

# Urban green spaces – A support for physical activities and tourism. Case study Oradea Municipality, Bihor, Romania

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## abstract

**Background:** Urban green space with specific functions (economic, social, ecological, recreational tourist, etc.) stands as one of the most representative indicators of attractiveness and quality. The main aim of the study is to inventory and analyze the green areas with reference to their number, total area, area per inhabitant and their facilities for physical and tourist activities.

**Material and methods:** The study data were obtained from the website of the National Institute of Statistics of Romania, the Register of Green Spaces of Oradea Municipality and the Oradea Green City Program as well as from field research. They were processed in Excel and ArcGis 10.6. programs.

**Results:** The results highlighted the existing situation at the level of Oradea Municipality regarding the green spaces that are suitable for engaging in physical and tourist activities.

**Conclusions:** Although the analyzed area is in full process of economic development and territorial expansion, against the background of a coherent urban development policy, the green space is undergoing a sustained process of expansion, contributing to increasing the quality of urban life and consolidating the city's destination image.

**Key words:** green areas, green city, physical and tourist activities, Municipality of Oradea.

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## INTRODUCTION

The urban area is, by far, a support of production, consumption and commercial activities, but it automatically becomes, through its subspaces, a saleable and attractive product [1,2], both for its own inhabitants as for those from the outside. Naturally, the quality of being saleable / attractive is one of the strengths towards which most cities tend; the notions of smart/green/tourist city being common in all current urban policies. Green space is one of the subspaces that significantly increase the attractiveness of a city, through its direct impact on the quality of life and health, becoming one of the representative indicators of urban attractiveness.

The urban green space features a wide variety of definitions generated by specialists in various fields, such as ecologists, geographers, landscapers, various national and international bodies [3], or by how it influences aspects of human life and the city as a whole [4-6]. From the definitions proposed by most authors, it appears that urban green spaces include those areas of land occupied by parks, zoos, botanical gardens, urban forests, green spaces for leisure, urban gardens, parks/sports facilities, protection corridors, etc.

Public green spaces, by their nature and functions, represent the "lung" of each city. Their most important function is to regenerate oxygen, reducing to some extent the pollution generated by human activities, and lately in the context of global warming, they reduce high heat in cities [6,7]. A secondary function is the economic one: green spaces being the support for an extensive range of activities specific to services, mostly the commercial ones.

From a social point of view, these spaces are the ones that reduce the differences; they all benefit from the same environment regardless of their social status or origin. Green spaces are also used differently by people, during different hours, days, and seasons. From a social point of view, through those who use the facilities of the space daily or are just mere visitors, in a real "daily ballet" takes place in these spaces [8].

Another defining element for the role of green spaces in the quality of the urban environment and life is representative of the leisure and tourist function given the impact on health and well-being through physical activities and recreation that can take place in these spaces [9-11]. For physical-sports activities, it is necessary to provide them with specific equipment, so as to generate a harmonious public space, shared by users, without affecting the access of any person [8, 12]. The tourist value of urban green spaces derives from the specificity of the space (botanical, zoological, landscape), the position within the city, the activities carried out, etc. [3]. Therefore, it is fully justified that green spaces, through their functions and equipment/facilities, are indicators used in various studies aimed at improving the quality of life in contemporary cities. At the same time, they constitute a buffer zone, an area for filtering/spreading flows, and contribute to the harmonization and sanitation of the city [8].

Last but not least, as a component subspace, public green spaces are a landmark in the evolution and development of cities: as the urbanization process experienced a strong acceleration, their area had been reduced, reorienting areas to other commercial residential or other functions [3, 5, 13].

Against this background, for quite a while, with the emergence of increasingly acute problems caused by pollution in urban areas [14-16, 24, 25], more and more public or private movements and actions that militate for the protection/conservation and expansion of urban green spaces started to appear. Suggestively defined as the green guerrilla, beginning at the end of the last century [5], the movement quickly spread to large cities in Europe, Asia, the United States, etc. Since 2004, a site specialized in these issues has been operating, <http://www.guerrillagardening.org/>, with 30 states of the world contributing

information and exchange of experience [3, 5]. The issue of green spaces has also been addressed through European policies and projects. Thus, a number of programs through the Framework Program of the European Union, "The city of tomorrow and cultural heritage" should be noticed [5, 17-19].

