

THE SYSTEM OF MARIJAMPOLĖ GREEN AREAS

Greta Juškaitė, Virginija Gurskienė
Aleksandras Stulginskis University, Lithuania

Abstract

Development and management of green area systems is important to both the environment and a person. It bears social, economic, and ecological significance. This system must comply with principles of sustainable spatial development. Therefore, well-developed systems of green areas must become the basic aim of all cities. Marijampolė, the seventh biggest city of Lithuania was selected as the research object. In the article the system of Marijampolė city green areas is analysed. Two surveys, which included questionnaires, were conducted, i.e. city inhabitants and territory-planning and management specialists were interviewed. It was identified that the system of Marijampolė green areas is not balanced and there are enough green areas only in part. However, the current parks, squares and other green spaces do not ensure full-fledged citizens' life. Marijampolė lacks equipped, applied to various activities local green areas for different age groups of the community, the development and maintenance of which must primarily be the inhabitants' concern.

Key words: the system of green areas, green spaces, recreation, sustainable development.

Introduction

A city is a stimulator of sustainable development, the basis for competitiveness and prosperity of the state (Dargis, 2008). It is a rather complicated system, encompassing city community, its activities and demands, natural, anthropogenic elements and the environment, while human being takes the most important position. Thus, not only city planning but also the formation of green areas must be oriented towards people's needs (Yakovlev's–Mateckis, 2006). One of the conditions for sustainable city existence is a high-quality system of public spaces and green areas, oriented towards satisfaction of people's needs and assuring favourable living conditions in the city (Chiesura, 2004). Well-planned green areas make a city vivid and attractive (Duggal ir kt., 2014). As well as this, they add to economic prosperity of the city. Green areas within the city must be arranged and managed so that they could ensure full-fledged citizens' life.

Recreation is essential for full-fledged life, especially a short-term one, i.e. everyday recreation, because it helps restore individual's physical and mental capacities and is significant as a social phenomenon since it induces varied development of a personality (Urbonaitė, 2011). For green areas to effectively ensure recreational function, accessibility of such areas, quality and assurance of various activities are crucial. According to K. J. Mateckis (2004), separate sites for recreation and a recreation park of the whole area (green area of the district) with the equipment and greeneries in order to satisfy the needs of different age groups within the district community must be established. In a residential area of a district recreation gardens whereas in groups of houses recreation and sport sites must be set up (the so-called local green spaces). Therefore, public spaces are becoming lively when a variety of activities dominates; they take place in a different part of a day, throughout all seasons, are easily accessible and interrelated (Rogers et al., 2006). A problem arises that not always existing recreational territories can properly ensure their functions or there are no such territories within the residential area of a district.

The research analyses Marijampolė, the city situated in southern Lithuania, the centre of one of the five ethnographic regions. Recently administration of the municipality has been paying a big attention of the community to management of public spaces and infrastructure of the city as well as improvement of work and recreation conditions. The municipality is one of the first within the country with regard to application of GIS technologies in the fields of territory administration and management.

The aim of this research is to analyse the system of Marijampolė city green areas as well as to find out inhabitants and specialists' opinion about it. The objectives of the research are as follows: to identify the distribution of current green areas; to assess the quality and demand for green areas in Marijampolė city.

Work methodology

The research object is the system of Marijampolė city green areas.

The analysis of scientific and legal literature, statistical data, territory-planning documents and other sources was conducted for the research. Moreover, two questionnaires were filled.

The system of Marijampolė city green areas was analysed on the basis of the general plan (2012), the special plan of development and management of green area system in Marijampolė city (2012) and the map containing solutions for the system of green areas as well as certain laws of the republic of Lithuania, resolutions of the government, other standard acts, scientific literature and other information sources.

The data of Lithuanian Land Fund, announced by National Land Service under the Ministry of Agriculture and other institutions as well as the data provided by Lithuanian Department of Statistics and other sources of information were analysed.

