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Urban Planning (ISSN: 2183–7635)
2022, Volume 7, Issue 3, Pages 159–171
https://doi.org/10.17645/up.v7i3.5502

Article

Developing Polycentricity to Shape Resilient Metropolitan Structures: The Case of the Gdansk–Gdynia–Sopot Metropolitan Area

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Submitted: 8 March 2022 | Accepted: 21 June 2022 | Published: 29 July 2022

Abstract

Making the metropolitan area resilient, in many cases, calls for amending its spatial structures. This may take various forms, including both reshaping the metropolitan core and redeveloping the entire regional network of cities and centres, making them part of a coherent structure. The latter strategy is associated with reinforcing secondary urban centres as well as shaping new connections between them. In this case, the term "resilience" is associated not only with environmental aspects but also with socio-economic and spatial ones. Shaping resilient metropolitan areas is therefore associated with complex planning and development undertakings, in many cases spread over decades. This approach was proven to be correct during the recent Covid-19 pandemic, which spurred this process of rethinking metropolitan structures and led to generating new approaches to metropolitan development and planning. The article focuses on the Gdansk–Gdynia–Sopot Metropolitan Area, which is potentially the largest polycentric metropolitan area on the southern shore of the Baltic Sea. In this case, polycentricity has a twofold origin—it includes centres with a shaped spatial structure that come closer together as they develop and diffuse suburban structure, the shaping of which remains one of the main challenges of the regional spatial policy. The authors look at both concepts and tools associated with reshaping this metropolitan centre. In particular, they analyse the effects of using both obligatory and optional planning tools which are available according to Polish law. They also try to answer the question of under what conditions a polycentric structure has a chance to become a resistant structure.

Keywords

Gdansk Metropolitan Area; metropolitan planning; Poland; polycentrism; resilience; Tri-City; urban planning

Issue

This article is part of the issue "The Resilient Metropolis: Planning in an Era of Decentralization" edited by Thomas J. Vicino (Northeastern University).

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1. Introduction

The evolution of the structure of metropolitan areas is related both to the conditions specific to a given area, as well as to the application (or the lack) of specific planning ideas and doctrines. The theories developed at the beginning of the 20th century aimed at responding to the challenges related to the rapid increase of population within metropolises. The Covid-19 pandemic and the development of remote work technologies have become the cause of the latest changes. Climate change and the pursuit of creating sustainable and resilient urban structures also play an important role. These questions induce city authorities and planners to rethink how large systems of metropolitan centres respond to contemporary needs (Jenks & Jones, 2010). Therefore, demands to verify the spatial policies of cities and metropolitan areas start to arise. Striving to keep the possibility of using the infrastructure and combining it with what a metropolitan centre can offer, while also limiting the sensitivity of its inhabitants and users to random events, one may find the answer in the idea of polycentricity of these areas.

As a result, the entire area may become more resilient not only concerning environmental aspects but also to socio-economic and spatial ones (Eraydin & Tasan-Kok, 2013). However, the need to build resilience is confronted there with the need to cope with the individual choices of local stakeholders which influence the process of development and transformation of urban structures. Thus, it is possible to identify the need for a new approach in the context of spatial development and management, which would be directed at the process of building the resilience of metropolitan areas (Kenworthy, 2016).

To present the large scope of issues associated with these processes, the authors decided to focus on a selected case study: the Gdansk–Sopot–Gdynia Metropolitan Area. It is the only urban complex in Poland with a metropolitan rank and a historically determined polycentric structure.

2. Theoretical Framework

2.1. Resilience of Urban Structures in Spatial Planning

The concept of resilience in spatial planning appeared for the first time in a conceptual framework describing models of changes in the structure and functions of ecological systems (Holling, 1973). Later, the concept of resilience became popular among social researchers and was reflected in attempts to investigate links between socio-ecological systems (Armitage & Johnson, 2006; Berkes & Folke, 1998; Folke et al., 2003; Walker et al., 2006), demographic trends (Bourne, 1995), institutional and organisational solutions (Anderies et al., 2004; Holling & Gunderson, 2002), or natural disasters, failures, and acts of terrorism (Godschalk, 2003). In recent years, the concept of resilience has often been associated with other phenomena that partially meet the criteria of a disaster—sensitivity to climate change and adaptation to its effects, and the ability to meet social needs in a time of pandemic (see, e.g., Han et al., 2021; Kajdanek, 2020).

In the context of planning for metropolitan areas, resilience is associated with dealing with various spatial situations, including areas facing growth, decline, or regeneration processes. These processes—also reflecting the classical model of the evolution of urban structures which includes urbanisation, suburbanisation, de-urbanisation, and ultimately re-urbanisation as the final recovery process—may be associated with the uneven and imbalanced process of transformation of the entire area. At the same time, these processes of urban transformation depend also on the type of planning instruments that are being used. In this respect, we can observe the diminishing importance of the planning regulations and the growing role of informal plans, allowing for less formal (but, paradoxically, often more effective) coordination of development processes within individual cities and municipalities. This entails a shift from command-and-control-based systems toward collaboration. At the same time, the "integrated planning approach" replaces "branch approaches."

Thus, for this study, building resilience is understood as the coordination of spatial processes aimed at creating a metropolitan structure consisting of a crystallised network of centres providing access to housing, public space and space for ecosystem services, and rationalising transport services within a defined area whose spatial policy is created by multiple actors.

