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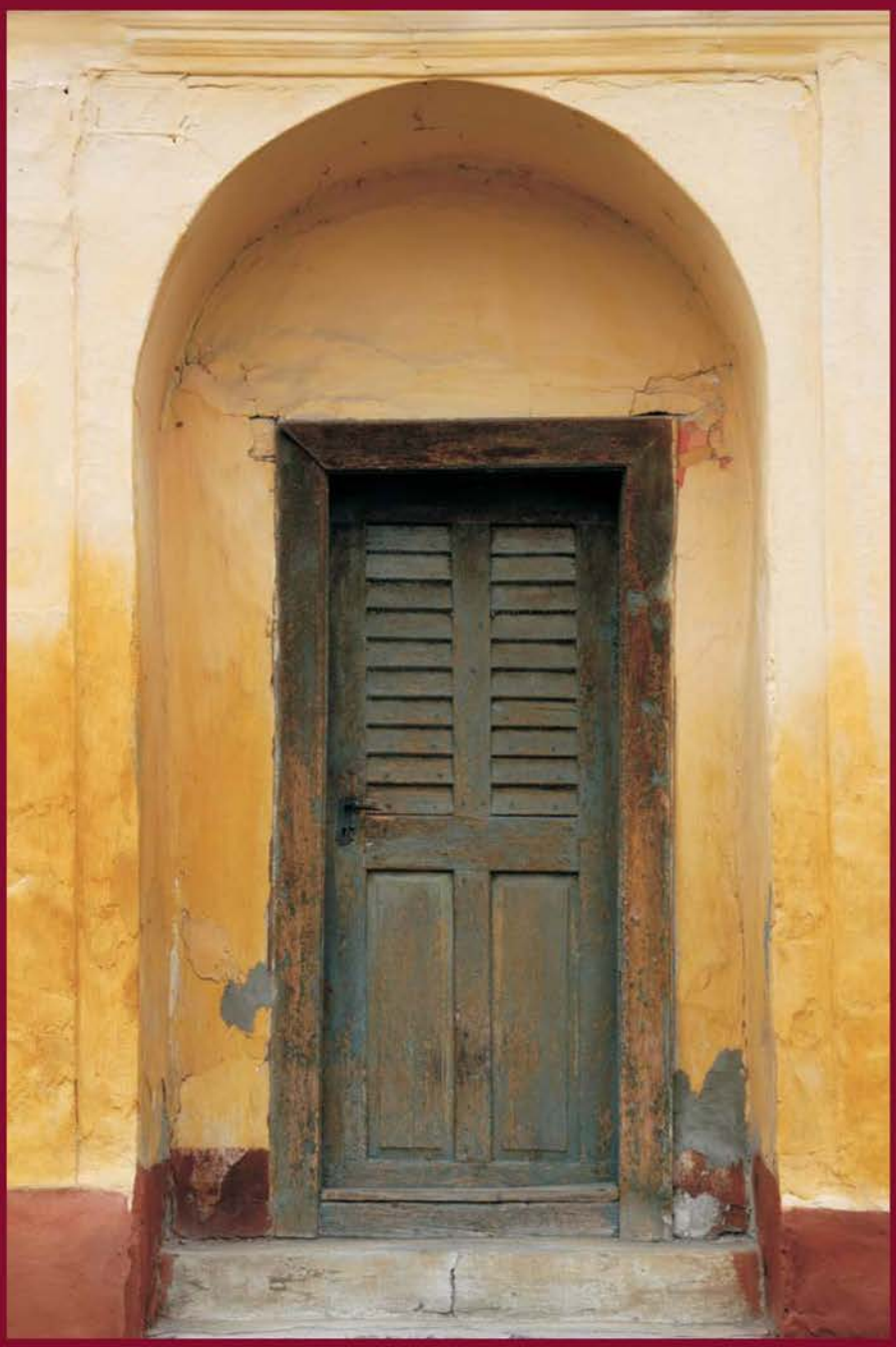
urban and spatial planning, architecture, housing building, geodesia, environment

December 2012 28



SPATIUM International Review **ISSN 1450-569X**
No. 28, December 2012, Belgrade **ISSN 2217-8066 (Online)**

SCOPE AND AIMS

The review is concerned with a multi-disciplinary approach to spatial, regional and urban planning and architecture, as well as with various aspects of land use, including housing, environment and related themes and topics. It attempts to contribute to better theoretical understanding of a new spatial development processes and to improve the practice in the field.

PUBLISHER
Institute of Architecture and Urban & Spatial Planning of Serbia, IAUS
Igor Marić, Director

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"Spatium"
Serbia, 11000 Belgrade, Bulevar kralja Aleksandra 73/II,
tel: (381 11) 3370-091, fax: (381 11) 3370-203,
e-mail: journal.spatium@gmail.com, web address: www.iaus.ac.rs

IN PUBLISHING SERVICES AGREEMENT WITH
Versita Sp. z o.o.
ul. Solipska 14A/1
02-482 Warsaw, Poland

FINANCIAL SUPPORT
Ministry of Education, Science and Technological Development of the Republic of Serbia

PROOF READING AND TRANSLATING SERVICES IN ENGLISH
Marija Obadović, Snježana Mijatović

COMPUTER DESIGN
Jelena Stevanović Stojanović, *Belgrade, Serbia*

COVER PAGE PHOTO
„Stara vrata"

COVER PAGE DESIGN
Tanja Bajić, *IAUS, Belgrade, Serbia*

ADMINISTRATIVE SUPPORT
Milena Milinković, *IAUS, Belgrade, Serbia*

Printed in Serbia by *Javno preduzeće "Službeni glasnik", Belgrade, Serbia*
Number of copies: 200

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EDITORIAL

Dear readers,

This issue of International Journal „Spatium" focuses on the results from some current research projects performed by the Institute of Architecture and Urban & Spatial Planning of Serbia and its fellows, viz.: population; planning of peri-urban zones; spatial organization and sustainable development of particular regions in Serbia; rural tourism development; some architectural aspects of sustainability; and web-based support for spatial planning. Also, two historical themes are presented, i.e. housing development in the 1950s in Belgrade, and early attempts of adaptation to the climate change of the 19th century Belgrade. To contrast these topics, a paper reflecting urban policy in Brazil is also included in this issue.

Editor-in-Chief

VERSITA

SPATIUM *International Review*
No. 28, December 2012, pp. 1-6

UDC 711.2-143(81) ;
349.4(81) ;
351.712:69(81)
Original scientific paper
DOI: 10.2298/SPAT1228001N

URBAN POLICY IN BRAZIL: MISMATCHES IN THE SOCIAL MANAGEMENT OF LAND APPRECIATION

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In Brazil, there is a clear strengthening of debates about the instruments of City Statute, which are discussed under the light of social management of land appreciation. Their degree of effectiveness, their low popular participation and their use to legitimize policies engendered by particular interests are usually questioned. This paper investigates the capacity of Joint Urban Operations as a instrument for surplus land value recovery. Starting from a study on Faria Lima Urban Operation, limitations and opportunities of Linha Verde Urban Operation (Curitiba-PR), which is being implemented, is prospectively discussed. Analysis performed came up with observations that were, at the same time, complementary and contradictory. On one hand, it is necessary to recognize urban operation's potential as an instrument able to leverage urban transformation, dividing costs of public action among other stakeholders. On the other hand, however, its low efficiency – from the perspective of social management of land appreciation – is clear, and shows a lack of mechanisms that could ensure a minimal addressing of the funds for constructions of public interest.

***Key words:** Urban Operation, surplus land value, land appreciation, city statute, social management of land appreciation.*

INTRODUCTION

Certain urban actions and decisions taken and made by the government – such as implementation of infrastructure and public facilities or changes in urban legislation – leverage land value. Thus, a public action, whose costs are spread throughout society, results in benefits for a few private owners. In this context, mechanisms for social management of land appreciation acquire a major role, enabling government to recover surplus land values, redistributing to community the land appreciation resulted from their actions (Smolka, Amborski, 2000, Furtado, 2004, Santoro, Cymbalista, 2004).

In Brazil, significant advances have been achieved in this field since 2001, when Federal Law No. 10.257/2001, known as the City Statute, established "rules of public policies and social interest that rule the use of urban property in favor of collective well, safety and welfare of citizens, as well as environmental balance" (Article 1, Author translation). For Piza, Santoro and Cymbalista (2004), City Statute consolidates State's duty on promoting the fair distribution of urbanization onus and benefits among whole society, recovering resulting appreciation of public constructions in order to accomplish the social function of city.

Among the instruments defined in Law 10.257/2001, this paper focuses its discussion on *Joint Urban Operation*, "one of the most controversial instruments of the City Statute", in the words of Cymbalista and Santoro (2008). As authors construes, Joint Urban Operation (UO) can be understood as an instrument to redesign certain urban areas through modifications in parameters of land use and occupation, combining public and private investments (obtained by selling of building rights) in order to implement an urban plan. The resulting funds of counterpart are directed to a unique account for each Urban Operation, and have to be used only for achievement interventions defined by law, within its perimeter.

According to its defenders, Joint Urban Operation lets the beneficiaries of a construction pay for its costs, freeing up public resources, so that they can be used in priority investments; and allow the recovery of so-called "surplus land value", by capturing part of the appreciation resulted from a public investment in a way that it is not appropriated only by owners and real estate developers (Fix, 2004).

Considering that instruments of urban policy must follow all guidelines outlined in City Statute (Santoro, Cymbalista, 2004), and thus enable social management of land appreciation, this paper intends to investigate the extent of Joint Urban Operation as a mechanism of urban surplus land value capture. In Brazil, its application dates back to the early 1990s,

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This paper was supported by CAPES, a human resources training institution of Brazilian government.

adopted by the city of São Paulo, a pioneer. However, many implementation problems were encountered due to fragility of operation at the time, leading to a series of questionings by public agencies (Sepe, Pereira, 2011).

After City Statute, in 2001, a set of general rules was established for Joint Urban Operations, ensuring legal security for its implementation by local governments. The law created the *Certificates of Additional Building Rights* (In Portuguese: certificados de potencial adicional de construção - CEPACs): real estate bonds issued by City Hall and sold in São Paulo Stock Market Exchange (BMF&Bovespa), a sale mechanism that works as a counterpart for the selling of additional building rights acquired by developers. In other words, they can be understood as a financial mechanism that enable to purchase more floor area ratio than established in zoning law, converting square meters into financial quotas.

In Brazil, there are only two cases of Joint Urban Operations (UO) implemented with issuance of CEPACs bonds so far (both in São Paulo), and another in implementation process (in Rio de Janeiro). Bearing in mind the reduced number of cases, it can be stated that the adoption of this financial engineering mechanism is still an ongoing learning opportunity in the country, whose dissonances and contradictions must be understood in order to mitigate them when setting up new Urban Operations.

In this context, we highlight the creation of Linha Verde *[Green Line]* Urban Operation in Curitiba, fourth in Brazil with CEPACs bonds. Known as the largest Brazilian Urban Operation (4,475,000 square meters of additional building potential), its implementation is still very recent (its regulatory decree was sanctioned only on January 26, 2012).

Given the above, this paper seeks to discuss the Linha Verde Urban Operation limits and its potential in Brazilian scenario, aiming to contribute to further discussion of Joint Urban Operations as a instrument for social management of land appreciation. The following issues were raised: what are the main structural elements of Linha Verde urban operation? Do these factors hinder or promote surplus value recovery?

An effort was made to understand previously experiences in national scenario, in order to establish a comparative parallel, enriching the discussion.

The experience in Rio de Janeiro (Porto Maravilha UO - Municipal Law No. 101/2009) was left out due to its early implementation process. In São Paulo, however, there is a historical trajectory of implementation of Joint Urban Operations, whose legal provision dates back to 1985 Master Plan and its implementation at the 1990s. Between São Paulo's urban Operations with CEPACS, Faria Lima UO was defined as complementary study case, selected in a non-probabilistic and intentional way, primarily considering two aspects: (I) the greater volume of financial compensation resources involved and (II) because there was an issuance of CEPACs in a second step of Urban Operation implementation (post City Statute), which allows to verify any transformation engendered by modifications in the way additional building rights are commercialized.

A SYNTHETIC ANALYSIS OF FARIA LIMA URBAN OPERATION

The first initiative to create Faria Lima Urban Operation (UO) dates back to 1991, when Municipal Strategic Master Plan was being developed. Later, in 1993, the UO was forwarded to City Council as a bill, approved in 1995 (Sepe, Pereira, 2011).

Instituted by Law No. 11.732/1995, Faria Lima UO focused in an area defined for a road system connection between Brigadeiro Faria Lima Avenue and Pedroso de Moraes Avenue, foreseeing improvements in road system, social housing and social equipments (Montandon, 2007). In a critical view, Sandroni (2001) summarizes Faria Lima's UO as a strategy to extent an avenue that was not priority in terms of circulation and traffic, on whose land value was one of the highest of São Paulo.

Its implementation can be divided into two stages: the first one preceding City Statute, and another, in which revisions were made in order to adapt it to new Brazilian legal framework. In the first stage, perimeter of the Urban Operation was divided into Directly Benefited Area (DBA), referring to the parcel directly benefited by extension of Faria Lima Avenue, and Indirectly Benefited Area (IBA). The purchase of additional building rights happened through presentation of projects by the owners, from which São Paulo City hall calculated the compensation value to be paid for each building individually.

According to Alvim, Abascal and Moraes (2011), capture of counterparts proved to be a sluggish process, in which buildings were settled long before required infrastructures were constructed. In addition, the adopted model for compensations valuation lacked legal ground, generating serious questionings by supervisory and controlling boards.

After City Statute approval (Law 10.257/2001), São Paulo City Hall reviewed Faria Lima UO in 2003, changing financial engineering and adopting CEPAC's logic. Thus, since Municipal Law nº. 13.769/2004 (amended by Law 13.871/2004), São Paulo City Hall started issuing CEPACs bonds for selling additional building rights. A CEPACs conversion table in additional square meters was created, with different values for commercial and residential uses, reducing subjectivity in the financial contribution calculation (Sepe, Pereira, 2011).

Four sectors (and 18 subsectors) were created to replace areas directly and indirectly benefited and the stock of residual additional square meters (1.281.908,54 m²) was converted into 650,000 CEPACs (sold for a minimum price per unit of $ 591,40[1]). The adopted criteria involve infrastructure capacity, architectural typological-pattern and existing land use.

Until October 2011, city hall had already sold 635.059 CEPACs (97.7% of total amount), collecting more than $ 634 million – 526,684 were already converted into buildings and 110.875 are still outstanding in financial market (SP-Urbanismo, 2011). It is necessary to highlight the recent approval by City Council of São Paulo, in December 2011, of an additional issuing of 500,000 CEPACs in Faria Lima UO, generating estimated revenue of $ 1,07 billion.

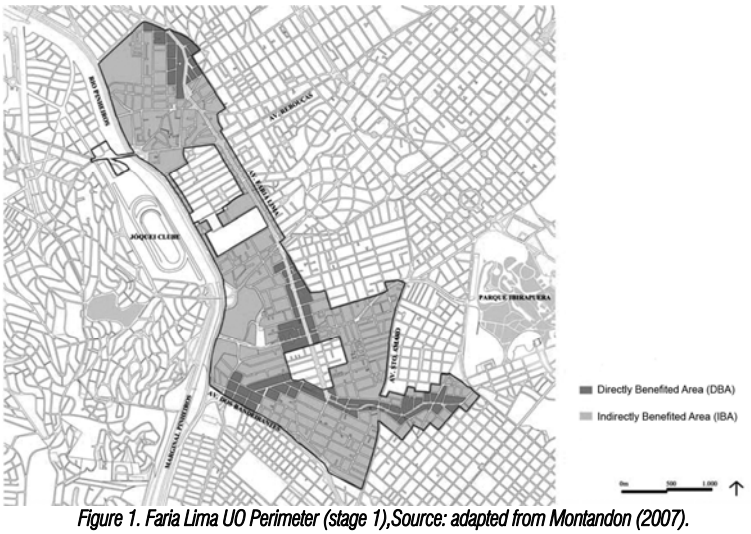

Figure 1. Faria Lima UO Perimeter (stage 1),Source: adapted from Montandon (2007).

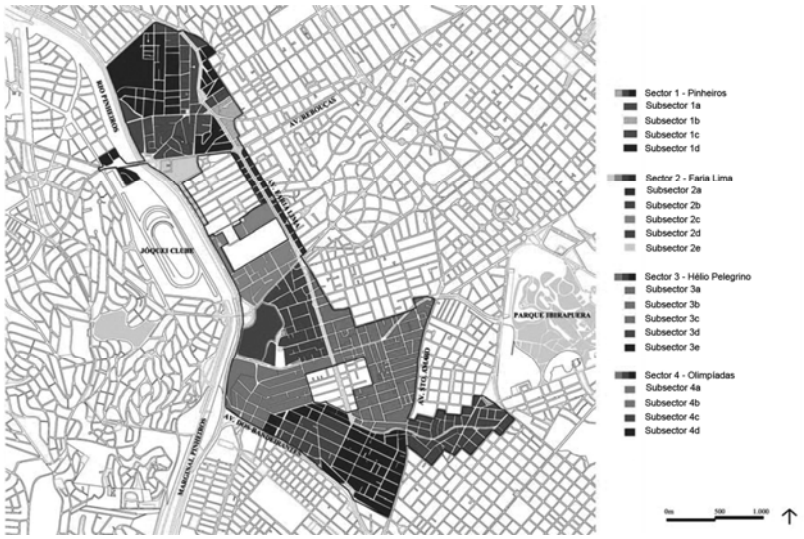

Figure 2– Faria Lima UO Perimeter (Stage 2), Source: adapted from SEPE and PEREIRA (2011).

Based on the analysis of another studies about this urban operation (Sepe, Pereira, 2011, Sales, 2005, Montandon, 2007; Fix, 2001), it was clear that there is an uneven distribution of benefits of urban interventions, confirming the classic *mismatch between theoretical framework of urban planning and the practice of urban management,* as extensively discussed by Maricato (2000).

Indeed, Faria Lima UO is far from being strong as an instrument for surplus value capture, contributing, in fact, to strengthen an exclusionary model of urban development, which concentrates resources and opportunities in restricted areas and in favor of certain groups. This process led to a fast land appreciation in a noble area of the city, hampering investments in social housing and land use diversification suggested by the UO (Fix, 2004, Sepe, Pereira, 2011, Sales, 2005, Montandon, 2007).

It is interesting to notice that the stock acquire was concentrated, between 1995 and 2004, in Indirectly Benefited Area (IBA) - accounting for 59.61% of acquired additional building rights - demonstrating the inability of Urban Operation in leveraging the densification along the extension of Faria Lima Avenue (DBA), where the largest amount of additional building rights was offered (1.25 million m² - 56% of total).

We can observe an increased interest of real estate sector in Vila Olímpia district (IBA), an area traditionally occupied by medium density single family housings, where direct investments in improvements have not been carried out, and where there has been occurred intensive replacement of existing buildings by large commercial ones (Sepe, Pereira, 2011). These new centralities expose a contradiction: districts with higher land appreciation are the same that have lost the greater amount of resident population. Direct public investment has intensified real estate activity, but failed in obtaining appropriated urban and social development (Montandon, 2007).

Faria Lima UO obtained, as a main result, the gentrification[2)] of an already elitist area of the city, where, from a "magical formula of partnership", a public investment cycle for real estate market has been legitimized and formally justified by the need for infrastructure funding (Fix, 2004). Although the second stage of urban operation has shown advances, it is still unable to break the capitalist logic of space production that combines high building density detached from population density, investments in road system closely related to real estate interests and low investment in social housing (Montando, 2007).

LINHA VERDE URBAN OPERATION – CURITIBA – PR

BR-116 Federal Highway is the main road in Brazil, connecting the whole country lengthwise. In Curitiba, it crosses the city, dividing it into two parts, creating transposition difficulties and an intense conflict between urban traffic and load traffic (Figure 3.). According to Souza (2001), problems generated by the intersection between BR-116 and urban grid are objects of City Hall's concern since the *Preliminary Urban Plan (PUP)* in 1965, when the urban occupation even had not overtaken the so-called BR-2 (Figure 4.).

With the construction of an alternative road to divert load traffic from urban stretch of the highway, the City Hall could urbanize an important route that connect Curitiba and its metropolitan area, passing through 23 neighborhoods and polarizing urban growth in eastern portion of the city (Machuca, 2010).

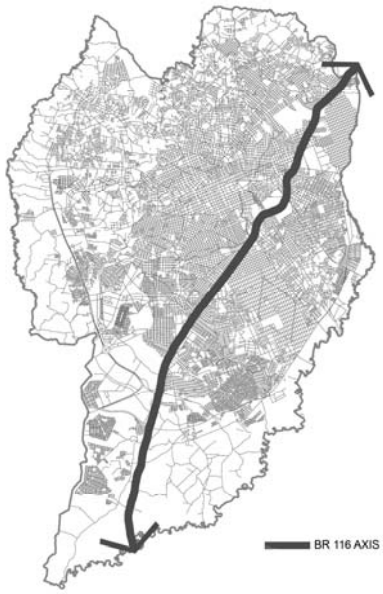

Figure 3. BR 116 Axis – current urban grid, Source: adapted from IPPUC (2011).

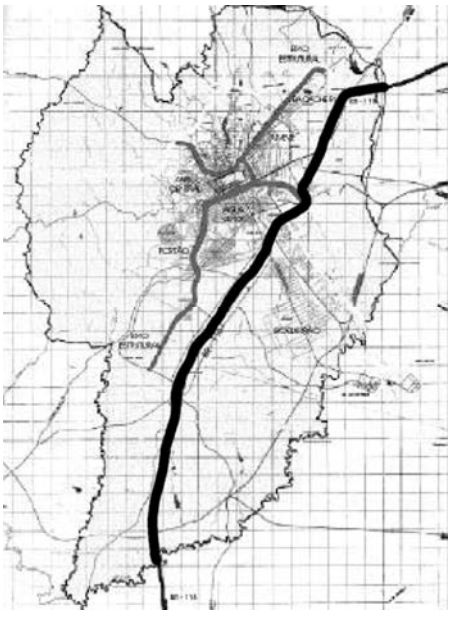

Figure 4. BR 116 Axis – PUP, Source: adapted from Souza (2001).

Figure 5. Linha Verde – total length), Source: IPPUC (2010).

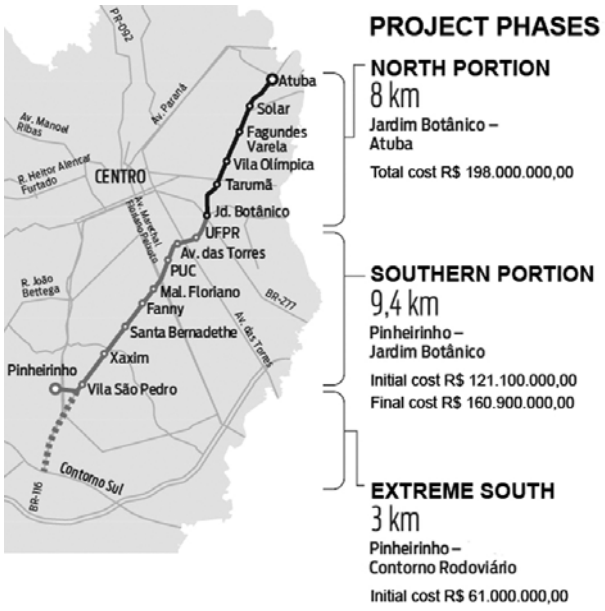

Figure 6. Project Cost per Stretch, Source: adapted from Cabral (2011)

Despite lengthy negotiations with federal government to grant the stretch - that lasted over a decade - the project, even with some modifications, maintained its principle from the beginning: construct an intercity and metropolitan integration axis, adapting the road system, changing land use and occupation (originally occupied by sheds and factories) and the type of predominant traffic (Moura, 2011).

The urbanization process, focused on the road system adequacy and implantation of the new public transportation axis, started in 2007, consuming $ 86.5 million only in the southern section (Figures 5. and 6.). Changes in zoning, made in 2008[3], intensified real estate dynamics in neighboring area, where was observed appreciation in land of over 70% in some places (Secovi, Rios, 2009).

Analyzing preliminary results, Machuca (2010), Hardt, Chu and Hardt (2009) identified a trend (even if slow) of transformation in land use and occupation, with gradual replacement of existing use for residential buildings and local commercial enterprises.

In order to leverage urban transformation in bordering areas of Linha Verde axis, Curitiba City Hall proposed the **Linha Verde Urban Operation (UO)**. The bill, sent to City Council in October 2011, was endorsed by Mayor Luciano Ducci in December 2011, creating Law No. 13.909/2011, regulated by Decree No. 133/2012.

Modeled according to CEPACs systematic, Linha Verde UO aims to raise funds for complete construction of the road and transportation system, urban redevelopment, creation of public spaces and land regularization, promoting an urban occupation with diversification of uses (in accordance to proposed zoning), assisting the population in vulnerable situation and improving road system and urban and environmental quality of the intervention area (Curitiba, 2011).

The urban operation perimeter was divided into three sections (North, Central and South), which were then subdivided into three sub-sectors, with different densities, possibilities of verticalization and allowed uses (Figure 7.). Linha Verde UO provides a total supply of 4,475,000 m² of additional building area (split unevenly among sectors and uses), which will be converted into up to 4,830,000 CEPACs, with a minimum sale price of $ 107,52[4] (Curitiba, 2011).

A controversial point of Linha Verde Urban Operation is its institutional management framework. Our questionings involve two elements considered fundamental in discussions about urban operation as an instrument for social management of land appreciation.

The first one refers to the elaboration of the *urban project*, the *priority constructions plan* and the *environmental impact study* of urban operation. As

Figure 7. Linha Verde Urban Operation – sectors delimitation, Source: adapted from Curitiba (2011).

stated in Curitiba Master Plan (Law 11.266/2004), in accordance with City Statute (Federal Law no. 10.257/01), a joint urban operation law must contain the following minimum elements: delimitation of the intervention area; purpose of the urban operation; basic programs for area occupation and interventions; study on the impact in the neighborhood; economic and social programs directed towards population directly affected; counterparts to owners, permanent users and private investors; the way to control the operation, which must includes civil society representatives (Curitiba, 2004).

Law no.13.909/2011, which approved Linha Verde Urban Operation, relegated to a later stage the elaboration of Priority Interventions Plan (art.19), Urban Plan and Project (art. 20) and the environmental impact study, contradicting Municipal Law no. 11.266/2004, which was supposed to be ruling it. In addition, although the economic and social program was mentioned as one of the general objectives of Linha Verde UO, mechanisms that would make it work are not provided and the elements that compose it are not even defined.

Far from putting into question the expertise of these documents (largely of IPPUC's responsibility), the question here is the lack of popular participation in the formulation process. And even if there was participation, how could the public evaluate a urban intervention project that does not have a clearly delineated action plan, nor a clear definition of environmental, social and economic impacts involved and their mitigation measures?[5)]

This question leads us to a second question on how to manage Linha Verde Urban Operation, namely: the low representation of civil society on its implementation process. Law no. 13.909/2011 establishes a management group that would implement and monitor the Intervention Program of Joint Urban Operation.

Coordinated by the Curitiba Research and Urban Planning Consultancy (IPPUC - Instituto de Pesquisa e Planejamento Urbano de Curitiba), this group consists of eleven members, with the following board: Municipal Urbanism Office; Municipal Finances Office; Municipal Administration Office; Municipal Environment Department; Municipal Government Office; Curitiba Research and Urban Planning Consultancy (IPPUC); Curitiba City Hall; Paraná's Civil Construction Industry Syndicate – SINDUSCON; Paraná Housing and Condominium Union - SECOVI Paraná; Paraná's Real Estate Companies Directors Association – ADEMI; City Council of Curitiba – CONCITIBA.

