

LEGISLATIVE AND ADMINISTRATIVE SUPPORT SCHEDULED FOR IMPROVING THE ENVIRONMENTAL QUALITY BY CREATING GREEN SPACES IN THE CITIES

Alexandru-Marian CHIPER¹, Sorin-Mihai CÎMPEANU¹, Roxana Dana BUCUR²,
Valentina CHIPER (MIHALCEA)³

e-mail: alexchiper@yahoo.de

Abstract

Improving the environmental quality by creating green spaces is a key factor in the development of populated areas by positive general impression and benefits of aesthetic, social, economic and public health nature in the intervention areas. This study analyzed the effects of "*The national program to improve the environmental quality by creating green spaces in cities*" aiming at the staged, controlled and prioritized development of green spaces to achieve the objectives of Romania under the accession to the European Union and to undertake the obligations under the Community Environmental Policy. Thus, in Romania through the implementation of this program, the national efforts have increased both administratively and economically and socially as regards the programming, design and execution of green spaces in cities, both as new sites, and as the rehabilitation or expansion of the existing ones.

Key words: environment, planning, landscape, spaces, green, parks

The improvement of the environmental quality should be treated as a quantitative and qualitative development factor of the populated areas both administratively and socially, aiming at the urbanization and access to the recreational and aesthetic factors of the population in cities (Konga, et al., 2010). The programming, design and execution of green spaces are directly dependent processes of the environmental factors, social factors and economic factors in the areas of application, and the objective and systematic analysis of these factors leads to high diversity and wealth of the population in those areas.

The literature defines the green spaces as those areas of land systematized and arranged in terms of landscape, covered with vegetation and which usually refer to parks, public gardens, squares, football courts, golf courts, private gardens, Botanical Gardens (P.H. Gobster, 2011; Caspersen O.H., et al., 2006). These spaces can be opened both to the public use and only selectively to certain types of users such as the privately owned green spaces, inside of which one can access only with the acceptance of the owner (AF Iliescu, 3003).

"The program to improve the environmental quality by creating green spaces in cities" hereinafter referred to as "The Program" aims at developing the green space infrastructure whose use is directed exclusively to the general public and their use must be open to all people who want to benefit of a positive ambient.

The public green spaces created by the "Program" are built on the principle of their multi-functionality and use (Mitchell R. et al., 2008, and Schilling J., 2010) diversely for the recreational activities (Vijai Shanker, et al. 2010), of which all citizens present in a particular area can fully benefit whether they are residents or visitors in those areas (Olga Barbosa et al., 2007).

The arrangement of green spaces constitutes a major and indispensable chapter in the evolution of urban and rural development at both global and European (Chiriac D., et al., 2009, James P., et al., 2009) and national level for Romania, as a long-term national strategy to improve the environmental quality in the populated areas by the systematic elimination of stress elements (Mrkajic V. et al., 2010).

"The Program" aims at the staged, controlled (Ianos I., et al., 2009) and prioritized development

¹University of Agronomic Science and Veterinary Medicine Bucharest

²University of Agricultural Sciences and Veterinary Medicine Iasi

³University of Craiova

of green spaces to achieve the objectives of Romania under the accession to the European Union and to undertake the obligations under the European Union Environmental Policy. In Romania "The Program" is legally supported by the Emergency Ordinance no. 59 as of June 20, 2007 and Law no. 49 as of March 19, 2008 on its amendment.

MATERIALS AND METHODS

According to a study made by Richard A. Fuller and Kevin J. Gaston published in 2009 in *Biology Letters* and represented graphically in Figure 1 in 2001 about 170,6 million people, almost 34% of the European Union population, lived in urban areas of the European Union and the average green surface rose to 18.6% of the urban surface.

The colour points representing cities are coloured according to the proportional coverage of urban green space within the city. The Country-

related areas are coloured depending on the coverage of green space per capita compared to the urban areas. The grey-shaded areas belong to the states with data unavailable to the countries whose data are being collected (Fuller and Gaston, 2001).

At national level, according to the 2009 Romanian Statistical Yearbook, as shown in Figure 2, in 2008 in Romania there were 9.73 sqm green spaces per capita in the cities and the total public green space rose to 21,124 ha.

"The Program" selectively encourages both quantitatively and qualitatively the national network infrastructure of green spaces in cities (Ioja C.I. et al., 2009; Ioja C.I. et al., 2010), being mainly favoured especially those investments in newly created spaces and then the extensions and refurbishments of the existing spaces (Patroescu M., et al., 2004).

