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**The divergence of growth of German medium-sized towns –
the role of social innovation and creativity for urban resilience**

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Abstract

This paper explores the development of German MSTs with a special focus on the former East/West divide and carries out a descriptive case study of two Saxon towns in proximity to the large urban centre Leipzig. Thereby, a particular emphasis is on the role of social innovation and creative approaches to achieve sustainable development and urban resilience. 30 years after the fall of the Berlin Wall, equal living conditions in terms of infrastructural facilities and economic prosperity have not been established. East Germany experienced a cumulative causal chain of shrinkage resulting from internal migration and even though economic stability has been displayed by, e.g., the two case study towns Bitterfeld-Wolfen and Weißenfels, the job opportunities are not a convincing pull-factor. Quite the contrary, both towns can be considered as urban shadows of Leipzig that are neither able to borrow size nor urban functions. Especially Bitterfeld-Wolfen serves as a workplace for commuters who reside elsewhere. To establish itself as a place to live, the city has carried out rather innovative urban planning measures and actions, but it remains to be seen in how far the measures taken will achieve improvements in the urban environment. Weißenfels on the other hand adopted a more conservative approach and serious structural problems, i.e., the absence of an internet connection, limit the capability and development potential significantly. To conclude, the towns display both converging and diverging patterns and even though proximity to an urban centre and social innovation approaches may have favourable implications for urban development, these factors are not a guarantor for growth and resilience.

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List of Abbreviations

BBSR	Bundesinstitut für Bau-, Stadt- und Raumforschung <i>[Federal Institute for Research on Building, Urban Affairs and Spatial Development]</i>
BMWI	Bundesministerium für Wirtschaft und Energie <i>[Federal Ministry for Economic Affairs and Energy]</i>
EC	European Commission
ESPON	European Spatial Planning Observation Network
FRG	Federal Republic of Germany
GDR	German Democratic Republic
LST	Large-sized town
MST	Medium-sized town
OECD	Organisation for Economic Co-operation and Development
SST	Small-sized town
SMST	Small and medium-sized town

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1 Introduction

The following sections introduce the thematic relevance by justifying the research. The underlying objectives are outlined, and the research questions and hypotheses are stated. A short limitation of research follows before the structure of this report will be elaborated.

1.1 Relevance and Justification of Research

Today's world is moving at an ever-faster pace and while the process of globalization has contributed to wealth and prosperity for many cities and regions around the world, the risk of failing to keep abreast of these developments is omnipresent. These rapid changes are being characterised by high degrees of uncertainty (Arup, 2015, p. 15) and the anticipation and management of change as well as the initiation of pre-adaptation measures is integral for the long-term success of territories (Arup, 2015, pp. 7, 15).

Just like large cities and metropolises, small and medium-sized towns (SMSTs) face manifold challenges such as increasing diversity, fluidity of societies and dynamic complexities (Hamdouch et al., 2017a, p. 1). Climate change, demographic change and the aforementioned (economic) uncertainties are significant stress factors that can quickly transform into shocks that disrupt the functionality of a system (Figueiredo et al., 2018, p. 6). But unlike large cities, the exposure to shocks and vulnerabilities of SMSTs have not been so thoroughly investigated, especially with regard to Eastern German medium-sized towns (MSTs).

Besides being partly overshadowed with respect to research activity, some SMSTs are furthermore being marginalised by large towns, while others benefit from the proximity of a metropolitan area (Nyseth et al., 2017, p. 16). The adjacent large-sized town (LST) can either affect the SMST positively (urban spill-over) or negatively (urban shadow). This role of geography results in a divergence of SMSTs in either growing and thriving or shrinking and declining towns despite their similar distance to metropolitan urban centres (Cuberes et al., 2018, p. 1).

Half of the European population lives in a city with less than 100.000 inhabitants and SMSTs show a strategic importance for territorial cohesion (Hamdouch et al., 2017a, p. 22). In Germany, a city with 20.000 to 100.000 inhabitants is categorised as medium-sized and this group can be further differentiated in small (20.000 - 50.000 inhabitants) and large (50.000 – 100.000 inhabitants) MSTs (BBSR, 2017b). As of 2015, 616 German cities belonged to this category, whereof 109

displayed a population greater than 50.000 (BBSR, 2019b). Besides this large number, they are often neglected in research and not valued for their socio-economic functions. But as “demographic and economic factors may [...] exert much influence on local development, and attempts of creating sustainability at the levels of a SMST are today highly challenging” (Nyseth et al., 2017, p. 17), the ability for SMSTs to adapt to today’s changes is a crucial factor. Ideally, this can be accomplished by establishing dynamic resilience patterns (Hamdouch et al., 2017a, p. 1). Thereby, social cohesion has been identified as a precondition for economic development (Hamdouch et al., 2017a: 99) and creativity and social innovation offer great potentials to enable social transformation and competitiveness (Hamdouch et al., 2017a, p. 100) as well as to enhance direct and indirect socio-economic development (Hamdouch & Ghaffari, 2017, p. 196). The availability of social cohesion and creativity is further assumed as offering a base for urban resilience. Towns need to be able to react, adapt and transform in order to overcome disturbances of all kinds as either natural hazards or global financial failures lead to shocks and stresses.

1.2 Research Aim and Research Questions

The aim of the research is to analyse, compare and evaluate why certain MSTs develop in diverging ways despite their similar characteristics and how MSTs can achieve urban resilience by the concept of social innovation and creativity. In this context, the geographical proximity to a metropolitan area is evaluated as a potential driver of innovation and new ideas due to knowledge spill-overs. Particular emphasis will be placed on the East/ West divide in Germany and how the decades long separation of the country has influenced urban development on both sides of the iron curtain.

Three hypotheses are core to the research:

- H1: Geographical proximity of a MST to a metropolitan area is a potential driver of innovation and new ideas due to knowledge spill overs*
- H2: MSTs have developed divergently due to different approaches of social innovation and creativity by the respective political bodies*
- H3: Social innovation plays a crucial role for MSTs to be better able to build urban resilience capacities (when fostering/ having fostered social innovation and creativity)*

Research questions were designed to prove or disprove the hypotheses. This research follows the main research question Q:

Q: What are the crucial factors for divergent growth of German medium-sized cities and how can they establish resilient characteristics and capacities as drivers of growth?

To allow a more specific way of answering Q, a set of sub-questions (SQ) was developed:

Convergence and Divergence of MSTs:

SQ₁: In how far develop MSTs differently in Eastern and Western Germany?

SQ₂: What strategies are deployed to achieve territorial convergence? What factors hinder or support territorial cohesion?

Urban Networks and Proximities

SQ₃: Why do cities benefit or suffer from being in close proximity to larger economic centres?

Social Innovation and Urban Resilience

SQ₄: In how far are the case study cities open to new ideas and approaches to react to today's socioeconomic complexities? How can they (pre-)adapt?

SQ₅: In how far does social cohesion foster local development (economically, politically, socially)?

SQ₆: What role does creativity and social innovation play for urban resilience?

1.4 Structure of Report

This report follows a combined methodological approach based on the topic “*The divergence of growth of German medium-sized towns – the role of social innovation and creativity for urban resilience*”. Having given the relevance, the research objective, questions and hypotheses in chapter 1, chapter 2 – the theoretical part – outlines a combined literature review and conceptualisation of relevant theories to provide crucial knowledge in relation to the examined topic and a comprehensive theoretical background. Before exploring the empirical implications of the research in five sections (cf. chapter 4), the analytical framework will be explained in chapter 3. The first section of chapter 4 provides the applied research methodology, followed by an elaboration of the development of MSTs in Eastern and Western Germany. Thirdly, the two case study cities Bitterfeld-Wolfen and Weißenfels are described and analysed before the empirical results are presented and a short future outlook is provided. Chapter 5 summarises the report's findings by answering the prior established research questions and draws an overall conclusion.

2 Theoretical Part

The following chapter outlines theoretical implications of various concepts related to towns, urban development of growth, social innovation and urban resilience. Before, a literature review is carried out to justify the following conceptualisations.

2.1 Conceptualisation and Literature Review

This section deals with the conceptualisation of several theories and models relevant to the research carried out in part two of this report. Firstly, understandings of medium-sized towns are synthesized. An overview about numerous definitions of *medium-sized towns* is given before the term's usage in a German context is examined. Moreover, the current state of research concerning the in chapter four examined case studies is reviewed. The interrelations between diverging German MST in context to social innovation and urban resilience are being explored using the method of a literature review. Following the found discrepancies and research gaps, secondly, theories and models relating to the linkage of towns and regions are explained. *Network theory*, *neo-classical polarisation* and *export base theory* are briefly defined before the *Krugman's New Economic Geography* and *Christaller's central place model* are described. Thirdly, the theories of *borrowed size* and *agglomeration shadows* offer further insights into the relation between regions. Fourth, social theories comprising the *creative city*, *social innovation* and *social capital* are covered before lastly, the concept of *urban resilience* and related approaches are sketched.

2.1.1 Medium-Sized Towns

The following section is devoted to the understanding of medium-sized towns in heterogeneous contexts and explains the term's specific utilisation for Germany.

Before defining medium-sized towns (MSTs), it is crucial to define a *town* and its difference to a *city*. The European Spatial Planning Observation Network (ESPON) report dedicated to towns indicates the difficulty of giving a clear definition of the constitution *town* (Servillo et al., 2014, p. 2). It is found to being “smaller than a city but larger than a village” (Servillo et al., 2014, p. 2) (Servillo et al., 2017, p. 2).¹

¹The following report uses the terms *city* and *town* in the review of theories according to the respective cited author's suggested usage of terms.

Three categories of classifying towns are given that are a *morphological*, *administrative* and *functional*. The morphological point of view defines towns according to a minimum concentration of population located in a compactly built up area (Servillo et al., 2014, p. 3). The administrative perspective regards a “territorial unit of local government that contains one or various urban settlements” (Servillo et al., 2014, p. 3) and the functional perspective deals with functional interrelations of settlements in urban cores and their hinterlands in a socio-spatial system (Servillo et al., 2014, pp. 4-5; Pumain, 2004 in Servillo et al., 2014, p. 6; EC, 2011, p. 2). The functional urban area is either monocentrically or polycentrically organised (EC, 2011, p. 2). Additionally, a town can also refer and relate to the cultural and social attributes being lived in a functional area (EC, 2011, p. 1).

As ambiguous as the definition of a town, as unprecise the definition of a medium-sized town. Brunet (1997, p. 188) refers to it as an “unidentified real object”. With *unidentified*, reference is taken to the vague concept of MSTs. Given the common cultural meaning and implicit understanding of MSTs, the expression *real object* is used (Brunet, 1997, p. 188). On a European scale, the European Commission (EC) in partnership with the Organisation for Economic Co-operation and Development (OECD) has proposed a definition used for analysis purposes that is based on the minimum density and the number of inhabitants (EC, 2011, p. 1).

In Germany, the Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR) offers a clear classification for MSTs. A town of 20,000 to 100,000 inhabitants belongs to the category of MSTs (BBSR, 2017b). It is further differentiated between small MSTs inhabiting 20,000 to 50,000 inhabitants and large MSTs inhabiting 50,000 to 100,000 inhabitants (BBSR, 2017b). Moreover, the BBSR (2019b) distinguishes MSTs in Germany by their location inside or outside urban regions. As of 2015, 616 German cities belonged to the category of MSTs, whereof the minority 109 displayed a population greater than 50,000 inhabitants (BBSR, 2019b). Approximately a quarter of the German population lives in MSTs which cover about 15% of Germany’s area with a majority of small MSTs that are 12,5% (BBSR, 2017b; BBSR, 2019b).

Classifications of MSTs only are hardly found in the common body of research. Whereas research dedication to large towns and metropolitan areas is numerously found, MSTs are often “packaged” as ensemble with small-sized towns (SSTs) (cf. Hamdouch et al., 2017a; Demazière, 2017; Birkner et al., 2018 etc.). For instance, the town report of ESPON (Servillo et al., 2014) conducts research by morphologically defining SMSTs by inhabitants. A differentiation between medium and small towns is not made, yet, the authors differentiate between medium SMSTs and small SMSTs in

relation to population density, average population, average square kilometres, average density (Servillo et al., 2014.). Russo et al. (2017) deep discusses the empirical classification problem of SMSTs and provide a typology of SMSTs. SMSTs were identified as constituting organised and dense urban hierarchies when in proximity to larger urban areas (Russo et al., 2017). Contrastingly, SMSTs proximity to smaller settlements depict rather loose structures (Russo et al., 2017). This shows the

It is striking that SMSTs are not considered separately for definitory purposes. Bell & Jayne (2009, p. 638) argue that smaller settlements are overlooked or shadowed by larger areas.

Urban Resilience and MSTs

Urban resilience has been deeply observed repeatedly as a phenomenon in literature (cf. chapter 2.1.5). The notion of urban resilience for MSTs, however, reveals a need for further consideration due to a lack of research or the emphasis on the “packaged” SMSTs as presented in the following.

Medium-sized cities cannot be found as element of urban resilience research. It is also striking that the leading urban resilience initiative “100 Resilient Cities” by the Rockefeller Foundation puts emphasis on developing urban resilience strategies for large cities and metropolises only (100RC, 2019).

Resilience in an urban context is often interpreted in relation to natural hazards and cities’ and/ or regions capabilities of adaptation to such stresses. For instance, Thieken et al. (2018) focus on urban resilience towards extreme weather events in large small cities and medium-sized cities in Germany. Coping with structural change in a coalmining area at Lausitzer Seenplatz in East Germany has been examined by Lintz et al. (2016, p. 333). They rather regard the scale of a region, finding that a complete sectoral territorial transformation to a tourism destination has taken place to create resilience patterns. The authors made clear that the term *resiliency* is not easily applicable to former industrialised territories (Lintz et al., 2016, p. 352). Contrastingly, Plöger & Lang (2016) address the resilience capacities of the old industrialised towns Leipzig and Bremen in Germany. Learning capacities and skills of local actors in terms of successful governance were found in both cities as helpful to adapt and react to economic decline (Lintz et al., 2016).

The missing notion of urban resilience research for MSTs may be explained with the concept’s ambiguous applicability in practice. As outlined in chapter 2.5.1 below, urban resilience comprises a variety of characteristics (e.g., social resilience, economic resilience, ecological resilience, etc.) that altogether fit the “resilience puzzle”. This indicates the difficulty to offer a comprehensive study considering all facets.

The importance of resilience is stressed by Servillo et al. (2017) who put emphasis on the need to pay attention to SMSTs in order to increase the territories' levels of resilience. They argue that local characteristics and existing territorial capital are key facets to face the global economic trends (Servillo et al., 2017). Furthermore, Servillo et al. (2017) find the importance of SMSTs territorial capital for a region's respective development which is rooted on the local scale.

Social innovation and SMSTs

In 2015, the URBACT (2015) publication dedicated its view on social innovation from the point of view of cities. URBACT (2016) positions social innovation in urban context by portraying the example of how social innovation has been applied in the MST Amersfoort in the Netherlands. Being applied in a context of public financial constraints in the local administration, it is found that social innovation is fostered and successfully achieved by bottom-up governance processes (Jégou, 2016, p. 19). Apart from that example, the publication highlights the crucial role of social innovation in cities by providing an action framework for social innovation. URBACT (2015) reveals that resilience is identified as being achieved by social innovations.

Birkner et al. (2018) addresses the characteristics of innovation in regions with small- and medium-sized towns. They regard both technological and social innovation. Birkner et al. (2018) address SMSTs development in the central-eastern European regions, in Hungary, in relation to their innovation abilities. It should be noted that Birkner et al.'s (2018) research neglects towns that are bigger than 50,000 inhabitants. This emphasises the definitory ambiguity and the difficulty of comparison with more populous areas. Their focal point regards small- and medium-sized enterprises as being drivers for social and technological innovation (Birkner et al., 2018).

Bristow & Healy (2018) regard the linkage between resilience and innovation in European regions after the economic crisis. They find that innovation supports regions to resist from shocks or crisis quicker (Bristow & Healy 2018). The authors define an innovation capacity for economic resilience that holistically addresses the on the one hand the technological and on the other hand the social, organisation and institutional capacities for innovation (Bristow & Healy, 2018, p. 267). With that, Bristow & Healy (2018) shed light on the crucial role of social innovation and social resilience. "The social aspect of innovation refers to the collective learning process between several departments of a firm as well as to external collaborations with other firms and knowledge providers. Variations in a region's institutional qualities and environment, the relationships and connections between its actors and other relevant economic capacities mean that innovation is

highly localised and is a territorially embedded, rather than placeless, process. This gives rise to strong differences in levels of innovation between places, reflecting differential capacities to generate knowledge and also, critically, to diffuse, absorb and make effective use of it (Cooke, 2012; Rodríguez-Pose, 2013).” Further, they name the role of policies to support the process of capacity building for resilience. Also, they find that economic resilience is higher when regions inhibit greater innovation capacities, yet, not the only decisive factor (Bristow & Healy, 2018, p. 276).

Towns in Germany’s East and West

The divergent development of towns in Germany’s East and West is subject to a vast body of research. Whereas rather larger cities are considered, some scholars concentrate on MSTs developments.

Findings by Kühn & Liebmann (2009, p. 346) verify the divergence of East German MSTs despite their comparable structural characteristics (e.g., peripheral location, deindustrialisation, etc.). The authors point an additional need for further research out to explain such developments. Whereas some cities grow, a majority of MSTs declines. A regeneration of shrinking cities in East Germany has been deeply researched by Fröhlich & Liebmann (2009) and Kuder (2009).

Development of MSTs in peripheral regions in West and East Germany has been addressed by Liebmann & Bernt (2013). Core to their assessments builds the role of local actors and actions taken by policy makers (Liebman & Bernt, 2013).

Wink et al. (2016) researched three different pathways of reindustrialisation in Eastern Germany taken during the economic crisis. It was found that local adaptive capabilities and place-based approaches are crucial for creating economic resilience. Yet, the case studies examined did not focus on MSTs but on urban core areas Dresden, Chemnitz and Leipzig that all large towns. “Close connections along multilevel governance structures were particularly helpful in the case of Dresden, where necessary scale economies by foreign microelectronic investments could only be realised by structural funds and public research infrastructure investments.” (Wink et al., 2019, p. 481) The role of innovations, that are of technological and financial character, is stated as being helpful specially to build networking advantages between the local and foreign actors. Social innovation, however, are not considered by Wink et al., (2019). New knowledge patterns elaborated leading to enhanced patterns of dynamic urban resilience. Wink et al. (2016) put emphasis on the importance of multi-level governance structures and place-based processes leading to positive development of towns.

It can be seen that social innovation and resilience are two concepts that have been merged in literature. Nevertheless, the role MSTs is again neglected.

2.1.2 Relations of Towns and their Connections to the Region

The following sections give a theoretical overview about relevant concepts for the research conducted. Several explanations have been offered to analyse the connections between a city and its hinterlands (Smetkowski, 2014, p. 4). The theories to be explained are chosen due to their importance in relation to developments of medium-sized towns regarding linkages and exchanges to their hinterland and to large cities.

Hamdouch et al. (2017a) further address SMSTs as common research objects, yet, neglecting a review of SSTs or MSTs only. Demazière (2017, p. 57) emphasises the crucial role of SMSTs for territorial cohesion due to the cities' role in providing for basic services for their population. He fears the disappearance of SMSTs from national governments' priorities (Demazière, 2017, p. 57). Servillo et al. (2017) argue that focusing on large urban areas undermines SMSTs' importance for economic development. Birkner et al. (2018) shares this concern by stating that metropolitan areas are central to (innovation) research. Moreover, the European Union's report *Cities of tomorrow* (EC, 2011) highlights the role of dynamic SMSTs to avoid the negative population growth in rural areas (EC, 2011, p. 5). Likewise, the report suggests that SMSTs are key players relating to regional economic development by providing their population with public and private services (EC, 2011, p. 5). Servillo et al. (2017) add to the discussion the territorial underestimation of SMSTs in a globalised context.

Research on SMSTs' performances in proximity of larger urban settlements has been carried out in theoretical context, e.g., following the concepts of *regional determinism* vs. *territorial autonomy* whereas the second one implies a region's independence from an urban core regarding a region's administrative, cultural and social-economic capacities (Servillo et al., 2017). Nevertheless, influence of larger urban areas to SMSTs proves development impacts as Servillo & Russi (2017) argue. Talking about 'smaller settlements', Servillo & Russo (2017), their socio-economic performances are characterised by factors such as local dynamics, regional path dependencies and national contextualisation's. Similarly, Sýkora & Muliček (2017) address SSTs (small sized towns) regional embeddedness, too. The performance and relationship and performance between towns and cities has been compared by Sýkora & Muliček (2017) in terms of their autonomy, networks and agglomerations with large cities. Their research shows that SMSTs that are not found

in the regional embeddedness of agglomerations or networks in larger metropolitan areas, tend to decline due to their autonomy (Sýkora & Muliček, 2017). The economic roles of SMSTs are analysed and systematised by Hamdouch et al (2017). They explain specific roles of within a region and give an explanation for their embeddedness. These roles are also addressed by Sýkora & Muliček (2017).

Servillo et al. (2017) address the relation “relationship between the small settlement and its regional area. This is a fundamental issue that can be found (mostly) implicitly in all the research approaches in regional and urban studies. It covers a wide array of approaches that go from the region as the determinant factor of socio-economic dynamics of the town, to the ‘autonomy’ of each urban settlement to steer its own developmental trajectory.”

Table 1 gives an overview about highly discussed theories regarding city-region relations. A common aspect in analysing relation depicts the factor of accessibility. Network structures occur leading to increasing levels of knowledge spill-overs and innovation due to agglomeration benefits. The concept of networking fosters interrelationships balancing indifferences between core and peripheral areas. It should be noted that this chapter does not intend to review all theories and therefore does not cover all models depicted. Furthermore, the natural characteristic of models indicates their limited applicability.

