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GREEN AREAS STRUCTURE OF 20TH C. RESIDENTIAL AREAS IN SZCZECIN

STRUKTURA ZIELENI MIEJSKIEJ W OSIEDLACH MIESZKANIOWYCH POWSTAŁYCH W SZCZECINIE W CIĄGU XX WIEKU

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Streszczenie. Na przestrzeni lat formowanie powierzchni na obszarach pełniących funkcję mieszkaniową ulegało różnym tendencjom, choć ich główna funkcja pozostała niezmienna. Na przykładzie różnowiekowych osiedli mieszkaniowych można prześledzić, jak wraz z upływającym czasem zmieniała się struktura poszczególnych elementów, w tym zieleni osiedlowej, na obszarach zabudowy wielorodzinnej. W niniejszej pracy poddano analizie strukturę udziału składowych terenów wybranych osiedli mieszkaniowych lewobrzeżnej części Szczecina, szukając odpowiedzi na pytanie jak ewaluowały i jak funkcjonują obecnie osiedlowe tereny zieleni. Do analizy wybrano dziewięć osiedli mieszkaniowych z terenu lewobrzeżnej części Szczecina, kierując się w wyborze okresem ich powstania: w okresie międzywojennym XX wieku, w epoce „wielkiej płyty” – lata 70.–80. XX wieku oraz wybudowane po 2000 roku. W wybranych do badań obszarach przeanalizowano strukturę użytkowania przestrzeni oraz określono skład gatunkowy zieleni wysokiej. Największy udział terenów zieleni w wybranych do analiz osiedlach lewobrzeżnej części Szczecina stwierdzono w przypadku terenów najstarszych, pochodzących z początku XX wieku (ok. 50% udziału w ogólnej powierzchni terenu). Przedwojenne osiedla mieszkaniowe cechuje dojrzała struktura zieleni, z okazami cennymi pod względem przyrodniczym. Problemem jest brak infrastruktury komunikacyjnej i wypoczynkowej. Osiedla budowane w latach 70. charakteryzuje zróżnicowany udział terenów zieleni (30–50%). Osiedla „wielkiej płyty” charakteryzują się złym rozplanowaniem zieleni oraz przypadkowym i skromnym doborem gatunków. W przypadku osiedli najmłodszych zauważa się wyraźnie mniejszy udział terenów zieleni kosztem terenów przeznaczonych na potrzeby komunikacyjne. Nowoczesne osiedla są zazwyczaj odpowiednio zaprojektowane pod względem roślinności ozdobnej, jednak coraz częściej brak jest miejsca na zielone enklawy o charakterze rekreacyjnym.

Key words: housing development, Szczecin, urban green areas, urbanization processes.

Słowa kluczowe: budownictwo mieszkaniowe, miasto Szczecin, procesy urbanizacyjne, tereny zieleni miejskiej.

INTRODUCTION

Over the years, space formation in housing areas has been influenced by various trends, although their main function remained the same. Aesthetic and social functions as well as feasibility of basic needs including the one of safety continue to be the chief factors in planning and building multi-family housing estates in cities. These areas have existed in the

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urban landscape for over 100 years where side by side can be found housing estates created in the interwar period, realizations of the 60s and 70s planners as well as modern residential developments. By observing housing estates from various times, it is possible to trace changes that have occurred over the years within the structure of particular elements of multi-family housing greenery. Green areas are primarily defined according to their functions in the entire settlement system, defining them as areas in urban complexes (including the open landscape) advisedly planted with vegetation for the improvement of aesthetics and the biological function of environment (Haber and Urbański 2005). Seeking for the answer to the question of how the green areas in housing estates have evolved and how they operate nowadays, the present study analyzes the structure of the shares of constitutive areas of the selected housing estates located in the left-bank part of Szczecin.

MATERIAL AND METHODS

Nine housing estates located in the left-bank part of Szczecin were chosen for the analysis according to the period of their foundation: from the interwar period of the 20th Century (objects 1–3, Fig. 1), the era of “Large Panel System building” – 70s – 80s of the 20th Century (objects 4–6) and built after the year of 2000 (objects 7–9). The main features of the chosen housing estates are presented in Table 1.

