

The Evolution of Urban Green Areas in Romania during 2002-2013

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Abstract: The small size of green areas in Romanian urban settlements remains a problem of current urbanization, having a negative impact on the healthy lifestyle of the population. Nowadays, the green areas from most of the Romanian cities are under the WHO standard of 50 m²/inhabitant, under the E.U. standard of 26 m²/inhabitant, and also under the national standard (94 urban settlements-29.4% have less than 10 m²/inhabitant of green area in 2013). Furthermore, the evolution of green areas after 2002, shows that almost a quarter of Romanian urban settlements (24.5%) recorded significant declines, some towns having less than one square meter per inhabitant. This study presents a detailed analysis of Romanian urban green areas, their evolution over the period 2002-2013, based on the latest data provided by INS (National Institute of Statistics), identifying in the same time the causes and effects that led to the current situation. Mapping the results and identifying regional disparities, along with proposing measures to increase urban green areas are also objectives achieved in this study.

Keywords: green spaces; urban development; green infrastructure; healthy lifestyle; regional disparities; concreting green spaces

JEL Classification: Q23; Q26

1. Theoretical and Methodological Aspects

Currently, the researchers define “green space” differently, depending on its management type, the way is perceived by each community, but also its location.

In the US and Canada, in the last half century, has developed a unique management concept of the green space called “urban forestry”. This concept is a real science, defined by some authors as “*art, science and technology of managing trees and forest resources in and around urban community ecosystems to provide physiological, sociological, economic, and aesthetic benefits to the society.*” (Konijnendijk et al, 2006, p. 93) or “*planning, design and management of trees with recreational values located in or near urban areas*” (Nilsson & Randrup, 1997, p. 2).

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Another concept commonly used by the US researchers is the “urban forest”, defined as: “*a forest or a collection of trees that grow in a city or a suburb. In a wider sense the concept may include any woody plants that are encountered in and around human settlements.*” (Negulescu, 2011, p. 9).

In Europe, industrial development in the nineteenth century, imposed planning measures to the public green areas, generated by the population migration from rural to urban areas. Even from that time, these green spaces, parks and gardens were perceived as very important for the quality of urban life and health of the population.

The latest studies conducted in Europe after 2010, by the European Commission specialists, and researchers interested in this topic, reunited in a series of workshops, use the concept of “Green Infrastructure” defined very differently. Further, we mention some definitions formulated in some of these studies:

- ❖ *Green Infrastructure is an interconnected network of green space that conserves natural ecosystem values and functions and provides associated benefits to human populations.*
- ❖ *Planning/strategic approaches that maintain ecological functions at the landscape scale in combination with multi-functional land uses*
- ❖ *Existing natural and “man made” structures that can deliver sustainable land use and services for society.*
- ❖ *The part of a territory devoid of permanent man-made structures, that is providing directly or indirectly, partly or totally through the vegetation it supports, a series of services to the population living on it or more or less near to it.*
- ❖ *System/network of open space, consisting of natural and man-made structures that provide directly or indirectly multiple benefits to society and support and improve ecological functions.*
- ❖ *Strategic or/and management approach to improve and sustain the multifunctional system of natural and man-made green structures, that provides benefits to society and maintain ecological functions. (“Towards Green Infrastructure for Europe”, Annex 1, Workshop Proceedings, Brussels, 2009, p.4)*

In this context green infrastructure consists of *natural and man-made elements, such as reforestation zones, green bridges, green urban areas, high nature value farmland or forest areas.* (Towards A Green Infrastructure for Europe-Developing New Concepts For Integration of Natura 2000 Network Into a Broader Countryside, p. 5).

These definitions refer to green infrastructure that overlaps/belongs to both urban and rural space, the difference being made by its categories of green areas. Thus, urban green infrastructure comprises primarily urban parks, gardens, trees, courtyards of churches, zoos, gardens of the houses in the residential area. (*ibidem*, p. 5).

