

Contemporary challenges of spatial development of local service centres in the suburban areas of Wrocław – example of Czernica, Poland

Piotr Kryczka¹, Katarzyna Chrobak²

¹ Department of Urban Planning and Settlement Processes; Faculty of Architecture;
Wrocław University of Science and Technology;
Bolesława Prusa St. 53/55, 50-317 Wrocław, Poland;
piotr.kryczka@pwr.edu.pl  0000-0001-6735-2658

² Department of Urban Planning and Settlement Processes; Faculty of Architecture;
Wrocław University of Science and Technology;
Bolesława Prusa St. 53/55, 50-317 Wrocław, Poland;
katarzyna.chrobak@pwr.edu.pl  0000-0002-1422-6671

Abstract: The residential anthropopressure in the areas around large urban centres has become an irrefutable fact. According to many analysts, the suburban development is not related to rational land-use, focused on shaping multifunctional settlement units. The paper is a study of a selected case of spatial development of a service function in the suburban area of Wrocław. The article presents the literature on the subject of building systems of service centres, as well as the analysis of planning documents of the Czernica municipality, including their correlation with higher-order planning studies. As a consequence of the above, the spatial structure of the municipality and potential development possibilities of the service centres system were analysed. For this purpose, GIS analyses (in particular, the analysis of building density or spatial accessibility analysis) were carried out. The research constituted an important starting point for shaping guidelines in the area referring to establishing a hierarchical system of service centres. This led to the further debate on shaping the spaces for integration of rural residents connected to local service centres.

Keywords: spatial policy, rural areas, suburban neighbourhoods, spatial accessibility, network analysis

1. Introduction

Spatial development of cities is dictated by the evolution of each of the components of the functional and spatial structure, including the subsystem of services, and as a consequence – its spatial distribution. Analysis of the urban subsystem of services focuses mainly

on economic phenomena by examining theoretical bases of demand and supply (e.g. [1]), service and settlement geography (e.g. [2]), sociology (e.g. [3]), and finally urban planning and spatial planning (e.g. [4], [5]). The last of the indicated analytical ranges is a particular interest of the authors. Shaping land-use in free market conditions is an important element affecting the quality of people's lives, and thus equalizing opportunities in access to basic public goods [6]. In this context, the development of the hierarchy of service centres in the area affected by suburbanisation processes in the Czernica municipality located in the vicinity of Wrocław (a metropolitan city), has been analysed. A multi-functional space is considered to be a service centre, providing access to a diverse typology of services at different scales (cf. [7], [8]). The service centres are functionally diverse at the national, regional and local level. In this paper, a local service centre is understood as a first order element in the hierarchical urban subsystem of services, that provides dwellers accessibility to services (public and commercial). Commonly, it has defined boundaries and urban composition. Sometimes the public space is an element of it. The local service centre is also a part of a larger network system, as connected with higher order service centres, depending on the level of service provided.¹ The subject of research is particularly important in the context of shaping areas affected by intensive housing anthropopressure in the vicinity of large urban centres. The process of migration of the Wrocław population to the suburban area has been observed since the early 1990s. In 1995, the negative migration balance for Wrocław was recorded for the first time, with a positive migration balance in the neighbouring municipalities, of which the Czernica municipality experienced the most dynamic growth [9]. In this period, the process of residential suburbanisation connected with the process of demographic suburbanisation began, followed by economic suburbanisation from the beginning of the 21st century [10].

Along with the dynamic development of suburban settlements, the morphological structure of the village began to undergo changes [11]. The development of housing estates with a mono-functional character was intensified by the development of individual transport, functional ties with Wrocław [10] and spatial policy based on irrational space management. As a result, new housing estates not only do not fit into the traditional structure of the village, but also, inhabited by a homogeneous "urban" community, lead to intensification of social stratification processes [11]. This process is compounded by the lack of public spaces associated with a multi-functional service offer that can gather the "old" and "new" residents of the village. This is especially important when the recent users of services in the city are dissatisfied with the services offered by the village, in which they live, for example due to its non-adaptation to their needs or taste. Ultimately, this state of affairs forces further intensification of contacts with the central city ([12] p.184).

Therefore, the overarching goal of the study is to systematize knowledge in the field of shaping the system of service centres in the areas affected by suburbanisation processes. Service centres, as places integrating local communities, are important elements of spatial development, therefore the auxiliary goal and also the research strategy was to verify the territorial cohesion of shaping the hierarchical system of service centres in the municipality of Czernica. The basis for the purposes of the study is the current spatial policy of the municipality and region in the analysed thematic area. This directly contributed to the continuation of discussions about shaping public space.

1 Detailed definitions and a synthetic hierarchy of service centres are presented in the chapter *Systematisation of service centres*.

2. Tools and methods

2.1. State of research

The current analyses of service centres are carried out in relation to different research contexts. In particular, the need to analyse users (their distribution, mobility) and their needs (in the sociological dimension), spatial form, functional program and accessibility (in the various urban and architectural dimensions) should be indicated (see Fig. 1).

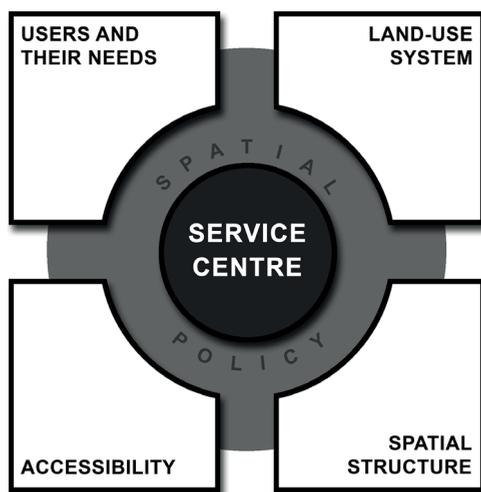


Fig. 1. Research context of service centres. *Source:* own study

The theoretical background of the analyses is spatial policy, which is shaped by local government units at the voivodeship, region and local levels [13].