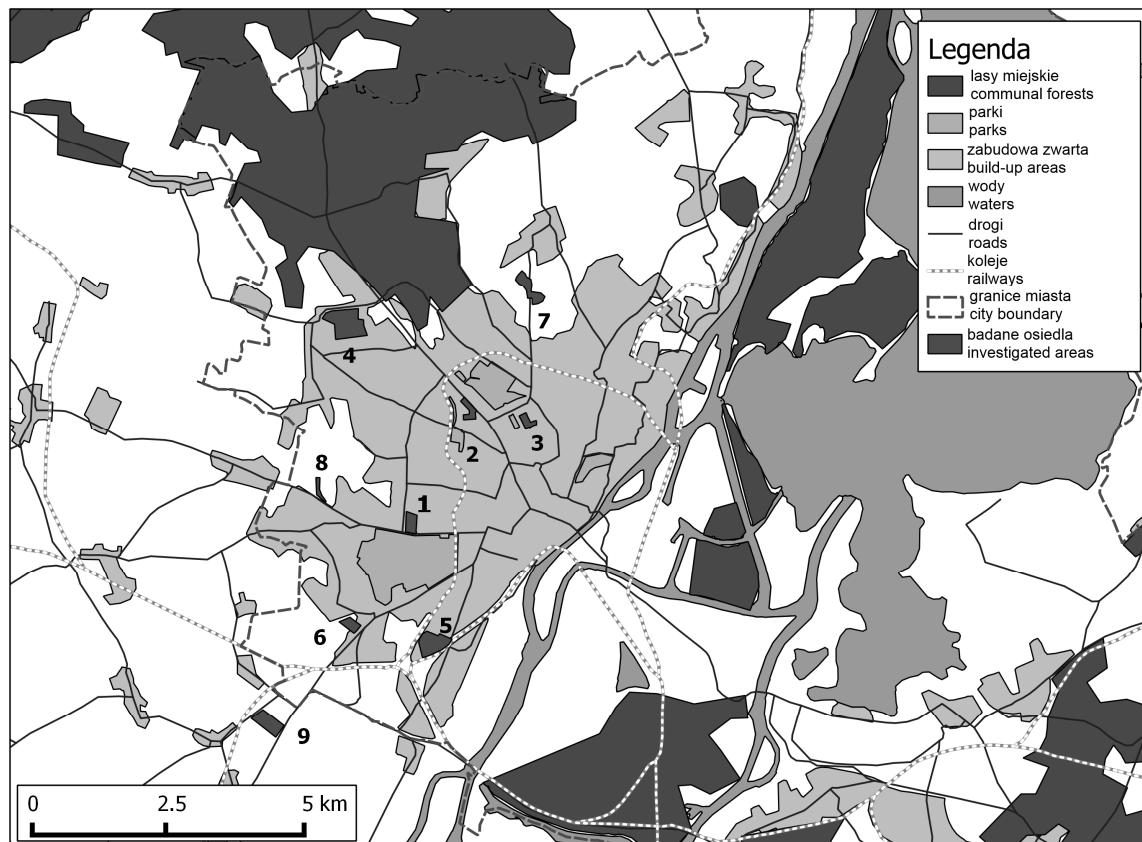


Fig.1. The location of the analyzed housing estates in Szczecin
Rys. 1. Lokalizacja badanych osiedli mieszkaniowych w Szczecinie

Table1. Main parameters of the analyzed housing estates in Szczecin
Tabela 1. Podstawowe informacje o badanych osiedlach mieszkaniowych w Szczecinie

