness and metropolitan identity is the migration balance, which is the difference between people moving to and away from the region. In the Saxon metropolitan region a high concentration of inhabitants is in the core cities while the hinterland is the least populated of entire Germany. In comparison to the Hannover-region a different structure can be seen. Here, the main population still lives in the core cities, however the structural differences to the hinterland is far more balanced. The indicator of the migration balance proves again the image of an incoherent Saxon-triangle region.

The Saxon-triangle belongs to the oldest manufacturing regions in Germany and was one of the three most developed conurbations until the 20th century. This long industrial tradition has also significantly influenced the cultural development. Especially the city Chemnitz has plenty of industrial monuments due to its former industrial base. It was well known for German machinery and automotive construction and had a high concentration of related industry.

Besides, the city of Halle has a similarly long tradition because of the brown coal and chemical industry, especially during the GDR. Due to the brown coal opencast mining the city Halle/Leuna became the location for one of the biggest chemical plants in the GDR – the Leuna chemical plant. It was an important industry location and gave the city a chemistry and industry image. After the German reunification, the Leuna plant was subdivided into small units, of which some were sold. In the course of this divestiture, the vast majorities of the employees became unemployed. In the following years, many start-up
companies settled in the former Leuna plant area, shaping today’s appearance of the city. Despite these changes, Halle and Leuna are still characterized by their history and still have the image of industrial cities.

To get rid of their industrial image and to make use of the abandoned open-cast mining and brown coal factories, the area around Leipzig has shaped a lake area – the so called “Leipziger Neuseenlandschaft”. The Leipziger Neuseenlandschaft is an emerging area and is part of the Saxon lake area (Sächsischen Seenland). This encompassed the North-West of Saxony, the South-East of Saxony-Anhalt and the North-East of Thuringia, and is located in the former ‘Middle-German” (Mitteldeutsche) brown coal area.

In the wake of the quiescence of the opencast mining, the holes from the former mining work which were transformed into lakes. These 23 lakes are today used for different purposes and serve as recreation areas. In the coming years they will be connected with each other and also with the surrounding cities. The development of these artificial lakes could further strengthen the tourism and natural areas in the region.

The already existing surrounding natural spaces like the uplands Erzgebirge and Sächsische Schweiz can be considered an additional strength of the Saxon-triangle. The uplands are well known as hiking area and attract several tourists.

The symbol function represents a special function and is generally hard to measure. Even if there are certain indicators which describe this function, it is difficult to compare these indicators. Moreover, the symbol function should reinforce other characteristics and should create a distinct image of a region. The indicators should give a region a unique and incomparable profile and – at the same time – give the region a certain recognition value.

Due to its industrial background and its GDR-history, the Saxon-triangle already has a certain image. On the one hand, it is considered to lag behind other regions and hence to be relatively poor. On the other hand, the region has unique characteristics due to its core cities and landmarks.
However until today, the region has failed to form a single image of the region. Without this, it will be difficult to gain national and, in particular, international recognition and importance. One root cause may be that the region has not initiated sufficient common projects and failed to launch a single marketing strategy. Yet, some attempts are made to connect the cities and to strength the region, for example, in the tourism sector with the artificial lake area.

The metropolitan region is well known for its cultural sphere but this is primarily driven through the two cities of Dresden and Leipzig rather than the region as a whole. There are differences between both cities concerning the cultural offers. These differences support the touristic and cultural attractions of the region and give both cities certain profiles.

Differences are not only noticeable in the cultural field. Due to the polycentric structure, the region does not really seem coherent. Consequently, it is complicated to establish a common awareness and common image. This is also amplified by the long distances within the region and also some uncoordinated competition between some of the core cities.

