GREEN INFRASTRUCTURE IN BELGRADE AS (RE) GENERATIVE SPACE OF BIOPHILIA: THE CASE STUDY OF BLOCKS 45, 70 AND SAVAMALA

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ABSTRACT

The consequences of climate change have already affected European urban areas, as numerous researches show that intense urbanization leads to degradation of natural habitats and reduction of biodiversity. Scientific findings on ecology and climatology, as well as global and national policies require a shift of the planning process towards the development of urban adaptable ecosystems. In this article, we look at possibilities to apply green infrastructure as urban planning approach that provides polyvalent space for ecosystem services and human well- being. Focuses of the research presented in this article are Block 45 and 70 in New Belgrade and Savamala neighborhood in the old city center. Even though they are characterized by different ecological, urban, morphological and social characteristics, they share direct contact with Sava River. Therefore, the adaptive potential of these spatial segments will be the subject of the analysis presented in this article, and the emphasis will be on applying biophilic design within the integrated network of green infrastructure.

Keywords: *green infrastructure, environmental planning and design, the ecosystem approach, biophilia, Blocks 45 and 70, Savamala*

1. INTRODUCTION

New discourses of ecology bring the shift in planning paradigms and change its value base. The ecosystem approach to planning involves achieving the goals of human well-being in the context of an integrated socio-ecological system, in which built and social components can be considered as specific types of physical and biological components (Pickett and Cadenasso, 2004). This approach is based on the principles of multi-scalability, hierarchical structure of ecosystems, the relation elements-processes, connectivity and spatial continuity (Pickett and Cadenasso, 2004; Ahern, 2007). As part of discourse, the term green infrastructure (hereinafter GI) appears as a new-planning and design concept that supports a set of ecological and cultural functions, contributes to better health and well-being of people (Ahern, 2007; Irvine et al., 2010; Lafortezza et al., 2013; Zaręba 2014). The main themes of this paper are the possibilities of applying the concept of GI in the area of urban structures of Belgrade. The study will address the possibilities of implementation of its spatial elements at neighbourhood/district level and linking them with Belgrade's green core as its main component at a higher city level. Two urban areas of Belgrade were taken for case studies: Blok 45 in New Belgrade and Savamala in the old town both located right next to the Sava River, the main green-blue corridor of the city. As representatives of two different models of urban structure, the study will determine what consequences it has for planning and implementation of elements of GI. The work will explore the capacity and compatibility of informal greening in order to be integrated with the planned network of GI and thus successfully completed. The basic assumption is that the forms of development of the urban areas establish mutually different relationships with the corresponding elements of GI. Greening spaces and autonomous adaptation by informal activities of the tenants, the local community or association could become an important part / element of GI as part of the concept of greening urban areas and future plans at local level. These spontaneously formed processes will be analysed in order to examine the possibilities for inclusion in the strategy and action plan that will be a driver of trends in higher spatial and organizational levels. Informal green spaces are an important factor of human well-being because, like GI, they have ecological, physiological and psychological importance. For the purpose of the case study we will apply three successive methods: Identification of the GI components based on patterns processed using patch-corridor-matrix model (Ahern, 2007); assessment of the problems and potentials of urban areas for application components of GI using Forman's model (Forman, 1995); identification of informal activities of greening and assessment of the potential of such space consisting of analysis, planning, site visits and documentation of the current situation. In the final part, we will compare the findings from the case studies and draw conclusions regarding the differences arising from the specific urban areas.

2. THEORETICAL FRAMEWORK FOR PLANNING AND DESIGN GREEN INFRASTRUCTURE

Planning of GI is based on scientifically-based principles for landscape planning including a multi-scaled perspective, recognition of pattern process relationships, the fundamental importance of connectivity and specific guidelines for planning the spatial configuration of landscapes. It is therefore essential that the structural elements of the GI are identified on the basis of patterns landscape. Benedict & McMahon (2002) define GI as an interconnected network of green space that conserves natural ecosystem values and functions and provides associated benefits to human populations. Green infrastructure provides environmental services in urban areas, which is a prerequisite for ensuring biodiversity, social and territorial cohesion and sustainable development, and overall human well-being (Lafortezza et al., 2013; Zaręba, 2014).