Housing estate Osiedle	Time of foundation Czas powstania	Area (ha) Powierzchnia (ha)	Comments Informacje
Herbowa	20s	4.40	two-storey housing blocks in the downtown district, numerous old trees, the vicinity of Jasne Błonia – a representative recreational area dwukondygnacyjne bloki mieszkalne w dzielnicy śródmiejskiej, liczny starodrzew, sąsiedztwo Jasnych Błoni – reprezentacyjnego terenu rekreacyjnego
Maksyma Gorkiego	20s	5.58	two- and three-storey housing blocks in the district of Pogodno, the vicinity of a recreational park dwu i trzykondygnacyjne bloki mieszkalne w dzielnicy Pogodno, sąsiedztwo parku rekreacyjnego
Karola Miarki	30s	6.90	distinctive two-storey terraced houses with balcony passageways, vicinity of the large area of organized greenery – Central Cemetery charakterystyczna dwupiętrowa – zabudowa szeregową z balkonowymi przejściami, sąsiedztwo dużego terenu zorganizowanej zieleni – Cmentarza Centralnego
Zawadzkiego	70s	29.08	4- to 10-storey large panel houses, numerous commercial buildings, sports fields, landscaping elements, organized greenery wielkopłytowe bloki 4-10 kondygnacyjne, liczne budynki usługowe, boiska sportowe, elementy małej architektury, zieleń zagospodarowana
Wzgórze Hetmańskie	70s	17.57	4- to 10-storey large panel houses, only internal organized green areas wielkopłytowe bloki 4–10 kondygnacyjne, zagospodarowane tereny zielone
Reda	70s	5.56	4- to 10-storey large panel houses, only internal organized green areas wielkopłytowe bloki 4–10 kondygnacyjne, zagospodarowane tereny zielone
Warszewo – Duńska	after 2000 po roku 2000	11.58	fast developing housing estates, 3- to 5-storey buildings, internal young plantings of trees and ornamental shrubs, commercial buildings, playgrounds szybko rozbudowywane osiedla, budynki 3–5 -piętrowe, młode nasadzenia drzew i krzewów ozdobnych, budynki usługowe, place zabaw
Warzymice – Różane	after 2000 po roku 2000	13.73	2- to 4-storey buildings, numerous guarded subdivisions, dense buildings, only internal young plantings of trees and ornamental shrubs budynki 2–4 -piętrowe, liczne osiedla strzeżone, gęsta zabudowa
Marynarzy Polskich	after 2001 po roku 2001	2.95	4- to 5-storey buildings, only internal young plantings of trees and ornamental shrubs budynki 4–5 piętrowe, młode nasadzenia drzew i krzewów ozdobnych

The selected areas were analyzed according to the structure of space usage (percentage of green areas, buildings, car parks and access roads) and characterized according to the species constitution of tall greenery (Table 2).

Table 2. The structure of space management in different types of Szczecin housing estates
Tabela 2. Struktura użytkowania przestrzeni w badanych osiedlach mieszkaniowych