In this regard, it aims to increase the area of green space per capita in the built-up area of cities and the target at the national level is to exceed 26 square meters of green space per capita by December 31, 2013.

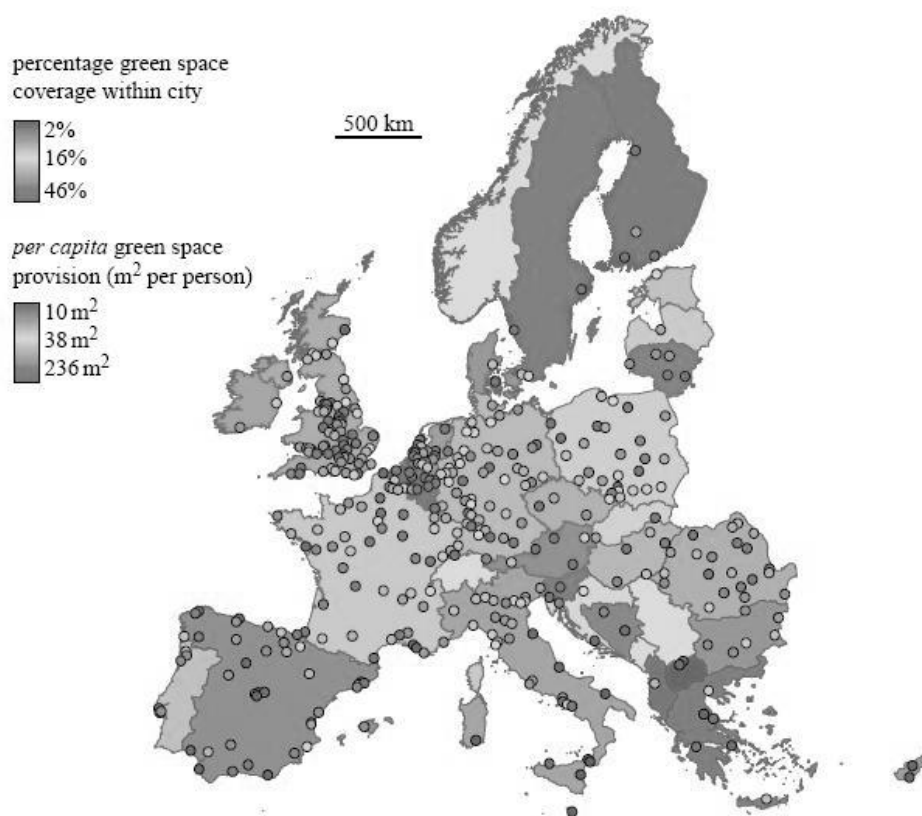


Figure 1. Green spaces in urban areas in Europe in 2001

According to a release as of October 15, 2007 of the Minister of Environment and Sustainable Development, currently Minister of Environment and Forests, the green space standard of 26 sqm/capita is the minimum value accepted in the European Union when the World Health Organization recommends an area of 52 sqm/capita and the European capitals such as Stockholm and London have at this moment surfaces of 83 and 64 sqm/capita while in 2007 Bucharest had only surfaces of 9.08 sqm / capita and that according to data provided by the National Environmental Protection Agency in 2008 it increased

to 12.39 sqm/capita (source:www.mmediu.ro, www.anpm.ro).

So, in the spirit of harmonizing the national legislation with the *acquis communautaire* by the Emergency Ordinance no. 114/2007 on the environmental protection, "the local authorities are required to ensure of the built-up land an area of green space of 20 sqm/inhabitant, until December 31, 2010 (which it wasn't fulfilled up to the moment) and minimum 26 sqm/inhabitant, until December 31, 2013" (source: www.cdep.ro).