In Romania, the concept of urban green space is defined as: “*the green areas in towns and cities, defined as a puzzle network or system of seminatural ecosystems consisting in specific vegetation (woody, tree, shrub, flowery and herbaceous).*” (Law no. 24/2007, Art. 2). Within this, the same law, as amended by Law no.47/2012, states the following categories of urban green spaces:

- a. public green spaces with unlimited access: parks, gardens, squares, planted strips;
- b. specialized green areas for public use:
 - botanical and zoological gardens, open-air museums, exhibition parks, recreation and ambient areas for trained animals in circuses;
 - those related to public facilities: nurseries, kindergartens, schools, hospitals or social protection institutions, cult edifices, cemeteries;
 - grounds and sports parks for practicing performance sports;
- c. green areas for recreation: recreational bases, leisure spaces, and sports complexes;
- d. green areas to protect lakes and watercourses;
- e. protection corridors from technical infrastructure;
- f. recreational forest;
- g) nurseries and greenhouses.

In this study, we used the latest data provided by the INS (National Institute of Statistics) on green areas¹ in the urban settlements in the period 2002-2013, and we also calculated the average area per inhabitant for each urban settlement in Romania. Based on these results, we established the hierarchy and mapped the urban settlements according to international European and national legal standards, but also on the evolution of green areas during 2002-2013. Finally, we identified the regional disparities reflected by thematic maps, proposing a series of measures for reducing the deficit of green space in urban settlements from Romania.

¹ According to INS, green areas (ha) - include the area of green spaces as parks, public gardens or public squares, land bases and sports facilities within the constructible perimeters of urban settlements. In the green areas are not included greenhouses, nurseries, vegetable gardens, cemeteries, agricultural land, lakes etc.

2. International and National Standards Regarding Urban Green Areas

The importance of green areas lies in their ecological and socio-economic functions, in their capacity to perform certain natural functions, protecting the environment and providing another series of multiple functions. Green areas are an important part of community life, contributing to its social image, architecture, reflecting in the end its social and economic development. (Negulescu, 2011, p. 8)

In the ecological functionality, the main functions of green areas are: hydrological function (retaining precipitation, preventing torrents), anti-erosion (strengthening riversides), climatic (moderating climate extremes), sanitary and leisure (stimulating exchange of air, oxygenation and air purification, air flow reduction, fixing and even metabolizing of some toxins, negative ionization and purification of microbial air), aesthetic, scientific and educational.

All these functions, extremely important, both for the natural environment and especially for the demographic component, increased, over time, the attention to this category of urban space, national and international organizations recommending a minimum area for urban population. At the moment, WHO recommends for urban areas a minimum of 50 m²/capita of green space and EU norm requires a minimum of 26 m²/capita.

In Romania, Law no.351/2001 regarding the approval of the National Planning Program - Section IV - Network of Settlements, in Appendix 2, Section 1.0, as amended by Law no. 100/2007 stipulates in the table "Minimum quantitative and qualitative indicators defining urban settlements" that green areas (parks, gardens, squares) must have at least 15 m²/capita for cities and at least 10 m²/capita for towns.

Regarding the definition and management of green areas, in 2007, after joining the EU, was adopted Law no.24/2007 regarding the regulation and management of green areas in urban settlements in Romania, with the purpose to improve the situation at this category of spaces so necessary for the health of the urban population (implementing the strategy for the conservation and development of the green areas of the municipalities of rank 0 and 1, setting up local registers of green areas). This law was amended until now by several normative acts, among which Law no.88/2014 and Law no.135/2014, the amendments aiming a number of provisions on administration of green areas in both the public and private property.

In 2007, was also adopted GEO no. 114/2007, which stipulated that "*local government authorities are obliged to provide, inside urban settlements, an area of green space of at least 20m²/inhabitant until December 31, 2010 and at least 26m²/inhabitant, until December 31, 2013*". Unfortunately, as we will see in the next chapter, although the legal framework exists for almost a decade, the

development of green areas inside the Romanian cities is still far from the norms mentioned in the existing laws, the actual values being extremely low in many urban settlements.

3. The Evolution and Current Characteristics of Urban Green Areas in Romania

The dynamics of urban green areas during 2002-2013 reflects an increase of 17.5% at national level, ranging from + 4.8% (Macroregiunea 4) to + 68.6% (Macroregiunea 1). The evolution of urban green areas also highlights increases in six of the eight development regions of Romania (NUTS 2), these oscillating between + 121.5% (Regiunea Nord-Vest) and + 2.2% (Regiunea Sud-Vest Oltenia). The only regions which recorded a significant decrease during this period are Regiunea Sud-Est (-12.5%) and Regiunea București-Ilfov (-5.2%), the same downward trend being recorded by green space area per capita (Table no.1). This revival recorded by urban green areas, especially after 2006, at national level, does not allow yet the fulfillment of the minimum standards of green space recommended by WHO and EU, national average being only 10.6 m²/capita in 2013.