Keeping in mind the topic of this work that explores the relationship between GI and certain models of urban structure, we consider GI in terms of its structure and the elementary units of which it consists of. For this purpose, we rely on the definition provided by Ortega-Álvarez & MacGregor-Fors (2009) who present GI in structural terms as components that work together to maintain a network of sites supporting ecological and social processes. In general, two main components of GI are the hubs and links (Benedict and Makmahon,

2002). Hubs can contain sub-elements such as nature reserves, parks and open spaces, forests and agricultural land. Links are connections that include green corridors and green belts that connect ecosystems, enabling the flow of ecological processes (Williamson, 2003). Although these elements are precisely defined spatial entities, in nature there are no sharp boundaries.

The method that we applied to two case studies consists of three phases: (A) identification of the components GI based on patterns of landscapes; (B) an assessment resources of the studied urban areas (case studies) for application components GI; (C) identification and assessment of potential informal green space.

(A) For the purposes for describing and understanding the spatial configuration of landscapes, as well as for identification of its fundamental elements, the two case studies in this work will refer to the patch-corridor-matrix model developed by Richard Forman (1995), a convenient and universally accepted model for structural categorisation and mapping the landscape mosaic which comes from an area of applied landscape ecology and it is universally accepted (Forman, 1995; Ahern, 2007). According to this model, there are three fundamental landscape elements- spatial components that define landscape structure: patches, corridors, and the matrix. Patches provide multiple functions including wildlife habitat, aquifer recharge areas, or sources and sinks for species or nutrients (Ahern, 2007). Corridors are linear landscape elements that can be defined on the basis of structure or function and they serve many functions within the landscape including habitat for wildlife, pathways or conduits for the movement of plants, animals, nutrients, and wind, or as barriers to such movement (Ahern, 2007). The matrix is the dominant land cover type in terms of area, a degree of connectivity and continuity, and control that is exerted over the dynamics of the landscape (Forman, 1995; Forman and Godron, 1986). Table 1 provides urban landscape elements classified in the Patch-Corridor-Matrix Model sorted by levels (Ahern, 2007; GI Guidance, 2009). As spatial information base for identification of landscape elements, we use the map of the current situation of biotopes of Belgrade, which is part of the "Green regulation of Belgrade" and belongs to the official planning documents at the level of a city.

Table 1: Urban landscape elements classified in the Patch-Corridor-Matrix Model sorted by levels; according to Ahern (2007) and Green Infrastructure Guidance (2009).

Scale / ***Element***	***Region/ City***	***District/ Neighbourhood***	***Individual sites/ Buildings***
Urban Patches/ Hubs and spots	• *Wetlands* • *Regional parks* • *River islands* • *Park forests* • *Forests*	• *Parks* • *Community gardens* • *Botanic gardens* • *Cemeteries* • *Sport fields* • *Squares*	• *Vacant lots* • *Individual gardens* • *Green roofs* • *Terraces*
Urban Corridors/ Lines	• *Rivers* • *Canals* • *River ways*	• *Drainage ways* • *Roads* • *Powerlines* • *inner block lanes* • *tree alleys*	• *Green roofs* • *Individual trees* • *Vertical gardens*
Urban Matrix		• *Residential Neighbourhoods* • *Industrial Districts* • *Waste disposal Areas* • *Commercial Areas* • *Mixed use Districts*	

(B) For the purposes of assessing the potential of urban areas (case studies), for application of GI components, we will use Forman's guidelines for landscape planning which recognizes the basic, so-called. 'Indispensable' patterns and their inter-relations: (1) a few large patches of natural vegetation; (2) major steam or river corridor; (3) connectivity with corridors and stepping stones between large patches; (4) heterogeneous bits of nature across the urban matrix. (Figure 1). These indispensable patterns are equally relevant in urban environments as they are in landscapes that are less dominated by human development and built

infrastructure. Forman argues that these patterns are fundamental, for without them specific ecological functions will not be supported (Forman, 1995).