In this European context, favorable to the conservation and extension of green spaces, the public actions of the Romanian state and of the urban administrations in Romania are included. Thus, by Law no. 24/2007, with amendments from 2012, the administration of green spaces as public interest areas is regulated (art. 1). The following article (art. 2) defines the notion of green space as "the green area within cities and municipalities, defined as a mosaic network or a system of semi-natural ecosystems, the specificity of which is determined by vegetation (wood, trees, shrubs, floriculture and herbaceous)", and art. 7 regarding the administration of green spaces, at letter f, mentions "the extension of the areas occupied by green spaces, by including in the category of public green spaces the lands with ecological or sociocultural potential" [20].

Supported by this national legislative framework, most cities in Romania have launched extensive public actions for the conservation and expansion of green spaces. Oradea was one of the first cities in Romania to realize the importance of green spaces in the quality of the urban environment, in the last decade noting the local administration's concern for expanding and increasing their quality. A first reference moment, for the city of Oradea, is the elaboration of the Local Registry of Green Spaces in the Municipality of Oradea, elaborated and approved by the Local Council of the Municipality on 15.07.2011 [21]. Moreover, with the value of 24 sq m of green space per inhabitant, the city of Oradea was ranked first among the cities in Romania, obtaining the title of green capital in 2011.

The second reference document is the ORADEA GREEN CITY Program, intended for urban regeneration and increasing the quality of green spaces in Oradea [22]. As a general objective, this document establishes the increase in the living standard of the citizens of Oradea. The strategic objectives established by this program include increasing the green area to 652 ha in 2030, increasing the green space indicator per capita to 29.4 sqm/inhab. in 2030, creating new tourist attractions by protecting and enhancing the city's green heritage.

These strategic objectives are also found in two of the city's development directions, namely Oradea Quality Public Spaces (planning of parks in each neighborhood, functional reconversion of large areas of unused land) and Touristic Oradea (re-planning of Crisul Repede river area).

The purpose of the present study is the inventory and analysis of green spaces in terms of the number, total area, area per inhabitant and their degree of equipment for physical and sports activities (sports grounds, fitness areas, running tracks, bicycle lanes, ping pong tables, skateboard parks, other facilities) and tourist activities (heritage buildings, statues, dendrological parks, spaces dedicated to events, etc.) within the Oradea municipality.

## **MATERIAL AND METHODS**

The study area is represented by the city of Oradea, located in the northwestern part of Romania, in Bihor County, near the border with Hungary (Fig. 2). A city with an old urban tradition, documented since the 11th century, it currently occupies the second rank in the national urban hierarchy, being a county seat, the polarizing center of Bihor County. Located on the banks of the Crisul Repede river, it spreads over 115.6 km<sup>2</sup> and has a population of over 220,000 inhabitants (Fig. 1). From the point of view of urban development, the city has experienced a significant boost in recent years, reflected in an increase in the quality

of life, holding the first place in attracting European funds among Romanian cities. Thus, in the period 2007–2020, the city attracted European funds of over 600 million euros, being an example of good practices for the rest of the cities in Romania. Also, in recent years, the city has become increasingly attractive to investors, economic development and significant increase in the quality of urban life attracting real estate projects, investments and residents [26]. In parallel with this growth, the initiatives of the local administration in the direction of increasing the tourist attractiveness of the city are noticeable: urban regeneration projects (Union Square), rehabilitation of Oradea Fortress, rehabilitation of heritage buildings, Nymphaea Aquapark, organization of events, festivals and tourist-related events, etc. As a direct consequence of this evolution, there are changes in the lifestyle and mentality of the population, the inhabitants taking over from the specific behavior of the residents of the traditional European cities, jogging, cycling, urban fitness being more and more practiced.