2.2. Polycentricity and Metropolitan Potential

The term polycentricity in relation to settlement networks can be analysed at different scales (see European Commission, 1999; Hall & Pain, 2006; Meijers, 2005). The authors have chosen to capture the urban region in scope.

Polycentric systems usually have their origins in the history of urbanisation of a given area. The genesis of such systems was first seen in the primary competitiveness of settlements, which with time were subordinated to one administration (e.g., the Hungarian Budapest; Słoń, 2010). The concept of the "garden city" (Howard, 1902), on the other hand, gave rise to polycentricity aimed at improving living conditions, which in the mid-20th century resulted in the planning of several urban regions, including London and Copenhagen (see Figure 1). Similar assumptions also guided the not fully implemented project of Functional Warsaw in the interwar period. In the case of polycentric metropolises, Randstad Holland is the leading example (Meijers, 2005).

Figure 1. Copenhagen Fingerplan, 1947. Source: Norman (2022).

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Today, however, the creation of polycentric centres is much more often caused by rapid urbanisation, including the confluence of urban structures and the development of suburbs (Bartosiewicz & Marcinczak, 2022).

Nowadays, one of the aspects of polycentricity is a conscious policy leading to the cooperation of centres against global competition, which may give polycentric metropolises an advantage over monocentric and diffuse ones (Hall & Pain, 2006). Regardless of their genesis, the great limitations for the management and development of polycentric metropolises remain the same: fragmentation of local policies (Hall & Pain, 2006), coordination limitations of these policies (Schmitt, 2013; Sołtys, 2009), and struggle to find a leader position (Sagan, 2014; Szmytkowska, et al., 2021).

2.3. Polycentricity in Central and Eastern Europe

Polycentric development in Eastern Europe, although having its origins in pre-Second World War urbanism, is marked by the legacy of rapid urbanisation phases of the 20th century (cf. Hirt & Kovachev, 2018). In the socialist era (after 1945), despite the central position of economic and spatial planning, the main assumptions for the development of polycentric urban structures were similar to those found in Western Europe and North America, which was related to the high costs of moving between centres (Domański, 1997). Moreover, the shortages of both goods and financing hindered the implementation of the service programme, and it often turned out that the planned local and supra-local centres around larger cities could not fulfil their role. This changed to a certain extent only after the political transformation of 1989 (Markowski, 2004). Nowadays, a potential resident or company looks for a place based on its criteria of attractiveness. However, as a result of making these choices, the urban structure may be atomised and broken down into an "archipelago of enclaves" (Hajer & Reijndorp, 2001, p. 60). A simplified typology of these spaces may be based on the analysis of their inhabitants' social position. Here, one can mention spaces for the elite and middle class, suburbs for relatively well-off families with children, traditional working-class areas, and ghettos of exclusion (Marcuse & van Kempen, 2000).

Despite the awareness of this trend within the academic community (e.g., Bald, 2005; Barwińska-Małajowicz et al., 2006; Kołodziejski et al., 1999; Korcelli-Olejniczak, 2004; Śleszyński, 2007) and political activity related to building an economic position in metropolises (e.g., Adamowicz, 1993), adopting regulations sanctioning the planning of long-term resilient structures on a supra-local scale did not succeed in Poland. A certain ground for discussion on coordinating the development of polycentric centres was established only in 1999 when regional self-governments for *voivodships* (regions) and *poviats* (counties) were established. The appointment of new levels of local government was a continuation of the process of decentralising power, which in turn was one of the basic assumptions of the democratic transformation (Kulesza, 2000). While counties did not play a greater role as a platform for managing the development (Kwaśny, 2019), *voivodships* gained tools to influence the coordination of local development policies. They were assigned competencies in spatial planning, environmental protection, transportation, and labour market development, and above all, they played a significant role in the implementation of the European Union cohesion policy, which Poland would soon join.

2.4. Urbanisation Trends

Global urbanisation trends in Eastern European cities are shaped based on local specificity, depending on their historical and political circumstances. Despite the strong urbanisation trends visible in the 20th century, the presence of a market economy and decentralisation of the planning system after 1989 contributed to a rapid urban sprawl and an outflow of residents from city districts. The wave of suburbanisation at the turn of the 20th and 21st centuries was preceded by a period of urbanisation after regaining independence after the First World War and the construction of settlements of the socialist period, as well as radically different urbanisation of a post-socialist state (see Hirt & Kovachev, 2018). The first two phases were often associated with the formation of well-thought-out layouts of housing estates and polycentric systems developing in cities, while the last phase was dominated by suburbanisation (Lorens, 2005). On the other hand, in the case of polycentric systems, the phenomenon of building structures moving towards the city region was more common (Sporna & Krzysztofik, 2022). As a response to the outflow of inhabitants, various urban regeneration and revitalisation programmes were established. However, the processes of urban transformation have not completely stifled interest in living or running a business in the suburban zones.

2.5. The Impact of the Covid-19 Pandemic on the Functioning of the City

The Covid-19 pandemic is the most recent issue affecting the shaping of the structure of a polycentric metropolis. Its long-term impact on urban regions requires verification in the long term. The pandemic has already influenced the transition of many enterprises to remote work (Dingel & Neiman, 2020; Kaushik & Guleria, 2020) and thus reduced the need to move between different areas (Fatmi, 2020). Declarations of various entrepreneurs indicate that the experience of working remotely may contribute to reducing the demand for office space in a permanent manner (Colliers, 2021). Many researchers also indicate that the implementation of the compact city—a city in which it is possible to meet needs without moving between districts—can limit the risk related to movement (e.g., Alraouf, 2021). Another concept mentioned in this matter is the 15-minute city (e.g., Abdelfattah

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et al., 2022; Moreno et al., 2021), the basic assumption of which is the possibility of satisfying needs in the place of residence, but without introducing high-density buildings. The experience also shows that lockdowns increase the interest in green urban spaces, even after the reopening of indoor meeting places (Venter et al., 2021).