Table 1. The Dynamics of Urban Green Areas In Romania/Macroregions/Development Regions During 2002-2013

Romania/Macroregions/ Development regions	2002		2007		2013		Evolution 2002-2013	
	Green areas km ²	Green areas m ² /inh.	Green areas km ²	Green areas m ² /inh.	Green areas km ²	Green areas m ² /inh.	Green areas km ² (%)	Green areas m ² /inh. (%)
ROMÂNIA	201,84	8,87	207,24	9,18	237,19	10,61	+17,51	+19,55
MACROREGIUNEA UNU	34,57	6,24	44,65	8,12	58,31	10,63	+68,67	+70,47
Regiunea NORD-VEST	15,46	5,37	22,81	8,00	34,25	12,05	+121,54	+124,45
Regiunea CENTRU	19,11	7,18	21,84	8,24	24,06	9,11	+25,90	+26,91
MACROREGIUNEA DOI	50,06	7,28	49,84	7,28	53,42	7,86	+6,71	+7,99
Regiunea NORD-EST	24,14	6,19	24,29	6,24	30,76	7,91	+27,42	+27,73
Regiunea SUD-EST	25,92	8,71	25,55	8,65	22,66	7,80	-12,58	-10,41
MACROREGIUNEA TREI	67,82	11,52	62,59	10,71	73,68	12,69	+8,64	+10,10
Regiunea SUD-MUNTENIA	17,74	5,13	18,92	5,57	26,23	7,93	+47,86	+54,49
Regiunea BUCURESTI - ILFOV	50,08	20,62	43,67	17,82	47,45	18,99	-5,25	-7,91
MACROREGIUNEA PATRU	49,39	11,12	50,16	11,48	51,78	12,12	+4,84	+9,01
Regiunea SUD-VEST OLTENIA	23,59	9,93	24,77	10,67	24,11	10,74	+2,20	+8,17
Regiunea VEST	25,8	12,48	25,39	12,39	27,67	13,64	+7,25	+9,32

Source: INS, Bucharest

In territorial level, from the 319 urban settlements of Romania, only 71 (22.2%) have an area of green spaces exceeding 26 m²/capita (EU standard) and only 20 (6.2%) exceed WHO standard of 50 m²/capita.

The analysis of each urban settlement, according to its rank, established by Law no. 351/2001, reflects the following evolution of green areas during 2002-2013:

❖ urban settlements of rank 0 (Bucharest), although recorded a downward trend of green areas (m²/capita) by 6.4%, is approaching, according to the latest data, the standards recommended by the EU, having in 2013, 21 m²/inhabitant;

❖ urban settlements of rank 1-cities of national importance, with potential influence at European level¹ (11 cities) - have an area of green space, placed mainly below the national legal standards. Craiova City (33.6 m²/inh.) and Cluj-Napoca City (28.7 m²/inh.) are the only ones that exceed the European norm, Oradea City being to the limit of 24.6 m²/inh., while Braila, Constanta, Galati, Ploiesti and Braşov City do not fulfill even the minimum national indicator, having less than 15 m²/inh. in 2013. The dynamics of green areas in the cities of rank 1 reveals that during 2002-2013, Galati City is the only one which recorded a significant decrease by -49.3%, the other cities recording increases between + 2.2% - Craiova City and + 236.6% - Oradea City.