Two questionnaires were compiled. The first one was developed in order to find out the needs of Marijampolė inhabitants and their opinion about green areas within the city. The second questionnaire was compiled so that one could know the position of experts of this field. 104 questionnaires (85 for inhabitants, 19 for experts) were prepared and distributed. The survey was conducted in February of 2015. The feedback of the questionnaires was 100 %. The collected data was analysed using MS Excel software. Descriptive and graphic depiction methods were used to assess the results and analysis of the research.

Results and their discussion

Marijampolė is a city in southern Lithuania, the centre of the county. It occupies the area of 2,412.71 ha. At the beginning of 2015, according to the data of Lithuanian Department of Statistics, the number of inhabitants in Marijampolė was 38,341 (Lietuvos..., 2015), i.e. 66 % of all dwellers in Marijampolė municipality. On the basis of Land Fund of Lithuania, according to the data of 01/01/2013, agricultural utilities in Marijampolė constituted 204.83 ha, which made up 8.5 % of the total city area. There have been no forests in the territory of the city. Roads constituted 131.00 ha or 5 %, the built territory made up 1,152.93 ha or 48 % whereas 127.23 ha or 5 % were covered with water and other land (which includes green areas as well) occupied 796.72 ha or 33 % (Lietuvos..., 2013). Following the distribution of agricultural utilities, one can make a conclusion that built territory and other land dominate in Marijampolė city.

On the basis of solution map for the system of green areas, compiled in 2012, the general plan of Marijampolė city (2012), the information provided by State Enterprise Centre of Registers and Regional Geoinformation Environment Service (REGIA) (2015), it was identified that the system of Marijampolė green areas is composed of separate green areas and other territories important for natural frame and a balanced system of green areas (Table 1).

Table 1

Distribution of green areas in Marijampolė city

Type of green areas	Amount, units	Area, ha	Area occupied within the total system of green areas %	Area within the total general city area %
Territories of separate green areas	15	92.70	44	4
Territories of common use	7	36.73	18	2
Recreational territories	3	28.27	14	1
Territories containing cultural heritage objects	7	50.89	24	2
Total	32	208.59	100	9

The system of green areas in Marijampolė city occupies only 9 % of all the city territory. However, it was discovered that one city dweller gets about 24 m² of separate recreational green areas. According to standards of recreational green areas (2007), knowing that in cities of medium size the standard must reach 20 m² for one inhabitant, one may claim that the area of the current green areas is sufficient. On the other hand, as it was shown by the data of questionnaire, not all of them satisfy people's needs.

The results of the survey reveal qualitative and quantitative situation of Marijampolė city green areas in certain city districts and the whole city as well as the assessment of state of certain green areas.

Having conducted the survey of green area designing specialists, architects and Marijampolė municipality environment protection department employees, 100 % of experts marked that creating a

single, functional system of green areas was an important step towards sustainable development of the city. 26 % of experts answered that green areas and greeneries in Marijampolė city were distributed evenly whereas 74 % of respondents said it was uneven.

The survey was intended to find out if there were enough green areas in Marijampolė city. 84 % of experts say the current green areas are sufficient while 16 % claim that the amount of green areas is sufficient only in part and there could be more greenery, i.e. the current parks, squares, etc. could be planted with trees and bushes as well as adapted to people’s recreation. The rest 15 % think that there are not enough green areas to ensure the prosperity of city dwellers.

The survey was meant to provide information if city dwellers and specialists understood the significance of green areas in the city. They were asked for the opinion concerning the functions of green areas. Apparently, as it was expected, 100 % of specialists know that green areas perform ecological, technical-protective and architectural-social functions. 65 % of inhabitants also marked all functions. 16 % of people think that green areas only reduce pollution and cleaned the air, i.e. performed urboecological functions. 11 % believe that green areas are important in order to satisfy people’s needs and maintain natural frame or, in other words, they perform architectural-social functions. The rest 8 % claim that green areas only protect from noise, dust, etc. In conclusion, it could be stated that the majority of Marijampolė inhabitants are aware of the importance of green areas. This awareness adds to the aspiration and realization of sustainable development in Marijampolė city.

