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THE QUALITY OF BUCHAREST'S GREEN SPACES

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Abstract
This paper presents the results of a study which had the goal to evaluate the quality of Bucharest's green spaces. The Analytic Hierarchy Process (AHP) method is used to determine the weightings for evaluation criteria. Five of the bigest parks in Bucharest (Cişmigiu, Herăstrău, Tineretului, Alexandru Ioan Cuza and Carol) were evaluated based on the responses of 51 Bucharest's citizens. Study findings suggest a need to deliberately and thoughtfully plan and manage the green spaces in Bucharest.
Keywords: urban parks, multiple criteria decision making, Analytic Hierarchy Process

1. INTRODUCTION

In 2011, the world population reached 7 billion inhabitants, out of which approximately 10% lived in communities that exceeded 10 million people (Bremner, 2010). Estimates show that about half of the world population lives in urban areas. The high degree of urbanization has led to the necessity of creating as many oasis of peace and fresh air as possible, in order to increase the quality of recreational facilities (Obinna and all, 2009). Due to this fact, more and more attention has been paid to the urban green areas, especially because of their numerous functions, such as: maintaining the health as well as their amusement, social, aesthetic and ecological functions. Not to mention the fact that the green space has a considerable economic importance. Thus, from the ecological perspective, the urban green areas are a true moderator of the impact of human activities on the environment. They contribute to the physical and chemical cleansing of the atmosphere, to the diminishing of the phonic pollution as well as to the moderation of the urban climate. From a social point of view, the green areas, which are public areas, contribute to the increase of social inclusion, by creating opportunities for people of all ages to interact by either an informal social contact or by taking part in community events. These areas can also be great places for people to hold social or cultural events, such as local festivals, theatrical or cinematographic activities, etc. The green areas that are well preserved play a significant role in

keeping the urban population healthy. They offer opportunities which encourage a more active lifestyle (walks, jogging, cycling, etc. including getting from the residential areas to different public facilities). Green areas also provide the ideal playground for children, thus contributing to their physical, mental and social development. The urban green space is highly important from an aesthetic point of view as well, because it diminishes the rigid perception of the buildings, which tend to take over the cities. Due to the value of the landscape arrangements, the green areas confer identity to the human settlements (Gondo and Zibabgwe, 2010). The positive impact of the green space expands to the economic sphere of the cities. A pleasant environment helps creating a favorable image of the urban centres, thus increasing their attractiveness to investors and the possibility of creating new work places. The presence of the green space determines the increase of the urban areas value and, implicitly, of that of the neighbouring properties. The well preserved green areas also contribute to a higher quality of life, due to the fact that people attribute more value to the neighbourhoods that have good green areas. According to Rabare, Okech and Onyango (2009), the quality of parks provides a quick and highly visible indicator of whether an area is an attractive place for people to live and for economic activities to thrive.

In conclusion, green areas represent a necessity, especially when taking into consideration certain urban problems such as: the traffic jams, the pollution of the environment and the lack of space for socializing. However, the existence of vegetation and public parks is not enough to make a city adopt a durable model (German-Chiari and Seeland, 2004).

There has been a growing interest in the urban green areas lately. They started as a decorative element in the cities, but have acquired a new value, the importance of which is welcomed by the entire world. This has required a constant evaluation of the quality of the green space in the cities. The assessment of their quality represents an essential point in any sustainable development.

2. LITERATURE REVIEW

Literature abounds in studies referring to the quality of green space. In the following is presented a selection of the studies on this subject as well as their main ideas.

Adamec, Banuelos and Bruse (2004) presented a series of important socio-economical problems that European cities have to face: the urban expansion, the traffic jams, the noise, the air pollution. They have come up with a methodology to evaluate the role of the green space in diminishing the negative aspects of urbanization, focusing mostly on the environment, but also adding up the socio-economical

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aspects. This methodology is called BUGS (Benefits of Urban Green Space) and it ensures the creation of a green space in an area that guarantees its quality.

Balram and Dragićević (2005) emphasize the people's perception of the green space. They stress the fact that people evaluate the quality of the green areas according to the following factors: the surface of the green space, the diversity of the vegetation, the existence of a water source: a river or a lake, the existence of a surface covered with a forest, the existence of an amusement area, a playground for children, a space for pets and a public walk.

Amati and Yokohari (2006) consider that the green space doesn't serve only a decorative purpose, but that it also acts as an ecological system with a wide range of social functions and services. No matter what its purpose is (amusement place, playground, sportsground), the green space can generate a high level of social participation and collaboration among individuals.

