Chapter 12
Urban Resilience and Polycentricity: The Case of the Stockholm Urban Agglomeration

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12.1 Introduction

This chapter explores the practices of implementing a polycentric strategy in the Stockholm urban agglomeration. The Stockholm case has been chosen to illustrate the need for a broadening of the understanding of resilience in actual land-use planning to a state in which the governance system can be viewed as a resilient structure that is flexible and adaptable to rapid changes at the city-regional level.

It is argued that when changing the scale of inquiry, it is beneficial to have a different empirical focus, that is, when evaluating resilience on a city-regional scale, it is more useful to grasp the resilience of such structures and their inherent dynamics and processes than the individual instruments applied to improve the resilience at a local level. This is partly based on the claim that a well-functioning territorial governance system is a prerequisite for actual resilient land-use planning for the whole city-region (in this case, the urban agglomeration of Stockholm) but also that the structure of the governance system should itself contain attributes that characterise urban resilience in a more dynamic and process-related way, namely, adaptability, transformability and connectivity. Thus, this case study analyses the resilience of a governance system at a city-regional level, and not the resilience of actual land-use changes at a local level.

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Urban resilience is defined here as an established type of operating governance regime (with various modes and mechanisms) that integrates a high degree of adaptive and strategic capacity to manage different socio-economic, ecological and spatial dynamics in a sustainable manner. In this light, this chapter discusses the experiences and learning processes of planners at a local and regional level when applying and following up on the strategic concept of polycentricity in the Stockholm region since the idea was first introduced in 2001. It is argued that the application of this concept can be considered as a major response to sustainable planning to manage, from a European perspective, notable high growth dynamics in the Stockholm urban agglomeration.

12.2   Visiting Stockholm City Region

When discussing spatial planning and development in the Stockholm urban agglomeration, one needs to mention the 26 municipalities and their individual municipal plans, drawn up by the so-called Stockholm County and the Office of Regional Growth, Environment and Planning (up to January 2011 named the Office of Regional Planning). The office has the mandate to develop nonbinding regional plans that are to be adopted by the County Council (see details in Chap. 7). These plans are based on several stages of negotiations with the participation of all municipalities and other relevant stakeholders and thus are consensual in regard to specific city-regional development goals. This kind of indicative regional planning is unique to Sweden – nevertheless, one should bear in mind that there are only a few examples of a "regional planning approach" throughout the country (Hårsman and Rader Olsson 2003). In the current plan for 2010, several long-term strategies for land use, infrastructure, economic development and environmental protection are incorporated, which makes it a real cross-sectoral comprehensive development programme for the Stockholm region. However, the municipalities are by far the strongest player in Swedish spatial planning, since their "planning monopoly" is relatively far-reaching when compared to other countries in Europe.

Stockholm's urban fabric has spread outwards over the centuries from the Old Town, at a ridge between the Lake Mälaren and the Baltic Sea, with clearly identifiable "annual rings" where development has jumped over to the "next island" and/or next municipality. Nevertheless, the Stockholm urban agglomeration is still marked, both morphologically and functionally, by a rather monocentric territorial layout, which is basically shaped by the inner city of Stockholm and a number of neighbouring dense urban areas with a relatively high centrality in terms of workplaces, such as Solna, Sundbyberg and Nacka (Fig. 12.1).

As the figure above highlights, the urban agglomeration's topography is made up of several islands and the bodies of water between them. This specific morphology of the physical environment is thus one major reason for both the concentration of population and the transport challenges, since distances are simply longer and the basic transport infrastructure is extremely costly to build, having to scale the rocks. In addition, it is very sensitive to disturbances such as climate change.
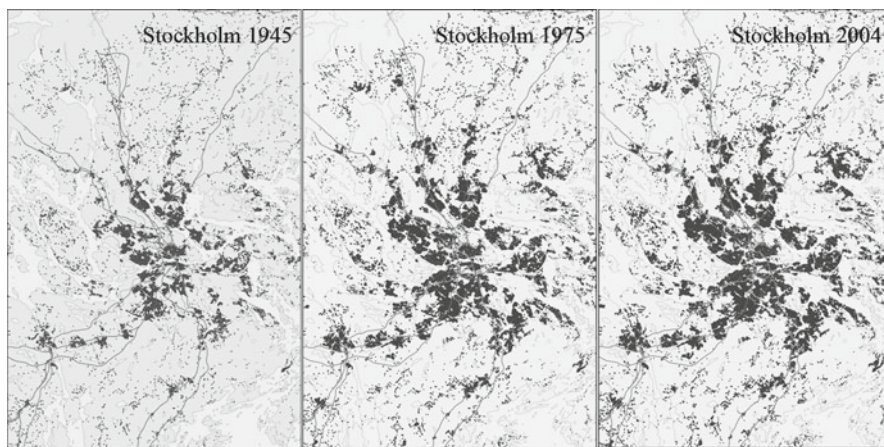
Fig. 12.1 A rough sketch of Stockholm's urban fabric 1945, 1975 and 2004 (Source: Lantmäteriet 2011)