Both city inhabitants and experts-specialists were asked what they thought about the amount of funding devoted to maintenance of Marijampolė city green areas. 74 % of experts think that the funding is not sufficient enough. 11 % feel that enough financial support is given whereas 15 % of respondents do not have an opinion about this issue. 60 % of dwellers do not have a clear opinion about the funding. Even 27 % of respondents think that enough funding is provided whereas 13 % believe it is not sufficient. The experts were also asked how more funding could be gained for management of green areas. 37 % of respondents say that the municipality could devote more money from the budget whereas 32 % of respondents claim that the support of EU structural funds could be used more often, which was the case with Poetry, Vytautas the Great parks and other public space management. 23 % of respondents think that it is possible to attract support from private persons by creating more favourable possibilities for investment. Several respondents believe (8 %) that the funding for ecologisation of the city, extension of green areas and improvement of quality must be foreseen not only in the city but also state budget.

Dwellers of Marijampolė city were asked to express their opinion about who should supervise green areas in the city (Fig. 1). In their opinion, the municipality and the inhabitants themselves (the society) ought to take care of green areas most. However, it is no less important that representatives of the private city sector, enterprises and offices should be concerned with green areas in the city.

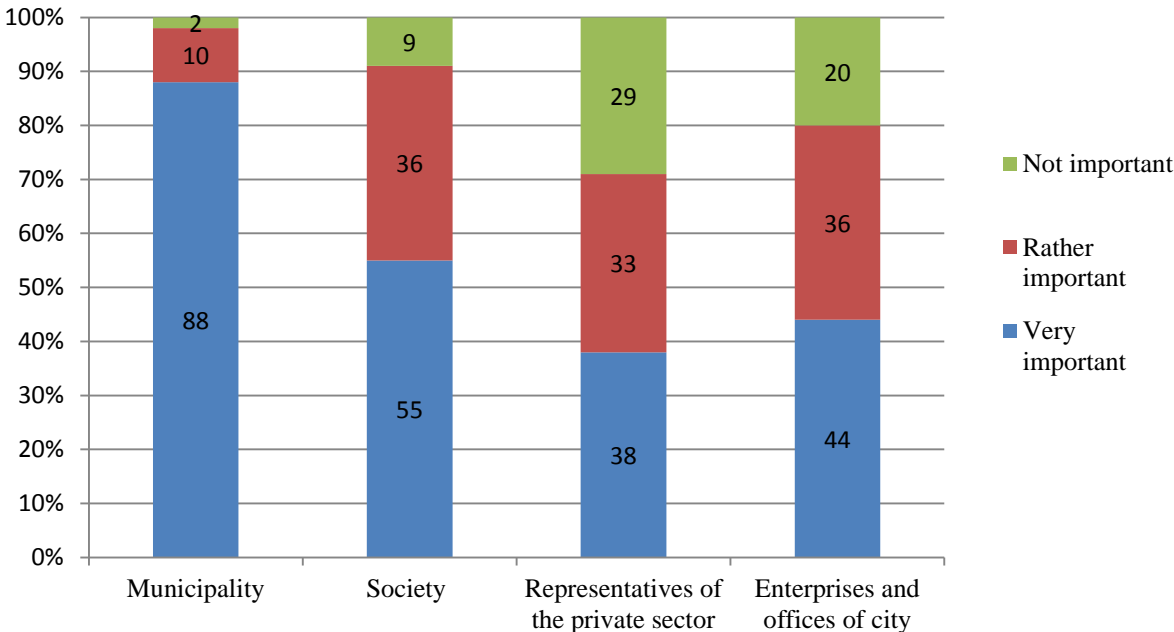


Fig. 1. Distribution of respondents’ opinions about institution maintenance of city green areas, %

On the basis of sustainable development principles, establishment and management of the green area system must be equally important in all countries because only under common agreement and efforts it is possible to reach a high-quality system of green spaces, reduction of urbanisation consequences and, definitely, sustainable development of the city.