In the context presented in this study, with an exploratory character, we intend to make an analysis of the current situation of green spaces in the city of Oradea, with emphasis on those that are especially suitable for physical and tourist activities. Secondly, the objective of the study is to highlight the benefits offered by green spaces in terms of population health, the added value of the image of the city of Oradea and the increase in its attractiveness for tourists and residents.

For this purpose, in the first stage, a brief comparative analysis of green spaces (sqm/inhabitant) in Romanian cities with over 200,000 inhabitants was performed, resulting in their hierarchy according to this criterion and allowing the positioning of Oradea in relation to the national average and with cities of the same rank (Table 1, Fig. 1). In the next stage, the main parks in the city were inventoried and classified, according to the facilities and planning they have and which enable them to offer physical activities or attract tourists (Table 2).

The data used for the ranking of cities in relation to the area of green spaces per capita were provided by the website of the National Institute of Statistics of Romania [23]. It should also be mentioned that, at the level of Romania, there is no unitary and clear methodology for establishing the categories of areas that are part of the green space. In most cases, in order to reach European norms and requirements (26 sqm/inhabitant), private properties that are not accessible to all inhabitants or unmaintained vacant spaces are artificially declared as green areas. For the data regarding the green spaces of Oradea we used the Registry of green spaces in Oradea and the information provided by the Oradea Green City Program, intended for urban regeneration and increasing the quality of green spaces in the municipality of Oradea. In order to update the information on the equipment of the parks, those that provide the quality of the green spaces, field trips were made.

## RESULTS

### GREEN SPACE PER INHABITANT (SQM/INHABITANT) IN CITIES OF ROMANIA WITH OVER 200,000 INHABITANTS

The urban hierarchy in Romania highlights 9 cities with over 200,000 inhabitants and the capital, Bucharest. All 9 cities are medium-sized, far from the capital, with a population between 328,000 inhabitants (i.e. Timisoara) and 220,000 inhabitants (i.e. Oradea), the last in the hierarchy.

Table 1. Cities with over 200,000 inhabitants of Romania: total population and green area per inhabitant (sqm/inhabitant, 2019)

City	Population	Green space area (ha)	Green space area (sqm/inhabitant)
Bucuresti	2 155 240	4 506	21
Brasov	289 683	146	5.0
Cluj Napoca	325 179	814	24.9
Craiova	301 687	1 039	19.6
Constanta	313 156	150	4.8
Galati	304 873	956	14.8
Iasi	318 118	674	17.5
Oradea	220 626	534	24.1
Ploiesti	227 614	283	12.5
Timisoara	328 480	525	16.0

The green area per capita at the level of 9 big cities of Romania records significant variations, in disagreement with the demographic hierarchy. Thus, it features values between 4.8 and 24.9 sqm/inhab. (Table 1, Fig. 1) the national average being 18 sqm/inhab.

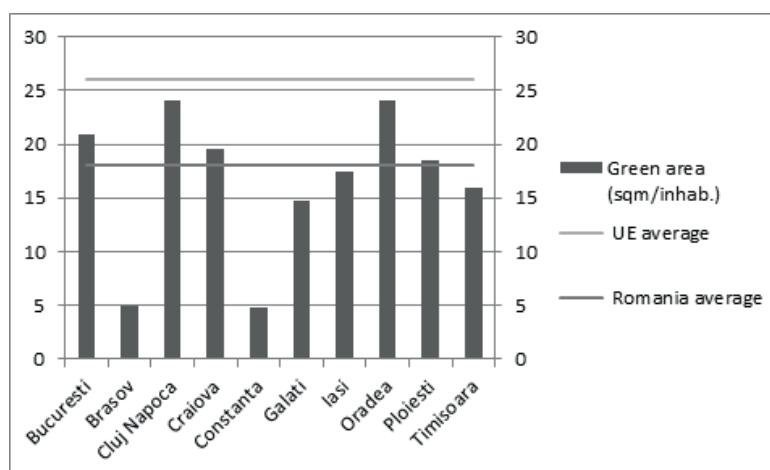


Fig. 1. Cities in Romania with over 200,000 inhabitants: green area per capita (sqm/inhabitant, 2019)