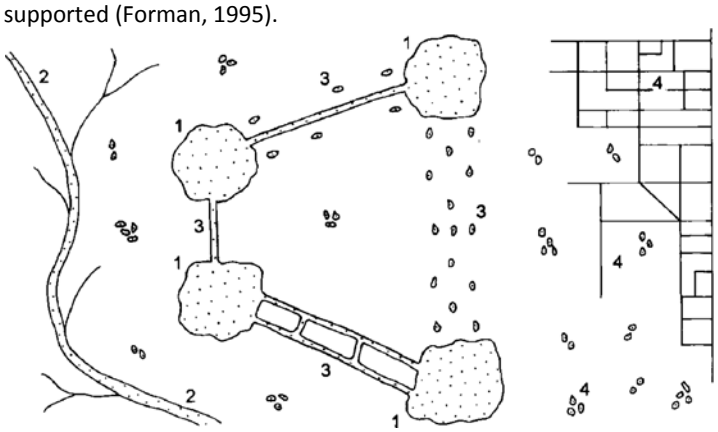

Figure 1: Top-priority ecological 'indispensables' in planning a landscape (Forman, 1995).

(C) In the analysis, we will pay particular attention to the importance and role of informal activities that produce 'bits of nature' greening elements within the urban matrix. According to Forman's guidelines 'bits of nature' are one of four essential patterns in the planning of the urban landscape. A bit of nature within the urban matrix plays a crucial role in ensuring a higher degree of connectivity of the entire urban landscape (Forman, 1995). These are a line or dot elements of GI at the local levels of neighbourhood/district and individual plots/object (Table 1).

All three listed phases involve the identification of the problem and the potential to achieve Forman principles of landscape planning concerning the presence of all the necessary components, and a spatial configuration that enables the necessary connectivity.

3. CASE STUDIES: BLOCK 45 AND SAVAMALA

Areas around the rivers Danube and Sava, with GI networks - islets, riverbank parks, foreland, lakes, ponds and wetlands that are located right next to them are called natural core areas of Belgrade (Belgrade green regulation 2003; City of Belgrade development strategy, 2011). The river Sava, as a green-blue corridor with urban areas that are directly related thereto, is taken as a testing ground for the analyses of the possibilities for the implementation of GI. Two Belgrade urban areas dwelling on the banks of Sava River- New Belgrade's Blocks 45 and 70 and Savamala were selected for the case study. What is common for these two urban areas is their position in relation to the green core of the city and the city's main green and blue corridors - Sava River with its coastline (Figure 2). However, being related to two epochs of Belgrade's development that caused also their morphological differences, hence different problems in compatibility with functions of the city and its ecology (Sztumski, 2013).

This unique and comprehensive area of green and blue corridors is identified in the Master Plan of Belgrade (2003) as a "green core of Belgrade", which includes the areas under the river courses of the Danube and Sava, with components of GI corresponding to spatial level of the region/city: river islands, coastal parks, forelands, lakes, ponds and marshes that are located right next to them. For now, strategies and plans at the city and local level do not recognize sufficiently the principles of GI planning, such as multi-scalability, relations structures of the processes, connectivity and ecosystem services. The importance of GI is identified/recognized the most in terms of its role in adaptation and mitigation to climate change, in the form of action plans. The city of Belgrade in early 2015 adopted the Action Plan for Climate Change Adaptation in which as a measure of the highest priority was listed the planning and implementation of GI networks throughout the territory of the city,

based on the concept defined in the Green Regulation of Belgrade (2003). In this way, spatial and urban planning at the level of town and municipality gradually turns to the preferred ecosystem approach to planning. However, in order to successfully implement GI at the local level, regulations and plans must contain information on the structural and functional properties that green spaces must have in order to integrate with components of GI at higher spatial levels, in the case of Belgrade with its "green core".