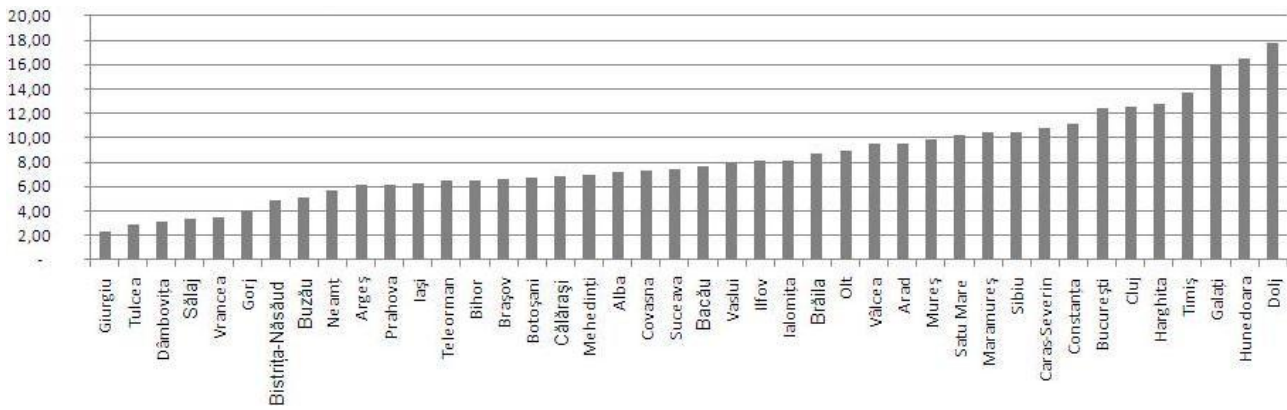


Figure 2. The available green space per capita in 2008 in the counties of Romania

Realizing the negative effects of the increased degradation of the quality and quantity of green areas in Romania at national level, the Romanian Government issued on June 20, 2007 the Emergency Ordinance no. 59 whereby a "program" was set at national level in the populated areas. Thus, at the European level, those realities have been found since the end of last century once with the conclusion of the fifth Environmental Action Programme "Towards Sustainability" as of on December 31, 2000 and, therefore, in 2002 by the Decision 1600/2002/EC of the European Parliament and Council, a new Community Action Program, aiming both to prevent the negative environmental effects as a result of the social factors and industrialization, and the reclaiming and continuous improvement based on legislative principles and population awareness was established.

According to the general objectives of the European Community concerning the environmental priorities on the climate change control, directions for nature and biodiversity, environmental improvements, population health and quality of life, responsible management of natural resources and waste, Romania has financially supported and confirmed the European Environmental Policy by the Emergency Ordinance 59/2007. These mandatory efforts undertaken by the accession treaty have as general objectives the accession of our country to the *acquis communautaire* in terms of EU Environmental Policy.

"The Program" was developed over a period of three years from 2007 to 2010, with the possibility of extension, and the funds allocated from the Environment Fund aim at the financial support of the "Program's" Beneficiaries, the local authorities: mayors and county councils.

The Government project was also supported by the legislative body of Romania by the Law 49/2008 whereby the amount of financeable projects was supplemented in 2007 by the Environment Fund with the amount of lei 15 million, which is gratifying as regards the legislative support of policy on the increase of quality of life by creating green spaces in cities.

Although the law has changed regarding the content of the "Program" Financing Guide approved by the Order of the Minister of Environment and Sustainable Development no. 1166/2007 and amended by Order No. 1107 as of August 20, 2009 for approval of the "Program" Financing Guide, the

law generally followed the same objectives, namely to encourage the investments carried out by the Beneficiaries of this program namely the local authorities.

During 2007 - 2011 by "The Program", 667 projects with a total value of lei 455,922,629 were selected and approved by 6 Government Decisions as a result of four sessions for submission of projects:

- In 2007, according to Decision no. 1256 as of October 17, 2007, in the session of July 27 to August 15, 2007, a total of 102 projects with a value of 58,713,055 were selected (source www.afm.ro).
- In 2008, according to Decision no. 482 as of May 7, 2008, in the session of January 3-31, 2008 a total of 97 projects with a total value of lei 59,992,056.55 were selected (source www.afm.ro).
- In 2009 according to Decision no. 1588 as of December 16, 2009 and after two sessions of submission, the session as of January 3-31, 2008 and August 25 to September 5, 2008, 35, respectively 148 projects with a total of lei 122,669,355.04 were selected (source www.afm.ro).
- In 2010 according to Decision no. 626 as of June 30, 2010 the amounts related to the submitted projects approved by Decision no. 1588 as of December 16, 2009, were ratified in sessions as of January 3-31, 2008 and August 25 to September 5, 2008, where a total of 35, respectively 148 projects were corrected and approved but with a total value of lei 123,283,498.68. The difference of lei 614,143.64 compared to the GO 1588/2009 consisting of the introduction and removal of various expenses considered eligible and ineligible - "The Program" (source: www.afm.ro).
- In 2010 according to the Decision no. 110 as of February 9, 2011, as a result of the session as of September 21, 2009 - October 12, 2009 a total of 285 projects with a total value of lei 214.548.162 were selected (source: www.afm.ro).