12.2.1   A Fast Growing City Region

Although the net migration between the city of Stockholm and the rest of Sweden was negative at the beginning of the 1990s, its development has turned around so that the population has increased by 13% from 1990 to 2002 (compared to 4% for the whole country), which corresponds to a total of 200,000 people. If it were not for foreign immigrants, however, the number of inhabitants would have decreased in this period (Hermelin 2004).

Since then, the population has increased relatively quickly not only in the city of Stockholm but also in particular in the entire Stockholm County, with an annual growth rate of 30,000 inhabitants per year – 3.5% higher than the rest of the country. At the end of 2010, the population of Stockholm County was 2.054 million, while the city of Stockholm counted 847,000 inhabitants. The latest forecasts predict that in 2030 the population will reach 2.4 million inhabitants (maybe even higher at the current rate of growth). Besides the ongoing (in-)migration to Stockholm County (from other parts of Sweden, but also from abroad), a further reason for this population gain is the current baby boom (around 2.1 children per woman in Stockholm County) (Office of Regional Planning 2010).

12.2.2   The Planning Response: Polycentricity and Densification

The future ambitions in terms of land development planning for the urban agglomeration of Stockholm can be easily read from the recently adopted regional plan, as well as the 2010 adopted comprehensive plan of the Stockholm Municipality as the

uncontested main centre and, finally, at least to some extent, from Vision Stockholm 2030, elaborated also by the city of Stockholm (see Chap. 7). For many decades, the interplay between the enlarging housing and labour markets and the improvement of the regional transport system have been the most central issues in the regional planning discourse. According to the Office of Regional Growth, Environment and Planning, the transport system in the Stockholm region is operating close to its capacity, road traffic having increased by 80% since 1970, while the road surface area has only increased by between 10 and 20% (Office of Regional Planning and Urban Transportation 2001). Examples of improvements to the transport infrastructure currently being debated are an extension of the fast tramways in the near future and a third track for the north–south light railway through the city, which is currently under construction (Stahre 2007).

The credo of the Stockholm municipal plan (also adopted in 2010) is to further increase the density of the urban landscape in order to cope with the high demand for, for example, new offices, hotels and other facilities in the city centre, and for housing in the nearby areas and suburbs while at the same time maintaining the urban qualities and the city's attractiveness (Stockholm Stad 2010). In recent years, this has inspired local debate on the pros and cons of high-rise buildings in the city centre. The densification goal has raised arguments related to the use of the green wedges. It will be interesting to see how this will be carried out in practice, being a modest collision with the city plan of 1999, which emphasised that non-built land in the city should be conserved (Stockholm Stad 1999).

The new Stockholm regional plan of 2010 underlines the approach of its forerunner, the Regional Development Plan from 2001, which introduced for the very first time the concept of polycentricity at a city-regional level. The emerging polycentric shape is to be structured by eight so-called regional urban cores located within a 15–40 km radius of the central core (i.e. the inner city of Stockholm and some adjacent central urban areas). Such "cores" shall serve as "territorial anchors" to concentrate land developments, as well as to accommodate distinct urban functions (see Fig. 12.2). In the latest regional plan, this normative concept has been renewed to follow up the intended gradual transformation of a rather monocentric urban configuration into a polycentric one.

The major rationale behind this can be described as follows: The central core has to be released from the strong pressure within a growing urban agglomeration. Hence, these eight (formerly seven in the regional plan of 2001) "regional urban cores" shall help to create a robust polycentric structure supported by a corresponding transport system until 2030. The development of the selected regional urban cores shall be promoted by distinct investments into the transport system, by increasing the density and compactness of energy efficient settlements, by improving the urban environment, by creating competitive milieus and, finally, by providing them with distinct urban functions (such as homes for more diversified work places, higher education and health-care facilities, better urban flair through cultural and gastronomic provisions) (Office of Regional Planning and Urban Transportation 2009; Office of Regional Planning 2010). It remains to be seen if such a planning concept helps to combat urban sprawl, as it is claimed that these regional urban cores have also potential for further intensification.