The intensification of urban sprawl resulted with more research on the future of rural areas in the context of their relationship with cities. In 2017 OECD released the report related to the challenges of the new rural policy [14]. The report highlights the complementarity of villages and cities, especially when rural areas fall inside the functional urban area. Due to the report, this type of rural area faces problems such as i.a. providing services for residents, while they are mainly concentrated in the core area and also problems in land-use management policy while facing urban core polarisation. While rural and urban territories are interconnected, OECD also underlines a role of urban-rural partnership on the level of regional policy. A salience of interrelationship between rural and urban areas was also noticed by Tacoli [15], where she proved that often a lot of services and facilities in the city relies on the demand from the rural area residents.

A lot of researches indicate the role that retailing and private service sectors have in shaping the spatial structure, the form in which particular area expands and consequently – a cost of travels made by residents [16], [17], [18]. Holden and Norland in their research [19] underline the role of distance between households and local service centres and indicate that accessibility to services is beneficial in the context of energy spent on everyday trips. Ferrell [20] points out that people living in highly accessible areas are more likely to make shorter trips and spend less time in retail-oriented trips. It is especially important while facing

the cost of urban sprawl in the context of households' losses on commuting and returning from the core city [21].

Nevertheless, along with the changes in consumer behaviour, oriented on mobility increase, the spatial distribution of services also had to change to adjust to changeable economic conditions [22]. Fernandes and Chamusca [23] indicate that the spatial distribution of services is mainly the result of decisions made by city dwellers. While the preferences and behaviour patterns change rapidly, service activities have to respond to these changes and according to demand and supply rules – adjust to the new economic conditions [22].

In connection with interactions and interrelationships described above, researchers also underline the necessity to undertake a strategy connected to sustainable development of both urban and rural areas (cf. [24], [25]). 'Sustainable Development in Rural Areas' also used to be one of the planning policy statements in the United Kingdom [26]. In one of their main missions the necessity of providing access to a variety of services and facilities was underlined. This mission could be achieved by planning local service centres in areas of intensive rural development that are accessible by walking, cycling or public transport and also in which the necessity of strengthening the role of particular local service centres was identified. The distribution of services should also promote the idea of mixed-use development to provide community vitality. The document also underlines the role of planning authorities in improvement of accessibility to existing services and facilities such as village shops, petrol stations, post offices or churches, which are very important for village communities. Nick Gallent [27] also underlines that spatial accessibility is a crucial element in rural areas planning, also in the matter of services and facilities distribution. He notices that spatial accessibility has an influence on difficulty of living in rural areas. Thus, he also highlights the necessity of providing transport links between residences and the places of realization of their everyday needs, while pointing out that this action is difficult in areas of dispersed development.

2.2. Methods

The research is based on the example of the Czernica municipality located in the vicinity of Wrocław, where the negative effects of suburbanisation processes have been identified so far [9]. The study is based on comparative and descriptive methods as well as deductive methods with an empirical inference. The study refers to the literature review in the field of shaping the hierarchy of service centres depending on the scale of their availability, which was then correlated with the planning documents of the voivodeship, region and the analysed municipality. In the next step, GIS analyses were carried out to verify the functional and spatial structure of Czernica and the availability and distribution of space users. The analyses were based on available statistical data, open spatial databases and urban inventory carried out in the municipality of Czernica.

3. Systematization of service centres

The systems of functional and spatial organization of service centres have been changing over the years. Today, we interpret primary service centres as places important for the community for economic reasons (e.g. trade and exchange of goods) or social (exchange of thoughts, rest, contemplation). The archetype of public spaces (that could be understood as a part of service centres) can be the Athenian agora or urban markets and squares of the Middle Ages, which idea of space creation was continued for many years [8].

The systematisation of service centres depends on the analytical issues raised. On the one hand, we are talking about territorial systematisation: spatial (on an urban scale) or geographical systematisation (including regional specificity), but also functional systematisation. The latter concerns, in particular the occurrence of dominant functional systems, in this case services, depending on the chosen spatial arrangement [28]. However, the most common specificity of service centre analysis concerns their location in space with the definition of their functional system – then we talk about functional and spatial specificity. Service centres have always been associated with urban thought. Particular attention was paid to them in American models of urban structure, where, among others [29] proposed a concentric model to describe the distribution of social groups in the urban structure centred around the main core, called the Central Business District. The Burgess model was so controversial that subsequent researchers made attempts to describe the urban structure, while also implementing concepts for the distribution of service centres, e.g. the Homer Hoyt sector model [30], and finally the multifocal model created by Chauncy Harris and Edward Ullman [31], which assumes many service centres spatially diversified depending on their location.

The hierarchy of service centres depends on the level of service to residents. There are six degrees of service centres in Polish literature on the subject:

- I° – elemental with the highest access for the society, where the facilities are visited very often (at a distance of up to approx. 500 m);
- II° – proximity of basic residential equipment, where facilities are often used; supports 10-25 thousand population (up to approx. 700 m);
- III° – used periodically, including spatially concentrated services, serving approx. 100,000 residents, accessible both on foot and by public and individual transport;
- IV° – used occasionally, of a high standard, covering a voivodeship centre;
- V° – supra voivodeship centres;
- VI° – state capital [8].

It is worth emphasizing that the development of service centres is different depending on their level of service. In the case of local and communal centres (I-III degree) we are talking about a specific urbanised space, e.g. square or street, while higher-order centres (IV-VI) can include the entire polycentric urbanised structure as such and shape a diverse repertoire of functions in a given unit settlement, which testifies to its rank.