If we analyze the *Management Group board*, which should apparently involve the participation of "representing entities of the civil society" (Curitiba, 2011, art. 18), a concentration of municipal government entities (7 - 63.4%) and institutions related to housing market (3 - 27.3%) becomes evident. Thus, civil society is left with only one member in the management group, represented by CONCITIBA. The situation gets worse when we consider the various questions about the legitimacy of CONCITIBA (Silva *et al*., 2011; TDD, 2010; CED, 2011), which does not have a significant representation of civil society organizations. Going along with the existence of popular participation in the implementation of the Linha Verde UO becomes hard to endure.

In addition, it is interesting to notice the composition of *Executive Committee of the Intervention Program*, which is responsible for defining the *Priority Intervention Plan* and the *Linha Verde Urban Operation Investment Program*. The Executive Committee is composed by six representatives of municipal boards (the same that make up the manager group), which, alone, represents more than 50% of *management group* and therefore could approve by themselves by majority rule the plans they came up with. Also, even if they didn't hold the majority of votes, the negotiations within the management group would be centered between the government and entities related to the housing market, keeping away those who should be prioritized by resources obtained through CEPACs: community.

Bearing in mind the experience of Faria Lima UO, discussed in the previous chapter, this paper must inquire about Linha Verde UO's limited role as an instrument for social management of land appreciation. If we include this scenario in the intense lobbying engendered by real estate market (which, by the way, has significant representation in the management group) and by the contractors focused on public constructions, we can raise the hypothesis that the Linha Verde UO is closer to a mechanism of boosting housing market than to an instrument of strengthening social function of the city and of the property (as provided by City Statute).

In this sense, Piza, Santoro and Cymbalista (2004) warn that the implementation of a Joint Urban Operation without an adequate social management of the resources involved undoubtedly leads to the definition of priorities "of a few" over the community interests. In fact, Urban Operations conducted improperly tend to maximize excluding effects of contemporary urbanization[6)], once it concentrates on singular intervention actions that do not add real contributions to the society (Alvim *et al*., 2011).

City Hall tends to invest on constructions called "anchor" of the urban operation, justified by the doubtful necessity of attracting "private equity" that could stimulate a process of wider urban renewal. Thus, the government plays the role of a real estate development company, a business potential brake-releaser in a certain region (Fix, 2004). Therefore, Joint Urban Operation can be understood as an effective mechanism adopted to cover the logic of urban income concentration, legitimizing the targeting of significant public resources to infra-structured areas and restricted benefits constructions, leading the government to assume a central role in boosting **private accumulation** (and not recovery, as one might suppose) of urban surplus land value.

FINAL REMARKS

For decades, land appreciation capture generated by public investment has been discussed and pursued in Brazil. Among the various tributaries and urban instruments provided by City Statute, Joint Urban Operation certainly represents one of the most controversial and contradictory.

Although one cannot deny the great potential of Joint Urban Operations as a instrument to leverage urban transformations - sharing the costs of public action – its disarticulation (intentional or merely reckless) with other urban instruments tends to reduce its power as a instrument for social management of land appreciation, generating conflicts between the different stakeholders involved and resulting in projects sometimes detached from the social dimension. In fact, plans and programs displaced from social policies tend to settle the basic substrate for continuity of political patronage, a traditional characteristic of Latin-American public management.

Based on Maricato and Ferreira's (2002) statement, for who the application or interpretation of the laws in Brazil usually depends on the circumstances, one could speculate about the predominance of interests of social groups with more influence, which have greater ability to influence decisions related to municipal urban policy.

We can even question the role of the Certificates of Additional Building Rights (CEPACs), which, even though allow the government to capture quickly and in advance the resources from the private sector, can also be understood as subordinator elements of urban policy for the housing market, converting it into an additional source of financial speculation.

Another critical issue of Joint Urban Operations concerns the restriction of investments within the perimeter of intervention, understood by many authors as a limit to the social function of the city, once considerable resources are reinvested in infra-structured areas, leveraging

land appreciation and exacerbating socio-territorial inequalities.

Despite the many contradictions inherent to the process of formulation and implementation of Joint Urban Operations in Brazil, it is believed that if these operations possess consistent mechanisms of democratic and participatory management, it would be possible to mitigate the risk of the prevalence of private interests. On the other hand, however, the cases studied in this paper point out the very low representation of civil society throughout the process, which is poorly even consulted about the approval of an urban operation.

Although the results are not deep enough to support the defense of a hypothesis, we risk to conclude this paper speculating about the lack of Joint Urban Operations in promoting social management of land appreciation by themselves. It's important to note that this paper tries to contribute to the investigation about the tools for recovery surplus land value, adding support for further discussion on theoretical and empirical questions, with no intention of ending the discussions on the theme.

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[1] Monetary values in this paper were converted from reais (Brazilian currency unit) to U.S. dollars based on quotation of May, 24, 2011 (US $ 1,00 – R$ 1,86).

[2] Although there are a large number of definitions for the term gentrification, they all understand it as a physical improvement of old neighborhoods where the poorer population move out and more affluent population moving into it. (Lukić, 2011).

[3] Law no. 12.767/2008 established building incentives for land situated in the area covered by Linha Verde project.

[4] Initial revenue estimative is approximately of $ 806,4 million (Sinduscon, 2011).

[5] It is worth mentioning that even among the council members, upon the approval of the bill in City Council, there were fierce debates regarding the lack of information about the impacts and mitigation measures related to Linha Verde Urban Operation (CMC, 2011).

[6] As Mazza (2010, p. 3) states, "the political nature of spatial planning activities is linked to their redistributive character and to the mechanism of exclusion and inclusion that follows from this. The main effects of planning practices are therefore political and social, rather than economic and spatial".

Received November 2012; accepted December 2012

VERSITA

SPATIUM *International Review*
No. 28, December 2012, pp. 7-14

UDC 314.8(497.11) ;
314.114:711.4(497.11) ;
711.4(497.11)
Review paper
DOI: 10.2298/SPAT1228007P

THE POPULATION CONUNDRUMS AND SOME IMPLICATIONS FOR URBAN DEVELOPMENT IN SERBIA

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Population development may reveal either a potential or constraint on functional labour markets and spatial development of the territory in concern. The first results of the 2011 Census in Serbia depict a rather bleak demographic situation, which is only the continuation of population trends from the late 20th and beginning of the 21st century, substantially fuelled by dynamic political and socioeconomic processes featuring Serbia in the past few decades. The focus is on demographic changes in relation to three correlated aspects: 1) intensive ageing process; 2) depopulation and negative natural growth; and 3) migratory movements - population exodus. This paper addresses in particular the spatial consequences and institutional aspects of recent demographic changes and their reflection on urban areas in Serbia. In the past, population movements from rural to urban areas used to colour much of the migratory balance map of the country, however this situation changed due to exhaustion of the 'traditional' demographic reservoirs. Still, urban primacy of the capital city Belgrade has been even intensified with the recent demographic movements, or more precisely, a tissue of the two largest cities in relative proximity - Belgrade and Novi Sad is hypertrophied in a demographic sense. Other urban settlements in Serbia, especially the smaller towns, which are numerous but demographically shrinking, have not been empowered enough to substantiate better links with smaller and larger settlements within urban-rural interface, and their role has been challenged in that respect. Demographic changes, which affect urban growth or decline, are largely to do with border effects, economic and social gaps, educational opportunities, and search of certain 'urban lifestyles'. The latter is particularly stressed regarding the process of 'second demographic transition' which encompassed Serbia and is manifested by changes in the family domain, viz. partnership and parenthood, as well as by plurality of lifestyles, namely for the younger and middle-age generations (20-34 years – dominantly the people in reproductive age) who are able to exercise their residential choices towards bigger urban centres. Finally, this paper addresses the demographic determinants of languishing population growth in Serbia coupled with highly uneven territorial distributions of population and level of development, which in the last decade marks the ratio of 10:1 (measured by GDP/inh.) between the most developed and the least developed regions in Serbia.

***Key words:** population, dynamics, urban settlements, Serbia.*

INTRODUCTION

The demographic structure of a territory is shaped by the number of births and deaths, population ageing and the balance of inward- and outward- migration. There is a vast literature on the components of population increase and frequently emphasised phenomenon of overpopulation. On the other hand, the issue of population decline reaches a new research momentum, being shaped by external factors, e.g. political and economic conditions, as well as by the internal factors such as fertility decrease due to changes in lifestyles, cultures and aspirations. Serbian population decline may serve as an illustrative example, since this is a post-socialist society where the process of transition started much later than in other former communist countries of Europe, and has faced prolonged economic and political crisis which stimulates continuous out-migrations of its population. At the same time, those who remained in Serbia, especially the generation of age 20-34, follow the pace with the wider European trend of 'second demographic transition', viz. nuptial/partnership settings, postponed parenthood, and drop in fertility rates (subreplacement fertility). As a consequence of reduced job prospects, low level of individual's self-achievement, and high dominance of subsistence human needs, the majority of population in Serbia is mainly oriented towards day-to-day decision-making instead of long-

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The paper was developed as a result on the project "The role and implementation of the national spatial plan and regional development documents in renewal of strategic research, thinking and governance in Serbia", No. III 47014, which is financed by the Serbian Ministry of Education, Science and Technological Development in the period 2011-2014.

term planning, which creates big repercussions in all aspects of personal and societal functioning. All that calls for a renewal of strategic research, thinking and governance at the national level, which should address a selected number of key demographic issues and their spatial/territorial implications.

Starting from the 1980s, a number of researchers dedicated their work to population decrease in the developed countries. Serbia had begun experiencing the matching demographic trends as from the 1990s, i.e. slightly postponed in comparison to the rest of Europe. However, not all parts of the country have been affected by the population decline, e.g. metropolitan region of the capital city Belgrade acted as a 'gainer' in this process because it managed to retain the proper population and to attract the newcomers. The explanation of this tendency lies in the fact that Serbia had strong centralisation and that, as in the rest of the world, the urban process has been fundamentally a political-economic one (Wu, 2003; Vujošević and Nedović-Budić, 2006).

An overall degree of urbanisation and the degree of urban concentration are the two related issues. Former is dominated by three factors: population growth, rural-urban migration, and subsequent urban expansion. Urban primacy or high concentration of urban population of a country in a single large city features a number of developing countries and Serbia is no exception to that 'rule'. However, in order to set the particular local experience into a broader context, one should try to make sense of 'distinctive combination of expansionary growth (or population decline) and urban social and spatial restructuring' (Soja *et al.*, 1983:196).

The research question addressed in this paper is which urban settlements in Serbia[2] are still gaining and which ones are losing the population and how this reflects on territorial distribution of population in the country. The opening discussion is dedicated to some historical points of urbanisation in Serbia which brought to the present demographic conditions, as well as to the analysis of demographic drivers and pressures in urban as well as in rural settlements of the country. This is followed by the discussion of development context for urban settlements of Serbia. The conclusions are drawn towards the need for renewed strategic research and thinking in respect to sound demographic and urban/regional policy.

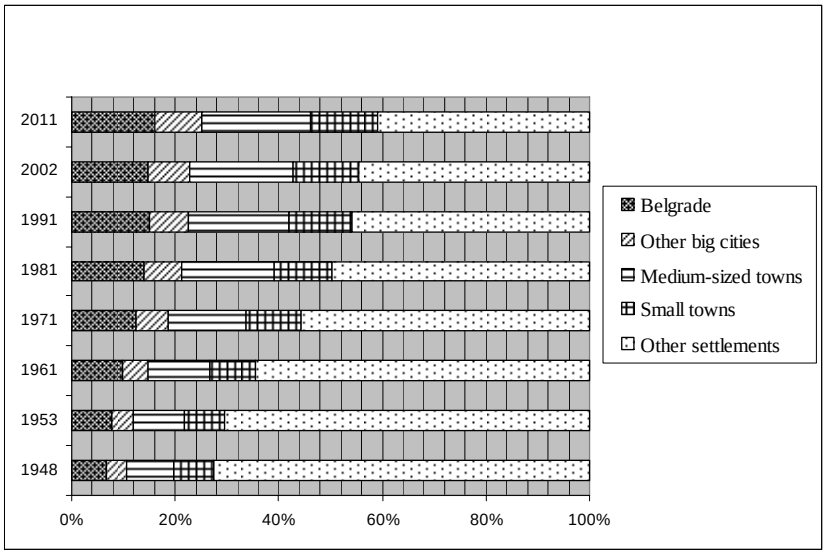

Figure 1. Population growth/decline according to different settlement types of Central Serbia and Vojvodina in the period 1948-2011

POPULATION CHANGES IN URBAN AND RURAL SETTLEMENTS OF SERBIA

An overview of the urbanisation process in Serbia after the Second World War

Before focusing on the present demographic conditions in urban settlements of Serbia, it is necessary to go back in the past, i.e. to the period when a dynamic primary urbanisation process took part. This was the phase of intensive industrialisation after the Second World War (in the 1950s and 1960s) which was marked by fundamental structural changes and long-term consequences that reflected on the country's population (re)distribution. According to the 1948 Census, the Republic of Serbia (without Kosovo and Metohija) was home to 5.8 million people, out of which 73% lived in rural settlements (see: Figure 1). In many respects, subsequent urban development of the country paralleled that of other areas of the formerly traditional world (Spasić, Petrić, 2007). With acceleration of the industrial process, towns which were to take the role of future industrial hubs became the focal points for development and concentration of people and activities. They mushroomed 'swollen by the influx of countrymen who have abandoned their herds and fields, motivated by the familiar push and pull stimuli so frequently described in the literature of urbanisation' (Simić, 1974). The main motivation behind such tendency is people's natural craving for moving upwardly in search of a better quality of living. As in other countries of real-socialism, the state was also the main subject of urbanisation in the former Yugoslavia including the Republic of Serbia, which was its integral part. Urban settlements, especially the republic and federal centre - Belgrade had been the focus for all investments being directed to industry, infrastructure and public service provision. This induced formation of two poles of development: (a) territorially small but demographically and economically expanding areas, typically being urban hubs in the zones under influence of the main development axes, among which the (Sava) Dunav-Morava development axis dominates the Serbian territory; and (b) territorially large areas, yet shrinking in population and economic terms, dominantly in rural, remote and/or in mountain regions (Stojanović, Vojković, 2005). What is the particularity of this process is that it keeps its pace even in the periods of the first and second demographic transition (characterised by decrease in natural population growth as well as by significant aging process and (post)modern turn in the family domain accompanied with the pluralisation of lifestyles especially for the younger and middle-aged generations) (Bobić, Vukelić, 2011).

A sudden urban population growth of the country, which was due to the process of primary urbanisation, had the effects throughout the period 1953-1981 when the urban population of Central Serbia and Vojvodina nearly tripled in numbers (Stojanović, 1990). However, the process of *demographic transition* in Serbia already

[2] In the sequel, when referring to Serbia, it is actually meant the encompass of Central Serbia and Vojvodina because the accurate data for the analysis have not been available for the territory of Kosovo and Metohija (southern province of the Republic of Serbia).

formed its roots by the 1960s, and has subsequently grown with the effects of 'spontaneity' (Stojanović, Vojković, 2005; Krunić, Tošić, 2007). Demographic transition as a universal phenomenon which is shaped by 'the overriding importance of mortality decline and the impact of the modernisation process in people's lives' (Notestein, 1945 in: van de Kaa, 2002:1) has overshadowed the effects of the primary urbanisation in Serbia in the 1990s, i.e. when the traditional demographic "reservoirs" (dominantly rural areas) showed first signs of "exhaustion" (Stojanović, Vojković, 2005). Urban population of Serbia kept growing in the period 1981-1991, but its stagnation followed in the next two intercensus periods, i.e. 1991-2002 and 2002-2011 (see: Figure 2). On the other hand, because of much greater decrease of the total population in Serbia, the level of urbanisation in the country has grown to 59% in 2011, which is still relatively modest in comparison to the European average of 73% urban dwellers in 2011 (UN, 2012:9).

Present demographic conditions in Serbia

The dominant demographic trends in present Serbia demonstrate that its population is being 'shrinking', while the growing number of villages and towns have become 'ghosts' or they appear 'too big' for their present population quantum. General analyses of statistical data from the latest (2011) Census in Serbia - First results (SORS, 2011) clearly demonstrate that the country's population is in a downward spiral of negative natural growth, encompassed by a significant ageing and continued emigration of people to other countries, with a resultant of 377,335 people less (decline of over 5%) now in Central Serbia and Vojvodina than it was recorded by the previous (2002) Census for the territory in concern. In the period 2002-2011, out of 4 regions in Serbia (not including its Region of Kosovo and Metohija for which the data have not been available), it is only the City of Belgrade Region that had an increase of population (approx. 63,000 inhabitants, or 4% growth). At the same time, population of the Region of Vojvodina and of the Region of Šumadija and Western Serbia decreased for more than 5%, respectively, and the population of the Region of Southern and Eastern Serbia had demographic loss of more than 11%! In the last intercensus period, out of 168 municipalities in Central Serbia and Vojvodina, it was only 22 that had an increase of population (see: Figure 3). Among those 22 municipalities, 11 belong to Belgrade Region

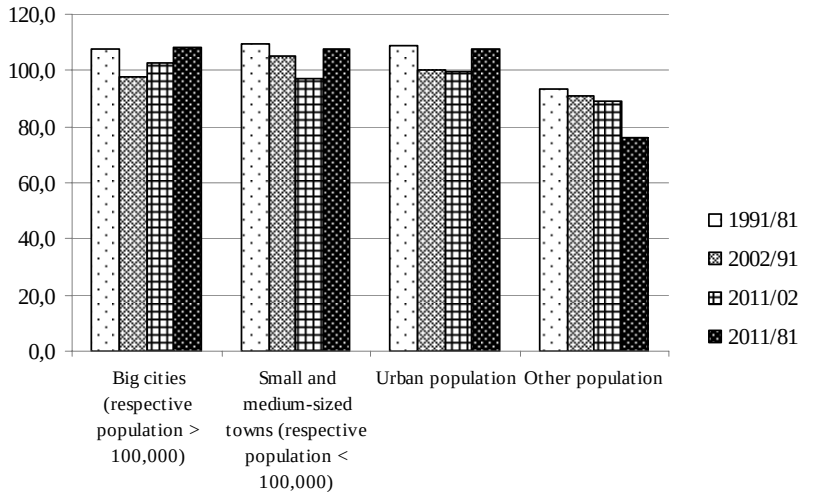

Figure 2. Population change index according to different groups of urban settlements and for urban and other population in Serbia within the period 1981-2011

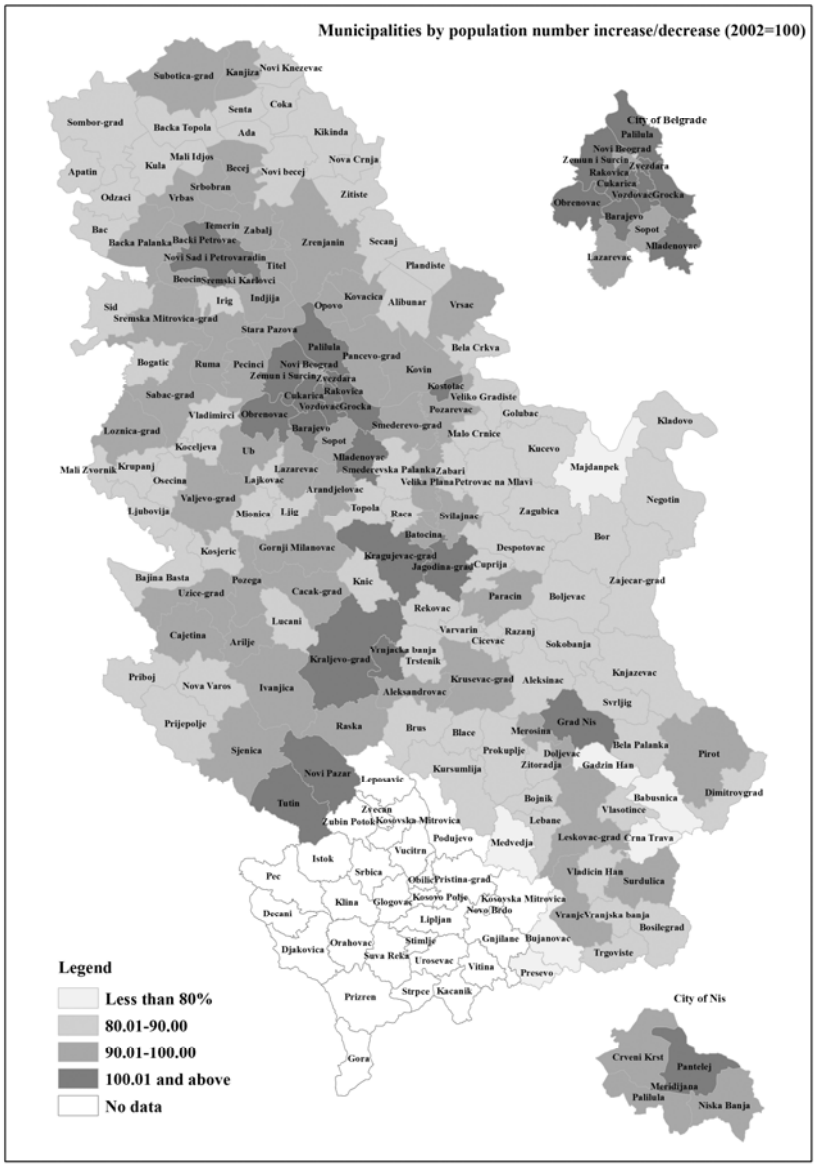

Figure 3. Municipalities in Serbia by population increase/decrease (change rate)(2002=100)
Source: Statistical Office of the Republic of Serbia (2011) 2011 Census of Population, Households and Dwellings in the Republic of Serbia – First Results

(Barajevo, Voždovac, Grocka, Zvezdara, Zemun, Mladenovac, Obrenovac, Palilula, Rakovica, Surčin, and Čukarica), and the rest are: Novi Sad, Petrovaradin (which both constitute the City of Novi Sad), Jagodina, Vrnjačka Banja, Kraljevo, Novi Pazar, Tutin, Kragujevac, Kostolac, Niš-Medijana, and Niš-Pantelej (latter two are integral parts of the City of Niš).

As it can be observed from Figure 4, out of present 169 urban settlements in Serbia (without data for Kosovo and Metohija), Belgrade is the only city with more than one million inhabitants (1,137,513 inh. or 16% of the total population in Central Serbia and Vojvodina together in 2011). Novi Sad is the second largest city of the country (221,854 inh., or another 3% of Central Serbia and Vojvodina population in 2011), whereas other big cities of the country - Niš and Kragujevac, have less than 200,000 people respectively (SORS, 2011).

When focusing on the urban population dynamics by city size classes in Serbia in the period 2002-2011, the group of small and medium-sized towns as former gainers of population are now depopulating, while big cities have been growing (see: Figure 5). This, however, is not surprising since the larger cities worldwide demonstrate a stronger position in terms of competitiveness and agglomeration advantages, therefore leaving small and medium-sized towns behind both in terms of economy and population capacities. It is just that Serbia experienced this process with a slight time-shift as a consequence of later initiation of the post-socialist transition.

The complexity of demographic issues in Serbia in the period 2002-2011 has been profound, with special concern for its 'geostrategic ('territorial') dimension' (Vujošević *et al*., 2010:72). Since there have been no indication of a radical shift in depopulation trends which are shaped by negative natural population growth and emigration of the most vital part of the population, Serbia presently 'loses' in average 42,000 people/year (which equals the total population of a medium-sized town in the country!), and that is noticeably higher than in the previous intercensus period (1991-2002) when the average loss was around 30,000 people/year. The worsening of the population age structure is the predictable outcome of such tendencies, but what particularly strikes is that for countries like Serbia in which 'long-term strategies typically have the horizon until the next elections' emigration may be considered as a 'safety net' for the issues of unemployment and state budget because each emigrant is 'one person less at the bureau for the unemployed' as

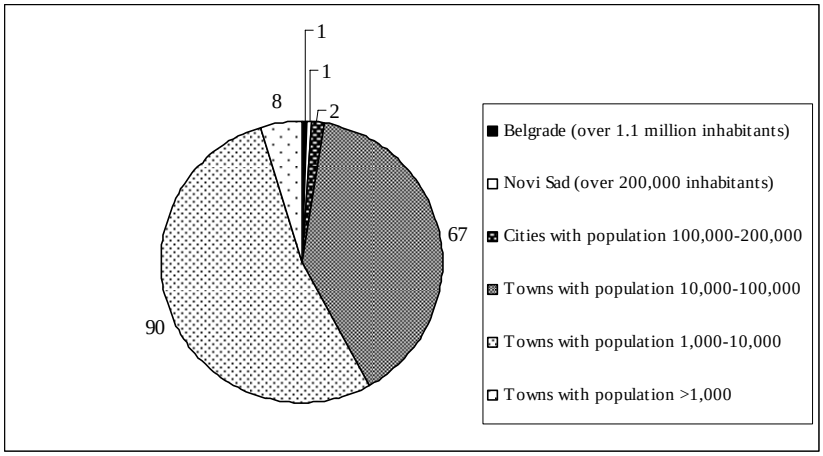

Figure 4. The share of various categories of urban settlements by their population size in Central Serbia and Vojvodina in 2011 (according to SORS, 2011)

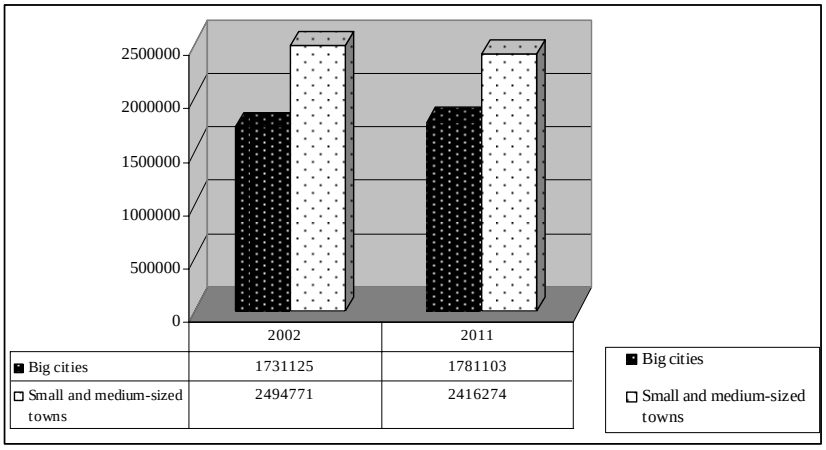

Figure 5. Distribution of population in big cities and small and medium-sized towns in Serbia in the period 2002-2011

well as that 'emigrants bring back in Serbia each year two to three times more money than the country obtains through foreign direct investments and incomes deriving from the privatisation of the state property' (see: Katić, 2009 in Vujošević *et al*., 2010:173). Consequently, since emigrants also pull their children away from the country and leave parents (senior citizens) behind, the share of retired people grows in relation to the remaining working force in the country, representing a threat for the maintenance of pension funds and social services quality. The experience of other countries which started earlier with the process of post-socialist transition and joined the EU demonstrated that under such circumstances these countries' work force emigration (seasonal and the long-standing one) was enhanced, and such situation may also be experienced by Serbia should it join the EU. With that in view, the much craved for population and work-force renewal in Serbia 'after the year 2017, when the country should become an immigration destination' (Sekulić, 2005, quoted in: Nikitović, 2010:100) induces the new challenges of accepting a potential immigration from Asia, North Africa as well as from Kosovo, which altogether may not be very welcomed by the domicile population.