The least favorable situation belongs to the cities of Constanța and Brașov, and the best to the city of Cluj-Napoca. Analyzing the urban hierarchy according to this indicator, it appears that Oradea is among the cities with green area per capita well above the Romanian average (20 sqm/inhabitant), but below the European average of 26 sqm/inhabitant, holding the second position, after Cluj-Napoca (Fig. 1). The value of 24.1 sqm /inhabitant (Table 1) positions the city among those with high values, so that the target of 29 sqm/inhabitant for 2030 is not impossible to achieve, other approximately 70 ha being identified as with certain potential for development as green space [22]. It should be mentioned that these values for the surface of green spaces per capita for 2019 reveal the municipality effort to maintain this position, thus since 2011 Oradea has held the title of the green capital of Romania. The effort to maintain Oradea in the upper echelon of urban centers that have large areas of green areas per capita is all the more meritorious as, in recent years, the construction of residential, commercial, sports complexes has recorded a significant increase. This was possible due to the fact that, in parallel with the development of housing, commercial, etc. complexes, the municipality managed to transform 24 ha into landscaped green spaces [22].

## THE CURRENT SITUATION OF GREEN SPACES IN ORADEA

For 2020, the area of green spaces in Oradea amounts to a total of 534 ha, representing 6.7% of the in-built urban area.

The distribution of green spaces at the neighborhood level triggers the accessibility degree of the population to these areas and, implicitly, their utility. Thus, at the neighborhood level, the situation is different, largely influenced by the period of construction of the neighborhood, urban policies and the existence/possibilities of landscaping, the type of green spaces and their surface being closely related to the period granted to green spaces in the quality of urban life.

As can be seen (Fig. 2) most parks are present in the neighborhoods of collective housing: Rogerius, Salca-Nufărul, Subcetate, Dorobanților, Olosig. The higher share is explained by the high urban density of these neighborhoods which are among the oldest in the city and, at the same time, concentrate the largest population.

The smallest green areas are in the neighborhoods of individual homes: Tokay, Oncea, Podgoria, Nicolae Iorga and, especially, in new neighborhoods: Grigorescu, Gheorghe Doja, etc.