Due to the varied detail of spatial analysis of the location of service centres, centres with the highest level of local service (I-III) are a particularly important aspect of urban space development, also significantly in suburban areas with high susceptibility to monofunctional housing development. It is the local public spaces, called agoras, that have become a special point of research for the Dutch architect Frank van Klinger, and the idea of modern agora has been thoroughly analysed by Marek Kowicki [4] in urban and rural areas. Service centres, according to these authors, are to be on the one hand a regionalist tool protecting cultural values, but also a spatial context enabling society to meet their own needs – in urban areas, but also in rural areas. “The task of reform of rural areas should start with the implementation of a network of correctly located and designed socio-service centres, which, taking over the functions of agora, market, open-air market, sports and entertainment arena and many other functions, have all the data to act as the main social and main “nodes” conducive to the correct crystallization of the plan.”([4]: 22).

4. Spatial policy of local government units

The background of research on the hierarchy of service centres is spatial policy, which in Polish legal conditions applies in particular to local government units – provinces and municipalities. Depending on the scale of the study, spatial policy is the basis for creating a development strategy, and consequently for developing hierarchy of the urban subsystem of service centres. Therefore, the planning documents of the Lower Silesian Voivodeship, regional study for the Functional Area of Wrocław and the study on land use planning of Czernica municipality were analysed.

4.1. Spatial development plan of the Lower Silesian Voivodeship (SDPLSV)

Spatial Development Plan of the Lower Silesian Voivodeship. Prospect until 2020 [32], adequately for the scale of its study, focuses on the hierarchy of service centres in the context of the region. SDPLSV thus indicates the development of Lower Silesia based on the European metropolitan centre (Wrocław), 3 regional centres, 7 sub-regional centres, 2 cross-border centres and other county centres (Fig. 2). Nevertheless, in the diagnosis of the conditions of the settlement zone, it was pointed out that both county and municipality centres, including villages – act as local centres, which constitute “basic service centres for the inhabitants of the region, and their regular distribution in the voivodeship space provides convenient access to basic services; maintaining their hierarchical division into three stages is a factor conducive to spatial cohesion of the region and a condition for maintaining a polycentric layout of the settlement network.”([32]: 23).

A graphic reflection of the analysed case of service centres is presented in Figure 2 of the SDPLSV, where the Czernica municipality has not been assigned a clear role in the hierarchy of service centres. The municipality is located in the zone of impact of the Wrocław metropolitan centre within the area of intensification of multi-functional development, as well as between Siechnice and Jelcz-Laskowice – the centres of equilibrating development. It can therefore be concluded that Czernica in the hierarchical system of the voivodeship is to serve residents at the local level, which in the light of the cited literature on the subject and the demographic situation of the municipality corresponds to the first and second degree centres.

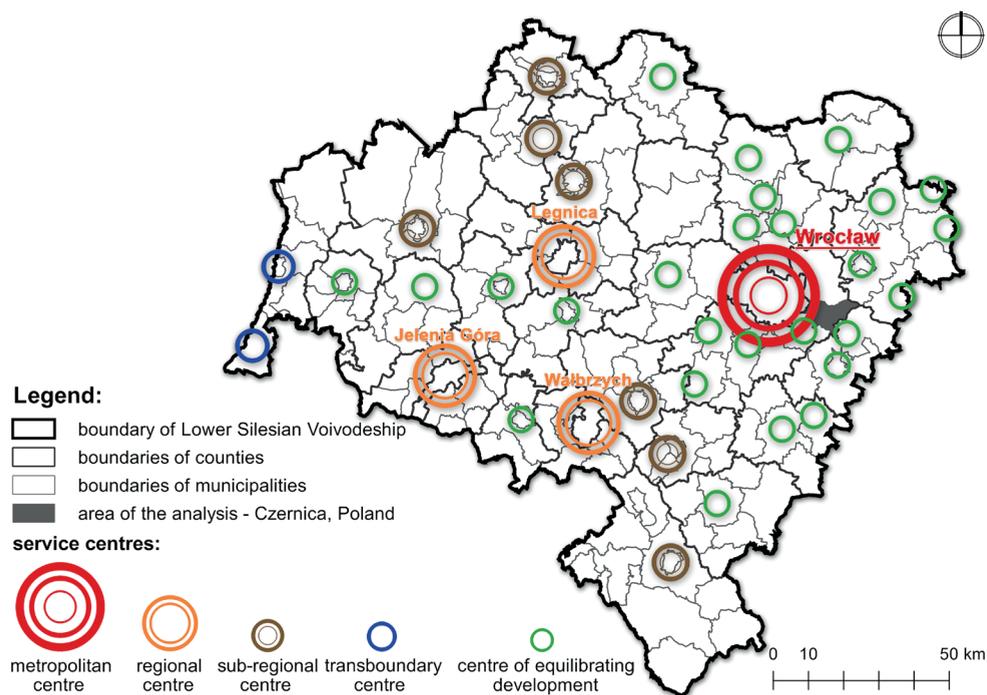


Fig. 2. Development of service centres in Lower Silesia on the example of Spatial Development Plan for Lower Silesian Voivodeship. Prospect until 2020. *Source:* own study based on [32]

4.2. Functional Cohesion Study in the Functional Area of Wrocław (FCSFAW)

The Act of March 27, 2003 on spatial planning and development does not introduce the obligation to draw up planning documents at the level of the functional area of a larger urban zone. Nevertheless, a Functional Cohesion Study [33] was prepared as part of the Functional Area of Wrocław (FAW). It is a document that thoroughly analyses the functional and spatial phenomena in Wrocław and its areas of influence.