Demographic drivers and pressures in Serbia

As it has been previously pointed out, the overall demographic retrogression featuring Serbia is one of the key factors which put rather 'bleak tones' on its development prospects (Vujošević, 2007). One should particularly stress on significant population ageing, i.e. high share of people of advanced age in the country, which lists Serbia in the group of the **fastest ageing populations in the World**[3]. According to the average age of

[3] This does not apply to the part of its territory (Kosovo and Metohija), in which Albanian ethnic group forms a majority that is characterized by much younger population and population expansion by natural growth, contrary to demographic trends at the rest of the territory of Serbia (Spasić *et al.*, 2009).

population in the Republic of Serbia (42.2 years) (SORS, 2012a), the country is listed among the 20 'oldest' in the World (Wikipedia, 2012). Truly, in contrast to numerous unpredictable trends, global ageing of population is highly foreseeable and distinctive trait during the 21st century. This process occurs in a range of settings, both among wealthy nations and within transitioning societies, being caused by intertwined factors - declining fertility and longer life expectancy, latter being ascribed to the achievements of public health, education and economic development. Although the ageing population represents a general impediment to development and institutional reforms, in order to break the stereotypes which picture this phenomenon as bad, societies should capture the full benefits that occur out of it – opportunity to involve older people in making substantial contributions for much longer periods than it was the case in the past, and this doesn't reflect only on senior citizens performing agricultural activity (Pantić, Živanović Miljković, 2010). Serbia, however has still been 'wrestling' with pressing issues of socio-economic nature (highly uneven territorial distribution of population and of the development level – i.e. ratio 10:1 between the most and least developed regions, where imbalances demonstrate further tendency of growth) (see: Maričić, Petrić, 2008, Vujošević *et al.*, 2012), and in many ways the country fails to adapt and unlock the potentials of the large front of senior citizens. The demographic issues have a cumulative effect and it would be wrong to either presume that they had come suddenly or that they could have been reversed with the start up optimism of 'October 2000' changes, after which Serbian society has found itself only in the situation of prolonged economic crisis.

When analysing the natural component of population growth in Serbia, again not referring to the demography of Kosovo and Metohija, it can be noticed that starting from the late 1980s and the beginning of the 1990s, population fertility rates in the country had significantly dropped (subreplacement fertility), and according to population projections, it will continue to decrease to 1.30 child per woman until the year 2020 (Rašević, 2012). **This reflects on natural population growth**, **remaining negative** in Serbia, and there are no indications this trend would change in a foreseeable period of time. Obviously, this was greatly influenced by the past internal conflicts, wars, economic sanctions, and other social instabilities that the Serbian society has been experiencing in the period of 25 years or so (Cvetićanin, 2012).

At the same time, **the intensive migration processes** have been going on in Serbia. After the mid-1990s, the war conflicts were terminated in the former Yugoslav republics, with approximately 400,000 refugees who were forced to leave their homes and found a new permanent residency in Serbia (Penev, 2008). Another wave of immigrants or „internally displaced citizens" from Kosovo and Metohija (around 200,000) came to Central Serbia and Vojvodina after the bombardment of Serbia by NATO forces in 1999. Yet, despite the economic and political progress in Serbia as from the year 2000 onwards, the emigration of its most vital part of population has still been high, which especially considers people with University degree who left Serbia to permanently settle abroad (brain-drain). Although it is impossible to fully grasp the brain-drain quantities, estimations are that during the 1990s Serbia lost around 40,000 of its highly educated people who emigrated from the country. To illustrate the gravity of this issue, recent surveys show that up to 85% of the top Belgrade University students actively search for employment outside Serbia motivated by: small or no possibility whatsoever to find employment in the country (especially in their professional field), the lack of opportunity for professional advancement in that field, small wages, and the lack of possibility to afford a family start-up flat (Zbogom našoj deci – Zbogom našim parama, 2009). According to the most recent annual report on the global competitiveness given by the World Economic Forum, Serbia is ranked on 141 position out of 144 countries in respect to the 'brain-drain', being followed only by Burundi, Haiti and Algeria (WEF, 2012).

The balance between biological and mechanical component of population growth in Serbia varies between different groups of settlements. In that respect, by combining the data that are obtained from the Natural changes of population in the Republic of Serbia that cover the period until the year 2010 (SORS, 2012b) and the change in total number of population on the settlement level in the latest intercensus period (SORS 2004, SORS 2011) it is possible to make the following inferences. In the period 2002-2011, the population of big cities in Central Serbia marked growth exclusively because of the positive migratory balance. The City of Belgrade lost 20,240 people due to negative natural growth, but its overall population growth was positive due to positive migratory balance: 38,111. Two other big cities in Central Serbia (Niš and Kragujevac) had the same population development trajectory, where the total population growth was the outcome of positive migratory balance only, which exceeded negative natural growth by ratio 1.8. On the other hand, in Vojvodina, Novi Sad was the only big city which marked population growth in the period 2002-2011, both because of positive natural growth (919) and positive migratory balance (29,530). However, this minimum positive natural growth in Novi Sad may not be of a long-term significance, and may be interpreted as a knee jerk benefit of demographic movements during the 1990s (immigration of younger population - refugees from the former Yugoslav republics and internally displaced people). The group of small and medium-sized towns in Central Serbia and Vojvodina, which was gaining population until the year 2002, registered total population decline in the latest intercensus period, and that should be ascribed to synergy effect between negative natural and migratory balances. Finally, the so-called 'other' (non-urban) settlements exhibit continuation of population decline as a predictable outcome of a mature stage in the ageing process and the consequent negative natural population growth (Jelić, Surčulija, 2012).

DEVELOPMENT CONTEXT FOR URBAN SETTLEMENTS IN SERBIA

As previously pointed out, the main demographic expansion area for the territory of Serbia is the zone of (Sava) Dunav-Morava development axis, which largely corresponds to the one of major European multimodal transport corridors (i.e. Corridor X) (see: *Figure 6*). The demographic and other importance of this development axis is demonstrated by the fact that though it spatially covers some 26% of the territories of Central Serbia and Vojvodina together, it has been populated by more than half of the total population of the respective territories (Stojanović, Vojković, 2005).

When compared with the analyses that were elaborated by Stojanović and Vojković (2005) on data from 2002 Census regarding urban population in the zone of (Sava) Dunav-Morava development axis, 2011 Census data demonstrate further intensification of population concentration in this zone (almost 60% of the total urban population), especially in the big cities of Central Serbia and Vojvodina, which are dominantly located here, excluding Kragujevac, which although being positioned aside is still in the relative vicinity of the Corridor X. Big cities within the zone of (Sava) Dunav-Morava development axis encompassed approximately 39% of the total urban population in 2011, and the network of small and medium-sized towns in this zone

(around 35% of their total number in Central Serbia and Vojvodina) encompassed additional 20% of the country's urban population.

However, the key factor of distribution of population within the urban system from the largest to the smallest urban centres in Serbia is the distribution of power, resources and capacities within the local government structure. Belgrade metropolitan region is still the key pointer to unbalanced regional development of Serbia which, together with Novi Sad in its relative vicinity, forms the so-called 'Serbian spatial banana' that cumulates a large share of the country's population (almost 35%) and creates almost 60% of the national GDP (Vujošević *et al*., 2012:153). When analysing the hierarchy in the country's urban settlement network, the advancement of macro-regional centres is needed in order to mitigate the acute issues of imbalance, i.e. extremely uneven regional development and weak territorial cohesion. At the same time, a more prudent steering and support of small and medium-sized towns development is essential, with hindsight that until recently they used to be the vital demographic reservoirs of Serbia.

With comparative observation of the Europe's urban structure, it can be noticed that big cities (especially high-profile world cities) also get most of the attention and maintain their (global) importance. The reason for this is, firstly, a considerable evidence of a positive correlation between an urban settlement's size and economic performance. Then, the largest cities perform multiple roles, nationally and internationally, as centres of government, advanced services, higher education, culture, etc. (Hall, 2003). Small and medium-sized towns, on the other hand, may be perceived to play a relatively peripheral role. However, though generally being neglected in the policy, the very many small and medium-sized towns are important to both regional and national economies. Within modern urban networks, they are seen as crucial link between big cities and rural areas, as well as in playing the major role in preventing urban sprawl and in slowing down suburbanisation process of Europe's big cities and metropolises (Satterthwaite, Tacoli, 2003). Generally, the policies to support regional development and small and medium-sized towns by linking peripheral regions to global networks are as important as ever, but may also be more difficult to realise.

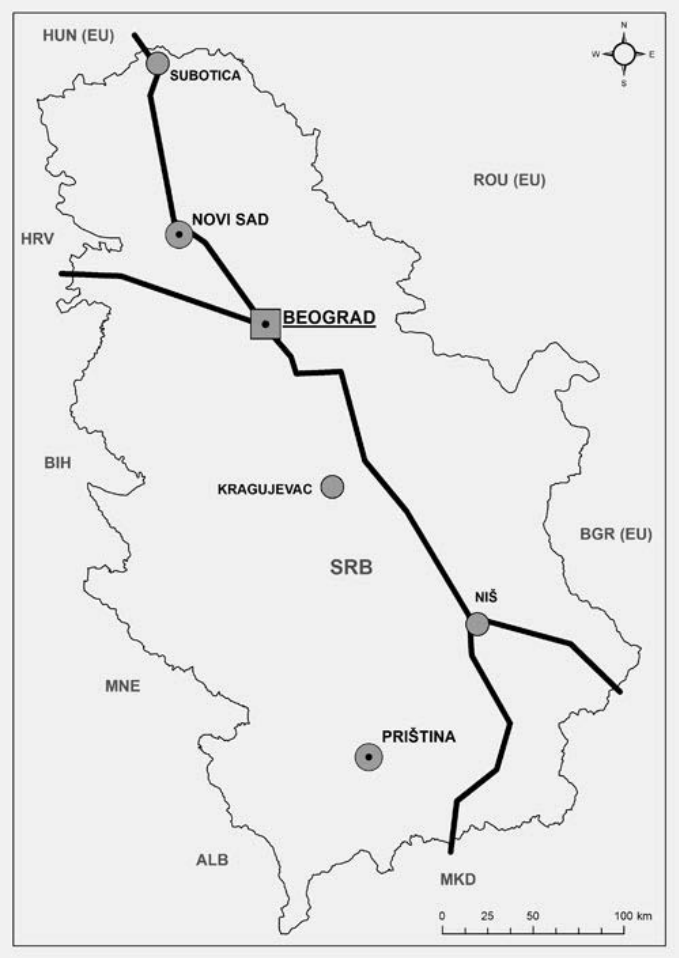

Figure 6. Corridor X in Serbia

CONCLUSION

Following the stagnation in development during the 1980s and subsequent 'collapse' characterised by the sanctions and international isolation of Serbia in the 1990s, even if there has been a dynamic but insufficient recovery in the period after the year 2000, Serbia is still faced with a situation of being in the so-called 'inner periphery of Europe' (Vujošević *et al.*, 2012), i.e. in the group of countries in which the differences between the developed and undeveloped regions are overwhelming, especially between Belgrade and Novi Sad agglomeration on the one side and the rest of the country on the other. As Vujošević (2012:228) points out, demographic and regional concepts in Serbia have not been mutually coordinated, and there are no effective implementation instruments for either one of them. Without full appreciation of the necessity to renew strategic research and thinking in Serbia and to focus on a selected number of key issues regarding the achievement of better impact on a spatial structure and distribution of population, the present large number of development issues will only accumulate and grow.

Migration processes, as the prime driver behind population changes need to be specially addressed under the conditions of insufficient natural reproduction of population in Serbia. Economically developed countries typically deal with this problem by 'importing' young and qualified working force. Looking from a wider perspective, since the 1990s Europe has become one of the major destinations for migrants from all over the world and thus has become a continent of net immigration. In this period, east-west migration has developed as a result of the opening of the 'Iron Curtain' and ongoing integration processes. However, currently being at the periphery of these processes, Serbia doesn't have the economic power neither to attract immigration of specialists from abroad nor to retain its own high-profile work force.

The situation of in- and out- migration will remain the issue to be considered both in the countries that 'import' and in those which 'export' the work force. In the former, many problems may arise because of the interchange between 'old' and 'new' population (though the fear of mass immigration is perhaps

overstated), whereas in Serbia, as the representative of the latter, there may be serious problems due to out- migration in terms of provisions for the remaining old and less well-off residents. Furthermore, the combination of lower birth rates, skewed age and gender structures may cause a number of villages, towns and even the whole regions dying out. The result would then be the continuation of the bleak scenario on further redistribution of population in the country, from the more deprived to less deprived (urban) areas, and to Belgrade and Novi Sad agglomeration in particular.

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Received November 2012; accepted in revised form December 2012

VERSITA

SPATIUM *International Review*
No. 28, December 2012, pp.15-22

UDC 711.4-13/.14(497.11) ;
502.131.1:711.4(497.11) ;
314.17(497.11)
Review paper
DOI: 10.2298/SPAT1228015Z

LAND USE PLANNING FOR SUSTAINABLE DEVELOPMENT OF PERI-URBAN ZONES

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Taking into consideration that growth of urban population has impacts on land use and that managing urban population change is one of the most important contemporary challenges, this paper deals with the sustainable development of peri-urban zones which represent important an environment where employment opportunities are developed and resources exploited (particularly agricultural resources) and environment where important recreational and leisure activities could be pursued. Within the review of current concepts and planning practices, the concepts of multifunctional agriculture and multifunctional landscapes in peri-urban zones are pointed out, as well as EU Developing Periurban Projects. The paper particularly focuses on the current situation in Serbia, where there is no specific legal basis for the planning of peri-urban areas, although there are positive examples of strategies, regulations and planning documents which treat agriculture and greenery in peri-urban zones in a sustainable manner.

Key words: ***peri-urban zones, land use planning, sustainable development, multifunctional agriculture, multifunctional landscape.***

INTRODUCTION

In just one decade, from 1990 to 2000, at least 2.8% of the land in Europe changed its use, including a significant increase in urban areas, with large differences between regions – from 0.3% to 10% (EEA, 2006). Statistics show that agricultural land (arable and permanent crops, pasture and mosaics) in 2006 covered about 42% of Europe, while 35% of land is under forests, and 4% is urban land (EEA, 2010). Urban sprawl is the main drive of change and urban areas have increased at the expense of agricultural land, mostly arable. These changes, i.e. urbanization, should be primarily understood as a process of expansion of the urban way of life in agricultural areas, but not only as physical growth of cities.

At a certain stage of development, a part of the city's function will transfer to the environment, but in most cases it means occupation of the land with the highest quality, agricultural land. In many cases, urbanization has had dramatic effects on peri-urban zones (fringes or areas)[2]; above all, it initially leads to resource degradation in peri-urban zones due to increased pressure on land resources in terms of destruction of biotopes, fragmentation of ecosystems, consequently diminishing the open space.

The importance of land use planning and land use management as particular tools for sustainable land use in peri-urban zones has to be a strategic issue. Land use planning, as one of the mechanisms that have impact on the reduction of pressure on land resources, is one of the key components of sustainable land management. In accordance with that, this paper will pay special attention to basic natural and production resources in peri-urban areas – agricultural land, and through some examples of these zones, planning in domestic practice will be emphasized.

PERI-URBAN ZONES – DETERMINATION AND CONCEPTS

Peri-urban zones increasingly occupy the attention of contemporary urban-geographic research and current documents and projects concerning this issue. Some of the concepts originally coined to describe the rural-urban interface in North America or in Europe, as the *peri-urban* concept itself or the more widely used in English literature *urban fringe,* are still in use in the Third World analyses, whereas in the former areas the debate has shifted to the *edge-cities* or *post-suburban landscapes* imagery (Adell, 1999).

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[2] All of these terms which are, in fact, related to the same phenomenon, can be found in literature. For the sake of easier distinction, the term "peri-urban zone" will be mainly used by the authors in this paper.

The paper was prepared within the scientific projects "The role and implementation of the National Spatial Plan and regional development documents in renewal of strategic research, thinking and governance in Serbia" (III 47014) and "Sustainable spatial development of the Danube region in Serbia" (TR 36036) financed by the Republic of Serbia Ministry of Education, Science and Technological Development in the period 2011–2014.

The first attempts to achieve conceptual precision in the peri-urban phenomenon was morphological and functional approach to the *urban fringe*, based on the analysis of features such as density, morphology and land uses changing (ibid). Still, mostly rural geographers argued that the transitional landscapes between city and countryside were not necessarily the result of urban driven processes, thus coining terms as *rurban* or *ruralurban*. Following English urban geographer Thomas (Thomas (1978) according to Matijevic, 2005), who analyzed terminological and conceptual determination of a rural-urban zone, various terms were distinguished in geographic literature: *limited fringe* and *extended fringe*, *rural non-farm*, *urban fringe*, *suburbs*, *suburban fringe zone*, *outlying adjacent zone*, *pseudo-suburbs*, *satellites* and *pseudo-satellites*, and *inner* and *outer urban fringe areas*[3] and lately *peri-urban interface* (Tacoli, 2003; Allen 2003; etc.).

From the 1970s in particular, considerable research was undertaken in this zone, focusing on the patterns of change in the context of the then dominant conceptual framework, that of the central city and built-up area, the rural-urban fringe, the outer fringe and the urban shadow. Such research became very popular in Canada, for instance, during and after the 1970s when it was recognized that this zone was a central part of the structure and functioning of urban and metropolitan regional systems (Bryant and Charvet, 2003).

In domestic geographical literature, a division into three zones of spatial transition of rural-urban (peri-urban area respectively) can be encountered, different in intensity of the influence of urbanization on rural areas and in the conflicts between the urban and rural life. These are: the *inner zone* closest to the city center, which suffers the most intense urban-oriented transformation; the *outer ring* – basically, this is a rural area that includes urban elements; and *urban shadow* – the area behind the outer ring, in which the presence of urban elements is still sporadic, primarily in the form of commuting to the city.

However, these zones represented and still represent important extensions of the living space of major urban and metropolitan systems – as living environments, as environments with different functions in which (Bryant and Charvet, 2003):

- Employment opportunities were developed and resources exploited (particularly agricultural resources);
- Important recreational and leisure activities could be pursued and provided; and
- As environments destined to receive many important infrastructural developments (e.g. transportation infrastructure), or local important industry, particularly in the processing of agricultural products (food industry) etc.

Today, a premise for any kind of development is sustainability. Therefore, this is also the main course for peri-urban zones development. In Table 1, as a result of literature review, the most commonly used current *determinations* and *characteristics* of peri-urban zones are outlined.

Anyhow, each of these definitions is related to city influences on the surrounding area and spatial changes which characterize each city. However, the fact is that in these areas there are numerous conflicts, primarily related to the land use.

Table 1. Determinations and characteristics of peri-urban zones

- Peri-urban zones are fringe zones around cities where new urban land uses and activities are being imposed on a rural landscape; they are *impermanent* – in that as cities grow, their peri-urban areas move outwards;
- The peri-urban zone is the area between an urban settlement and their rural hinterland. Larger peri-urban zones can include towns and villages within an urban agglomeration. Such areas are often *fast changing*, with complex patterns of land use and landscape, fragmented between local or regional boundaries;
- Peri-urban zones are transition or interaction zones, where urban and rural activities are *juxtaposed*, and landscape features are subject to rapid modifications, inducing by human activities;
- Peri-urban zones are critical zones of land cover change, leading to transformations often *neglected* by both rural and urban administrations;
- The peri-urban zone constitutes an "uneasy" phenomenon, usually characterized by either the loss of "rural" aspects (loss of fertile soil, agricultural land, natural landscape, etc.) or the lack of "urban" attributes (low density, lack of accessibility, lack of services and infrastructure, etc.);
- The peri-urban zone is not only a zone of direct impact experiencing the immediate impacts of land demands from urban growth and pollution, but is also a wider *market-related zone* of influence that is recognizable in terms of the handling of agricultural and natural resource products;
- Peri-urban zones include prime agricultural lands, valuable protected areas, forested hills, preserved woodlands and important wetlands, and can provide essential life *support services* for urban residents;
- They are generally places of rapid *ecosystem change*, sometimes deliberate and sometimes spontaneous, although they may contain relicts of old rural ecosystems and some protected natural areas; They are often far more *environmentally unstable* than either urban or rural settings.

(after: Allen, 2003; McGranahan et al. 2004; Fang et al., 2005.; Douglas, 2006; Simon et al., 2006.; Douglas, 2008; Priorr et al.(eds), 2011).

Within the new approaches to researching the development of peri-urban areas, one project stands out – **PLUREL** (**P**eri-urban **L**and **U**se **Rel**ationships), a large research project developed during 2007–2011 within the 6th Research Framework Programme of the European Union, which gathered 31 partner organisations from 14 European countries and China.

PLUREL's main subject of study is the Rural-Urban Region (RUR). This is based on the concept of a Functional Urban Region – an urban core and its surrounding commuting ring – which can extend to include both the rural and peri-urban regions. The RUR, however, extends beyond today's rings of intense interaction with the core city and includes areas of recreational use, food supply and nature reserve functions in predominantly rural areas (Figure 1).

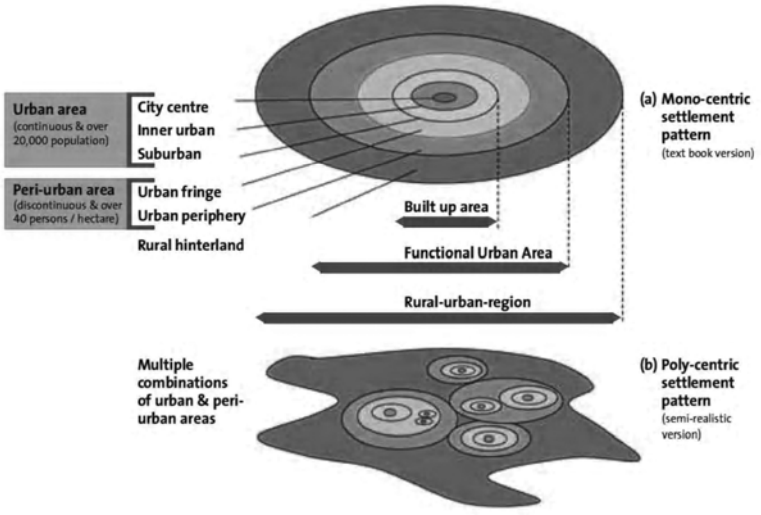

Figure 1. Peri-urban areas and the 'rural-urban region' – Geographic concepts and definitions as used in the PLUREL project. (Source: Priorr et al., 2011. Source: Loibl et al., 2011:25)

[3] See more in Thomas (1978) (according to Matijevic, 2005).

Though most land designated for agricultural use is located in rural areas, the functions of agriculture have to be seen as a complex exchange between urban and rural regions (Figure 2).

There are regions in Denmark, north-western Germany, the Netherlands and Belgium where the land is mainly used for agriculture while also containing an above average share of peri-urban areas. This is also the case in large parts of Poland, the Atlantic coast of France, eastern Italy, parts of Hungary and the south of the United Kingdom. Some are run in a highly intensive manner, often with horticultural production and high economic productivity (e.g. the Netherlands, Denmark, Spanish and French Mediterranean coast, as well as northern and southern Italy). Other regions have a traditionally strong crop or grassland production.

The final recommendations of the PLUREL project stated, among others, "the need for strong government in the shape of legislation and an efficient spatial planning system" and outlined the importance of the green infrastructure and forestry and agriculture within future development in the urbanised city.

LAND USE PLANNING OF PERI-URBAN ZONES – THE ROLE OF MULTIFUNCTIONAL AGRICULTURE AND MULTIFUNCTIONAL LANDSCAPE

Due to its significant economic, environmental and social impacts, the issue of peri-urban zones, the peri-urban agriculture development (as an activity that implies a number of interaction in these areas) and landscape planning are the subject of discussions in many European forums and documents. However, the majority of these documents generally provide constatations regarding the situation in these areas and some recommendations[4].

In order to preserve the peri-urban agricultural zones from the city's constant need for land (for urban growth, industrial and territorial development and infrastructure), some guidelines should be followed: a) applying the instruments for land use and land tenure in peri-urban zones (which will be a result of the instruments of regional and urban planning in the European Union, at national and regional levels); b) reinforcing the principle of subsidiarity (the responsibility of local authorities) at the municipal level planning; c) introducing an obligatory study

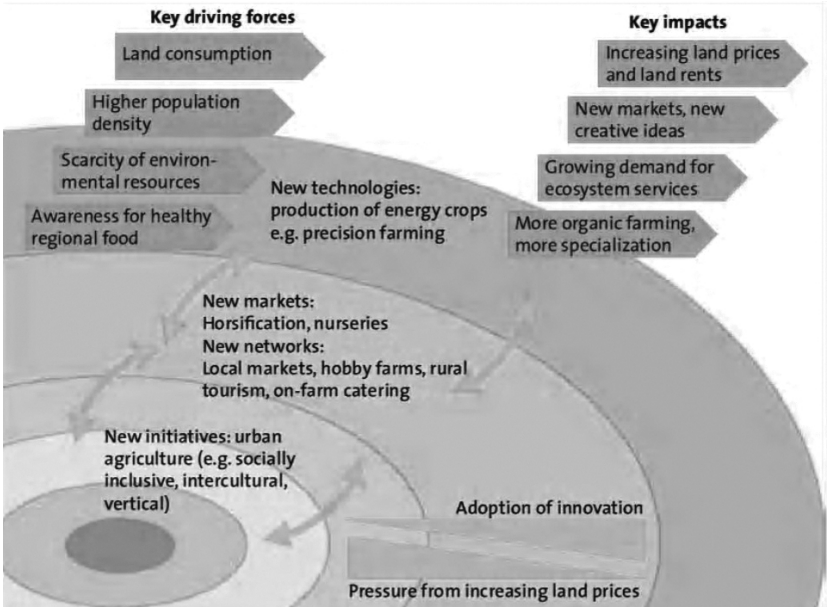

Figure 2. Spatial dynamics of agriculture in peri-urban zones
Source: Priorr, 2011:65.

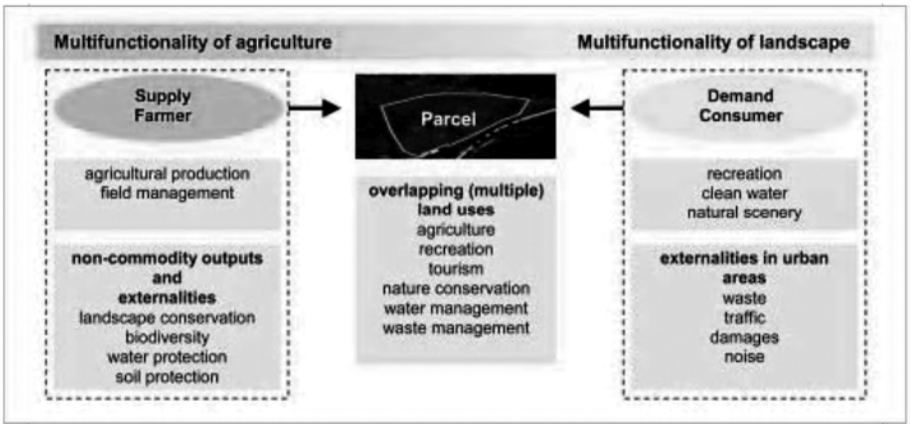

Figure 3. Relationship between multifunctionality of agriculture and landscape
Source: Silber and Wytrzens, 2006:29

on the agricultural impact, which will consider all the planned land use changes in peri-urban zones (EESC, 2004).

Although international conventions, declarations and resolutions addressing problems of peri-urban areas are not binding in terms of adoption, in both the developed and developing countries researchers and planners are increasingly focusing on the role of agriculture in those areas. The positive effects of urban and peri-urban agriculture and its basic perspectives can generally be observed and reflected primarily through the facts that this specific kind of agriculture provides safety and quality food, increases incomes and preserves natural resources and environment.

EU documents define agriculture as a multifunctional, which aims to accomplish the sustainable development in providing food and other "non-market" functions, such as rural development, high living standard and environmental protection. In recent years, multifunctional agriculture, multifunctional landscape and multifunctional land use have been a common subject of scientific research[5]. In most cases, researchers were focusing on developing strategies concerning the preservation of multifunctional urban agriculture and diversification activities on multifunctional farms, but less on the impacts of multifunctional use of agricultural land (Živanović Miljković *et al.*, 2012).