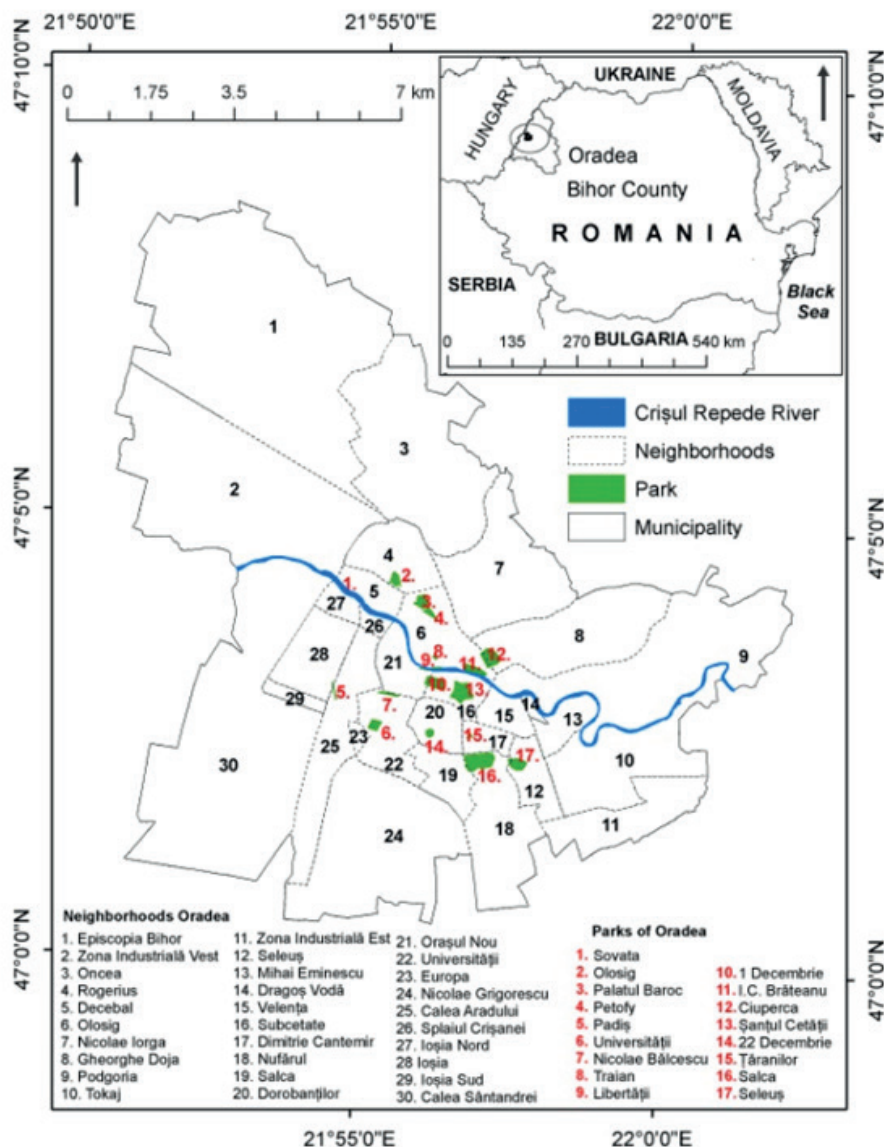


Fig.2. Parks of the Municipality of Oradea



Among the old districts of the city, Velența and the Bishopric of Bihor stand out due to the small number of green spaces. Velența neighborhood, the old urban core of the city, was built during the period when green spaces were not taken into account in urban development and concentrated a large number of industrial units and individual housing. The newer part of the neighborhood, built during the communist period, includes low quality collective housing for the poor population of the city, with high urban density, the emphasis not being on the quality of life but on maximizing the useful space for construction. In the case of Episcopia, the situation is explained by the fact that it is a former village in the vicinity of the city, incorporated into the latter after 1990. Therefore, its specific urban fabric is one of individual housing, the former suburban rural settlement, most green spaces being private and meant for agricultural use. The policy of landscaping, through the Oradea Green City project, specifically targets these neighborhoods, so that in the near future the green space in these neighborhoods will increase.

Within the categories of green spaces, the largest share belongs to parks, amounting to 17, which spread over 41 ha, followed by squares, i.e. 19 ha, and 5 ha belong to green spaces located in residential areas. Parks are also useful from the point of view of tourism and the practice of sports activities, from the total green spaces, 12.4% being, theoretically, available for practicing these activities.

In terms of facilities, not all of the 17 parks correspond to the unfolding of physical and tourist activities. Some of them are equipped with children's playgrounds or relaxation areas with specific urban furniture (benches, pergolas and gazebos).

Table 2. Park facilities of Oradea Municipality

Park	Area [ha]	Sports ground	Fitness area	Running track	Bicycle lane	Other sports equipment (ping pong tables, skateboards, etc.)	Promenade alley	Children's playground	Space dedicated to events	Heritage buildings, statues, etc.	Dendrological park or elements with landscape value
I.C. Bratianu	6.4	X	X	X	X	X	X	X		X	X
Balcescu	2.2						X	X	X	X	X
Baroc	6.3						X		X	X	X
Petofi	2.5				X			X		X	X
Libertatii	0.8				X		X	X	X	X	X
Santul Cetatii	2.5	X			X		X	X	X	X	X
Linistii	1.2										
Universitatii	1.8						X			X	X
Taranilor	0.9						X	X			
Traian	0.5									X	
Salca	4			X	X		X	X			X
Sovata	2	X	X	X	X		X	X			
Seleus	1.5	X					X	X			
Padis	0.8	X			X		X	X			
22 Decembrie	2.3						X				X
1 Decembrie	8.2						X	X	X	X	X
Ciuperca	4.5										