FCSFAW presents an in-depth analysis of the hierarchy of service centres (Fig. 3). It is indicated that in recent years there has been significant transformation of service centres in the FAW. Analysis of the dynamics of demographic changes and the balance of migration, which were carried out as part of FCSFAW, confirm the thesis that the migration of Wrocław residents to suburban areas resulted in significant transformations of towns near Wrocław. The sudden and often uncontrolled spatial development of residential areas did not go hand in hand with the adequate development of service centres serving them. As a result, dozens of villages around Wrocław and larger urban centres in FAW changed their spatial structure. The historical rural structure has been blurred, turning them into spreading housing estates with disturbed composition elements, i.e. inconsistent geometric layout, disturbed hierarchy of importance of elements, chaotic material and blurred borders of the village and their components.

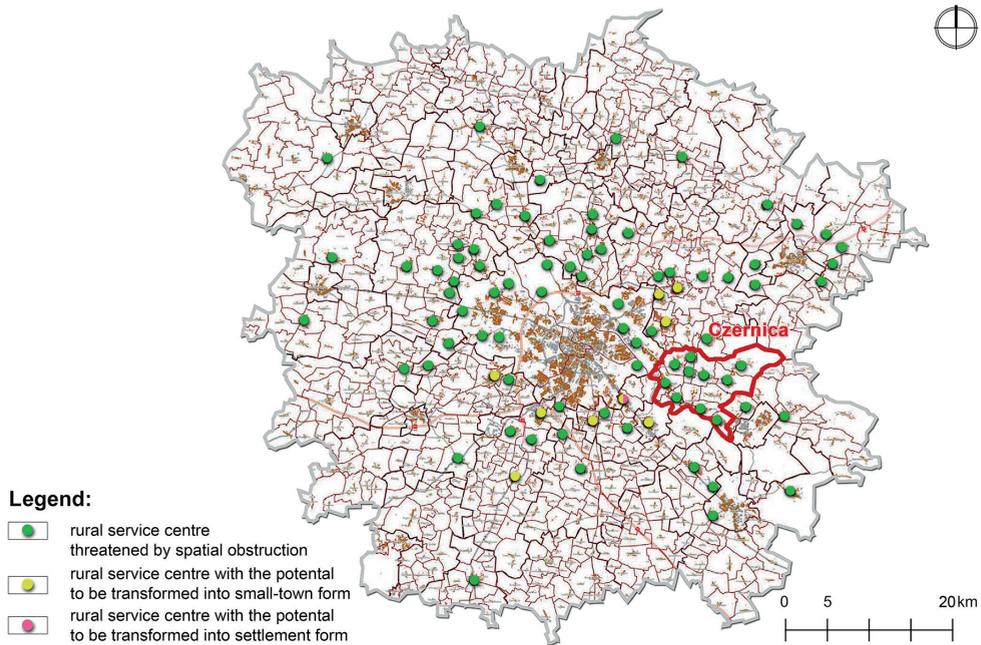


Fig. 3. Analysis of service centres in FAW. *Source:* own study based on ([33]: 139)

FCSFAW identifies 10 rural service centres threatened by spatial obstruction in the Czernica municipality. These are: Chrzęstawa Mała, Chrzęstawa Wielka, Czernica, Dobrzykowice, Gajków, Kamieniec Wrocławski, Krzyków, Nadolice Małe, Nadolice Wielkie, and Ratowice

4.3. Study on land use planning of the Czernica municipality

The study on land use planning of the Czernica municipality laconically refers to spatial aspects of the functioning of the hierarchical system of service centres. The study indicates that the density of the residential areas is determined by the index 6.0 km²/settlement unit (6.5 km²/village council). The functional structure of the existing municipality settlement network has a clear hierarchical system of service centres (Fig. 4):

- the village of Czernica – second level (local) service centre, also fulfilling an administrative function,
- the village of Kamieniec Wrocławski – first level service centre,
- the villages of Nadolice Wielkie and Ratowice – first level service centres – additional,
- the other villages are centres with the level of elementary services.

The nature of the functions of individual villages clearly correlates with the observed dynamics of their growth. Typical agricultural villages, with the exception of the Nadolice Wielkie, have so far been characterized by stagnation of population growth, and the largest population increase was recorded in the village of Kamieniec Wrocławski, which is most affected by urbanisation. It was also pointed out that the location of the primary school was an important element integrating villages so far.

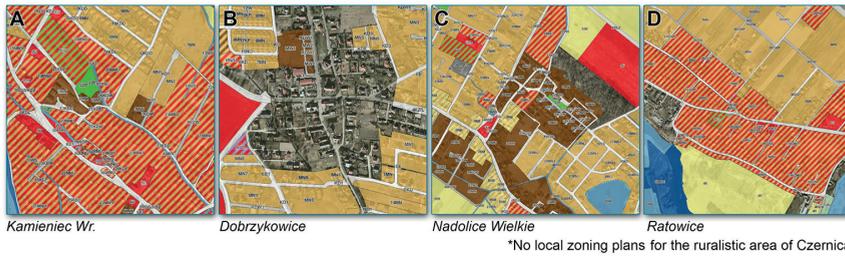


Fig. 5. Local zoning plans for selected central areas of villages in Czernica municipality, Poland. *Source:* own study based on [35]

The spatial planning situation in Kamieniec Wrocławski, Nadolice Wielkie and Ratowice is similar. The plans almost entirely cover the central areas of these villages and mainly single-family housing with services or multi-family housing are introduced there. In Kamieniec Wrocławski, particular attention is paid to the location of the school and the playground in the vicinity of the park and newly emerging services with a diverse catalogue, as well as the development of residential buildings in their surroundings. In the development plans for Ratowice, strictly residential space is organized around smaller areas designated for service buildings, in particular the existing church and the adjacent store. The plan also marks the existing primary school. A different character of space occurs in Nadolice Wielkie, where the planned service structure is polycentric and implements existing traffic attractors into the functional structure. These are planning units including a local museum, church, manor with a park and a fire station of the Volunteer Fire Department. However, there is a noticeable lack of provision of promising areas constituting the development of these functions in the area of the village.