In summary, the strong dynamics of future urban development, and thus land consumption, are well reflected in these policy documents, as also discussed in

Arlanda - Märsta

Täby centrum-Arninge

Kista-Sollentuna-Häggvik

Barkarby-Jakobsberg

Centrala regionkärnan

Kungens kurva-Skärholmen

Flemingsberg

Haninge centrum

Södertälje

0 5 10 15 20km

ⓒ Lantmäteriet Gävle 2011, Medgivande I 2011/0729

Fig. 12.2 The intended polycentric territorial layout in Stockholm County: one 'central' and eight 'regional' urban cores (Source: By courtesy of the Office of Regional Growth, Environment and Planning)

Chap. 7. It is obvious that the pace of growth in the Stockholm urban agglomeration necessitates a wide regional perspective to land-use development, as well as cooperation beyond the administrative borders, if a robust response to such challenges is to be found. It became clear from the case study analysis that the intended creation of a (modest) polycentric urban structure at the level of the Stockholm urban agglomeration was a key concept, offering a clear understanding of the pressure on land use on the one hand, and the high degree of adaptive and strategic capacity to manage socio-economic, ecological and spatial dynamics in a sustainable manner in the Stockholm region on the other.

12.3 Urban Resilience and Polycentricity: Setting the Scene for the Empirical Study

This study aims to explore the practices and capacities of the polycentric development strategy being developed for the Stockholm urban agglomeration since 2001.

As discussed in Chap. 3, the "urban resilience" approach conceptualises cities (or city regions) as complex adaptive social-ecological systems and develops ways of assessing urban vulnerability and identifying principles and opportunities so as to contribute to resilience in "urban" systems. Here, the level of adaptability and transformability is inevitably dependent on the ability to self-organise and learn, as major social components within such socioecological/urban systems (Carpenter et al. 2001). In this sense, according to Gupta et al. (2010), "adaptive institutions" can encourage learning among the actors by questioning the socially embedded ideologies, frames, assumptions, roles, rules and procedures that dominate problem-solving efforts. Maru (2010) notes in this context while the capacity to self-organise and adapt are shared properties of social (and ecological) systems, "learning" is an essential human (and thus individual) capability.

Having emphasised this, in this case study, urban resilience is considered to be an established type of operating governance regime (with various modes and mechanisms) that integrates a high degree of adaptive and strategic capacity to manage different socio-economic, ecological and spatial dynamics in a sustainable manner. More concretely, the intention has been to explore to what extent the normative concept of polycentricity at the regional level, as introduced in 2001 and followed up in 2010, can be considered as a useful tool for establishing a spatial system that is less vulnerable to future disturbances, and that is better equipped to manage urban dynamics.

As already touched upon in Chap. 4, it is argued that, based on further investigations, the concept of polycentricity demands a high level of systemic understanding, in that one needs to delve deeper into the character of such urban configurations today and the logics and inherent processes of spatial planning of the urban agglomeration and its different "cores"/"centres" in particular (Schmitt 2010). Therefore, this analysis is focused upon the understandings, challenges and disconnections of this strategic policy approach (to promote and even create a more polycentric urban agglomeration) since 2001, as perceived by urban planners.

This research addresses three dimensions of urban resilience. The first one is the dimension of *transformability,* or the extent to which planners perceive physical changes in the land-use structure, that is, in making the Stockholm urban agglomeration more polycentric (here in particular regarding its morphological territorial layout). However, in contrast to Walker et al. (2004), the intention here is not to talk about the creation of a fundamentally new system, as the current urban system is still tenable (even though coming increasingly under pressure) and could certainly not be replaced entirely as can be the case in ecological systems.

Secondly, the dimension of *connectivity* is addressed, which is the degree to which nodes of a network are directly linked with each other. In this study, such nodes are represented by the case areas (the six regional urban cores and the central one) and the linkages of their (potentially improved) accessibility, based on the observations of urban planners. From a more functional polycentric perspective, another issue would be how far these cores are able to develop complementary profiles in order to develop synergies at the city-regional level (Meijers 2007). In implementing this, not only is the physical dimension decisive but also, from a more resilient perspective, the relationships between actors and organisations. In the case study, the tension between cooperation and competition among the regional urban cores that are in focus here (see below) has been discussed, with particular attention paid to the fact that most of the regional urban cores cover more than one municipality.