3. Methodology

For this research, building the resilience of a polycentric metropolis is assumed to be primarily a political process, requiring the development of mechanisms for effective and deliberate multi-level governance. The authors try to answer the question of how a resilient metropolitan organism can be formed in the context of specific development trends in different urban areas. This applies especially to the use of spatial policy instruments. In addition, the authors also try to present the dynamics of the process of shaping the polycentric metropolitan region in the example of the Gdansk–Sopot–Gdynia (also called the Tri-City) Metropolitan Area. To do so, they draw a timetable of the process embedded in the description of the evolution of the legislation and the appearance of the development funds.

Considering the theoretical foundations discussed above, after introducing the historical determinants of the polycentricity of the urban region of the Tri-City, the authors analyse changes that are taking place in the municipalities of the metropolitan area and its surroundings. These analyses include both quantitative (i.e., coverage of the municipalities/areas by local spatial development plans, which is considered as one of the main factors deciding the effectiveness of the spatial policy at the municipal level in Poland; population; size of residential areas and public green areas) and qualitative data (i.e., the presence of a shaped public space with a service infrastructure; access to city rail stations). Also, the authors focus on the usage of specific planning instruments and results of undertaken transformation processes. Special emphasis is given here to the presence of statutory planning documents and the above-mentioned coverage of the urban areas by planning documents. This is because local spatial development plans are statutory documents that define how areas within a municipality are to be developed. In Polish legal conditions, in the absence of such plans, individual plots of land can be developed based on special planning permits, frequently resulting in urban chaos and the destruction of the most valuable environmental and landscape complexes (Nowak et al., 2022).

The relationship between changes in legislation and planning documents and the effects of spatial policy cannot be captured in a specific or short time horizon. To illustrate the change, the authors decided to use data from the Polish Central Statistical Office available over the longest available time horizon.

Moreover, the authors look at supra-local activities aimed at integration and coordination of the development of the metropolitan area. For this purpose, legal acts, planning documents, policies, and key investments influencing spatial development were analysed as well as key investment projects of regional importance which served as catalysts of local and regional development.

The introduction of self-governing regions in 1999 and the adaptation of the binding act on spatial planning and development in 2003 are considered not only significant time intervals but at the same time the starting points for the conducted analysis. However, the case study also includes the key sources of the current conditions that occurred earlier, as well as the timing of available data. The spatial scope of the analysis is in line with the adopted Gdansk–Gdynia–Sopot Metropolitan Area Spatial Development Plan up to the year 2030.

4. Case Study: The Specificity of the Polycentricity of the Tri-City Metropolis

Despite the name, the Gdansk–Sopot–Gdynia Metropolitan Area is a bipolar system, the main hubs of which are the harbour and service centres of Gdansk and Gdynia (Meijers et al., 2014). The population of the third major city, Sopot, is similar to numerous other municipalities functionally related to the core of the metropolitan area. However, due to historic reasons, its role and position in the metropolitan area are considered greater than other similar-sized cities.

For analyses based on public statistical data, a delimitation was adopted following the 2017 Pomorskie Voivodeship Spatial Development Plan, within which the following zones are distinguished: the core of the metropolitan area, municipalities of the functional surroundings of this centre (constituting the functional zone of the metropolitan area), and the potential functional zone of the metropolitan area (see Figure 2).

4.1. Analysis: History to Present Day

The Tri-City area is a result of political changes after the end of the First World War, when—in close vicinity to the Free City of Gdansk—the Polish government decided to establish a new harbour and city—Gdynia (Krośnicka et al., 2021). After the Second World War, the development of the Tri-City as one organism became a natural consequence of the war devastation that was suffered especially in Gdansk (Stankiewicz & Szermer, 1959). The spine of this organism was constituted by an urban railway system and a linear layout of urban structures, stretching from Wejherowo to Tczew.

The situation changed as a result of the construction of the Tri-City bypass, which started in 1973 west from the existing urban complex. It gave rise to the urbanisation of former villages located on the border of the plateau and the forest strip covering it. In the 1980s, new large-scale housing estates were also planned and partly developed in former agricultural areas in the southern parts of Gdansk and western parts of Gdynia. Following