A study conducted for the Linz/Urfahr region in Upper Austria supports the idea of multifunctionality of agriculture in intensively used urban regions. It is considered that agriculture is one of multifunctional landscapes (Silber and Wytrzens, 2006). Figure 3 shows that the spatial unit of an agricultural parcel is the link between

[4] Sustainable Agriculture and Rural Development (SARD); European Economic and Social Committee (EESC); International Council on Agriculture, Science and Technology (CAST)

[5] See more in: Silber and Wytrzens (2006); Van Huylenbroeck et al. (2007); Wilson (2009), etc.

the supply of multifunctional agriculture and social demands for multiple uses of the farms.

The study conducted in Belgium starts from the fact that the agricultural sector is becoming increasingly faced with the pressures of population, environmental policies or spatial planning, but still farming in peri-urban areas undoubtedly has a role in preserving the landscape, improving local socio-economic quality of life, filling the ecological function and so on. In order to maintain this role, it is necessary that "urban areas in agriculture be sustainable" (SPSD II, 2005). This research on the example of Brussels showed that agriculture in peri-urban zones is faced with numerous difficulties (more than it is the case with 'rural' agriculture), which makes the sustainability of these farms vulnerable, so farmers have to deal with the opportunities and threats brought about by the city.

There is a special situation in peri-urban areas due to the fact that they are characterized by overlapping of different land uses as a result of competing interests. As urban areas sometimes have problems to maintain sustainable multifunctional use of agricultural land as desired by population, it is necessary to know how to approach, how to preserve and how to support the aspects of multi-functionality of agriculture and landscape (Živanović Miljković *et al*., 2012).

Recognizing the fact that green spaces in peri-urban zones are environments with important recreational and leisure activities and that they thus provide beneficial goods for urban community (so called "ecosystem goods" or "quality of life" factors – biodiversity, air quality, water, health, recreation), their potential for adaptation to climate change is also notably emphasized within green infrastructure development.

A negative consequence of urban growth in Europe, which may have serious consequences on human health and well-being, is landscape fragmentation, which is especially concentrated in the central part of Western Europe, where only small patches of open space have remained, while the same situation/pattern is also seen in the recreational capacity (Zasada *et al*., 2010). This situation is, as it can be noted, a reflection of the fact that existing international conventions, declarations and resolutions,[6] that have an indirect influence on the planning of green infrastructure in peri-urban zones, still do not provide more extensive and specific guidelines. Further, there is a wide range of regulations covering green infrastructure, such as environment, land use planning, forestry etc., and, as it was stated, mostly specific legislation at the national level is missing, while "...at the municipal level, however, by-laws on tree protection are quite common, even though most of them only provide for partial protection of trees, depending on their dimension or location..." (Knuth, 2005).

The current concepts for the development of peri-urban zones are aiming to satisfy human living preferences – clean air, clean water, green spaces and safe environment for children. Therefore, special attention is given to green infrastructure. In respect to that, two concepts, already commonly applied in practice, can be outlined. The first one is making the compact cites more attractive (The Compact City), where the main challenge is to combine the necessity for a compact city with the people's need for green spaces close to their residence, and, as already stated, "the overall strategy is to counter the suburbanization process by enhancement of the city and improving the quality of life in order to retain residents in the city" (PLUREL, 2011). Examples of this concept are "green metropolis by the seaside in The Hague and a variety of urban renewal and social regeneration projects in Leipzig" (ibid). The goal of the second concept is "preservation and development of green and blue corridors for energy-saving means of transport such as walking and cycling, biodiversity and human health and well-being". The green belt of Leipzig, involving 13 municipalities in a spatial, environmental and recreational strategy, and the Red Rose Forest, covering the 6 western districts of Greater Manchester, are noted as reference examples (ibid).

STAKEHOLDER NETWORKING IN PERI-URBAN LAND USE PLANNING AND DEVELOPMENT – EU PRACTICES

A participatory and multi-level approach to land use planning and management, with the aim of promoting sustainable development of land resources in peri-urban areas, is essential. Following these approaches, in some EU countries there is a practice of stakeholder networking in peri-urban planning and development.

PURPLE *network (**P**eri-**U**rban **R**egions **P**latform **E**urope)* was set up in 2004 and it brings together 16 EU peri-urban regions (Figure 4).

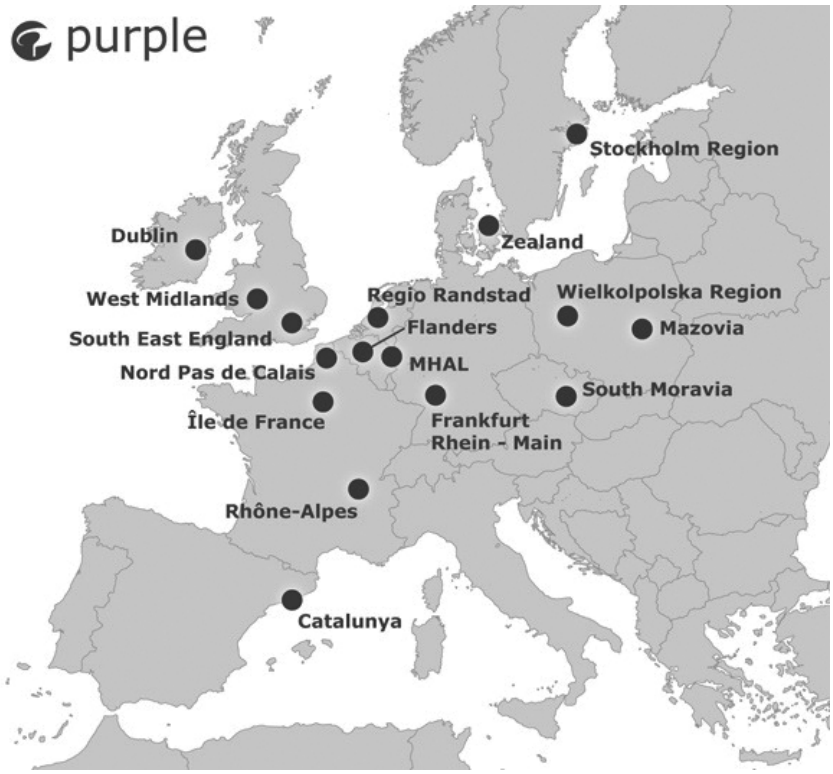

Figure 4. PURPLE network
(Source: http://www.purple-eu.org/about/members/)

[6] UN – Habitat Agenda, Istanbul declaration on human settlements, Agenda 21, United Nations Framework Convention on Climate Change, Convention on Biological Diversity etc.

In its Resolution, this network calls upon the institutions and EU member states to "recognize the importance of peri-urban regions" which play a vital role in planning and directing the changes that lead to multifunctional land use and the multifunctional role of agriculture, regarding both the global competitive production and local sustainable agriculture.

PURPLE is striving for sustainable rural and agricultural development in peri-urban regions. General objectives of PURPLE are related to: successful socio-economic transition in peri-urban areas and their agricultural sectors; influence on European regional and rural policy making; acting as the primary interlocutor with EU institutions and stakeholders on issues of special relevance to peri-urban regions; and acting as a platform for peri-urban regions to share knowledge and good practice, allowing connections between existing projects, as well as promoting new trans-European initiatives in this field[7].

Arco Latino Network was established in 1999 and officially inaugurated in 2002, and it covers the western Mediterranean and includes the provinces and local administration level of four EU countries-Spain, France, Italy and Portugal. It is a geographical region with 70 million people, spread over coastal regions, islands and border regions[8].

Arco Latino is a space for cooperation between territorial units in which integrated actions in different strategic spheres can be carried out, with the aim of strengthening economic and social cohesion in EU regions, which is crucial for the process of balancing between northern and southern Europe. Arco Latino meets the needs of local authorities, often unknown and undermined at the EU, national and regional levels.

Terres en Villes is a network of local bodies involved in agriculture in peri-urban areas of France. As such, the network also supports all forest and uncultivated land in peri-urban areas. The network is particularly interested in the sustainability of the built and urban areas, and currently has 27 agglomerations in France, and, for each agglomerations, a board for inter-municipal agglomerations and local agricultural chambers, or similar bodies.

Many members – generally representing chambers of agriculture, conurbation councils or urban authorities in Grenoble, the Voiron region, Lille, Lorient, Lyon, Nantes, Rennes, Saint-Étienne, etc... – and the network itself

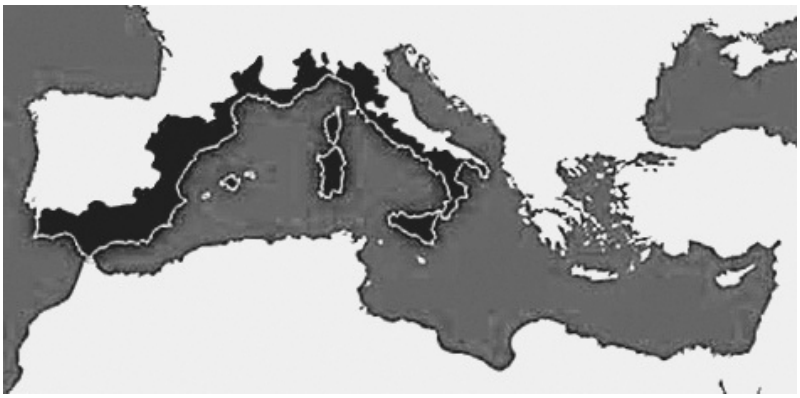

Figure 5. ARCO LATINO network
(source: http://en.developing-periurban-projects.eu/index.php?id=16)

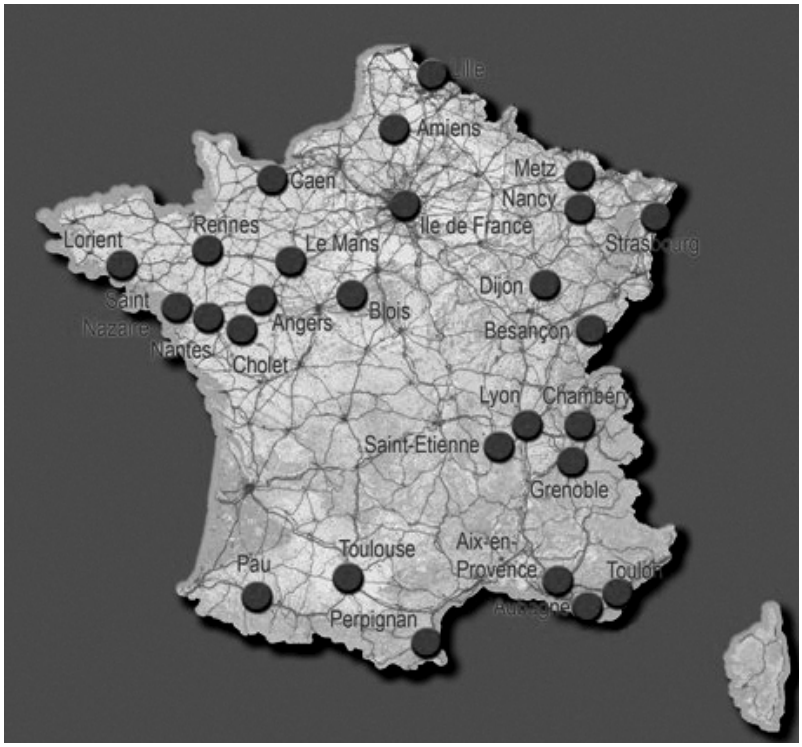

Figure 6. TERRES en VILLES agglomeration network
(source: http://www.terresenvilles.org/agglomeration.php?PHPSESSID=36565047d2baf2300dd5a71db51f7205)

(the Leonardo program) have taken part in cross-border or transnational European programmes, and work in close collaboration with European bodies actively involved in peri-urban areas and farming.

The network and its members are actively involved in collaborative drawing up of peri-urban agricultural policies, protection and successful exploitation of agricultural, wooded and natural peri-urban areas and contributing to the development of European policies in peri-urban farming and uncultivated areas[9].

LAND USE PLANNING IN PERI-URBAN ZONES IN SERBIA

The regulatory and planning framework of the development of peri-urban areas in Serbia is outlined in the Law on the Spatial Planning of the Republic of Serbia, which defines these zones as "zones of transition, in which interactions between urban and rural activities overlap or conflict, and the characteristics of the area are subject to rapid modification caused by human activity" (RS Official Gazette, No. 88/2010). In this framework, peri-urban areas are treated primarily through the prism of agricultural land protection and the specific character of urban-rural areas, that is the

[7] http://www.purple-eu.org/about/

[8] http://www.arcolatino.org/index.php?method=section&id=2012

[9] http://en.developing-periurban-projects.eu/ index.php? id =16

control and the implementation of appropriate urban and spatial planning measures for preventing overall taking of fertile land in peri-urban areas for non-agricultural purposes (as a result of illegal and unplanned construction). Therefore, the guidelines for resolving conflicts in this respect (between non-agricultural activities' needs for space and the importance of the continuous course of agricultural production for the preservation of natural and landscape values of the city and its surroundings) are provided by the restrictive measures of urban planning, while imposing standards on use of agro-technical measures that do not threaten the environment and the safety and quality of food.

Therefore, there is no specific legal basis in Serbia for planning peri-urban areas, but the positive examples of strategies and regulations are present (though insufficiently), mostly at the local level, which treats, in a sustainable manner, agriculture (e.g. Strategy for agricultural development of Belgrade) and greenery (protection of forests in Vrnjačka Banja) in peri-urban areas.

The problem of peri-urban areas in Serbia, especially in Belgrade, which has a large swathes of agricultural land in its hinterland (Живановић Миљковић, 2009), has not been given enough attention in the social and legislatory sense, in terms of unplanned, unregulated and uncontrolled construction. Often, present individual housing is not sufficiently rational regarding population density or infrastructural and suprastructural equipment. The impacts of agricultural soil occupation are magnified by unplanned and inadequate human activities, including insufficient safety measures. Advanced and integrated land use, planning and natural resource management have a critical role in reducing non-adequate soil use (Živanović Miljković, 2008). In addition, rural areas are not only relevant for the users of urban areas, but also indirectly for suppliers to the city. Although Serbia is not a member of any European project regarding the development of peri-urban zones, this fact does not constrain the existing practice of using modern development frameworks for peri-urban zones. In this sense, an example of good practice can be seen in the extract from the Detailed Regulation Plan for Block 23 in Bela Crkva. The peripheral position of this block, in the peri-urban zone with agricultural hinterland, with its planning solutions promotes the development of peri-urban agriculture in the scope of green spaces (Манић *et al*., 2011).

From the point of view of green infrastructure planning, it should be stated that current legal framework does not give adequate support (Draft version of the Law on planning and management of green spaces is still in the adoption procedure (Манић *et al*., 2011)). However, the situation in practice indicates that special attention is given to the sustainable development of green infrastructure within peri-urban zones. Thus, the Master urban plan for Vrnjačka Banja (spa), as it was pointed out (Marić *et al*., 2005; Црнчевић and Бакић, 2005; Crnčević and Bakić, 2008; Црнчевић *et al*., 2010) promotes the concept of establishing the conditions for the development of green rings around the constructed areas and dislocation of the construction areas from the centre to peri-urban zones (Figure 7). The concept of green spaces expansion in peri-urban zones is conditioned by impossibility of Banja's park growth.

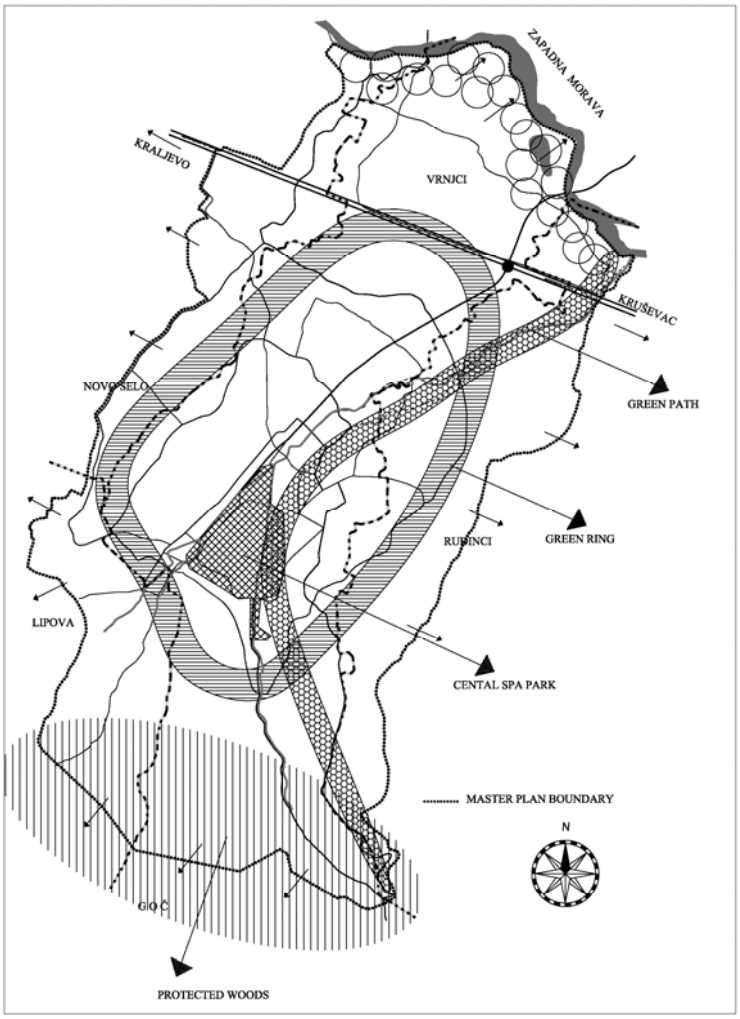

Figure 7. Green infrastructure in a function of peri-urban zone development
Source: Crnčević, Živanović Miljković, 2010

On the other side, the concept enables the prevention of uncontrolled development and stimulation of planned construction of the spa and its peri-urban zones, as well as the activation of these zones by linking the forests of Vrnjačka Banja and Mount Kopaonik (over Željin and Goč mountains) with the aim of preserving landscape features, microclimate, protection and development of tourist and recreational values. Furthermore, it can be noted that in the Master urban plan for the city of Valjevo, which promotes the development of green corridors along the rivers (Kolubara, Gradac, Obnica, Jablanica and Ljubostinja), they are multifunctional (cultural, historical, environmental and economical aspects) and they connect the area of the Master plan with the Spatial plan of the municipality, urban, peri-urban and rural area, protected zone Brankovina in the north, Valjevo mountain nature park, Hydropower Stuborovni and the area of Petnica and Mount Divčibare in the southeast (Црнчевић and Бакић, 2006).

CONCLUSIONS

Peri-urban zones in Europe, as well as in Serbia, are faced with over-pressure. The necessity to re-establish the balance between

sustainable agriculture and urban, spatial and economic dynamics has been emphasized. For those living and working in peri-urban regions there are opportunities as well as challenges which should be reflected in strategic policies and strategies. Management of peri-urban zones requires an integrated approach to all the activities and land uses occurring within them.

So far, both in European institutions and in Serbia there has been a lack of recognition of the need for specific policies or support to peri-urban regions in particular. In this regard, this review came to certain conclusions which can be a recommendation for domestic urban and spatial planning practices, with particular attention directed towards the planning of peri-urban zones. In this sense, we provide certain recommendations, which are mainly related to those parts of the environment which we focused on in this paper – to agriculture and agricultural land and the greenery:

- Agriculture and green spaces in peri-urban areas should have the perspectives which will make the whole zone sustainable; it is necessary to promote the concept of multifunctionality in the planning process of peri-urban zones, as the basic concept which supports the sustainable development of numerous interactions in these zones. The contribution of local planning practices in this area would be in the planning commitments that provide flexible instruments favouring multifunctional agricultural use of agriculture and conservation of the attractive and functional rural landscape in a ring around the city, instead of creating rigid spatial planning solutions;
- On the regional and local levels there should be encouraging initiatives for the remaining agricultural production in peri-urban zones as the main potential of the city, which does not require high transport costs and shortens the distribution chain of food products;
- Establishing the network of local bodies involved in agriculture in peri-urban areas should be considered, which can gather all municipalities targeted with inter-urban spreading, with the aim of protecting and successfully exploiting agricultural, forested and natural peri-urban areas;
- Encourages bottom-up initiatives and further development of strategies and legal framework which will contribute to preserving agriculture, as well as to green spaces which provide beneficial goods for the urban community (biodiversity, recreation, air quality, water, health), taking into account their importance in mitigating the impacts of climate change; and
- Support current concepts in planning practice and research covering sustainable urban-rural relationships.

Acknowledgements

The authors would like to thank the reviewers for their valuable comments and suggestions, which helped strengthen this paper.

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Received October 2012; accepted in revised form December 2012

VERSITA

SPATIUM *International Review*
No. 28, December 2012, pp.23-29

UDC 911.37:314.116/.117(497.113) ;
711.4/.7(497.113)
Original scientific paper
DOI: 10.2298/SPAT1228023K

SPATIAL-FUNCTIONAL ORGANIZATION OF SETTLEMENTS IN VOJVODINA

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This paper summarizes the results of recent exploration of spatial and functional organization of Autonomous Province of Vojvodina in the Republic of Serbia (hereinafter referred to as "Vojvodina") based on identification of the level of development of spatial and functional connections and relationships within its settlement network. The research is theoretically and methodically based on principles of regionalization and recent doctrines of regional development, contemporary spatial planning and social and economics disciplines of social geography. Results to a great extent identify and scientifically explain problems of the development of spatial and functional organization of settlement network in Vojvodina. Based on these results, a recommendation for a possible model of a sustainable settlement network in Vojvodina has been given.

***Key words:** Spatial and functional organization, regional spatial planning, Vojvodina.*

INTRODUCTION

Settlements in Vojvodina represent a relatively stable, conditionally homogeneous and polycentric settlement system where medium-sized cities (in demographic sense), suitably and evenly distributed on its territory, are the major structural elements. The settlement system of Vojvodina has so far been a subject of many scientific research studies from the realm of physics and social geography. However, there is an impression that so far the aspect of spatial-functional relationships and connections in the Vojvodina settlement network as a whole has not been sufficiently investigated in an adequate way. The fact is that settlement systems are also very dynamic and complex categories, so that their continuous research is an imperative. The constant and continuous need for spatial planning and other development policy instruments to have an appropriate scientific explanation of conditions for the existence and effects of the development of hierarchical structure and spatial-functional relationships and connections within the settlement network, goes in favor of the need for settlement system exploration.

SPATIAL AND FUNCTIONAL ORGANISATION PARADIGM

Theoretical and methodological starting points of Vojvodina settlement network exploration are based on spatial organization paradigm based on functional-process approach and nodal regionalism whose instrument is the urban region. The nodal region (Symanski, Newman, 1973, Tošić, 2000, Tošić, Nevenić, 2007) concept based on empirically determined fact that urban settlements through their activity influence the regional integration and differentiation of a complex and heterogeneous space, thereby creating specific spatial systems known as urban (nodal or functional) regions, or functional-urban regions, is in the basis of a functional-process approach in the exploration of relationships and connections within settlement network. Thus, urban region is a space of functional integration of cities and settlements in their influence zones.

The **process functionalist** approach gives the character of evolutivity to the spatial-functional structure of settlement network because the relationship between elements of settlement system is changing and dependable on strength, intensity, quality, time duration and territorial range of connections between them. Urban regions develop under conditions of dynamic processes of concentration and decentralization of functions, population, jobs, and public services, i.e. under conditions of successive turns of stages of urbanization. Evolutive stages of the development of urbanization are synchronized with the achieved economic development, i.e. level of socio-economic transformation of population.

In the research, the Vojvodina settlement network was considered as a complex, open and dynamic urban region system. Functional-process approach and nodal regionalization based on it are scientific concepts of a balanced regional development and decentralization of the European Union (EU), both at macro- and mezzo-regional, as well as local level. Finally, this approach was also implemented in the Spatial Plan of the Republic of Serbia (SPRS, 2010), further elaborated in regional spatial plans.

The research has yielded the results which to a great extent confirm the following hypotheses (Krunić, 2012):

1. Vojvodina settlement network is a sub-system of settlement network of Serbia, with a complex and dynamic spatial-functional structure whose organization is the manifestation of interaction between numerous internal and external factors stemming from natural-geographic, settlement,

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The paper was prepared within the research project „The Role and Implementation of the National Spatial Plan and Regional Development Documents in Renewal of Strategic Research, Thinking and Governance in Serbia", number III 47014, financed by the Republic of Serbia, Ministry of Education, Science and Technological Development.

demographic and socio-economic specificities of the territory and its surroundings.

2. The basis of contemporary settlement network in Vojvodina is made up of urban regions which have successively developed through stages of urbanization of a polycentric character, which is spatially implicated by a dispersive distribution of urban settlements, but also by a higher level of socio-economic transformation of rural settlements compared to other parts of Serbia.
3. Through influence of towns/cities with central places functions, a complex and dynamic spatial-functional structure of settlement network has been developed in Vojvodina. Urban region is made up of a core (town/city, central place) and influence zone with socio-geographically and socio-economically transformed settlements with a certain level of urbanity.
4. Spatial-functional connections manifested through movement of population, material goods and information, specifically manifesting themselves in the form of Daily Urban System (DUS) have developed within urban regions. The level of development of urban commuting within the settlement network in Vojvodina is an indicator of the development of spatial-functional relationships and connections within it. There are a lot of analogies between urban regions and daily urban systems of settlement network in Vojvodina.
5. By their hierarchy, urban regions are differentiation factors, but also factors of integration, as well as factors of the spatial directing of the development and organization of settlement network in Vojvodina. Thus, they are also instruments for the complex research, planning and directing of overall development processes. The development of spatial-functional relationships and connections in settlement network of Vojvodina can be controlled and directed towards the accomplishment of strategic development goals through a system of planned measures and actions.

PROCESSES AND TRENDS IN SPATIAL-FUNCTIONAL ORGANIZATION OF URBAN REGIONS IN THE EU

Urban regions are a product of complex interactions between towns/cities and their surroundings (Figure 1). Degree of influence of urban regions on spatial-functional integration and differentiation in geographic space is directly dependent on the transition stage of urbanization of a subject space and society. Early industrial phase of urbanization is followed by polarization effects, reduced over time through phases of gradual decentralization of urbanization. Urban regions have developed under conditions of permanent dynamic concentration and deconcentration processes, i.e. under conditions of successive turns of polarization and decentralization phases of urbanization (Tošić, 2000).

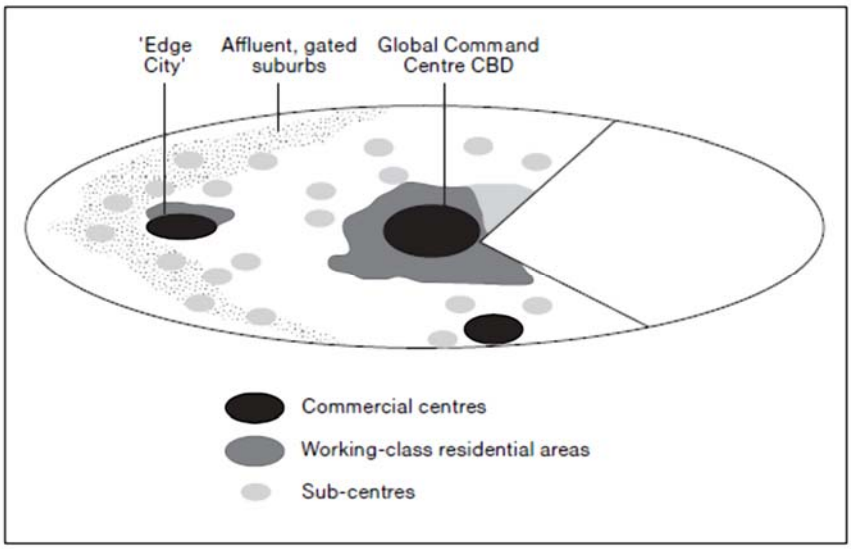

Figure 1. Model of postindustrial world metropolises (Hall, 2006).