Another part of the questions included the quality of green areas and distribution in certain parts of Marijampolė city. City inhabitants were asked to assess sufficiency and availability of green areas in their residential area. After the analysis, it was identified that inhabitants of Degučiai district and the city centre were best supplied with green areas. In these parts of the city green areas are arranged conveniently and are easy to reach. Dwellers of these districts mostly mention that there are enough green areas for their needs. The worst situation is found in Laikštė and Draugystė quarters, where respondents mark that green spaces are too far and there are no green areas in their neighbourhood.

As experts assess, the mentioned districts, namely Degučiai and the city centre are best with regard to green areas, having collected on average 4 points out of five whereas the worst situation is found in Laikštė and Nartas, which scored only 2 points (Fig. 2).

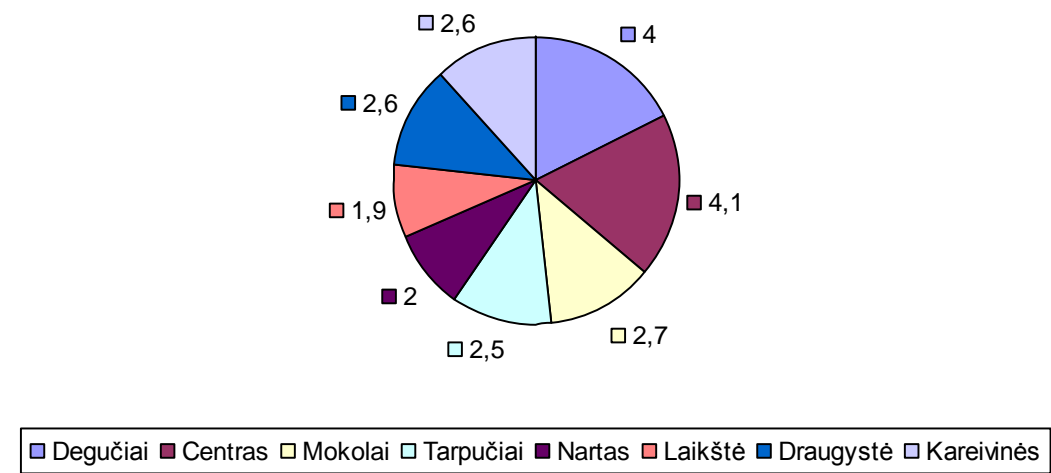


Fig. 2. The assessment of local green area sufficiency in microdistricts, conducted by respondents, points

Thus, the opinion of inhabitants and experts is very similar and, as a result, the assessment is valid. Furthermore, the research was carried out to find out inhabitants' social needs and recreational possibilities in the city. The inhabitants were asked if district and local green areas in their residence were adjusted to people's social and recreational needs (Fig. 3).

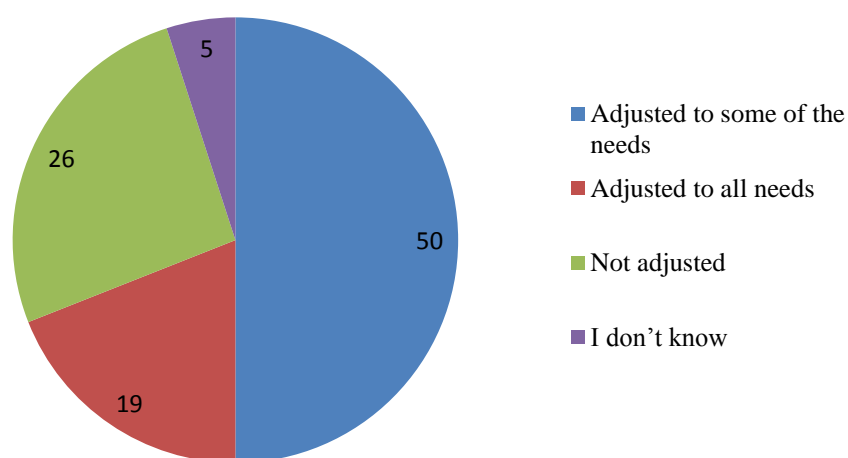


Fig. 3. Distribution of respondents' opinions about adjustment of green areas to inhabitants' needs, %