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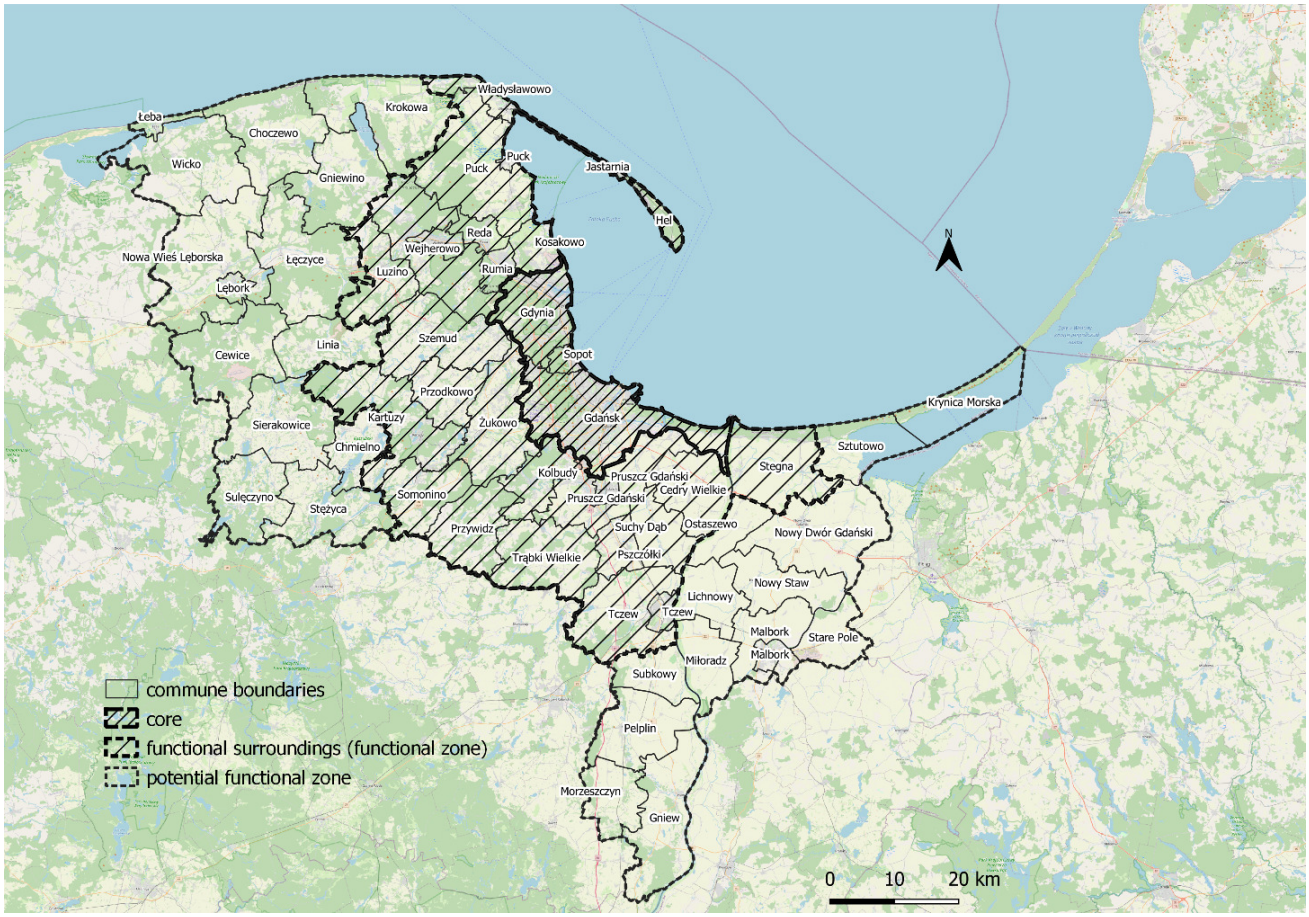

Figure 2. Metropolis structure. Source: Authors' drawing based on Pomorskie Biuro Planowania Regionalnego (2016) with Open Street Map.

the political changes after 1989, the new development areas were taken over by private developers offering new housing complexes. This resulted in changes within the older parts of the urban agglomeration (depopulation, degradation).

4.2. Public Policy Instruments

Within the Polish political system, the main instrument used in the process of shaping space is spatial planning, regulated by an appropriate act. It is organised at the national, regional, and local levels, with different entities responsible for each of them. In practice, this creates a system widely criticised for its ineffectiveness (Ciesielski et al., 2021), and one that for years has been looking forward to a thorough reform (Nowak et al., 2022).

The Act on Spatial Planning and Development indicates the possibility of drawing up a spatial development plan for a metropolitan area as a specific functional area. Plans adopted at a local level cannot contradict higher-level documents (e.g., metropolitan or regional), but it should be emphasised that these documents may only include tasks assigned to a given level of administration. This means that the development of urbanisation may be directed by designing a supra-local transport system or delineating large-scale plans of environmental protection, however it is not possible to impose alignments on the urban development or the location of service centres.

Activities related to the Tri-City Metropolitan Area are an example of an active coordination policy with an imperfect set of legal instruments available. In 1993, as part of an agreement between local governments, studies were commissioned on the possibilities of cooperation between agglomeration cities within a self-governing metropolis. The cooperation would concern the implementation of common ecological and cultural goals within the technical, social, and economic infrastructure (Pankau, 2009). Giving the region the responsibility for managing EU funds (2004) for purposes related to, inter alia, city renewal, encouraged local governments to create recovery programmes and thus include re-urbanisation processes in the city's strategic vision. At the same time, the regional spatial development plan began to play an additional role as an auxiliary document in the distribution of European Union funds. However, a breakthrough in tightening metropolitan cooperation was caused by the European Union's requirements for financing integrated territorial investments. To obtain funds, 51 municipalities joined forces within the Metropolitan Area Gdansk–Gdynia–Sopot

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Association. This gave rise to cooperation in the fields of mobility, revitalisation, labour, and energy markets, with a current budget of around 250 million euros (Urząd Marszałkowski Województwa Pomorskiego, 2015).

