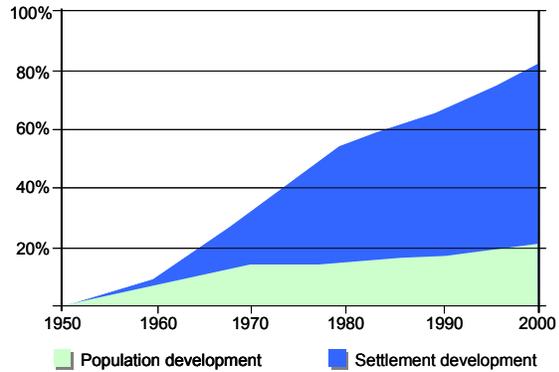


Perspectives for urban regeneration in European metropolitan areas: a cross-border study in Germany and Switzerland

I. Introduction: Consumption of land as sustainable challenge

In the last few decades, European metropolitan areas have witnessed a rapid urban growth at unprecedented rates mostly in the form of urban sprawl as in other metropolitan areas around the world. In Germany, the consumption of land for settlement purposes has reached more 115 Hectare per day (13.3 m² per second) [Statistisches Bundesamt, 2007]. This is more than the area of the city of Munich each year. In Switzerland the consumption of land has reached about 9 Hectare per day (1 m² per second in 2006) [Bundesamt für Raumentwicklung, 2005]. It is estimated that the consumed land in the last fifty years exceeds the amount of land that have been consumed by all earlier generations.



Population development and settlement development in Germany
 Source: www.isl.uni-karlsruhe.de

Parallel to the above mentioned extensive urban growth another trend has strongly influenced the urban structure of many metropolitan areas recently, namely the proliferation of vacant or underused sites within many agglomerations. This is not only limited to the classical brown fields on abandoned industrial, military and infrastructure sites, but there are more and more underused sites within the bodies of the settlements. While these inner development potentials represent a chance for spatial development, their long term existence represents a failure of spatial development policies. Furthermore, it was evident in many municipalities that vacant land in residential and mixed areas plays an important role in the urban regeneration of the agglomeration.



Inner development potential
 Source: Karlsruhe, City-Park



Urban sprawl
 Source: ARE, Switzerland

While “urban sprawl” describes a specific negative quality of urban growth, we concentrate in this paper on the concept of “consumption of land” in general, focusing mainly on the amount of urban growth and the existence of alternatives for development without sprawl. In addition, several metropolitan regions in Europe have reached their limits of urban growth as a result of physical or administrative limits. As a result searching for sustainable alternatives for urban development represents a strategic task for these metropolitan areas. One of the proposed strategies for sustainable urban development is the mobilization of land reserves within urban areas – inner development. However setting inner development as a strategy for spatial development necessitates information about the amount, allocation, and structure of these inner reserves. Furthermore, it is important to identify the obstacles that

prevent the mobilization of these areas. Both aspects play a decisive role for implementing inner development as a strategy.

Based on a cross-border study, this paper investigates the patterns and characteristics of inner development potentials in two comparable metropolitan areas in Germany and Switzerland; aiming at finding out the differences in the characteristics of these reserves and then to explore the reasons for these differences. Several aspects are examined in this context: land policy, planning legalisation, cooperation forms and frameworks and planning culture. This comparison aims at identifying possibilities for mobilising these potentials and finding out the required measures to avoid the emergence of new underused areas.