Table 1: City-Region Relations from Selected Theoretical Concepts

Theory/ theories	Types of relations between city and region	The role of region in the city development	The role of city in regional development
<i>Spatial interaction theories</i>	Complementarity Intervening opportunities Transferability	Provides resources and serves as a market for goods and services	Provides resources and services as a market for goods and services
<i>Urbanisation theories</i>	Evolution of regional settlement systems as a result of agglomeration or deconcentration processes	Area of origin or destination for migrations depending on current tendencies	Area of origin or destination for migrations depending on current tendencies
<i>Economic base theory</i>	Basic and non-basic local activities	There is no distinction between regional hinterland and other export markets	Not applicable. Region is one of possible markets for goods and services.
<i>Central place theory</i>	Good and services provided by city for the region	The importance of city depends not only on local, but also regional demand. The city is central place for its hinterland.	Region depends on city.
<i>Growth pole theories</i>	Positive spread effects and negative backwashing effects	Region provides simple resources and labour	Capital investments, diffusion of innovations, but backwashing of human resources
<i>Network theories</i>	Network linkages a-hierarchical and not depending on distance between nodes	Region does not play important role in the city development unless there are nodes of regional network	City as a centre of nodal region

(Source: own depiction based on Smetkowski, 2014, p. 4)

Networks and Proximity – An Overview

During the last three decades, the sociological concept of (social) networks has gained increasingly in importance in the field of economic geography to explain divergent growth and prosperity among different entities such as firms, cities and regions (e.g., Boschma, 2005; Boschma & Frenken, 2009; Glückler, 2007). Whereas the success of such networks strongly depends on interaction and proximity (Boschma & Frenken, 2009, p. 1; Smetkowski, 2014, p. 4; Glückler, 2007, p. 5), an expanded perception of proximity initiated by the French School of Proximity Dynamics in the 1990s offered new points of approach beyond geography (Boschma, 2005, p. 63). Thereby, the organization of space has become increasingly characterized by network structures of nodes of varying size (Smetkowski, 2014, p. 2) in which the notion of proximity is understood as a multi-dimensional concept (Boschma, 2005; Boschma & Frenken, 2009; Torre and Gilly, 2000). Among the different interpretations towards the assessment and number of the dimensions that are being pursued by scholars, the five-dimensional approach developed by Boschma (2005) has been found most appropriate to serve the objective of this research and will be shortly outlined below:

- *Geographical proximity*: absolute and relative spatial distance between actors (i.e., distance and travel time)
- *Social proximity*: networks are built upon microlevel relationships and trust among the people
- *Institutional proximity*: mutual trust in formal (i.e., the law) and informal institutions (i.e., norms and values)
- *Organisational proximity*: mutual trust in an organisational framework (i.e. similar business culture and reliable agreements)
- *Cognitive proximity*: a similar level of knowledge and understanding for good collaboration and knowledge spill-overs (Boschma, 2015, pp. 63-71; Boschma & Frenken, 2009, p. 3)

Table 2 gives a deepened understanding of the prior mentioned dimensions.

Table 2: Five Dimensions of Proximity and their Key Features

	Key dimension	Too little proximity	Too much proximity	Possible solutions
1. Cognitive	Knowledge gap	Misunderstanding	Lack of sources of novelty	Common knowledge base with diverse but complementary capabilities
2. Organizational	Control	Opportunism	Bureaucracy	Loosely coupled system
3. Social	Trust (based on social relations)	Opportunism	No economic rationale	Mixture of embedded and market relations
4. Institutional	Trust (based on common institutions)	Opportunism	Lock-in and inertia	Institutional checks and balances
5. Geographical	Distance	No spatial externalities	Lack of geographical openness	Mix of local ‘buzz’ and extra-local linkages

(Source: Boschma, 2015, p. 71)

Eder (2019, p. 121) argues that in some cases “temporary spatial proximity is sufficient” whereas “too much proximity is indeed disadvantageous”. This demonstrates the influence of the proximity approach (Rallet & Torre, 1999; Torre & Rallet, 2005): The understanding of *distance* relates not only to a geographical meaning (Boschma, 2005). Negative lock-in effects may occur resulting from too much proximity (Boschma, 2005).

The role of proximity for growth has already been regarded by Marshall and Weber in the beginning of the 20th century considered as external economies and external agglomerations. Marshall (1932, p. 152) makes clear that

“[w]hen an industry thus chosen a locality for itself it is likely to stay there long: so great are the advantages which people following the same skilled trade get from near neighbourhood to on another [...]. And presently subsidiary trades grow up in the neighbourhood supplying it [the industry] with implements and materials, organising its traffic and in many ways conducing to the economy of materials [...] Again in all but the earliest stages of economic development a localised industries gains a great advantages from the fact that it offers a constant market for skill.”

Whereas Marshall explains the growth of a region by external factors leading to supporting feeder industries to the main industry, Weber contrastingly states the low transportation costs being the crucial factor defining a locality for industries. (Trippel, 2004)

Neo-Classical Theory

Neo-classical theories imply balancing regional development differences (Stiller, 2005, p. 851). It depicts models that follows the idea that scarce production factors lead to regional imbalances. These disparities exist due to the difference of economic activities, production factors and the population (Stiller, 2005, p. 850). Regional growth is thus based on capital accumulation origination from a place's exogenous forces. The neo-classical theories thus assume the convergence of regions by a decrease of income disparities if capital and human labour can interregional exchange. As a consequence, production factors move to where their remuneration is better. This process balances the allocation of labour with capital and decreases income disparities between regions. (Bathelt & Glückler, 2003, p. 67; Stiller, 2005, p. 851)

Polarisation Theories/ Growth Poles

In contrast to the neo-classical theories, polarisation theories explain and imply the divergence of regions due to trade and factor mobility (Maier & Tödtling, 2006, p. 85; Stiller, 2005, p. 852). Economic expansions of a region can lead to either negative or positive effects for other regions. It is differentiated between a regional and a sectoral approach.

According to the regional approach, a central place with high wages attracts capital and labour from peripheral regions which results in positive growth in central and negative growth in disadvantaged peripheral regions. Positive development for peripheral neglected areas can be achieved by the centre's innovation and knowledge spill-over effects to the regions (Stiller, 2005, p. 852). Growth poles exist with agglomeration advantages that attract enterprises which are the motor for the whole region.

The sectoral polarisation (Perroux, 1950) explains the existence of “motor units” acting as growth poles that are either companies or industrial sectors that grow faster than average. Externalities foster innovation and the growth poles' expansions lead to sectoral polarisation. Networking effects between the growth poles lead to growth impulses. Negative growth of sectors can be explained based on the production rate of enterprises of a sector. Polarisation results in either positive effects for other regions by innovation and clusters, or negative backwash effects for other regions by exploiting production factors (Farhauer & Kröll, 2013b, p. 245; Maier & Tödtling, 2006, p. 61; Stiller, 2005, p. 852.).

Export Base Theory

Following the polarisation theory, the export base theory assumes that the development of a region depends on export demands of goods and services produced in the region (Stiller, 2005, p. 850).

The basic assumption are territorial imbalances in two regions in terms of economic development (Perroux, 1950). The theory divides the economy in a base sector (i.e. companies that export their goods and services) and a non-base sector (i.e. goods and services developed for regional market). The non-base sector depends of development of base sector because export of goods and services generates income to the region. Hence, economic growth can occur as the export sector depicts the key importance for regional development (Stiller, 2005, p. 850; Farhauer & Kröll, 2013c, p. 255).

Traditional and Modern Growth Theory

This thread of theories integrates the polarisation approaches into new classical models. Lasting regional divergence is explained due to external effects and monopolistic markets and regional development is influenced by innovations and related external effects (Stiller, 2005, p. 853).

New Economic Geography

With the emerge of the New Economic Geography, Krugman (1991) and Venables (1996) give explanations for the uneven spread of economic activities. Krugman states that transport costs and agglomeration effects lead to the development of cores with concentrations of industries and underdeveloped peripheries (Krugman, 1991, p. 483; Stiller, 2005, p. 854). Key factors of the theory are the interregional transport costs and centripetal and centrifugal forces, economies of scale, pecuniary externalities developed endogenously from the market mechanism. Whereas centripetal forces decide about the spatial concentration of enterprises and labour, centrifugal forces lead to dispersed economic activities in a region (Farhauer & Kröll, 2013a, p. 209; Stiller, 2005, p. 854).

Christaller's Central Places

The theory of central places has been coined by Walter Christaller in the 1930s in Germany. It defines central places that concentrate core functions for their core and surrounding areas. A central place is equipped with a surplus of functions which make that place more central than another. These functions comprise economic, administrative functions, services, transportation, cultural and educational purposes. Regions are assumed to depend on core central areas due to their provision with central goods and services. Christaller differentiates between three hierarchies of central places according to the size of a place (mostly towns). (Faßmann, 2009, p. 197; Gebhardt, 2008, p. 655; Kirsten, 1983, p. 22.; Maier & Tödtling, 2006, p. 142.; Schätzl & Liefner, 2012, p. 47)

2.1.3 Borrowed-Size and Agglomeration Shadows

Suggestions that uneven distributions of economic activities exist in the spatial economy which are caused due to economies of scale and transport costs, according to Fujita & Krugman (1995) and Fujita, Krugman and Mori (1999), a correlation between the distance of an agglomeration to the core and the local market potential is shown. That means that regions located in proximity to the core suffer the absorption of economic resources by the core. The process is called the agglomeration shadow. The core's development is fostered whereas the peripheral region's development is hindered. Based on the previous outlined theories, the models of agglomeration shadows and borrowed size are presented in the following.

In the light of urban networks, the concept of 'borrowed size' seizes on the positive effects of connectivity whereas negative connectivity leads to 'agglomeration shadows' (Meijers et al., 2016).

Introduced by Wilam Alonso (1973), the borrowed size effect offers an explanation for an enhanced economic performance of cities located in large metropolitan complexes as they are able to benefit from agglomeration benefits from bigger urban areas (Meijers & Burger, 2017, p. 269; Servillo et al., 2014). In this perspective, accessibility of services and further urban functions in larger towns depicts the key element as by that the respective smaller city is able to "borrow size" as it is located in a network of city. Its embeddedness in a city network provides for the compensation of its smaller size (Meijers et al., 2016, p. 185). Eventually, agglomeration benefits are borrowed from larger cities and agglomeration costs are avoided (Meijers et al., 2016, p. 185). Yet, the perquisite of a city's location in a network of cities must not be neglected for borrowing size (Alonso, 1973, p. 200; Meijers & Burger, 2017, p. 2721).

"The concept of a system of cities has many facets, but one of particular interest [...] is the concept of 'borrowed size', whereby a small city or metropolitan area exhibits some of the characteristics of a larger one if it is near other population concentrations" (Alonso, 1973, p. 200).

Based on these main characteristics of borrowing size, Meijers & Burger (2017, p. 287) further developed the model by adding the two components of 'borrowed performance' and 'borrowed function'. *Borrowed function* refers to larger places in a region that own more functions than supposed to and are therefore able to easier borrow size. *Borrowed performance* relates to a city's access to these functions as the network of larger cities offers enhanced benefits therefore performance is borrowed. The concept of 'borrowed size' is therefore used to explain the economic growth of places without them physically expanding (Meijers & Burger, 2010).

Contrasting to ‘borrowed size’ are so-called ‘agglomeration shadows’. These explain negative networking effects of spatial interdependencies depending on international and national scales. Given that negative networks effects occur on a regional scale, larger cities have more influence. (Meijers & Burger, 2017, p. 270). Eventually, the geography of a city matters for its development.

Table 3 shortly summarises the relation between ‘borrowed size’, ‘borrowed function’ and ‘borrowed performance’.

Table 3: Dimensions of Borrowed Size

Dimensions of borrowed size		Connection size $\leftrightarrow$ function	
		Less functions than expected given size	More functions than expected given size
Connection size $\leftrightarrow$ performance	Performs less than expected given size	<i>Agglomeration shadow</i>	<i>Borrowed function</i>
	Performs better than expected given size	<i>Borrowed performance</i>	<i>Borrowed size (function & performance)</i>

(Source: Meijers & Burger, 2017, p. 287)

2.1.4 The Social Strand of Development

As characterised above, economic performance plays a significant role in a town's development. However, a growing number of scholars has emerged evaluating the importance of so-called “soft factors” for positive territorial development.

Creative City

Jane Jacobs developed the concept of the creative cities by describing them as being innovative and diverse (Tremblay & Pilati, 2013, p. 67). Diversity is found as crucial element stipulating creativity and interactions between different people (Tremblay & Pilati, 2013, p. 68).

In 2002, Richard Florida (2002) has published the revolutionary theory that explains regional development of regions based on the spatial allocation of the *Creative Class*. Attracting and retaining talents, i.e. professionals, people from cultural and artistic communities and from the education and training sectors, are key factors for economic development (Tremblay & Pilati, 2013, p. 69) Florida claims that knowledge, idea and information exchange between creative people and workers are fundamental for innovating (Florida, 2000 in Tremblay & Pilati, 2013, p. 68). Similarly, this makes creativity responsible for being able to foster economic prosperity, growth and competitiveness due to the people's capability to foster innovation as creative outputs. A region's attractivity therefore depends on *Three T's* that are *technology*, referring to the concentration of the knowledge and technology sector, *talents*, referring to the creative potential of the people's professions, and *tolerance*, relating to a region's openness towards diversity and new ideas. These three forms of creativity are stated as making a city more attractive and thus attracting further *Creatives* from other places (Farhauer & Kröll, 2013d, p. 229)

Social Innovation

It cannot be denied that social innovation has found entrance in a variety of researches from different fields of study (Moulaert et al., 2013, p. 15). This has also been found by Moulaert et al. (2013, p. 13) referring to the ambiguous usage of the term ‘social innovation’. Expressions such as social inventions or social transformation have been used to paraphrase social innovation early on (e.g., Max Weber and Joseph Schumpeter, cf. Hagemann, 2004, p. 755), thus, this paper focuses on social innovation.

The key features of social innovation target the quality of life, i.e., the wellbeing of people to be achieved by improved human conditions, satisfactions and relationships (Moulaert et al., 2013, p. 16; Tremblay & Pilati, 2013, p. 67). Such as general meaning implies a process “that aims to contribute new solutions to unresolved social problems” (Lévesque, 2013, p. 25). Tremblay & Pilati (2013, p. 67) make concerned people to be key players in initiating social innovation. Being used as answer to human needs, social innovation is often rooted in the local context. Diverse actors, most often stemming from civil society, find solutions for providing basics services.

One of most important social innovation has been developed through cooperation of the state and union to improve life conditions that is the welfare state (Moulaert et al., 2013). This leads to another understanding of social innovation being utilised “as a label to indicate significant changes in the way society evolves, how its structures are modified, its ethical norms revisited, etc.” (Moulaert et al., 2013, p. 13). In this context, changes imply those of public policy or socio-political background that similarly represent innovative forms of social organisation. (Moulaert et al., 2013, p. 13, 15). In this sense, innovative collective actions depict the ambitions of social actors (Lévesque, 2013, p. 25; Moulaert et al., 2013, p. 14). By social innovation enhanced social relations and empowerment processes are meant leading to fostered inclusion and wellbeing. Relations on different scales are meant, such as on the macro-scale referring to those between social groups and classes, and on micro-scale referring to relations between individual people. Additionally, the importance of a diversity of skills dedicated to the actors characterises social innovation (Moulaert et al., 2013, p. 16).

The consideration of social innovation is “path dependent and contextual” (Moulaert et al., 2013, p. 17). Mainly, changes shall support including the excluded to society. Therefore, social innovation displays an innovative process that touches power relations of societies (Moulaert et al., 2013, p. 17). Yet, institutional relationship plays a major role therefore social innovation

Social innovation has been used as being a new way of responding to crisis as fast policy approach (Moulaert et al., 2013, p. 17). In this case, the relationships between political actors in a system need to be regarded as of scale and path-dependency (Moulaert et al., 2013, p. 18). Moreover, social innovation refers to different types of social transformation and collective action (Moulaert et al., 2013, p. 18). Governance structures, empowerment and participation possibilities are addressed (MacCallum et al., 2009 in Moulaert et al., 2013, p. 19) and further their interdependencies.

Social innovation in the context of governance emerged as a consequence of the New Public Management and addresses political aspects (Lévesque, 2013, p. 15)

Creativity as a characteristic of social innovation, economic development and social development offers organisations the possibility to create knowledge accumulation by new social forms resulting in competitiveness of regions (Sacco & Tavano Blessi, 2005 in Tremblay & Pilati, 2013, p. 67). Therefore, social innovation is considered as “an inherently territorialized process” (Van Dyck & Van den Broeck, 2013, p. 131).

Social innovation are those “that both good for society and enhance society’s capacity to act” (Mulgan & Pulford, 2010, p. 16 in Van Dyck & Van den Broeck, 2013, p. 132). Co-ordination between individuals is enhanced due to new mechanisms increasing people’s welfare (Young, 2011, p. 21285). The concept of social innovation has also found entrance to the level of the European Union that uses the concept to addresses societal challenges, e.g., poverty or social injustice (Edwards-Schachter & Wallace, 2017). By that, social innovation is considered as a tool shaping societal needs (Edwards-Schachter & Wallace, 2017; Fougère, Segercrantz, & Seeck, 2017; Grimm, Fox, Baines, & Albertson, 2013; Schubert, 2018 in Wittmayer et al., 2019, p. 1).

Social Capital

Social capital depicts a crucial theory in relation to social innovation. The term paraphrases social cohesion and is often defined as being a value by supporting certain measures for particular groups or individuals. This understanding defines social capital as being a tool (Hanke, 2011, p. 14).

The significance of social capital has been profoundly researched by James Coleman, Pierre Bourdieu and Robert Putnam who approach the term differently.

According to Bourdieu (1983), social capital is characterised by social exchange and the power that a sense of belong can set off for an individual person. Social capital thus comprises all resources that are linked to a participation in a network of social relations (Bourdieu, 1983).

Contrastingly to Pierre Bourdieu’s term *social capital* (Bourdieu, 1983), Robert Putnam puts forward the view that social capital is the most crucial factor for development within a society. Putnam (1995, p. 65) defines social capital as a presence of networks. He states that “‘Social capital’ refers to features of social organisations such as networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit” (Putnam, 1995, p. 65).

In the context of urban development, local effects are evolved by social capital. The interrelations and common visions between actors create networks and higher levels of participation for urban development are reached. As a result, better social and economic conditions are achieved within an area. Endogenic local resources such as common visions may give impetus to urban development. (Hannemann, 2002, p. 264; Mayer, 2002, p. 37)

Social capital facilitates self-organisation of societies. The provision of information, financial and non-financial resources and further services is initiated through social capital networks (Elliott et al., 2010; Hurlbert et al., 2000; Kaniasty & Norris, 1993 in Aldrich & Meyer, 2015, p. 256). Therefore, social capital is a crucial feature of social resilience (Aldrich & Meyer, 2015, p. 256). “Communities with high trust, norms, participation, and networks were able to more quickly recover from disaster” (Aldrich & Meyer, 2015, p. 260). Moreover, further rapid recovery results from community leadership (Aldrich & Meyer, 2015, p. 260).

2.1.5 Urban Resilience

The following section introduces into the concept of urban resilience. First, a short genesis of the term *resilience* is outlined before the ambiguous concept is scaled down to the broad understanding of urban resilience.

The concept named *resilience* emerges from Crawford C. Holling (1973). Back then, it was referred to an environmental system’s capability to predict and resolve external shocks and maintain its main functional operation. Up until today, a vast body of resilience research exists comprising an application in various contexts, e.g., ecological, economic, engineering and further ones. Yet, a single definition can be found due to the field-specific meanings (Vale & Campanella, 2005). Nevertheless, a basic construct of resilience can be defined as “the capacity of a system to absorb disturbance and reorganize while undergoing change so as to still retain essentially the same function, structure, identity, and feedbacks” (Walker et al., 2004, p. 4).

Table 4 briefly outlines the characteristics of the main resilience concepts.

Table 4: Concepts of Resilience

Resilience Concept	Characteristics
Engineering resilience	Maintain a system’s functions, resistance, recovery, constancy, focus on one ecosystem part.
Ecological resilience	Stability at various levels, focus on an entire ecosystem.
Socio-ecological resilience	Reorganisation, learn, adapt, transform, self-organise; coherence of a social system and an ecosystem

(Sources: own illustration (Menking, 2018) based on Voss & Dittmer, 2016; Scharte & Thoma, 2016; Brand et al., 2011; Folke et al. 2010; Bürkner, 2010; Holling 1973)

In times of high dynamics, towns face numerous challenges that can either be natural hazards, economic crisis or social stress. The need to predict uncertainties to harmful events is necessary. Shocks and stresses may be physical damages to infrastructures and service facilities, social damages such as social stability, institutional damages referring to the operation of governments and organisations and economic damages relating to negative impacts on the economy (Vale & Campanella, 2005). The positive development of an areas thus depends on its capacities to be resilient.

Urban resilience is rooted in social-ecological resilience which related to people and nature as interdependent system (in contrast to ecological resilience) (Folke et al., 2010). Three main factors influence the concept that are persistence, adaptability and transformability. Adaptability addresses actor's capacities to influence resilience and transformability means the possibility of transformation and create a new system. (Folke et al., 2010).

The meaning and thus application of urban resilience comprises various facets. According to Jakubowski (2013, p. 375) a city or and region is especially resilient when it is robust against external influences, when it owns sufficient resources to overcome situations of crisis and when its administration, citizens and relevant stakeholders are equipped with know-how and creativity to withstand and cope with exceptional situations. The resilience capability is the maximum of pressure that a system, such as a city, can withstand. (Frommer, 2011, p. 85). The meaning and thus application of urban resilience comprises various facets. According to Jakubowski (2013, p. 375) a city or and region is especially resilient when

- it is robust against external influences,
- it owns sufficient resources to overcome situations of crisis and,
- its administration, citizens and relevant stakeholders are equipped with know-how and creativity to withstand and cope with exceptional situations.

Moreover, resilience can be recognised due to a city's or region's reaction ex-post shocks and the duration of its recovery (Jakubowski, 2013, p. 375). Recovery implies a pre-disturbance state whereas creativity related to an urban society's and system's ability to adapt and reinvent (Frommer, 2011, p. 85; Maguire & Hagan, 2007).

It is important to mention that urban resilience relates to a city's capability to react and prepare for past and future shocks and stresses in order to maintain its growth patterns (OECD, 2016). As a consequence, dynamic resilience patterns shall be established referring to a new status of a

previous one (Boschma, 2015). Nevertheless, static resilience is also considered as the ability to resist functional damage (Dabson et al., 2012).