Although external financing has become the main motivating factor for formal integration, the association has developed many documents not required by law to ensure adequate standards throughout the area. These documents were developed aside from the statutory regulations, which municipalities adopt based on the existing planning regulation (Ciesielski et al., 2021; Nowak et al., 2022). This applies, inter alia, to sustainable urban mobility plans and setting minimum standard plans in terms of support for the handicapped and for immigrant integration. In 2021, a diagnosis of adaptation and mitigation to climate change was made for the association. The Gdansk–Gdynia–Sopot Metropolitan Area Association also actively participated in creating the legislation regarding metropolises in the regional spatial development plan adopted in 2017. Thanks to the close cooperation between the particular municipalities and in-depth analyses that were conducted for the development of this plan, the document took on the role of a contract with detailed arrangements. As an example, legislation regarding the preservation of ecological corridors has been defined which helps prevent further development of sprawl.

Among the other instruments used at the regional level, one should also mention the incentives for better coordination of spatial policies related to the investment. An example of such an investment was the construction of the Pomeranian Metropolitan Railway between 2013 and 2015. As one of the few infrastructural investments, it is in many places ahead of the development plans and investments, which may influence the direction of the development of building areas. In this way, the largely uncontrolled spatial development of new housing estates has a chance to be focused and concentrated near the stops of the new line (Masik, 2018). In addition to the investments, regional authorities offer advisory assistance in the optimal use of zones around Pomorska Kolej Metropolitalna (Pomeranian Metropolitan Railway) stops which can be applicative to local governments (see Pomorskie Biuro Planowania Regionalnego, 2018).

4.3. Spatial Policy of Communes (Municipalities): Instruments and Phenomena

The set of data available through public statistics, in conjunction with the authors' observations regarding the quality of spatial development, allows for the analysis of instruments used and phenomena occurring in the area in question.

As discussed before, in Poland, the basic act of local law defining the development conditions is the Local Spatial Development Plan. Since this instrument is not always in place, planning legislation in Poland also includes a special procedure for providing potential investors with the planning permit, which takes the form of an administrative decision referred to as the "decision on development conditions" (Nowak & Kreja, 2012; Ziobrowski, 2009). Official statistics make it possible to estimate the percentage of the municipal areas covered by local planning regulations within the years between 2009 and 2020. As discussed before, in Polish realities, this is the transparency indicator of the local development policy (Nowak et al., 2022).

In the functional environment of the metropolis, greater diversification in the use of spatial policy instruments and their effects can be observed. In general, development processes in cities are predominantly defined by regulations included in the local plans (statutory planning). Within the borders of the municipalities located in the functional zone of the metropolitan area but out of the borders of main cities the situation is different—most of the new investments are developed based on planning permits included in the above-mentioned special administrative decisions regarding development conditions. Within the borders of more distant municipalities, the situation is more varied. The usage of these instruments was presented on the maps depicting the application of the spatial planning documents (local plans and special administrative decisions) in two time periods—2009 and 2020 (see Figure 3).

There are two more types of documents that should be mentioned in the context of planning policy instruments and shaping resilience in urban and metropolitan areas: revitalisation programmes and climate change adaptation plans. Neither is binding but they are closely related to spatial policy and affect the shape of obligatory documents. Currently, these types of documents are implemented on a smaller or larger scale in all cities of the analysed area. However, their impact on the depopulation problem of the degraded areas varies. In addition, the Urban Climate Adaptation Plans were developed between 2016 and 2018 and adopted in 2019 in all three cities of the metropolitan core. Although the majority of the diagnosed threats concern all three cities, these documents were developed and adopted separately. This was due to the methodology imposed by the Ministry of the Environment financing the project.

Based on the description of the changing planning environment within the Tri-City area, it is possible to discuss the appearing spatial phenomena. Their analysis allows concluding urbanisation trends, including the process of shaping centres within the polycentric structure. Among these trends the most important one is suburbanisation, which is associated with disordered mode of development of peripheral zones. The areas facing the most dynamic suburbanisation processes include rural areas located close to the main urban centres of the metropolitan area. In this group, we can identify a suburbanisation zone strongly associated with Gdansk, filled with multi-family housing estates and single-family housing, suburbanisation of Gdynia and Wejherowo in the vicinity of the Tri-City Landscape Park, dominated by single-family