In the local spatial development plans one can identify the purposes of the areas which prove the potential of shaping the system of service centres. Nevertheless, a negative tendency is to indicate the lack of public spaces (e.g. plazas) in these plans. Lack of this type of way of shaping projects of local plans creates uncertainty about shaping public space enabling integration of the local community.

5. Results

Analysis of planning documents on both a local and regional scale has enabled the identification of a potential hierarchy of service centres in the municipality of Czernica (see Fig. 4). It constituted the basis for further analysis of the spatial structure of the municipality in terms of development opportunities in its area of the service centre system. The verification of the extracted structure was made on the basis of the research context of service centres presented in Chapter 1 (see Fig. 1), on spatial analyses based on GIS software (verification of the distribution of space users and the level of accessibility of selected service centres) and urban inventory (analysis of the functional program and spatial forms of service centres).

One of the indicators that allow analysing the distribution of users in space is the density indicator. In municipalities under pressure of suburbanisation, due to frequent discrepancies in the actual number of inhabitants and the number of registered people (Kajdanek 2011: 49), it is not always accurate to determine the density based on statistical data on the number of people registered in a given registration area. What's more, due to the intense growth of housing, newly completed apartments can only be a potential for an increase in the number of users of a given space. When dealing with areas of intense, often chaotic monofunctional

development, it seems more accurate to analyse the density of housing development, helpful in identifying areas of its rapid growth. The degree of housing density allows the selection of areas predestined to perform specific functions in the spatial structure of the municipality.

The scheme of density of housing development in the municipality of Czernica (Fig. 6) was made using the kernel density tool in ArcGIS software. In this case, each residential building was presented as a single point. Data regarding the arrangement of housing were obtained from the Topographic Objects Database, successively supplemented with OpenStreetMap open resources and orthophotomap data. A search radius of 500 m was adopted.

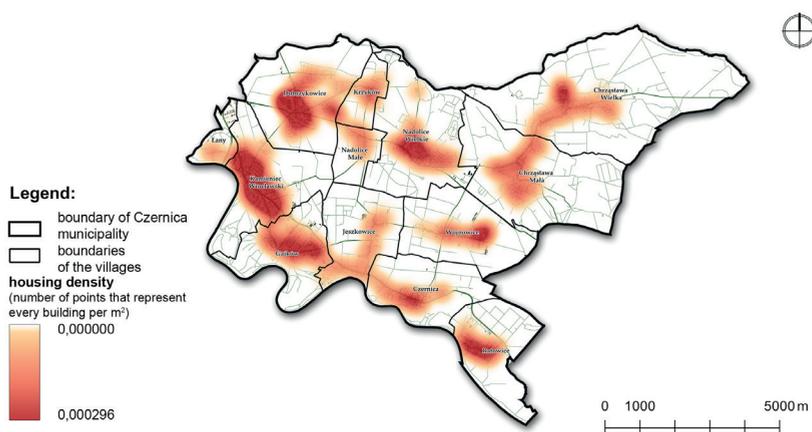


Fig. 6. Scheme of the housing density in the Czernica municipality based on the kernel density tool. *Source:* own study

The analysis of housing density in the municipality of Czernica allowed to identify the impact of Wrocław on the appearance of new residential buildings in neighbouring municipalities. While in rural municipalities performing traditional functions, buildings develop the most in the village fulfilling an administrative function (residence of the municipality office), in the case of municipalities located in the suburbia zone of a large centre, the most attractive places to live in are located near this centre. In the case of the Czernica municipality, the highest density of housing is characterized by registration precincts located in the immediate vicinity of Wrocław (primarily Dobrzykowice and Kamieniec Wrocławski), and it is in them that new residential develops, often of a similar nature to urban ones, becoming almost a continuation of buildings of Wrocław. These results became the basis for taking into account also the village of Dobrzykowice in further analysis as an area of intensive housing development. At the same time, the seat of the municipality office – the village of Czernica, due to its peripheral location, is characterized by one of the lowest housing density indicators in the municipality.

Analysis of the accessibility of service centres was carried out using the Network Analyst tool in ArcGIS software (Fig. 7). Accessibility of residents to service centres located in five cadastral districts was examined, viz Czernica, Dobrzykowice, Kamieniec Wrocławski, Nadolice Wielkie and Ratowice. First of all, the pedestrian accessibility to selected central points in selected cities was analysed at intervals of up to 10 min, up to 20 min and up to 30 min. For each of the service polygons, the level of service for residents was calculated, understood as the number of single and multi-family residential buildings that fall within a given time range.

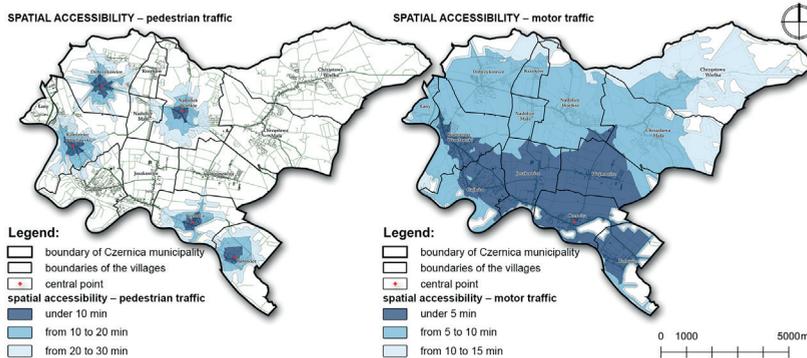


Fig. 7. Analysis of spatial accessibility in pedestrian traffic to central points located in selected villages and spatial accessibility in motor traffic to a central point located in Czernica. *Source:* own study

For each of the service training grounds, the level of service for residents was calculated, understood as the number of single- and multi-family residential buildings that fall within a given time range (Table 1).