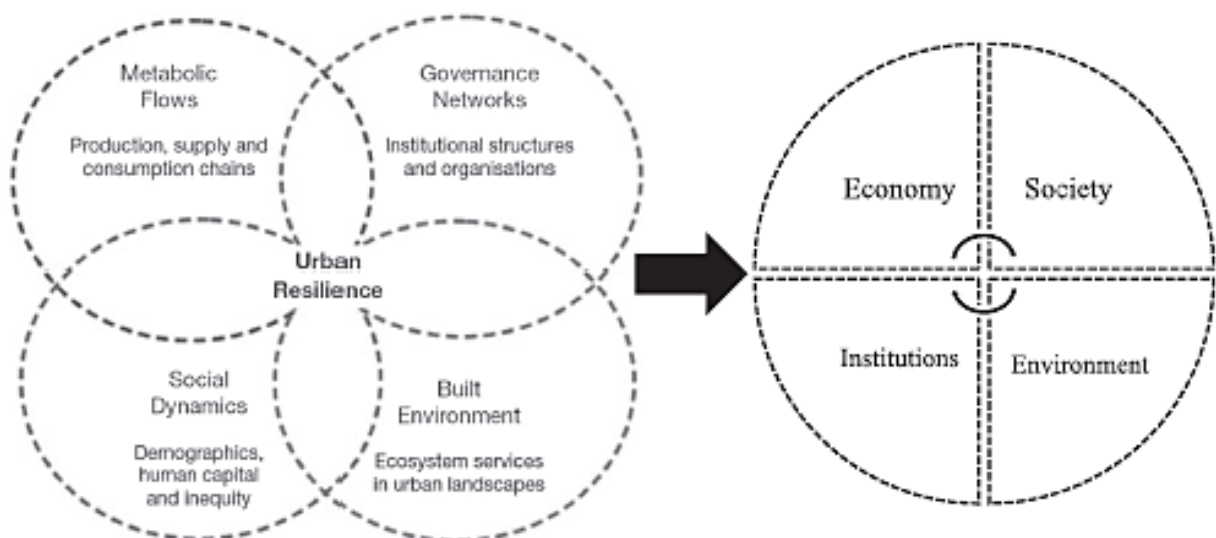
Consequently, urban resilience can be understood as an

“ability of an urban system-and all its constituent socio-ecological and sociotechnical networks across temporal and spatial scales-to maintain or rapidly return to desired functions in the face of a disturbance, to adapt to change, and to quickly transform systems that limit current or future adaptive capacity” (Meerow, 2016, p. 39).

A framework for urban resilience application was firstly proposed by Resilience Alliance in 2007. Four drivers for resilience, that are *economy*, *society*, *institution* and the *environment*, are addressed showing the multi-level understanding needed for applying urban resilience.

First, the economical pillar refers to diversified and knowledge-based industries that are empowered by creativity for innovation (OECD, 2016). Second, social cohesion and inclusion are stated to develop a resilient society that is capable of leadership and cooperation skills (Xiao & van Zandt 2012, p. 2523). The environmental pillar puts its main focus on environmental sustainability. For example, climate change adaptations offer resilience in urban areas. Lastly, an important role is given to institutions. Emphasis is put on extending social capital and collaboration in local policymaking by inclusive and open structures. Effective governance structures are needed to build trust (Borsekova et al., 2018, p. 382).

Figure 1: Multi-Level Understanding of Resilience of Urban Systems and Drivers of Resilience



(Source: Borsekova et al., 2018, p. 383)

Figure 1 outlines the multi-level understanding of resilience of urban system and the drivers of resilience (Borsekova et al., 2018, p. 381)

Social Resilience

Being a characteristic of urban resilience, social resilience relates to a community or society that needs to deal with disturbance (Keck & Sakdapolrak, 2013 in Mattissek & Sakdapolrak, 2016, p. 23). Being able to successfully perform and practise resilience may be informed through power relationships, knowledge, resources and human abilities which also differ depending on the peoples' socio-economic backgrounds. (Keck & Sakdapolrak, 2013 in Mattissek & Sakdapolrak, 2016, p. 24). Table 5 briefly covers the three main capacities needed to establish social resilience. These differ in terms of time scopes, degrees of change and the targeted outcomes.

Table 5: Capacities of Social Resilience

	Coping	Capacities Adaption	Transformation
Interaction with disturbance	ex post	ex ante	ex ante
Time scope	short-term	long-term	long-term
Degree of transition	low, status-quo	intermediate, slow transition	high, radical transition
Outcome	Recovery of well-being to actual condition	Guarantee of future well-being	Enhancement of present and future well-being

(Source: own illustration (Menking, 2018) based on Keck & Sakdapolrak, 2013 in Mattissek & Sakdapolrak, 2016, p. 24)

Economic Resilience

Economic resilience shows a further responsible factor to explain economic growth in urban regions. Regional economic resilience research emerged post-crises with researchers such as Boschma (2015), Carpenter et al. (2001) and many more. It comprises factors such as socioeconomic characteristics and the diversity of economic structures as already mentioned above (Dabson et al., 2012). In this context, economic resilience mainly refers to a capacity of being able or self-organise a system after disturbance (Rose & Lim, 2002). Further, Polèse (2010) defines economic resilience as the ability of a region to maintain its vitality during crisis. By lock-out effects, an economy overcomes external shock by withstanding (Crespo et al., 2013) whereas lock-in effects explain the failure of economy to adapt to new changes resulting in downwards development (Harrison, 2015; Martin, 2010). Lock-ins may be prevented by a diversified economy (Martin, 2010).

Despite the ambiguity that the resilience concept brings along, its interdisciplinarity may be a benefit when planning for resilience.

2.2 Interim Results

The previous chapter has revealed numerous theoretical implications that are crucial for the understanding of the research aim. It was found that the definition of a MSTs does not provide a standard understanding. Instead, the term MST differs from economic, socio-economic and territorial applications thus the term MST is not used in a similar manner. However, it is found that MSTs are constructs of morphological, administrative and functional characteristics. In Germany, a clear definition of medium-sized towns is given based on the number of inhabitants. Further, MSTs are often neglected as research objects that is not linked to small-sized towns. This is discovered as a crucial issue as SSTs and MSTs do not necessarily establish equal development characteristics.

Furthermore, a variety of theories and concepts explaining the relation towns and their connections to the region are outlined. It was revealed that explanations cover either the divergence or the convergence of towns based on a diversity of either internal or external factors. These factors often appear to be of economic nature or reveal the relevance of functional or proximity relationships between two territories. Whereas networking structure can lead to convergence, too much proximity may lead to divergence of territories. In addition, the concept of borrow-size and agglomeration shadows outlines the fact that some peripheral cities are able to flourish due to their capacity to borrow functions from respective urban cores.

Moreover, theories and concepts from a rather societal strand are regarded. Explanations for urban growth are found in the availability of creativity in towns and the establishment of social innovation structures is found as crucial for urban development. The presence of socially innovative structures facilitates territories to foster people's quality of life by applying innovative urban development approaches that do not only focus on technical infrastructures of innovation but also concentrate on social structures. In addition, the concept and availability of social capital in territories has been found as being essential in order to strengthen social cohesion.

Lastly, the review of the urban resilience concept shows that the concept inherits a multiplicity of characteristics. The four main pillars, namely the economy, the environment, institutions and the society need to be working as gearwheels to contribute to resilient urban environment. As found of highest importance for the report, social and economic resilience have been regarded more profoundly.

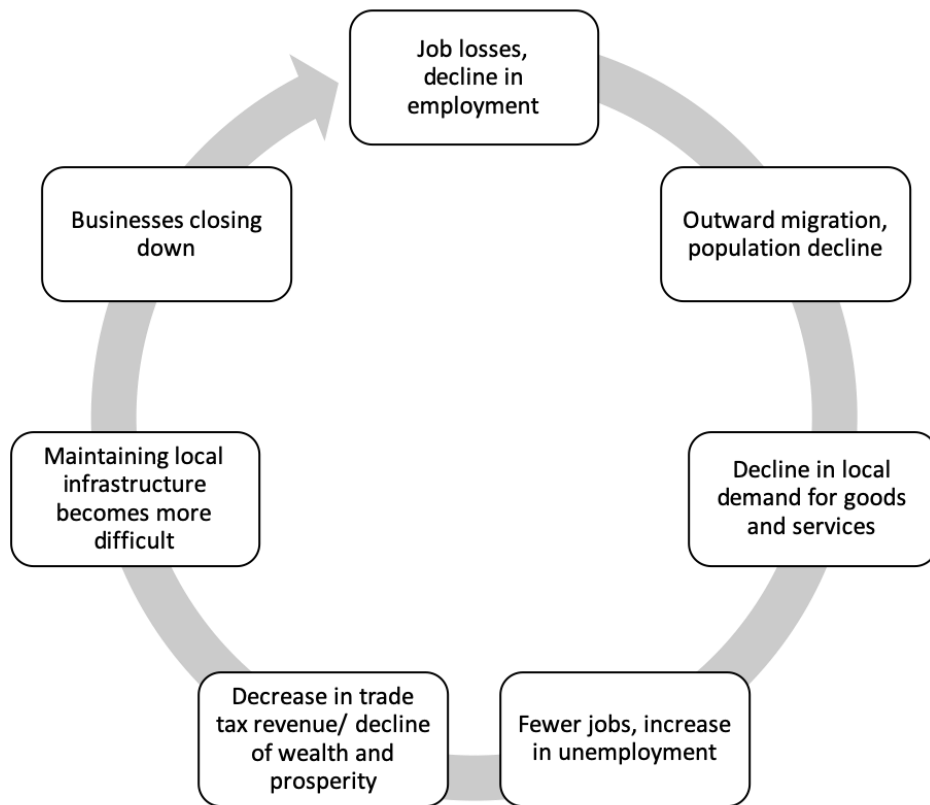
3 Analytical Framework

The research involved two related inquiries: a broad quantitative overview of German MSTs with a special focus on the East/ West divide and a detailed comparative case study to examine and verify the phenomena elaborated in the contextual part of this paper.

Approximately one quarter of the German population is living in the around 600 MSTs (BBSR, 2017b; BBSR, 2019b) and this vast number poses some serious constraints on the feasibility of detailed comparison between Eastern and Western MSTs. A prominent approach to evaluate the success or failure of a city determines whether it displays growing or shrinking characteristics (BBSR, 2018a, p. 1, Cuberes et al., 2018, p. 1, Schlappa & Neill, 2013, p. 8). Thereby, shrinking can be defined as either a one-dimensional process of persistent population losses that are reflected in urban and regional development or as a multi-dimensional process with profound restructuring in the economy, population and building structure of a given city or town (BBSR, 2018a, p. 1). Shrinking equated with population losses can also be an expression of cyclical migration and is a basic variable that only superficially accounts for the dynamics surrounding urban shrinkage. Nevertheless, due to the limited availability of data, the general population development of West and East Germany has been harnessed in this study to indicate a general trend of developments since the fall of the Berlin Wall in 1989. But, as has been elaborated by Häußermann & Siebel (2004, p. 10), it is through the interplay of population losses with selective emigration of skilled young workers, unsuccessful integration of immigrants, negative economic developments, high unemployment, declining municipal financial leeway, dissolution of the urban form and thinning of the supply of goods and services that creates an urban crisis in which negative developments are setting off a downward spiral that slowly expands to all urban functions.

Summarising the points above, the underlying problem of shrinking cities does not lie in individual developments, which implies an expanded measuring concept with several indicators. The BBSR (2017c) has developed such a framework of both nationwide available and periodically viable indicators based on the cumulative causal chain of shrinking as displayed in figure 2 (Mayer & Knox, 2009 in BBSR, 2018a, p. 2).

Figure 2: Cumulative Causal Chain of Shrinking



(Source: own depiction based on Mayer & Knox, 2009 in BBSR, 2018a, p. 2)

From the different dimensions of shrinking, the BBSR (2018a) has derived six indicators that have been computed for the time period 2010/11 to 2015/16:

1. Average annual population growth 2011-2016 (%)

Central indicator for the quantitative recording of growth and shrinkage

2. Average total annual migration balance 2012-2016 per 1000 inhabitants

Migration is considered as a measure of the attractiveness of a city or community

(Demographically, the migration balance is part of the population development; both indicators are highly correlated (between 0.85 and 0.92 in the time intervals 1998 - 2016))

3. Average annual workforce development by age (20-64 years) 2011-2016 (%)

Labour force potential and in addition, this indicator provides information on the groups that are economically and socially dependent on taxation (under-aged and seniors)

4. Average annual development of employees subject to social insurance 2011-2016 (%)

Creation or dismantling of jobs (Unfortunately, only ~65% of jobs are subject to social security contributions, but a different database is not available at the community level)

5. Average annual change in the unemployment rate 2010/11-2015/16 (%)

Indicator includes not only the creation/ dismantling of jobs (not only subject to social security contributions) but also financial aspects concerning the dependence or non-dependence on transfer incomes; two-yearly averages

6. Average annual change of business tax base per inhabitant from 2010/11-2015/16 (%)

Indicator of economic activity at the municipal level, refers to the base amount and not the actual revenue (Years with negative revenue – negative revenue represents repayments of the municipalities on the basis of the actual revenue generated in the following year (annual tax equalisation) – are not taken into account)

All indicators are presented as the average annual development rate within the time interval using the geometric mean, which is less affected by outliers and extreme values (BBSR, 2018a, p. 3). To summarise the different indicators, they either must be standardised or classified, and this procedure always requires an adequate consideration of outliers and extreme values. For this purpose, a classification into quintiles has been carried out: starting from an assumed normal distribution, the boundaries of the outer quintiles were designed in a way that the relative distance between extreme values and outliers is compensated (BBSR, 2018a, p. 3). The more frequently the indicators are in an upper quintile, the higher the total score and subsequently the better the local development. When aggregating the total score, the three demographic indicators are weighted twice as much as the economic indicators, which is justified by the high relevance of demography in the shrinking process but also statistically with regard to reliability by the less strong correlation of economic indicators in the overall concept (BBSR, 2018a, p. 4). Finally, the municipalities were divided into five development groups according to their total score (BBSR, 2018a, p. 4):

- Above-average growth: 19 to 24 points
- Growing: 14 to 18 points
- No clear direction of development: 11 to 13 points
- Shrinking: 6 to 10 points
- Above-average shrinking: 0 to 5 points

The results have been visualised by the BBSR (2017c) in the form of maps and are harnessed in this paper to illustrate the growth patterns of MSTs in Germany as elaborated in chapter 4.2 and 4.3. While these indicators contribute to an assessment of the extent to which MSTs develop differently in Eastern and Western Germany, the other phenomena addressed in this research –

i.e., the role of social cohesion, innovation and creativity for urban resilience, strategies for territorial convergence and MSTs responses to today's socio-economic complexities – are not easily quantifiable and are highly dependent on secondary data and the case specific information gathered through the interviews and reviews of the socioeconomic town profiles in chapter 4.3. Within the realms of feasibility and possibility, the theories outlined in chapter 2 have been applied to the case-study cities Bitterfeld-Wolfen and Weißenfels, whereas the development of MSTs in East/ West Germany is much more general in nature by reason of the large number of towns and the limited availability of comparative data.

4 Empirical Part

The structure of the empirical part of this research is twofold: firstly, the development of German MSTs with a special emphasis on the former East/ West divide has been analysed in order to gain a broad understanding of the growth patterns as well as factors supporting and hindering territorial cohesion. In a second step, a descriptive case study of the Saxon MSTs Bitterfeld-Wolfen and Weißenfels has been conducted to systematically examine and verify the phenomena described in chapter 2 on the micro-level. In this context, the geographical proximity to a metropolitan area, i.e., Leipzig, and possible knowledge spill-over have been regarded as a potential driver for innovation and new ideas.

Before presenting the results of these two segments, the underlying methodology and the selection of the methods applied will be shortly outlined and justified.

4.1 Methodology

This paper utilises a mixture of both qualitative and quantitative research methods to properly respond to the duality of the research objective(s). The main question of this research '*What are the crucial factors for divergent growth of German medium-sized cities and how can they establish resilient characteristics and capacities as drivers of growth?*', combines two types of questions: *what* and *how* questions. In general, *what* questions are either merely exploratory in nature, e.g., '*what role does creativity and social innovation play for urban resilience?*' or explore the scope or extent of a certain phenomenon, e.g., '*in how far develop MSTs differently in Eastern and Western Germany?*'. A variety of methods has been found appropriate to address these kind of questions (Yin, 2018, p. 9). On the other hand, *how* questions are more explanatory in nature, e.g.,

‘how do MSTs respond to challenges?’, and are often assessed through methods such as experiments or case studies (Yin, 2018, pp. 8-10). Summarising the above, the selection of a particular method is closely linked to the concrete purpose of the study as articulated through the research questions, thereby defining the specific content under investigation (Kuckartz, 2014, pp. 34-36, Yin, 2018). In order to generate comprehensive and viable results, four different methods were applied, namely: Literature review, secondary data analysis, case study analysis and expert interviews.

4.1.1 Literature Review

The theoretical part of this report is based on the examination of relevant literature taken from scientific journals, monographs and official reports (Farthing, 2016, p. 65). A systematic literature review was carried out to gain profound understanding and justification of theoretical and practical implications of the research by “review[ing] the state of knowledge on a question” (Farthing, 2016, p. 65). By inspecting available written material on the subject and identifying gaps in the existing findings, the literature review thereby constitutes the focussed entry into a topic (Denney & Tewksbury, 2012, p. 1). It is a systematic, reproducible and explicit method used to identify, evaluate and synthesise already existing works by scholars, researchers and practitioners (Fink, 2010, p. 3). For the purpose of this paper, the focus was rather integrative and theoretical in nature, i.e., harnessing already existing explanations for certain developments as well as exploring theoretical concepts and their capability to account for real life phenomena (Cooper, 1984 as cited in Denney & Tewksbury, 2012, p. 4). Thereby, relevant theories regarding social innovation, creativity and innovation, economic geography and development theories addressing interdependencies between metropolises and their hinterland have been evaluated and contextualised in chapter 2. The investigation was organised in relation to prior specified research questions (Farthing, 2016, p. 65).

The literature review provided explanations for divergent growth despite similar characteristics and insights into possibilities of how MSTs can achieve urban resilience by fostering the concept of social innovation and creativity were explored. This knowledge formed the theoretical framework of this study and contributed largely to the formation of the analytical framework. In addition, it has been a source of results and outputs with regard to the comparison of MSTs in Germany as well as the case study towns.

Particular significance has been attached to the selection of sources to achieve viable and relevant results. Berg (2009, p. 389 in Denney & Tewksbury, 2012, p. 10) has determined an order of priority that has been taken into account throughout this research:

1. Scholarly empirical articles, dissertations and books
2. Scholarly nonempirical articles and essays
3. Textbooks, encyclopaedias, and dictionaries
4. Trade journal articles
5. Nationally and internationally recognised and viable newsmagazines

Nevertheless, the character of the topic constituted a certain degree of limitation with regard to the literature review. Given that the two case study towns are rather small and still largely unresearched, it was difficult to find sufficient scientific sources. For this reason, it was in general unavoidable to draw on grey literature, e.g., websites, local newspapers and magazine articles, as well. Moreover, due to the limited time scope, the review has been reduced to the critical contents needed to answer the research questions.

4.1.2 Secondary Data Analysis

For the empirical part, an analysis of relevant qualitative and quantitative data from local and federal databases as well as an evaluation of evolutionary contexts and policy and planning documents has been deployed to establish a general understanding of the development of MSTs in Eastern and Western Germany as well as a case-specific understanding of the development of the case study cities Bitterfeld-Wolfen and Weißenfels. Secondary data analysis can be divided into qualitative document analysis and quantitative data analysis that each capture different sections of social reality (Lamnek, 2010, pp. 30-32) and will contribute to provide a comprehensive picture of the different dynamics, factors and (governance) processes that influenced the development of MSTs in Germany. Documentation and archival records (Yin, 2018, pp. 113-116) are tantamount to qualitative document analysis and quantitative data analysis and the respective strengths and weaknesses can be found in table 6 under case study analysis.

4.1.3 Case Study Analysis

Case studies have acquired growing importance in the field of qualitative research to establish an in-depth understanding of the particularities of a specific case (Baxter & Jack, 2008; Thomas, 2011, Stake, 1995) and can provide suitable framework conditions for quantitative and qualitative

analysis (Yin, 2003, p. 14). In general, a “case study is expected to catch the complexity of a single case” (Stake, 1995, p. xi), but the approaches of collective case study (Stake, 1995, p. 4), comparative or multiple case-studies are utilised to investigate two or more cases against similar criteria (Baxter & Jack, 2008, p. 555; Yin, 2018, p. 54). Case study analyses are based on a wide range of data and detailed assessment of different types of information (Yin, 2018, p. 15), which increases the veracity of the research (Baxter & Jack, 2008, p. 554). But the open nature of data collection allows for selectivity and the pursuit of own purposes to create a certain bias by neglecting contrary evidence, it is hence important for researchers to be aware of possible (sub)conscious biases and commit to research ethics and strive for truth and objectivity (Yin, 2018, pp. 86-87). General recommendations to achieve viable results include clearly phrased research questions and appropriate research design, a well-defined research framework and purposeful and thorough data collection, management and analysis processes (Baxter & Jack, 2008, Yin, 2018). According to Yin (2018, pp. 113-121), there are six sources of evidence, namely documentation, archival records, interviews, direct observations, participant-observations and physical artefacts. For the scope of this paper documentation, archival records and interviews have been found most appropriate to serve the research objectives. Table 6 provides a detailed overview of the strengths and weaknesses of the selected sources of information.

Table 6: Strengths and Weaknesses of the Sources of Evidence

Source of Evidence	Strengths	Weaknesses
Documentation (Agendas, progress reports, proposals, studies, articles, ...)	– Stable – can be reviewed repeatedly – Unobtrusive – not created as a result of the case study – Specific – can contain the exact names, references and details of an event – Broad – can cover a long span of time, many events, and many setting	– Retrievability – can be difficult to find – Biased selectivity, if the collection is incomplete – Reporting bias – reflects (unknown) bias of any given document’s author – Access – may be deliberately withheld
Archival Records (Data, maps, charts, ...)	– [Same as those for documentation] – Precise and usually quantitative	– [Same as those for documentation] – Accessibility due to privacy reasons
Interviews (Prolonged/ shorter interviews, interviews surveys, verbal reports, ...)	– Targeted – can focus directly on case study topics – Insightful – provides explanations as well as personal views (e.g., perceptions, attitudes and meanings)	– Bias due to poorly articulated questions – Response bias – Inaccuracies due to poor recall – Reflexivity – e.g., interviewee says what the interviewer wants to hear

(Source: own depiction based on Yin, 2018, pp. 113-121)

An important aspect is the choice of the case(s) (Yin, 2018, p. 28). Within the framework of MSTs in (Eastern) Germany and effects of peripheralization, two comparative MSTs in geographic proximity to a flourishing larger metropolitan centre had to be found. Due to the divergent characteristics and growth patterns, it was impossible to find comparable cities in East and West Germany, but two cities in geographic proximity to Leipzig were matching the objective(s) of this study. Weißenfels and Bitterfeld-Wolfen are both small medium-sized cities and characterised by their similar size, geographic proximity as well as (public) transport connections to Leipzig (BBSR 2017c). These equivalent properties justify and provide an excellent basis for a comparative case study analysis.