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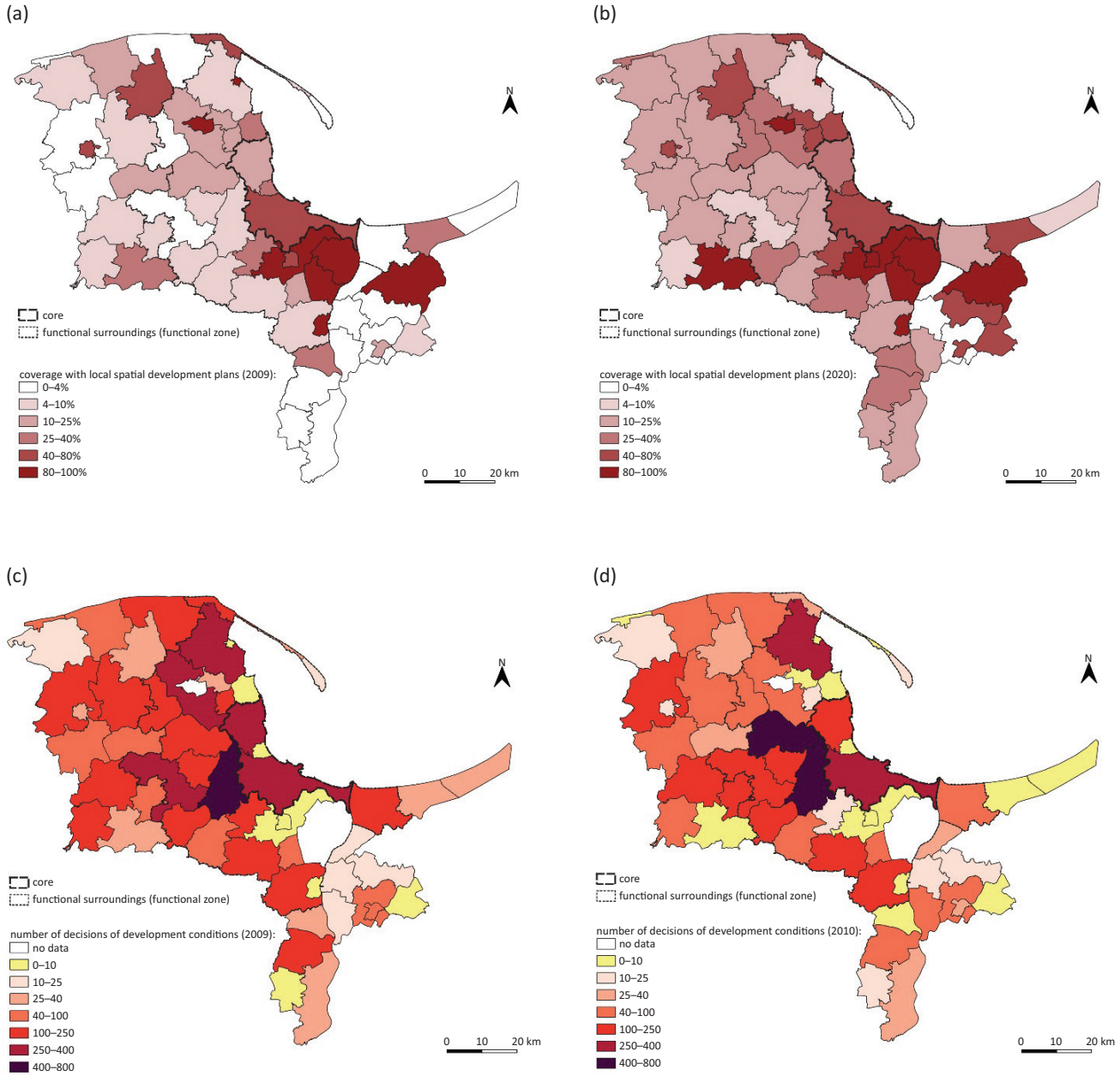

Figure 3. Application of spatial policy documents: (a) coverage with local spatial development plans (2009); (b) coverage with local spatial development plans (2020); (c) number of decisions on development conditions (2009); and (d) number of decisions on development conditions (2020).

housing, and the residential suburbanisation of Gdynia in the coastal zone. Interestingly, a bigger level of growth can be observed in cities established on the layout of former villages, which at the beginning of the transformation had a poorly developed spatial structure. Historically developed cities stagnate or have a slight increase in population with building developments appearing in the surrounding municipalities. The municipalities of the potential functional zone are generally affected by stagnation. Some exceptions are rural communes famous for their high birth rate as well as the surroundings of the towns of Malbork and Lębork (see Figure 4).

An important aspect is also the share of green areas in the city/commune. These areas include parks, park squares, street greenery, estate greenery, and communal forests. Due to the availability of data, we were able to compare the changes in 2004 and 2020. In terms of surface, the largest share of greenery is found in urban areas. However, the largest percentage increase in green areas—with some exceptions—occurs in urbanising rural communes. The limitation of green areas occurred largely in communes surrounded by state forests or adjacent to the seashore. It can be assumed that the inhabitants of these communes have access to green areas outside the district, but in the case of larger communes, this means that the availability of recreational areas for less mobile inhabitants is limited (see Figure 5).