Half of the respondents think that Marijampole city green areas are adjusted only to some needs while 26 % of the respondents claim that green areas are not adjusted to people's needs at all. 19 % believe that green areas are well-suited to all needs and it is not surprising that almost all respondents who chose this option lived in the city centre where loads of equipped, arranged and adapted to various activities parks could be found.

The inhabitants, asked to say what is lacking in Marijampole green areas, those living far from the central green areas (Rygiškių Jonas, Poetry, Vytautas the Great, Mokolai, and other parks), emphasize that they lack well-equipped parks. The others mention insufficient sport and free time equipment in parks as well as lack of playing grounds and zones for children or picnics and cycling tracks. In addition, inhabitants are not satisfied with lighting of certain green areas, lack of benches, rubbish bins, parterre, trees and greenery as well as lack of cleanness.

The answers to the question what green area is mostly visited show that the most popular green spaces are Rygiškių Jonas, Poetry, Vytautas the Great and Pašešupys parks. The truth is that these parks are equipped and adapted to people's rest and, thus, they are visited. The other parks, still not equipped, were not mentioned.

In order to find out how city dwellers and specialists assess the state of elements in Marijampole city green areas, the table for assessment (from 0 to 5 points) was included in the questionnaire. According to the assessment obtained, the average point of each element assessment (table 2) was calculated.

The inhabitants best rated Rygiškių Jonas park. In 2013 its rearrangement was finished and, therefore, the inhabitants are satisfied with a still favourable condition of pedestrian and cycling tracks as well as a variety of sport equipment and active zones. J. Vaižgantas park, located in Vytautas Street, was considered as the worst one. Specialists' opinion slightly differed. They consider Poetry park, reconstructed in 2012, as one of the highest quality. The worst state of elements appeared in Youth park, which is being arranged at the moment. Thus, the state of park elements must improve and necessary elements are likely to appear, namely lighting, sport equipment, parterre, etc.)

Table 2

Assessment of the state of green area elements in the main Marijampolė parks

Elements \ Green areas	Pedestrian paths	Cycling tracks	Playgrounds	Sport/ Active zones	Sport equipment	Lighting	Benches	Other objects *	Trees	Parterre	Water reservoirs	Supply with rubbish bins	Total score
Rygiškių Jonas park	4.8	4.1	4.3	4.7	4.7	4.7	4.7	3.2	4.6	2.3	4.2	3.7	50.0
Poetry park	4.7	4.9	4.7	4.2	4.2	4.9	4.7	4.3	4.8	4.3	4.7	4.2	64.8
J. Vaižgantas park	1.0	0.6	2.9	0.5	0.5	1.3	1.4	0.5	2.8	0.5	0	1.4	13.3
Youth park	0.5	0.5	1.0	1.5	0	0	1	0	2.5	0	3.5	2.0	12.5

Explanation: * – elements of minor architecture (sculptures, etc.)

The results of the questionnaire show that the system of Marijampole green areas is not balanced. There are enough green areas only in part whereas the current parks, squares and other green areas do not satisfy all inhabitants' needs.

Seeking for improvement of Marijampole city green area system, it is important to regard inhabitants and specialists' opinion concerning actions, which could help improve the system (Fig. 4).

Respondents (inhabitants) suggest (about 70 %) rational managing of present green areas, enriching them with various recreational functions and equipment. 66 % of inhabitants believe that more attention should be paid to management of natural water reservoirs (the Šešupė, the Jevonis and other streams). 54 % of respondents say that having adjusted unequipped green areas to people's needs, the system of green areas in the city would be of higher quality. The smallest amount of inhabitants (30 %) maintain the idea that more green areas should be equipped in free territories because the problem is not the lack but the quality of green areas.