In both, the first and second time zones, the largest percentage of buildings served in the municipality was recorded in the village of Dobrzykowice. First of all, they are single-family buildings and this type of development is being built to the greatest extent in the villages bordering Wrocław. The village of Kamieniec Wrocławski bordering Wrocław has the highest level of service (the highest among the analysed centres in the third time zone) also is connected with a large number of multi-family buildings.

Table 1. The level of service of residential buildings by central points in selected cities – pedestrian traffic. *Source:* own study

Central location	Number of residential buildings served in accessibility zone		
	single-family	multifamily	total share in residential buildings in the municipality of Czernica
zone up to 10 min			
Czernica	67	11	2%
Dobrzykowice	213	2	5%
Kamieniec Wrocławski	174	3	4%
Nadolice Wielkie	110	0	2%
Ratowice	93	0	2%
zone up to 20 min			
Czernica	178	11	4%
Dobrzykowice	516	2	11%
Kamieniec Wrocławski	468	10	10%
Nadolice Wielkie	265	6	6%
Ratowice	268	0	6%
zone up to 30 min			
Czernica	242	11	5%
Dobrzykowice	642	2	14%
Kamieniec Wrocławski	719	10	16%
Nadolice Wielkie	397	6	9%
Ratowice	274	0	6%

In the village of Czernica the level of service is much lower (each time the lowest or one of the lowest among the analysed). Although already in the first zone includes 11 multi-family buildings, it is still a level of service too low to perform the function of the main municipality centre. Nevertheless, the village of Czernica still has a functional specialization related to its administrative function – the residence of the municipality office. The range of this function is greater, so for the village of Czernica the availability of car traffic was also analysed, in subsequent service zones: up to 5 min, up to 10 min and up to 15 min (Table 2).

Almost 50% of all residential buildings in the municipality are located in the 5-minute zone. In the next zone it is almost 100%. The relatively dense road network means that even the peripheral village of Czernica is accessible by car to residents even in a very short time. However, one should bear in mind the fact that there are numerous difficulties in navigating the road network in suburbs, where congestion increases significantly at the contact with the central city (in this case the city of Wrocław), modifying the obtained spatial accessibility results.

Table 2. The level of service of residential buildings by central point in Czernica – car traffic. *Source:* own study

accessibility zone	single-family	multifamily	total share in residential buildings in the municipality of Czernica
Zone up to 5 min	2014	24	44%
Zone up to 10 min	4400	37	95%
Zone up to 15 min	4633	37	100%

Therefore, one should try to promote pedestrian traffic by creating places of its absorption and a diversified functional and spatial offer encouraging walking. From the residents' perspective, there will always be a desire to minimize travel time, however, the different specifics of the services accompanying local service centres have different ranges of influence (also in territorial sense) and may even encourage further travel if the functional offer varies significantly.

The urban inventory of central places made in the next step allowed to assess the functional and spatial diversity of places shaped as potential local service centres in the analysed centres (Fig. 8).

Residence of the municipality office – the village of Czernica, has two areas of local centrality. The first, limited by Kolejowa and Wrocławska streets, has a higher degree of specialization and stands out in this respect from the whole municipality. It is associated with the presence of the municipality office, train station and restaurant. The second, with functions typical of rural areas – associated with the presence of a store, school and church, but also a post office, is located in the area of the accumulation of multi-family housing. Despite the greater potential of the first centre, related to its significance for the entire municipality, it requires spatial ordering – primarily revitalization of post-industrial areas located nearby the railway station. It is also important to create traffic generators that allow linking both centres to create a coherent structure.

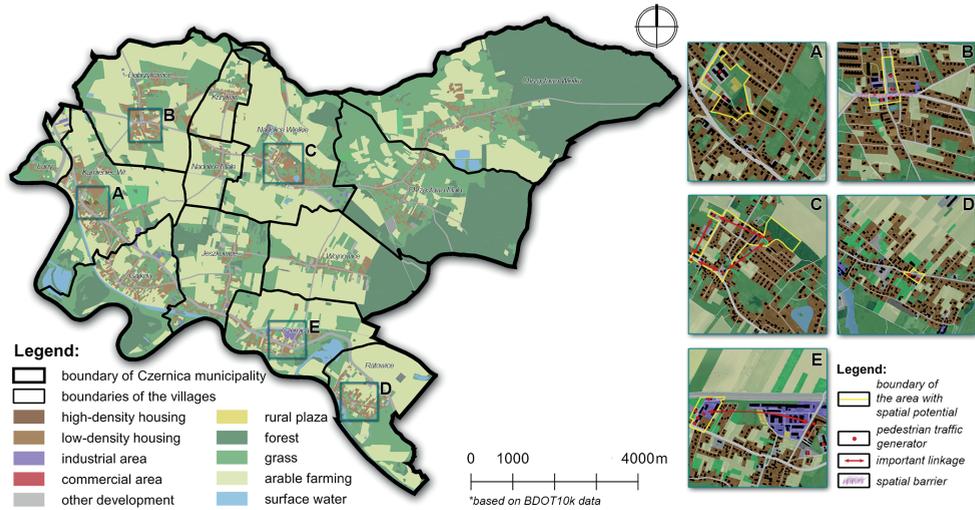


Fig. 8. Inventory and functional assessment of central places in selected villages of the Czernica municipality.
Source: own study

In the village of Dobrzykowice, the area bounded by Stawowa, Szkolna, Czerwona and Ładna Streets is shaped as the central one. Its functioning is associated with the presence of such service facilities as school, church, store and restaurant. Despite the increased functional offer in relation to the basic unit found in the countryside, it is necessary to increase the readability of the system, which is most disturbed by the presence of a spatial barrier – Wrocławska Street. It is a busy street, an artery with a high technical class and parameters that are not friendly to pedestrians. Its elimination should at the same time increase the representative function of the church situated next to it, which is an important place for the local community.