According to Order no. 1107 as of August 20, 2009, between the size of the green space created by "The Program" and the number of inhabitants of the administrative units, there must be a close bondage. As seen in *Table 1*, the funds allocated for the development of green spaces networks are directly proportional to the size of cities and type of arrangements.

Table 1

Encouraging by score the funded projects depending on the number of city inhabitants

Administrative unit	Inhabitants No.	New construction		Refurbishment and extension		Refurbishment	
		Limit	Score	Limit	Score	Limit	Score
Cities/large municipalities	Over 100.000	2.000.000 lei	10 points	1.500.000 lei	7 points	1.000.000 lei	5 points
Cities/medium municipalities	Between 20.000 and 100.000	1.500.000 lei	7 points	750.000 lei	5 points	550.000 lei	4 points
Cities/small municipalities	Till 20.000	1.000.000 lei	5 points	500.000 lei	3 points	400.000 lei	3 points
Large villages	Over 3.000	1.000.000 lei	3 points	500.000 lei	2 points	400.000 lei	2 points
Small villages	Till 3.000	500.000 lei	2 points	250.000 lei	1 point	200.000 lei	1 point

Source : Order 1107/2009

The amounts allocated depending on the projects' location were thus designed to encourage the growth of green space per capita in poor areas, giving priority to those locations where it is necessary to increase this report. The given score is consistent with that presented in *Table 2*.

Table2

Encouraging by score the projects according to the created green space

Over 20.000 m ²	10 points
Between 15.000 and 20.000 m ²	7 points
Between 10.000 and 15.000 m ²	5 points
Between 500 and 10.000 m ²	3 points

Source : Order 1107/ 2009

The quality and type of components is also an important factor in project selection financed by "The Program", giving priority to those projects that provide the majority investments in plants and organic products, and provided with facilities for irrigation with sprinklers and lighting panels with photovoltaic poles.

RESULTS AND DISCUSSION

The green spaces are considered by experts in sociology, health (Maas J. et al., 2006), economics, culture, education, as real energy tanks in the standard of living and environmental quality development and growth mechanism (Ioja C. et al. 2011).

According to the study "Recreational Values of Public Parks" (Robert Manning & Thomas More) the users' interest in parks can be gradually seen by the many positive effects that they offer. These are proportional in *Table 3*.

In this respect, the multi-functionality means that the newly created, extended or refurbished green spaces should offer a variety of public utility services such as recreational activities, social activities, educational, cultural activities and all of them according to the specifics and needs of these areas (Byrne and Neil Sipe, 2010).

The variety intends that on the area of green spaces a large number of useful components are grouped functionally and recreational, components which are applied to all potential users and beneficiaries thereof (Clark P. and Jauhainen J.S., 2006).

In this regard, the programming, design and execution of green spaces should take into account all components of a recreational space such as: a diversified vegetation with lawns, paths and access roads, lighting, irrigation systems, information elements, urban furniture, leisure furniture, playgrounds, outdoor fitness equipment, space and users protection elements, fauna elements and aquatic ecosystems, fountains, drinking fountains, lakes, garbage collection areas, sports grounds, and any other useful items in the administrative areas and those available to the public (Fanhua Kong et al., 2010; Ziyu T. et al., 2011).

The arrangement of green spaces should encourage all recreational activities with appropriate spaces for walking; resting in nature, sports, play grounds, social spaces but also economic activities by the existence of terraces, restaurants, bicycles renting spaces, boats whereby the landscape arrangements can make that space more valuable. An important factor of quality and durability of the landscape works is their equipment with irrigation systems smartly and cost-effective designed so that they can be exploited later responsibly and economically (Zazueta F.S. et al., 1995).

By the statistical data analysis and processing, we, the authors, have observed that the largest investments in green spaces achieved by the program have been made in Calarasi, Neamt, Bihor, Mures, Constanta counties, and the least significant investments were made in Mehedinti, Caras-Severin, Valcea, Alba and Ialomita counties as presented in *Table 4* and *Figure 3*.