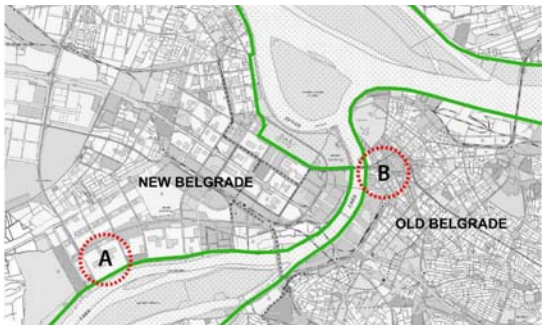

Figure 2: Position of block 45 (A) and Savamala (B) in relation to green core of Belgrade and River Sava.

3.1. BLOCK 45

Block 45 is located in the municipality of New Belgrade, first among Belgrade municipalities across the surface of the intra-block greens (396.6 hectares). The block of 32,000 inhabitants occupies a strip of land on the left bank of the Sava River, implemented as a unique urban entity at the level of the extended local community. Despite the large projected areas dedicated to greenery (norm of 22m² of green space per inhabitant is required), it remains insufficiently defined and with no clear differences in relation to other areas for public use. Defining the public interest, i.e. public land and the area for new development, are becoming the key in urban planning of New Belgrade, as well as for reconstruction and differentiation of green spaces in the elements that make up the network of GI. The draft of a detailed regulation plan for blocks 45 and 70 in 2009. specifies new values which include, inter alia, "the preservation and improvement of the achieved high standards of living and understanding the emerging needs of the population." In terms of the development of GI, the Action Plan for Climate Change Adaptation (2015) provides for the development of a network of green corridors along the promenade Lazara Kardenasa that connects residents of the city with the Sava river.

Based on patch-corridor-matrix model and biotope map of Belgrade, we have identified the basic elements of the area in the territory (Figure 3a) on the basis of which we will identify the components of GI and their inter-relations using Forman's model. In the immediate surroundings of the block, on its west and east, there are five major patches (P1, P2, P6, P7 and P8) composed of potentially valuable biotopes extensively used and with rich structure (biotope map of Belgrade, 2007). According to their purpose, these are free public spaces covered with greenery (P1, P2, P8) or intra-block green areas (P6 and P7). Within the block, there are three patches small and medium-sized (P3, P4, P5) in potential also worthy biotopes with rich structure. Concerning the purpose, these patches are intra-block greenery. Corridors in the area of the block (C1, C2, C3 and C4) can be divided according to their importance into broader city (C1, C2), local (C3, C4) and intra-block. Within the block, there are three intra-block corridors (C3, C4, C5) whose purpose is pedestrian communication and connecting the block with the main green-blue corridor (C1).

The block is halved into southern and northern part. There are 21 planned buildings in the southern half, lower levels from GF + 2 to GF + 4 in the form of semi-atrium houses opened and oriented towards the river. In the northern half, it was planned the construction of 45 high-storey buildings (GF+7 to GF+15). The northern and the southern parts of the block differ in the built form, primarily in the type of residential buildings – the

northern part consists of freestanding skyscrapers, whereas the southern part consists of semi-atrium buildings with a smaller number of floors. This also caused the different configuration of greenery: in the northern part it appears in the form of smaller park areas, with a narrow strip of greenery around the building or smaller residual areas around playgrounds and parking lots; in the southern part, green areas are less fragmented and consist of smaller park areas and greenery surrounded by a semi-atrium form of building. The apartments on the ground floor of these buildings own a narrow strip of green area, which is private property, while the remaining majority is the public green area mainly covered with trees and bushes. Both urban matrixes of the block 45 have characteristic shapes bits of nature, which were created as a combination of the mentioned urban-morphological characteristics, as well as informal activities of greening initiated by dwellers. With informal activities, dwellers contribute to the impression that semi-atriums are a private or common space designed primarily for their needs. This informal greening transforms the semi-atrium area into very diverse and rich bits of nature (Figure 3c).