Another village located in the vicinity of Wrocław – Kamieniec Wrocłowski, has a central place in the Palace Park area, associated with the existence of a school, nursery school, clinic, police station, store and pharmacy. These facilities are located chaotically and do not create a coherent spatial structure. That is why the readability of this place must be increased. Due to high housing anthropopressure in this area, it is also necessary to increase the service offer and encase the centre with more services targeted at residents. The park area itself, which is a potentially strong attractor, also needs better spatial organization.

A different character of the space occurs in Nadolice Wielkie, where the service structure is polycentric and concerns the local museum in the southwest, the church in the northwest, the manor and park in the northeast and the fire station in the southeast. This urban equipment is an important traffic generator, and its interconnection can create a potential for a functionally diverse centre.

The village of Ratowice has the poorest service offer. The area that appears to be important for the inhabitants of the village occurs in the area of Wrocławska Street and is associated with the existence of a basic service unit for the village, including a church and a store. For this area, it is necessary to revalorize it in order to maintain its important position for the inhabitants of the village. The example of Ratowice shows how much the functional and spatial diversity of central places changes when it is farther from the borders of Wrocław.

6. Discussion

The analysis confirms the progressive and multi-faceted modifications of the functional and spatial structure of the Czernica municipality caused by the adverse effects of suburbanisation. They constitute a special starting point for undertaking a broader scope of analyses covering a larger number of municipalities neighbouring with Wrocław – in order to further verify the results in relation to the holistic phenomenon of suburbanisation as well as to determine clear conclusions regarding the administrative specificity of municipality and the location of central areas in a more extensive analytical context. Research indicates that special functional and spatial potential is located in the capital of the municipality, but it is not accessible enough in pedestrian traffic to act as a centre with a higher hierarchical level.

Activities in the field of spatial policy in the municipality of Czernica should aim at reducing monofunctional spatial development and striving to enrich the service offer throughout the entire municipality – also within the villages which development potential of service centres is the lowest, but at the same time particularly important for the functioning of local communities. Building a system of service centres should be focused on the successive study of demographic trends and spatial behaviour within the village with identified potential. However, the development of these centres should be based on existing spatial values and traffic attractors – in particular within the villages of Nadolice Wielkie and Dobrzykowice. An important issue of developing a network of services in space is also the need to build the identity of a given place – already at the design stage.

Conducted analyses highlighted the special need for shaping space in relation to spatial development trends. The highest housing density occurring in the direct vicinity of Wrocław and in the capital of the Czernica municipality shows that firstly, activities aimed at implementing the own tasks of municipality in the field of public space should be oriented in these areas. This action is considered to be deliberate while resulting from the highest values of spatial accessibility of these areas.

Building a common identity is possible, among others, by creating places of integration of residents. These structures should encourage people to stay in them through clear development, as well as through a wide range of services meeting the needs of all residents. It is important to eliminate or suppress the impact of disturbing functions that are not adapted in scale to their more intimate and still rural character. They should also be easily accessible, especially for pedestrians, along with access corridors from each part of the village, enclosed with traffic generators, encouraging them to continue their journey.

The newly created structures (Fig. 9) should constitute a bridge between the city and the village, both in the regional and local dimension, but also urban, based on specific design assumptions, and sociological, connecting “old” and “new” village residents. In this context, local spatial development plans will play a particularly important role, as in their current form they would need to be updated to determine more precise records shaping public space and its encapsulating functions. When planning the functional and spatial structure of rural areas under the pressure of intensive urbanisation in the zone of influence of a metropolitan centre, it is necessary to adapt the service offer to a wider and more diverse group of recipients. The traditional approach to village planning should be re-evaluated in the face of new challenges posed by the emergence of new users accustomed to the “urban” lifestyle, entering areas important for local, indigenous communities.

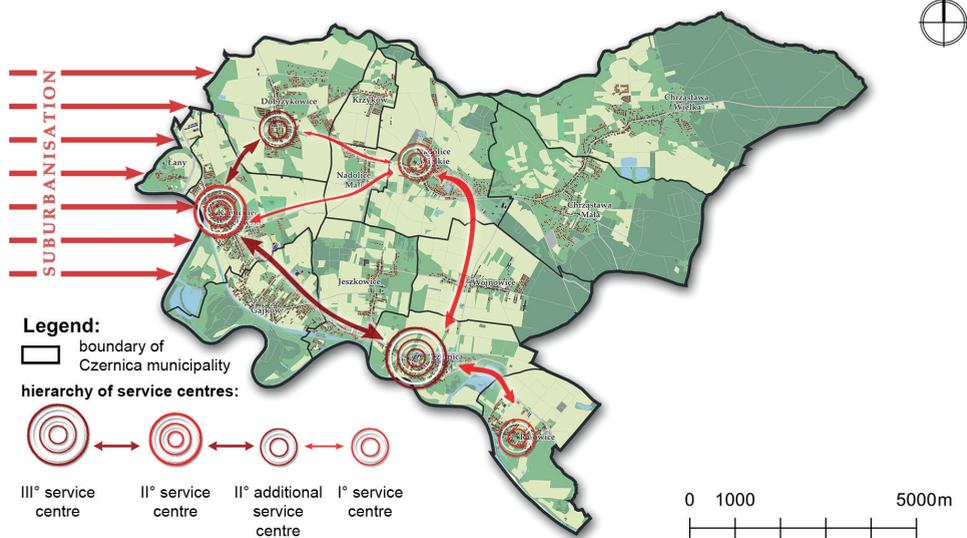


Fig. 9. The concept of a hierarchical system of service centres in the Czernica municipality. *Source:* own study