Table 3

Value of interest	Recreational values of parks					
	Level of significance (%)					
	(1)	(2)	(3)	(4)	(5)	(6)
Recreational	64,4	27,9	5,7	1,1	0,9	0
Aesthetics	60,4	29,5	6,6	2,4	1,1	0
Educational	31,8	31,6	24,1	7,2	4,8	0,4
Moral / Ethics	31,0	31,4	19,7	8,3	5,2	4,4
Economic	23,2	36,9	23,9	10,8	3,5	1,7
Ecological	33,6	25,5	18,5	11,3	6,1	5,0
Therapeutic	24,0	28,2	26,4	11,6	7,1	2,7
Historical /Cultural	20,1	28,5	20,1	17,9	9,1	4,4
Scientific	16,0	18,7	29,3	19,6	9,6	6,9
Intellectual	17,8	19,6	22,2	17,0	16,5	6,8
Spiritual	9,9	14,6	15,8	20,0	20,3	19,4

*1= very important; 2=important; 3= moderately; 4= satisfactory ; 5= less important; 6= insignificant
Source: "Recreational Values of Public Parks" (Robert Manning & Thomas More, 2002)

Table 4

Comparison between the extreme limits of the absorption of funds through the "Program"

Counties with a low rate of absorption of funds				Counties with a high rate of absorption of funds			
PI.	County	Total value	Absorption from total funds	PI.	County	Total value	Absorption from total funds
42	Mehedinți	1.902.483 lei	0,4173%	5	Constanța	18.519.996 lei	4,0621%
41	Caras-Severin	4.095.169 lei	0,8982%	4	Mureș	19.475.514 lei	4,2717%
40	Vâlcea	4.307.119 lei	0,9447%	3	Bihor	22.675.646 lei	4,9736%
39	Alba	4.919.206 lei	1,0790%	2	Neamț	23.191.845 lei	5,0868%
38	Ialomița	5.183.273 lei	1,1369%	1	Călărași	24.922.696 lei	5,4664%

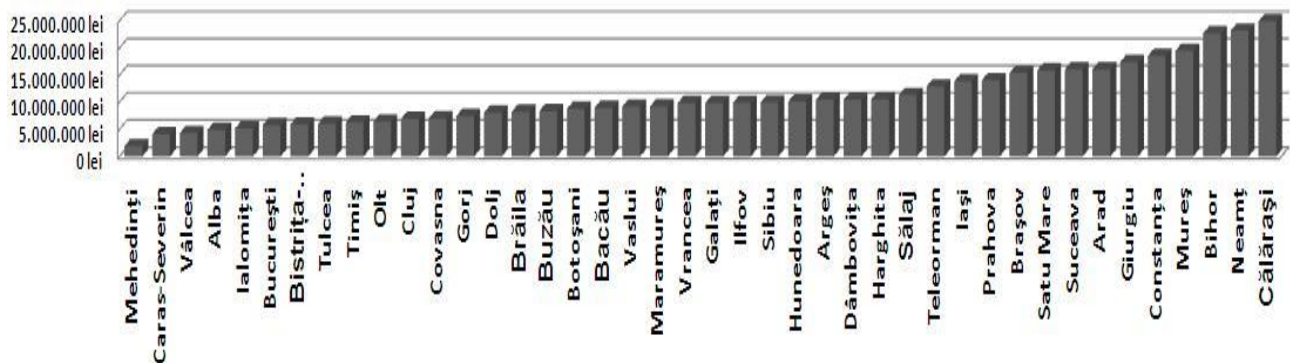


Figure 3 The total value of investment in green spaces in funded counties during 2007-2011 by "The Program"

By analyzing the obtained data with the demographic ones it can be noticed that the report is relatively disproportionate by the fact that 47% of the Romanian population lives in rural areas and 53% in urban areas.

Following the analysis at the level of geographical developing regions, results summarized in Table 5 and Figure 5, we can see that Region 3 South is the area where most funds were absorbed, most of these funds being concentrated in Calarasi, Giurgiu and Prahova counties.

The lowest investments in relation to the number of inhabitants and surface were conducted in South-West Region 4, where the counties of this region have attracted only 6.19% of the total available funds.

By analyzing the data presented in Table 6, it is also observed at county level that Mehedinți and Caras Severin have attracted the least funds in creating green spaces, while Calarasi, Neamt and Bihor counties have applied more aggressive county policies for the creation of green spaces, data presented schematically in Figures 6 and 7.

Administrative form	Funds raised
Villages	260.323.010 lei
Cities	114.823.982 lei
Towns	80.775.637 lei

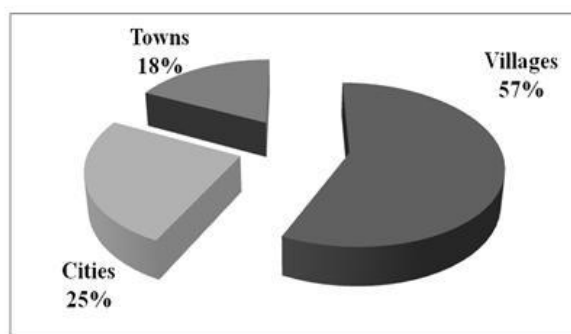


Figure 4 The total value of investments in green spaces attracted by the "Program" during 2007-2011, according to the cities' administrative form.