The matrix of the northern part of the block consists of 45 residential skyscrapers (GF+7 to GF+15) which are arranged in a chessboard pattern. The areas between the skyscrapers are fragmented and designed for green areas, parking lot, children's playgrounds and vehicular and pedestrian communication; the matrix of the southern part of the block, which consists of semi-atrium residential buildings oriented towards the river in north-south direction. Using Forman's criteria we are able to examine the potentials of the elements of the area to form a favourable spatial configuration of GI. The area in its immediate surrounding has several large patches of natural vegetation (Figure 3a, P1, P2, P7, P8) which, according to the structure of the biotope belong to 'complex, structurally rich fallow lands with mosaic arrangement of vegetation of different stages of succession' (biotope map of Belgrade, 2007). In the northern matrix of the block, informal greening is not as diverse as in the southern, primarily because of the high fragmentation of open areas due to dense and dispersed arrangement of skyscrapers and concrete areas, such as parking lots and playgrounds. Greenery is reduced to a narrow strip by the buildings and residual areas around parking lots and playgrounds. However, dwellers' interest in individual greening is equally high; it is mainly expressed through the cultivation of flowers and low bushy vegetation such as hedges (Figure 3b).

Above recognized bits of nature transformed by informal activities are of great importance for planning and design of future GI because it connects the levels of micro and macro, blocks with riverside areas and rivers, providing continuity of greenery. This is very important for the residents of the blocks because it provides continuous protection from high temperatures and sunlight, forming an integral space of rich biodiversity and connectivity of habitat for plant and animal species.

Figure 3a, 3b, 3c: Elements of GI (3a), bits of nature north urban matrix (3b), bits of nature south urban matrix (3c).

3.2. SAVAMALA

Savamala is the central urban area of Belgrade, which covers an area of the two city municipalities- Savski Venac and Stari Grad. It is located on a slope along the left bank of the Sava. Savamala is bounded in the east by street Gavrilo Princip, and in the west its natural border is the river Sava. The cutting of flux of people and greenery between the two lines - the Sava river and Karadjordjeva Street - proved to be a key issue in the development of Savamala. In recent years it became evident that there has been a resurgence of interest in this part of the city, since its degraded state is now perceived as a challenge for reactivation, especially in the civil sector, cultural and artistic circles.

Savamala is classified in plans as continuously built urban fabric, which consists of the traditional city block as the elementary unit (Master Plan of Belgrade to 2021). Along Karadjordjeva Street, it is homogeneous and consists of GF+4 to GF+6 storey buildings which form a continuous street front. In the zone along the riverbanks, the urban fabric is discontinually constructed with a combination of low-rise city block and service and storage facilities. Regarding the planning treatment of green areas of Savamala at the local level, it is only partial. While it is recognized as an urban district, it extends over the territory of two municipalities. The part in the municipality of Savski venac is covered by Local environmental action plan (LEAP, 2010) which suggests "starting plans and projects related to the oldest urban part of Belgrade-Savamala" and launching "the current relocation plan of the railway station and repurpose of Sava amphitheatre." The plan is based on the projects "Belgrade green regulation" (2003) and "Mapping and evaluating biotopes of Belgrade" (2007), which established the concept of planning of green areas, which corresponds to the concept of GI, i.e. on biotope mapping, biodiversity and ecosystem functions which a network of greenery should take. LEAP defines the basic aims, among other things, the introduction of GIS (geographical information system) of green areas and "raising the modern forms of green areas such as 'pocket parks', roof and vertical greenery and others." (LEAP, 2007).