Due to the potential of the cities, Saxon-triangle has the potential to gain international recognition. Each of the core cities is different and has its own strengths. Especially Dresden and Leipzig are well known for its cultural and historical diversity. Furthermore, the cities are popular tourist destinations, shown in the high number of tourists. In comparison to the Hannover-region, Hannover counts more overnight stays, which can partially be explained by more international trade fairs. Even if the number of tourists is higher in the Hannover-region, the Saxon-region has more cultural and historically attraction. Furthermore, it gives the region a character and a specific recognition value, which unfortunately is primarily true for the core cities Dresden and Leipzig.
4.7 Summary of the Saxon metropolitan region

Figure 9: Overview of the metropolitan functions

Figure 9 illustratively shows the strengths and weaknesses of the Saxon Triangle Metropolitan Region. The main strengths of the region are in the challenge and innovation function, which includes the research and development institution and universities. Here, the region has great potential because of the high number of research and development institution and the close collaborations with the local universities. In this area, the Saxon-triangle also ranks higher than the Hannover-region. Despite the numerous universities and research and development institute in the Hannover-region, this function has less influence than the dominating fairs or the car industry. A major hurdle for the development is the lacking cooperation of the public and private sector in the Saxon-triangle. This field needs significant improvement in the future. Beside the strengths in the challenge and innovation function, the de-
cision-making and controlling function is less distinct. Here several weaknesses are recognizable, for example in the sub function private industries. In the Saxon-triangle very few important or strong selling companies are located. A possible explanation is the GDR-history when all companies were state-owned. In the course of the reunification all companies were closed and the region lost its economic power. The companies had to start all over again and are now too young to have leading products or access to the global market. This explains also the few headquarters in the region.

Regarding the private industry the Hannover-region has a good position because of the Wolfsburg-based Volkswagen AG. The Volkswagen AG automotive company has the highest sales of all German companies and is the second largest automotive company in the world. The focus of the region is on vehicle construction, logistic as well as transport especially in the Braunschweig-Wolfsburg area. Apart from VW, the region has further companies of international relevance, for example, the automotive supplier Continental AG or the travel company TUI.

The indicator politics is also part of the decision-making and controlling function. In this field the Saxon region has a relatively good position especially due to the state capital Dresden. Most of the state ministries and state-wide government agencies are located in Dresden. The same is valid for the Hannover-region: several state ministries and federal authorities are located in the state capital in Hannover.

Regarding the gateway function, the Saxon-region shows the biggest weaknesses especially in the transport connection and mobility. The access to the Saxon-triangle is indeed possible by car, train, air as well as boat, however, the inner connectivity of the region is still lacking. The weak inner travel connections and the connection to other metropolitan cities are the main reason for this. The distances of each city are too long and no fast connections by public transportation are possible. Moreover, few flight destinations and a low flight frequency are further problems. This makes it quite difficult to access and debase the whole situation of the region. The access of the metropolitan region is crucial for incomer as well as tourists.
In comparison to the Saxon-triangle huge differences can be identified in the Hannover-region. The access to the region is ensured by car, train, air as well as boat. The Hannover-region has an excellent road network and provides several possibilities for an easy access.

An excellent road network is of great importance especially for tourism. Tourists are essential factors for fairs which belong to the sub function penetrate new markets. The Leipzig fair is a central event in the region but with little international relevance. The main focus of the Leipzig fair is on the national market, which is the main cause for the limited international awareness. With the limited external representation of the region, the fair is not seen as an important international event what consequences in few foreign visitors. The little international awareness is intensified by the difficult access to the region.

In contrast, the main focus of the Hannover-region is on international trades. The Hannover fair and the CeBIT are the most important fairs in the region and are of great international relevance. The fairs attract every year many national and international exhibitors, fairgoers as well as tourists.

The fourth function, the symbol function, describes the cultural, social and historical offers of metropolitan regions. This function is supposed to give the region a metropolitan identity or a unique profile. In this function the Saxon region has a relatively good position due to the wide range of cultural and historical sights that differ from city to city. The diversity of cultural and historical sights makes each city individual and gives each one a recognition value. However, mainly Dresden and Leipzig are of national and international relevance.