In the EU, areas of functional integration and multimodal corridors have been defined, conceived on spatial organization paradigm. This should contribute to the creation of an integrated urban system of balanced hierarchy and strong spatial-functional connections (Hall, Pain, 2006, Tošić *et al.,* 2009). The Metropolitan European Growth Areas (MEGAs) model has been proposed within the INTERREG[2] program as the most coherent model of the EU decentralization and balanced development.

The concentration, as a result of the center/periphery concept and general regularities in economic development (Mihajlović, 1970, Peru, 1986) has become a precondition for polycentric development. In regions with greater population density, functional division among towns/cities is more intense, i.e. diversification and specialization of functions is faster. The formation of functionally connected urban/agglomeration systems in this region provides more favorable possibilities for future regional development through increasing the general quality and specialization of services and business conditions. In less populated regions, potentials for developing functionally connected agglomeration systems are limited, primarily because of distance between urban centers themselves.

Socio-economic transformations and their spatial manifestation in urban systems of former socialist countries, which are today member countries of the EU or are in different stages of the process of integration into the EU, have many common characteristics, but they more indicate the accelerated development of unfavorable center/periphery structure. The recent exploration of socio-economic transformations of population in Croatia, as well as social space of the city of Zagreb, indicate significant negative changes. After 1990, the urban social segregation has been increased (Prelogović, 2004). There is a pronounced correlation between the population size and achieved level of socio-economic transformation, or functional integration into urban region (Bašić, 2004, Bašić, 2005; Ilić, Toskić, 2004). The post-industrial development of Slovenia is characterized by general global trends affecting the economic, social and spatial development of the city: concentration of capital, knowledge, jobs, and highly qualified labor, infrastructure, etc., in larger cities; the tertiarization and specialization of production; regional centralization and increased social segregation (Ravbar, 1997, Pak, 2003, Rebernik, 2004). The metropolization process, which started in Poland back in 1980s, has been intensified, but in new spatial and social relationships. Economic, social and spatial transformations of cities and urban regions are almost identical to those in other former socialist countries (Lisowski, 2004). The situation is similar also in Romania where the development-planned regions have been formed aiming at reducing regional disparities. These disparities have been intensified particularly after approaching and later accession of the country to the EU, due to inflow of the greatest part of foreign

[2] Initiative to stimulate cooperation between regions in the EU.

direct investments in Bucharest and several regional centers. Demographic processes are marked with massive migration of working-age population into developed EU countries, as well as migrations from de-industrialized cities into rural areas (Benedek, 2006, Ianos, 2010).

PREVIOUS RESEARCH ON NETWORK OF SETTLEMENTS IN VOJVODINA AND THEIR ROLE IN SPATIAL PLANNING

The research on settlements in Vojvodina has a long tradition, almost as long as the process of their contemporary continual development itself, initiated in the 18th century, aiming at reorganizing the existing and create new settlements. Geographical research and results obtained mainly after the WWII are shown in this paper (Krunić, Tošić, 2011). The papers presented below particularly deal with spatial and functional aspects of emergence and transformation of settlement network in Vojvodina.

Bukurov (1983) classified the geographic basis of emergence and development of settlements in Vojvodina, in the paper under the same title, into natural and social ones. Analyzing the position of settlements in Vojvodina, Ćurčić and Đuričić (1994) continued Bukurov's research from the aspect of geomorphological, mainly orohydrographic characteristics (position, shape and structure of settlements). Ćurčić (1991) explored and defined general conditions in which contemporary settlement network in Vojvodina emerged. Đere (1979) considered the urbanization in Vojvodina after WWII from the aspect of spatial planning: spatial manifestation; emergence of a complex urban network structure; urban population growth; and changes in urban hierarchy. He also analyzed the towns/cities, as main holders of production and service functions, as well as bigger rural settlements, which over time formed a „complex and extensive territorial division of labor" as a result of „general economic and social development of space" (Đere, 1984). Ćurčić (1993) concluded that settlements developed in changing political, economic and cultural ambiences. The functional transition from rural to urban-type settlements, with accompanying functional restructuring and diversification, is typical for towns/cities in Vojvodina. In addition to industrial development, the administrative development was also important for the development of cities, thus also other functions, thereby intensifying population density (Ćurčić, 1989). In one of the first research works on daily commuting in our literature, Bajić (1971) associated its development with intense development of industries and related activities (through the concentration of economic activities in cities, the workplaces and places of residence became separated) and agricultural mechanization (creating labor surplus in rural areas),. The development of cities in Vojvodina was characterized by „agrarian urbanization", so that in these areas, over a long period of their development, only several cities got a polyfunctional character: Novi Sad, Subotica, Zrenjanin and Pančevo. Analyzing the standard deviation according to groups of activities, authors noticed territorial dispersion and heterogeneity of urban functions (Đuričić, Romelić, 1993). Perišić (1985), while exploring the agglomeration system of Serbia, started from inter-dependence of the development of network of settlements in general, urban settlements and transportation, as well as regularities in emergence and formation of „group forms" in these networks. He identified primary and secondary agglomeration systems in Vojvodina. Veljković *et al.* (1995) with associates analyzed the place and role of cities in the settlement network of Serbia as a whole, elaborating the hypothesis of four phases of development of towns/cities and formation of development axes. Recognizing the basic factors of emergence and development of settlements in Vojvodina, Dorić (1985) considered the transport–geographical position and relief dominant. Taking that the city in spatial planning could not be considered separately and without its sphere of influence (gravitating zone), he considered that urban functions and their range were the measure of „activities" of the center and „absorbing power" of its surrounding. He noticed that these influence zones were spaces of fast and unplanned changes in the way and intensity of using suburban land, as well as that they were accompanied by socio-economic transformation of population.

In the SPRS (1996), settlement networks are considered as instruments of rational functional organization of space. According to the specified criteria, 34 functional areas have been defined. In SPRS until the year 2020 (SPRS, 2010), the tendency to form polycentric urban system is also a major plan determination. The concept of development harmonization of network and functions of centers is instrumentalized by the Plan by defining Functional Urban Areas (FUA). Elaborating the concept of development of settlement systems specified in the SPRS 2010, the Regional Spatial Plan of AP Vojvodina (RSPAPV, 2011) recognizes the hierarchical and polycentric settlement system. It has been concluded that functional connections and relationships in Vojvodina are characterized by coherence, which is to be improved by better functional connections between regional, sub-regional and municipal entities, and particularly by improving and strengthening horizontal–spatial connections between centers.

SPATIAL ORGANIZATION OF VOJVODINA

Contemporary spatial-functional organization of settlement network in Vojvodina has been considered though the analysis of dynamism and spatial distribution of its population (Krunić *et al.,* 2011), economic activities, infrastructure connectivity, and changes in land use, while functional relationships and connections have been considered from the aspect of urbanization expanding process and manifestation of daily commuting of labor force.

The polarization process has been identified in Vojvodina, i.e. in its settlements system, manifesting itself through increasingly intense concentration of population, on the one hand, and increased depopulation, on the other hand (Figure 2, Figure 3). There is a growing number of large settlements in terms of populations size, with simultaneous increase in percentage of their population in the total population, whereby disperse focal points of concentration are formed. These zones are centers or important sub-centers of urban regions. Contrary to this process, the number of small settlements is increasing, at the same time maintaining the percentage of their population in the total population at the same level, which indicates the deconcentration process. Settlement groups in this zone are mainly in border areas in North and Middle Banat. To summarize: The polarization of spatial distribution of population of Vojvodina is intensified and accelerated. The Belgrade-Novi Sad metropolitan area whose sub-center is Pančevo, and prospectively Zrenjanin and Sremska Mitrovica, gains in importance in intensification of the polarization process in Vojvodina.

Urbanization process in the settlement network in Vojvodina has conditionally taken place in two stages. Early stage, after WWII until the beginning of 1980s was characterized by polycentric polarization in which, besides Novi Sad and Subotica, other towns/cities, equal by demographic size, were: Zrenjanin, Pančevo, Sombor, Kikinda, and Vršac. In the second stage, lasting longer that the first one, the settlement network of Vojvodina has developed

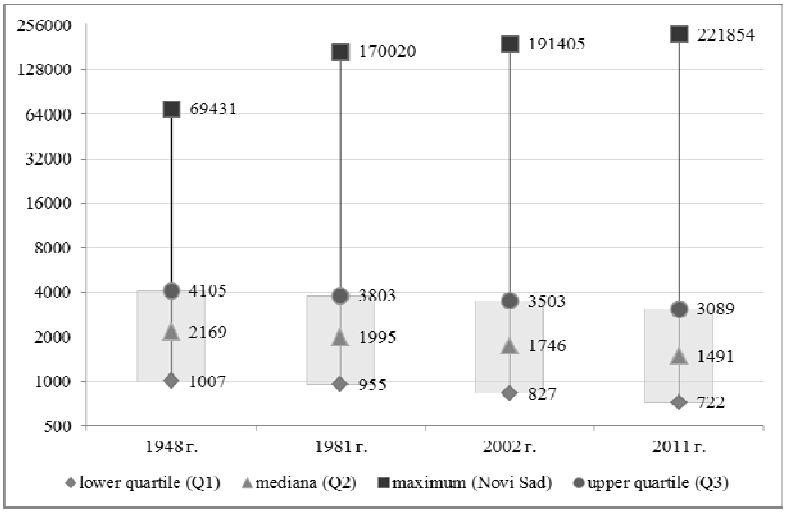

Figure 2: Box-plot analysis of number of inhabitants in Vojvodina settlements according to selected census years. Number of inhabitants shown on ordinate is a logarithmic sequence to base 2.

under the influence of monocentric polarization in which Novi Sad has a dominant role, while other, once developed urban centers, have begun to lag behind. This is particularly pronounced in towns in Banat: Kikinda, Vršac and to some extent also Zrenjanin.

Administrative position of centers also determines their economic importance, thus strengthening the labor demand function. Municipal and urban centers are poles of economic development in which sub-regional and local labor force is concentrated. However, with the recession of industrial sector and related service sector, the polarization of work centers has begun. It is assumed that larger centers have maintained their economic importance, thus clearly determining daily commuting, as well as migration of population in general. This additionally reduced functional capacity of smaller centers to mainly administrative and public service functions. The „vicious circles" (according to the Myrdal-Hirschman concept, explained in: Bradford, Kent, 1977, Ocić, 1998, Fujita *et al.*, 1999) is thus accelerated, because the reduction of functions will stimulate emigration, thereby making it more difficult to maintain administrative-public function. However, the deindustrialization, wrongly understood as a complete closure of factories and not as the evolution of industry towards technologically more advanced and flexible branches along with synchronized development of tertiary sector, has changed economic structure of Vojvodina, and Serbia as a whole, causing severe consequences on overall social development.

Further development of public services, as well as other services in Vojvodina and Serbia as a whole, will be at odds with constitutional rights and declared standards, on the one hand, and economic conditions, under the Christaller's principle of „minimum demand", on the other hand. Favoring the economic viability over approximately equal social standard has brought about changes in functioning and hierarchical organization of a part of public services (social and health care, education). Further effects will manifest themselves according to the already mentioned negative spiral. Despite obvious polycentric settlement network in Vojvodina and quality infrastructure connections, it is not clear why the concentration of otherwise spatially completely indifferent activities in Novi Sad and other centers of the region, is still insisted on (a part of the functions of health care, education, defense and police, while completely the functions of social and public services).

The level of development and spatial distribution of infrastructure systems in Vojvodina, particularly transportation infrastructure, enable relatively homogeneous development of economy and complementary services. Problems in infrastructure system functioning are of technical/technological and organizational character with increasingly present negative effects of minimum demand. Peripheral centers of Sombor and Kikinda urban regions, and to some extent also Vršac, have reduced development possibilities due to absence of valorization of cross border connections with Croatia, Hungary, and particularly Romania. For example, considering that Romania has problems with regional disparities and distance of its capital city, Bucharest, from development centers in the EU, Temisoara has a role of a gateway city / transport hub. Therefore, there is no reason for Serbia, Vojvodina and local self-governments not to valorize new transport function of peripheral centers in Banat. Railway traffic, waterways and airports are not operational, or are unjustifiably neglected.

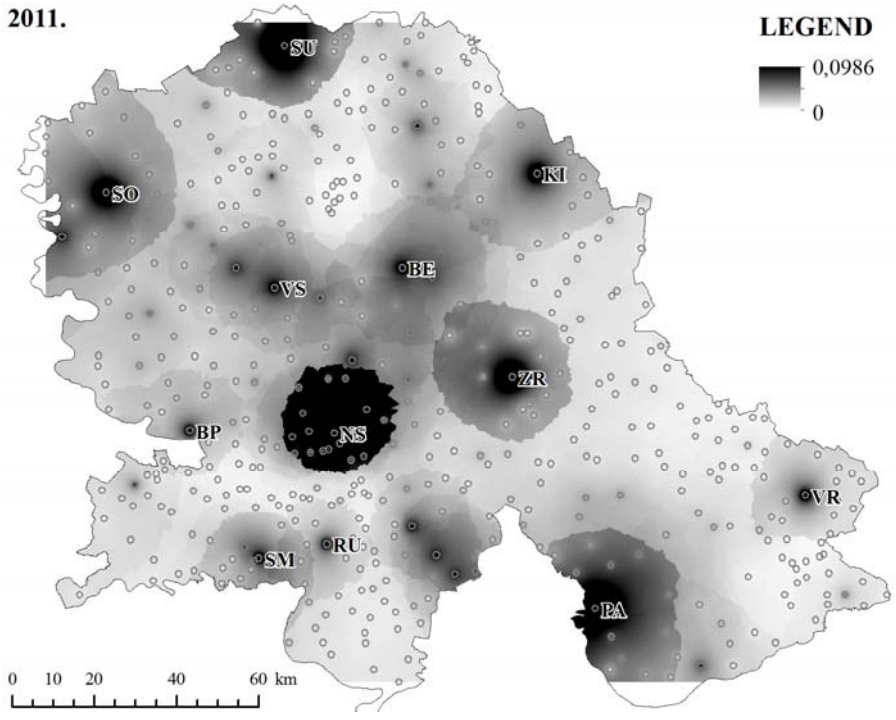

Figure 3. Model of population distribution according to rank size rule in the year 2011

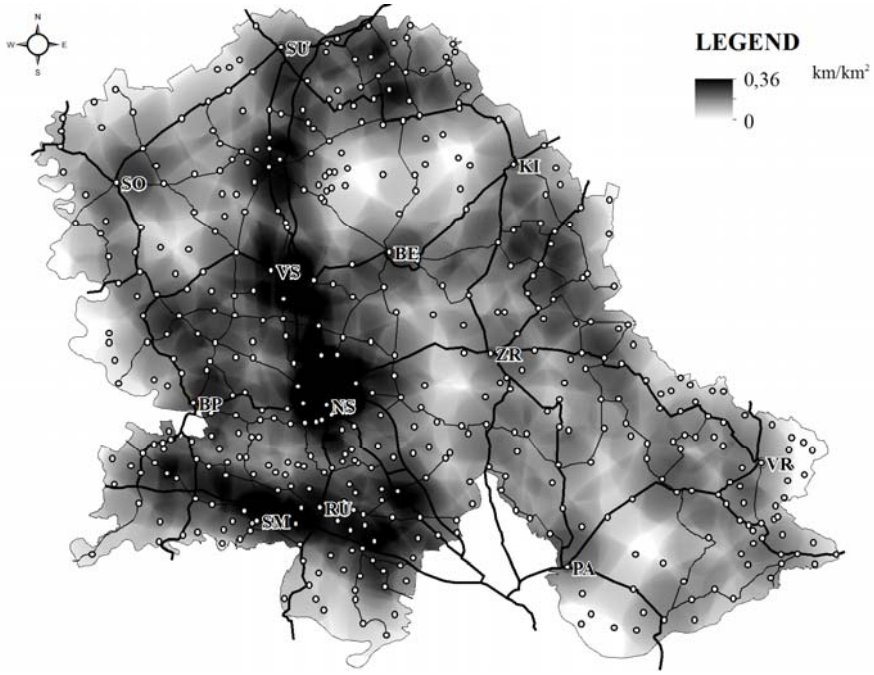

Figure 4. Centers of transport importance according to the density of road network per km².

Based on the presented analyses of the distribution of population, settlements, road network (Figure 4.) and its burden, there is a clear analogy: hierarchical importance of centers - hierarchical importance of roads – level of development of transport functions (traffic intensity). Settlements and transport corridors connecting them create a spatial structure, **axses** or **development belts** (Vresk, 1993), characterized by dynamism and concentration of population, economy, services and capital. Existing road network and development impulses spreading around them have created morphologically visible and functionally determined zones of more intense development. These zones are being formed between the following urban centers: Belgrade-Novi Sad, Belgrade-Pančevo, Belgrade-Sremska Mitrovica, Novi Sad-Subotica, Subotica-Sombor, Crvenka-Kula-Vrbas-Srbobran, Novi Sad-Bačka Palanka, etc. More intense changes in land use, particularly transformation of agricultural land into land intended for commercial facilities, will take place in wider and narrower zones of these development axes, whereby spatial conflicts and conflicts of interest will become prominent. To this end, besides urban areas functionally defined in the SPRS, the development axes are certainly to be considered as major instruments in planning and development of space both at national and regional level, into which it is necessary to integrate different strategic and sectoral development policies.

SPATIAL AND FUNCTIONAL RELATIONSHIPS

It has been empirically noticed and scientifically ascertained that development processes shift from cities-hubs of urban regions into surroundings through sub-urbanization, de-urbanization and daily population mobility. Many examples have proven the hypothesis that the intensity of daily commuting of working population and size of urban areas are in directed correlation with the intensity of socio-economic transformation of regions (Tošić *et al.,* 2009, Krunić *et al.,* 2009).

By their intensity and spatial range, the urbanization impulses reflect functional importance of centers. Morphologically, they most frequently manifest themselves in the form of concentric circles or linear systems where urbanity declines with distance from centers. However, some sub-regional differences are obvious. Zones of more intense urbanization are located around Novi Sad, in South Bačka and Belgrade-Novi Sad metropolitan area. Lower level of urbanization is found in zones with greater concentration of rural settlements without significant centers in north-eastern (Kanjiža-Kneževac) and south-eastern Banat (Sečanj-Plandište). Urbanization has a greater influence on "more rural" settlements, i.e. those with a lower-level socio-economic transformation. Furthermore, in settlements with similar functional capacity and spatial closeness there are noticeable effects of agglomeration and polycentric complementary development (Crvenka-Kula-Vrbas-Srbobran and dual-center system along the Tisa River). Analysis of the level of urbanization shows two apparently opposite processes in urbanization belt between Belgrade and Novi Sad: urbanization zone is extended, but in plenty of settlements a decline in urbanization has been observed. Here, the centers of metropolitan areas have a negative polarization effects on settlements in immediate surroundings. Thereby, the model of the level of urbanization highlights the problem of regional disparity: in which moment and under what conditions the positive impulses from centers towards settlement surroundings, which stimulate their socio-economic transformation, will become negative, thus having influence on weakening in functional capacities of settlement surroundings making them totally dependent on centers, with accompanying degradation of their socio-economic structure?

In Vojvodina, DUS have developed in the function of general development trends. They have formed the complex, hierarchized and dynamic spatial-functional structures (Figure 5.). According to territorial range and intensity, twelve centers of daily commutes stand out. There are plenty of differences between them, so that they can be classified in several groups and sub-groups. Influence of Belgrade on scope, directions and spatial manifestation of daily mobility of workers from Vojvodina is significant and closest to Novi Sad, thereby also obtaining the function of one of the primary DUS in Vojvodina. Other centers in the contact zone, like Šabac and Smederevo, have a local importance. To summarize: DUS in Vojvodina have territorially expanded, at the same time increasing the functional dependence of settlements whose residents commute from work centers. However, there are two assumptions according to which this is rather a matter of growth, and not development of DUS. The first assumption is based on depopulation process, whereby, besides the population decline, the population's median age advances, thereby also a relative percentage of active population, with a simultaneous decline of its absolute size. The DUS territorial range is thus expanding due to smaller capacity of surrounding settlements to „respond to the demand" of centers for labor force. The other assumption refers to disturbance in the general economic structure of Serbia, thus also Vojvodina, hitting more the industry and former agricultural combines and less the tertiary sector. At the same time, this process was spatially uneven, so that more important economic capacities and services remained in

larger urban centers. The employment opportunities in places of residence have thereby been diminished, thus intensifying the daily commutes. However, it is crucial to continue to explore to what extent is daily commuting of workers under local conditions merely a phase leading to their permanent move into urban centers?

Daily urban systems of Vojvodina are structures interweaving in space and time. They are more intense in centers of pronouncedly different hierarchical ranks (e.g. Novi Sad-Bačka Palanka) where the lower-rank center is a focus of local integration and, at the same time, a sub-center of a higher-rank system. At centers of approximate functional capacities, wider delineation zones are formed in which there are settlements conditionally independent or equally dependent on both centers (Čenta between Belgrade and Zrenjanin, Bajmok between Subotica and Sombor, etc.). It has been concluded that distance between centers is of great importance in polarization and integration of space. Greater zones of periphery have been created where distance between centers is greater than their functional capacities, e.g. to the south-west of the Subotica-Kikinda line and in Zrenjanin-Vršac-Pančevo triangle. In this sense, the growth and development of daily urban systems is in the function of the traffic network level of development. There are two kinds of preconditions for the development of local work centers. They emerge as sub-centers in zones of interweaving of higher-rank DUS, or at sufficient distance from them, in order to develop independently. One gets an impression that sustainable development in the long run is more possible in poly-nodal urban systems than in mono-nodal ones.

By implementing the model of DUS determination, daily urban systems in Vojvodina have been defined, as well as functional differentiation of settlements within them. Settlements are classified into five groups which, according to settlement type, have the following major characteristics:

1. **DUS center or core** is a settlement with a pronounced concentration of workplaces. Besides Novi Sad, the largest urban settlements in Vojvodina also belong to this group.
2. **DUS secondary center** is a settlement with considerable concentration of workplaces. This group comprises larger urban settlements in Vojvodina, i.e. municipal centers. Due to its relatively big share of daily commuters in the total number of workers, Pančevo, as a sub-center of Belgrade agglomeration, also belongs to this group.

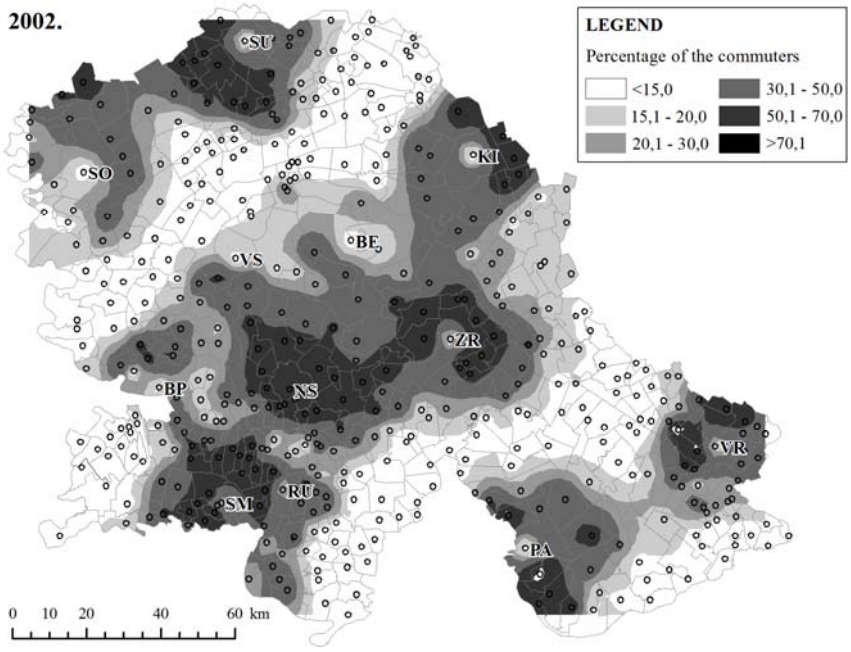

Figure 5. Changes in the morphology of the DUS's of Vojvodina, 1981 - 2002.

3. **Zones of strong influence** comprise functionally dependent settlements with mainly negative balance of commutes, which are functionally directed to DUS center in which more than half of daily commuters travel from their places of residence. Number of settlements belonging to this group is increasing, thus indicating the intensification of polarization effects of primary and secondary DUS centers.
4. **Zones of weak influence** comprise two types of settlements: functionally weakly dependent and relatively functionally dependent settlements. Their capacity as work centers is small, but positive, compared to the settlements belonging to previous groups. Nevertheless, settlements belonging to this group show certain functional dependence on other centers. They are most frequently under the influence of several centers, thus having no clear functional orientation.
5. **Periphery** is comprised of settlements of small influence, or those without clear influence of centers on labor force movement. Their number has decreased because they have fallen into the group of settlements under influence.

A level of polarization of territory of Vojvodina has been identified starting from assumptions that population size reflects settlement functional capacity, that the level of their urbanization is a result of the achieved phase of socio-economic transformation of population, as well as that daily commuting of labor force is an indicator of spatial connections and functional relationships within urban region. It is a heterogeneous system of multi-layered polycentricity. On the one hand, multi-nodal systems have been formed around centers of urban regions: central and polycentric one, formed by Novi Sad, and insular-peripheral one formed by Subotica, Zrenjanin, Sombor, Kikinda and Sremska Mitrovica. The intensity of influence on surroundings of these centers is not equal. Polycentric systems of great importance for functional organization of Vojvodina include the Belgrade-Novi Sad metropolitan area, whose sub-center is Pančevo, and also potentially Sremska Mitrovica, as well as smaller town agglomerations along Belgrade-Novi Sad corridor: Inđija and Stara Pazova. The third polycentric system is being developed in northern parts of the Novi Sad urban region, actually in zones of its contact with Sombor and Subotica regions, where centers of local importance are: Bačka Palanka-Bač-Odžaci and Crvenka-Kula-Vrbas-Srbobran. The complexity of structure is conditioned by a simultaneous participation of functions of the same center in several polycentric systems. If the development of this systems would still have the character of spontaneousness, the direction of polarization would be on Subotica-Novi Sad-Belgrade line and west of it. That is why it is necessary to direct development impulses from polycentric system of Belgrade-Novi Sad metropolitan area and wider zone of Novi Sad urban region to the east of Vojvodina, where Bečej, Zrenjanin and Pančevo, and potentially Kikinda and Vršac, will have a key role.

CONCLUDING CONSIDERATIONS

Based on the abovementioned, the spatial-functional organization of Vojvodina could be the following: 1) Novi Sad and its polycentric urban region comprising most of settlements in south Bačka and western slopes of Fruška Gora Mountain. 2) Regional integration centers - Subotica, Zrenjanin and Pančevo. Their roles and functional capacities are different; 3) Centers of approximately equal functional importance and territorial range - Sombor, Kikinda and Sremska Mitrovica; 4) Vršac, a sub-regional integration center; 5) Sub-centers of urban regions or independent local integration centers with zones of delineation of higher-rank center influences, such as - Bačka Palanka, Bačka Topola, Senta, Bečej, and Ruma. This group also includes local polycentric systems of agglomeration physiognomy: Crvenka-Kula-Vrbas-Srbobran and Inđija-Stara Pazova; 6) Other municipal centers whose development will be conditioned by the development dynamism of urban, regional and sub-regional associations. They are under strong influence of polarization, while those weaker ones have no sufficient capacity for integration of their administrative territories; 7) Other settlements form a heterogeneous system that is more or less integrated into systems and sub-systems of urban regions. These settlements will develop in direction of functional dependence on centers and general development impulses. Settlements with specific functions, closer to centers and with accessible position, will have more development chances.