Entered the process of replanning and consolidation

The qualitative analysis of the park facilities allows their classification in three distinct categories: 1) The first category comprises parks in which physical activities benefit from adequate infrastructure or are under development. 2) The second category are parks with tourist potential, and 3) the third category is represented by parks especially planned for children and relaxation, but which, in turn, have some facilities for physical activities, respectively sports grounds or a running track and a bicycle lane.

1. There are three parks specifically designed for physical activities. Among them is I. C. Bratianu Park, an old park of the city dating from the beginning of the last century, located in the central area of the city, on the right bank of the Crișul Repede. Initially it was a park for children and relaxation with an area of 6.9 ha. Since 2010, the park has undergone an extensive replanning process with sports grounds (for basketball and football, ping-pong tables), a running track on synthetic surface (1054 m long, 1.25 m wide), doubled by a bike lane, ramps for skateboarding, pump-track area (a circuit of about 50 m, for children and beginners), fitness area. At the same time, the park benefits from a well-developed urban forest that provides an ozonated climate (Fig. 3).

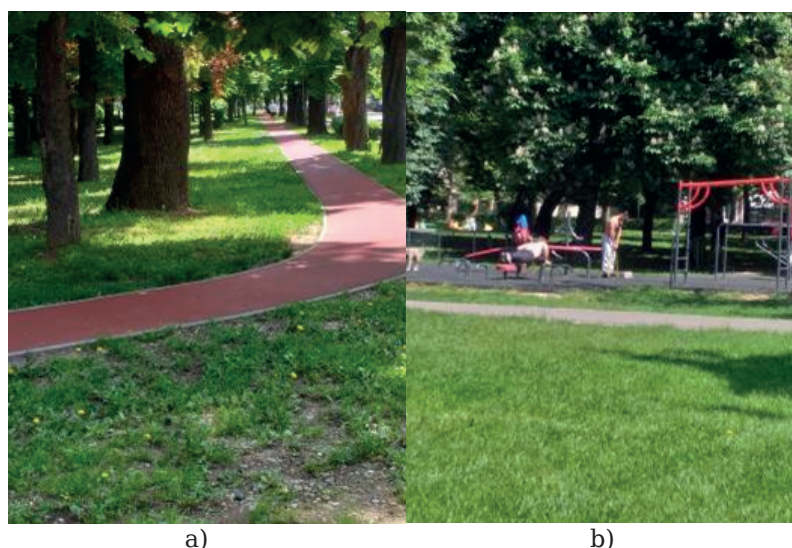


Fig. 3. Bratianu Park



Fig. 4. Sovata Park



Sovata Park, planned for sports activities, spreads over an area of more than 2 ha and is located on the right bank of the Crisul Repede river. Moreover, this park is planned for fitness, has sports grounds (football-basketball), and playgrounds for children (Fig. 4). In the near future, this park will be equipped with a synthetic running track with a length of 652 m and a width of 1.0 m [23].

Salca Park, still under development, is set on an area previously occupied by industrial units and vacant land, on the left bank of the Petastream (4 ha). Designed as a leisure, sports and event space, it is equipped with promenade alleys, children's playgrounds and an urban garden. It also has areas specifically planned for jogging, a running track with a length of 1074 m and a width of 1.25 m are being planned (Fig. 5). The park also benefits from the proximity of a bike lane lining the bank of the Petastream, and in the future spaces for fitness will be arranged inside the park.



Fig. 5. Salca Park

The two green corridors partially equipped with bicycle lanes also for physical activities, respectively Peta Military Road and Crisul Repede Corridor, are under development [22].