II. Mobilizing the lost land: Raum+ approach to inner development

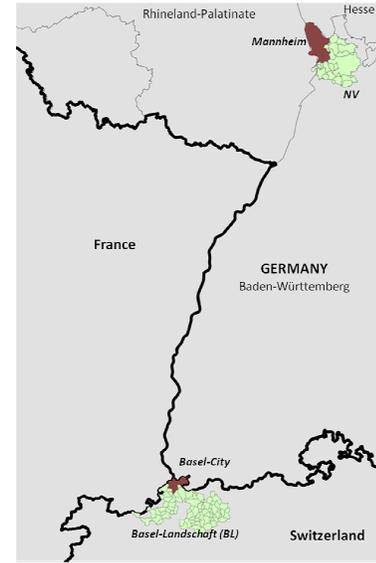
In Germany and Switzerland, reducing land consumption as a principle for spatial development is politically accepted and is declared through maxims like “inner development before urban growth” already as a leitmotiv in laws and plans. The federal governments in Germany and Switzerland have set specific goals for reducing the consumption of land. In Germany, the federal government has set the goals of reducing consumption of land from 100 Hectares per day to 30 Hectares per day until 2020[Deutsche Bundesregierung 2004]. In the Swiss constitution the aim of a thrifty use of land is statutory. Implementing the aim of reducing the consumption of land can only be carried out locally due to the municipal planning autonomy in Germany and Switzerland. However, it has been noticeable that municipalities, which are active in the field of land management, need support from higher levels of planning, namely regional planning associations, cantons and federal state authorities. Such planning agencies can intervene through funds and various types of state and regional planning instruments to help mobilise the inner potential. Hence, an overview about the allocation, amount and structure of the settlement inner reserves represents an essential basis for efficiently implementing such measures. But this information is usually missing. Even in countries like Germany and Switzerland, where a conventional monitoring of land-use development is available. These monitoring systems solely allow the data collection of urban sprawl and infill of vacant areas on a statistical basis. Important potentials, e.g. brown-fields or under-used sites cannot be incorporated into a coordination of measures for inner development processes of the municipalities. Furthermore, information about the characteristics of these sites and the development barriers is usually not available.

To overcome these deficiencies, the project Raum+ was initiated and aimed at establishing an overview about the inner development potentials and the growth reserves on a supra-regional level. Such an overview gives a robust and updatable foundation about settlement reserves and their characteristics. The realization of this overview took place via on-site interviews with the local planners in the municipalities of six regions of the German State of Baden-Württemberg and in the Canton of Basel-Landschaft in Switzerland. The survey was supported by an interactive internet based information platform. The project is planned to run from autumn 2006 till autumn 2008, the enquiries are already finished and it was possible to gain data in more the half of the municipalities in Baden-Württemberg (approx. 6,1 million inhabitants, almost 45% the settlement area of Baden-Württemberg) and the all the 86 municipalities in the Swiss Canton Basel-Landschaft.

The survey about land reserves in the Raum+ project covers two main areas. The first area involves identifying the development potentials in form of brown field, underused or inbuilt areas inside the settlement as well as growth reserves on the outskirts of settlements. In this paper only sites that have an area larger than 5000 m² are considered. Furthermore, urban growth reserves on the outskirts are only considered if they are approved in the permitted land use plans. The second area covers the assessment of the quality of the site for development and the problems that hinder development. This assessment covers areas like: state of planning, land property situation, willingness of the landowner to develop the site, soil contamination, and quality of the surrounding area. The results of the project are the basis for the following comparison between the two case-study regions.

III. The two metropolitan areas: a background

To illustrate the different situations regarding inner development reserves in Germany and in Switzerland, two regions are examined in this paper. The first one is the Planning Association Heidelberg-Mannheim in Baden-Württemberg, Germany (*Nachbarschaftsverband Heidelberg – Mannheim - NV*). The second region is the Swiss part of Basel agglomeration in Canton Basel-Landschaft (BL). Both regions are highly industrialized Metropolitan areas with broad variety of companies of the second and third sector. The density of the settlements is relatively similar (approx. 50 user/ ha settlement area). While NV consists of relatively large municipalities, BL has numerous small municipalities. Both regions also differ in terms of topography. While NV lies in the broad and flat middle-Rhine valley, BL has several narrow valleys of the Swiss midland uplands. Both regions represent a border area between several countries and/or administrative subdivisions. The following comparison concentrates mainly on the ring around the core city of the metropolitan areas. Hence the core cities, Basel-City and Mannheim, are not considered in this comparison.



Location of the case-study areas

Table 1: Comparison of the two case study regions

	BL	NV
Area	51 754 hectare	34 259 hectare
Inhabitants	268 382	336 936
Employees	109 177	114 880
Number of municipalities	86	17
Main city	Basel City (165 529 Inh.)	Mannheim (307 914 Inh.)

IV. Land reserves in the two metropolitan areas: overview, obstacles and chances

Based on the results of the survey, it is apparent that the amount of inner development potential around the core of metropolitan areas represents a very important proportion of the development in the metropolitan area. In this chapter we explore the amount, distribution and characteristics of inner development reserves in both regions to identify the major difference between the two case-study regions regarding the mobilisation possibilities of these reserves and the reasons that lead to the emergence of such sites.