Further research efforts should be directed to determine to what extent the settlements in Vojvodina could resist depopulation and reduction of functional capacity in future, due to economic structure transformation of their urban regions. Based upon this research, spatial planning instruments need to be adjusted. Given that numerous examples in Vojvodina have confirmed that there is a correlation between intensity of daily commuting of workers and size of influence area of towns/cities with intense socio-economic transformation of their regions, further research efforts are needed to determine to what extent daily commuting of labor force will be merely a phase in a permanent move into urban region cores.

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Received October 2012; accepted November 2012

VERSITA

SPATIUM *International Review*
No. 28, December 2012, pp. 30-36

UDC 728.3(497.11)"1950/1960"
Original scientific paper
DOI: 10.2298/SPAT1228030M

HOUSING DEVELOPMENT IN THE 1950s IN SERBIA– –TYPICAL EXAMPLES OF RESIDENTIAL BLOCKS BUILT IN BELGRADE

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To date, the Serbian architecture of the nineteen-fifties has not yet been more comprehensively studied albeit the fact that there are sufficient sources, data, literature, and structures built at that time. The reason for the lack of interest in architecture of that period may be found in the relationship between the non-understanding and insufficient valuation of architectural results of the modern architecture of the time, but also in the general opinion that the immediate postwar years were the time of a poor social housing development, which is also characterized by the lack of distinct architectural values. Furthermore, there has been an obvious unreadiness to analyze in more detail and in time distance the subject of the socio-realistic construction, which was also partially present in this period.

After a short period of the so-called Socio-Realism 1945-1950, characterized by reconstruction of the war devastated country with extensive participation of youth brigades, the housing construction in particular got a big boost, considering the changes in population structure, as well as the fact that a significant portion of population moved from rural areas to towns. The subject decade of the newly established socialist society was, in every respect, marked with upward path of economic, political and social development, which was an important base for overall architectural and cultural construction. This was the time when Serbian architects of different generations created a great number of works, which were diverse in they contents. The architects of older generation often created their most important works, while young architects, looking into future, but also into own architectural heritage and accomplishments, achieved their first significant results, thus generating autochthonous architectural trend and expression which would soon be recognized as the Belgrade School of Architecture. In the conditions in which the Serbian architecture developed, it actually meant fitting within the world development trends along with preservation of own and regional specificities.

***Key words:** planned construction, apartment organization, typical projects, studios, residential-office buildings.*

INTRODUCTION

Housing construction of the period from 1950 to 1960 may not be observed apart from the overall political, economic and social circumstances which preceded the period of nineteen-sixties, but also those that followed afterwards (Baylon,1976, Kadijević, 1999, Blagojević, 2007, Mecanov, 2008, Milašinović Marić, 2011). The period of the planned construction of the war devastated, as well as demographically fundamentally changed social and political map of the country, began with the program of the First Five-Year Plan (1947-1952). In its essence, the plan had a standardized subsistence minimum per capita.[1)] After setting the first standards, as well as the criticism of low housing standards that followed after the *First Consultative Meeting of Yugoslav Architects held in Dubrovnik (1950),* (Group of authors, 1950) and also out of the need for the progress and improvement of housing construction not only as a subsistence minimum, but also as a superstructure, the building construction that followed, although modest, still marked a move, a step forward from the subsistence minimum towards the higher standards, which was going on in parallel with the development of construction.

The fifties (1950-1960) were marked with construction of smaller housing groups and the so-called buffering of central city areas, as well as with construction of residential-office and public buildings. The period from 1960 onwards was the time of intensive building of blocks in New Belgrade, building of bigger settlements, introduction of the institute of public and invitation competitions for important projects (Baylon, 1976).

APARTMENT ORGANIZATION

It should be pointed out that numerous residential blocks built in this period were spatially and visually very similar to each. These were often typical and identical houses built in similar spirit. They may be found in many towns of Serbia. In architectural sense, a particular time was marked in this way, which was typical by uniform architecture reflecting ideology and spirit of the time in an obvious

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and direct way. Depersonalization was favored, collectivity was praised, and a strong social note was emphasized. Architect and professor Mate Baylon was the one who, particularly in the period between the two world wars and after the Second World War, spoke the most about apartment organization and layouts (Bunić, 1973).

Besides the Ministry of Construction (later the Institute for Testing Materials), the issue of apartments and housing was particularly dealt with by the Women Society *Savremeni dom (Modern House),* the *Federal Institute for Work Productivity*, *Institute for Household Improvement of the SR of Serbia,* and Federal Committee of the *Family and Household, Center for Building and Construction Industry Improvement* within the Federal Chamber of Civil Engineers (later the Yugoslav Civil Engineering Center), and other.

Considering that population moving to cities mainly from underdeveloped areas and rural households had, generally, a poor urban culture or habits of collective living, the socio-political community organized lectures and discussions with the aim to articulate its social concern, as well as to educate population on housing and modern household issues. Many professionals also participated in such activities, such as Mate Baylon, Ratomir Bogojević, Stjepan Han, and others. The lectures started modestly, however, the entire action soon became well organized. The lecture cycles were carried out during the period 1954–1957.

TYPICAL HOUSE DESIGN

There was a great interest of the profession in issues of housing at that time, so that pubic competitions for designs were organized at which a great number of architects of various generations participated. By the end of 1951, *The Council for Construction and Public Utilizes Affairs of the SR of Serbia,* in association with active participation of the *Society of Architects of Serbia,* announced a competition for the concept of certain types of one-family houses. The best designs were elaborated by certain architects, and the results were presented in a publication titled *Overview of Typical Designs for Small Apartment Buildings,* published by the Economics Institute of Serbia in 1953, in which 60 typical house designs were shown. The team, which was composed of architects of older and younger generation, Ivo Kurtović, Đorđe Stefanović, and Ivan Antić, won a number of housing design awards for **typical social housing scheme** (*Group of authors*, *1952).* The competition requirements demanded appropriate organization of life in the house for work, stay, and sleeping, along with optimal functional layout, high level of insulation and use of materials, as well as appropriate architectural design with elements of local identity in the facade structure and materialization.[2)] The Commission which searched for good and rational functional concepts with great precision positively evaluated the team's designs, which were convincing in their rational simplicity and purified functional schemes. It is interesting to mention that, in the period from 1953 until the end of 1957, out of all offered typical house designs, the total of 6,507 were sold and almost 2,000 houses were built *(Group of authors*, 1958).

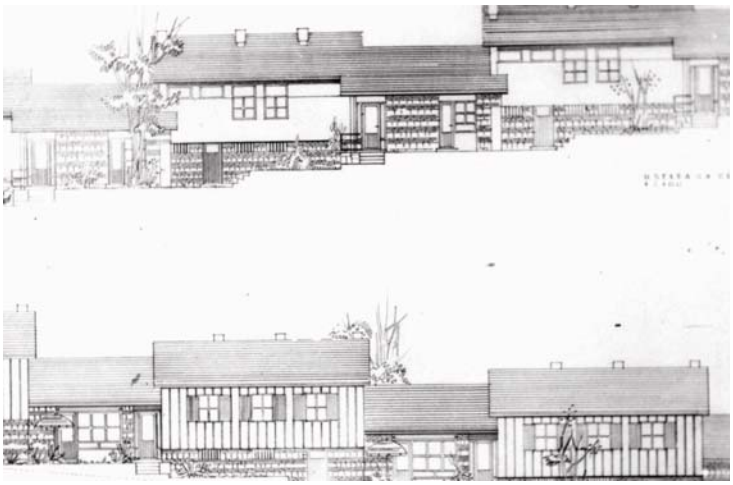

Figure 1. Kurtović, Đ. Stefanović, I. Antić, Typical house designs for social housing scheme, 1951 Competition

Certainly, one of well-established research undertakings in the field of housing of that time, which gathered many professionals organized in working groups, was the work of the Commission organized within the *Yugoslav Building Center* in 1955. The Commission's proposal of the *Uniform Modular Building System,* which was adopted as a Yugoslav standard, was actually a model of application of modular coordination, as well as a number of proposals for dimensional standards for furniture, devices and equipment, and communication through apartment based on detailed analysis of space, equipment, and function.T he work of Commission was discontinued already in 1960. due to lack of wider social interest.

The attempt to improve housing and raise the living standard, not only in towns but also in the village, is also evident in the publication issued by the *Institute for Household Improvement of the SR of Serbia,* which published the book titled **Village Housing** by architects Branislav Milenković and Zoran Petrović in 1960. They have for many years developed studiously, attentively and professionally concepts of typical houses for the village, proposing various types of buildings (Milenković, Petrović, 1960).

Based on the previously announced competition in 1953 for village households in lowland areas, the same authors presented the best competition concepts and in 1954, in association with Vojislav Đorđević and Mihajlo Miličević, prepared the publication which was published by *The Hygienic Institute of Serbia*. Four types of buildings were presented with layouts and perspectives, and proposals for accessory structures, yards, as well as organization of house plots. This publication is worth mentioning as an example of permanently present attempt and parallel research, also worth paying attention, which is actually present even today, although, unfortunately, the proposed designs have not been realized, which has been the case with many other attempts afterwards (Marić, 2006).

Collective residential buildings in the city tissue

At the beginning of fifties, residential buildings were erected in the city tissue mainly in the spirit of late modern architecture. During these years, many architects who were educated in the pre-war time acted on the Serbian architectural scene. By their activities and architectural works, they represent a chain link between pre-war Modern and post war period of searching ideologically suitable architectural formula which would in the best way express the new society (Milašinović Marić, 2010). Amongst them, Branislav Marinković stands out as a creator of marked productivity and persuasiveness. He participated in the most important architectural competitions and built many buildings in Belgrade (Manević, 1981, Bogunović, 2005, Prosen, 2007). He began his architecture career before the Second World War primarily by

designing family houses in Belgrade in the spirit of modern Belgrade architecture. Characteristics of his post-war architecture are clearly noticeable on the residential building erected at the corner of the **Vasina street No. 22-24 and Studentski trg** /Students Square/, **1952-54** in Belgrade. This is a corner building with two-room and one-room apartments, and shops in the ground floor. Architect Marinković realized the building in the spirit of pre-war Belgrade architecture, however, introducing a few contemporary concepts.

The building at the corner of the **Vasina and**

Figure 2. Residential building at the corner of the Vasina street No. 22-24 and Studentski trg, 1954, in Belgrade, Architect B. Marinković

Zmaj Jovina streets (1951) also dates from this period. It was designed by architect Branko Petričić, a pre war student and Le Corbusier's associate for some time (Bogunović*, 2005)*. This is a building of somewhat more daring composition and expressive façade. In traditional examples of Belgrade corners, the motif of the corner is used as a dominant and most interesting accent of the building while, in this case, the motif of the corner was treated as relationship between the masses, while the corner was missing, cut off, it actually did not exist.

Both buildings are, by their architectural design, completely in line with the modern architecture between the two wars, while their interior organization corresponds to the post war requirements of functional apartment organization and modest standards, namely, small two-room and one-room apartments with small kitchen, loggia, bathroom, and modest interior finishing.

The *Plan* Architecture Studio, namely, Nikola Šercer, a exceptionally productive architect of that time, designed a six-storey residential-facade building of the **Department for Housing Affairs of the People's Committee of the City of Belgrade in the street of Marshal Tito No.19** (1954) (today the King Milan street). Since the building was erected in the place where Srpska književna zadruga (Serbian Literary Co-operative) had a smaller building demolished in 1948, a part of the building was planned for the needs of the Co-operative. Thus, the offices and spacious ceremonial hall were designed in the ground floor and the first floor was envisaged for the needs of the bookshop, while the apartments were designed on upper floors. This, in itself a harmonious and well proportionate building fitted within the street row, with its precise facade grid and a part containing offices clearly separated from the residential part, is certainly one of the most important accomplishments of this period.

Residential **building in the Đura Daničić**

Figure 3. Residential-administrative building of the Department for Housing Affairs of the People's Committee of the City of Belgrade in the street of Marshal Tito No. 19 (1954), today street of King Milan, Architect Nikola Šercer

street (1959) was designed by architect Dušan Milenković. The building was skillfully interpolated into a street row by respecting older neighboring buildings. The facade was composed with a feeling for restraint and geometry, and with small number of elements. In dividing the facade cladding, the architect highlighted horizontal and vertical strips, as well as window parapets which he emphasized by using colors. He achieved the effect of play of plans by second-degree plastic, which is emphasized by colors ranging from white to black (Vuković, 1960).

One of the most important architecture studios of that time was the *Stadion* studio founded in 1953 and led by architect Mihajlo Janković (Mišić, 2007).[3] The most intensive period of his creativity is linked to this studio. He was a founder and director of the studio and worked in it until the end of his life (Vuković, 1964). The buildings designed by the skilled hand of architects of the *Stadion* studio are obviously amongst the most interesting architectural concepts of the time. They indicate attempt to depart from the stereotype of the then architecture and to bring into it more personal, author's attitude, as well as to emphasize human character of architecture as an expression of human need for beauty, being particular, and for comfort.

The residential building in the Palmotićeva street No. 17 (1953-1954) designed by Mihajlo Janković and Uglješa Bogunović (Stojanović, Martinović, 1978, Brkić, 1992, Milašinović Marić, 2003) shows that even a pressing need for housing space does not necessarily imply giving up beauty. Functional organization of apartments by room size and floor heights relies on standards of construction valid in the period between the two wars, while clear division of space into bedroom area and kitchen area, with smaller functional ante room, clearly indicates modern housing schemes. The exterior building design shows that there is an attempt of architects to finish the balcony railings in an aesthetically interesting manner by specially designed ornaments with the feeling for aesthetic dimension of the profession, which was constantly neglected in the post-war period.

The residential-office buiding **in the Francuska street No. 11** (1954), for the Svetlost company as investor, and residential-office building in the **Brankova street No. 28** (1958), for the Brodoimpeks company as investor, were designed by Mihajlo Janković as a chief architect. Dual function of these buildings is obvious by their organization and facades. The pronounced secondary plastic and almost relief facades on the part of buildings used for offices are a counterpoint to the residential parts with flat facade finishing.

By their concept, all aforementioned buildings built for collective housing, regardless of

Figure 4. Residential-office building in the Francuska street No. 11 (1954), Architect M. Janković

whether they were treated as detached multi-storey buildings or interpolations, indicate that building heights, namely fitting within the street row, were governed by legal regulations, as well as that there was an obligation to respect outlines of neighboring buildings, which, generally, gives a good impression that urban order has been supported. Architecture of all aforementioned buildings is in the spirit of the late modern architecture. These are buildings are with a strong structure, somewhere with colors, as well as with marked secondary plastic and emphasized structural or functional grid.

Characteristic residential blocks in the city tissue

The fifties were the years when new blocks were built for multifamily, collective housing in the the city areas which were partially devastated and demolished. From the seventies of the 20th century onwards greater attention has been dedicated to the development of New Belgrade, while revitalization and development of the old part of Belgrade remained in the background.

The residential block in **Njegoševa street** No. 41-45 (1956), between the streets of Alekse Nenadovića, Njegoševa and Smiljanićeva, built for the Department of Construction of the Belgrade Garrison, is structure of higher standard. This block was designed within the *Arhitekt* atelier by architect Đorđe Grujičić.[4] The block contains ground floor with shops, five floors and a recessed sixth floor. The apartments were intended for foreign military representatives, so that more luxurious and comfortable space was envisaged by the program. Each floor contained four three-room luxury apartments. The apartments are functionally organized in three wholes: a bedroom area, directly connected to the entrance part, a representative area for receptions with a hall and dining room connected to the kitchen area and entrance, and the service area, with cooking area and housemaid's room with separate entrance. Interior finishing is also of higher standard, the used materials are of better quality, while the facade finishing is a combination of Terranova and marble. In the structure of the Njegoševa street in Vračar, one of the central Belgrade municipalities, this block acts as a foreign tissue both by its urban composition and outline, facade, actually by its overall composition.

During the fifties, more residential blocks of recognizable architecture were erected in the same street. They consisted of ground floor coated by crashed stone, slightly projected frame of central facade cladding with horizontal division of shallow terraces, recessed top floor, and several entrances. Such are also buildings in the **Njegoševa street No. 32, 34** (1957), designed within the *Morava* studio by architect Časlav Đorđević[5], a building in Njegoševa No.14, or a residential building built for employees of the Energoprojekt company in the Alekse Nenadovića street No. 12-14 (1957) and designed by architects Radoslav Kostić and Aleksandar Raševski. The characteristic of this latter building is its structure made of concrete prefabricated blocks, indicating that the IMS prefabricated elements, which accelerate construction to great extent, were in use already at that time.

Across the street from the aforementioned building, there is a residential pavilion in the **Njegoševa atreet No. 31**, 31a, 31 b (1956) occupying also a part of the A. Nenadovića street. The pavilion was designed by architect Rajko Tatić. It is an uncompromisingly positioned pavilion in the city tissue and in creating its façade, there was no tendency to match the facades of the old neighboring buildings. Functional organization of two-room and single-room apartments belongs to a common type of organization of space with housing kitchen.

Figure 6. Building in the street of Njegoševa 32, 34, 36 (1957), Architect Č. Đorđević

Figure 5 . Residential block in the Njegoševa street No. 41-45 (1956), between streets of Alekse Nenadovića, Njegoševa and Smiljanićeva, Architect Đ. Grujičić

Figure 7. Building in the street of A. Nenadovića, Architect R.Tatić

Architects Nikola Šercer and Vera Ćirković, who worked with the Plan architecture studio, were very active in the second half of fifties. Their **residential block at the corner of Proleterskih brigada (today Krunska) and Kneza Miloša streets** (1956) designed for investor, the Federal Executive Council, may be taken as a good example of a higher-standard multifamily residential block at that time, which is at the same time a typical example of collective residential building erected in the city tissue. The building facade finishing is with structural, decorative elements and highlighted play of balconies. Transparent partition panels partially shielding terraces, with fragmented geometrical concrete structure, have a functional role in protection against the sun and, being decoratively worked, they are also some kind of replacement for ornaments. These terrace panels, which were often used on the facades of that time, represent a specific trademark of the time.

In terms of architecture, this city residential block, which stands out by its urban compostion, architecture and freer concept, is composed of a group of buildings located in the **Admirala Geprata street No. 8** (1955-1960). The block was designed by architects Bogdan Ignjatović, Leon Kabiljo (*Encyclopaedia architectonica,2002)* and Stanko Mandić (Z. Manević, 1991) within the *Stil* design studio. The block, consisting of several segments, was erected for investor the *Department of Construction of the Garrison,* and indicates the powerful impact of architect Le Corbusier. It is interesting to note that there were no financial constraints for vanguard concepts in architecture, actually the structures designed and erected for the Army as a powerful investor, because the Army wanted to demonstrate its own power and orientation towards contemporary trends particularly through modern architecture. The entire block comprises the corner of the Admirala Geprata and Balkanska streets and consists of longitudinally and vertically positioned outlines of different number of storeys which vary in a form of cascade from five to eight floors. In the silhouette of the city, this block stands out with its well conceived

composition which follows configuration of terrain slopes. Architecture of the entire block, a very successful urban, dynamic composition of volume in the space which is well positioned in relation to the terrain configuration, suggests the skillfulness and significant potential of Serbian architects of that time who professionally and responsibly managed to realize contemporary architectural concepts.

Residential-office buildings, with characteristic dual-purpose structure

In terms of contents and design, this period is characterized by buildings intended for mixed use, namely for both commercial and habitation use. In one part of such buildings, premises were deisgned such as offices depending on a company profile, while apartments of various structures planned to meet the needs of employees of the company or working organization, were designed in the other part. The specific feature of this complexes lies in the idea basis deeply permeating the concept and basic postulate.

A typical example is a **residential complex erected in the Takovska street** No. 6 (1955)[6], designed in the Design Institute of Serbia by architect Jovan Tadić for investor *Partizanski put*. It is composed of two lower parts containing business facilities and a high volume, a skyscraper for habitation use. In terms of concept, contents and shape, as well as urbanistically, this architectural concept fully expresses the program scheme of a collective idea of a happy commune where one works, supplies him/herself, takes decisions, lives and socializes in an ideal community. In this way, the idea of a small enclave of working people, as an important cell of a general concept of prosperity, to whom the new society enabled a comfortable living and working conditions, was realized.

The **office-residential building at the corner of Hilandarska and Džordža Vašingtona streets** (1955-1958)[7] is completely in the spirit of the time. It was designed by architect Konstantin Krpić for investor the Housing Construction Administration of the Belgrade Municipality. By its composition and concept, the building exploited all possibilities of the location, an enlarged street intersection, and of a corner-building which is architecturally interpreted in the spirit of the time. The building is composed of three parts. Emphasizing the corner, the main facade, accented in relation to the side facades, is representative, appropriate to the position and falls into the type of city palaces which have been conceived using elements of Le Corbusier's architecture. This is implied by sun shields and oval columns, a colonnade, supporting the volume of the corner tower. Thus, the building got its identity and became recognizable although elements used were of architectural vocabulary which was, in fact, a uniform style at the time.

Figure 8. Mixed-use admininstrative-residential complex erected in the Takovska street No. 6 (1955), Architect J. Tadić

In a similar spirit, however, more ambitious and less successful building, is **the office-residential block of the Post Office and Automatic Telephone Exchange Office located between the streets of Vasina, Zmaj Jovina and Čika Ljubina** (1958)[8], designed by architect Časlav Đorđević in the *Morava* Studio for the PTT Traffic as investor. This is an architectural composition with a tower at the corner, lower office block along the Zmaj Jovina street, and residential parts oriented towards the Čika Ljubina and Vasina streets. Each segment of this architectural assemblage has a specific facade finishing and number of floors, which indicates the concept of visual separation of different functions. Although the architect tried to make a coherent composition, the architectural assemblage looks incoherent as if foreign element was interpolated into the city tissue. As it was a common practice at that time, the two approaches of divergent conceptual origin were also applied here. One was the urban approach according to which the building is to be fitted within environment, and the other one, appropriate to detached buildings. This may be recognized in appearance of gables, often *blind,* unfinished. In this case, it is a stone bond without additional decoration. Architectural design is inconsistent as it is a mix of various expressions of the time, starting from imitation of concepts between the two world wars, through impacts of Le Corbusier's architecture, to the hint of coming tendencies.

Figure 9. The residential-office building at the corner of Hilandarska and Džordža Vašingtona streets (1955-1958), Architect K. Krpić

The **residential-office block erected at the corner of the Bulevar Revolucije and Prvog maja** (today Resavska) streets (building permit 1953) is of consistent architectural expression, clear division into office and residential parts, and distinctive architectural composition. This city corner block was designed for the *Tehnopromet* company by architects Mihajlo Marinković, Đorđe Grujičić, Ljubiša Dragić in their *Arhitekt* design studio. The architecture of the composition consists of three cubes in harmonic mutual relationship. The highest volume of eight floors, the administrative building, is located at the corner, while side wings, oriented towards the streets, are for habitation use. The marble was mostly used for column coating, while the facade and inner facade are partly in marble and partly in Venetian terazzo, as well as in unavoidable material of that time, the Terranova.

The business tower was finished in representative manner as a city palace covered with regular grid, coated with marble, and structured with secondary plastic. The facade is a cell structure of deep loggias rhythmically arranged with interior plastic: decorative panels with arabesques, which is in contrast to the geometricized finishing of the office tower. The roof is of characteristic pattern, a corrugated easy line as a joint between the sky and architectural structure of the residential building. This replacement of once traditional inclined roofs or pronounced friezes with the

Figure 10. The residential-office block erected at the corner of the Bulevar Revolucije and Prvog maja street (today Resavska) (Building Permit 1953), Architect M. Marinković, Đ. Grujičić, LJ. Dragić

profiled eaves or balustrades, emphasized, in a representative way, the function of using the fifth facade on many buildings of that time, but it is also as a visual, decoratively shaped element in a counterpoint to the facade rigid geometry. It may be observed that this architectural composition is an example that reflects the ideals of the time. Actually, the building is designed as a small commune with offices and a residential part for habitation use of the workers in a representative building which is a picture of success of new business activities and new society like *a new social condenser,* of the era, wich was supposed to contribute to the accelerated social progress bases of Marxist ideology. The ideal of the time is actually the stability and geometrical precision of an office building, as well as decoratively refreshed housing ambience for workers (Bajić, 2010).

CONCLUSION

In the early nineteen-fifties, the investors (Military Post Office, sports associations, companies like *Jugometal, Janko Lisjak, Centrotekstil*, and many others) built the so-called interpolations, buildings inserted within the city tissue. The design of these buildings was entusted primarily to proven architects such as Branislav Marinković, Branku Petričić, Nikola Šercera, Dragana Gudovića, Branko Pešić, Aleksej Brkić, Rajko Tatić, and others, who erected collective residential buildings of architectural quality in the city tissue. These buildings were built in the spirit of the late modern architecture and had a well-conceived functional organization.

One of the characteristics of that time is that buildings interpolated in the city tissue, by their volume and design, mostly corresponded to the detached buildings. In this way, hybrid concepts with mixed characteristics of traditional urban composition in the form of fitting within the heights were obtained, as well as the concepts which were actually taken over from the nomenclature of the new urbanism of open blocks. Using such procedures, a new spatial quality of increasing and enriching public space was also obtained. However, at the same time, adverse effects in the sense of disintegration of the existing matrices and structures of the existing city tissues are clearly visible.

At that time, many architects gathered around numerous architecture studios and groups. Amongst architecture studios, the *Stadion* studio, in which numerous administrative and collective residential buildings were designed, stood out.

The fifties are characterized also by renovation of town blocks. These, by their contents, collective housing blocks, although different by their position, size and structure, are of uniform architectural pattern and recognizable architectural vocabulary. The examples presented in this paper as a sample of the housing block show diversity of standards, starting from social construction of minimal economic determinants to, for that time, higher standards (by surface area of housing units and by beneficiary, number of floors, used materials, etc.). The characteristic of each of the mentioned examples, as well as other blocks built at that time, is their relationship towards the space together with urban composition, where buildings were recessed from the street building lines in order to form open spaces in front of them for planting vegetation, or only for pavements. However, at places where this was not possible, colonnades were designed to enable wider pedestrian walking space. The building passages were often planned, while the buildings fitted within the street row by their heights. Generally, concept of a building with common public and interior spaces fitted the idea of forming collective communities.

Architecture of these buildings is similar, with almost the same decorative and functional elements on railings or balconies and the same used materials, with similar concepts of facades, roof finishing elements, used joinery and locksmith items. Sun shields, terrace partitions of concrete elements with holes, pergolas, corrugated roofs, and glass prisms are recognizable parts of the then architect's vocabulary.

During this period, multi-family villas were also built, although to lesser extent. Architecturally, they ranged in form from villas built in the spirit of traditional house with double-pitched roof and ground-floor rustic finishing, to modernly conceived villas in international style. Regarding apartment organization, all buildings implied different, higher standard, as well as used material.

By their contents and number, the residential-office buildings were characteristic of the time. They implied a dual function. One part of the building contained premises for the company with a representative part intended for administration, decision making and meetings, while the other part of the building was designed for habitation use and served for solving housing problems of both the company officials and employees. These are interesting architectural concepts, functionally positioned so that various contents can interweave. Despite general conditions imposing standardization, the very production shows that architects managed to realize quality architectural concepts within these restrictions, as well as to express, in the field of housing construction, and particularly office buildings, the ideal of the time, namely spirit of togetherness, equality, and collectivity.

The abovementioned shows that housing architecture of nineteen fifties was appropriate to time that required uniformity, standardization, collectivity. An appropriate architectural form, or urban design, was realized and, although sometimes hybrid or ambiguous, it was still an appropriate solution in terms of design and function. The overall impression is that architecture of the nineteen fifties was moderate, harmonious, to some extent also meager and modest, but solidly and unobtrusively fitted into space and city, that would get its proper prominent place in the values scale.