4.1.4 Expert Interviews

Among key question interviews, narrative interviews and group interviews, expert interviews are a subdivision of qualitative interviews (Mayring, 2002, pp. 80-81; Reuber & Pfaffenbach, 2005, pp. 145-146; Schirmer, 2009, pp. 186-187). The primary objective is the acquisition of factual information to achieve profound insights into the internal structures and processes of an organisation, program or system by interviewing ‘experts’ (Kaiser, 2014, p. 4). The so-called experts are closely related to the investigated subject and possess an insider perspective, i.e., ‘exclusive knowledge’ in the form of ‘business knowledge’, ‘context knowledge’ or ‘knowledge of interpretation’ (Kaiser, 2014, p. 5). While this knowledge can contribute greatly to research, it is indispensable to consider that the interviewee’s conception and narration are shaped by subjective experiences and values (Bogner et al., 2009, p. 140). Hence, the possible (sub)conscious bias of the interviewees should be considered.

In the context of this research, the aim of the expert interviews is to gather additional information that – due to the exploratory nature of the subject – could not be obtained elsewhere. Through operationalisation, the research questions were transformed into specific interview questions (Kaiser 2014, pp. 4-5). The interview guideline (cf. Appendix A) comprises three thematic blocks, namely:

1. General questions about the interviewees;
2. General questions regarding divergence;
3. Questions regarding the case study cities

The conduction of the interviews followed a semi-structured approach, i.e., the guideline questions could be spontaneously adapted to the respective conversational situation including the possibility for additional questions (Cropley, 2005, pp. 107-108; Hopf 2007, p. 351, Schirmer, 2009, pp. 186-

187). Due to the small scope of the interview series, a qualitative content analysis (e.g., Mayring 2000, Mayring, 2014) has not been conducted.

Two expert interviews with two interviewees were conducted. The interviewees were selected regardless of their age, gender or other demographic features. All interviews have been conducted in December 2019. In consent with the interviewees, all interviews were recorded as audio files and were summarised and translated.

One interviewee did opt for anonymity and will be referred to as Interviewee II in the further course of this text. Nevertheless, permission has been granted to make references to the function and field of work. In this context, the two interviewees will be shortly introduced in the following:

- Robby Risch: Mayor of the City of Weißenfels since 2008 (cf. Appendix B)
- Interviewee II: Head of Urban Planning Department City of Bitterfeld-Wolfen (cf. Appendix C)

4.2 Development of MSTs in Eastern and Western Germany

This section is devoted to “SQ1: In how far develop MSTs differently in Eastern and Western Germany?”. Before delving deeper into the evolution of MSTs after the fall of the Berlin Wall, a small historical overview of the developments in Germany since the end of the second world war in 1945 will be provided and the general population development in the second half of the 20th and beginning of the 21st century will be considered in more detail. There are two extreme situations that are fundamental to urban development in Germany and particularly Eastern Germany in the last century: on the one hand, destruction and subsequent reconstruction under changed political conditions during and after World War II, and on the other, the political system change brought by the annexation of the German Democratic Republic (GDR) to the Federal Republic of Germany (FRG) in 1989/90. After WWII, defeated Germany has been divided between the US, UK, France and the Soviet Union which led to an emergence of two blocks and respectively an East/ West divide. The disparate ideological views culminated 1949 in the foundation of the Western FRG and the communist GDR. The latter was formed out of the area of today’s federal states of Brandenburg, Berlin (excluding West Berlin), Mecklenburg-Western Pomerania, Saxony, Saxony-Anhalt, and Thuringia, whereas the remaining states became part of the FRG. For the next 40 years, the populations of these states lived under completely different political, economic and social conditions with particular legal systems, institutions and cultural patterns (Cassens et al. 2009). The fall of the Berlin Wall in 1989 marked the end of the separation of the two German states, but the 40 years of divergent evolution have left their traces. Whereas

the reunification process was initiated quickly and has been formalised less than a year later on October 3, 1990, the territorial convergence could not be achieved so easily. The different circumstances and developmental stages of the two parts required practical measures for territorial cohesion that would reach far beyond the formal process of creating a unified country.

In the light of the newly attained freedom, the so-called new Länder² experienced extensive migration losses, especially in the context of internal migration, and imploding birth rates. One factor contributing to these developments where the prevailing fundamental (structural) differences and 30 years after the fall of the Berlin Wall, there is still evidence of divergent growth between MSTs in East and West Germany (BBSR 2018b: www).

Figure 3: Population Development (in %) 1951-2018 West/ East/ Whole Germany

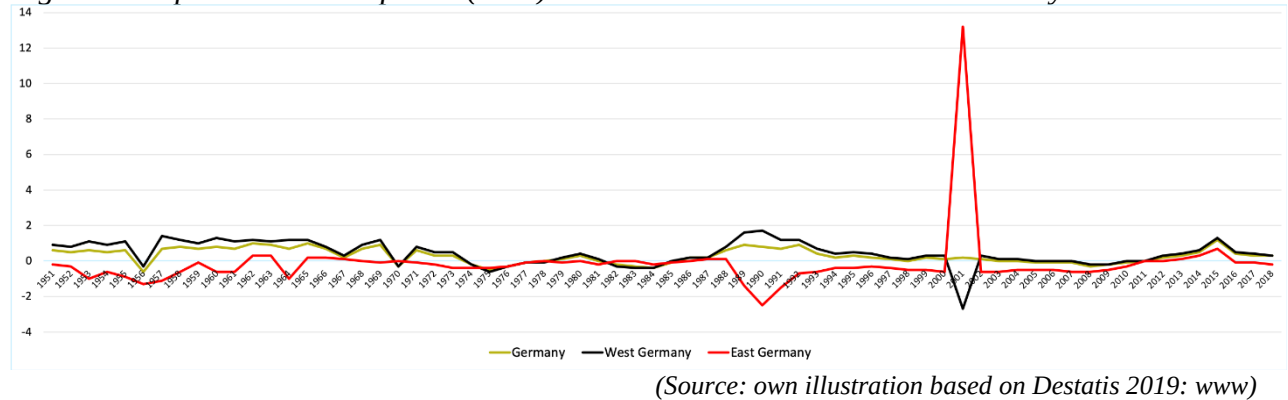
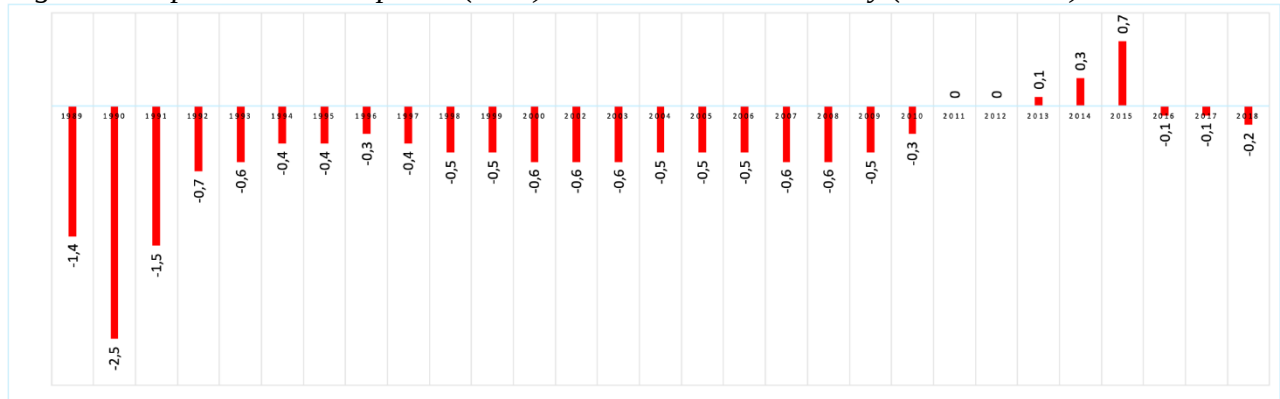


Figure 3 displays the population development for the whole of Germany as well as for East and West Germany from 1951-2018. The statistical outlier in 2001 can be explained by a methodological change as West and East Berlin were still assessed independently up until the turn of the millennium and were finally merged in statistical terms (Destatis, 2019). In addition, the nationwide increase in population in the years 2013-2015 were a direct effect of the global humanitarian crisis and German chancellor Angela Merkel's refugee policy in response to the alarming situation of refugees along the Eastern route. In autumn 2015, the derogation of the Dublin agreement for Syrian refugees resulted in a significant increase of population. Figure 4 takes a more detailed look on the population development of Eastern Germany since the fall of the wall in 1989. For better visibility, the year 2001 (i.e., the year of statistical merger of East and West Berlin) has been excluded. It stands out, that the population losses are particularly high in the initial years after the Berlin Wall was demolished, but the negative trend could not be reversed

² The term new Länder (germ. Neue Bundesländer) refers to the new federal states of Germany, i.e., Brandenburg, Mecklenburg-Western Pomerania, Saxony, Saxony-Anhalt and Thuringia, that were formed after the reunification in 1990.

– with exception of the years of increased immigration of refugees (2013 – 2015), but this did not last long (Destatis, 2019).

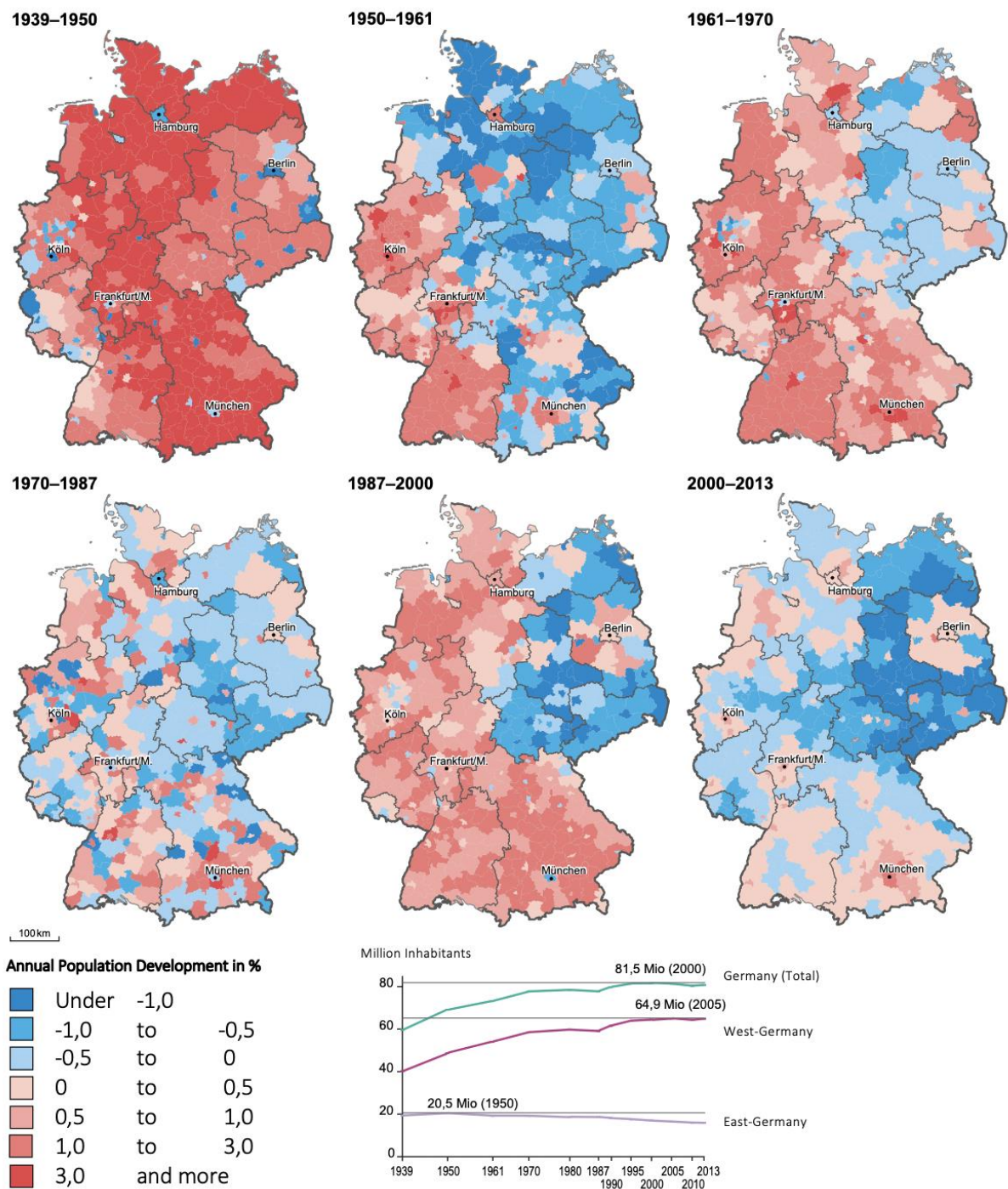
Figure 4: Population Development (in %) 1989-2018 East Germany (without 2001)



(Source: own illustration based on Destatis 2019: [www](http://www.destatis.de))

To visualise these developments from a territorial perspective, Figure 5 provides an overview of the annual population development in Germany in the form of maps. The overall time span covers the years from 1939 until 2013 and is divided further into six time periods. Even during the years 1939-1950, i.e., before the establishment of the GDR, the population development in Eastern Germany was slightly lower than in the rest of the country with the exception of parts of Rhineland-Palatinate, North Rhine-Westphalia, Munich, Frankfurt, Cologne and Hamburg (BBSR, 2015, p. 7). During these years, the decreases in the big cities can be explained by the heavy bombardment of places of structural importance by the allied powers and the respective fatalities and outward migration. From 1950-1961, only the Southwestern states of Baden-Württemberg, Rhineland-Palatinate and North Rhine-Westphalia recorded an increase in population, whereas the following time spans provided clearer indications of the trend of declining population in East Germany, except for Berlin, and more stable developments in the rest of the country (BBSR, 2015, p. 7). Since the turn of the millennium, population growth has slowed down in all parts of Germany, but once again, the largest decline is displayed by the Eastern parts with some areas even recording declines of more than 1% (BBSR, 2015, p. 7). In spite of these clear results, this statistical data only provides insights into general demographic trends and does not yet allow for definitive conclusions with regard to the development of German MSTs, especially as it is the declared objective to go beyond the notion of shrinking as losses in the population and pursue a deeper understanding of the underlying patterns and causes of such dynamics.

Figure 5: Population Development 1939-2013



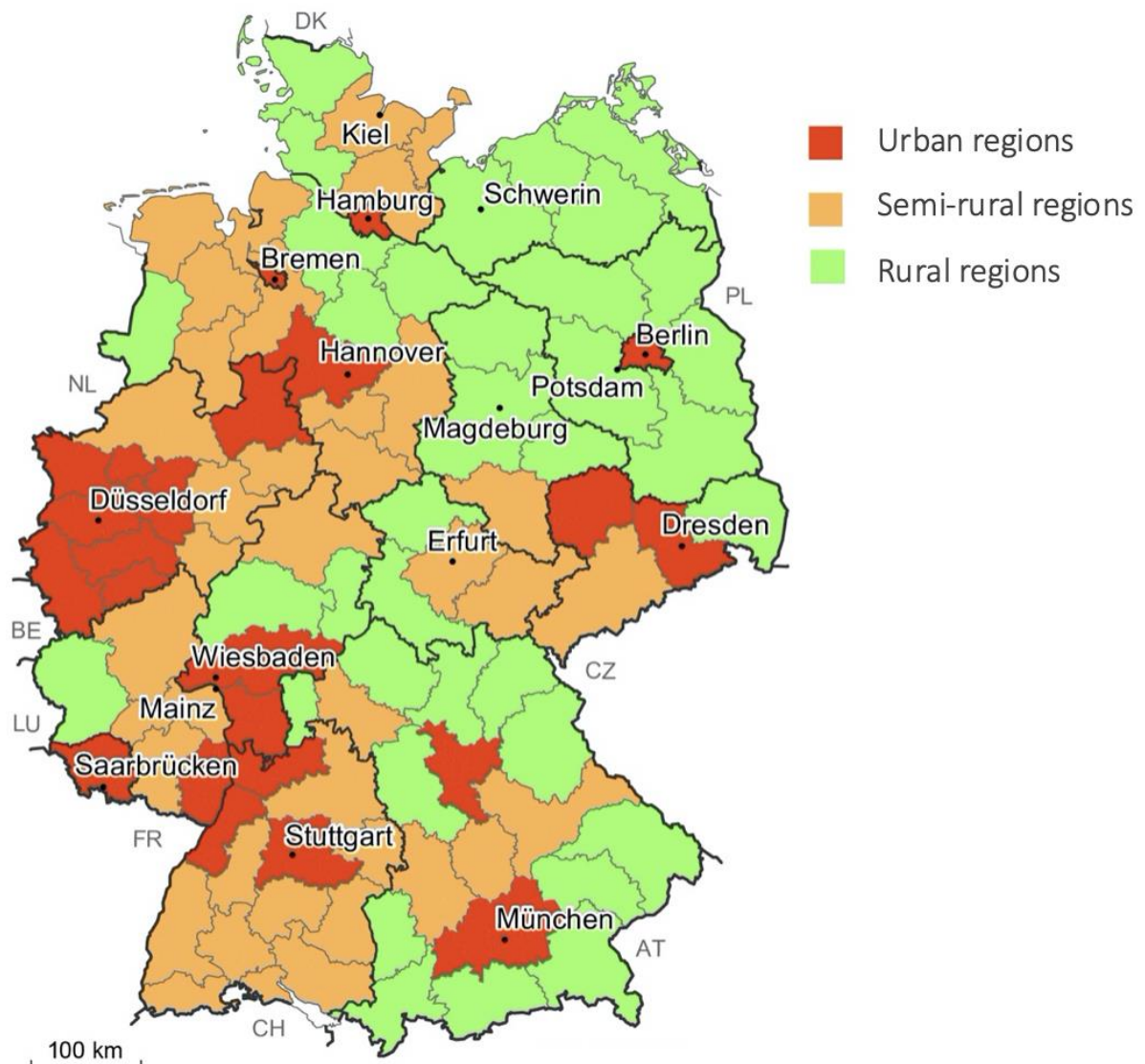
(Source: own visualisation based on BBSR, 2015, p. 7)

The next section will lay the emphasis on the development features of MSTs by evaluating in how far this territorial dimension has influenced the growth patterns of MSTs in both parts of the country and which factors have been beneficial or obstructive in this process. Furthermore, the emphasis will be laid more upon shrinking as a multi-dimensional process as has been elaborated by the BBSR (2018a) instead of associating it simply with losses in population.

4.2.1 Growth Characteristics of MSTs in East and West Germany

After a long period of steady growth and economic prosperity of towns, economic and demographic change began in the 1970s, leading to continued job and population losses in parts of the country (BBSR, n.d.). Thereby, it is striking that an East/ West distribution of towns is existing in Germany. Especially the Western part of the country comprises numerous medium-sized towns as in the federal states of North Rhine-Westphalia and Baden-Württemberg. For Eastern Germany, medium-sized towns are predominantly found in the Southeast of Saxony-Anhalt and Brandenburg in close proximity to Berlin (BBSR, 2017b). This creates very dense urban areas, e.g., in North-Rhine Westphalia around the Ruhr area, as well as semi-rural regions, e.g., in large parts of Baden-Württemberg and majoritarian rural regions in Eastern Germany with the exception of Berlin and parts of Saxony, Thuringia and Saxony-Anhalt (cf. figure 6).

Figure 6: Settlements in Germany and their Structural Characteristics 2017

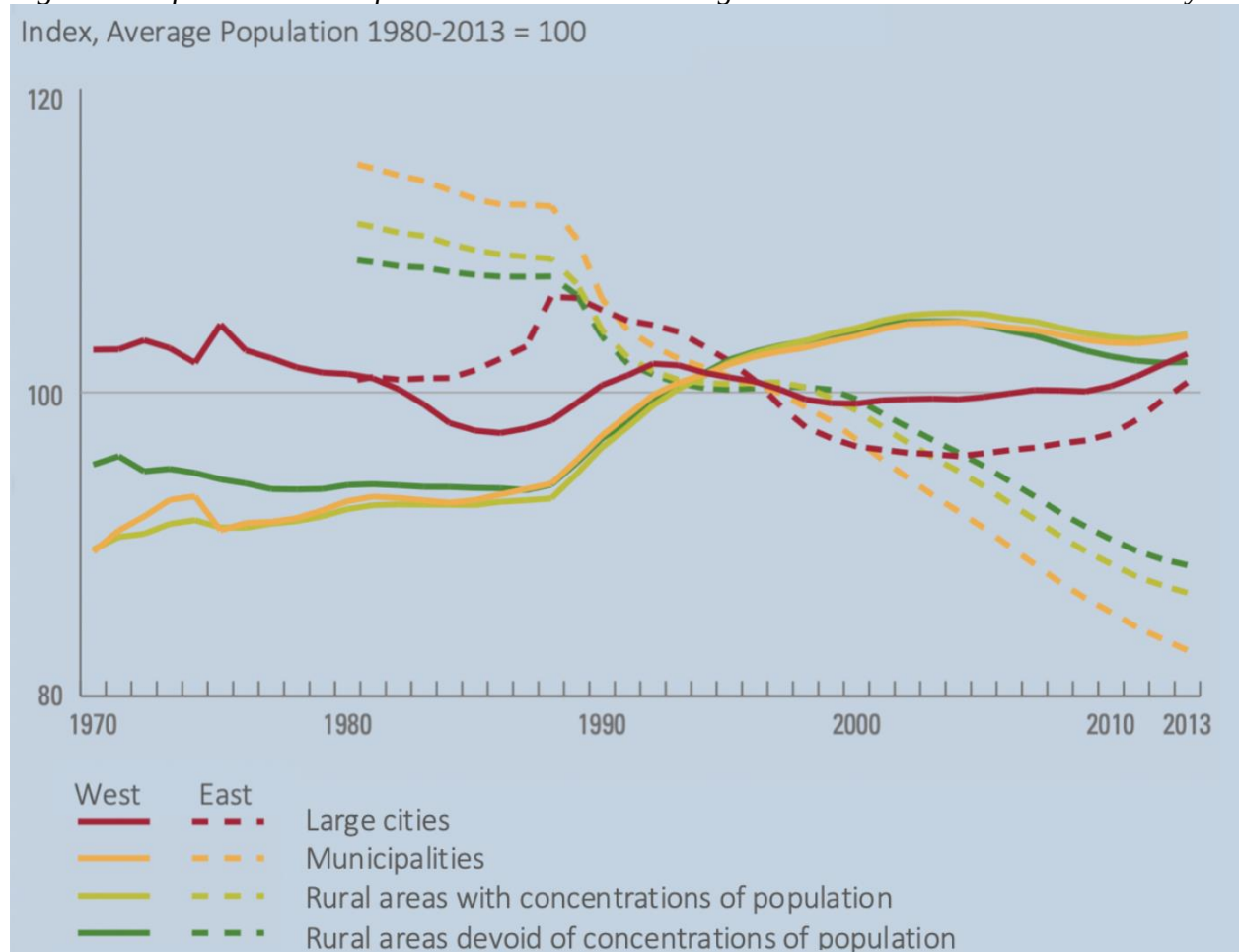


(Source: own visualisation based on BBSR, 2019a)

As elaborated in the previous section, the fall of the Berlin Wall and subsequently the reunification has been a life-changing and decisive event for German history, but it also revealed structural differences and brought about substantial internal migration that had a significant influence on urban development: Shrinking and growing cities emerged (BBSR, 2019b).