2. There are five parks with a tourist function or a place to carry out tourist-related activities. The touristic function is generated by the existence of major tourist sites: heritage buildings, statues, dendrological parks, elements with landscape value, spaces for cultural and artistic activities (festivals, fairs, concerts).

Baroque Palace Park (6.3 ha) stands out in the urban landscape through the presence of the Baroque Palace, the headquarters of the Roman Catholic Episcopate, of the Saint Mary Basilica and of a beautiful dendrological park (Fig. 6). Inside the park there is an open-air amphitheater, suitable for cultural and artistic events, the park being the favorite place for young married people to take photos [27-29].

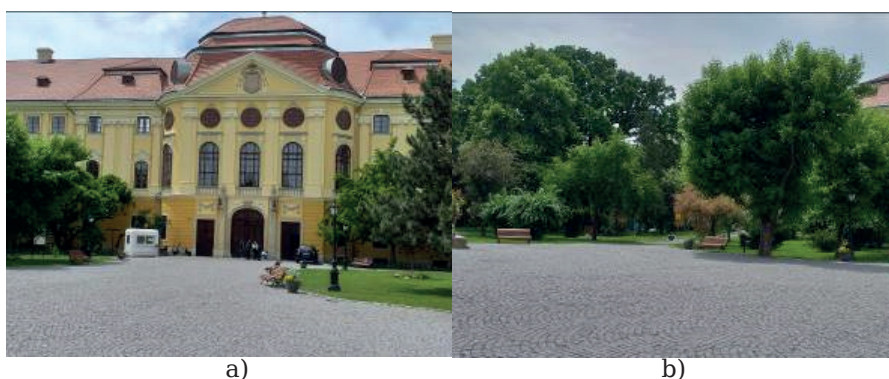


Fig. 6. Baroque Palace Park

In its proximity there is Petöfi Park, one of the first parks in the city, originally part of the space of the Baroque Palace. It stands out by the bust of a Hungarian revolutionary poet Petöfi Sándor. It has children's playgrounds, promenade alleys and a bike lane.



Fig. 7. Fortress Ditch Park

Fortress Ditch Park spreads over an area of 5 ha. Its planning started in 2009 and is still continuing. It stands out due of the Oradea Fortress, the Oradea City Museum, and a dendrological park spreads over an area of 1.7 ha, including a lake with over 100 species of water lilies, alpinarium, etc. (Fig. 7).

It is also the venue of medieval festivals (Oradea Medieval Festival/Oradea Fortress Days), but also of other cultural and artistic events. Moreover in this park there are some sports and archery competitions, dog training, and it is one of the favorite parks for those who practice jogging.

Balcescu Park, located in the central area of the city, is part of the former Rhédey Park, in the vicinity of the Cris Land Museum and the future Museum of Freemasonry. It stands out by the events that take place here: the Folk Craftsmen Festival, the Wine Festival, The homage festivities of the revolution of 1848, etc. being also the space where folk performances take place, equipped with a stage and spectators' areas for this purpose.