The main problem of the region is the limited cooperation between core cities and their hinterland. The hinterland is not involved in the activities of the core cities what creates an imbalance within the entire region. The little collaboration makes the situation worse by the polycentric structure of the region. Therefore, it is difficult to establish a common profile for the Region.
In comparison, the Hannover-region is of less importance and shows just few landmarks or culture sights. The emphasis of the region is on fairs and the automotive industry. The region has no major well known events or landmarks that would give the region another recognition value. The region has clear recognizable strengths that promote and reinforce its metropolitan identity.
5 What can be done for the Saxon Triangle Metropolitan Region

5.1 Decision-making and controlling function

The Saxon-triangle shows considerable weaknesses in the decision-making and controlling function compared to the Hannover-region. Due to its GDR-history, the Saxon-triangle has a different economic development than its western benchmark region. For a better understanding and to describe the actual situation of the Saxon-triangle, it is of main importance to mention the economy-system of the former German Democratic Republic (GDR). The GDR-history has shaped the entire region and is still in the mind of many people.

During the GDR-time were all companies nationally owned – which means, companies did not have any private owners. Furthermore, competition was unanchored in the GDR-economy system and a market-driven economy did not exist in the socialistic states. In the course of the German reunification, all former nationally owned companies were closed and absorbed by west-German or international companies. With this change most of the former GDR-companies were chaired by new company-headquarters that were generally not located in the Saxon-triangle – a situation that has remained unchanged ever since.

Strengthening the decision-making and controlling function is quite difficult and a barely controllable sphere of activity. Reasons for this are the less scope of influences to locate corporate head offices in this region. In comparison, the Hannover-region has a generally better positioning. Especially important headquarters and finance locations are well represented. With the Volkswagen-AG in Wolfsburg the region ranks on the first place Germany-wide. Moreover there are further strong selling companies represented in the region what consequently reinforce the position as an attractive location for companies.
Although the Saxon-triangle has a leading position within the newly formed federal German States, it is still not seen as an important headquarter-location. Furthermore the industry of the entire region is – due to its GDR-history – quite young what makes it almost impossible to catch up the western German industry. In the contrast to Hannover-region there are no factors identifiable that could improve the position of the Saxon-triangle on the competitive market.

When it comes to the political decision-making and controlling function there are recognizable strengths in both metropolitan regions. The Saxon-triangle is with Dresden as capital city of the Free State of Saxony in a good position. Due to its capital status several state Ministries as well as most of state-wide government agencies are situated in Dresden. The Hannover-region has due to Hannover as state capital a good position as well. Comparing the number of federal authorities Hannover has a clear advantage over the Saxon-triangle.

A principle aim of the Saxon-triangle should be a common appearance of all the core cities. Due to its polycentric structure and the individuality of each city, it will however be quite hard to develop such a coherent appearance. To strengthen the position of the Saxon-triangle, the main effort should be to guarantee and to boost the decision-making and controlling function by a co-occurrence of the Saxon-triangle cities. The cities should act more jointly which would also affect the necessary growth of decision-making and controlling companies.

5.2 Challenge and innovation function

The Saxon-triangle has a leading position in science and research, which may well be the real potential in the challenge and innovation function. Due to its large number of research and development institute and universities it has more strengths than weaknesses. The strengths of the region are focused on the generation of knowledge.
In contrast to this, the main weaknesses are in the limited research and development activities of local companies. It is noticeable that several research and development institutions are collaborating with universities instead of local companies. This again is the impact of the less distinct decision-making and controlling function due to the fact that research is usually conducted at the companies headquarter. Furthermore, there are just little collaborations between research and development activities and the economy of the region. The realized research and development innovations are not used for the development of the region.

A principle aim of the Saxony-triangle should be to strengthen further its science and know-how potential and to use this strengths to establish a network between science and private businesses. A possible starting-point could be to subsidise the corporate sector and to invest in research and development. This would attract new companies and new clients and would help the region to become more attractive on the market, and ultimately improve the image of the region.

5.3 Gateway function

The Saxony-triangle shows several weaknesses concerning the gateway function. The connectivity of the entire region is quite bad and extremely upgradable – in particular when it comes to the air traffic and the inner connectivity. Although the region has two airports it is hard to reach by air. Great problems concerning the air traffic are the few destinations to other metropolis or international cities. Moreover the low flight frequencies make the Saxony-triangle difficult to access. This could worsen the situation of the region what would mean to be cut off much more from the other metropolitan regions in Germany.