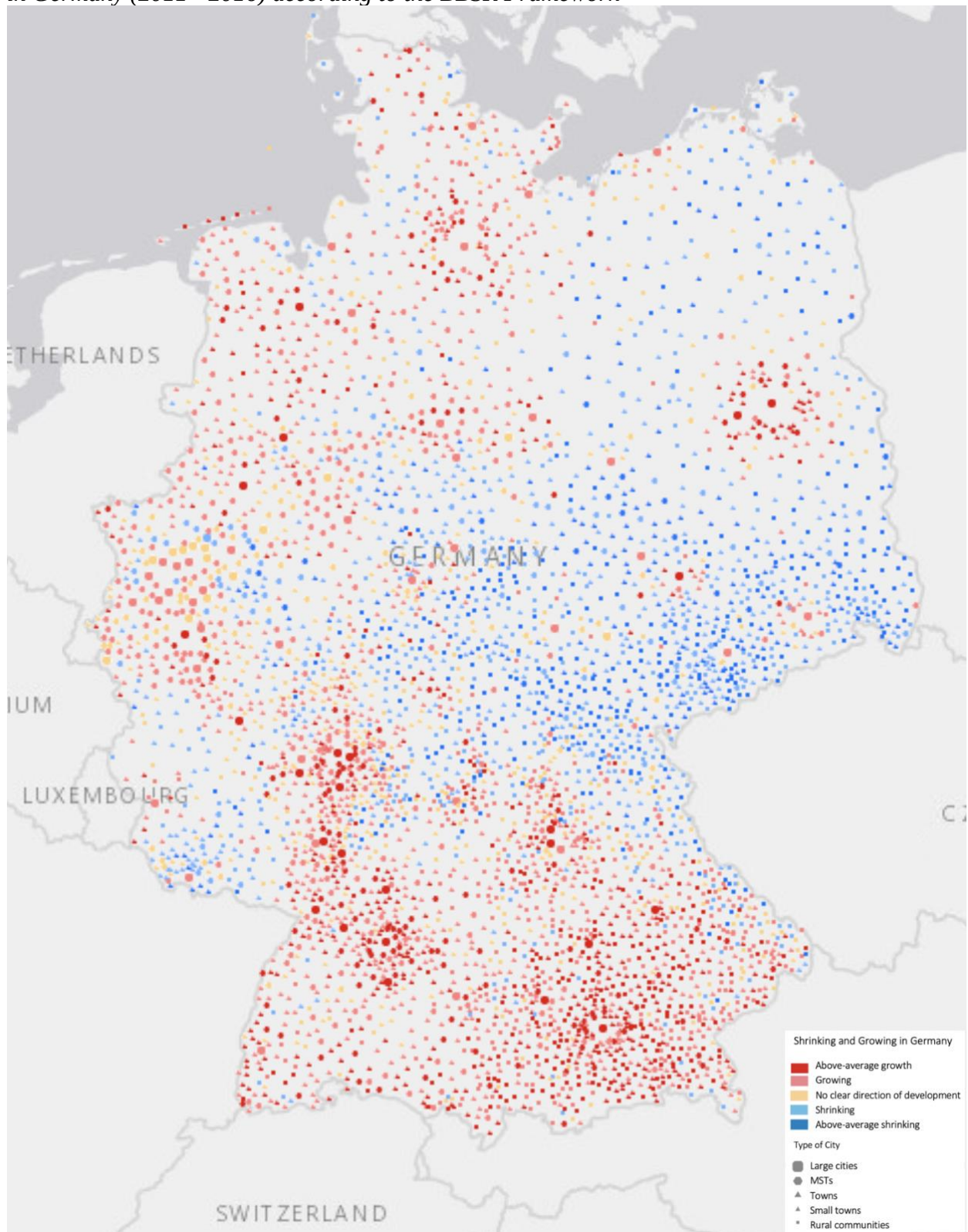
Figure 7 displays the population development according to the different settlement structures in both West and East Germany. Data for Eastern Germany prior to 1980 is not available, but most interestingly are the developments after the fall of the Berlin Wall in 1989. All four settlement structures in the East experienced an enormous drop in population that slowed down for a while in the midst of the 1990s, but by the end of the decade, Eastern municipalities and both types of rural areas have been caught in a continuing downward trend (BBSR, 2015, p. 5). Large cities have been comparatively better off and are even experiencing positive developments since 2005. Nevertheless, since the reunification, Western settlement structures almost ever display more positive growth patterns than their Eastern counterparts (BBSR, 2015, p. 5).

Figure 7: Population Development 1970-2013 according to Settlement Structures in Germany



(Source: own visualisation based on BBSR, 2015, p. 5)

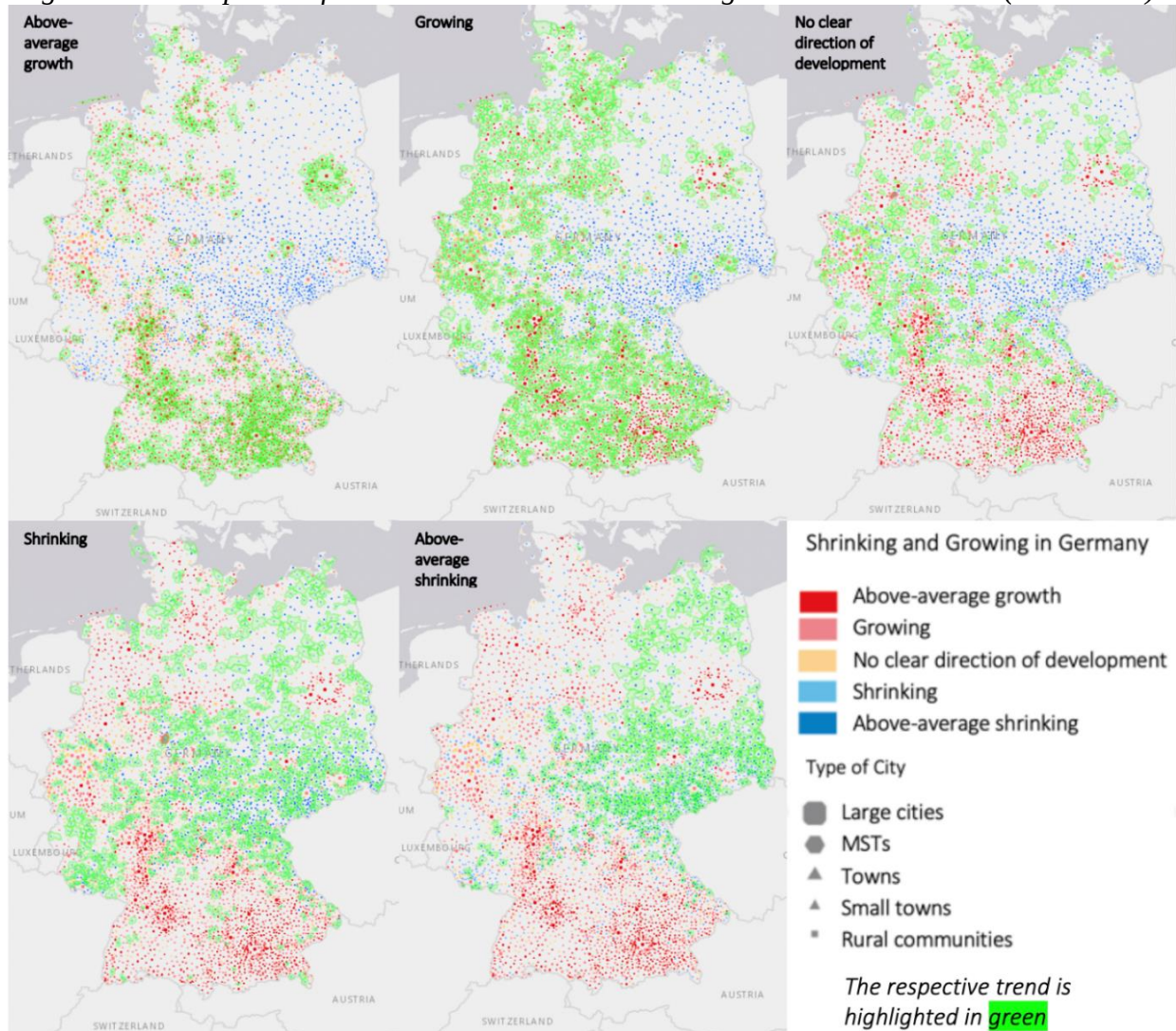
Figure 8: Overall Outcome of Shrinking and Growing according to the different Types of Cities in Germany (2011 - 2016) according to the BBSR Framework



(Source: own visualisation based on BBSR, 2017c)

As elaborated in Chapter 3, the BBSR (2018a) has derived six indicators that have been computed for the time period 2011 to 2016 and provide a more comprehensive picture of shrinking that goes beyond the basic definition of simply associating shrinking with decreases in population. Figure 8 displays the overall outcome of the analysis carried out by the BBSR (2018a). Besides clear indications that the new Länder except Berlin are predominantly characterised by shrinking or above-average shrinking growth patterns, it is also clearly visible that the density of settlement structures is much lower than in the rest of the country (BBSR, 2017c). Berlin and Leipzig and parts of their catchment areas are the only exceptions in Eastern Germany that have recorded above-average growth, whereas coastal cities such as Rostock, Wismar and Stralsund, the capital of Saxony, Dresden and some other scattered settlements display growing characteristics (cf. figure 9), which is in line with previous findings regarding the structural features of German settlements (BBSR, 2019a).

Figure 9: Development of Structural Settlements according to BBSR Framework (2011-2016)

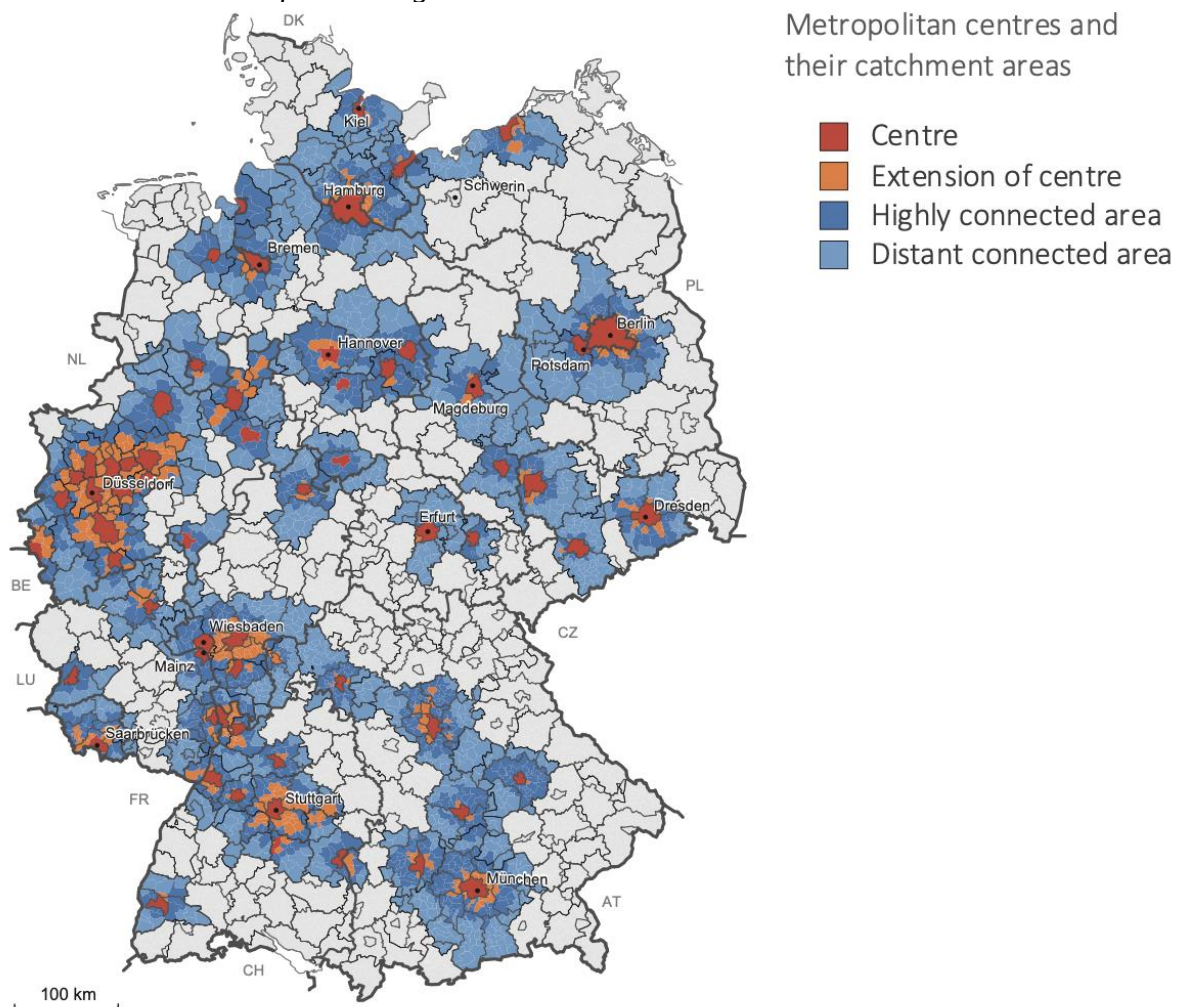


(Source: own visualisation based on BBSR, 2017c)

The border regions to France and Luxembourg, Rhineland-Palatinate and Saarland, also come off rather badly in a nation-wide comparison. Exceptional growth patterns are prevalent in the South German areas of Bavaria and Baden-Württemberg, whereas the Northwest also has been experiencing growth in the given time period. Of particular note is the last development group of ‘Above-average shrinking’ in figure 9, besides some outliers mainly in the centre of Germany and Saarland, the broad majority of settlement structures characterised by above-average shrinking growth features are located in the former parts of the GDR.

As already shown in figure 9, MSTs are often located in close distance to large towns and metropolises that are major centres of centrality for a wider region and whereas this is evident for the whole federal republic, there are area-specific differences (BBSR, 2017b). Figure 10 visualises the metropolitan centres and their catchment areas, and the most explicit manifestation of urban expansion can be observed in North-Rhine Westphalia in the Ruhr area.

Figure 10: German Metropolitan Regions 2015



(Source: own visualisation based on BBSR, 2017a)

4.2.2 Factors Supporting and Hindering Territorial Cohesion

After the fall of the Berlin Wall, the improvement and alignment of living conditions and opportunities in East Germany has been prioritised but posed a special challenge. The starting conditions of the former GDR in 1990 were less favourable, to say the least: high unemployment rates, a sharp decrease in industrial production and massive emigration inevitably lead to a self-reinforcing downward spiral. In order to stop and reverse this negative trend, a comprehensive set of supporting measures has been initiated under the term *Aufbau Ost*³ to develop the economy and infrastructure. Based on the experience and best-practice of West Germany, the main objectives were to achieve self-sustaining economic growth in the new Länder and initiate a convergence process with regard to income and price level to gradually reduce the dependency on transfer payments (Konrad-Adenauer-Stiftung e.V., 2018). Measures included the facilitation of the privatisation of former state enterprises and the fostering of research and development capacities as well as a broad number of grants and tax concessions to stimulate private investment and entrepreneurship. Furthermore, *Aufbau Ost* drove forward the expansion of the poorly developed infrastructure with a special focus on transport, telecommunications and industrial parks but also housing, urban planning and environmental protection to accelerate the process of social and economic catch-up. Labour market policies such as early retirement schemes, job creation and retraining measures accomplished the program to outweigh the negative effects of the economic transformation and liberalisation process. During the first two years 1991-92, approximately 12.3 billion € were invested and further funds of 82.2 billion € were distributed to the new Länder until 1994 (Konrad-Adenauer-Stiftung e.V., 2018). Whereas these initial years were financed by the German Unity Fund, from 1995 onwards, funding took the form of financial equalisation schemes between the federal government and the regions based on the constitutional principle of supporting solidarity between the individual states on the federal level (BMWl, 2019).

The so-called *Solidarpakt*⁴ I (1995-2004) and *Solidarpakt II* (2005-2019) comprised the distribution of funds amounting to a total of 262 billion € and these financial flows were of considerable importance for the new Länder, e.g., in 2013, they accounted for between 14% and 16% of the total expenditures of the East German states, and as much as 20% for Berlin (BMWl, 2019). Whereas the *Solidarpakt* will be discontinued starting from 2020, the special financial

³ The term *Aufbau Ost*, i.e., reconstruction of the East, refers to both the aim of harmonizing the economic conditions of life in the Eastern German federal states with the West of the federal republic, as well as the economic policy measures and efforts taken to achieve this objective

⁴ *Solidarpakt I* and *II* are two solidarity agreements securing additional financial support for the new Länder through special needs federal supplement allocations to reduce division-related special burdens and to compensate for under-proportional municipal financial power

support for the new Länder will continue and is still considered a necessity to achieve territorial cohesion (BMW, 2019).

On a city level, the program *Stadtumbau Ost* allocated funds to secure and increase the quality of life in East German cities. The objectives included the strengthening of inner cities and the preservation of old buildings, the reduction of vacancies and the (re)development of cities affected by shrinking processes. Between 2002 and 2016, a total of more than 5.1 billion euros were made available for Stadtumbau Ost, of which around 1.7 billion euros alone came from the federal government's budget. Since the beginning of the program, over 490 cities and municipalities have been funded with a total of almost 1.200 urban redevelopment measures. Since 2017, these objectives have been further pursued in a joint urban redevelopment program for both East and West Germany (Bundesministerium des Innern, für Bau und Heimat, n.d.).

So far, expectations of a rapid alignment of both Germanies have been only fulfilled partially. The real gross domestic product per inhabitant of East Germany including Berlin rose from 43.3% in 1991 to 68.4% in 1996 of the West German level, but for the years from 1996 to 2010, the economic catching-up process has almost stagnated: achieving only 71.5% of the West German level in 2010 (Konrad-Adenauer-Stiftung e.V., 2018). Similar developments were recorded with regard to the adjustment of the income situation. In 1991, gross wages of a worker in East Germany only reached 58.2% of the Western level, which increased to 79.7% in 1996. From 1996 to 2011 these numbers only improved marginally to 83.1% of the Western level (Konrad-Adenauer-Stiftung e.V., 2018). One explanation for the existing gap between the East and West is the "small scale" of the East German economy, i.e., the lack of headquarters of large corporations and the shortage of medium-sized companies that always played an important role as drivers of local development and identity in the West, e.g., through the funding of local activities such as sports clubs and youth activities (Ragnitz et al., 2019, p. 8; Risch, 2019, 00:03:47). This lack of a strong middle class, which often has been considered at the heart of Germany's economic strength, is an essential factor limiting the economic capabilities and development potential of the New Länder (Ragnitz et al., 2019, p. 8; Risch, 2019, 00:02:24). During the GDR-time, entrepreneurship was quasi non-existent and the state-owned trustee firms were not oriented towards efficiency and even 30 years of funding have not brought about the desired growth impulse and the majority of added value remains still in the old federal states (Ragnitz et al., 2019, p. 5; Risch, 2019, 00:04:40).

One success was certainly achieved with regard to the infrastructure gap, which has been reduced to considerable extents, especially in public domains (Ragnitz et al., 2019, p. 3). Nevertheless, East Germany is still far from a socio-economic alignment with West Germany and has to find ways to appropriately address the problematic demographic change (Konrad-Adenauer-Stiftung e.V., 2018). Wider broadband deployment has been neglected in Germany for many years and while its significance for public applications and competitiveness has been finally recognized, the nation-wide process of catching-up is slow with rural and low-density areas being not an overriding priority. The new funding system superseding the Solidarpakt II from 2020 onwards states broadband expansion as an important factor to foster economic development, innovation and the attractiveness of places (Ragnitz et al., 2019, p. 9), but as long as there are regions in Germany that are characterised by a complete absence of broadband connection, the potential for sustainable economic growth, job creation and prosperity for the citizens is very limited (Ragnitz et al., 2019, p. 11; Risch, 2019, 00:14:16). Under these framework conditions, neither private individuals and families nor companies and especially not innovative firms and start-ups will consider such towns as suitable living and business environments.