Tyrväinen, Mäkinen, and Schipperijn (2007) describe a simple method that stresses the characteristics of a green space that helps its strategic planning. A survey was made in Helsinki, Finland, in order to obtain information regarding the general attitude and the benefits that people consider that the green space has. The participants identified on a map those areas with positive characteristics as well as those with negative ones. The results were compiled with the help of the GIS (Geographic Information System) and they were used in the process of planning the green areas.

Chen, Adimo and Bao (2009) evaluated the aesthetic quality (visual, auditory, tactile and olfactory factors) of urban green space and they proposed a systematic approach for assessing the natural beauty. The quantitative techniques were used together with questionnaires and also visual photo stimuli.

Some urban parks have become „hot spots" of crime and other criminal activities like drug dealing, bashing and sexual violence. Abdul Malek and Mariapan (2009) has investigated how vandalism issues and the level of safety in Malaysian parks are perceived by gaining further insights into the benefits of recreational usage and identifying strategies to minimise vandalism as well as to increase safety measures.

Schipperijn. and all (2010) present the results of a study carried out in Odense, Denmark, which was meant to test the importance of different factors that determine the city-dwellers to use the green areas in their neighbourhood. This study also presents the criteria that influence one's choice of a particular green space: the distance from home, the surface of the green space, the possibilities it offers. The

individual criteria that influence this choice are: the level of education, the sex, the preferences towards certain services, owning a pet.

Taking into account the literature mentioned above, we suggest the following criteria and subcriteria for evaluating the quality of green spaces (Table 1).

TABLE 1 – CRITERIA FOR THE EVALUATION OF THE GREEN SPACE QUALITY

Criteria	Subcriteria
Green space placement	▪ Situated in a polluted/ slightly polluted area ▪ Distance from home ▪ Allows/ doesn't allow the successive territory expansion
Green space use	▪ The existence of recreation facilities (amusement/public walk), sports facilities (tennis, football, basketball, badminton, cycling, jogging, skating), cultural facilities (monuments, open theatres, exhibition pavilions), amusement facilities (boats, hydrobicycles, nautical sports), fun facilities (playgrounds for children, space for adults) ▪ It offers/ doesn't offer working places (restaurants, terraces, piers)
Environment	▪ The existence of water sources (rivers, lakes, fountains) ▪ The existence of areas covered with trees ▪ The existence of special spaces for pets
Biodiversity	▪ The diversity of the natural vegetation/ of the local species cultivated by man/ exotic species cultivated by man ▪ The diversity of the species measured by the number of bird species

3. THE SITUATION OF URBAN GREEN SPACES IN ROMANIA

In Romania, the Law 24/2007, regarding the regulation and administration of urban green areas, stipulates the fact that: "The state acknowledges every person's right to a healthy environment, free access for amusement in public green areas, the right to contribute to the arranging of the green space, the creation of tree and shrub rows, in those situations stipulated by the law". The same law defines the urban green areas as a mosaic net or a system of seminatural ecosystems, whose peculiarity is determined by their vegetation (wood, trees, shrubs, flowers and grass) and which comprise parks, squares, rows of trees or unproductive plots of land within the built-up area. The most important ones are the parks, due to their surface and their facilities, but also due to their functions.

According to the nature of ownership, the green areas can be public (parks, squares, arranged spaces full of vegetation and areas with spontaneous vegetation that are public) or private (private green areas, which are not used for the public benefit).

The administration of green areas is made by the local public administrations. If the areas are private, this task belongs to their owners.

For a very long time people didn't pay much attention to keeping the balance between the urban development and the necessary green areas, whenever territorial transformations of the city occurred.

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Thus, in the last two decades, there has been a reduction of the green space surface in all 319 urban settlements in Romania, where 55.2% of the population lives. This happened as a result of the constant tendency to expand the built-up area, which has led to an average surface of the green space of 18 square meters per inhabitant, while the EU standards require 26 square meters/inhabitant and those of the World Organization of Health require 50 square meters/inhabitant (Chiriac, Humă and Stanciu, 2009)

.In Stockholm and Vienna the average surface of the green areas is 70 square meters/inhabitant, but in Bucharest, the largest Romanian city of over 1.9 million inhabitants (16.2% of the urban population of the country), the average surface of the green areas is 9.67 square meters/inhabitant, which is insufficient for the minimum needs of the population, not to mention the fact that it is way below the EU standards.