Housing Estate Osiedle	The structure of area management (%) Struktura użytkowania przestrzeni			Species composition of high greenery (trees, shrubs) Skład gatunkowy zieleni wysokiej (drzewa i krzewy)
	green areas tereny zieleni	buildings zabudowa	car parks, roads drogi i parkingi	
Herbowa	52	28	20	<i>Tilia cordata</i> (Small-leaved Lime), <i>Tilia platyphyllos</i> (Large-leaved Lime), <i>Acer negundo</i> (Ash Maple), <i>Acer platanoides</i> (Norway Maple), <i>Betula pendula</i> (Silver Birch), <i>Sambucus nigra</i> (Black Elder), <i>Syringa vulgaris</i> (Common Lilac), <i>Philadelphus</i> (Mock-orange), Paul's Secret Midland Hawthorn, <i>Robinia pseudoacacia</i> (Black Locust), <i>Spiraea</i> , <i>Salix alba</i> (White Willow), <i>Picea abies</i> (Norway Spruce), <i>Rhus typhina</i> (Staghorn Sumac), <i>Aesculus hippocastanum</i> (Horse-chestnut)
Maksyma Gorkiego	46	24	30	<i>Tilia cordata</i> (Small-leaved Lime), <i>Betula pendula</i> (Silver Birch), <i>Tilia platyphyllos</i> (Large-leaved Lime), <i>Aesculus hippocastanum</i> (Horse-chestnut), Paul's Secret Midland Hawthorn, <i>Philadelphus</i> (Mock-orange), <i>Syringa vulgaris</i> (Common Lilac), <i>Quercus rubra</i> (Northern Red Oak), <i>Salix alba</i> (White Willow)
Karola Miarki	57	38	19	<i>Acer campestre</i> (Field Maple), <i>Aesculus hippocastanum</i> (Horse-chestnut), <i>Acer platanoides</i> (Norway Maple), <i>Sorbus aucuparia</i> (Rowan), <i>Salix alba</i> (White Willow), <i>Crataegus laevigata</i> (Midland Hawthorn), <i>Sambucus nigra</i> (Black Elder), <i>Tilia platyphyllos</i> (Large-leaved Lime), <i>Lonicera periclymenum</i> (Common Honeysuckle), <i>Picea abies</i> (Norway Spruce), <i>Robinia pseudoacacia</i> (Black Locust), <i>Betula pendula</i> (Silver Birch)
Zawadzkiego	38	34	28	<i>Tilia x euchlora</i> (Caucasian Lime), <i>Tilia platyphyllos</i> (Large-leaved Lime), <i>Robinia pseudoacacia</i> (Black Locust), <i>Fraxinus excelsior</i> (European Ash), <i>Acer platanoides</i> (Norway Maple), <i>Aesculus hippocastanum</i> (Horse-chestnut), <i>Acer negundo</i> (Ash Maple), <i>Betula pendula</i> (Silver Birch), <i>Rhus typhina</i> (Staghorn Sumac)
Wzgórze Hetmańskie	35	27	38	<i>Carpinus betulus</i> (European Hornbeam), <i>Tilia cordata</i> (Small-leaved Lime), <i>Tilia x euchlora</i> (Caucasian Lime), <i>Acer platanoides</i> (Norway Maple), <i>Acer pseudoplatanus</i> (Sycamore Maple), <i>Acer negundo</i> (Ash Maple), <i>Rosa agrestis</i> Savi (Field Rose), <i>Sambucus nigra</i> (Black Elder), <i>Spiraea</i> , <i>Ligustrum vulgare</i> (Wild Privet)
Reda	42	23	35	<i>Acer platanoides</i> (Norway Maple), <i>Populus</i> (Poplar), <i>Picea abies</i> (Norway Spruce), <i>Pinus sylvestris</i> (Scots Pine), <i>Acer negundo</i> (Ash Maple), <i>Robinia pseudoacacia</i> (Black Locust), <i>Sorbus aucuparia</i> (Rowan), <i>Salix alba</i> (White Willow), <i>Ligustrum vulgare</i> (Wild Privet), <i>Spiraea</i>
Warszewo – Duńska	31	28	41	<i>Forsythia</i> , <i>Syringa vulgaris</i> (Common Lilac), <i>Cornus alba</i> (Siberian Dogwood), <i>Spiraea</i> , <i>Chaenomeles</i> , <i>Ligustrum vulgare</i> (Wild Privet), <i>Berberis</i> , <i>Prunus serrulata</i> (Japanese Cherry), <i>Robinia pseudoacacia</i> 'Umbraculifera', <i>Prunus cerasus</i> (Sour Cherry), <i>Carpinus betulus</i> 'Columnaris' (Columnar European Hornbeam), <i>Acer pseudoplatanus</i> 'Brilliantissimum' (Sycamore Maple 'Brilliantissimum'), <i>Platanus × acerifolia</i> (London plane), <i>Crataegus laevigata</i> (Midland Hawthorne)
Warzymice – Różane	30	39	31	<i>Prunus serrulata</i> (Japanese Cherry), <i>Robinia pseudoacacia</i> 'Umbraculifera', <i>Prunus cerasus</i> (Sour Cherry), <i>Salix alba</i> (White Willow), <i>Forsythia</i> , <i>Syringa vulgaris</i> (Common Lilac), <i>Cornus alba</i> (Siberian Dogwood), <i>Spiraea</i> , <i>Chaenomeles</i> , <i>Ligustrum vulgare</i> (Wild Privet), <i>Berberis</i> , <i>Thuja</i> , <i>Junipers</i> , <i>Picea abies</i> (Norway Spruce), <i>Fir</i>
Marynarzy Polskich	21	42	37	<i>Pinus sylvestris</i> (Scots Pine), <i>Betula pendula</i> (Silver Birch), <i>Tamarix</i> (Tamarisk), <i>Junipers</i> , <i>Prunus serrulata</i> (Japanese Cherry), <i>Prunus</i> , <i>Acer platanoides</i> (Norway Maple), <i>Picea abies</i> (Norway Spruce), <i>Picea pungens</i> (Blue Spruce)

RESULTS AND DISCUSSION

The largest share of green areas among the selected housing estates could be noticed in case of the oldest developments. They constitute about 50% of the total area (Table 2). It is worth to notice the relatively small share of paved surfaces intended for car parks, sidewalks and roads (Fig. 2). Housing estates built in the 70s are characterized by the share of greenery at the level of a dozen or so percent up to the level similar to that observed among the areas of the oldest of the analyzed settlements. Distinctly smaller share of green areas and larger share of those intended for communication can be observed in case of the newest housing estates built over the last few years. The share of green areas in these housing estates is similar to that in the housing estates from the 70s and notably smaller than that observed among housing estates built in the interwar period.