Based on patch-corridor-matrix model and map of biotopes of Belgrade, we have identified the basic elements of the area in the territory (Figure 4) on the basis of which we will identify the components of GI and their inter-relations using Forman's model. On the territory of Savamala we recognized six major patches (P1, P2, P3, P4, P5, P6), of which P2, P5 and P6 belong to the park greenery, P1 to intra-block greenery, P3 to square and P4 to greenery along the road. The structure of their biotopes is diverse: green areas under trees and shrubs less than 50 percent (P2, P6), a complex structurally rich fallow land (P4), green areas under trees and shrubs more than 50 percent (P5) and micro-complex mosaically arranged biotopes with the participation of built surface less than 50 percent (P1).

Streets have the corridor function in this densely built urban structure, and their green potential is reflected in the tree coverage percentage, water-absorbing areas and surface water drainage system. The main street corridor is Karadjordjeva Street (C1) with a wider urban character. The connection between Karadjordjeva street and the Sava banks is achieved by a network of smaller street corridors (C2-C7): Hercegovačka, Braće Krsmanović, Mostarska, Zvornička and Železnička streets. It should be noted that the railroad blocks direct contact of river corridors with the riverbanks.

Savamala urban matrix is characterized by a densely built structure of closed blocks, a high percentage of asphalt and other waterproof surfaces, which implies fragmentation and low diversity of biotopes. Bits of nature which are limited mainly to the areas within the block. However, there has been a recent trend of informal greening in the form of collective actions initiated by local organizations. Within Mikser festival "Blue-green dream" project is organized, which brings together the local community and professionals participating in the greening of public spaces, planting rows of trees, individual trees and placing of urban furniture for horticulture (Figures 4a, 4b). Public workshop on urban gardening “Zdravamala” (Figure 4d) was held within the “Spanish house" which is currently used as an informal public space (Zdravamala, 2014). The participatory workshop "My piece of Savamala" (2015), which addressed the new solution for free public space in

Karadjordjeva Street, was held in the organization of "Mixer House" and "Urban Guerrilla". That public space has remained free after the relocation of the petrol station. This action has implemented a method of participatory design by involving various actors - the local people, experts in the field of urban planning, architecture, ecology and engineering, as well as city and local authorities (Figure 4e).

Figure **4a, 4b, 4c, 4d, 4e:** Elements of GI (4a), “Blue-green dream” (4b, 4c), “Zdravamala” (4d), “My piece of Savamala” (4e).

4. CONCLUDING REMARKS

In this paper, we have investigated the possibilities of applying the concept of GI and spatial planning in the context of Belgrade and its built environment. The focus of the study was an implementation of GI at the local spatial level of neighbourhood/district and establishment of a connection to city/regional level, especially to river and riverbank as a major green-blue corridor. For the case study, we have chosen Block 45 and Savamala, two urban areas of Belgrade positioned right next to the riverbank and River Sava, as the main blue-green corridor at the regional / city level. Although in a similar position in relation to the river, these areas represent entirely different models of urban structure - Block 45 is representative of the "functionalist" model of the city, while Savamala is a typical traditional urban structure of the old city centre. These implied different conditions for the development of green spaces: Green regulation of Belgrade treated area of the block 45 as an integral part of the internal ring of greenery and green core, while Savamala is treated as a part of a continuously built urban area with the lowest percentage of green space. Because of these contrasting conditions in terms of green spaces, planning of GI at the local level requires different approaches. Therefore, the research put emphasis on the study of spatial context, the specific problems of urban structure that challenges actions of GI implementation.

Based on the ecosystem approach to planning, we have formed the theoretical framework where we defined the concept of GI, its elements and the possibilities for their application within the planning context of Belgrade. In case studies we have dealt with the identification and assessment of potential of existing green spaces to become a part of the future network of GI. Research showed that informal greening could take a very diverse spatial pattern, and it is different by the character of a private/public and individual/collective. As expected, two case studies have shown very different forms of informal greening, but it can be concluded that in both cases it plays an equally important role as bits of nature across urban matrix that increases the overall connectivity of urban matrix in relation to other elements of GI at the local level.