Table 5

The total value of investments in green spaces attracted by "The Program" according to developing regions.

Geographical developing regions	Amount of funds	Degree of absorption	Geographical developing regions	Amount of funds	Degree of absorption
Region 1 (North-East)	79.994.569 lei	17,55%	Region 5 (West)	36.574.750 lei	8,02%
Region 2 (South-East)	60.849.232 lei	13%	Region 6 (North-Vest)	71.927.902 lei	15,78%
Region 3 (South)	95.345.490 lei	20,91%	Region 7 (Center)	67.329.054 lei	14,77%
Region 4 (South -West)	28.204.724 lei	6,19%	Region 8 (Bucuresti -Ilfov)	15.696.907 lei	3,44%

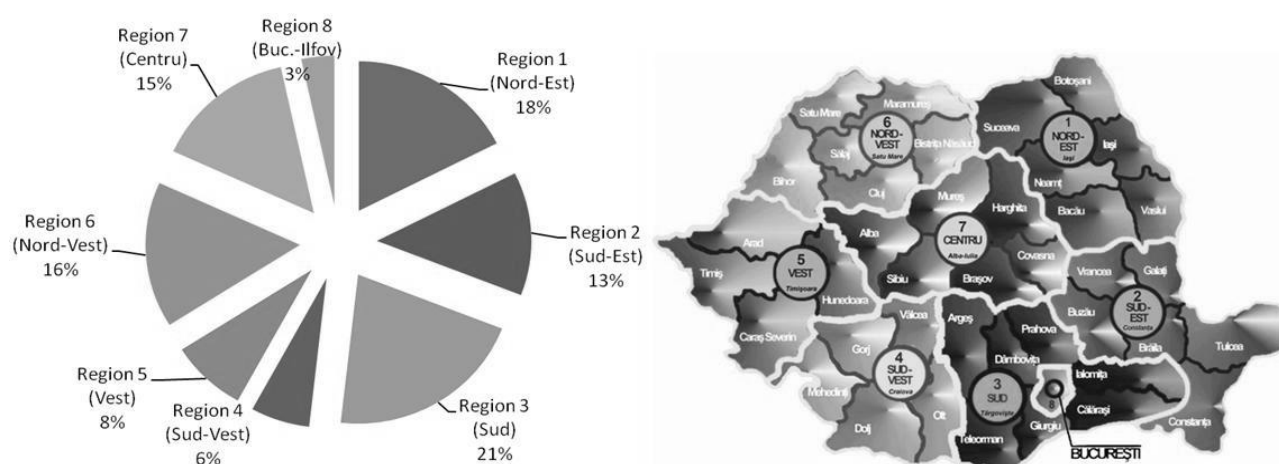


Figure 5. The disposal of investments in green spaces (2007-2011) made by "The Program" in the developing regions