Apart the air-traffic, the inner connectivity of the region also shows several weaknesses. The few rail connections and the not cooperating transport system imply that each conurbations of the Saxony-triangle has its own traffic system. That makes the region incoherent and collaborations are difficult to
establish. For new incoming people the access is quite difficult what could lead to a slower development of the entire region. Especially the Gateway-
function is central to provide the access to the region thus people, knowledge as well as information.

For the development of metropolitan regions it is of main importance to bring new people in the region with new ideas and leading-edge knowledge. This gives birth to steady creation and exchange of ideas and knowledge. Therefore it is of main importance to have an easy accessible metropolitan region because otherwise it will be difficult to develop and to bring forward a metropolitan region.

In comparison to the Saxon-triangle, the Hannover-region has a better position in the gateway function. The region has a much easier accessibility and inner-connectivity. In the Hannover-region, obvious attempts are recognizable to strength the entire metropolitan region. Furthermore the access by car, train or flight is regarding the connectivity or the flight frequency much better equipped.

Apart from the transport connection and the mobility belongs to the gateway function also the access to new markets. This function is divided into access to knowledge and access to markets. As analysed before, the access to knowledge is equally good in both regions. However regarding the access to new markets there are differences clearly recognizable. The focus of the Hannover-region fairs is mainly on the international market what gives the region international relevance. In comparison has the Saxon triangle region a strong emphasis on national fairs and very few international fairs.

A principle aim of the Saxon region should be the further development and expansion of both airports. The further development concerning more flight destinations would make the airports more attractive and could establish a better awareness of the entire metropolitan region.

In the field of the inner connectivity of the Saxon-triangle the main problem is the few cooperating cities. The region should develop a common ticket that should be valid for the entire metropolitan region. The launch of a metropoli-
tan-ticket could be a starting point for a better inner connectivity, better collaboration and network between each of the core cities. A common metropolitan ticket would be chance for the hinterland that is still not involved in the development of the metropolitan region. The common ticket would be a starting point and could further strengthen other sectors like tourism or traffic transport.

In connection with the traffic system, fairs also need to be considered. The limited international orientation of the fairs relates to the connectivity of the entire metropolitan region. Due to the poor traffic connections it is difficult to attract visitors, exhibitors and tourists. When the inner connectivity and the entire travel connections of the Saxon-triangle are expanded other sectors could benefit and more visitors could be attracted.

5.4 Symbol function

The Saxon-triangle shows a lot of strengths in the symbol function. Although this function is difficult to measure, the analysis has shown that the Saxon-triangle is better positioned than the Hannover-region due to its cultural and historical sights.

The region is well known for its cultural and historical background – especially the cities Dresden and Leipzig have an extraordinary position. Dresden is a popular travel destination and well known for its cultural and historical heritage like the Lutheran church Frauenkirche or the Saxon state opera (Semperoper). This is also confirmed by figures on tourism – with more than 1 million visitors is it the highest number in whole Saxony. Apart from Dresden, Leipzig is a popular travel destination. The city is well known for its trade as well as cultural offers. In comparison to the Hannover-region counts the Saxon triangle region indeed less tourists but this is due to the international fairs in Hannover. The Hannover trade is the distinguishing characteristic of the Hannover-region. Beside the fairs just few sights with limited cultural and historical relevance are in the western metropolitan region. The history of the Hannover-region is a possible explanation for this. During the Second World
War were most of the cities of the metropolitan region destroyed, losing many of its cultural sights.

A similarity of both metropolitan regions is recognizable concerning the hinterland of each bigger city. In the Saxon-triangle as well as the Hannover-region the hinterland is of less importance and seems not really involved in activities of the bigger cities. However, the Saxon-triangle shows in this aspect much higher differences than the Hannover-region. In the Saxon-triangle the main focus is on the core cities – shown in the number of inhabitants. The hinterland is hit by migration and unemployment whereas the core cities gain in importance. The Saxon-triangle tries to improve this situation through different projects like the lake-area project where the former mining’s are re-constructed as touristic areas – so far with limited success.