First we introduce the overview about the amount and distribution of land reserves (a). Afterwards, we focus mainly on inner development reserves, comparing brown-fields and inbuilt sites inside the settlement area in both regions regarding the following main aspects:

- The state of development (b)
- Type of land use and state of planning (c)
- Land property and landowner's willingness to develop the property (d)
- Main development barriers (Soil contamination, infrastructure and demand, ...) (e)

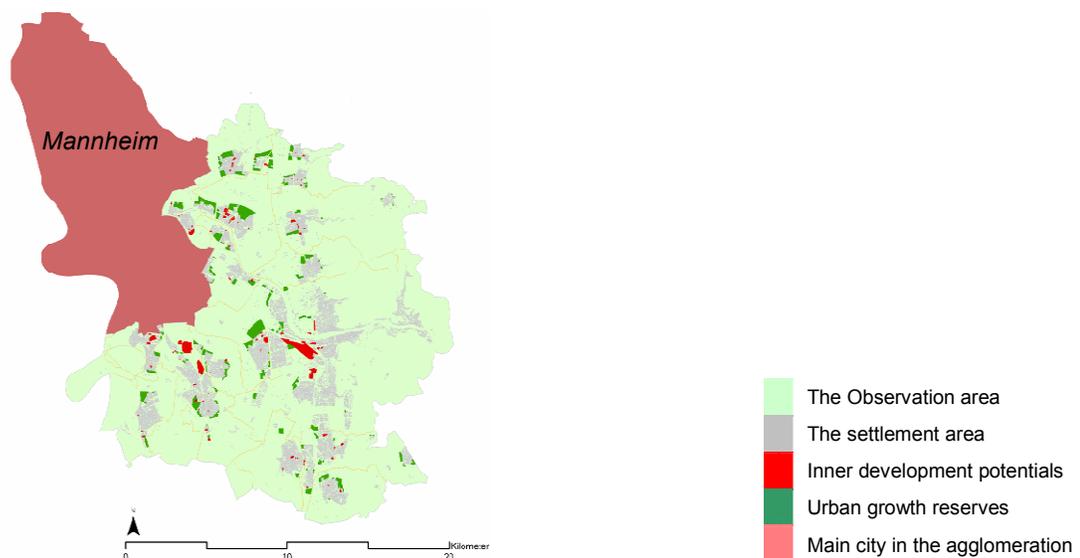
Furthermore we compare the characteristics of brown-fields and inbuilt sites in each region separately (f) to find out if structural differences between these two types of reserves can be identified regardless of their location.

a. Overview about the amount and distribution of land reserves

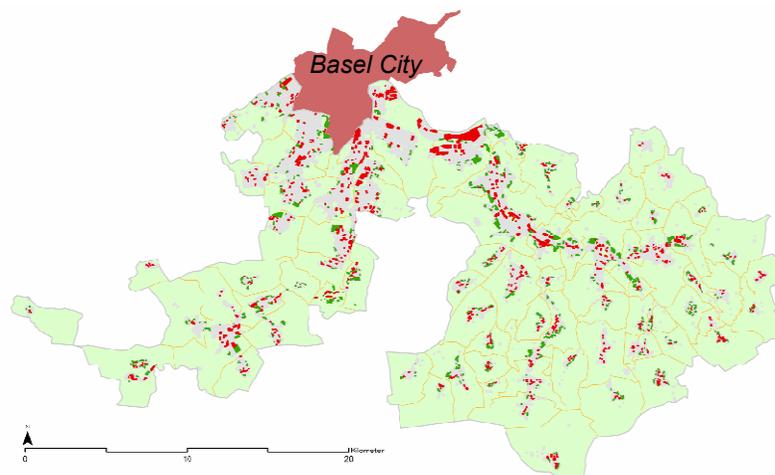
The following tables and maps show the results of the survey in both regions, differentiating between inner development sites that are completely included in the existing settlement structure and urban growth reserves that include approved areas on the outskirts of the settlement.