In other 24 large cities of the country, which have a population of over 100000 inhabitants, the situation is not so much better. Only four cities come near the European standards, with an average surface of the green areas of 20-23 square meters/inhabitant. In Suceava, the average is 20.31, in Iasi 20.6, in Pitesti 22.81 and in Satu Mare 22.99. The two cities with an average above 24 square meters/inhabitant are Oradea with 24.3 and Sibiu, with 24.8. The rest of the cities have averages between 2.4 (Galati) and 17.85 (Bacau) (Chiriac, Humă and Stanciu, 2009).

In the category of towns with a population between 20000 and 100000 inhabitants, only five (Odorheiu Secuiesc, Carei, Buhusi, Dragasani and Voluntari) have values above the European standards (26 square meters/inhabitant). Another 12 towns in this category have over 20 square meters of green space/inhabitant.

In the category of 213 small towns, with a population below 20,000 inhabitants, the green areas cover various surfaces, between 0.64 square meters/inhabitant in Simleul Silvaniei and 665 square meters/inhabitant in Cavnic. This category also includes a few therapeutic resorts, which have significant green areas (Busteni, Covasna, Buzias, Baile Govora, Ocna Sibiului) and some towns with a rich forest vegetation (Balcesti, Cavnic, Solca, etc.) There are however some areas, that have recently been turned into towns, which have no green space (Milisauti, Potcoava) (Chiriac, Humă and Stanciu, 2009).

As a result of the urban green space reduction in Romania, the emergency injunction 114/2007 regarding the environment protection, stipulates the fact that it is compulsory for the local public authorities to "ensure within the built-up area a surface of green space of at least 20 square meters/inhabitant until December 31st 2010 and one of at least 26 square meters/inhabitant until

December 31st 2013" (art.2, paragraph 1). In order to attain this, some townhalls have to identify the unproductive or deteriorated terrains that are to be transformed into green space.

4. CASE STUDY: BUCHAREST'S GREEN SPACES

Considered once a city of gardens, nowadays Bucharest faces with many urban problems, which increasingly affect the quality of life of its inhabitants. One of the great problems of Bucharest is that of the green space insufficiency. This crisis has grown significantly since 1990, when constructions reduced the green areas of the city. A research made by Chiriac, Humă and Stanciu (2009) showed that in the last 20 years, 1.5 million trees and 20 million square meters of green space disappeared. Estimates show that the rate of the green space reduction was about 250 acres a year, which would explain the fact that the green space in Bucharest now covers only half of its previous surface. The best situated is the first sector, in which the green space occupies 11 square meters/inhabitant (compared to the European standard of 12 square meters), while in sector 6 there are only 0.6 square meters of green space/inhabitant, twenty times less than necessary. The reduction of the green areas surface in Bucharest would be even higher if their total didn't include the 14 cemeteries, which cover 324.44 acres. In order to reach the European standards, Bucharest has to have 6905.2 acres of green space by the end of 2025. At present the built-up area covers only 2579.7 acres.

There are about 40 parks in Bucharest, some of which have a great landscape or historical value, conferring an identity to this great city. Some of these parks are:

The Cismigiu Park

The Cismigiu Park is the oldest and most beautiful public garden in Bucharest and it has a surface of 33 acres. It is situated in the centre of the capital city and it has a structure which is similar to that of English parks: the central lake surrounded by wide alleys with benches protected by old trees and rare dendrological species, the lawns with flower arrangements and sculptures or monuments. Two bridges go across the lake and there are also two rivers in the park.

At the end towards Schitu Magureanu there is a rotunda, where the bust sculptures of great writers (Mihai Eminescu, George Cosbuc, Ion Luca Caragiale, Alexandru Odobescu, Titu Maiorescu, Stefan Octavian Iosif, Ion Creanga, Alexandru Vlahuta, Duiliu Zamfirescu, Bogdan Petriceicu Hasdeu, Nicolae Balcescu and Vasile Alexandri) are exhibited. On a different alley, one can admire the marble monument built in the honour of the French soldiers who fought in the first World War. Other

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monuments in this garden are the sculpted bust of Mother Smare, Gheorghe Panu and the River Sissi Stefanidi. The Cismigiu Park is one of the most loved amusement and walking places in Bucharest.

From the point of view of the techno-urbanistic equipment, the park has been extended and there have been a modernization of the water supply, irrigation and collection system as well as an upgrade of the general and ambiental illumination system.. The parking lots are sized and placed outside the public traffic, according to the existing regulations and legally approved projects. There have also been many interventions for the restoration of the original configuration of the park and the completion of the barren areas by using similar species and compositions.