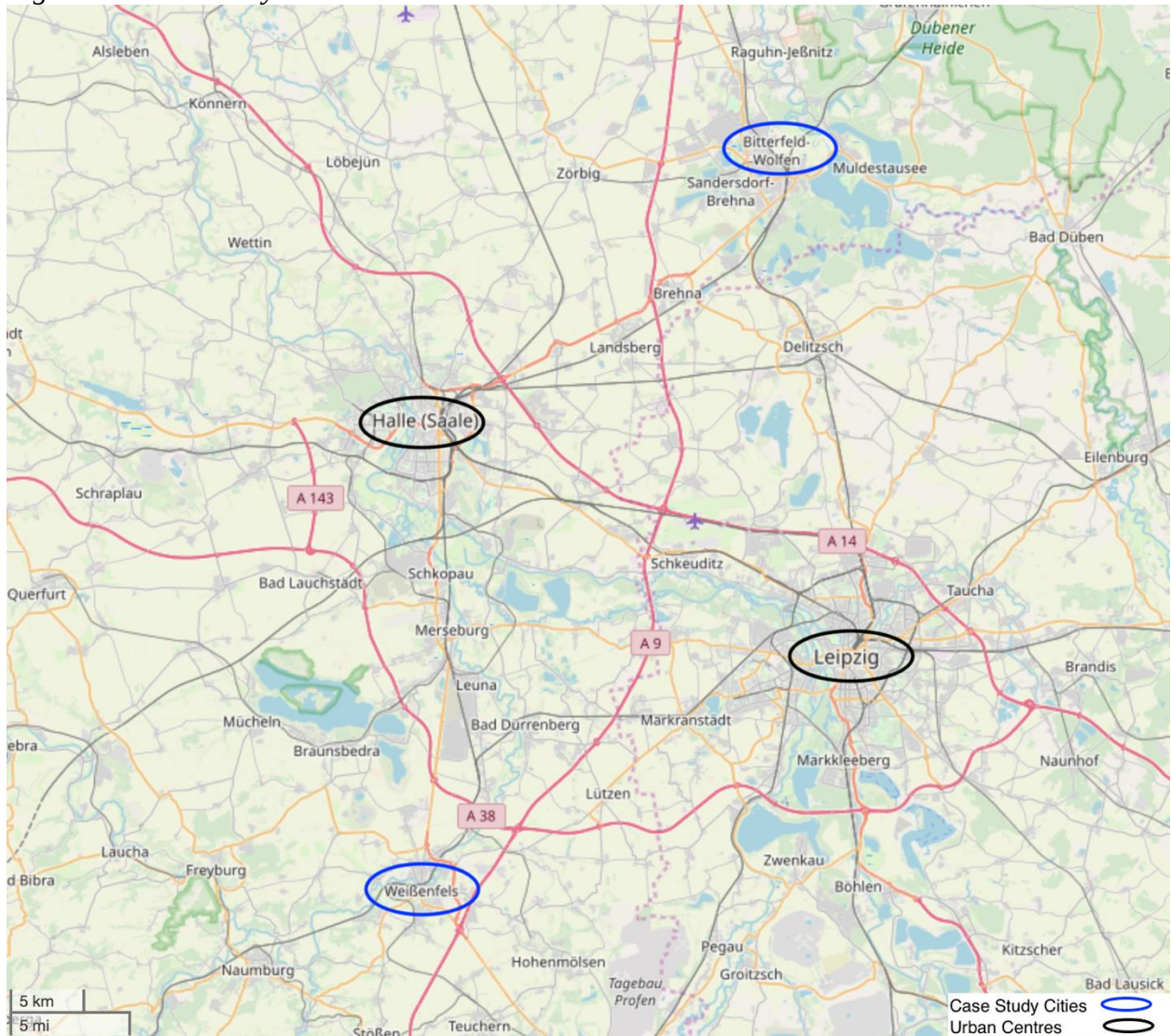
Another factor is the self-perception: besides disrupted or non-existent commitment and sense of place (Risch, 2019, 00:03:34), almost every third East German still feels as a "second-class citizen" and 47% feel more like East Germans and only 44% as Germans (Ragnitz et al., 2019, p. 4). On the communal administrative level, this translates into a feeling of being supplicants with limited own operational resources and respectively very limited scope of action (Risch, 2019, 00:05:22, 00:09:06).

All these factors encourage emigration and relocation in search of more promising conditions elsewhere in Germany or abroad and explain the steadily diminishing number of inhabitants and firms in the Eastern parts of the country.

4.3 Case Studies

Building on the general knowledge of the dynamics shaping the development of MSTs as established in chapter 2 and the German situation (cf. chapter 4.2), this section aims to provide more specific information on the micro-level by evaluating the specific cases of the Saxon cities Bitterfeld-Wolfen and Weißenfels. Figure 11 provides an impression of the geographical location of both cities in proximity to the urban centres Leipzig (most populous city in Saxony) and Halle.

Figure 11: Case Study Cities and Urban Centres



(Source: own visualisation based on Openstreetmap, 2019)

4.3.1 Bitterfeld-Wolfen

The city is one of the youngest cities in Germany as it was founded on July 1, 2007 through a merger of Bitterfeld and Wolfen. Besides these recent developments, the individual parts of the city can look back on a long history of 850 years (Stadt Bitterfeld-Wolfen, 2018). Nowadays, the city has a size of 517,4km² and 45.171 inhabitants with a median age of 53,4 years and a share of foreigners of 4,5% most of which are coming from Poland (DB-City, 2019).

Since the discovery of brown coal deposits because wild rabbits rummaged “black earth” to the surface, the area has been mainly characterised by opencast mining activities. After mining activities have ceased in 1992, the flooding of the mine Goitzsche has resulted in a 25km² lake, the Goitzscheseesee, that is located next to the city centre creating a promenade, several beaches and

opportunities for recreational activities such as water sports offers (see figure 12). Furthermore, the lake has become a protected landscape area with unique flora and fauna (Stadt Bitterfeld-Wolfen, 2018). Bitterfeld-Wolfen is characterised by a small oldtown, a decommissioned waterworks facility converted into a culture centre hosting exhibitions, lecture series and art installations and the Bitterfelder Bogen, which functions as a landmark for entire region: An 81m long and 28m high walk-in architectural art piece that serves as a vantage point and symbol of transformation of the region and is a popular destination for hiking and bike tours (see figure 13) (Stadt Bitterfeld-Wolfen, 2018).

Figure 12: Goitzschensee Bitterfeld-Wolfen



(Source: Stadt Bitterfeld-Wolfen, 2018)

Figure 13: Bitterfelder Bogen



(Source: Stadt Bitterfeld-Wolfen, 2018)

Since 1893, the area has been home to a sizable chemical site due to the availability of lignite and mineral deposits and during the 125 years of history, the business site “ChemiePark Bitterfeld-Wolfen” has successfully established itself as the most important employer in town, with over 360 different companies and altogether about 11.000 employees (Chemiepark Bitterfeld-Wolfen GmbH, n.d.). The long history started with the production of chloride, later pesticides and paint and focuses today on a highly diversified range of chemical products. The facility is ‘conveniently’ located in the centre of town and offers highly specialised research facilities (Chemiepark Bitterfeld-Wolfen GmbH, n.d.) and an innovative internal material cycle where the residues of one company are the resources for another company, thereby creating more efficient production conditions and reducing emissions (Chemiepark Bitterfeld-Wolfen GmbH, 2019). Within the chemistry park, a start-up incubator has been initiated to attract and support newly founded chemical and technological companies by providing a good business environment with opportunities to profit from existing structures and the expertise of larger firms (Technologie- u. Gründerzentrum Bitterfeld-Wolfen GmbH, 2019).

From an infrastructure perspective, the city is in close proximity to the Autobahn network (A9 Berlin-Munich, A14 Magdeburg-Dresden and A38 Leipzig-Göttingen) and the distance to the airport Leipzig/ Halle is only 23,2km. One of Europe's most modern transshipment centres for global airfreight operated by DHL is located at the airport Leipzig/ Halle. Furthermore, the port Elbhafen Aken, a trimodal interface of freight transport with connection to the overseas ports Hamburg and Rotterdam is only 40km away (EWG, 2017). The city of Leipzig can be reached in approximately 40 minutes by car (Google Maps, 2019) and 30 minutes by suburban railway, regional express or intercity train with at least two connections per hour on weekdays and in the rush hour even up to four (Deutsche Bahn, 2019a).

In 2009, the city has been categorised as a city facing extreme population losses. Noteworthy is that all cities of this type, e.g., among Bitterfeld-Wolfen also Eisenhüttenstadt, Guben and Hoyerswerda, have experienced significant increases in population during the GDR time, but where facing extreme migration losses after 1990 (Fröhlich & Liebmann, 2009, p. 59). Associated with the strong emigration is a significant aging of the population. In general, the decrease in employment was slightly less dramatic than the population losses resulting in at least low unemployment rates. Hence, it can be concluded that emigration from these cities had been caused by other reasons as well (Fröhlich & Liebmann, 2009, p. 59). All of the concerned cities can also be labelled as industrial cities with no remarkable historical centre providing low incentives and attractiveness as residential locations even though in some of these cities highly productive companies are found that provide good job opportunities.

According to Fröhlich and Liebmann (2009, p. 62), a regeneration of these cities can possibly succeed as a place of work for employees who live outside and commute. Even though Bitterfeld-Wolfen has displayed positive economic developments, the migration balance is still extremely negative which suggests that Leipzig or Halle are functioning as the preferential place of residence for the employees of companies in Bitterfeld-Wolfen (Fröhlich & Liebmann, 2009, p. 62). And indeed, these pessimistic predictions from 2009 have proved to be true as from 2011-2017, the relative population trend for Bitterfeld-Wolfen was -8,6% and the BBSR (2017c) has also labelled the city as being above-average shrinking for the period between 2011-2016. Thereby, the following results in the respective indicators contributed to this overall assessment (BBSR, 2017c):

1. Average annual population growth 2011-2016: -1,42%
2. Average total annual migration balance 2012-2016 per 1000 inhabitants: -4,79
3. Average annual workforce development by age (20-64 years) 2011-2016: -2,32%

4. Average annual development of employees subject to social insurance 2011-2016: -2,49%
5. Average annual change in the unemployment rate 2010/11-2015/16: -0,44%
6. Average annual change of business tax base per inhabitant from 2010/11-2015/16: -1,30%

In addition, the projected population trend 2012-2030 is estimated at -26,8% (Bertelsmannstiftung, 2019a). In order to address the current and future problems, the city has initiated a town-development concept under the slogan “Shape the change” for the years 2015-2025. The underlying objective is that Bitterfeld-Wolfen remains a cosmopolitan polycentric city with attractive living conditions for all generations (Stadtverwaltung Bitterfeld-Wolfen, 2015, p. 8). Thereby, the improvements already achieved are only a starting point and further qualitative advancements in the retail structure but also in the housing and service offers are necessary to achieve long-lasting increases in attractiveness. The city administration perceives itself as a facilitator of change and an intermediary and service provider for (prospective) property owners to provide advice on possible funding programs to upgrade the building stock and achieve a further expansion of vacancy and brownfield management (Stadtverwaltung Bitterfeld-Wolfen, 2015, p. 8). Besides, the city has a well-developed infrastructure and the main focus is on the permanent maintenance of the main traffic network. However, the further upgrading and expansion of the other municipal road network should not be neglected. In addition, the city is considered to be a bicycle city and in order to underpin this and achieve future improvements, the cycle path network must be upgraded and supplemented, and accompanying service offers shall be established (Stadtverwaltung Bitterfeld-Wolfen, 2015, p. 8).

The city of Bitterfeld-Wolfen intends to lead the way as a pioneering example of how to deal with demographic change and how the transformation process from a large medium-sized town to a small medium-sized town can be successfully implemented (Stadtverwaltung Bitterfeld-Wolfen, 2015, p. 14). Due to the loss of population since 1990, a restructuring process has been and still is required in the real estate sector, especially dismantling measures for unsolicited forms of living. Thereby, dismantling is not to be seen as a negative feature, but rather as an opportunity to transform space to improve the quality of the existing areas (Stadtverwaltung Bitterfeld-Wolfen, 2015, p. 16). However, attention will also be directed towards housing construction and modernisation. This includes the harnessing of existing potential and must be tailored to the needs of the population to ideally also attract new inhabitants and contribute to a positive development to counter demographic change (Stadtverwaltung Bitterfeld-Wolfen, 2015, p. 10).

Development in the centre of the city has been declared a priority in order to activate inner-city life and increase attractivity in terms of retail, services, cultural and gastronomic flair. In addition to this basic orientation, Bitterfeld-Wolfen is a synergy of two cities and therefore highly polycentric and the development dynamics experienced by the different districts vary significantly (Stadtverwaltung Bitterfeld-Wolfen, 2015, p. 14).

The dismantling of areas characterised by vacancy offers potential for connecting existing green areas to sustainably improve the inner-city climate. A large proportion of the need for living space can be met by development in the attractive inner-city area (densification) through progressive renovation of existing and new buildings, e.g., near the lake (Stadtverwaltung Bitterfeld-Wolfen, 2015, p. 15). Bitterfeld-Wolfen is primarily a business location with a great number of different industries and aims to become an attractive place to live to create a long-term commitment between the people, the industries and the city. Thereby, an important question for the future raised by the city is how to integrate non-profit organisations, associations, neighbourhood initiatives, multi-generation houses, senior citizens' clubs, local networks and entrepreneurial groups (Stadtverwaltung Bitterfeld-Wolfen, 2015, pp. 182-183). Education is one key element and the good infrastructure of vocational training has set the course for accompanying and supporting start-ups and young specialists to bind them to the city. It is the declared goal to further deepen and promote this synergy between vocational training and business location (Stadtverwaltung Bitterfeld-Wolfen, 2015, p. 15).

The city's desire for more participation and civic engagement requires a whole arsenal of methods for mobilisation, idea development and decision-making that builds upon the cooperation between all sectors and generations (Stadtverwaltung Bitterfeld-Wolfen, 2015, pp. 182-183.). In order to support citizens in their understanding that they not only live in the city, but with their city, an important aspect is citizen participation. With various forms, the population has been provided with the opportunity to not only get information, but also to participate in planning processes, e.g., in the drafting of the town-development concept or the restructuring of the former battery factory (Interviewee II, 2019, 00:18:06; Stadtverwaltung Bitterfeld-Wolfen, 2015, p. 185).

4.3.2 Weißenfels

Weißenfels was founded in 1185 and as many cities in the region, the landscape and business environment has been characterised by underground and opencast mining since the late 18th century, but the decline of coal mining has initiated a transformation into industrial site in the midst of the 19th century (Stadt Weißenfels, n.d.). Nowadays the city has a size of 113,55 km² and is home to 41.521 inhabitants with a median age of 49,7 years and a share of foreigners of 7,8%, mainly from Poland (Deutsches Institut für Urbanistik, 2018, Stadt Weißenfels, 2019b).

The river Saale divides the city in an old town South of the river and newer settlements in the North. In the historic old town, there are many beautiful, but currently unused and uninhabited houses. The city operates a vacancy exchange board to allocate the houses and properties as quickly as possible and initiate a restoration (Stadt Weißenfels, n.d.). Besides the historic centre and its numerous baroque buildings (see figure 14), the city is a gateway to the central German castle and wine region Saale-Unstrut that is very attractive for culinary hiking and bike tours and attracts some tourists, but Weißenfels is not located ideally to fully benefit from the proximity of this wine region. Nevertheless, the special location of the city on the Saale and its proximity to highly attractive tourist areas with interesting growth potential, places urban tourism, cycling and water tourism very high on the city's agenda (Stadtverwaltung Weißenfels, 2008, p. 30). Under the premise “Green city on the Saale”, projects regarding the qualification of public spaces on the river, in the adjacent urban areas and especially in the historic old town have been initiated to improve the image of the city (Stadtverwaltung Weißenfels, 2008, p. 31).

In addition, the attractiveness and profile of Weißenfels is determined by cultural institutions. In conjunction with the city's educational institutions, these addresses play an important role in the quality of life. With a particular focus on the growth potential of the economy, education and culture, they play an important role in the city of Weißenfels in the present and future. (Stadtverwaltung Weißenfels, 2008, p. 30).

Figure 14: Town Square Weißenfels



(Source: Stadt Weißenfels, 2019a)

During GDR-times, the city was renowned for being the biggest shoe producer, but that came to an end in 1990 and the process of dismantling and revitalisation of production and industrial sites is ongoing till this day (Stadt Weißenfels, n.d.). The fall of the Berlin Wall also brought about a resettlement of industry and businesses outside the city in the years after 1990 with intensive land use and today, agriculture is the predominant land use (Meyer, 2016). The substantial changes in the industrial sector that were predominant in the recent history also initiated demographic change. With the collapse of the primary industry after the GDR, serious job losses occurred during the early 1990s. Currently, the economic development is characterised by an increased settlement of companies in the food industry (Deutsches Institut für Urbanistik, 2018). Besides the food industry that includes a large slaughterhouse, dairy, bakeries and sweet, the city is an army location with one of the largest paramedical sections in Germany. Other significant sectors include industry, mechanical engineering and construction and the plastics processing chemical sites in Leuna and Buna that are main employers in the region (Stadt Weißenfels, 2019b).

The city is in close proximity to the Autobahn network (A4 Görlitz-Aachen, A9 Berlin-Munich, A14 Magdeburg-Dresden and A38 Leipzig-Göttingen) and the distance to the airport Leipzig/Halle with its modern transshipment centre is only 33km away (Stadt Weißenfels, 2019b). The city of Leipzig can be reached in approximately 35 minutes by car (Google Maps, 2019) and 30 minutes by regional express or train with two connections per hour on weekdays (Deutsche Bahn, 2019b). Between the years 1991 and 2006, the population decline in Weißenfels amounted to 18.5%. Three years later, in 2009, the city has been classified as a city with average development representing the classical case of East German MSTs. According to Fröhlich and Liebmann (2009, p. 53) this type of cities can be relatively well demarcated: no significant gains in the population nor job creation and further characteristics can hardly be recorded for this type of city. In the 2010s, the large food businesses were functioning as pull-factor enabling an increased influx of immigrants from Eastern Europe. This development initiated some stabilisation and mitigated the emigration trend a little (Deutsches Institut für Urbanistik, 2018). With the support of funding programs, a variety of efforts were made to facilitate urban development, most recently with regard to integration as the city became home to 600 refugees from Syria in 2015. As a first joint project of the city administration and a citizens' initiative, the establishment of an intercultural meeting place has been planned to foster exchange and integration (Deutsches Institut für Urbanistik, 2018).

These efforts are reflected in the relative population trend from 2011-2017 of +2,6%, which has also been confirmed by the evaluation of the BBSR (2017c) that labels Weißenfels as being above-

average growing for the years 2011-2016. Thereby, the city achieved the following results in the respective categories (BBSR, 2017c):

1. Average annual population growth 2011-2016: +0,42%
2. Average total annual migration balance 2012-2016 per 1000 inhabitants: 11,23
3. Average annual workforce development by age (20-64 years) 2011-2016: +0,29%
4. Average annual development of employees subject to social insurance 2011-2016: 1,20%
5. Average annual change in the unemployment rate 2010/11-2015/16: -0,90%
6. Average annual change of business tax base per inhabitant from 2010/11-2015/16: +5,60%

Nevertheless, this upward trend is expected to be only short-lived as the projected population trend 2012-2030 predicts a negative development of -13,3% (Bertelsmannstiftung, 2019b).

Against the background of this past and foreseeable population development, dismantling measures have been implemented within the framework of the funding program Stadtumbau Ost to reduce the vacancy rate in the housing stock (Stadtverwaltung Weißenfels, 2008, p. 49). This adjustment of structures and adaptation of housing stocks and living spaces has been accompanied by a restructuring of the technical infrastructure networks and the corresponding operation of facilities and social and cultural infrastructure offers to achieve an economically viable utilisation (Stadtverwaltung Weißenfels, 2008, p. 31).

According to the urban development concept 2008-2020, the situation and perspective of the commercial enterprises of the food industry, metal processing, construction and logistic industry located in the city and urban region represent an important guarantee for successful urban development. To summarise, the city of Weißenfels is changing. Demographic change, the consequences of structural changes in the economy and the resulting processes and dynamics affect the economic and spatial infrastructures, but also the urban social space as well as the living and working places of the citizens. Modern times and especially people and businesses require a decent internet connection, something that is not given in Weißenfels and which poses a significant constraint to the city's appeal in attracting people and firms (Risch, 2019, 00:13:58). Since the tasks to be solved affect several aspects of urban life, integrated action by various actors and stakeholders is required. This applies both to the level of the city as a whole up to its regional integration and at the same time to individual districts, residential quarters and locations for business, culture, education and social security (Stadtverwaltung Weißenfels, 2008, p. 7). For increased long-term viability, public participation and consultation of local stakeholders in the drafting of the urban development concept 2008-2020 as well as a monitoring system to evaluate the success of the implemented measures have been introduced (Stadtverwaltung Weißenfels,

2008, p. 14). Nevertheless, the implications of this evaluation are not publicly available and so far, a follow-up document for the future development of Weißenfels beyond 2020 has not been published.

4.4 Results of Empirical Analysis

The following section is dedicated to the application of the research framework to the cities. It is structured along the sub-research questions SQ_2 - SQ_6 that lead to answering the main research question. In addition to the review of the city profiles and their history as elaborated above, the theoretical knowledge and analytical framework will be applied and complemented by the expert knowledge and specific insights gained through the two interviews with in each case one local authority representative of the cities.

SQ₂: What strategies are deployed to achieve territorial convergence? What factors hinder or support territorial cohesion? (cf. also chapter 4.2.2)

Territorial cohesion defines the availability of equal living conditions to be achieved between different areas (Battis & Kersten, 2008, p. 10 in BBSR 2012, p. 14; Eser & Böhme, 2015, p. 71). As described above, there are still high inequalities when considering conformity between the West and East of Germany following the former border between the FRG and the GDR. One explanation is given by Risch (2019, 00:04:40) who states that territorial cohesion between the West and the East cannot be achieved due to a lack of entrepreneurial activities in the East. Hence, economic activities are primarily found in the West which led to minimised economic activities in Eastern Germany. It can be concluded that the need for start-up and innovation activities is considered by Risch as necessary to achieve territorial convergence in economic and social terms. Furthermore, subsidiaries are stated as not sufficiently focusing on the needs of the East. Unfortunately, other priorities are set that do not benefit economic cohesion between the East and the West. (Risch, 2019, 00:05:35) For example, financial support is given to enhancing the economic conditions in Weißenfeld by carrying out renovations of castles or museums to enhance tourism activities. Such endeavours are not perceived as being efficient considering economic and social cohesion as the needs of citizens are not considered sufficiently (Risch, 2019, 00:07:50). Despite the attempt to strengthen convergence by regional development, it should be considered to re-distribute subsidies for other thematic issues in demand. Risch (2019, 00:05:35) criticises that the internal development of Weißenfels is not supported. Giving the example of ailing school

facilities, efforts to renovate these might be more useful in order to be able to invest in people's capacities and crucial and creative skills (Risch, 2019, 00:05:35). A difference in the quality of the society's education does not contribute to territorial convergence. In this regard, new residents might rather be attracted, especially families, as they are given the opportunity to successfully have their children educated. Nevertheless, it cannot be neglected that subsidies to foster a location's image and reputation for tourism activities play a crucial role in establishing territorial cohesion as the attraction of external visitors and tourists benefits a region's economy. Still, the pillar of social cohesion is equally important to be addressed to avoid the brain drain, i.e. younger people's outmigration, due to lacking future opportunities such as employment. Hence, a financial disproportion is to be avoided as it seems to lead to negative lock-ins effects of a region or town like Weißenfels hindering territorial cohesion. Eventually, Risch (2019, 00:09:06) demands that municipalities need more possibilities to freely decide how to spend subsidies when lacking own resources to act. This would create a much-desired independency and scope for action and bring relief regarding their perceived role as still being petitioners (Risch, 2019, 00:05:22).