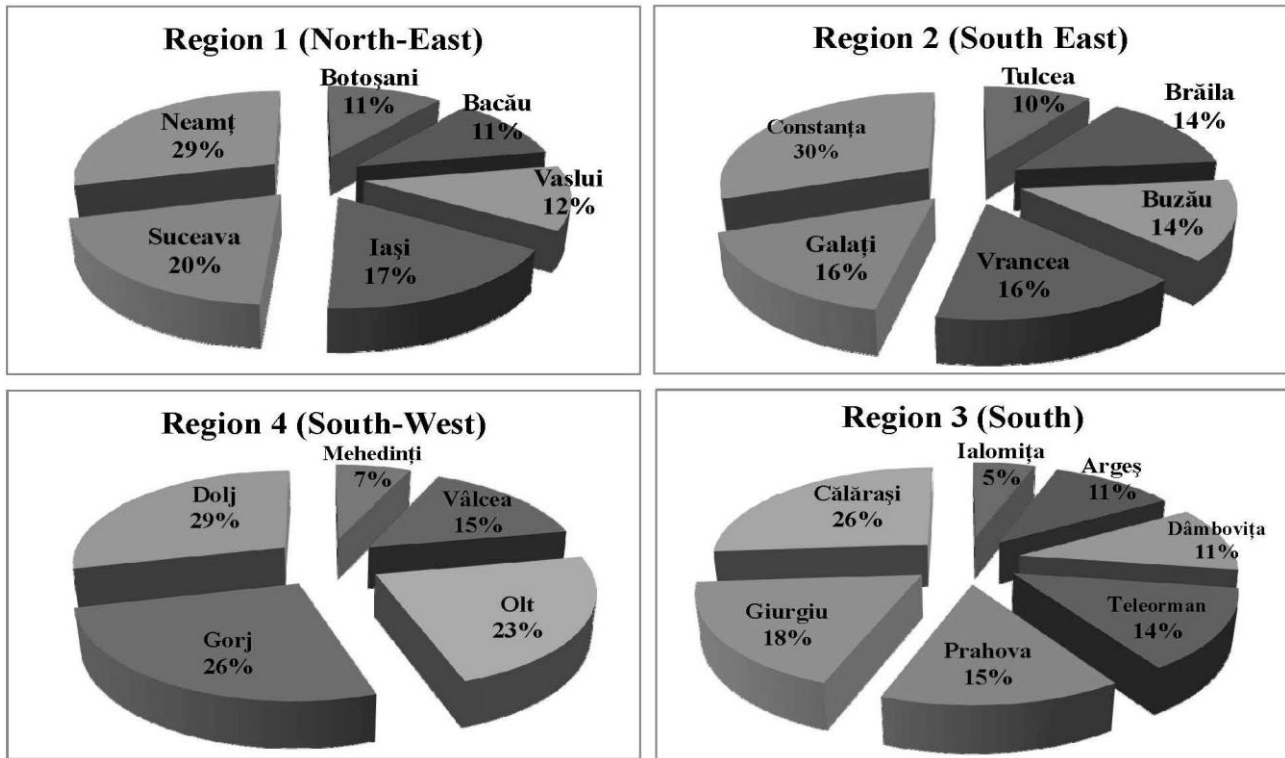


Figure 6. The percentage of investments in green spaces (2007-2011) made by "The Program" in the developing regions 1-4.

Table 6

The value of investments in green spaces (2007-2011) made by "The Program" in the developing regions 1-8

County	Investment value	Degree of absorption	Region	County	Investment value	Degree of absorption	Region
Botoșani	8.773.811 lei	1,92%	1	Gorj	7.445.383 lei	1,63%	4
Bacău	8.987.074 lei	1,97%	1	Dolj	8.106.352 lei	1,78%	4
Vaslui	9.180.505 lei	2,01%	1	Total Region 4	28.204.724 lei	6,19%	
Iași	13.820.917 lei	3,03%	1	Caras-Severin	4.095.169 lei	0,90%	5
Suceava	16.040.418 lei	3,52%	1	Timiș	6.262.751 lei	1,37%	5
Neamț	23.191.845 lei	5,09%	1	Hunedoara	10.148.623 lei	2,23%	5
Total Region 1	79.994.569 lei	17,55%		Arad	16.068.207 lei	3,52%	5
Tulcea	6.042.135 lei	1,33%	2	Total Region 5	36.574.750 lei	8,02%	
Brăila	8.237.127 lei	1,81%	2	Bistrița-Năsăud	5.897.011 lei	1,29%	6
Buzău	8.361.700 lei	1,83%	2	Cluj	6.955.626 lei	1,53%	6
Vrancea	9.823.779 lei	2,15%	2	Maramureș	9.202.249 lei	2,02%	6
Galați	9.864.494 lei	2,16%	2	Sălaj	11.327.823 lei	2,48%	6
Constanța	18.519.996 lei	4,06%	2	Satu Mare	15.869.547 lei	3,48%	6
Total Region 2	60.849.232 lei	13%		Bihor	22.675.646 lei	4,97%	6
Ialomița	5.183.273 lei	1,14%	3	Total Region 6	71.927.902 lei	15,78%	
Argeș	10.446.504 lei	2,29%	3	Alba	4.919.206 lei	1,08%	7
Dâmbovița	10.448.793 lei	2,29%	3	Covasna	7.014.808 lei	1,54%	7
Teleorman	12.896.156 lei	2,83%	3	Sibiu	9.951.941 lei	2,18%	7
Prahova	14.061.730 lei	3,08%	3	Harghita	10.578.391 lei	2,32%	7