The Cismigiu Park has been classified as a historic monument and and included on the List of Historical Monuments in 2004, as a series of monuments which are found within the park.

The Herastrau Park

Situated in the Northern area of Bucharest, with a surface of 272 acres, the Herastrau Park represents a complex of parks around Lake Herastrau. This park is the largest green area used for relaxation and touristic purposes in Bucharest. Its large surface contributes to the absorption of the traffic noise and other disturbing factors. Within this complex, one can distinguish the following components: The Herastrau Park itself, the Village Museum, the Kiseleff Park and the Bordei Park. The Herastrau Park is divided into two areas: the Old Herastrau is destined to cultural activities (monuments, statues, open theatre, exhibit pavilions) as well as to relaxation (piers for boats) and the New Herastrau (the Northern Herastrau) is for sports and amusement (sportsgrounds, playgrounds, restaurants).

The lake in the centre of the park is part of the lake chains of the Colentina river and it is used for amusement activities, nautical sports and navigation and it is endowed with boats, hydrobicycles and little ships.

The Herastrau Park is an important touristic objective in the capital city, its attraction points being:

- The Expoflora area, organized on a surface of 37 acres;
- The Roses Island, which has two axes, the former towards the Village Museum and the latter towards the rest of the park;
- The Japanese Garden, arranged with the support of the Japanese Embassy in Romania and that of the Memorial Foundation of the Japanese World Exhibition;
- The Caryatid Alley by Constantin Baraschi;

- The statue of the general De Gaulle, which is placed at the entrance from Charles De Gaulle Square and which was unveiled during the Francophony Summit in Bucharest, in September 2006.

The Tineretului Park

Situated in the southern area of Bucharest, with a surface of 197 acres, the Tineretului Park disposes of a large green space. Within this park there is the Ioan Kunst Ghermanescu Hall (the new name of the Polyvalent Hall), which hosts cultural activities and sporting events. There is also a huge paved platform, decorated with statuary groups, used for hosting outdoors school festivities.

Near the residential areas there are large playgrounds, relaxation spots, a pier for boats and hydrobicycles. The lake has a surface of 39.5 acres and it is naturally supplied by the ground-water layers. There are three islands, two of which are connected by two small bridges that are harmoniously framed in the sinuous shore configuration, representing lovely visual landmarks.

Taking into account the surface relief modelling and the difference in ground levels that could reach even 16 meters in some points, one is able to notice the lake better and there are also favorable positions for admiring the panorama.

Besides the lake, around which the entire park gravitates, this place has other attractions to offer: the carting track, a steam train, a bicycle and jogging track of over 6 kilometers, tennis courts, football fields, basketball courts, badminton courts and during the winter, there is also an artificially made skating ring.

Other interesting elements would be the circular rosary with a diameter of 200 meters, which has paved inner alleys, a curved groundfloor with variable width, framed by alleys with plane trees that lead to the paved alley which dominates the view.

The Alexandru Ioan Cuza (the former IOR-Titan) Park

Situated in the central-eastern part, in the third sector of the capital city, it is one of the largest parks in Bucharest. It provides the right conditions for relaxation and amusement for the people who live in the Titan, Dristor, Balta Alba neighbourhoods; it has a surface of 210 acres and it includes paved alleys, playgrounds, two synthetical football fields, 5-6 smaller fields, where people can play football as well as basketball, a special place arranged for rollerbladers and skateboarders, an artificial skating ring which can be fit out during the summer, a few small terraces, a restaurant and a lake in the middle of the park. The lake is a natural one and there are four small islands on it. During the summer, one can rent boats and kayaks and row on the lake for amusement purposes.

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Another attraction of the park is the wooden church, built in the Maramures style. The church provides foreign languages tutorials and Internet classes.

The Alexandru Ioan Cuza Park risks being cut into half, in favor of building commercial and business centres. This is the "Parklake Plaza" project, which will enclose over 300,000 built square meters, with 110,000 square meters being rented by 50 retail stores. There will also be built two blocks with approximately 1,200 flats.

The Carol Park

The Carol Park or the Liberty Park is situated in the fourth sector of the capital city, on the Filaret Hill and has a surface of 111 acres. The park is arranged in a mixed style, with a dominant landscape side, the vegetation being placed around the main alley, which is built in a geometric style. The rest of the park is filled with sinuous alleys and the vegetation is grouped in such a way as to create an image that is close to that of the natural world. The park is destined for relaxation, walks, amusement (rowing on the lake), sports practice (cycling, jogging), and it also has a few playgrounds.