Relating to Bitterfeld-Wolfen, the twofold town does not develop evenly as a North-South difference between Wolfen and Bitterfeld exists (Interviewee II, 2019). The southernly located Bitterfeld offers higher levels of attractivity due its natural environment. Goitzscheseesee, a flooded-open-cast mine, is used as tourist magnet. Also, it attracts potential residents so that the town cannot sufficiently react to the housing demand close to the water (Interviewee II, 2019, 00:06:16). The difference is further visible in real estate prices. The municipality offers adapted plot prices in Bitterfeld (approx. 100€/m²) and Wolfen (70-80€/m²) (Interviewee II, 2019, 00:06:53) which may result in the opposite of city-internal territorial convergence if trends intensify. The divide between Bitterfeld and Wolfen may increase leading to social disparities. In contrast to Weißenfels, the town Bitterfeld-Wolfen seems to be aware of more effective funding possibilities by the state and government (see below, SQ₄).

SQ₃: Why do cities benefit or suffer from being in close proximity to larger economic centres?

Geographic proximity to Leipzig is perceived by both case study towns Weißenfels and Bitterfeld-Wolfen as both an opportunity and a threat (Interviewee II, 2019: 00:05:01, Risch, 2019, 00:13:27). The agglomeration Leipzig-Halle offers the towns a pool of workforce that is necessary to hold one's ground in relation to economic and social quality of lives, and benefits are offered

from major centres (Interviewee II, 2019, 00:04:12). In this regard, urban centres offer their function as higher-functional centrum to subordinate centres, proofing the central place theory by Christaller. Nevertheless, the proximity does not only offer benefits. Exemplary, Weißenfels' close distance to Leipzig is undermined by insufficient links of public transportation networks to/ from Leipzig running approx. every 30 minutes. First, the interval of trains is not attractive enough for people wanting to live in Weißenfels but being able to rapidly go to Leipzig for leisure or work activities. Therefore, it can be assumed that citizens leave MSTs and hence, the missing infrastructures do not support proximity to urban cores. Also, the progressing demographic change does not bring a wind of change but rather the contrast. Out-migration of young people to other places goes along with a (future) lack of (skilled) workers (c.f. above). Trickle-down effects occur as no economic activities to compete, to work and to innovate are not pursued. In contrast to the negative perception perceived by Risch (2019), Interviewee II (2019, 00:05:019) perceives Bitterfeld-Wolfen as benefitting from spill-over of people who do not want to live in expensive metropolis anymore and then settle in the periphery (Interviewee II, 2019, 00:05:01). This assumption cannot be proved with statistical data as the town records negative population growth. Nevertheless, Interviewee II (2019, 00:05:26) is aware of the fact that Bitterfeld-Wolfen is strongly affected by shrinkage.

Second, in particular the town Weißenfels does not seem to offer sufficient levels of attractiveness that would make especially young families live in the location benefitting from lower rents than in the urban cores of Halle or Leipzig (Risch, 2019, 00:16:20). Despite coping with similar problems, Bitterfeld-Wolfen recognised the need to react as outlined further below (Interviewee II, 2019).

In addition, lacking broadband internet connections hinder exchange between people in a physical meaning, when the internet is used to arrange meetings by application, and in virtual meaning, referring to messenger applications. In the sense of social proximity regarding the high-speed internet connections in Leipzig compared to slow ones in Weißenfels, social cohesion cannot be established via messenger services that are internet-based and shows a crucial part of especially young people's everyday lives nowadays. The fact can be translated to an economic environment as technology-oriented firms, enterprises and companies cannot work sufficiently without stable internet connections. Eventually, businesses are neither able to compete nor to innovate. Consequently, people decide to rather settle down in a close-by large town such as Leipzig, a city offering essential qualities of life.

Considering again the theory of agglomeration shadows and borrowed size, both Weißenfels and Bitterfeld-Wolfen are identified as agglomeration shadows. They exist as the backlight of Leipzig,

exhibiting severe levels of (forecasted) shrinkage. These two towns prove the statement that too much proximity, here especially to Leipzig but also to Halle, is disadvantageous so that lock-in effects can be observed. Neither Weißenfels nor Bitterfeld-Wolfen borrow size from neither Leipzig nor Halle for improved economic performance. In contrast to Marshall's assumptions, growth does not result from external factors. In fact, for Bitterfeld-Wolfen and Weißenfels, these are rather hindering the positive development considering the ineffective distribution of financial aid for Weißenfels. Nevertheless, it is true to say that neither Weißenfels nor Bitterfeld-Wolfen can offer high-quality markets of skills that attracts people to go, live and work at the respective location or in close-by urban cores.

From the point of view of the neo-classical theories, it can partly be validated that workers move to where they find better remuneration. Firstly, high commuter flows to Leipzig lead to territorial imbalances. It can be denied that regional growth happens due to exogenous factor of capital accumulation. It can clearly be said the Weißenfels and Bitterfeld-Wolfen depend on the core Leipzig concerning the offer and provision of services and functions since the specialisation of infrastructures is only found in LSTs due to financial reason.

Briefly, proximity to Leipzig and Halle does not bring along positive growth to Weißenfels and Bitterfeld-Wolfen as both MSTs cannot compete with an equivalent quality of life offered in LSTs. Neither benefits of low rentals and housing prices nor the close distance to a job market reduce out-migration and the loss of citizens is likewise supported by an aging population. The effect of urbanisation is still apparent and strong.

*SQ₄: In how far are the case study cities open to new ideas and approaches to react to today's socioeconomic complexities?
How can they (pre-)adapt?*

It is evident that challenges are multi-faceted and hence numerous context-related approaches are needed to respond efficiently and effectively to respective development trends.

In the case of Weißenfels, a comprehensive dismantling programme (see chapter 4.3.2) has been established allowing to reactive urban attractiveness by renovating old houses to brightening up the towns image. It is obvious the town is trying to enhance local infrastructures for services needed to foster economic activities.

The case of Bitterfeld-Wolfen shows the municipalities handling with negative growth by accepting the transition to a small MST (Interviewee II, 2019). The municipality uses various

innovative approaches that are known from large-town contexts in order to reply to future citizens demands. Under the slogan “Shape the change”, the town-development concept 2015-2025 lays out ambitious objectives and strategies to address demographic change and achieve attractive living conditions (Stadtverwaltung Bitterfeld-Wolfen, 2015). The following examples show the political will to react to current urban trends. Experimental living is planned by the municipality. A tiny house settlement area with natural areas and vegetable garden shall be implemented. The approach is fostered by several actors who take action (Interviewee II, 2019, 00:08:59). Moreover, to provide sufficient infrastructures, the city administration is open to find suitable solutions in terms of freeing residents from the obligation to connect and use the sewage system (Interviewee II, 2019, 00:11:00). Such approaches are expected to foster the town’s development. Subsidies are being obtained from federal and state instruments so that the entire dismantling measures of housing associations are funded (Interviewee II, 2019, 00:12:24). Bitterfeld-Wolfen already owns a multi-generation house, a Christopherus House and social housing facilities (Interviewee II, 2019, 00:14:10). These initiatives are characterised by the interaction of various community actors such as the youth and migration service of the evangelical church community (Interviewee II, 2019, 00:14:10). As a project of the housing cooperative in Grepping, the municipality reacts to current demographic trends by demolishing old housing blocks and flats to re-develop housing facilities that are intended for singles and seniors alike, and also connect with social facilities (00:16:19).

In addition, the industry’s ambition of being a start-up incubator supports the settlement of firms and industries and the vocational training offers may help to create a long-lasting bond between the industry, the city and its people.

SQ5: In how far does social cohesion foster local development (economically, politically, socially)?

Interviewee II (2019, 00:19:57) emphasises that fact that the public is being included in urban development. Apart from legal obligations, particular interest had been shown by residents concerning the development of an old battery factory. It is stressed that all decisions are being published and that public participation is welcomed.

It can be assumed that participatory structures offer people a ground to get to know each other. Besides displaying relatively low numbers of foreigners (i.e., Bitterfeld-Wolfen 4,5% and Weißenfels 7,8% – in both cases mainly from Poland (DB-City, 2019; Stadt Weißenfels, 2019b)), the city of Weißenfels has in cooperation with a citizen initiative established an intercultural

meeting place to foster exchange and integration (Deutsches Institut für Urbanistik, 2018). Hence, it can be concluded that both cities have active citizens that display interest in the development of their city and are taking an active role to shape these processes.

SQ₆: What role does creativity and social innovation play for urban resilience?

As outlined in the chapters above, creativity and social innovation play crucial roles in urban development as the conceptual views are being regarded as driver of growth and competitiveness. Hence, when being available in respective territories, urban resilience is expected to be achieved. Despite being regarded separately in the following, some linkages to the connected pillars of urban resilience are being made. Moreover, this report does not regard the facet of environmental resilience although it does define a crucial aspect for holistic urban resilience. The choice is made as research has not specifically been focusing on the natural ecosystem environment but on urban growth from an economic, institutional and social point of view. Urban resilience capacities are evaluated following the characteristics of observed resistance against as well as adaptability and transformability to shocks and stresses.

Based on the thoughts of the polarisation theory, the divergent development of Weißenfels within the Leipzig/ Halle region results in negative growth for the region. It is true that Leipzig as a core grows whereas Weißenfels and Bitterfeld-Wolfen, representing the periphery, suffer from negative growth. It is not yet visible that knowledge spill-overs from Leipzig will have a positive impact on the two MST's development's, e.g., for innovation activities due to the town's rather less attractive offers of functions and infrastructures. From a broader perspective, Leipzig may be the growth pole, the driver of development, for the whole Leipzig/Halle region, yet, only in a regional approach. The occurrence of collaboration between towns is rather perceived as challenging due to the towns' respective competitive interests. Competition is pursued and possible positive growth effects of clusters and/ or networking structures is neglected in Weißenfels and in the Leipzig/ Halle region. Especially the collaboration between Weißenfeld and Bitterfeld-Wolfen is assumed to lead to economic growth. The existence of a food industry network, however, does not seem to be efficiently pursued. Similarly, the merger PRO-LOG defines a logistics network focusing on the middle of Germany with the objective to promote urban growth (HELO GmbH Logistics & Services, n.d.). As for the former networks, cooperation appears rather obsolete which leads to the assumption that companies compete instead of collaborating. Eventually, economic cohesion is

not created as high levels of competition do not necessarily allow networking effects that promote comprehensive regional growth.

The town Weißenfels implicitly recognises social innovation and social capital as being crucial for urban development. Local commitment and engagement of both companies and entrepreneurs is missing but needed (Risch, 2019, 00:03:47). In comparison to the East, Risch states that social engagement does not occur as continuously as in the West, thus, it is important for medium-sized cities. Social cohesion is recognised as crucial, yet, its non-existence leads to negative developments. Creativity or innovation patterns cannot be observed in Weißenfels whereas Bitterfeld-Wolfen shows innovation patterns as displaying start-up incubations.

These development facts lead to statements concerning economic resilience. Resistance capacities might be available in both MSTs of Weißenfels and Bitterfeld-Wolfen. However, it is very likely that the lack of skilled workers in the cities may turn out as a major drawback in the future. That displays not only a need for diversifying the economic structure but further attracting workers of the current industries. Currently, the food production industry, the main employer in Weißenfels, i.e., the slaughterhouse Tönnies does not show resilient capacities. Being in a state of insolvency, negative effects for the region are expected relating to a loss of employment and annual turnovers that have been crucial for Weißenfels' economic development.

This development exemplarily portrays the lack of adaptability. First, lacking economic diversity undermines the importance of establishing knowledge-based industries which are driver's for creativity and thus innovation. Adaptability, however, might be partly available considering Weißenfels' ambitions of strengthening the logistics sector benefitting from the narrow Autobahn network.

In the case of Bitterfeld-Wolfen, economic redundancy is given with diversified chemical industries. The transformation from concentrating on one main output product to several ones proves this finding. Nevertheless, economic resilience cannot be based on the chemical industry only as the need to diversify cannot be neglected.

The adaptability to shocks and stresses is followed by the characteristic of transformability, the ex-post reaction to disturbance. For Weißenfels, it can be assumed that capacities to withstand shocks and stresses are partly developed. The observation is based on the evidence that crucial knowledge for economic developments is absorbed by Leipzig resulting from the fact that Weißenfels cannot offer a diverse educational sector for knowledge production and innovation activities. The crucial question to be posed is how Weißenfels will develop the ability to become more economically resilient by using creative and innovative approaches towards transformation.

In this regard, the institutional role comes into play. According to Risch, social cohesion is not sufficiently developed in Weißenfels. This might result from a lack of municipal leadership to first offer possibilities of social participation in urban planning and second in fostering economic development. Social innovation cannot be sufficiently and effectively fostered by, e.g., a modern government that is based on online participation of citizens due to a lack of sufficient internet infrastructures as it is the case for Weißenfels. Innovative capacities are hence strongly limited or not possible to develop.

Considering the process of negative growth of population, demographic change does not support adaptability capacities of the MSTs Weißenfels and Bitterfeld-Wolfen. In terms of social resilience, Weißenfels needs to adapt to current trends for instance as pursued by Bitterfeld-Wolfen. Social innovation is fostered by the MST's approach to promote approaches of, e.g., tiny houses or eco-district which are often applied in LSTs. Such approaches display innovations that are pursued by different actors, especially by the municipality as a driver towards participatory urban planning. To enable a society to become creative and innovative, a demand for new people from the outside is essential in order to offer new points of views on recurring issues. Nevertheless, the success of these approaches and their future impacts for Bitterfeld-Wolfen are not yet clear as monitoring is still in process. Further, the towns measures are highly interesting concerning the outcomes on the demographic structure and the economic profile. Also, no clear result can be offered answering the question how these innovations offer social cohesion. It can only be assumed that positive effects can be awaited.

4.5 Beyond Solidarpakt II

Much has been argued about the future of subsidies to achieve territorial cohesion in Germany. Ragnitz et al. (2019, p. 16) argue that in order to effectively address the persistent disparities and create equal living conditions in East and West Germany, measures that address the underlying structural conditions are required that go beyond the economic activity-promoting and job-creation nature of the previous structural funds. In the context of the restructuring of the Solidarpakt II from 2020 onwards, the following overarching goals have been announced by the German government (Ragnitz et al., 2019, pp. 16-17):

- **Promote structurally weak regions with a nationwide subsidy system**

In view of the expiry of the previous provisions of the Solidarpakt II, the specific structural policy funding instruments for East Germany should become available to all regions. Programs for innovation, strengthening of technical social infrastructures and the

safeguarding of professionals in the regions shall be developed. In addition, the allocation of subsidies to improve the regional economic structure shall take greater account of demographic change.

- **Job creation in structurally weak regions**

Authorities, scientific institutions and higher education should primarily be located in structurally weak regions to stimulate their (economic) development.

- **Broadband expansion and mobile network development**

- **Improvement of mobility and transport infrastructure**

- **Strengthen villages and rural areas**

The provision of public services shall be strengthened, and infrastructure deficiencies addressed.

- **Promote urban development and social housing**

Continuation of the federal funds for social housing after the year 2021.

- **Find a fair solution for municipal debts**

- **Strengthen local commitment and civic engagement**

- **Ensure the provision of quality childcare**

Financial commitment beyond 2022.

- **Realise accessibility in the area**

Fulfilment of the Federal Government's obligations under the UN Convention on the Rights of Persons with Disabilities.

- **Promote the co-existence of the citizens in the municipalities**

Commitment to create good framework conditions for the creation of a social infrastructure in the municipalities. The aim is to improve the attractiveness of local communities as places where several generations live together.

It has to be noted, that many of these goals are already known from other contexts or continue the implementation of existing instruments. Besides, much is formulated rather vaguely. For example, with regard to the improvement of mobility and transport infrastructure, it could imply everything from enabling longer commutes by better road infrastructure to higher provision of public transport. Ragnitz et al. (2019, p. 17) take the view that the goal shall be to enable people to work wherever they live by advances in digital infrastructure development, flexible working hours, and child and elderly care, which at the same time implies an enhancement of the structural local conditions.

Another factor that remains open is the total size of the financial package of support. According to Ragnitz et al. (2019, p. 17), beyond the planned measures, a far-reaching restructuring of education, research, transport and financial policy is necessary that pursues four strategies:

1. Treat unequal conditions differently

Social and technical infrastructures are spatially very unevenly scattered. Government spending must be distributed in a more spatially equitable way in the future. A more indicator-based regionalisation of state investment aids, oriented to technical aspects and spatial imbalances, is needed. This applies in particular to infrastructure promotion programs and to investment subsidies by the federal and state governments. Thus, both the needs of structurally and financially weak communities as well as the problems of dynamic cities and districts overburdened by migratory pressure can be acknowledged.

2. Strengthen local communities

Without high-performance municipalities, equal living conditions cannot be achieved. The municipal administrations ensure the access to public services and need adequate human and financial resources. Therefore, an initiative is needed to strengthen the administrative power in order to rebuild communal competences. An adjustment of the local fiscal equalisation systems of the Länder must ensure that the funds provided by the federal government reach those municipalities and districts in need.

3. Unburdening deprived municipalities

The most deprived communities often bear the highest burden of social transfer payments. The debts of the most heavily burdened municipalities should be pooled and linked with conditions to improve the revenue situation and avoid new debt. In addition, support for social expenditure by the federal government is necessary, e.g., with regard to social housing and unemployment.

4. Regional services of general interest

Access to a comprehensive and efficient infrastructure is the prerequisite for development. A policy of cohesion must therefore be concerned with the development of social places where autonomous regional development is practiced through civic engagement, communal cooperation and regional networks and other forms of participation. This shall include the systematic support of innovative approaches and processes for the activation, codetermination and self-organisation of the civil society (Ragnitz et al., 2019, p. 18).

In conclusion, 30 years after the fall of the Berlin Wall, the problem of the creation of equal living conditions has not been resolved and the debate on measures and strategies to achieve similar

results and success is ongoing. It shall be seen if the next funding period and the transformation of the Solidarpakt II will finally contribute to a decisive improvement of the situation and offer solutions to the cities, towns and regions in question.

5 Conclusions and Further Research Opportunities

The following section is dedicated to firstly answer the main research questions Q and secondly to proof or disproof the hypotheses. Lastly, conclusions are drawn before future research possibilities are shortly outlined.

Q: What are the crucial factors for divergent growth of German medium-sized cities and how can they establish resilient characteristics and capacities as drivers of growth?

The unification of East and West Germany was supposed to convergence the two territories in terms of political and economic conformity. Several funding programmes have been established to support territorial cohesion. Nevertheless, these measures did not lead to equal growth and especially the Eastern part of Germany was and is still lagging behind in economic terms. Whereas LSTs developed rapid growth patterns, SMSTs could not catch up coherently. The explanations for these processes are manifold. Firstly, the fall of the Berlin Wall caused high levels of migration from the new to the old federal states in the West. In addition, rising attractivity and increasing levels of quality of life in large towns supported the process of urbanisation. Hence, the rural exodus was accompanied by demographic change. Trickle down effects occurred resulting from higher levels of unemployment in Eastern Germany.

Despite the severe situation of certain MSTs in East Germany, municipalities still attempt to grow in terms of the economy and the population. From an economic perspective, MSTs such as the case study towns Bitterfeld-Wolfen and Weißenfels have been reflecting economic stability due to their unique locations for the chemistry and food production industry, respectively. Still, both towns suffer from strong population losses which are even expected to increase in the future. In this respect, proximity to the urban cores Leipzig and Halle let Weißenfels and Bitterfeld-Wolfen appear as urban shadows that are neither able to borrow size nor borrow urban functions.

The forecasts for Bitterfeld-Wolfen are expected to be even worse than for Weißenfels in relation to economic growth. The trend of negative growth, however, is addressed very differently by the respective municipalities. Whereas Weißenfels follows a rather traditional urban planning approach to pursue growth, Bitterfeld-Wolfen reacts by applying rather innovative urban planning measures and actions. It remains to be seen whether social innovation and creativity will pay off in the future.

Still, the development of resilient characteristics can be achieved primarily by focusing on a diverse economy. The redundancy of companies of the same sector does not provide for disturbance. Moreover, it is crucial to combine the society's and the municipality's visions for urban development. Integrated development reacts to the overall developments trends instead of focusing on old-established structures. Yet, it is helpful to combine old and new structures of institutional will by innovative and creative forms of participation and governance structures. The municipality, however, is responsible to establish successful leadership capacities in order to train residents to cope with uncertainty. Hence, the creation of social cohesion appears to be a crucial element towards resiliency and thus growth.

H1: Geographical proximity of a MST to a metropolitan area is a potential driver of innovation and new ideas due to knowledge spill-overs

As results have shown, the hypothesis cannot be verified. The two studied cases display suffrage from geographical proximity to a metropolitan area as spill-over effects do hardly exist. Brain drain appears to be a crucial issue accompanied by the constant out-migration and the loss of population due to demographic change. Innovation has to be targeted by the responsible municipality otherwise lock-in effects occur. Nevertheless, towns cannot neglect cognitive proximity in order to compete on a regional scale by receiving inspirations of LSTs urban planning innovations.

H2: MSTs have developed divergently due to different approaches of social innovation and creativity by the respective political bodies

This hypothesis can only be verified to a certain extend. Comparing the approaches taken by Bitterfeld-Wolfen and Weißenfels, the first town can surely be identified as being the more innovative and creative one despite being the town suffering from the highest loss of population and employment. In this regard, Weißenfels appears to be better off by not innovating but focusing on its rather traditional approaches characterised by regional identity. This report, however, could not fully resolve the structures of social innovation and creativity. The assumption that the availability of social innovation and creativity foster growth versus the non-availability of social innovation and creativity does not support growth cannot be verified as the examples studied have shown. Nevertheless, political bodies are in charge of applying innovative processes that provide for the establishment of leadership capacities among citizens, public institutions and private organisations.

H3: Social innovation plays a crucial role for MSTs to be better able to build urban resilience capacities (when fostering/ having fostered social innovation and creativity)

Despite being stated as crucial for urban resilience, social innovation may not be completely linked to an establishment of resilient capacities. The hypothesis can be partly verified as, based on the case study findings, social innovation is assumed as a tool or a path towards urban resilience. Urban processes may be enhanced by stakeholder's participation in creative and innovative ways. Still, the precondition is the generation of social capital by social innovation. Yet, as urban resilience comprises a comprehensive model, social innovation may touch the pillar of the society and the institutions most, as these depict the actors needed to implement environmental and economic resilience.