Due to its numerous cultural and historical offers, the Saxon-region has good potential to strength the entire region. Each of the core cities has its own characteristic but a common image of the region is hard to identify. However, to make use of its potential, the metropolitan region should leverage the cultural and touristic offers. Furthermore, an international marketing strategy should be developed for the entire Saxon-triangle to attract more tourists and potentially also long-term residents. The promotion of tourism could establish a better collaboration between the cities and the hinterland. Also, the potentials as trade fair city should be better used. To strength this potential it is of main importance to improve the public transport network. Especially the flight destinations but also the inner traffic system of the city should be expanded and upgraded. This would improve the access to the region and also attract more people.
6 Strategic issues

The Saxon-triangle has several unused potentials which have not been activated. The entire region is missing a common profile, which is however difficult to establish due to the individual character of each of the core cities. This is amplified by the fact that the Saxon-triangle has a polycentric structure. This polycentric structure and long distances between the cities – of over 100km – make it difficult to interlink every core city. However, this individuality could be used to create a network to promote a more intensive collaboration between the cities and thereby establish a common awareness of the region.

The Saxon-triangle should focus on its strengths: research and development, science, culture, fairs and tourism. The combination of these factors and a better collaboration could be a starting point for the progress of the Saxon-triangle. To achieve this, the region should further reinforce its know-how in research and development in particular to promote the transfer of knowledge between science and private businesses. The research and development institution should put more emphasis on cooperation with the local companies – the main focus is at the moment on the collaboration with universities. This should be expanded and the corporate sector should be involved in the activities. The main focus of the cooperation should be on the development of regional strengths to boost the regional economy. The results of the collaborations could be presented on the Leipzig fair what would help to promote the region. This again could reinforce the touristic sector what would attract more tourists as well as incomer.

Another challenge for the region is the involvement of its hinterland. The core cities should also appreciate the role of the hinterland and recognise it as equal partner. The hinterland has several functions and is acknowledged in every metropolitan in a different way. The Saxon-triangle offers opportunities for tourism, recreation and has also potential to be involved in the activities of the core cities. The regional collaborations especially with the hinterland are limited and it will be difficult to define successful common solutions or pro-
jects. This issue is intensified by the fact that the Saxon-triangle is now spread over three different federal states, making a single governance more difficult. There is a fragmented government and each administrative unit has its own, different competencies. The Saxon triangle metropolitan region has new demands regarding the organisational structure and therefore it is crucial to have a single metropolitan governance. The metropolitan governance should be responsible for the coordination of projects, organisation, ideas as well as cooperation. Moreover, the metropolitan governance has the challenge to create better problem awareness for joint tasks and consequently to reach a better understanding. With regard to the external representation of the region, the main task for the Saxon-triangle is to create a common image of the metropolitan region.

When looking at the concept of metropolitan regions many questions arise. Although metropolitan regions can help to tackle challenges in a more structured and collaborative way, expectations of the concept are often too high and actual developments often do not meet initial expectations. Collaborations within most metropolitan regions are often behind plan and the regions do not operate as functional regions on a daily basis. Furthermore, many of the challenges that the cities face could even be resolved without the setup of a metropolitan region.

The objective of equal growth and a common awareness is a good starting point, however, the concept of metropolitan region promotes just collaboration within regions but not collaboration with other regions. Given the increasing competition at a European level, the concept of metropolitan regions needs to be adjusted to master this development. Besides, there is also the risk that the concept of metropolitan regions might neglect the development of the hinterland, in particular rural areas.

Despite these weaknesses, the general concept can be considered the best approach to stimulate the economic, social and cultural development to maintain the performance and competitiveness of the region and to accelerate the European integration process. Furthermore, it needs to be insured that met-
ropolitan regions also stimulate the development of rural areas that are not officially part of the metropolitan region to avoid that structural differences increase even further.
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