The most attractive elements are: the Roman Arenas (a complex for open shows) with 5,500 seats, the Technical Museum, a sequoia gigantea, a tree which has been declared a natural monument, Vlad Tepes's Tower, which harbours a water reservoir, monuments and statues - the most remarkable of which is the Unknown Hero Monument - and several works of art: the Waterfall Cave, the Giants statuary group and the Sleeping Beauty.

The park includes a small lake - crossed by a bridge which is paved with slabs of marble - which is used for amusement, seeing as it is equipped with boats.

The park has been on the list of historical monuments since 2004.

5. RESEARCH METHODOLOGY

The assesment of the quality of green spaces was based on a survey. For data collection we have used a questionnaire with 10 questions. A five-point Likert scale was used to determine citizen satisfaction with each of the 10 criteria used for quality assessment. The analised quality criteria were grouped in four categories (Figure 1).

We have analyzed five major parks in Bucharest (Cismigiu, Herastrau, Tineretului, Alexandru Ioan Cuza and Carol). The questionnaires were distributed to 97 people. The response rate was 51 questionnaires completed correctly. Results were evaluated by processing the responses.

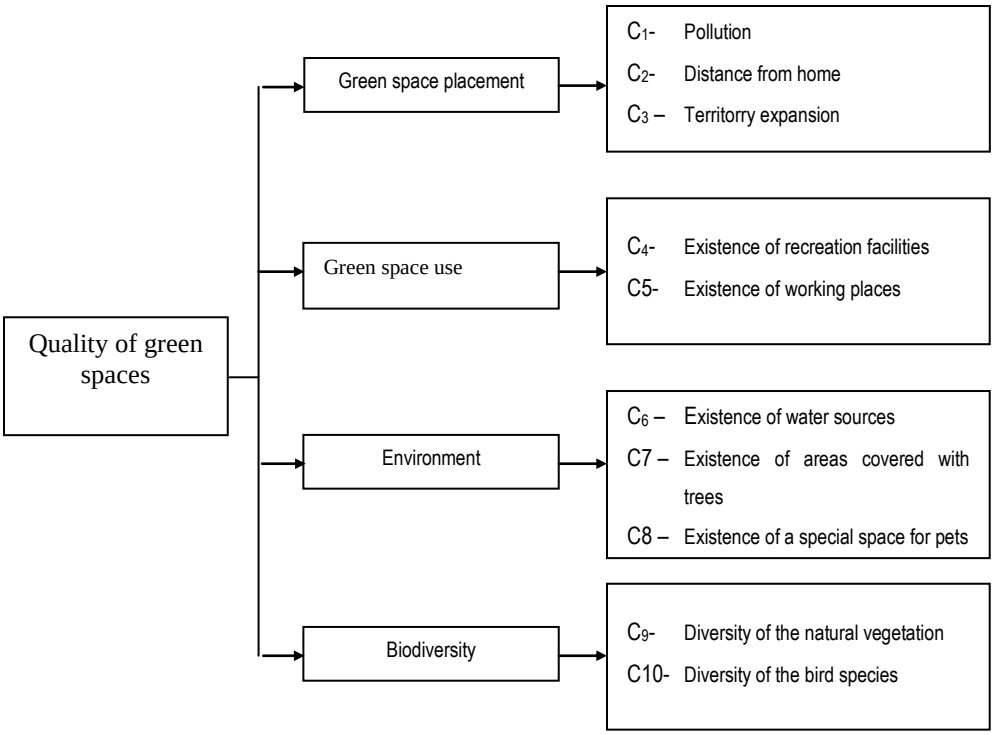

FIGURE 1 - THE QUALITY OF GREEN SPACES

The weight of each criterion was calculated using AHP method (Analytic Hierarchy Process) (Saaty, 1980), a method largely used in economic research.

Given a set of n evalution criteria, we note with c_{ij} the relative importance of criterion i to criterion j. Pairwise comparation was made using the scoring scale (adapted from Saaty, 1980) in Table 2.