❖ urban settlements of rank 2-cities with inter-county importance or with balance role in the network of settlements (92 cities) recorded the same poor situation, only 14 of them (15.2%) exceeding 26 m²/ inh., of which only three (Băileşti, Mangalia and Campina-3.2%) having values above 50 m²/inh. of green areas. Most of the cities of rank 2 (43 urban settlements- 46.7%) have an area of green spaces placed in the range of 15-26 m²/capita, but more concerning is the percentage of those with values below 15 m² of green space/capita (35 cities-38%), of which 17 cities have less than 10 m²/capita in 2013². Regarding the evolution of green areas, we notice that only 17 cities of rank 2 (18.4%) recorded a decrease (m²/capita), the highest being registered by Sighetu Marmăţiei (-74% during 2002-2013).

the analysis of urban settlements of rank 3-towns (215 towns), reflects the large deficit of green areas in romanian urban settlements. Basically, from the 215 towns of rank 3, 34.8% (75 cities) have less than 10 m²/inhabitant of green areas. If we consider the fact that, from 319 urban settlements in Romania, 94 have less than 10 m²/capita, we can conclude that towns are the urban settlements with the largest deficit of green areas (79.7%). At the same time we notice (Figure 1) that 55 towns

¹ Bacău, Braşov, Brăila, Cluj-Napoca, Constanţa, Craiova, Galaţi, Iaşi, Oradea, Ploieşti, Timişoara.

² Sacele city has the smallest area of green space of all the cities in Romania, each inhabitant assuming only 1.1 m² of green space.

(25.5%) of urban settlements of rank 3 have over 26 m²/capita., having the largest share in Romanian urban settlements (77.4%) that meet WHO and EU standards. Thus, the towns that have also the role of health resorts, have large areas of green spaces (Băile Tușnad-412.9 m²/inh., Sovata-149.7 m²/ inh, Slănic-148.9 m²/ inh, Băile Olănești-135.8 m²/ inh, Băile Herculane-109.5 m²/ inh. etc.) and cities located in areas with richer forest vegetation (Cavnic, Solca, etc. - Figure 2). Instead, a series of settlements, which recently became towns, basically do not have green areas (Pantelimon-0.82 m²/ inh, Broșteni-1.5 m²/ inh, Milișăuți-1.8 m²/ inh., Podu Iloaiei-2.7 m²/ inh.). Regarding the dynamics of green areas, the evolution is extremely varied, fluctuating between +1733% (Mioveni-the highest increase during 2002-2013) and – 89.2% (Rovinari-the highest decrease during 2002-2013).

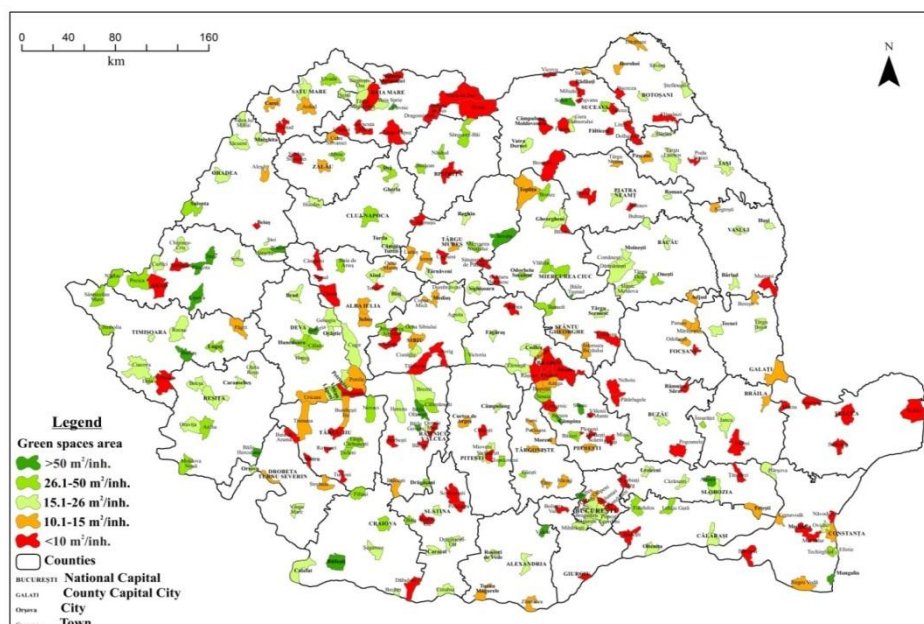


Figure 1. Urban Green Areas in Romania in 2013

Source: INS, Bucharest

The causes which led to this unfavorable evolution, continued after 2007, appear after 2000, when local authorities began to return the properties (especially urban domains) confiscated by the communist regime. The main effect of this action was the extension of residential area to the detriment of green areas. Incompetence or indifference of the authorities determined the restitution of large areas of green spaces, although the most rational solution would have been buying them back.