Block 45 is an urban structure with a high percentage of green and open spaces within the block, as well as the nature of similar patches in its immediate surroundings, which gives a great potential for the development of the necessary elements of GI. Object typology determines the type of urban matrix, as well as the type and level of informal greening. It recognizes the two types of urban matrix, south and north. North matrix, with free-standing skyscraper type of housing, has less diverse biotopes and more fragmented structure of green spaces around and between buildings. Informal green spaces are the result of individual or joint activities of tenants in the green areas related to housing. Tenants are self-organized and they modifying these areas by planting shrubs and flowers. South matrix, with greenery in the semi-atrium type of housing, brings intense informal greening of spaces that includes individual gardening on private plots, as well as planting high vegetation in public green space. There is also an interesting phenomenon of "extension" of individual gardening to adjacent public space.

Savamala is a dense and intensively built urban area where parks are main patches, and streets are potential corridors of GI. Informal actions of greening spaces are substantially different in character than the one in block 45. The public spaces such as squares, urban pockets and surfaces along the roads have become the main available space for bits of nature. Unlike the block 45, the main initiators of informal activities in Savamala are locally based organizations. They are organizing inclusive projects and public participatory workshops involving experts, local residents and other stakeholders aiming to improve the environmental quality of public spaces. In urban matrix of Savamala, these public bits of nature are a key link in connecting all of the components of GI at the local level.

All of these processes, which are spontaneously initiated and mainly related to the informal level action, must be involved in planning strategies which would raise listed trends to a higher spatial and organizational level. Bearing in mind the necessity of immediate action which would alleviate the impact of carbon-intensive life and increase overall well-being, it can be concluded that the right initiatives targeting the local context show greater flexibility and efficiency, therefore their potential, particularly in the field of strengthening green infrastructure, have to be used intensively and coordinated with similar actions at city level.

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REFERENCES

1. AHERN, J. 2007, Green infrastructure for cities: The spatial dimension, in: Novotny, V. and Brown, P. (eds.) Cities of the Future Towards Integrated Sustainable Water and Landscape Management. IWA Publishing, London, p. 267-283.
2. Action Plan for Climate Change Adaptation for City of Belgrade, 2015, http://www.beograd.rs/download.php/documents/Akcioni%20plan%20adaptacije%20na%20klimatske%20promene-srp.pdf (28 Apr 2016).
3. BENEDICT, M., MCMAHON, E. 2002, Green infrastructure: Smart conservation for the 21st Century. The Conservation Fund and Sprawl Watch Clearinghouse, Arlington, VA.
4. Blue-green dream, 2014, http://www.slideshare.net/NALED/the-story-of-mikser (28th Apr 2016).
5. City of Belgrade development strategy (CBDS) 2011-2016 [Strategija razvoja grada Beograda 2011-2016], 2011, http://www.beograd.rs/download.php/documents/SRGBpredlog.pdf (28th Apr 2016).
6. Detailed urban plan of blocks 45 and 70 [Detaljni urbanistički plan bloka 45 i 70], 1966, in: RS Official Gazette, no. 09/11.