The overall research has established a comprehensive set of findings addressing the research issue “*The divergence of growth of German medium-sized towns – the role of social innovation and creativity for urban resilience*”. A profound literature review was carried out shedding light on numerous concepts of towns and their developments in relation to proximity and networks. The large body of scholars developed explanations for urban convergence and convergence that have been discovered in relation to social innovation and creativity as well as urban resilience. Main findings revealed the fact that a MST's proximity to metropolitan areas cannot be automatically perceived as driver for growth. Further, social innovation approaches and creativity may lead to divergent developments of towns, yet, these factors do not necessarily support urban growth. Still, their availability is perceived as being helpful to establish urban resilience.

Nevertheless, the fact that the territorial infrastructures of towns do not yet correspond to common standards (e.g., the connection to high-speed broadband internet), certain actions supporting social innovation and thus urban resilience appear to be challenging. For instance, the importance of a diversified economy characterised by a strong service and knowledge sector depicts an obstacle with lacking internet connections.

Generally, the two case studies are portrayed by both converging and diverging development patterns which do not allow to conclude too hastily. The innovative approaches taken by Bitterfeld-Wolfen show the will of the political body to engage the population by participation, yet, results have to be awaited.

All results only show a construction of reality, therefore similar studies should be carried out in similar contexts in order to proof the findings of this report. Further research opportunities include a broader investigation of MSTs all over Germany as well as a more in-depth evaluation of the effects and phenomena described above. In this regard, the local population would be of special interest in order to obtain a comprehensive understanding of the dynamics of shrinking and growing cities.

Translation is an interpretive act and some words and concepts are not universally translatable into another language, hence meaning might diminish or slightly change during the translation process (Van Nes et al., 2010, pp. 313-215, Roth, 2013, pp. 2-5; Roth 2018, pp. 1-3). As most of the sources have been in German, this poses a possible research constraint. In addition, the small size of the interview series does not allow to draw far-reaching conclusions.

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Z

Appendix A Interview Guideline

BLOCKS	QUESTIONS	(POSSIBLE) FOLLOWING QUESTIONS
GENERAL QUESTIONS	Would you like to remain anonymous in our report?	If yes, may we mention your function?
	Could you first explain your field of work and tasks?	
	How long have you been working in this position?	
GENERAL QUESTIONS ABOUT DIVERGENCE	To what extent do medium-sized cities in East and West Germany develop differently?	Which factors promote and/ or hinder territorial cohesion?
	Do you think that enough has been done at federal level to achieve territorial convergence?	Are there any factors that favour this development?
QUESTIONS ABOUT THE CASE STUDY CITIES	What specific challenges/ potentials do you see in Bitterfeld-Wolfen's / Weißenfels' urban development?	How are these addressed in planning processes?
	Which instruments and funding measures (federal and provincial level) can you access to promote urban development?	Are these appropriate? From your perspective, are there any other and/ or better possibilities?
	To what extent do forms of (local) cooperation/ networking exist?	If yes, which? If not, are there special reasons for that?
	Do you integrate aspects that promote social cohesion in planning processes?	If yes, which and why? If not, why?
	To what extent does social cohesion promote local development (economic, political, social)?	Do you consider social cohesion to be an important aspect of local development?
	Are creative aspects and/ or aspects of social innovation included in planning processes, e.g., participatory planning elements?	If yes, which and why? If not, why?
	Do you assess the proximity to Leipzig as a beneficial or obstructive factor for the development of Bitterfeld-Wolfen's / Weißenfels'?	If yes/ no, why?
	To what extent do future-oriented strategies to cope with demographic change and other challenges exist?	To what extent do innovation and new ideas and approaches play a role?
	To what extent have the experiences of the last economic crisis impacted planning processes?	Are there strategies for economic resilience?

Appendix B Interview I

TRANSLATION

ROBBY RISCH

METADATA:	
Date of Interview:	06/12/2019
Duration of Interview:	00:25:04
Location of Interview:	Interview via phone 35 Allée Ferdinand de Lesseps 37000 Tours France
Interviewer:	Selma-Paulina Breuste Kendra Menking
Interviewee:	Robby Risch, Mayor Weißenfels since 2008
Type of Interviewee:	Expert with specific knowledge regarding the city of Weißenfels
Person summarizing and analysing the interview:	Selma-Paulina Breuste

First of all, would you like to remain anonymous in our report (00:00:03)?

That is not necessary (00:00:07).

Thank you very much. Could you please start by explaining your field of work and your tasks (00:00:10)?

A large number of my activities overlap, of course, when you are working as a representative (00:00:34). This task of representation is the main task of the administration manager (00:00:39). I am in charge of an administration, which includes green areas and kindergarten, all together about 550 employees, with an annual volume of about 70 million EUR (00:00:47) and then of course the whole range of what such a city ultimately needs to function (00:01:01) from fire brigade, where I just came from, about the kindergartens, green areas, political institutions and all that is needed for a functioning city (00:01:09).

How long have you been working in this position (00:01:20)?

Since 1 August 2008, I am now in the 2nd term (00:01:23). I was also a member of the city council since about 1999, so I already knew what is technically required (00:01:33).

Regarding divergence: To what extent do medium-sized cities in East and West Germany develop differently? (00:02:10)?

In principle, we do not have a middle class here in East Germany. So, the classical definition of the middle class is somewhere between 100-400 employees. Honestly that would be here already a large-scale enterprise (00:02:24). And will have mostly, already from the history, no managements. And not just management also marketing, sales department but also research and development on site. The appreciation is different at this point (00:02:39). This is clearly visible (00:02:58). Well, how do you say that, as it is repeatedly said, the East is unproductive but that is not true. The appreciation takes place somewhere else (00:03:10). I can also be very specific, we have a company in the area, I don't have to name it now. They make about 1 billion turnover - trade tax is zero. And then there are a few things where I tell myself that there would be no such thing in the old federal states (00:03:17). And in addition, there is the second point, which is also a lack of connection to one's own municipality, which allows one to act differently (00:03:34). And of course, there is also one thing, community life, no matter if culture or sport. What's missing is the entrepreneur who played in a football club or was around the corner in the music school and is so committed to his local life: That's my home, that's where I get involved. Such scenarios are rare here in the East (00:03:47).

Which factors promote and/ or hinder territorial cohesion? (00:04:17)?

That's just history, too. You just have to look back at what happened in the GDR and the sixties. Many companies, no matter if Audi or Bayer, went from the East to the West (00:04:21). And in GDR times there was no entrepreneurship here and just with the acting of the trustees, that should not be a reproach at all at this point, the situation is just so that the companies have mainly built up workbenches here and so the added value is still in the old federal states (00:04:40).

To what extent do you think that enough has been/is being done at federal level to achieve territorial cohesion? (00:05:11)?

That's not easy to answer. But that starts with the fact that 30 years after the fall of communism we are still the petitioners (00:05:22). That sounds a bit hard now, but we are driven by subsidies in many things, that means we do things that we would not have prioritized on the spot in our own perception, but also because of the necessity (00:05:35).

For example, the energetic renovation of a half-day facility, e.g., a primary school, with which we could have built two completely new schools. But that's how it is, subsidies often come with very specific requirements, in this case energetic aspects. Sometimes we cannot afford that (00:05:59). And so, we partly go to projects which are not really the most urgent in terms of priority, but for which there is support. Such a thing leads naturally also to a certain dissatisfaction (00:06:20). Also, because we just suffer, as already mentioned here somewhat under this tax weakness. This finally leads to the fact that we do not have the necessary own resources, that we cannot act independently and in principle see that we finance the available subsidies against it, so the question arises to what extent all this is particularly target-oriented (00:06:34). So, this is just the reality, only certain aspects are supported. For example, renovation in accordance with monument protection, now nothing against monument protection in general, but often we can hardly afford projects (00:07:03). And next door to it is a property that is just as important, or for the community much more important than a castle or a museum but disintegrates. But the castle is wonderfully restored. Because there was money there, although I would have preferred to renew the primary school, those are often precarious situations (00:07:50).

Which instruments and funds (federal and state level) can you access in order to promote urban development? Are these appropriate?

In your opinion, are there other and/or better or more effective possibilities (00:08:07)?

This must always be seen in the context of Germany as a whole; in the context of structural change, we had a discussion about if it would be good if our region became a special development area. Sounds great at first, but in terms of competition law and the EU, we are in the Halle/Leipzig region, and this is considered to be a generally expanding region. Just when we're looking at southern Italy or eastern Europe, say Romania, Bulgaria or Poland, it's suddenly difficult to justify in comparison (00:08:20). I think Germany is rich enough already. The actual task I would see in that, there was also a regional reform, to give the municipalities themselves more possibilities for action. But even that is often not quite recognisable with such a helicopter view from Brussels.

In rich Germany, I don't have to suddenly build a new school or support a kindergarten renovation as the EU (00:09:06). And when there are subsidies, then of course often very politically motivated, to always set the current goal of the premise's climate protection and energy change (00:09:35). And then we start doing things we can't afford (00:09:48).

To what extent do forms of (local) cooperation/networking exist?

Could one join forces with other municipalities in this respect? In order to perhaps be able to access other forms of support (00:10:22)?

There are of course already considerations, and this is tried also straight the party basis. In reality, however, it looks like we have a lot of egoisms to deal with. For example, when it comes to the settlement of companies and then everyone just looks at themselves and we are suddenly competitors (00:10:47). We all have a common problem now, and that's the lack of workers and I'm not even talking about skilled workers, but workers in our region at all (00:11:25). It would be important to develop the municipalities at this point to the extent that they are attractive places to live. There are soft location factors like baths or a cinema, but also a discotheque for young people, something like that. But it's exactly these things that we as East German municipalities are limited to in the context of budget consolidations - that's the friendly name when a budget is in deficit - (00:11:40). This leads of course to the fact that we as a region already have an increased population migration but on the other hand, we here in the district of Burgenland, every fourth is now 65, so actually pensioners. We are dying out physically simply (00:12:09). But 25% of those who, best-agers one calls them, 35-40 years old leave their homeland - yes must leave - because there are simply no jobs and no infrastructure which would make it possible to get easily to the metropolitan areas, where there are then again more jobs (00:12:34).

Do you see the spatial proximity to Leipzig as a beneficial or hindering factor for the development of Weißenfels? (00:13:11)?

At the moment everyone is betting on Leipzig, which of course doesn't always make it easy. But actually, we should see this as an opportunity. If the municipality is well positioned enough to be an attractive place to live, that would be good (00:13:27). But especially the area south of Weißenfels, you have to talk about a region, we don't even have a decent internet, not only mobile phone holes, also hardly usable landline internet connections for present-day times (00:13:58). No innovations take place in this way, no start-up can develop in this way. This already poses major problems for young people in the area of social media or Netflix. Nowadays, this is a normal matter

of course, but unfortunately not usable here (00:14:16). And I'm not even talking about topics such as medical care, which of course suffers a lot due to the declining number of cases. The possibilities are dwindling, our clinic has just become insolvent, another story, there is also a homemade problem, but the problem is always the same. Questions of effectiveness, price questions, which services can and will be offered locally. A specialisation must take place, in the end this is also in the interest of the patients, even if this leads to a selective reduction of services (00:14:35).

Does that mean we talk about a downward spiral? One is so overwhelmed by the problems of the present that it is almost impossible to plan properly for the future (00:15:42)?

One thing is important, this is also partly a federal task, but I think it has arrived in consciousness in the meantime, but it is a process that will still take some time. Especially if you look towards Halle/Leipzig, infrastructure is the big issue (00:16:01). Actually, it's already the situation today that from Weißenfels one could be standing on Augustusplatz in Leipzig in 30min, that's in front of the university. On the other hand, the city isn't so attractive yet, that young families, for example, accept the distance in favour of cheaper rents we provide out here (00:16:20). Even if we don't have a suburban train yet, trains usually run every half hour. But there are also other conditions that are not right. The classic; the Internet, not even broadband, but for many that's really a knockout criterion. And they decide not to move here, but somewhere where the conditions and infrastructure are right. You really have to work on that, the process will take a few more years (00:17:03). I'm already glad that this has now at least been recognised as a problem and that a structural change is imminent. This includes hard factors like the rail network and a good public transport system, it doesn't only work with more and more parking spaces everywhere, so a city is also deprived of its quality of life (00:17:46). Rural areas in particular are demanding that distances be covered in order to use certain services. And of course, the own car is used for visits to the doctor, withdrawing money, shopping in the city if the public transport serves the connection only twice a day and then mostly adapted to the school bus operation. I know this is a bit depressing (00:18:47).

We are a generation that did not experience the German reunification directly also we both come from Hannover (00:19:19)...

I witnessed it all at first hand and finished my studies in 1986. And during GDR times, there was a legal regulation, that was called job commitment - so you had to stay with your employer for 3 years, he couldn't even dismiss you, that also had its advantages (00:19:34).

Although this was not so optimal for me personally, I met my wife at this time and she came from Weißenfels, but I still had to work in Leipzig, and I had to commute (00:19:56). At that time there was a better connection, but nobody was looking at the costs, I honestly have to admit that (00:20:12). Right now, there are many romantics who mourn the whole thing - everything was better in the past - but the system GDR was simply bankrupt, it just didn't work, the exchange rate was 10-1 or similar and the currency was highly inflationary (00:20:32).

As an indication, as we talked briefly about Eastern Europe, is there any immigration from this direction? Could the labour force problem be defused in this way (00:21:11)?

This was the case for a while, but only partially. We are one of the biggest slaughterhouse locations in Germany, the company Tönnies is well known (00:21:29). However, the working conditions there are precarious, these are jobs nobody wants to have, not even from Eastern Europe. And also, Poland is doing well enough themselves thanks to the EU. The caravan moves on, now people from the Ukraine work in the Polish factories. And when workers from Romania and Bulgarian are to be employed, many of them often only had two years of schooling, so not the genuinely qualified immigration. Also, often the spatial distance is simply too large. One is not ready to build a new life so many kilometres from home (00:21:58). What happens more often is that people work here for a certain time, in that scenario the German minimum wage is already attractive but rather for certain periods only (00:24:17)

Appendix C Interview II

TRANSLATION

INTERVIEWEE II

METADATA:	
Date of Interview:	10/12/2019
Duration of Interview:	00:21:53
Location of Interview:	Interview via phone 35 Allée Ferdinand de Lesseps 37000 Tours France
Interviewer:	Selma-Paulina Breuste
Interviewee:	Head of Urban Planning Department City of Bitterfeld-Wolfen
Type of Interviewee:	Expert with specific knowledge regarding the city of Bitterfeld-Wolfen
Person summarising and analysing the interview:	Selma-Paulina Breuste

First of all, would you like to remain anonymous in our report (00:00:33)?

Yes please (00:00:40).

May we mention your function (00:00:41)?

Yes, the name does not have to be mentioned, but the function is fine (00:00:41).

Many thanks. Firstly, could you please explain your field of work and your tasks (00:01:25)?

I work in the department of urban planning as the department head in Bitterfeld-Wolfen. And we deal with everything that is related to urban development. Essentially, building law creation, i.e. development plans and land use planning. The land use plan from 2012 is currently being updated – it is right now in the draft phase, which is one of the very important things that is recently going on (00:01:33).

Otherwise, conceptual considerations of districts or individual city quarters also play an important role. Traffic planning is also part of my job, so if roads are to be expanded or renovated then the relevant documents must be reviewed. Building applications are also being requested, of course. We are a city belonging to a district and therefore the district is the sub-building permit authority and then the municipalities belonging to the district get involved. On the one hand according to section 36 of the Building Code or for an opinion piece if it falls in the area of a development plan (00:02:05). We also process projects under the Federal Emissions Act. Furthermore, monument protection is also included in our area, which affects the Wolfen district and we assign the street names and house numbers, which of course is also one of the tasks. Maybe I forgot something, but that is basically our field of work (00:02:50).

How long have you been working in this position (00:03:22)?

Since 2013 probably (00:03:29).

Regarding divergence: To what extent are medium-sized cities in East and West Germany developing differently (00:03:47)?

Well, I have not made any comparisons yet, but I think that there might be similar problems, whether it is East or West (00:04:03). So, we realised that we benefit quite a lot from these major centres like Dresden for example (00:04:12). Especially with the housing market policy currently, it is getting much more expensive and now people are looking for alternatives in the surrounding area. And I could imagine that it is not much different in the old federal states, perhaps even more extreme because the cities there are growing much more. Well, if you look at Dresden, it is pretty much the same phenomenon (00:04:19). I do not know who you have asked yet if there are any great differences, but as I said I have not made any comparisons yet (00:04:44).

It is also more about a personal opinion. (00:04:57).

So, I would definitely assess it that way, of course I cannot say whether it is really realistic or correct for sure. Because from my point of view we really benefit from the spill-over of people who do not want to live in the expensive metropolis anymore, and say I want to settle more on the periphery. Plus, we are doing pretty well with the industry we have here (00:05:01). And we have a high number of commuters coming and of course we keep trying to attract them as residents, so they do not have to commute anymore from Leipzig and pay high rents. Then it would be the other

way around if they want to do something in Leipzig. Of course, we would prefer that way, because we are of course already strongly affected by shrinkage (00:05:26). I think other middle cities, also in the Western federal states, will also have their problems with this issue and many people simply prefer to live in more metropolitan areas (00:05:56).

What challenges or potentials, such as the commuter flows mentioned, can you see for the urban development of Bitterfeld-Wolfen (00:06:03)?

Yes, we have two special things, that is the great Goitzschensee, the flooded open-cast mine, which suddenly developed overnight as a result of a flood, the flooding was actually planned much more slowly over a period of time. So, we also have a little something to offer tourists, that is an essential factor. Of course, this also affects the housing market, especially in Bitterfeld, where the demand is bigger, everyone wants to move relatively close to the water. On the one hand because of the possible leisure activities and but also because it is more attractive neighbourhood there. As you can see in Leipzig, the lake areas are in great demand (00:06:18). The problem is, we got a North-South gap with great demand in the South and less in the North. The Wolfen district is now a bit behind there, because the focus is much more on the Bitterfeld district, but that is precisely why we want to do a lot of location development there. Of course, they cannot be offered at such a high price as is the case at the Goitzsche where you can start at 100 euros per square meter. In Wolfen, 70-80 euros per square meter would be realistic (00:06:53).

Do you actually know Bitterfeld-Wolfen as a city?

I looked it up on the internet and did some research, but no, I have never been there (00:07:52)

There is also the Wolfen-Nord district, that was a so-called satellite city, for the industrial park. And there were a lot of apartments for the workforce at the time, some large apartment blocks were pounded out of the ground almost overnight and in a relatively short time a lot of people were accommodated in Wolfen-Nord, six to seven storey buildings where many people lived in relatively small spaces (00:08:33). And after 1990, there was of course a change and jobs were lost and now there are 6700 inhabitants left in Wolfen-Nord from formerly 36.000 at that time. This is of course a huge population decline. The housing associations and the city are trying to react to this with appropriate dismantling and rescaling measures (00:08:04). The far outlying areas, I do not know if this is an issue in larger cities, there are increasingly people who yearn for a more ecological lifestyle, who prefer to live a simpler life and take care of their work-life balance, we have such an area in view where we want to set up such experimental living, for example tiny

houses with lots of nature and areas for vegetable gardens. There are currently several actors who want to take action, because the municipal housing association wants to withdraw a bit and a section on the edge has become free for such projects between several areas that are to be developed (00:08:59).

That sounds very exciting, that would also have been one of my next questions, to what extent do innovations and new approaches play a role in the development of the city. And these are some really good ideas that are actually known from bigger cities (00:10:46).

Yes, of course, the search for natural areas, especially livestock farming, such as sheep or cow, is of course difficult to achieve in a purely residential area, also because of the emissions. Such edge areas are much more suitable. The question is still how to deal with the supply and disposal of water waste, because the pipelines on site are significantly too large to be used without further adjustments. There is still a lot to be done and redesigned. Perhaps one could free the residents from the obligation to connect and use the sewage system, which actually every resident is subject to, and lay suitable disposal lines there first. In any case, this will be exciting (00:11:00).

In this regard, you can access federal and state instruments and grants (00:12:05)?

Yes, exactly, we have an urban development concept and there are some conversion areas and there is a lot of funding, for example, the entire dismantling measures of the housing associations are all funded. The only problem is, a certain sum was advertised per square meter, but that was unfortunately not enough. However, this has been increased to around 70 euros per square meter, which is already being utilised. We also use subsidies for access roads. We have a project in downtown Wolfen, an access road still needs to be built there, I think that would also be eligible (00:12:24).

To what extent are there aspects that promote social cohesion, do they also flow into planning processes, or are there no problems in this regard in Bitterfeld-Wolfen (00:13:54)?

So that is a minor problem compared to big cities. This is not something that plays a major role for us, it is mixed, i.e., decentralised, whether social housing or multi-generation houses. We have a few projects that are meant to bring young and old together. We also have a Christopherus House, which is a youth and migration service of the evangelical church community. There are also many volunteers involved (00:14:10). And as far as living arrangements are concerned, the rent structure

we have here does not have the problem that we have to charge eight, nine or ten euros per square meter here. We have rather moderate prices, like five to six euros, in Bitterfeld right on the lake a little more, sometimes eight euros (00:15:31). The housing cooperative in Greppin, a fairly central district, there is a project where old blocks of flats have been demolished and the development plan provides for a form of living with small, rather compact units that are intended for singles and seniors alike, also connected with social facilities (00:16:19).

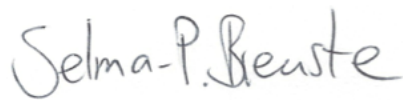
To what extent are such planning processes involving the local population, i.e., are participatory (00:17:10)?

So, development plans and land use plans are always public anyway, everyone can participate or give a statement. Sometimes we also invite the public to project presentations, but less often lately due to time constraints. The workload has increased enormously in recent years (00:17:22). We have the upcoming development and transformation of the old battery factory, that was operated by a Chinese American cooperation, located directly on the highway at the Central German Technology Park, in the suburb of Tahlheim. This is also a priority location in terms of spatial planning, as a development plan is currently being created for the area. There is a large participation of the citizens, there are questions being raised in regards of sustainability and whether jobs could be created, there was a lot of participation (00:18:06).

We are creating an inventory of the demolition process and some guiding principles on how to proceed for the experimental living project in Wolfen-Nord. Everything will be published, and the public is invited to contribute (00:19:57).

Declaration of Authenticity

We, Selma-Paulina Breuste and Kendra Menking, hereby declare that the work presented herein is our own work completed without the use of any aids other than those listed. Any material from other sources or works done by others has been given due acknowledgment and listed in the reference section. Sentences or parts of sentences quoted literally are marked as quotations; identification of other references with regard to the statement and scope of the work is quoted. We will retain a copy of this assignment until after the Board of Examiners has published the results, which we will make available on request.



Hanover / Tours, 16 January 2020