TABLE 2 - SCORING SCALE FOR CRITERIA COMPARISON

Intensity	Evaluation	Explication
1	Equal importance	The spedified criteria contribute equally to objective
3	Weakly importance	A criterion is slightly favored compared with other
5	Essentially importance	A criterion is clearly dominates the other in importance
7	Very strongly importance	A criterion is strongly favored compared with other
9	Absolutely importance	A criterion is unquestionably more important than other
2, 4, 6, 8	Intermediate values	When compromise is giving between two adjacent judgments

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Based on the succesive comparasions, results a n*n matrix (the matrix of relative importance of criteria) with the following structure:

$$C = \begin{bmatrix} c_{11} c_{12} \dots c_{1n} \\ c_{21} c_{22} \dots c_{2n} \\ \vdots \quad \vdots \ddots \\ c_{n1} c_{n2} \dots c_{nn} \end{bmatrix} , c_{ii} = 1, c_{ji} = 1/c_{ij}, c_{ij} \neq 0$$

After normalization ($\bar{c}_{ij} = \frac{c_{ij}}{\sum_{i=1}^{n} c_{ij}}$) the weight of each criterion is calculated: $w_i = \frac{\sum_{j=1}^{n} \bar{c}_{ij}}{n}$

The presented algorithm was applied to each level in the tree of criteria.

5 experts from Bucharest public administration did the evaluation of the criteria. The values calculated for the weight of each criterion is shown in Figure 2.

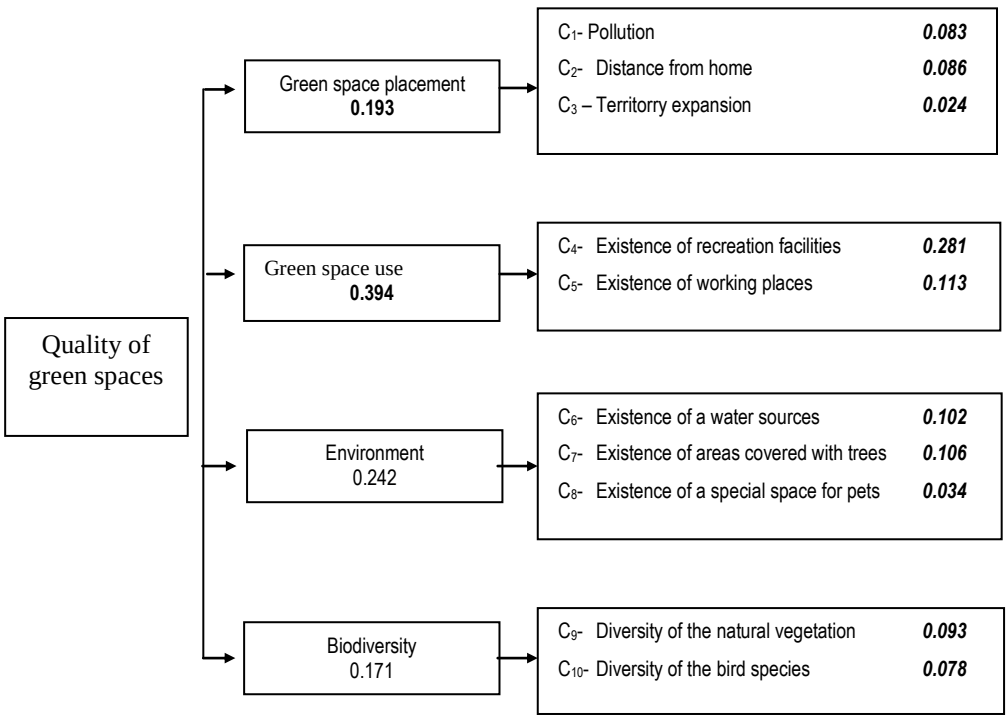

FIGURE 2 – THE WEIGHT OF EACH EVALUATION CRITERION

After obtaining the weights for performance criteria, each park has been assessed based on the responses from questionnaires. Each criterion was evaluated by using a five-point Likert scale. The calculation was made using the mean of the values obtained for the each park and each criterion. The results of evaluation are presented in Table 3.

TABLE 3 – EVALUATION RESULTS

Park	Q	Place in the hierarchy
Cişmigiu	0.94	2
Herăstrău	1.08	1
Tineretului	0.83	3
Al. Ioan Cuza	0.75	5
Carol	0.79	4

The maximum possible value is 1.40

Based on the evaluation resulted a top of the quality of the analyzed parks (Table 4).

TABLE 4 - RATING OF THE QUALITY OF BUCHAREST'S PARKS

Park	Place in the hierarchy
Herăstrău	1
Cişmigiu	2
Tineretului	3
Carol	4
Alexandru Ioan Cuza	5

The main strengths and weaknesses of each park are listed in Table 5.