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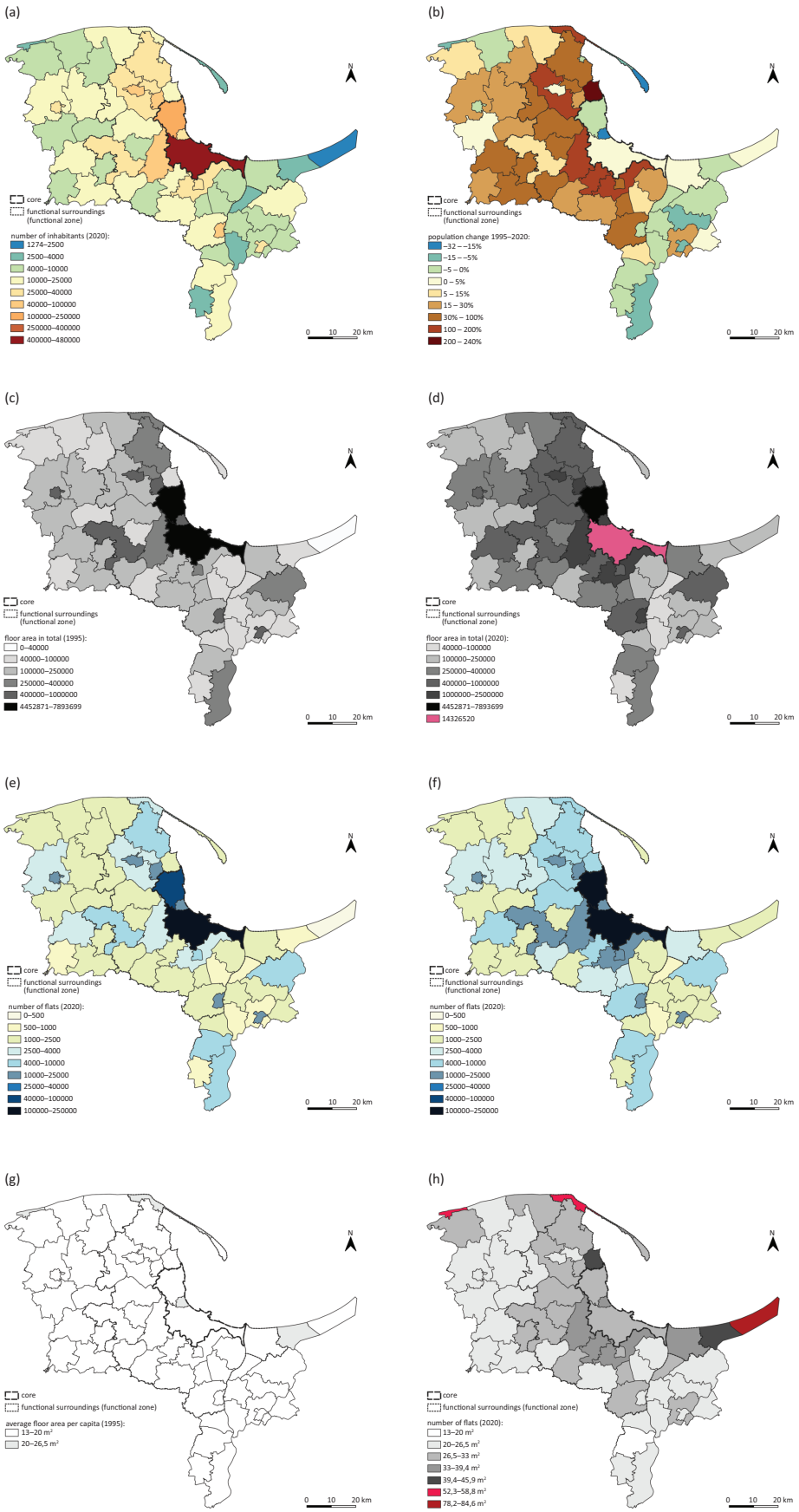

Figure 4. Population and housing offer: (a) number of inhabitants in communes in 2020; (b) difference in the number of inhabitants between 1995 and 2020; (c) total floor area (1995); (d) total floor area (2020); (e) number of flats (1995); (f) number of flats (2020); (g) average floor area per capita (1995); and (h) average floor area per capita (2020).

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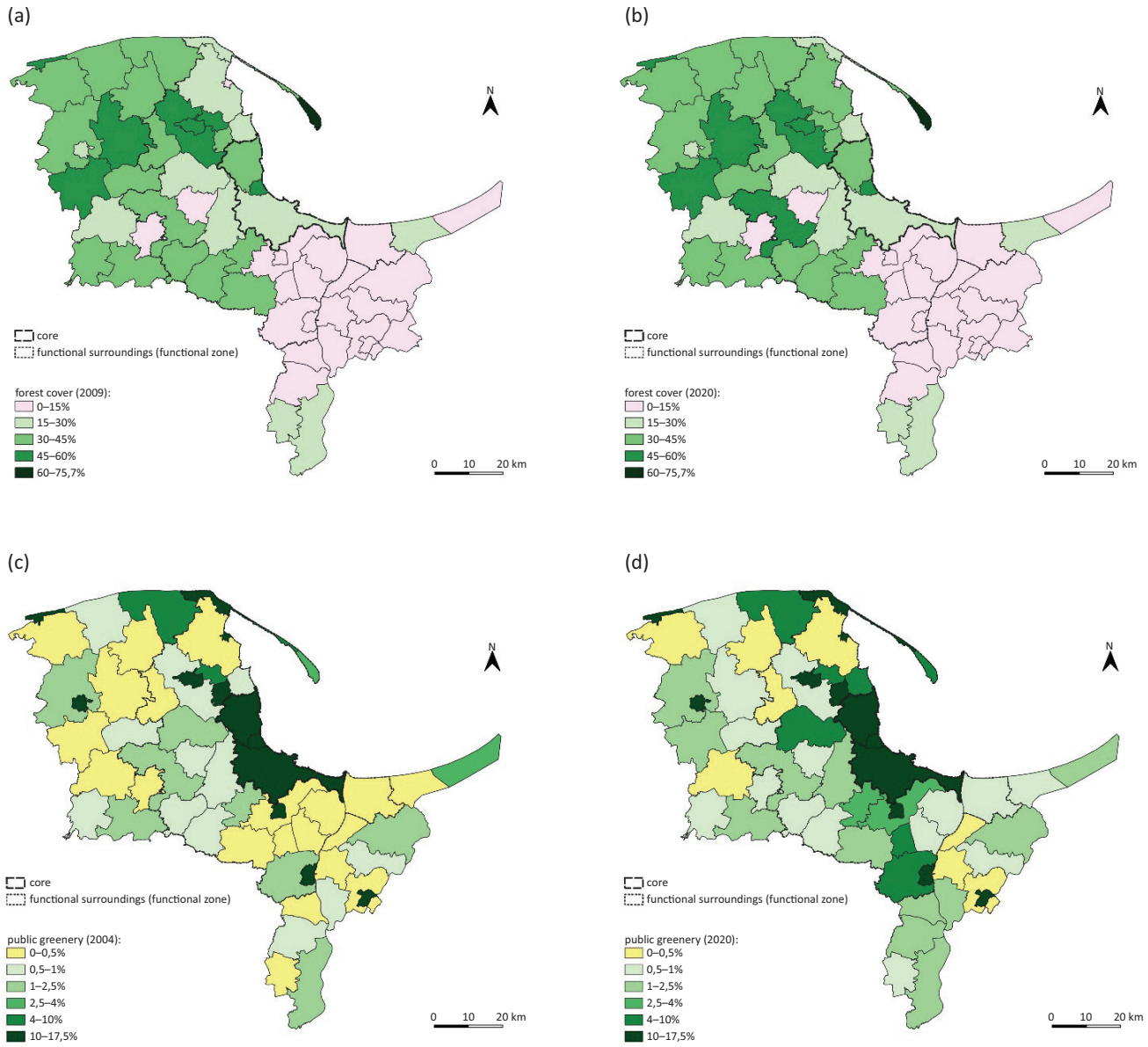