7. EU Commission & Commission of the European Communities, 2007, Green Paper - Adapting to climate change in Europe – options for EU action, The European Parliament, Brussels.
8. EU Commission & European Environment Agency, 2006, Urban Sprawl in Europe - The ignored chalenge, EEA, Copenhagen.
9. FORMAN, R. 1995, Land Mosaics: The Ecology of Landscapes and Regions, Cambridge University Press, London.
10. GILL, S. E., HANDLEY, J. F., ENNOS, A. R., PAULIET, S. 2007, Adapting Cities for Climate Change: The Role of Green Infrastructure, in: Built Environment, vol. 33, no 1, p. 115-133.
11. Green Regulation of Belgrade [Zelena regulativa Beograda], 2003, http://www.urbel.com/documents/zelena_regulativa_beograd.pdf (28th Apr 2016).
12. Green Infrastructure Guidance, 2009, http://publications.naturalengland.org.uk/publication/35033 (10th June 2016).
13. IPCC WGII Fourth Assessment Report. 2005, Inter-Relationships between Adaptation and Mitigation, IPCC.
14. IRVINE, K. N., FULLER, R. A., DEVINE-WRIGHT, P., TRATALOS, J., PAYNE, S. R., WARREN, P. H., LOMAS, K. J., GASTON, K. J. 2010, Ecological and Psychological Value of Urban Green Space, in: Dimensions of Sustainable City, Future City 2, eds. Jenks, M. and Jones C., Springer, London, p. 215-237.
15. LAFORTEZZA, R., DAVIES, C., SANESI, G., KONIJNENDIJK, C. 2013, Green Infrastructure as a tool to support spatial planning in European urban regions, in: iForest 6, p. 102-108, http://www.sisef.it/iforest/contens/?id'ifor0723-006, [2013-03-05]
16. Local ecological action plan (LEAP) of Savski venac municpality [Lokalni ekološki akcioni plan gradske opštine Savski venac], (2009). URL: http://www.savskivenac.rs/ekoppt/2010-4.pps (28th Apr 2016).
17. Mapping and evaluating biotopes of Belgrade [Kartiranje i vrednovanje biotopa Beograda], http://www.urbel.com/documents/info20-tema.pdf (28th Apr 2016).
18. Master Plan of Belgrade to 2021 [Urbanistički zavod Beograda, Generalni Plan Beograda 2021], http://www.urbel.com/cms_images/gup1.jpg, (17th Dec 2015).
19. Millennium Ecosystem Assessment (MEA), http://www.millenniumassessment.org/en/index.html, (17th Dec 2015).
20. My piece of Savamala - City Guerilla [Moje parče Savamale - Gradska gerila], http://festival.mikser.rs/en/project/my-piece-of-savamala/ (28th Apr 2016).
21. PICKETT, STEWARD. T. A., CADENASSO, M. L., AND GROVE, J. M. 2004, Resilient cities: meaning, models, and metaphor for integrating the ecological, socioeconomic, and planning realms, in: Landscape and Urban Planning, no. 69, p. 369–384.
22. SZTUMSKI, W. 2013, Towards the Sustainability of Urban Development, in: Problemy Ekorozwoju/ Problems of Sustainable Development, vol.8, no. 2, p. 39-48.
23. TEOFILOVIĆ, A., CVEJIĆ, J. 2003, Zelena regulativa Beograda, Urbanistički Zavod, Beograd.
24. UN Habitat Global Report on Human Settlements. (2011) Cities and Climate Change: Policy Directions, Abridged Edition. London: Earthscan.
25. UNEP & UN Habitat, brochure. (2006) The Climate Change and the Role of Cities. UNEP.
26. Belgrade green regulation, http://www.urbel.com/default.aspx?ID=uzb_ZelenaReg3&LN=S (17th Dec 2015).
27. WILLIAMSON, K. S. 2003, Growing with green infrastructure. Heritage Conservancy, Doylestown, PA, USA, pp. 20. [online] http://164.156.7.76/ucmprd2/groups/public/documents/document/dcnr_002286.pdf (16th June 2016).
28. ZARĘBA, A. 2014, Multifunctional and Multiscale Aspects of Green Infrastructure in Contemporary Research, in: Problemy Ekorozwoju/ Problems of Sustainable Development, vol. 9, no. 121, p. 149-156.
29. Zdravamala, http://urbanincubator.org/portfolio_page/zdravamala/ (28th Apr 2016).Smith, J. J., 2010. Chapter title. Chapter 7 in Publication Name (Eds. A. A. Anderson, B. B. Bridgens and C. C. Conte). Wiley, Chichester. pp 139–164.