Conducted analysis is a part of the current trend of urban planning and design as well as architectural research highlighted in the state of research. Intensive development of Wrocław and its urban sprawl phenomenon resulted in challenges that Czernica municipality must face in planning sustainable development. It is related to the specificity of shaping spatial growth of rural zones in the functional urban area. The conclusions of the OECD report [14] are also appropriate in the analysed municipality. The lack of multifunctional public spaces that provide a diverse catalogue of services for local society in the areas of urban core pressure can be noticed in conducted urban inventory. It should be considered as a negative trend, especially considering the fact that current research indicates the centre-forming role of retailing and private services in the spatial structure. Although, in recent years the crisis in public spaces can be noticed [36]. The patterns in social behaviour are subject to permanent changes [19], [22], [37], thus the accessibility of public space in the context of energy spent on everyday trips will be an important factor for many people. Therefore, the concept of a hierarchical system of service centres in the Czernica municipality based on conclusions of network analysis and urban inventory seems to be justified. Space changes much more slowly than the way it is used, so it also can adapt to economic realities. After all, in the vicinity of valuable public spaces, the economic condition of entities can be intensified. It may have an important impact if the municipality builds a strategy of shaping public spaces and local service centres based on pedestrian traffic generators. The planned hierarchical system of service centres (consistent with current systematization of service centres) and the identification of the areas predisposed to the development of public functions, implements the idea of mixed-use development, as well as indirectly provides the vitality of the local community. A correctly conducted spatial policy and proper implementation of strategic development assumptions play a crucial role in this context. Consequently, the need for further improvement of planning and strategic documents in the Czernica municipality should be indicated. The spatial policy of municipalities should be correlated at the planning level in the functional area and in the voivodeship, but also in smaller – urban design scale [38].

7. Conclusions

The municipality of Czernica, through its proximity to a large urban centre, is exposed to adverse suburbanisation processes, and thus – its negative spatial effects. As indicated in this study, the highest building density in the municipality is correlated with the proximity of Wrocław's administrative borders. In the Czernica municipality, the existence of an unambiguous hierarchical system of service centres has not been identified, even despite the proposals for their creation contained in the rather laconic entries of the Study on land use planning. Their presence is dictated by the location of certain lower-order functions that are not equipped with the appropriate nature of public space development. The analysis carried out for the Czernica municipality shows that the hierarchical system of service centres is disturbed by suburbanisation processes, and the theoretically developed three-level service model is a subject to devaluation processes. It is the result of intensive housing anthropopressure near the borders of the voivodeship city. An additional factor weakening the current structure of the service centre hierarchy is the lack of sufficient functional and spatial potential to create a service system. Monofunctional (residential) development of the space around the city limits prevents development taking into account high spatial accessibility to areas important for society, which are undoubtedly service centres.

In the light of conducted analyses the positive conclusions as well as positive trends in contemporary challenges of spatial development of local service centres in the suburban areas of Wrocław, could be pointed out:

- The spatial development plan of the Lower Silesian Voivodeship correctly indicates the hierarchical system of development of service centres in the regional scale. The need of development of settlement areas in parallel with the need of development of counties and municipality local centres should also be considered as a positive trend.
- In contrast to the spatial development plan of the Lower Silesian Voivodeship, the Functional Cohesion Study in the Functional Area of Wrocław widely diagnoses the trends in service centres, which should be assessed as beneficial. Nevertheless, it is a diagnostic document with no legal force. Therefore, the implementation of its conclusions by the local government units is not required. Moreover, it can be pointed out that guidelines of the Cohesion Study had not been implemented by the Czernica municipality.
- The hierarchical development of service centres in relation to the calculated density of the settlement network was indicated in the study on land use planning of the Czernica municipality. Correlation of development of the service sector with population density is a positive trend.
- Conducted study of the development of service centres in the suburban areas on the example of the Czernica municipality, based on in-depth urban inventory, analysis of the housing density, as well as analysis of spatial accessibility, allowed to indicate the potential development of space (major pedestrian traffic generators, important linkages and current spatial barriers that should be reduced in further spatial development).
- The spatial potential in the development of service centres in suburban areas does not have to be associated with a typical spatial form as a plaza surrounded by service buildings, what was indicated in the analyses. The centres may have a polycentric character, shaped on the basis of pedestrian linkages, where appropriate traffic generators should occur.

Conducted analyses also enabled to define negative conclusions as well as negative trends in contemporary challenges of spatial development of local service centres in the suburban areas of Wrocław:

- There are gaps in the source literature in the case of contemporary development of service centres and their spatial structure. It equals a lack of knowledge that can be implemented within local government units.
- The spatial development plan of the Lower Silesian Voivodeship does not diagnose the special need of development of local service centres in the areas affected by suburbanisation, where the spatial anthropopression related to monofunctional housing development has occurred.
- The study on land use planning of the Czernica municipality does not describe guidelines regarding the specific location and methods of shaping spatial development of local service centres.
- The implementation policy of the Czernica municipality does not provide the necessity of shaping service centres. The regulations included in local plans that are related to the service sector are highly laconic. Moreover, the villages of Dobrzykowice and Czernica do not have local plans that could indicate important public spaces with concomitant services.
- There is a strong necessity of correlation of architectural and urban planning research with sociological research connected to the needs of the users and residents of suburban areas. The results of these researches may widen the functional catalogue and approach to development of public space in the areas affected by suburbanisation, where the specific social groups are combined.

With regard to the above conclusions, attention should be paid to the need to create a service centre system in suburban areas. With regard to the case study of Czernica municipality, the most important (based on the centre-creating municipal functions) is the service centre in Czernica. It shows the highest functional and spatial potential, despite the lower level of service for residents in pedestrian traffic. The second-order centre is located in Kamieniec Wrocławski. It is available for areas located closer to Wrocław, as well as the second-order complementary centre in Dobrzykowice and first order centres in Nadolice Wielkie and Ratowice. The development of local service centres is a significant challenge in contemporary urban planning. On the one hand, it involves the need of ensuring accessibility to services, and on the other hand, the need of shaping public spaces that can integrate the local community.

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