Experts have a slightly different opinion. They mostly support the idea (79 %) that more attention should be paid to management of water reservoirs and integration into spatial structure of the city. In addition, almost 74 % of experts propose cooperating with foreign cities. Their experience and knowledge might encourage representatives of Marijampolė municipality and business to undertake more sustainable initiative. A major part of experts, namely 63 %, the same as city inhabitants, suggest establishing new green areas in free territories (58 %) and reasonably arranging the existing (53 %) green areas. Specialists least support the idea of finding out separate district inhabitants' needs. (32 %).

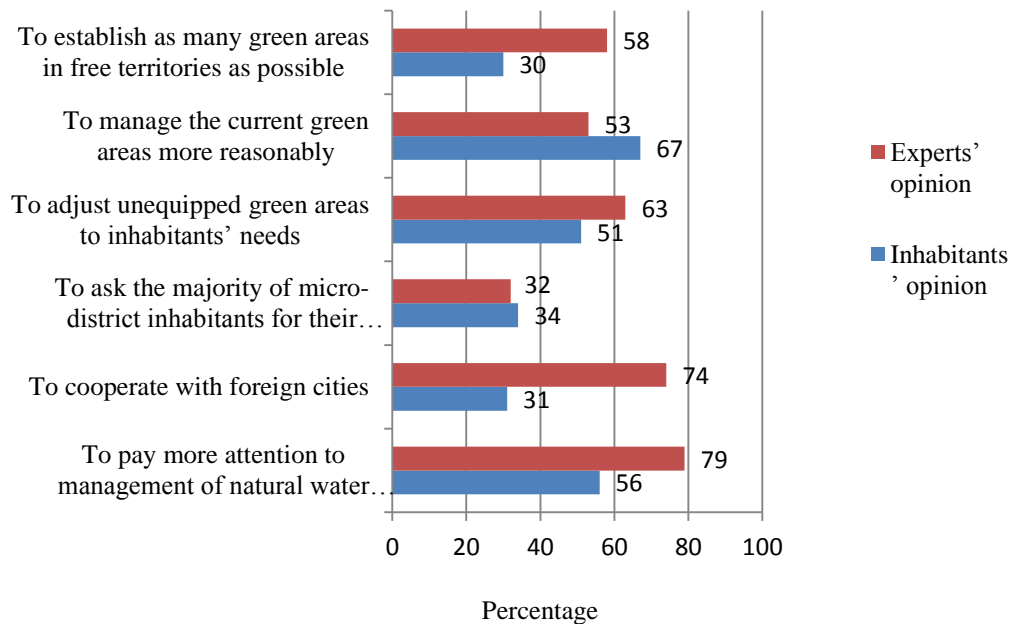


Fig. 4. Distribution of respondents' opinion about actions to improve the system of Marijampolė city green spaces

One may claim that it is crucial to take into consideration the potential of city resources, make use of the current green spaces, adjusting them to people's needs. Establishment of new green areas in free territories must be well-discussed, responsible and useful for both natural surroundings and inhabitants themselves. It is important to involve territorial communities into the process of developing the green space system. The initiative of communities to create the identity of their residential area through the system of public spaces should be promoted because only inhabitants themselves know their needs best.

Conclusions

1. It was found that green areas in Marijampolė city occupy 9 % of the territory. One inhabitant gets about 24 m² of separate recreational green areas. This index exceeds the minimum standard 1/5.
2. There are enough green areas in Marijampolė city though the number of well-equipped green areas, which could completely satisfy the city community needs, is not sufficient. 50 % of respondents claim that Marijampolė city green areas are adjusted only to certain needs. 26 % say that green areas are not adjusted to human needs whereas 19 % state that green areas are applied to all needs. When establishing green areas, more attention should be paid to people's health promotion, stimulation of active leisure and children's occupation.
3. Central green areas in Marijampolė are well-located. They constitute the biggest part of city green areas. It is obvious that there is insufficient amount of district and local green areas. What is more, their state is not good and, thus, when developing the system of Marijampolė city green areas more attention should be paid to the development of district, especially local green areas, promotion of their recreational functions and territory maintenance.
4. The main ways to solve the problems could be as follows: rational management and use of current green areas and water reservoirs, adjustment of green areas to inhabitants' needs (equipment of playing and sport grounds, pedestrian paths and cycling tracks), using the experience of foreign cities.