The lack of a Local Register of Green Areas¹, before the appearance of Law no.24/2007, and also the delay of its achievement, incomplete at present in most of the urban settlements, allowed municipalities to give building permits to owners, green areas having other status in official documents. Another reason that generated the reduction of urban green areas, mostly in Bucharest City, was caused by the appearance of pubs whose number increase significantly in these areas of rest and recreation. This phenomenon started after 1990 when certain commercial spaces appeared in parks under contracts concluded between the owners of these units and local authorities, with the obligation to respect the green areas. In most cases this fact was not respected, and many units have spread without permits. Therefore, besides the increase of the concrete surface, many illegal constructions which were built in this period, reduced significantly the urban green areas (Chiriac D., 2009, p.267).

Permissive legal provisions (the low amount of fines compared to the amount of profit earned by real estate developers), failure law application or its selective application by local authorities were also important causes of this unfavorable evolution.

¹ Each urban domain in order to have the status of green area must appear in official documents-planning documents, General Urbanistic Plan, Local Register of Green Areas. Currently, in planning documents, few green areas are listed as they really are. For example, green areas between blocks, squares, are not considered in these documents green spaces so they do not receive legal protection.

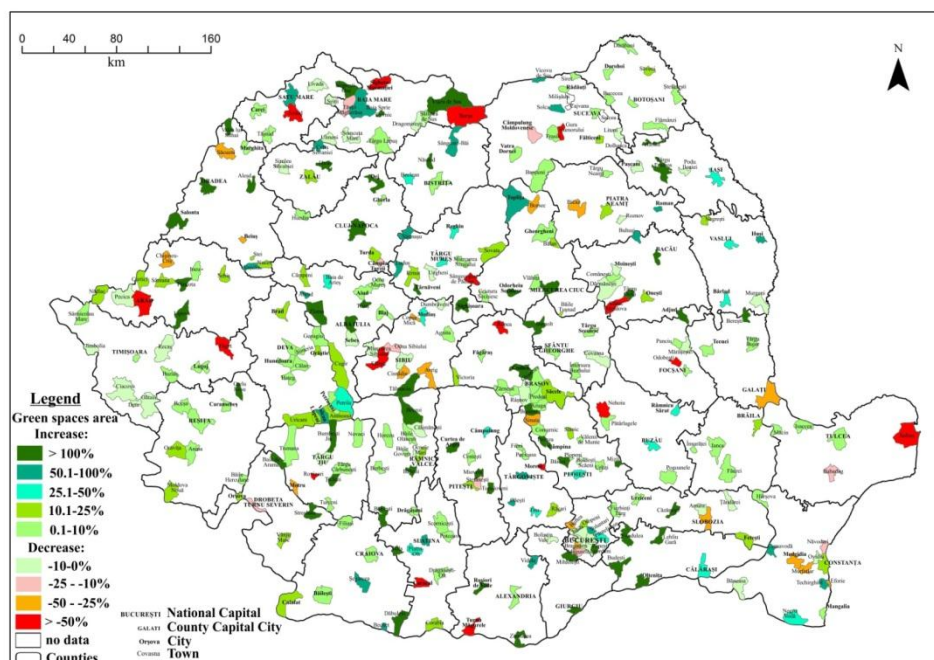


Figure 2. Urban Green Areas Evolution During 2002-2013

Source: INS, Bucharest

4. Conclusions

Unfortunately, the unfavorable evolution, continued after 2007, could be lowered only in few cases, although the central authorities have approved in the same year “The National Program For Improving The Quality Of The Environment By Creating Green Areas in Urban Settlements” (Emergency Ordinance no. 59/2007) which supports the financed projects submitted by local authorities for new green areas or for the rehabilitation and expansion of existing ones.

The goal (improving the environment and life quality of urban population) and objectives of this program (increasing green areas in settlements and improving the indicators according to WHO, EU and national standards, by developing and modernizing the urban green areas in cities, creating new parks, squares or alignments and rehabilitation of existing ones) should be pursued primarily by the municipalities of urban settlements, which must submit as many projects for setting up new green areas which contribute to the overall process of urban regeneration.

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