In addition, the "adaptive capacity" of the existing governance regime (dimension *adaptability*) at the local and city-regional level within the Stockholm urban agglomeration has been analysed. Here, the focus is on the factual organisational and institutional changes (i.e. in terms of new routines, patterns of [inter]action, involvement and participation) as well as individual appraisals (in terms of learning curves, perception and awareness) by applying the concept of polycentricity in the urban agglomeration of Stockholm. Also addressed is the need for understanding among the six regional urban cores in focus here, as an emergent system that requires multilevel coordination, which is another attribute of the required adaptive capacity. This is particularly relevant between the local and the city-regional authorities, as well as at the inter-municipal level, since, as stated above, a number of cores are "owned" by more than one municipality.

The empirical research has been directed at the closest six out of the eight designated regional urban cores and, at least to some extent, their relationship to the central core (see Fig. 12.2). The remaining two regional urban cores, Södertälje to the south and Arlanda-Märsta to the north, were not covered, since the latter has been only designated in the 2010 regional plan and is thus at a very early stage in its planning and implementation phase; and Södertälje, on the other hand, can be considered as an independent city in the greater Stockholm region with rather different characteristics and needs in the planning process.

In summary, these seven case areas help to analyse ex post the applicability of the concept of polycentricity since 2001 and may help in making speculations for the future in this respect. The case areas and their criss-cross relationships were assessed in terms of their conformance with the underlying objectives of the regional development plan of 2001 and the recently adopted plan of 2010.

The empirical research has been conducted in two stages: First, the regional and municipal plans were analysed to assess whether there is coherence between the intentions of the regional plan and those at the municipal level, and second, a number of interviews were conducted with planners responsible for the development of the "cores" in the municipalities and with planners responsible for the overall polycentric development of Stockholm at the city-regional level, from which it can be deduced how far they see resilience as an integral dimension of their planning approach. Since most of the regional urban cores cross municipal borders and thus are to be planned between two and even three municipalities, a total of 12 planners have been interviewed.

12.4 Findings of the Empirical Research

From the outset, the concept of polycentricity was received positively by our interviewees as it, unsurprisingly, brings those municipalities that own a regional urban core to an advanced position when compared to others that do not. However, during the course of the research, it became clear that not much has happened in the Stockholm region in regard to physical changes ((Office of Regional Planning and Urban Transportation 2009), interviews held in 2010). The most concrete results were rather to be found in changes of perceptions and routines. Generally speaking, the designation of regional urban cores in the regional plan of 2001 (Office of Regional Planning and Urban Transportation 2001) has to some extent been a driver of planning practices and their understandings. In other words, the interviewees were hesitant to judge to what extent the planning concept had helped guide the material outcomes of urban development since 2001.

First to be mentioned is that the concept has been integrated formally into most of the municipal plans, and some municipalities have even deepened their planning ambitions with additional development plans for their own particular areas. Also, it has resulted in many innovations regarding the self-image of the municipalities concerned, their awareness of the "city-regional" dimension and how far "their" regional urban cores are related to others. In addition, it has helped to mobilise some "informal planning practices" such as inter-municipal cooperation and the development of professional networks within the Stockholm region. How far the governance system is able to create an adaptive and strategic capacity to manage existing and unexpected socio-economic, ecological and spatial dynamics (viz., a resilient governance regime) is explored, as mentioned above, with the help of three attributes of resilience in the coming sections of this chapter.

12.4.1 Adaptability

Working together with other municipalities in the regional urban core is a novel approach in the Stockholm urban agglomeration that is considered by planners as providing a valuable opportunity to adapt to the current changes and dynamics.

Cooperation with other cores is based on informal meetings and discussions, which are mainly facilitated by the Office of Regional Growth, Environment and Planning; however, the need for a more formal platform to increase the intensity of cooperation has been emphasised. Concerning new tasks or the need for new individual capacities, two of the regional urban cores have employed planners specialised in city-regional issues, while another has employed a co-coordinator to work with the two involved municipalities as well as the private sector in the wider region, and a third has employed a development director, which can in part be seen as a consequence of the application of this concept. The remaining municipalities feel that they have sufficiently dealt with the new tasks within the existing planning offices; however, most of them state that now there is a lot more cross-sectoral cooperation within the municipality.