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[2)] The Commission members were Živa M. Đorđević, President, Branislav Piha, Secretary, Milorad Macura, Bogdan Nestorović, Rata Bogojević, Josef Kortus, Miladin Prljević, Vladeta Maksimović, while proxies were Dušan Stefanović, Aleksej Brkić, Zoran Vasiljević and Branislav Piha.

[3)] Architect Mihailo Janković wrote many articles on architecture for various newspapers: *Mesto arhitekture* (*Place of Architecture*), Borba 1st, 2nd, 3rd May, 1965; *O takozvanim realistima i fantastima (About the so-called realists and fantasts)*, Borba 1st, 2nd, 3rd May, 1964; *Beograd – grad bez trgova (Belgrade – the city without squares)*, Večernje novosti, Sunday issue, 1957; *Beograd bez završetka(Belgrade without end)*, Večernje novosti, May, 1957; *Zar stanovi baš na svakom terenu (Why apartments on every type of terrain)*, Večernje novosti, Sunday issue, 1957; *Urbanizam i sport (Urbanism and Sports)*, Večernje novosti, May 1957; *Vizija budućih gradova (Vision of Future Cities)*, 17th January, Večernje novosti , 1965.

[4)] Architects Mihajlo Marinković and Ljubiša Dragić (1922-1998) worked in the *Arhitekt* studio together with architect Grujičić.

[5)] At the entrance to the building, there is a small plate containing the name of architect Č. Đorđević, as well as the name of the *Neimar* Contracting Company.

[6)] The building was erected on already started foundations of administrative building for the Telegraphic Agency of the New Yugoslavia *Tanjug,* from which the company *Partizanski put* bought the design and adapted it for the company's residential and administrative building.

[7)] The Decision from 1954 on expropriation of a private property of Stefanović Đ. Ilija in the area of 808,02 square meters against appropriate compensation, together with the note stating that no complaint may be filed against this Decision, was attached to the design documentation.

[8)] On the entrance to the Post Office, as was practice in the period between the two wars, a plate was placed bearing the name of the architect and contractor, and construction completion date, namely, Arch. Časlav Đorđević, *Morava* Architectural Atelier, 1958.

Received September 2012; accepted October 2012

VERSITA

SPATIUM *International Review*
No. 28, December 2012, pp. 37-44

UDC 338.484:502.131.1(497.11)
Original scientific paper
DOI: 10.2298/SPAT1228037M

SUSTAINABLE HERITAGE UTILIZATION IN RURAL TOURISM DEVELOPMENT IN SERBIA

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Research on natural and cultural heritage as one of the key levers of sustainable tourism development in Serbia has been conducted 2010, for the elaboration of the Master plan for Sustainable Rural Tourism Development in Serbia. To evaluate achieved and potential attractiveness of natural and cultural heritage at rural Serbia the FAS methodology was implemented, and the results of this evaluation are discussed. Based on achieved and potential attractiveness and accessibility of natural and cultural heritage, and other criteria, the rural tourism clusters have been established. Methodology for rural tourism clusters identification and prioritization is presented, and the results of prioritization discussed. Elaboration of the Master plan for Sustainable Rural Tourism Development in Serbia has been based on the holistic approach. Therefore the aim of rural tourism development is to protect, revitalize and use the natural and cultural assets in sustainable way to benefit the rural communities. Challenges and possibilities for sustainable heritage utilization, sustainable rural tourism development, and management arrangements are discussed for two cases – Viminacium archaeological park and Mountain Stara planina Nature Park. Based on analyzed cases the evaluation criteria for management of sustainable heritage utilization and rural tourism development are proposed.

***Key words:** evaluation criteria, attractiveness of natural and cultural heritage, sustainable heritage utilization, sustainable rural tourism, management.*

INTRODUCTION

Rural development in Serbia is an economic, social and environmental priority. Almost half the population of Serbia lives in rural regions which make up nearly three-quarters of the country's territory. Despite its unspoilt natural beauty, rural environment is relatively untapped and provides a great opportunity to create value for rural communities. Sustainable rural tourism is one of the key sectors with strong potential to diversify the Serbian rural economy. Sustainable rural tourism is committed to the long term relationship between the tourism sector and the local communities. International trends show that rural tourism has a key role to play in rural communities in alleviating poverty, uplifting the quality of life, fighting social and economic inequality and economic degradation. Depopulation and high rates of unemployment have been affecting Serbia over the last years. Both these problems are far more intense in rural areas.

Rural tourism is already playing an important role in rural Serbia and is generating a significant level of income. From more than 32,000 beds (registered and un- registered) in rural areas, approximately 10,000 beds are exclusively rural. It is estimated that these total beds are generating yearly more than 5 billion RSD of accommodation incomes and contribute to almost 5 billion RSD more direct incomes for the tourism sector, which represent 16% of the Direct Travel and Tourism GDP calculated by WTTC (World Tourism and Travel Council) in Serbia for 2010 (Diagnostic Report, 2010: 191, 192).

Rural tourism is defined as tourism which produces a "rural environment" for the visitor, by offering a combination of natural, cultural and human experiences which are typically rural in character. It is the immersion of the visitor in authentic, original and grassroots experiences which are the essence of rural life. Rural character can be described as the combination of natural and cultural landscapes, natural and cultural heritage, and activities developed by the local population. It is the contact with this nature and the personal human contact with the local people and their culture which makes rural tourism so unique. Rural tourism, therefore, combines many different aspects of experiencing, sharing and showcasing rural life.

Attractiveness and accessibility of natural and cultural heritage is very important for sustainable rural tourism development (Maksin, 2010). There is a large number of nature and culture-based assets spread throughout Serbia potentially highly attractive for a sustainable rural tourism development, but the majority of them has stil not been developed for tourism. To maintain achieved heritage attractiveness and to develop its potential attractiveness, the protection and sustainable utilization of heritage in tourism development is important as well. In this respect, the main purpose of the paper is to analyze and discuss the evaluation of heritage attractiveness and rural tourism clusters, as well as the evaluation of heritage utilization and rural tourism development sustainability in the management of tourism destinations.

To evaluate achieved and potential attractiveness of natural and cultural heritage at rural Serbia the FAS methodology was implemented in the

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research conducted for the Master plan for Sustainable Rural Tourism Development in Serbia (2011) (in the sequel: Master plan)[2]. The results of this evaluation are discussed – the problem of insufficient data for carrying out the quantitative evaluation, and qualitative assessment uncertainty of potential attractiveness. The identification and prioritization of rural tourism clusters is based on the attractiveness and accessibility of natural and cultural heritage, as well as on other criteria. Methodology for rural tourism cluster identification and prioritization is presented, and the results of prioritization discussed.

The aim of sustainable rural tourism development is to support the protection and utilization of the natural and cultural heritage in sustainable way, and to benefit the rural communities. Challenges and possibilities for sustainable heritage utilization, sustainable rural tourism development and management are analyzed and discussed at the cases of protected natural and cultural heritage in Serbia. Based on analyzed cases several criteria for the evaluation of sustainable heritage utilization and sustainable rural tourism development are proposed for tourism destinations.

EVALUATION OF NATURAL AND CULTURAL HERITAGE AS TOURISM ATTRACTORS AND FACTORS FOR RURAL TOURISM DEVELOPMENT IN SERBIA

To evaluate the attractiveness of natural and cultural heritage at rural areas of Serbia the FAS methodology was implemented (Figure 1).

According to the FAS methodology (Factors – Attractors – Support) of the UNWTO, attractors include natural resources, cultural heritage and "man-made" tourism sites and assets which continually attract significant number of tourists. Tourism attractors (natural, cultural and man-made) are tourism sites or assets that are currently visited by tourists. The assessment considers the current situation of the attractor, as well as it potential to attract tourists in the future. For its assessment, each attractor is rated from 1 to 5 on its current attraction (quantitative and qualitative weighting of number of visitors and value for tourism, qualitative weighting of the beauty of the site/place and accessibility; 1 being low and 5 high) and from 1 to 5 in terms of its potential attraction (qualitative weighting of: possible upgrades, future increase/ decrease on the number of visitors, future accessibility works and future value for tourism; 1 being low and 5 high). Therefore, the final assessment for each attractor results of the weighted average between the current attraction assessment and the potential attraction assessment, and not of the arithmetical average (Table 1).

Ten main natural attractors have been identified at rural areas. These include natural heritage sites and mountains (national parks, natural parks and reserves), diversity of scenic landscapes, rivers and gorges, thermal springs etc. Natural elements are well preserved and have great potential to be attractive for tourists. Therefore, the assessment has been valued at 3.3 reflecting a high attractiveness of the natural attractors that mostly have to improve their interpretation and accessibility.

Eleven main cultural attractors have been identified at rural areas. The best examples are Viminacium archaeological park and Felix Romuliana (UNESCO World Heritage site). There are monasteries recognized as UNESCO World Heritage sites but they have still to develop their presentation and interpretation for tourists. Unique remains of prehistoric civilisation in Europe, Lepenski Vir archaeological site in Iron Gate (Djerdap) gorge has been reconstructed (first phase finished at the end of 2011), with the potential to become one of the most attractive sites by providing access to cruisers at Danube. Guca brass band festival has become the bestseller based on elements of traditional folk music. Therefore, the assessment has been valued at 3.4 reflecting a high attractiveness of the cultural attractors that mostly have to be further developed.

Man-made type of attractor shapes the leisure elements within the tourism industry such as bars, restaurants, shopping and other entertainment and edutainment activities. In rural Serbia, man-made attractors are limited and should be increased to become a more attractive for tourists. Currently, there are only two high potential attractors. Famous film director Emir Kusturica built an attractive ethno-village, Drvengrad, where he organises the international film festival annually. Nearby there

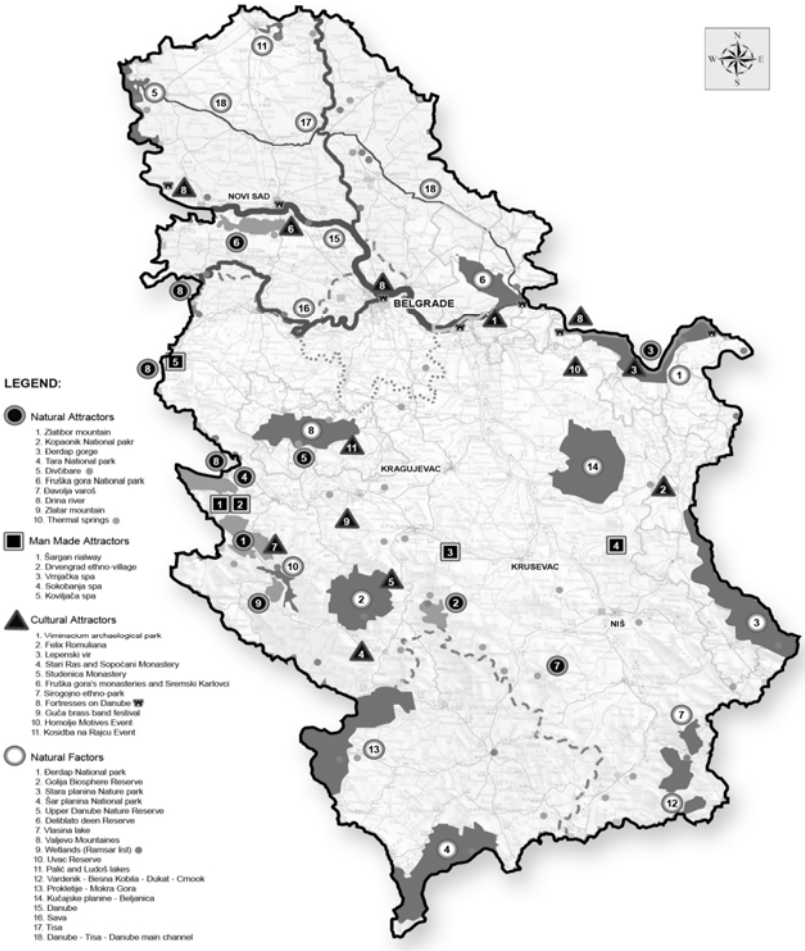

Figure 1. Mapping of the most relevant attractors and factors in Serbia as defined by UNWTO FAS
Source: Diagnostic of Rural Tourism in Serbia, Master Plan for Sustainable Rural Tourism Development in Serbia, UNWTO, 2011, p. 35.

[2] Prezented results of research for the Master plan for Sustainable Rural Tourism Development in Serbia have been conducted during the 2010 and 2011 by authors of this paper as a memebers of the reserach team from Tourism & Leasure Europraxis, Barcelona, Spain and University Singidunum, Belgrade, Serbia, under the direction of UNWTO.

Table 1. Attractor assessment according to the FAS methodology

Natural Attractors		Assessment
1.	Zlatibor mountain	4.25
2.	Kopaonik mountain	4.25
3.	Đerdap gorge	3.9
4.	Tara National park	3.75
5.	Divčibare	3.5
6.	Fruška Gora National park	3
7.	Đavolja varoš	2.5
8.	Drina river	2.25
9.	Zlatar mountain	2.5
10.	Thermal springs	2.75
Total		3.3
Man-made Attractors		Assessment
1.	Shargan railway	4.5
2.	Drvengrad ethno-village	2.25
3.	Vrnjacka spa	4
4.	Sokobanja spa	4
5.	Koviljaca spa	4
6.	Traditional cuisine restaurants	2.5
7.	Tradiotional craft shops	2
8.	Markets with agroproducts	1.75
Total		3.1

Cultural Attractors		Assessment
1.	Viminacium archaelogical park	4
2.	Felix Romuliana*	3.75
3.	Lepenski Vir	3.75
4.	Stari Ras and Sopocani Monastery*	3.25
5.	Studenica Monastery*	3.5
6.	Fruska Gora's monasteries and S. Karlovci	3.5
7.	Sirogojno ethno-park	2.25
8.	Fortresses at Danube	2.5
9.	Guca brass band festival	4.25
10.	Homolje Motives Event	3.5
11.	Kosidba na Rajcu Event	3.5
Total		3.4
Attractors		Assessment
N	Natural Attractors	3.3
C	Cultural Attractors	3.4
M	Man-made Attractors	3.1
Total		3.3

** UNESCO World Heritage List*
Source: Diagnostic of Rural Tourism in Serbia,
Master Plan for Sustainable Rural Tourism Development in Serbia, UNWTO, 2011, p.34.

Table 2. Natural factor assessment according to the FAS methodology

Natural factor		Assessment	Natural factor		Assessment
1.	Đerdap National Park	5	11.	Palić and Ludoš lakes	2.5
2.	Golija Biosphere Reserve*	4.5	12.	Vardenik-Besna Kobila-Đukat-Crnook	3.5
3.	Stara Mount Nature Park	4.5	13.	Prokletije-Mokra Gora	3.5
4.	Šar Mount National Park	4.2	14.	Kučajske Mount-Beljanica	3
5.	Upper Danube Reserve	3.5	15.	Danube river	5
6.	Deliblato Sands Reserve	3.5	16.	Sava river	4
7.	Vlasina lake	3.5	17.	Tisa river	4
8.	Valjevo Mountains	3.5	18.	Danube-Tisa-Danube fairway	2.5
9.	Wetlands	3	19.	Climate	2
10.	Uvac Reserve	3	Total		3.6

** UNESCO MaB List*
Source: Diagnostic of Rural Tourism in Serbia, Master Plan for Sustainable Rural Tourism Development in Serbia, UNWTO, 2011, p. 32.

is the internationally recognized old Shargan railway (Šarganska osmica). Both attractors are placed in scenic landscape of Mokra Gora. The assessment of man-made attractors is 3.1, highlighting that these attractors should be increased and more diversified.

Factors are resources which do not currently attract many tourists and have not yet been prepared for their inclusion in tourism. However, they have potential to be developed for tourism. Factors include two different elements: natural factors that have potential to become tourism attractors; and human and capital factors that are key issues that ease or hinder (depending on the assessment) the process of tourism factors to become tourism attractors. The natural factors are qualitatively assessed from 1 to 5 in terms of their beauty, biodiversity and potential to attract tourists (1 being low and 5 high).

In Serbia 23 relevant factors have been identified and assessed with an average of 3.1, where the highest assessment has been given to natural factors (3.6) and the lowest to capital factors (2.2 due to limited financial access in Serbian rural areas, which means that this particular factor is not meeting the minimum average rating and, therefore, it is has to be considered as a strong weakness).

Serbia is composed of a large offer of natural resources and a great diversity of scenic landscapes, from high mountains to valleys and plains. The Danube, which runs through Serbia for 588 km, with Sava, Tisa and Great Morava rivers compose a dense river network, attractive for all water activities in summer and autumn. Biological diversity, both of ecosystem and species, is extremely high and attractive for tourism. Vascular flora belongs to almost a half of all floristic/vegetation regions in the world, representing one of the biodiversity centres of Europe. Climate is continental and moderate-continental with more or less pronounced local characteristics. Total average assessment of the natural factors in Serbia is reflecting a great potential to host tourists and high attractiveness of the natural factors (Table 2). Due to greatest potential attractiveness and chances to improve its accessibility (by developing nautical infrastructure), the best ranked factor is Đerdap National Park with Danube.

Discussion of the results

Qualitative assessments of attractors and factors and assigned values as a result of the evaluation process carried out by experts in tourism research (Delphi method), are more appropriate for assessment of the natural and cultural heritage value for tourism, than quantitative assessments. The problem in carrying out the quantitative assessment emerged due to the lack of sufficient data on tourists visiting natural and cultural heritage. In Serbia, entrance for the natural and cultural heritage is seldom charged. Only reliable data on tourist visits was available for natural and cultural heritage with charged entrance – Viminacium, Felix Romuliana and Đavolja Varoš. The information system on tourism development is not established, and the private sector is not obliged or willing to give any information concerning the tourism development (tourist visits, overnight stays etc). So far, only reliable annual data on tourist visits and overnight stays for municipalities is provided by the Statistical Office of the Republic of Serbia, but this data does not provide for tourism destinations.

Prioritization of rural tourism development in Serbia

Rural tourism in Serbia is generally at an emerging stage. The international experience shows that development of tourism cannot be fostered everywhere in the country and at the same pace. Moreover it is good to have a strategy that enables the country to continuously showcase new rural tourism products and destinations.

Necessity to establish development priorities can be resolved by determining physical rural tourism clusters that are suitable for rural tourism development. The objective of the rural tourism clustering is to identify and prioritise the rural tourism clusters for development in the short- (3-5 years), medium- (5 to 10 years), and long-term (more than 10 years).

Rural tourism clusters were created using the clustering methodology described below:

1. Initial prioritization

• Identification of rural tourism clusters (RTC) – Twelve rural tourism clusters were created by taking into account the most relevant attractors and factors elected by the FAS methodology. Creation of initial RTC comprises high, medium or low concentration of priority attractors and factors with ranking points from 1 for high, 2 for medium and 3 for low.

• Prioritization of RTC – Based on criteria for prioritization such as the concentration of resources, the presence of Tourism Master Plans and the potential of the destination throughout the year, initial RTC are evaluated. Evaluation in terms of their seasonality and potential as a year round destination is based on the following criteria from the Spatial Plan of Republic of Serbia: potential of destinations as an all year round offer, dominant summer offer with participation of winter supply or a dominant summer offer. After the initial rating of the RTC (level 1 for high, 2 for medium and 3 for low 3), next step is grouping of the RTC into groups of clusters which are in relatively close proximity – rural tourism cluster groups (RTCG).

• Initial set of prioritized RTC and RTCG throughout the territory of the Republic of Serbia was mapped and validated by stakeholders.

2. Secondary prioritization

• Identification and evaluation of other influences, dimensions of importance to the prioritization of the previously identified RTC – infrastructure and accessibility, urban centres/markets proximity to RTC, hospitality supply, unemployment distribution and tourism experience.

• Validation of the prioritization level given to the RTC or re-prioritization of the RTC based on included dimensions and stakeholder participation.

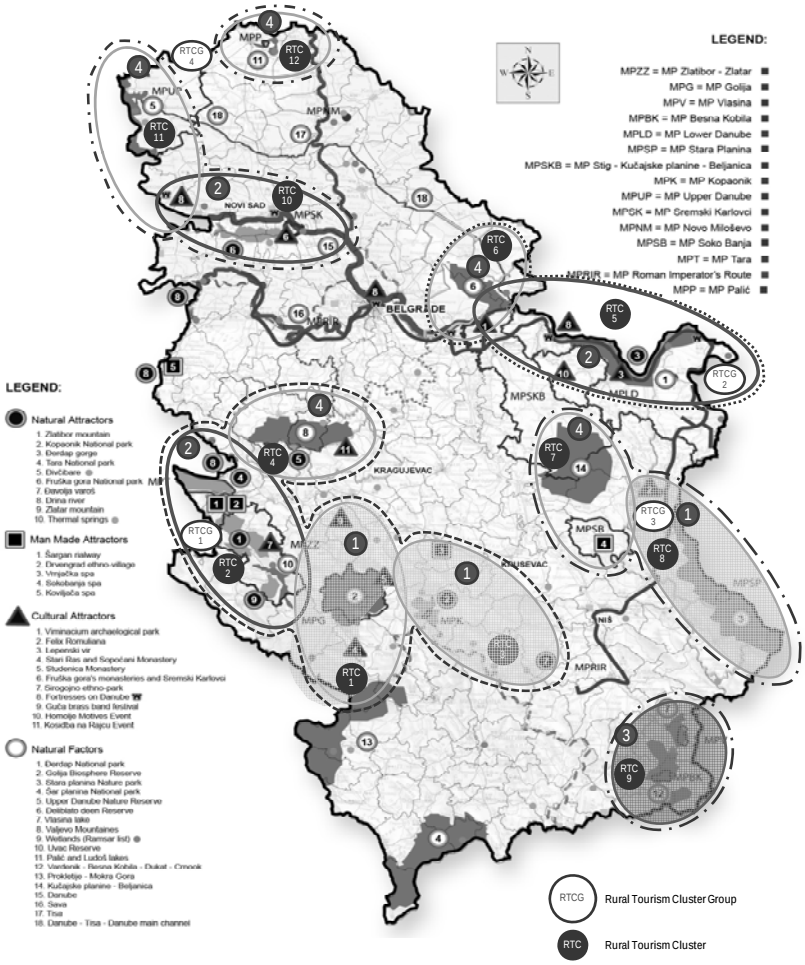

Figure 2. Map of Rural Tourism Clusters and Rural Tourism Cluster Groups in Serbia
Source: Strategy for Sustainable Rural Tourism Development in Serbia,
Master Plan for Sustainable Rural Tourism Development in Serbia, UNWTO, 2011, p. 25.

• Final prioritization of RTC and RTC groups (Figure 2).

The following rural tourism cluster groups (RTCG) and rural tourism clusters (RTC) have been proposed: RTCG 1 Central Serbia and Western Serbia – RTC 1 Golija, RTC 2 Zlatar-Zlatibor, RTC 3 Kopaonik, RTC 4 Central Serbia; RTCG 2 South Banat and Lower Danube – RTC 5 Lower Danube and RTC 6 South Banat; RTCG 3 Eastern Serbia – RTC 7 Soko Banja, RTC 8 Eastern Serbia and RTC 9 South Eastern Serbia; RTCG 4 Vojvodina – RTC 10 Fruška Gora, RTC 11 Upper Danube and RTC 12 Northern Vojvodina.

In the pocess of initial prioritization, the identified 12 RTC are rated according to the following criteria:

• Level 1: Cluster contains a high concentration of high value factors and attractors, has a Tourism Master Plan and has at least one resource with the potential to be an all year round destination.

• Level 2: Cluster contains a high concentration of priority factors and attractors, has a Tourism Master Plan but has limited potential as a destination all year round, or Cluster contains a lower concentration of priority factors and attractors, has a Tourism Master Plan but has potential as a destination all year round.

• Level 3: Cluster contains a lower concentration of priority factors and attractors, has a Tourism Master Plan; but has limited potential as a destination all year round; or Cluster contains a lower concentration of priority factors and attractors, has the potential as a destination all year round, but does not have a Tourism Master Plan.

The comparison of the RTC and RTCG brougth up the following conclusions:

• RTCG 1: Comprises of RTC 1-4 and is located in Central Serbia and Western Serbia. The cluster group comprises of a high variety of clusters which have high potential to attract visitors and tourists throughout the year. It has a high variety of natural and cultural attractors, as well as having three of the most important man-made attractors in Serbia.

• RTCG 2: Comprises of RTC 5-6 and is located in

South Banat and Lower Danube with the northern part or Eastern Serbia. The cluster group comprises a high variety of clusters with high potential to attract visitors, although it does not have such a strong potential as RTCG 1 to attract visitors throughout the year.

- RTCG 3: Comprises of RTC 7-9 and is located primarily in Eastern Serbia. The cluster group contains attractive natural factors, but has limited attractors. It has natural resources which have the potential to attract visitors and tourists all year round.
- RTCG 4: Comprises of RTC 10-12 and is located in Vojvodina. The cluster group contains attractive natural factors and attractors, although it is not as highly concentrated as in RTG1 and RTG 2. RTCG 4 has less potential than RTCG 1 and RTCG 3 to attract visitors and tourists all year round.

However more factors have been taken into account in a second prioritisation process in order to fine tune the decision making process. The results of the initial and secondary prioritisation (Table 3) show that the final prioritization for rural tourism development is the following (in order of priority): Central and Western Serbia (RTCG 1), Vojvodina (RTCG 4), South Banat, followed by the Lower Danube with the northern part or Eastern Serbia (RTCG 2) and Eastern Serbia (RTCG 3). The highest priority clusters (RTCG 1, RTCG 4) have the best opportunities and highest potential to create value and potential returns from tourism investments.

Discussion of the results

The identification and prioritization of rural tourism clusters was based on the results of FAS methodology, as well as on the relevant spatial plans (Spatial Plan of the Republic of Serbia and spatial plans of special purpose areas) and tourism master plans for primary tourism destinations in Serbia. The prioritization based on the results of FAS methodology corresponded to the prioritization set by relevant spatial and tourism sector plans. Validation of the prioritization level given to the RTC and re-prioritization of the RTC was conducted by stakeholders at the national lelvel of governance – ministry in charge of tourism and national tourism organization. This reduction in participation of actors at national level of governance reduces the validity of the results. Their validity would be higher if other relevant actors participated in the process of prioritization, namely the ministries and agencies in charge of spatial planning, nature and culture heritage protection, transport etc.

HOW TO MANAGE THE SUSTAINABLE HERITAGE UTILIZATION AND SUSTAINABLE RURAL TOURISM DEVELOPMENT?

Cases

The main challenges and possibilities for rural tourism development in achieving sustainable heritage utilization and benefit for development of rural communities are discussed at two cases – protected natural heritage of Mountain Stara planina, and protected cultural heritage of Viminacium.

Viminacium is the highest ranked cultural attractor in Serbia, located in RTC 5 and RTCG 2. Mountain Stara planina is the third ranked natural factor, located in RTC 8 and RTCG 3.

Viminacium Archaeological Park

Viminacium archeological site is in Pozarevac Municipality, at the rural area near "Drmno" open pit coal and "Kostolac B" thermal power plant.

Viminacium is protected as immovable cultural property of exceptional importance for the Republic of Serbia, and the proposal for the Tentative List of UNESCO World Heritage is in preparation. Viminacium was the capital of the Roman province – Upper Moesia (Moesia Superior) and Late Antiquity Moesia (Moesia Prima). There are indications that this great city and legionary camp on Roman Limes was transition point between the West and the East when the capital was moved from Rome to the East, to Constantinople. Its advantage is the possibility to investigate and present the entire Roman city whose area was greater than Pompeii.