References

1. Atskirųjų rekreacinės paskirties želdynų plotų normos. From: *Valstybės žinios*, 2007, Nr. 137-5624.
2. Chiesura A. (2004) *The role of urban parks for the sustainable city*. From: *Landscape and Urban Planning: science direct*. p. 129–138.
3. Dargis R. (2008) *Valstybės teritorijų planavimo ir urbanistinės sistemos tobulinimas darnios plėtros kontekste*. From: *Darnioji plėtra teritorijų planavime ir urbanistikoje*, p. 16-19.
4. Duggal A., Chib A. (2014) *The Role of Urban Green Spaces for The Sustainable City*. Iš: *Indian Journal of Research*. Volume: 3. Issue: 6. ISSN-2250-1991.
5. Jakovlevas–Mateckis K. (2004) *Miesto ir jo gyvenamosios aplinkos sisteminio formavimo principai*. Dailė 33, p. 57–65.
6. Jakovlevas–Mateckis K. (2006) *Miesto želdynų problemos ir jų socialinė paskirtis*. From: *Urbanistika ir architektūra*, V., XXX, Nr. 1, p. 3-14.
7. Lietuvos Respublikos želdynų įstatymas. From: *Valstybės žinios*, 2007, Nr. 80-3215.
8. Lietuvos Respublikos žemės fondas 2013 m. sausio 1 d. [interaktyvus]. [Žiūrėta 2015-02-01]. Prieiga per internetą:<www.zis.lt/download.php/fileid/77>.
9. Lietuvos statistikos departamentas (2015) [interaktyvus]. [Žiūrėta 2015-02-01]. Prieiga per internetą:<<http://osp.stat.gov.lt/web/guest/statistiniu-rodikliu-analize?portletFormName=visualization&hash=302b354f-8511-4993-aeb6-b03fc86c6d3f>>.
10. Marijampolės miesto bendrasis planas. Sprendiniai. Aiškinamasis raštas (2012) Vilnius.
11. Marijampolės miesto želdynų sistemos plėtojimo ir tvarkymo specialusis planas (2012)
12. Regionų geoinformacinės aplinkos paslauga (REGIA) (2015) [interaktyvus]. [Žiūrėta 2015-02-01]. Prieiga per internetą:< <http://www.regia.lt/map/marijampoles>>.
13. Rogers R., Power A. (2006) *Mažos valstybės miestai*. Vilnius: Vilniaus dailės akademijos leidykla.
14. Urbonaitė I. (2011) *Miesto teritorinių bendruomenių įtaka rekreacinių teritorijų formavimui*. From: *Mokslas – Lietuvos ateitis*. VGTU, T. 3(3), p. 30-37. ISSN 2029-2341.

Information about authors

Greta Juškaitė, master student, Land management study program, Institute of Land Use Planning and Geomatics, University of Aleksandras Stulginskis, Lithuania. Address: Universiteto str. 10, LT – 53361 Akademija, Kauno distr. Tel. + 370 37 752272, e-mail: greta.juskaite89@gmail.com. Fields of interest: urban planning.

Virginija Gurskienė. Doctor of technology science, assoc. prof., Institute of Land Use Planning and Geomatics, University of Aleksandras Stulginskis, Lithuania. Address: Universiteto str. 10, LT-53361, Akademija, Kaunas distr., Lithuania, Tel. + 370 37 752272 e-mail: Virginija.Gurskiene@asu.lt. Fields of interest: real property cadastre, planning of protected areas, urban planning.