TABLE 5 – THE STRENGTHS AND WEAKNESS OF EACH PARK

Criteria	The Cismigiu Park	The Herastrau Park	The Tineretului Park	The Al. Ioan Cuza Park	The Carol Park
Green space placement	▪ polluted area ▪ situated in the city centre ▪ doesn't allow territory expansion	▪ slightly polluted area ▪ situated in the city centre ▪ allows territory expansion	▪ polluted area ▪ situated in a neighbourhood ▪ allows territory expansion	▪ slightly polluted area ▪ situated in a neighbourhood ▪ allows territory expansion	▪ polluted area ▪ situated in a neighbourhood ▪ doesn't allow territory expansion
Green space use	▪ recreation facilities (amusement/ public walk), / sports facilities (cycling, jogging) / cultural facilities (monuments, statues, open theatre) / amusement facilities (boats, little ships, hydrobicycles) / fun facilities (playground for children, space for adults) ▪ it offers working places (restaurants, terraces, piers)	▪ recreation facilities (amusement/ public walk) / sports facilities (tennis, basketball, cycling, jogging)/ cultural facilities (monuments, statues, open theatre, exhibition pavilion)/ amusement facilities (boats, little ships, hydrobicycles, nautical sports)/ fun facilities (playground for children, space for adults) ▪ it offers working places (restaurants, terraces, piers)	▪ recreation facilities (amusement/ public walk), sports facilities (tennis, basketball, cycling, jogging, football, badminton, skating)/ cultural facilities (statues, the showroom)/ amusement facilities (boats, hydrobicycles)/ fun facilities (playground for children, space for adults) ▪ it offers working places (restaurants, terraces, piers)	▪ recreation facilities (amusement/ public walk), sports facilities (basketball, football, skating, cycling, jogging)/ cultural facilities (open theatre)/ amusement facilities (boats, kayaks)/ fun facilities (playground for children, space for adults) ▪ it offers working places (restaurants, terraces, piers)	▪ recreation facilities (amusement/ public walk)/ sports facilities (cycling, jogging)/ cultural facilities (monuments, statues)/ amusement facilities (boats)/ fun facilities (playground for children, space for adults) ▪ it offers working places (terraces, piers)

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Criteria	The Cismigiu Park	The Herastrau Park	The Tineretului Park	The Al. Ioan Cuza Park	The Carol Park
Environment	▪ water source (one lake, two springs, fountains) ▪ the existence of an area covered with trees – no ▪ the existence of a special space for pets	▪ water source (one lake, fountains) ▪ the existence of an area covered with trees - yes ▪ the existence of a special space for pets	▪ water source (one lake, fountains) ▪ the existence of an area covered with trees - yes ▪ the existence of a special space for pets	▪ water source (one lake, fountain) ▪ the existence of an area covered with trees – no ▪ the existence of a special space for pets	▪ water source (one lake, fountains) ▪ the existence of an area covered with trees – no ▪ the existence of a special space for pets
Biodiversity	▪ natural vegetation (over 50 species of trees and plants)/ local species cultivated by man (over 30 species) ▪ bird species (over 30 species)	▪ natural vegetation (over 40 species of trees and plants)/ local species cultivated by man (over 20 species) ▪ bird species (over 20 species)	▪ natural vegetation (over 30 species of trees and plants)/ local species cultivated by man (over 10 species) ▪ bird species (over 20 species)	▪ natural vegetation (over 30 species of trees and plants)/ local species cultivated by man (over 10 species) ▪ bird species (over 20 species)	▪ natural vegetation (over 30 species of trees and plants)/ local species cultivated by man (over 10 species) ▪ bird species (over 20 species)

6. CONCLUSIONS

The largest park in Bucharest is the Herastrau Park, with a surface of 272 acres, followed by the Tineretului Park, which covers 197 acres and the Carol Park, which has 111 acres. However, these three large parks together with the other green areas are not enough according to the EU standards. We can't talk about an excessive fragmentation of parks in Bucharest, but there are exceptions, such as the Titan Park or other smaller parks (Florilor, Plumbuita). This is caused by the fact that the parks are too small and within certain neighbourhoods.

The parks in Bucharest are separated from one another and there is no connection among them. The largest parks are completely isolated, except for the Herastrau, which covers all the surface along the lake and which has a certain continuity one might say.