Fig. 8. Balcescu Park

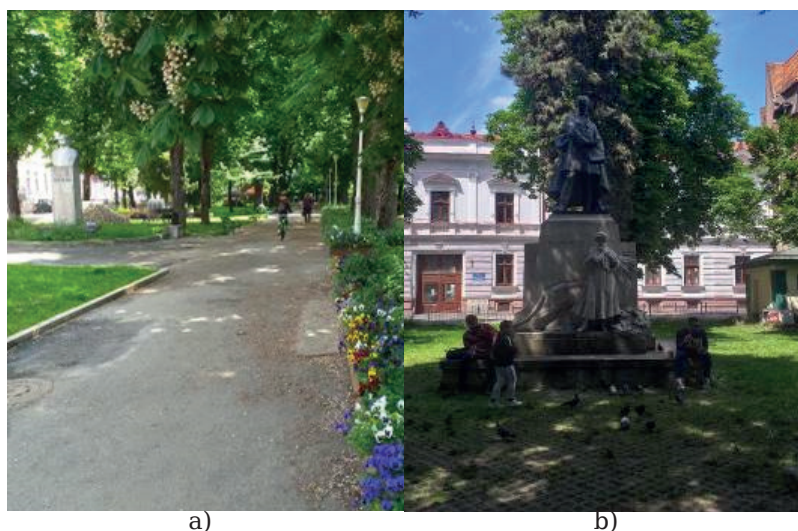


Fig. 9. Liberty Park

1st December Park, the largest park in the city, 8.2 ha, is located in the center of Oradea. It was arranged in 1950 and was called 23rd August Park until 1989. It stands out by tourist attractions such: the Statue of the Romanian Soldier, the monument dedicated to the famous Romanian sculptor Constantin Brâncuși and, since 2019, the park hosts the rehabilitated statue of the man of culture, lawyer and patron, Emanuel Gojdu (Fig. 10). Also in this park there is an impressive fountain, and in its vicinity there are playgrounds for children.

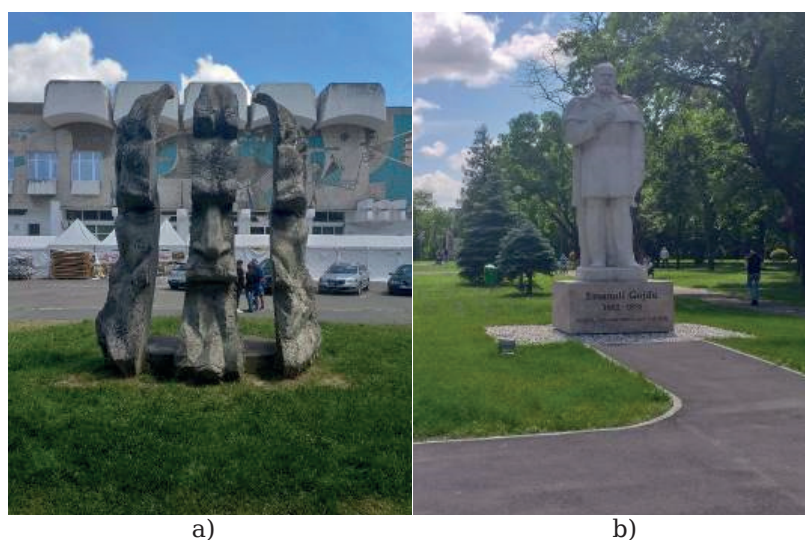


Fig. 10. 1st December Park

3. Parks planned for children and relaxation, the third category includes most urban parks in the neighborhood. By their facilities, some of them also offer the possibility to practice physical activities. In this category there are: 22nd December Park, Peace Park (Olosig), Peasants Park, Padis Park, etc.

## CONCLUSIONS

The analysis carried out on the green spaces at the level of Oradea Municipality reveals the following conclusions:



- at the level of Romania, at present, the green spaces policy requires sustained efforts, none of the big cities observing the European standards regarding the green space/inhabitant, and the national average being well below this standard;
- the place of the green spaces policy in the urban development of Oradea Municipality is remarkable, the latter being declared the green capital of Romania since 2011;
- analyzing the green area per inhabitant (sqm/inhab.), although in the last place in the hierarchy of cities with over 200,000 inhabitants in Romania, Oradea is very well situated (on the second place, very close to Cluj Napoca, first ranked), exceeding by far the national average;
- the analysis of the parks in Oradea from the perspective of facilities for sports, leisure and tourism activities, reveals the improvements made in recent years and allows the identification of three categories of parks, highlighting the fact that they can support sports and tourism activities;
- it is worth noting the municipality's effort to identify areas that can be transformed, in the coming years, into green spaces;

Therefore, the general conclusion is that, although in a period of remarkable economic development and territorial expansion, which puts pressure on the land market, Oradea manages, through a policy of sustained and coherent urban development, to increase the green space and improve its quality, turning it into a valuable asset of the urban quality of life and a factor of attractiveness for residents, tourists and even investors, as it contributes significantly to the image of the modern city.

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