In addition, the concept of polycentricity has strengthened a systemic understanding of the urban agglomeration of Stockholm through an extension and deepening of the municipal planners' mental maps of the region. Here it has been assessed positively by the interviewed urban planners that the Office of Regional Growth, Environment and Planning has acted like a spider in a web, providing inspiring analyses and background material, but has also, maybe even more importantly, organised forums at which the issues at hand can be discussed with planners from other cores. The Office of Regional Growth, Environment and Planning itself considers this work with polycentricity as an eye-opener for their work in general, since they have recognised the need for an active backing of the objectives indicated in the regional plan. In former times, there was rather a tendency to sit back once a regional plan had been approved – but now the focus has changed to become more actively involved as an informant, but also partly as a moderator, in the application process.

Since it is a long-term strategy, there have been indications that it has also affected the interplay between professional planners and politicians, as the latter are not used to thinking in periods of 20 years or so. Moreover, it has emphasised the need to coordinate communication processes carefully, as the concept is rather challenging and necessitates more effort to depict the inherent objectives that are associated with it.

12.4.2 Transformability

As indicated above, the polycentric structure has been incorporated widely into the municipal plans for each of the regional urban cores. However, given the recent implementation of these plans, few physical changes are evident at this point. One main obstacle, which has been mentioned several times, is the lack of financial resources for corresponding urban projects. Besides this, the process of implementing new ideas within the factual practices of municipal planning also takes time. A general line of argument is that the regional plan from 2001 paved the way for thinking in terms of being a regional urban core, getting the politicians on board and expressing the idea accordingly in strategic municipal plans. As a consequence of the process to develop the latest regional plan (see Office of Regional Planning 2010) and the more specific ideas expressed within it, the "physical work" can now begin.

Although this might be delayed due to the latest economic crisis, the planning framework is prepared for further utilisation once private and public investments become possible again.

In this light, the concept of polycentricity has been applied so far in terms of handful concrete local strategies with the main emphasis being on mixed land-use development, combinations of work places and quality of life and the building of shops close to commuter railway stations. Additionally, the local population should have access to educational facilities and be able to make use of other services that are specific for each area (medical, IT etc.). In terms of the social dimension, the regional urban cores are planned to offer different types of housing for different groups/classes of society (i.e. different apartments for students and families). In other words, the aim has been to diversify the housing types, which is believed will help diversify social groups and thus combat segregation.

12.4.3 Connectivity

Although in terms of physical connectivity the regional urban cores are in general considered as having good accessibility (both in regard to public and individual transport means), addressing the weak connectivity between them seems to be the biggest challenge. The urban agglomeration of Stockholm is still characterised by a radial structure with a clear lack of robust criss-cross connections between the designated regional urban cores, meaning that the private car is the most dominant means of transport. Secondly, there is a clear mismatch between the planning ambitions raised in the regional plan (and advocated by the Office of Regional Growth, Environment and Planning) and the regional public transport agency (Storstockholms Lokaltrafik, SL). Criticisms have been raised that the latter focuses too strongly on improving its services for accessibility to the city of Stockholm and its close neighbourhoods, instead of recognising the growing demand and potentials of the regional urban cores, which are considered "further outside" in this respect. In other words, it is argued that the regional public transport agency is still rooted in a more traditional way of thinking, with particular focus on linking the city centre with its nearby suburbs instead of strengthening the "emerging nodes" (as represented by the regional urban cores concept) at a larger geographic scale.

With regard to the complementarities of the functional and economic profiles within this emerging polycentric system, one can say that all cores are perceived as having specific profiles. However, if they are all successful in developing mixed housing, good accessibility, diverse labour markets, education opportunities and distinct urban qualities (e.g. as regards so-called "evening economies"), the planners admit that the cores may become very similar, resulting in greater inter-competition. Again, the need for inter-municipal cooperation and coordination has been emphasised here, although admitting that there is already strong competition among the regional urban cores to increase the demand for further housing constructions. It has been declared that informal networking – in particular through the use of the

Office of Regional Growth, Environment and Planning as a platform – is far from sufficient for developing any mutually agreed concepts, for instance, due to the lack of political backing for such strategic arrangements at the level of the Stockholm urban agglomeration.