Table 2: The results of the survey in both regions (Source: Data from the project Raum+)

		BL	NV
Inner development	<i>Number of sites</i>	335	66
	<i>Total area [hectare]</i>	580	278
	<i>Area / space user [m²./user]</i>	15.7	6.0
Urban growth reserves	<i>Number of sites</i>	231	144
	<i>Total area [hectare]</i>	350	880
	<i>Area / space user [m²./user]</i>	10.0	18.0



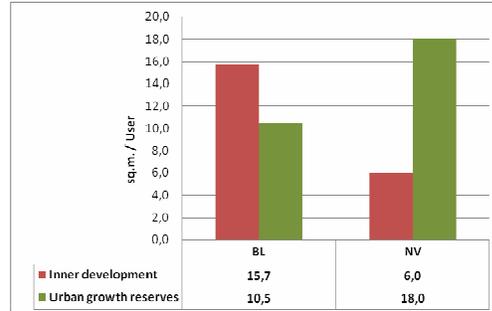
**Development reserves in the Planning Association Heidelberg-Mannheim
(Source: Data from the project Raum+)**



**Development reserves in Canton Basel-Landschaft
(Source: Data from the project Raum+)**

Regarding the amount and distribution of land reserves in the two case-study regions, the following main differences can be observed.

- The total amount of inner development potential as indicated per m² / land user (inhabitants + employees) is much higher in BL than in NV (17.7 and 6.0 m²/user respectively).
- On the contrary, urban growth reserves on the outskirts of the built-up area in BL are much lower than in NV (10.5 and 18.0 m²/user respectively).



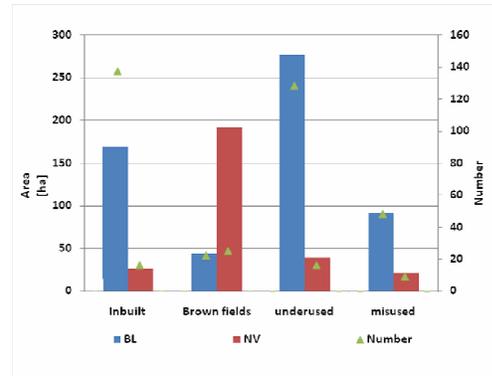
Amount and distribution of land reserves in the two case-study regions
(Source: Data from the project Raum+)

b. The state of development

Regarding the state of the site, major differences can also be identified:

- In BL there are 137 inbuilt sites (completely unused) with an area of 169 hectares. Only 22 sites are brown fields with an area of 44 hectares.
- In NV the relation is reversed. Only 16 inbuilt sites with an area of 26 hectares and 25 brown fields with an area of 192 hectares are identified in NV in Germany.

From these few figures, it is obvious that in the two regions completely different structure of inner development reserves can be identified.



state of development of inner development reserves in the two case-study regions
(Source: Data from the project Raum+)

c. Type of land use and state of planning

	BL	NV
Brown fields	Higher ratio of the sites are classified as „problem-case“ (approx. 10%)	Higher ratio of the sites are classified as „requires support“ (approx. 60%). No area is classified as „problem-case“
Brown fields	Only 5% of the sites are currently not subject to planning activities	About 20% of the sites are currently not subject to planning activities
Brown fields	On average smaller areas, no area larger than 10 hectares.	The whole potential is concentrated in few large sites; ratio of sites > 10 hectares approx. 80%
Inbuilt sites	More than one third of the sites are currently not subject to planning activities.	Only one quarter of the area is currently not subject to planning activities.
Inbuilt sites		Relatively large sites; high ratio planned for mixed-use
Land Use		
Planning Phase		

Type of land use and state of planning of inner development reserves in both regions
(Source: Data from the project Raum+)

d. Land property and landowner's willingness to develop the property

	BL	NV
Brown fields	<ul style="list-style-type: none"> Mainly privately owned land (more than 80%) 	<ul style="list-style-type: none"> Only 10% of the cases are privately owned. 50% are in mixed ownership and 30% are public property.
Inbuilt sites	<ul style="list-style-type: none"> High ratio of sites in private hands (>50%) Only 50% with a positive owner interest; in approx. 20% of the cases the owner is not to mobilise the property. 	<ul style="list-style-type: none"> About 70% of the area has positive owner's interest. There are no rejecting owners.

Land property and landowner's willingness to develop the property of the inner development reserves in both regions (Source: Data from the project Raum+)

e. Main development barriers (Soil contamination, infrastructure, demand, ...)