The parks in Bucharest have first of all a recreational purpose. They can be used for sports practice (for jogging, football, tennis, volleyball), but there aren't so many fields or courts. The parks of Bucharest offer few work places, especially in the restaurants and small shops on their territory and for the staff on the ships on Lake Herastrau.

The offer for green space is quite low in Bucharest. The city is not ecological and it continues to grow in whichever space there has been left, not taking into account the fact that the green areas are significant for its viability.

One can reach the parks in Bucharest easily enough, but it also depends on the traffic. The largest parks are central.

The species and the habitat aren't very diverse because the climate doesn't allow the naturalization of more species of flowers and fauna. However, one can find a lot of trees which are not specific for the Romanian climate, such as the downy oak.

We could say that the capital city has preserved its green areas, even though their surface has diminished. Most of the parks have existed since the 19th- 20th century.

The green areas of Bucharest are daily affected by human activities. Just like any urban space, the parks in the capital city have environmental problems such as: the air pollution with suspension dust (from all the traffic around the park), the air pollution with toxic noxa agents (nitrogen dioxide, sulfur dioxide, carbon monoxide, hydrocarbons), the water pollution and other types of pollution. This is why one needs to take measures regarding the expansion of the green areas, the protection of the already existing green space. The water and the lake shores can become important landmarks in creating new vegetation oasis.

REFERENCES

Abdul Malek, N. and Mariapan, M. (2009). Visitors perception on vandalism and safety issues in a Malaysian urban park. *Theoretical and Empirical Researches in Urban Management*, 4(13), pp. 93-107

Adamec, V., Banuelos, A. and Bruse, M. (2004). An integrated methodology to assess the benefits of urban green space. *Science of the Total Environment*, Volume 334-335, pp. 489-497

Amati, M. and Yokohari, M. (2006). Temporal changes and local variations in the functions of London's green belt. *Landscape and Urban Planning*, Volume 75, Issues 1-2, pp. 125-142

Balram, S. and Dragićević, S. (2005). Attitudes toward urban green spaces: integrating questionnaire survey and collaborative GIS techniques to improve attitude measurements. *Landscape and Urban Planning*, Volume 71, Issues 2-4, pp. 147-162

Bremner, J., Frost, A., Haub, C., Mather, M., Ringheim, K. and Zuehlke, E. (2010). *World population highlights: key findings from PRB's 2010 world population data sheet.* Population Buletin, Vol. 65, No. 2

Chen, B., Adimo, O. and Bao, Z. (2009). Assessment of aesthetic quality and multiple functions uf urban green space from the users'perspective: The case of Hangzhou Flower Garden, China . *Landcape and Urban Planning*, Volume 93, Issue 1, pp. 76-82

Chiriac, D., Humă, C. and Stanciu, M. (2009). Spaţiile verzi – O problema a urbanizarii actuale, *Calitatea vieţii*, XX, nr. 3–4, pp. 249–270

German-Chiari, C. and Seeland, K. (2004). Are urban green spaces optimally distributed to act as places for social integration? Results of a geographical information system (GIS) approach for urban forestry research. *Forest Policy and Economics*, Volume 6, Issues 1, pp. 3-13

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Gondo, T. and Zibabgwe, S. (2010). GIS solutions and land management in urban Ethiopia. Perspectives on capacity, utilization and transformative possibilities. *Management Research And Practice*, Vol. 2 Issue 2, pp: 200-216

Obinna, V., Owei, O., Ayodele, A. and Okwakpam, I. (2009). Patterns and determinants of recreational behaviour in Port Harcourt, Rivers State, Nigeria. *Theoretical and Empirical Researches in Urban Management*, 3(12), pp. 150-165

Rabare, R.S., Okech, R. and Onyango, G.M. (2009). The role of urban parks and socio-economic development: Case study of Kisumu Kenya. *Theoretical and Empirical Researches in Urban Management*, 3(12), pp. 22-36

Saaty, L.T. (1980). *The Analytic Hierarchy Process*. New York, McGraw-Hill International

Schipperijn, J., Stigsdotter, U., Randrup, T. and Troelsen, J. (2010). Influences on the use of urban green space – A case study in Odense, Denmark. *Urban Forestry&Urban Greening*, Volume 9, Issue 1, pp. 25-32

Tyrväinen, L., Mäkinen, K. and Schipperijn, J. (2007). Tools for mapping social values of urban woodlands and other green areas. *Landscape and Urban Planning*, Volume 79, Issue 1, pp. 5-19