Fig. 2. The structure of greenery and building development in prewar housing estates in the left-bank part of Szczecin
Rys. 2. Przykłady struktury zieleni w przedwojennych osiedlach lewobrzeżnego Szczecina

In terms of species diversity in the analyzed housing estates, the increasing share of ornamental fruit trees and columnar forms of trees as well as larger share of ornamental shrubs are noticeable. The increasing share of shrubs in the structure of the greenery in the newest of the studied housing estates coincides with the elimination of the plantings of large trees e.g. *Tilia* (lime trees). This situation is connected with the recent fragmentation of green areas within housing estates caused by the need of large areas intended for roads and car parks. The standard of greenery cultivation is also varied, affecting the viability and maturation of the designed green areas. This is particularly visible in large housing estates from the 70s, where the species diversity is often limited to a few most popular species of trees and shrubs. However, in the structure of the oldest settlements one can find species traditionally common in Western Pomerania such as different varieties of beech, hornbeam, oaks, lime trees and plane trees.

Different age of housing estates is also visible by the structure of the greenery. In the housing estates created in the prewar period it is mature, stable and is not subject to any significant changes. Designers of newer housing estates introduce fast-growing species and numerous species of ornamental shrubs which quickly fill the space with low shapes and their structure undergoes fast transformation.

The structure of building development in the housing estates built in the interwar period resulted mainly from the need to meet ever-increasing deficit of housing for unaffluent citizens. Consequently, designers began to seek solutions that would accelerate the construction of residential areas while providing good environmental conditions, and maintaining the lowest possible cost of their construction and operation. These guidelines gave grounds to the new trend in urban planning called functionalism (Kania 2010). Most often these were building units where residential buildings were located perpendicularly to the roads, usually in repeated cubature form with identical spaces between the buildings – it created building developments in line system (Ostrowski 1975). Housing estates established according to this simple scheme could fulfill the basic functions intended for them. They could house large numbers of inhabitants (two- and three-storey buildings) while providing good living conditions thanks to resigning from creating small, stuffy courtyards typical for tenement buildings in favour of creating large green yards between buildings.

The problems observed among the prewar housing estates include difficult access to staircase entrances as well as insufficient parking space in relation to the needs of contemporary inhabitants. In the 30s of the 20th Century large communication areas were superfluous. Adapting functionality of these housing estates enforces actions which result in limiting the green areas in favour of creating paved parking surfaces.

Prewar housing estates are characterized by mature structure of greenery. Very often one can meet trees planted decades ago. Low greenery is dominated by modest hedges and small lawns. Mini-gardens and flowerbeds created by inhabitants themselves between terraced houses are also quite common. Recreational structure is limited to playgrounds and small areas intended for relaxation. Buildings often form internal courtyards, which hinder the maintenance of green areas in good condition. Tree crowns of trees growing in the internal courtyards are very often asymmetric due to inadequate insolation. Green areas are well planned and the present species can be described as naturally valuable. Particular attention in the prewar housing estates was paid when creating green dominants in the form of individual plantings of long-living ornamental species of deciduous trees such as: Horse-chestnut, London plane or White Weeping Willow.

The idea of creating social housing estates with open green areas fostering bonds between people started to be abandoned in the 50s. The new era of residential building supporting mass building have begun. Consequently, in the left-bank part of Szczecin one can nowadays encounter the examples of so called „large-panel building system” estates, which have caused the dissolution of social bonds, becoming the places of residence only.

The housing estates from the 70s are characterized by plantings which are already 20–30 years old and the results of their poor layout is becoming visible – very often trees are planted too densely, there is lack of order, there is no concept of spatial planting and the selection of species seems random (Fig. 3). The green areas of housing estates from the times of PRL (People's Republic of Poland) are dominated by trees and lawns, which are maintained in varying degrees. Areas intended for relaxation and their infrastructure are usually in poor condition. Land administrators constantly deal with the problem of property damage, thefts and vandalism. Cultivation of green areas is usually limited to the preservation of the current state. However, the inhabitants themselves more often reveal

their own initiative by managing small pieces of land, planting trees and shrubs or looking after already existing greenery. With this type of building development leaving some parts of area without any greenery or without proper maintenance to become unkempt lawns is quite common, due to design negligence, damaging some parts of project ideas, treading and using grounds as sports fields, etc. Such places form semi-public space with limited value for the inhabitants (Chmielewski 2001).