Figure 5. Availability of greenery in municipalities: (a) forest cover (2009); (b) forest cover (2020); (c) the share of public greenery in the area (2004); and (d) the share of public greenery in the area (2020).

5. Discussion

So far, research on the impact of planning on resilience in metropolitan areas has largely focused on social, transport, or, more recently, climate resilience issues. These are undoubtedly fundamental; however, in polycentric areas, the issue of resilience particularly depends on management coordination between different actors. Considering both the scientific context and the coordination of regional and global policies, it is advisable to undertake an analytical discourse on the specificity of polycentric metropolitan areas in the context of holistically understood resilience, including its indicators.

In the context of the analysis carried out, however, it can be stated that the issue of polycentricity and resilience of a metropolitan area is inextricably linked with the question of the importance of suburbanisation processes. Here, two dominant research trends can be identified: one focused on the negative effects of urban sprawl—considering violating ecological connectivity, the costs of transportation, or social problems—and another on reforming the problematic edge cities. Meanwhile, as the analysis shows, coordinated suburbanisation associated with effective public transport may be a response to the development needs of metropolises, at the same time ensuring affordable housing with access to ecosystem services for a wide group of people in the metropolitan labour market.

Regarding the analysed case study, it is also necessary to discuss whether the suburban zone of an Eastern European city, marked by overlapping dysfunctions of the central planning and the transformational

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development leap era, has a chance to become an attractive living space, or is it doomed to progressive degradation, and thus an immunity decrease? At the initial stage of political transformation after 1989, the main factor driving the development of buildings outside cities was the supply of land that was relatively cheap and easy to invest in (Lorens, 2010). Research on SMEs, which account for a large share of entities in the Polish economy, shows a change in the trend. It has shown that the main determinants in the location of this type of activity are the proximity of a large city and possibilities of the local market (Chrzanowska & Drejerska, 2015) along with cost-driving factors. For large enterprises, it is factors related to technological infrastructure, proximity to highways, labour costs, and opportunities for cooperation with local enterprises that are important (Flieger, 2013). Recent research on the suburbanisation of Tri-City showed strong tendencies for the formation of SME clusters as well as the presence of the development quality factor in the decision-making process while choosing the location (Martyniuk-Pęczek et al., 2017).

It seems that as a result of the analysis presented within this article, the existing and developing concepts of space organisation serving to stimulate metropolitan resilience—with particular emphasis on polycentric metropolises—need to be revised. This applies both to the need for analysis of spatial policy and the organisational and financial solutions that support it. Possible results bear great application potential.

6. Conclusion

The polycentricity of the area in question is endangered by chaotic suburbanisation, which in turn contributes to a decrease in the resilience of the structure. On the other hand, ongoing transformation processes may contribute to intensifying the social stratification of the metropolitan area in the near future. It should be emphasised that similar effects may be caused by improperly carried out re-urbanisation processes. Access to green areas is also essential, and of particular importance considering the needs of residents resulting from the Covid-19 pandemic and the classically understood resistance of urban structures. The planned activation of further railway lines and the construction of a metropolitan bypass will certainly contribute to expanding the functional area of the metropolis and developing new building structures. This creates a potential for shaping centres with good access to the transport network and green areas, which will synergistically build the polycentric potential of the metropolitan area. To properly use the new conditions, it is necessary to adjust the spatial policy of the municipalities that will be affected by these phenomena. Thus, the spatial policy ensuring the resilience of polycentric spaces in metropolises is not synonymous with limiting investments but requires their coordination, also at a regional level.

It seems that the goals of the coordination policies pursued by both the *voivodeship* authorities and the Gdansk–Gdynia–Sopot Metropolitan Area Association are correct and favour shaping a resilient polycentric system; however, their effectiveness is limited by the absence of proper planning and implementation instruments. The regional development plan truly impacted the space only when it was combined with operational programmes and prospects of obtaining funds from local governments which were developing projects through dialogue with their neighbours. With these experiences in mind, it turns out that at the metropolitan level, organisation, use of investment preferences, and informal tools along with network planning give better results than attempts at rigid planning coordination. In the absence of a legal basis for political management, it was networking and collaboration that turned out to be the solution. Referring to the experiences from the central planning period, the unified political management does not guarantee avoidance of dysfunctions in spatial management, resulting in the development of less resistant structures. The optimal solution seems to be the development of a cooperation culture and maintaining supra-local authorities in the role of soft coordinators and facilitators of development processes.

Conflict of Interests

The authors declare no conflict of interests.

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