Giurgiu	17.386.340 lei	3,81%	3	Brașov	15.389.195 lei	3,38%	7
Călărași	24.922.696 lei	5,47%	3	Mureș	19.475.514 lei	4,27%	7
Total Region 3	95.345.490 lei	20,91%		Total Region7	67.329.054 lei	14,77%	
Mehedinți	1.902.483 lei	0,42%	4	București	5.800.000 lei	1,27%	8
Vâlcea	4.307.119 lei	0,94%	4	Ilfov	9.896.907 lei	2,17%	8
Olt	6.443.387 lei	1,41%	4	Total Region 8	15.696.907 lei	3,44%	
Total of Regions (1-8): 455.922.629 lei							

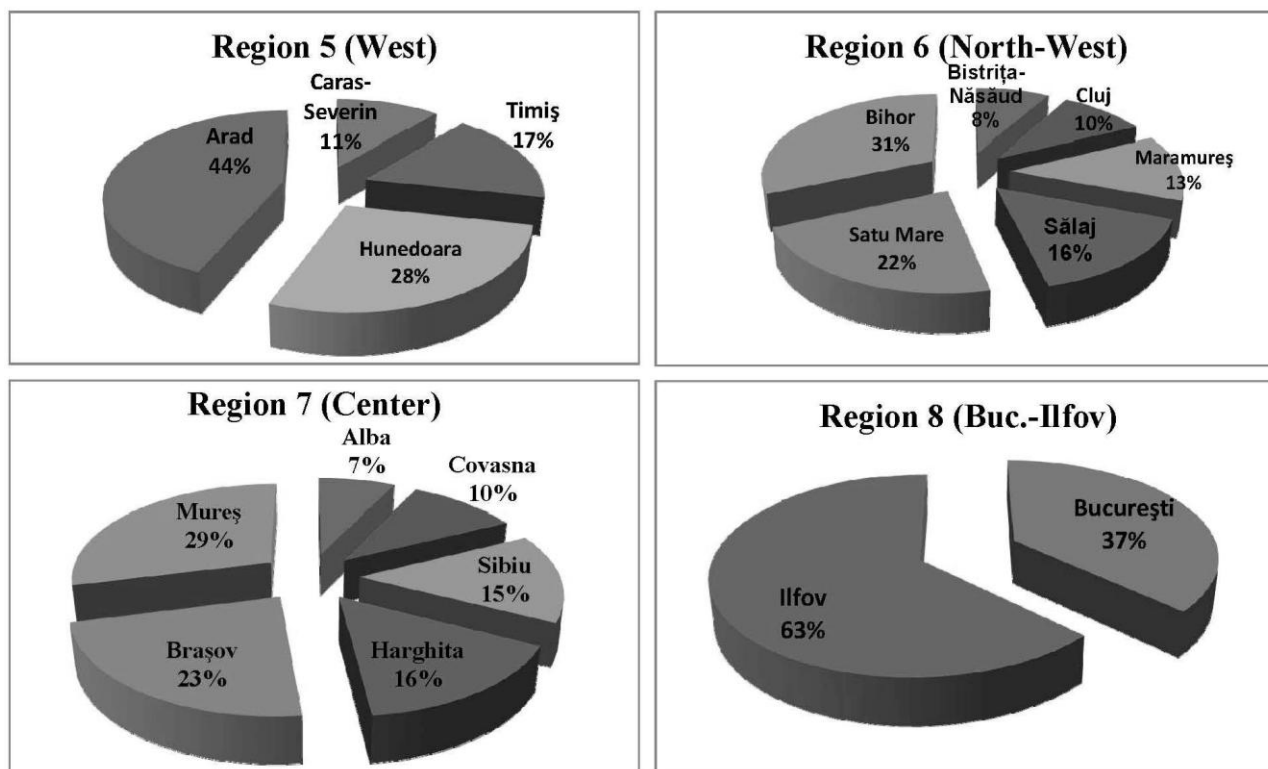


Figure 7 The percentage of investments in green spaces (2007-2011) made by "The Program" in the developing regions 5-8.

CONCLUSIONS

The performed studies confirm that the "Environmental quality improving program by creating green spaces in cities" through its nationwide implementation has largely met the overall objective to increase the area of green space available per capita in cities, but it should be noted that this increase has resulted in at an uneven national level, with significant differences between the values of funds absorbed by the administrative units in different regions and counties or administrative organization.

At the same time, we need to emphasize that at the political and governmental decision level, they should be implemented with the release of collateral measure programs that can support the potential Beneficiaries and provide them the capacity to attract funds uniformly and equitably at national level.

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