Fig. 3 The structure of greenery and building development in called large-panel building system housing estates in the left-bank part of Szczecin
Rys. 3. Przykłady struktury zieleni w osiedlach wielkopłytowych lewobrzeżnego Szczecina

Modern housing estates are usually designed with great care. However, economic calculation enforces high density of buildings and devoting large spaces for car parks and access roads (Fig. 4).



Fig. 4 The structure of greenery and building development modern housing estates in the left-bank part of Szczecin
Rys. 4. Przykłady struktury zieleni na terenach osiedlowych z końca XX wieku w lewobrzeżej części Szczecina

Consequently, the green areas are usually marginalized. Their role is predominantly ornamental, however there is no place for large green areas intended for relaxation. Species composition of plants in modern housing estates is relatively rich. Designers introduce modern species of ornamental plants, however, they often pay little attention to their habitat requirements. Shrubs planted in small groups, forming hedges or completing clusters of trees are usually dominant. The arrangement of shrubs is very often random without any attention

to balanced composition. The effect is counterproductive and the compositional chaos is intensified by improper maintenance of existing greenery. The most popular are rather low species with regular and small crowns, which frequently form round shapes, as well as conifers which require less care. The greenery in modern housing estates have been shaped for only few years so far. Gated and guarded communities give better opportunities for keeping greenery in good condition and its maintenance is kept at much higher level compared to other analyzed objects.

The consequence of modern planning of the residential areas is lowering the quality of life in modern housing, since the green areas are created in comminuted forms in the immediate vicinity of buildings and their size is limited to the minimum. The only role of green areas here is the aesthetic one, since creating places intended for relaxation is impossible due to the lack of their limited space. These housing estates are destitute of large green areas for recreation and sports, which have significant utilitarian, environmental and pro-health value (Sitarski et al. 2011).

CONCLUSIONS

1. The largest share of green areas in the selected housing estates on the left-bank part of Szczecin has been observed in the oldest settlements established at the beginning of the 20th Century (about 50% of share in total surface area).
2. Prewar housing estates are characterized by mature structure of greenery with valuable species. The problem is with the lack of transport infrastructure as well as places intended for relaxation.
3. The housing estates established in the 70s are characterized by varied share of green areas (30–50%). Large-panel system building housing estates are characterized by poor layout of greenery as well as random and limited selection of species. Places intended for relaxation and their infrastructure are usually in bad condition and their maintenance is limited to preserving the current state.
4. In case of modern housing areas one can observe significantly smaller share of green spaces in favour of areas devoted for transport needs. Modern housing estates are usually properly designed with respect to ornamental plants, but more often there is no place for green enclaves for recreation.

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Abstract. Over the years, space formation in housing areas has been influenced by various trends, although their main function remained the same. By observing housing estates from various times, it is possible to trace changes that have occurred over the years within the structure of particular elements of multi-family housing greenery. Seeking for the answer to the question of how the green areas in housing estates have evolved and how they operate nowadays, the present study analyzes the structure of the shares of constitutive areas of the selected housing estates located in the left-bank part of Szczecin. Nine housing estates located in the left-bank part of Szczecin were chosen for the analysis according to the period of their foundation: from the interwar period of the 20th Century, the era of "Large Panel System building" – 70s–80s of the 20th Century and built after the year of 2000. The largest share of green areas in the selected housing estates on the left-bank part of Szczecin has been observed in the oldest settlements established at the beginning of the 20th Century (about 50% of share in total surface area). Prewar housing estates are characterized by mature structure of greenery with valuable species. The problem is with the lack of transport infrastructure as well as places intended for relaxation. The housing estates established in the 70s are characterized by varied share of green areas (30–50%). Large-panel system building housing estates are characterized by poor layout of greenery as well as random and limited selection of species. In case of modern housing areas one can observe significantly smaller share of green spaces in favour of areas devoted for transport needs. Modern housing estates are usually properly designed with respect to ornamental plants, but more often there is no place for green enclaves for recreation.