	BL	NV
Brown fields	Soil contamination represents a problem twice as often as for the mobilisation as in NV.	Demand, infrastructure and context are predominantly positive, while the urban context is problematic in 20 % of the area.
Inbuilt sites	Only 10% of the sites are being immediately ready for development.	More than one third of the area can be developed immediately.

f. Characteristics of inbuilt and brown fields in Canton Basel-Landschaft (BL)

Aspect	Inbuilt sites	Brown fields
Planned land use	<ul style="list-style-type: none"> About 40% of the area is planned as residential zones and 30% is planned as employment zones. 	<ul style="list-style-type: none"> The ratio of sites planned for residential use is less than 10%; sites for employment represent more than 60% of the area.
Property type	<ul style="list-style-type: none"> Higher percentage of sites in public property (> 20%) 50% of the area in private hands The ratio of area with a notable readiness of the owner for mobilization is 50% 	<ul style="list-style-type: none"> Only about 10 %of the area are in public ownership 80% of the area is in private hand. The ratio of area with clear owner's willingness for mobilization is 90%
State of planning	<ul style="list-style-type: none"> More than one third of the area is not in a mobilization process. 10% of the area is already prepared for development. 	<ul style="list-style-type: none"> Less than 10% of the area are not in a mobilization process There are no areas that could be immediately developed.
Problems	<ul style="list-style-type: none"> Soil contamination, demand, context is not a problem. Problematic infrastructure only in 10% of the area. 	<ul style="list-style-type: none"> Soil contamination is a problem in about 60%, demand in about 25% and context in about 10%. Infrastructure is problematic in about 20% of the area.

g. Characteristics of inbuilt sites and brown fields in the planning association Heidelberg-Mannheim (NV)

Aspect	Inbuilt sites	Brown fields
Planned land use	<ul style="list-style-type: none"> About 40% of the area is planned for residential zones; only 10% is planned as employment zones. 	<ul style="list-style-type: none"> Only 10% is planned for residential zones, about 20% as employment zones and more than 70% as mixed zones.
Property type	<ul style="list-style-type: none"> About 40% of the area is in private hand and 10% in municipal ownership. 	<ul style="list-style-type: none"> Public and private ownerships together make 20% of the area. The other 80% are previously public properties and mixed ownership (railway and post)
State of planning	<ul style="list-style-type: none"> One third of the area can be developed immediately. 	<ul style="list-style-type: none"> Almost no areas that can be immediately developed.
Problems	<ul style="list-style-type: none"> Soil contamination and demand are unproblematic. Infrastructure in about 10% of the area represents a problem. The urban context is a problem in about 20%. 	<ul style="list-style-type: none"> Soil contamination represents a problem in one third of the area. Demand, infrastructure and context are unproblematic.

From the comparison of the quantity and the quality of inner development land reserves in the two regions it is obvious that the structure of these reserves is completely different. Furthermore, the characteristics of the different types of inner reserves in the same region are also completely different. Consequently there are different types of problems that should be solved to mobilize these inner reserves. Experiences in land management show that for the successful mobilization of inner development reserves, there is a need for different approaches to deal with the different cases according to the local situation and the specific problems of each case. Hence, it is essential to define the set of planning instruments needed to deal with each specific problem situation.

V. The relationship between the planning system and the state of land reserves

We suggest in this paper that the differences between the states of land reserves in the two metropolitan areas can be attributed to differences in history and evolutions in legislation of land use planning in both countries. Municipalities in Switzerland and Germany, as federal countries, have a strong “planning autonomy”. They are autonomous and responsible for spatial planning in their territory according to the guidelines defined by higher planning levels (regional and federal planning authorities). In this chapter we will briefly introduce the basics of land use planning on the municipal level in both countries. Afterwards the main differences will be discussed.

a. Land use planning in Germany:

In Germany the Federal Building Code (*Baugesetzbuch*) sets the legal framework for land use planning on the municipal level. Germany follows a two-tier system for land use planning [Scholl et al. 2005].

- In a first stage, each municipality has to prepare the so-called “preparatory land use plan” (*Flächennutzungsplan*). Such a plan covers the entire territory of the municipality, setting the main lines for future urban development. It has a time span of approx. 15 years, but can be customized in parts if necessary. It is usually prepared on relatively rough scale (1: 10,000), so that it is not in the scale of land parcels. It obligates only public authorities that were involved in its preparation. Consequently, the preparatory plans have no consequences for private land owners and the municipality can change the type of use without having to compensate negative effects on land value.
- In the second stage, a legally-binding land-use plan (*Bebauungsplan*) is only set up for those parts of the municipality where new developments or fundamental changes are intended in the use of existing settlement structure. It defines the exact local statute of

the concerned parcels of land to which all building and development must conform. It defines the type of land use, the density, public and private spaces, building masses, etc.