12.5 Concluding Remarks

The process to develop the new regional development plan for 2010 was, according to the interviewed planners, felt to be more interactive and dialogue oriented than the regional development plan adopted in 2001. Obviously the process has ensured that the new plan's objectives have been further anchored in the application of the concept of polycentricity at the municipal level. The further implementation of the aims of the regional development plan, in terms, for instance, of more essential land-use changes, is, however, a longer process.

Most municipalities that own a so-called regional urban core share the opinion that the 2001 regional development plan was primarily useful in introducing this concept to the municipal politicians and in convincing them that these cores should be perceived from a more city-regional perspective. However, the 2001 regional development plan was also useful, as noted by the interviewees, in that it kick-started inter-sectoral thinking in the planning departments and launched the establishment of the planners' networks needed to develop the regional cores across municipal borders.

Another conclusion to be drawn when comparing the reflected practices of the interviewed municipal planners is that the Office of Regional Growth, Environment and Planning has become increasingly more aware of what is expected of them in terms of how the regional urban cores should develop, taking into account socio-economic functions, accessibility, business profiles or attractive locations for housing. In this respect, the Office of Regional Growth, Environment and Planning has been quite efficient, providing analyses on central themes, conducting workshops and seminars, and as a kind of sounding board for the municipal planners. However, this sense of support is not unambiguous since a number of municipal planners still seem to be a little confused as to how they are supposed to develop their core.

One general criticism of the new regional plan has been that the number of cores is too high; however, such criticisms may actually be a symptom of the global economic crisis and the resulting lack of investments, significantly curtailing their ability to develop the regional cores as desired. Another criterion for the development of the cores is the expansion or establishment of new infrastructure, particularly improvements to public transport to and from the cores. All planners state that this is essential if the regional cores are to become more attractive on a regional scale, for commuters, as it would allow them to access new work places, and also for the existing residents and businesses. This argument, however, highlights a problem with the implementation of the regional plan's vision of a polycentric Stockholm region. The regional transportation agency does not feel obliged to support the

polycentric regional development, which is due to the lack of any formal power in the regional development plan to direct such powerful stakeholders in terms of physical planning.

As regards a resilient perspective, it can be concluded that the concept of polycentricity demands a high level of systemic understanding of the Stockholm city region in general, and its different regional urban cores in particular. Cooperation and coordination seem to be the key issues here (between municipalities and between municipalities and the city-regional level, which is represented by the Office of Regional Growth, Environment and Planning and the County Council). The concept is tied to advances in particular in public transport facilities, which would improve the attractiveness of the regional urban cores. Internally, in some of the municipalities, the concept is used as a tool to gain the attention of politicians by advocating the idea of developing the municipality in line with this concept within their own administration. With regard to the governance structures of the Stockholm urban agglomeration, it has been argued that the work carried out within the regional urban cores has raised awareness among planners and politicians of the benefits and potentials of cooperating with neighbouring municipalities. However, this has resulted in very different expressions, with some regional urban cores developing common plans, while others maintain the concept within individual municipal plans that are then coordinated within so-called inter-municipal core working groups.

Nevertheless, the application of the concept of polycentricity by developing so-called regional urban cores has been highly appreciated by the interviewed municipal planners, in that it allows them to cope with the current and future anticipated growth dynamics. This seems to have been a meaningful response, reconciling the expected tensions in terms of the economic and social, but also environmental changes associated with urban growth in the urban agglomeration of Stockholm. In this vein, it has been argued that the concept can help to increase the city region's robustness to contemporary, but also to such future challenges as economic crises, the dying out of specific sectors, urban sprawl, social segregation, climate change mitigation or further environmental degradation. Apparently, the concept is being seen as a blueprint for many issues that are linked to urban change. On the other hand, it has been acknowledged that the concept of polycentricity requires some considerable learning on the side of the urban planners and other stakeholders. In particular, the adaptability of the current governance regime is challenged, since the further application of the concept demands a high level of individual and institutional capacity, cooperation and coordination between different, and partly changing, stakeholders within, and beyond, the municipality.

As a methodological reflection, it should be noted that the concept of urban resilience has been particularly helpful in enriching this analysis, based on its focus on the institutional responses and individual reflections related to this (until 2001) hitherto unknown planning concept of polycentricity. The concept requires a more systematic understanding of spatial planning and its inherent dynamics and logics in the Stockholm region, since it challenges in a very pronounced way the interplay between the six regional urban cores and the central core while also revealing the agendas and rationales of different planners and their ability to learn and adapt accordingly.

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