It is usually prepared on scales between 1:5,000 1: 1,000

This two-tier land use planning system exists in Germany, in its first implementation, since the beginning of the 20th century when the forerunners of the preliminary land use plan were introduced to manage the growth of the cities [Heiligenthal 1929, Solinus 1936]. After World War II, the two tier land-use planning was kept. From 1960, the current regulations of land use came into effect. It can be stated that land use planning in two-tiers has a long tradition in Germany. While the preparatory land use plan sets the long term framework for spatial development, the legally binding land-use plan can be seen as an instrument which provides land for more or less short term demand. After the German reunification, different regulations were adopted in the planning legislations to incorporate private capital in the process of urban development.

b. Land use planning in Switzerland (Canton Basel Landschaft)

In Switzerland, the federal law on spatial planning sets only a framework for spatial planning. Detailed regulations are defined in the cantonal planning regulations. Since the 1940's the legal possibility to differentiate between settlement and non-settlement land was established in Switzerland [Huber 1999]. On the contrary to German land-use planning, the Swiss system is organized on a one-tier system. Its main instrument is the legally binding land-use plan which is updated every 15 years [Gilgen 2004]. Each municipality has to set-up a „zoning plan“ (*Zonenplan, Nutzungsplan*). It is legally-binding for public and private parties and is prepared in full detail for the entire area of the municipality at the scale of land parcels (1:500 - 1:15,000). Zoning an area for settlement purposes creates a certain duty for the municipality to build infrastructure, and in case of de-zoning, to compensate landowners. Additionally, it is also not possible for municipalities to buy the land before zoning it for settlement purposes, as buying and selling agricultural land is permitted only for farmers. Since few years ago there is a possibility for the municipalities to prepare a Municipal Structure Plan (*kommunaler Richtplan*) (1: 2,000 to 1:25,000). Such a plan covers the entire territory of the municipality and aims at setting the main framework for future urban development. It is only binding for public authorities. Such a plan still does not exist in each municipality. Recent developments in the planning jurisdiction in Switzerland seem react to these developments and to prevent further miss-development on this issue. Furthermore, instruments for the cooperation between private investors and public authorities in the mobilization of inner development reserves were also introduced in the last few years. However during the interview in the municipalities, it was clear that these instruments are still in the beginning of their implementation.

To summarize, it can be stated that the differences between Swiss and German jurisdiction are one of the major causes for the existence of more inner development potential in Switzerland than in Germany. Implementing different sets of instruments and processes for mobilizing these inner reserves and avoiding the emergence of more inbuilt land parcels in new zones, lead to a different amount and structure of each type of the above mentioned sites in the different regions. For example, implementing appropriate instruments for avoiding “land hoarding” in a specific region in the past would have today lead to the reduction of this type of land reserves.

VI. Conclusion: main issues for mobilising inner development reserves:

The question we raised at the beginning of this paper emphasised the relationship between the planning system and the state of inner development in the ring around core cities. By comparing the two case-study areas in two countries it was evident that some of the main differences can be attributed to the differences in the planning legal framework. For this conclusion we will focus mainly on three aspects that have general relevance for spatial development in other countries.

The first aspect that leads to the existence of many inner-development sites, as in BL, is the one-level land-use-planning. Each municipality can estimate land demand for the next fifteen years and declare it in the zoning plan. With this zoning plan, when the road-infrastructure is available, every land owner has the right during the period of this plan to develop his land. On the contrary, with a two-tier land-use planning, as in Germany, it is not possible to develop an area that is identified in the land-use plan without having the legally-binding land use plan for the specific area. This situation gives a higher level of regulation for the Germany municipalities, while in Swiss municipalities this possibility does not exist.

The second primary issue is attributed to a legal a co-ordination mechanism that allows each neighbouring municipality to comment the land-use plan of the other municipalities. While such a co-ordination mechanism, as in the German planning system, allows some sort of balance between the municipality development interests with that of other municipalities in the agglomeration, avoiding an oversupply of settlement areas. Hence, there is a need, beyond the legal aspects, to establish a culture of cooperation between different planning levels on the one hand, and cooperation between different entities on the same planning level on the other hand. In addition, a culture of cooperation among public agencies, private landowners and investors can help in mobilising inner development sites and controlling urban growth on green fields.

The last issue implies that beside the “hard” structural circumstances, such as settlement structure and infrastructure system, also “soft” factors, such as planning culture and experience in the authorities concerned; have to be considered in defining the suitable approach for mobilization. Furthermore, there are non-planning sets of laws that influence urban development directly or indirectly.

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