Bearing in mind that eighteen Roman Emperors who were born in present-day Serbia represents one fifth of the total number of all the Roman Emperors and the greatest number of Roman emperors who were born and ruled out of the Italian territory, the Archaeological Institute of the Serbian Academy of Sciences and Arts (further: Archaeological Institute) launched the project "Roman Emperors' Cultural Route in Serbia" (Itinerarium Serbiae Romanum). The basic idea of this project is to connect all of the imperial territory at Serbia into one unit as it existed when the Roman Empire was on the banks of Danube. The project has the objective of Pan-European significance, to connect to other places in the imperial Roman provinces at the territory of Roman Empire, where Roman Emperors were born or lived.

Viminacium is the first archaeological park in Serbia, and so far the most attractive site at Roman Emperors' Cultural Route in Serbia. The intensive archaeological and multidisciplinary

Table 3. Results of initial and secondary prioritization of RTC and RTCG in Serbia

Rural Tourism Cluster Groups (RTCG), Rural Tourism Cluster (RTC)	Initial priorization		Secondary priorization					
	FAS	Seasonality	Accessi-bility	Proximity to markets	Un-employ-ment	Hospitality	Experience in Tourism	Average RTCG Total RTC
RTCG 1:	1	1.5	2	1.75	1.75	1.5	1.5	11
RTC 1 Golija	1	1	2	2	1	2	1	10
RTC 2 Zlatar-Zlatibor	1	2	2	2	2	1	1	11
RTC 3 Kopoanik	1	1	2	2	1	2	2	11
RTC 4 Central Serbia	1	2	2	1	3	1	2	12
RTCG 2:	1.5	3	2	1	2.5	1.5	2	13.5
RTC 5 Lower Ddanube	1	3	2	1	3	1	1	12
RTC 6 South Banat	2	3	2	1	2	2	3	15
RTCG 3:	2.3	1.3	3	1.7	1.3	2.7	2.7	15
RTC 7 Soko Banja	3	2	3	1	2	2	2	15
RTC 8 Eastern Serbia	1	1	3	1	1	3	3	13
RTC 9 South Eastern	3	1	3	3	1	3	3	17
RTCG 4:	2	3	1.3	1.7	2.3	1.3	1	12.6
RTC 10 Fruška Gora	1	3	1	1	2	2	1	11
RTC 11 Upper Danube	2	3	2	2	2	1	1	13
RTC 12 Northern Voj.	3	3	1	2	3	1	1	14

Prepared based on: Strategy for Sustainable Rural Tourism Development in Serbia, Master Plan for Sustainable Rural Tourism Development in Serbia, UNWTO, 2011, p. 26.

research at the area of this Roman city has been carried out since 2002 under the direction of archaeologist Miomir Korać from the Archaeological Institute. All investigated localities have been immediately presented and interpreted as a part of the Viminacium archaeological park. Efficient development of Viminacium archaeological park was supported by establishing the appropriate management arrangement. Archaeological Institute and the Mathematical Institute of Serbian academy of Arts and Sciences, Faculty of Mathematics and Faculty of Mining Geology, University of Belgrade, founded the Center for New Technologies "Viminacijum" to manage the geophysical surveys, archaeological site protection, development and promotion of tourism. This Center developed good coordination and cooperation with public services and enterprises at national, and less at local level management.

Development of the Viminacium archaeological park is environmentally, economically and socially sustainable. Environmental and economical sustainability is achieved both in cultural and archaeological tourism development and cultural heritage protection. Economic sustainability is strengthened by an investing part of tourism revenue in investigations, protection and presentation of archaeological site. Environmental sustainability is strengthened by resolving the conflicts between immovable cultural property protection and expansion of open coal mines in the buffer zone of Viminacium. Social sustainability is partly achieved by employing the local population, namely providing jobs for 20 young people at archaeological park (e.g. tourist interpreter, organization of conferences, workshops and events, guard service etc). Social and economical sustainability of local communities is going to be accomplished by development of a specific accommodation along Roman Emperors' Cultural Route in Serbia – so. Domus. The idea of this project is to employ the local inhabitants by combining the cultural and rural tourism products. In agreement with the representatives of the Italian region of Friuli Venezia Giulia, formed joint task force of experts prepared a project worth 39 million euros for the construction of 100 Domuses along the 600 km of Roman Emperors' Cultural Route in Serbia. This accommodation will be located at a distance of about 5-10 km, at a day cross on foot or by bike. All will be built in the Roman style in the form of a Roman villa, with 5-10 bedrooms and standardized services. It will provide all services for cycling. Each will employ 8-10 people. All 100 Domuses directly will employ 800-1,000 and indirectly another 3-4,000 local inhabitants in catering and other necessary supply. It is estimated that Domuses should provide employment for a total of about 4-5,000 local inhabitants (Maksin *et al*., 2011).

Mountain Stara planina Nature Park

The Mountain Stara planina Nature Park occupying the area of 1.143 km^2 is situated in the eastern part of Serbia, in the border line between the Republic of Serbia and the Republic of Bulgaria. The Nature Park is selected as IBA and IPA site and planned to be proposed for the UNESCO MaB (Man and Biosphere) program. This is an area with pronounced potentials for the development of winter and summer tourism because of which it has been prioritizied as primary tourism destinations with all-year-round offer in Serbia. It is also an area containing a great number of cultural monuments of national and regional importance, as well as authentic old mountain villages, water sources of national and regional importance, etc. Diversity of rural cultural heritage, particularly the preserved examples of folk architecture and settled entities are important resource for the rural tourism development. Rural cultural heritage (tangible and intangible) may help the strengthening of Nature Park identity and identification of inhabitants and visitors with natural and cultural values of rural area, which would contribute to the preservation and sustainable utilization of cultural heritage. Although this area has potentially exceptionally attractive tourism assets in eastern Serbia, the tourism is only in the initial phase of development, and it still cannot create positive effects on socio-economic development of local communities.

The conflicts between diferent tourism development concepts (concentration concept – mega winter tourist resort and dispersion concept – small and medium tourist resorts and rural tourism development), and between planned mega winter tourist resort with ski infrastructure and nature heritage protection and local communities development occured due to non compliance of spatial plan and tourism master plan. In other words, the Stara Planina Resort Area Master Plan (2007, in the sequel: Master Plan) was not elaborated in complaiance with the Spatial Plan for the Special-Purpose Area of the Mountain Stara planina Nature Park (2008, further: Spatial Plan for Stara planina), nor with the protection regimes established for the entire area of Mounatin Stara planina Nature Park. The Master Plan has doubled the accommodation capacity in the mountain zone compared to the total capacity envisaged by the Spatial Plan for Stara planina. Sustainability assessment of the planned Jabučko Ravnište-Leskovac Tourist Resort proposed by the Master Plan was researched and presented in the Strategic Environmental Impact Assessment (2008), wich was carried out for the Spatial Plan for Stara planina. Based on the results of evaluation carried out using the Strategic Environmental Impact Assessment (SEA) methodology, it has been concluded that, under the tourism concept of a dispersion development and construction which has been implemented in about 88% of the area, implementation of the Spatial Plan for Stara planina will have significant positive effects manifested in: the protection and improvement of the natural environment; preservation and sustainable utilization of natural and cultural heritage; overall economic effects and equable growth in local employment (in the realm of tourism, agriculture and other complementary activities); uniform development of infrastructure and improvement in the quality and accessibility of infrastructure and public services; creation of conditions in which tourism and recreation will be accessible to all tourist, etc. In carrying out the SEA, it has been concluded that, in the smaller part of the area covered by the Spatial Plan for the Stara planina (in about 12% of the area), the implementation of tourism concentration concept with mega winter tourist resort (Jabučko Ravnište-Leskovac) will have a long-lasting unfavorable effects on the natural environment, particularly in regard to water supply, wastewater disposal, access and internal traffic, solid municipal waste elimination, the quality of life of local residents etc, which is much more difficult to control than in case of concept of disperse development which is more suitable for the protected area of the Mountain Stara planina Nature Park (Maksin-Mićić *et al.*, 2009). The SEA has provided recommendations for the reduction of originally determined capacities of Tourist resort Jabučko Ravnište (approximately 22,000 beds) to the level which would not endanger the environment (approximately 6,000 beds). The Plan of Detailed Regulation of Jabučko Ravnište (2009, in the sequel: PDR) has been designed for 6,000 beds. In carrying out the SEA for this PDR (IAUS, 2009), it has been concluded that none of the planning solutions will generate significant long-lasting unfavorable effects on the environment and local communities development that cannot be kept under control.

Problems in achieving sustainable tourism development, natural heritage protection and rural development mainly occur due to management arrangement for the Mountain Stara planina. Management arrangement includes the public sector predominantly at the national level of governance, namely the

following key stakeholders: in nature protection – Institute for Nature Conservation of Serbia and Public Enterprise "Srbijašume" (monitoring and managing protection and development of Nature Park), and in tourism development – National Corporation for Tourism Development of Serbia (managing development of the Jabučko Ravnište Tourist Resort), Public Enterprise for the development of mountain tourism "Stara planina" (managing construction of the Jabučko Ravnište Tourist Resort), and Public Enterprise "Skijališta Srbije" (managing construction and maintenance of the ski infrastructure). Efficiency and effects of the established public sector management arrangement have not been monitored at national level of governance. Local public and private sector, as well as civil society have almost no influence on the management of tourism development and nature protection at Mountain Stara planina.

Evaluation criteria for managing sustainable heritage utilization and rural tourism development

Based on two analyzed cases the following evaluation criteria for the management of sustainable heritage utilization and sustainable rural tourism development are proposed for tourism destinations:

- Planned tourism development – Adopted Spatial Plan for Special-purpose Area (SPSPA), regulation plan for tourism resort (RP) and Tourism Master Plan (TMP) for the area with protected natural and cultural heritage (or wider area).
- Compliance of the plans – compliance of TMP with the SPSPA and Strategic Environmental Impact Assessment (SEA) in respect to protection regimes, planned tourism development and local society development.
- Controlled tourism development – level of tourism development in compliance with the SPSPA and RP at the protected area of natural and cultural heritage.
- Achieved sustainability of tourism development (and rural tourism development), heritage utilization (protection, presentation and interpretation) and rural community development (employment and inclusion of local inhabitants in tourism development and heritage protection, economic and social benefits for rural communities).
- Governance support and coordination of tourism development, heritage utilization and local community development.

Planned tourism development at area with protected natural and cultural heritage is rated according to the following criteria:

- High (1) – for the area with protected natural or cultural heritage all proposed plans are adopted (SPSPA, RP for priority tourism resort and TMP),
- Medium (2) – for the area with protected natural or cultural heritage one of the proposed plans (SPSPA, RP or TMP) is adopted, or two plans have been elaborated, but not adopted,
- Low (3) – for the area with protected natural or cultural heritage none of the proposed plans is elaborated.

Compliance of the plans, namely the Tourism Master Plan (TMP) with the Spatial Plan for Special-purpose Area (SPSPA) and the Strategic Environmental Impact Assessment (SEA) is rated according to the following criteria:

- High (1) – when TMP is elaborated and adopted in compliance with SPSPA and SEA for the spatial plan or with SEA for the master plan,
- Medium (2) - when TMP is elaborated and adopted partly in compliance with SPSPA and SEA for the spatial plan, only in respect to protection regimes,
- Low (3) – when TMP is not elaborated and adopted in compliance with SPSPA and SEA for the spatial plan.

Controlled tourism development in respect to the level of tourism development in compliance with the SPSPA and RP at the protected area of natural and cultural heritage is rated according to the following criteria:

- High (1) – when the tourism development and construction of tourism facilities is in accordance with the SPSPA and RP, based on technical documentation and Environment Impact Assessment (EIA) when proposed,
- Medium (2) - the tourism development and construction of tourism facilities is partly in accordance with the SPSPA and RP (with deviations within the limits of carrying capacity, preveiling landuse and in accordance with protection regimes proposed by the plan), based on technical documentation and Environment Impact Assessment (EIA) when proposed,
- Low (3) – the tourism development and construction of tourism facilities is not in accordance with the SPSPA and RP.

Achieved sustainability of tourism development and heritage utilization is rated according to the following criteria:

- High (1) – achieved environmental, social and economic sustainability of tourism development, sustainable natural and cultural heritage utilization (protection, prezentation and interpretation) and sustainable rural community development (employment and inclusion of local inhabitants in tourism development and heritage utilization, economic and social benefits for local community, etc),
- Medium (2) – achieved environmental and partial social and economic sustainability of tourism development, sustainable natural and cultural heritage utilization (prezentation and interpretation) and partial support to rural community development (employment and inclusion of local inhabitants in tourism development),
- Low (3) – sustainability of tourism development, natural and cultural heritage utilization and rural community development has not been achieved.

Governance support for coordinated management of tourism development, heritage utilization and local community development is rated according to the following criteria:

- High (1) – coordinated tourism destination management and heritage protection management at national level of governance, with participation of local stakeholders in public and private sector, and civil society (e.g. rural households),
- Medium (2) – coordinated tourism destination management and heritage protection management at national level of governance, with partial participation of local stakeholders in public aand private sector, and weak participation of civil society,
- Low (3) – uncoordinated tourism destination management and heritage protection management at any level of governance, with the weak participation of local stakeholders in all sectors.

The sustainability evaluation of heritage utilization and rural tourism development is carried out based on proposed criteria for the analyzed tourism destinations with natural and cultural heritage (Table 4). Although less planned and without any involvement of the national level of governance in destination

Table 4. Sustainability evaluation of heritage utilization and rural tourism development for tourism destinations with natural and cultural heritage in Serbia

Tourism destination with natural/ cultural heritage	1. Planned tourism development	2. Compliance of plans	3. Controlled tourism development	4. Achieved sustainability	5. Governance support	Average points
Viminacium Archaeological Park	2	2	1	2	2	1.8
Mountain Stara planina Nature Park	1	3	2	3	3	2.4

management, Viminacium tourism destination has achieved higher level of overall sustainability. This brief evaluation shows that the key problem in achieving the sustainability of tourism development, heritage utilization and local community development is the un-efficient management.

Discussion of the results

Data base for evaluation process is partial for the third criteria and insufficient for the last two of proposed criteria, as there is no established information and monitoring system on spatial and tourism development, or on heritage and environment protection in Serbia.

Detailed sustainability evaluation should be carried out based on monitoring of sustainability indicators and criteria of rural tourism development, rural community development, and natural and cultural heritage utilization. Thus would enable carrying out both quantitative and qualitative assessments.

CONCLUSION

Rural tourism combines many different aspects of experiencing, sharing and showcasing rural life and rural environment. Key aspect of rural experience is the attractiveness, prezentation and interpretation, as well as accessibility of nature and culture-based assets and their sustainable utilization and protection. To evaluate the attractiveness of natural and cultural heritage at rural Serbia, and at primary tourism destinations defined by the Spatial Plan of the Republic of Serbia, the FAS methodology should be implemented. To carry out the quantitative evaluation, necessary data should be provided on tourism development of primary tourism destinations in Serbia.

Development of tourism cannot be fostered everywhere in the Serbia and at the same pace. The identification and prioritization of rural tourism clusters is based on the concentration of attractive natural and cultural heritage, as well as on other criteria – the potential of the destination throughout the year, accessibility, infrastructure, urban centers/markets proximity, hospitality supply, unemployment distribution and tourism experience. This kind of prioritization should be carried out for each primary tourism destination in Serbia, and for appropriating support of international and national funds. Validation of prioritization should be based on the expanded participation of stakeholders in public, private and civil sector.

Five evaluation criteria for the management of sustainable heritage utilization and sustainable rural tourism development are proposed for tourism destinations – planned tourism development, compliance of the plans, controlled tourism development, achieved sustainability, and governance support. To carry out any detailed sustainability evaluation, information and monitoring system on spatial and tourism development, as well as on heritage and environment protection in Serbia should be established.

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Received October 2012; accepted November 2012

VERSITA

SPATIUM *International Review*
No. 28, December 2012, pp. 45-52

UDC 502.131.1:336.38(234.421.1)(497.11)
Review paper
DOI: 10.2298/SPAT1228045P

SUSTAINABLE TOURISM DEVELOPMENT IN THE CARPATHIAN REGION IN SERBIA

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This paper analyzes natural and anthropogenic tourism resources in the Carpathian region in Serbia, as well as legal and institutional frameworks which need to be strengthened with the aim of ensuring sustainable tourism development of the region. The sustainable tourism development will necessitate the linking of stakeholders within and at the level of the region, along with an adequate support at the national level in order to take advantage of numerous opportunities offered by an increasingly intense cross-border cooperation. Taking into account the greater number of protected areas and those planned to be protected in the Carpathian region, as well as specificities of tourism development in these areas, special attention in the paper has been given to sustainable tourism development of protected areas.

***Key words:** sustainable tourism, Carpathian region, clusters, local communities, multi-sectoral approach.*

INTRODUCTION

Tourism is one the most dynamic industries in the global economy. Due to accelerated tempo of contemporary life and environment pollution in urban agglomerations, a growing number of people seek to spend their time in nature, in contact with an authentic lifestyle based on traditional values. The concept of holidays has been changed. Today, holidays are expected to offer new experiences and knowledge in all fields. The tourism offer has been increasingly diversified towards the development of various forms of nature tourism[1)], as well as cultural and rural tourism.

Regardless of forms in which it develops, tourism must meet sustainability criteria. The World Tourism Organization (WTO) defines ***sustainable tourism*** as a tourism which leads to management of all resources in such a way that economic, social and aesthetic needs can be fulfilled while maintaining cultural integrity, essential ecological processes, biological diversity and life support systems (Tourism New South Wales, 2006). Sustainable development, protection and planning of tourism areas is based on the following principles:

- ***Principles of development***: economic sustainability; social and cultural appropriateness; environmental acceptability; encouraging the tourism destination development in order to create competitive tourism products, as well as institutional and functional organization of tourism area offer; development of all-year round tourism offer; creating conditions for integrating the tourism with complementary sectors of economy and society – through partnership between the public, private and non-governmental sectors; strengthening the cross-border cooperation in tourism and complementary activities; harmonizing the tourism development regulations with European standards; and ensuring public participation in conceiving and implementing sustainable tourism spatial development.
- ***Principles of protection***: organization, planning and use of tourism areas by full implementation of criteria and standards for environmental protection, as well as the protection of nature, natural and cultural heritage; ensuring the protection, presentation and integrated management of the cultural and natural resources in the interest of sustainable tourism; conservation and revitalization of natural and cultural resources by generating income from tourism.
- ***Principles of regulation***: valorization of natural and man-made tourism resources classified according to their value and contents (as a starting point in identifying the tourism areas); integrated strategic planning of tourism development along with equally considering social, economic, spatial, environmental and cultural aspects; monitoring and implementation of international principles, methods and models of sustainable tourism, with critical specifications for conditions in Serbia.

Attracting visitors and investors, as well as engaging local entrepreneurs in tourism and complementary activities, contributes to economic development and social stability of local communities. However, tourism development, if inadequately managed, can have negative effects on the environment and cultural values, especially in environmentally vulnerable areas.

Aiming at promoting the sustainable (environmentally friendly, economically viable and socially responsible) tourism, the UN Conference of the Parties to the Convention on Biological Diversity (CBD) adopted in 2004 the

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The paper is prepared as a result obtained within the scientific projects: "Sustainable agriculture and rural development in the function of accomplishing strategic objectives of the Republic of Serbia in the Danube region" (III 46006) and "Sustainable Spatial Development of Danubian Serbia" (TR 36036), financed by the Ministry of Education, Science and Technological Development of the Republic of Serbia in the period 2011-2014.

Guidelines on Biodiversity and Tourism Development in areas of importance for biodiversity and ecosystem conservation, as well as in protected areas, including vulnerable costal and mountain ecosystems, but also in any area where tourism development may have impact on biodiversity. According to the CBD Guidelines, in order to be sustainable, the tourism development should involve a coordinated process of formulating the policy, planning and management based on participative approach (CBD Secretariat, 2004).

FRAMEWORKS AND RESOURCES FOR SUSTAINABLE TOURISM DEVELOPMENT

Geographical determinants and development potential

For the analysis of tourism potentials of the Carpathian region in Serbia a wider definition of Carpathian region geographic framework[2] was used. Thus considered, according to orographic elements, watersheds and administrative–territorial division, the region can be conditionally divided into 11 sectors as follows: Šomrda, Liskovac, Miroč, Homolje mountains, Veliki and Mali Krš, Deli Jovan, Beljanica, Kučaj mountains, Rtanj, Tupižnica, Ozren and Devica, as shown on Figure 1.

Although sparsely populated area with undeveloped local infrastructure, particularly in its interior, the Carpathian region has significant development potential. The Danube river (with the most attractive part of its course within the Lower Danube Basin), sources of natural mineral water, hilly and mountainous areas, forests and natural and cultural resources of outstanding value, together with spiritual values, as well as traditional architecture and diverse offer of food and wines with geographical indications, provide a good basis for tourism development. High levels of environmental vulnerability, as well as demographic and structural limitations highlight the importance of sustainable development of tourism and agriculture, which ensures their mutual support in the realization of sustainable regional development (Popović *et al*., 2010a).

Taking into account specificities of tourism development in protected areas, these areas, as well as areas planned to be protected in the Carpathian region, deserve special attention. According to the provisions of the Spatial Plan of the Republic of Serbia (2010-2020), the following areas keep the status of protected areas (of 500 ha and more) in the plan period: the "Đerdap" National Park, the "Ozren Meadows" and "Lepterija-Sokograd"

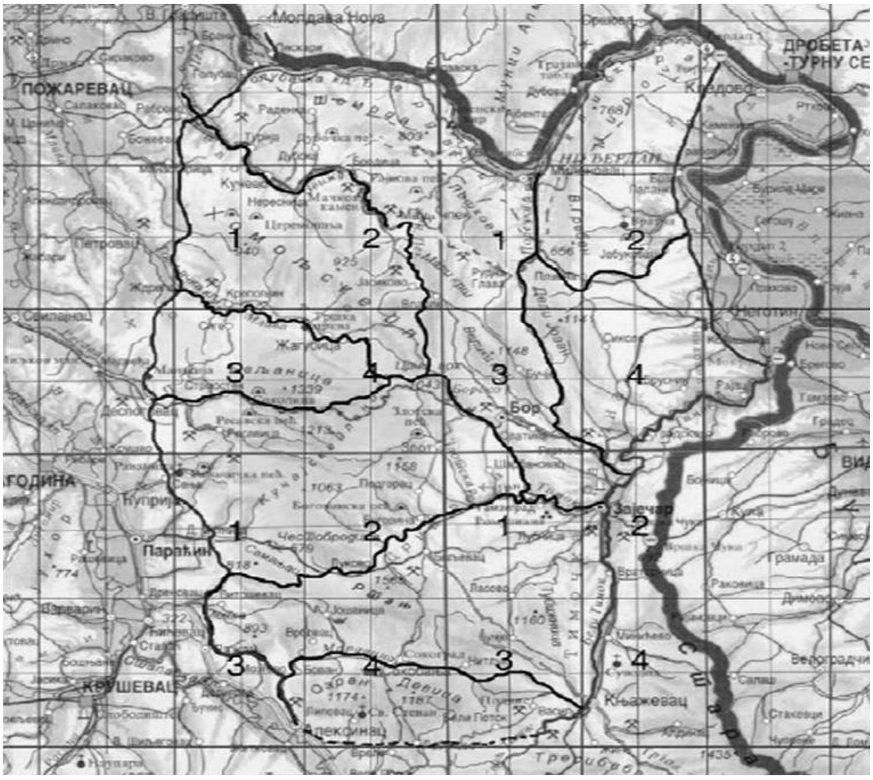

Figure 1. Wider area of the Carpathian region in Serbia
Source: REC-EUR.AC, (2006)

landscapes of outstanding values and the "Resava" and "Lazar's Canyon" monuments of nature. The status, spatial coverage and protection regime are to be defined for the following mountains: Rtanj, Kučaj mountains, Deli Jovan, Ozren-Devica, Tupižnica, Stol, Mali Krš, and Veliki Krš as well as for the areas of Vitovnica Gorge and Romulijana-Gamzigrad.

The following are proposed to be entered on the Ramsar List: Đerdap Gorge (the Danube 1050-950 river km), Mala Vrbica Fish Pond and the Danube 930-845 river km (Negotinska krajina region); Đerdap and Kučaj mountains on the List of Biosphere Reserves, while NP "Đerdap" on the UNESCO World Heritage List. Besides Gamzigrad, which is inscribed on the UNESCO World Cultural and Natural Heritage List, the Negotin pimnice (settlements consisting of wine cellars such as Rajac, Rogljevo, Štubik, etc.) and the riparian area of the Danube (Golubac, Lepenski vir, Diana and Pontes) are also among the priority cultural areas which should enjoy special treatment (Official Gazette of the Republic of Serbia, 88/2010).

Protected areas create a positive regional image, while sustainable tourism development contributes to the promotion of protected areas and to greater employment opportunities for local population, as well as to overcoming regional development problems. For successful implementation of this tourism development concept in practice, it is necessary to engage a wide range of stakeholders in the process of creating key tourist products and multi-sectoral approach (Popović, Milijić, 2010b).

Legal and institutional frameworks for sustainable tourism development

The principles of: ***sustainable tourism development*** (balanced economic development, conservation of natural and cultural resources and development of local communities*);* ***integrated tourism development and development of accompanying activities*** (transportation, trade, agriculture, crafts, and public services); and ***partnerships between the public and private sectors and civil society*** in planning, design and marketing tourism products, are defined in the **Law on Tourism**. According to the Law, integrated planning and proclamation and sustainable use of tourism areas are based on concepts contained in the national *Tourism Development Strategy*. The Strategy is realized through strategic master plans, marketing plans, programs for tourism product development, as well as spatial and urban plans (Official Gazette of the Republic of Serbia, 36/2009, 88/2010).

The Carpathian region has not been considered as an integral tourism area in the above-mentioned planning and development documents. Greater part of this area belongs to

Eastern Serbia tourism cluster[3], while a smaller part, to the northwest, to the Belgrade tourism cluster[4] (Figure 2).

This division is functional and partly statistical, and not strictly physical, given that tourism areas (destinations/regions) most frequently comprise territories of two or more municipalities, and not rarely the territories within more that one region, meaning that the tourism area and/or its part are located within two or more administrative territorial entities.

Strategic master plans cover tourism destinations/regions of *Lower Danube Basin*, *Stig-Kučaj mountains-Beljanica*, *Sokobanja* and cultural-historical route *Roman Emperors Route (Felix Romuliana)*. Greater or smaller parts of the listed tourism areas are linked with boundaries of the Carpathian region. Strategic master plans also represent an important basis for elaboration of spatial and urban plans within tourism destinations and tourism regions[5]. In the part of tourism region which is at the same time a protected area, the protection regimes are prioritized and prescribed by regulations on the protection and use of natural and cultural values of protected areas.

In considering the sustainable tourism development, a particular problem lies with legal regulations related to obligation of carrying out a strategic impact assessment of plan/program document (based on the Law on Strategic Impact Assessment and Law on Planning and Construction), which (most frequently declaratively) applies only to spatial and urban plans, but not also to master plans for tourism, thus creating problems in their implementation[6]. The role of strategic impact assessment should be to create causal links between environmental protection and development planning, spatial regulation and construction, by determination of measures for neutralizing the impacts, that might be caused with certain activities and interventions in space (Maksin *et al*., 2009).

In the Tourism Development Strategy of the Republic of Serbia, the clusters/ destinations/ products are conceived in such a manner that "they themselves establish their market positioning and own competitive advantages in order to be different from their competitors and successfully counteract the competition" (Official Gazette of the Republic of Serbia, 91/2006). However, due to overtaken international obligations related to sustainable tourism development in the Carpathian region, i.e. possibility for developing the specific tourism products/destinations, such as sustainable tourism in protected areas, the tourism entities both within and at the level of Carpathian region have to take joint actions.

Serbia is signatory of the ***Carpathian Convention*** (2007) and its ***Protocol on Sustainable Tourism*** (2011). The Protocol envisages a number of obligations for signatory countries, related to regional and cross-border cooperation in:

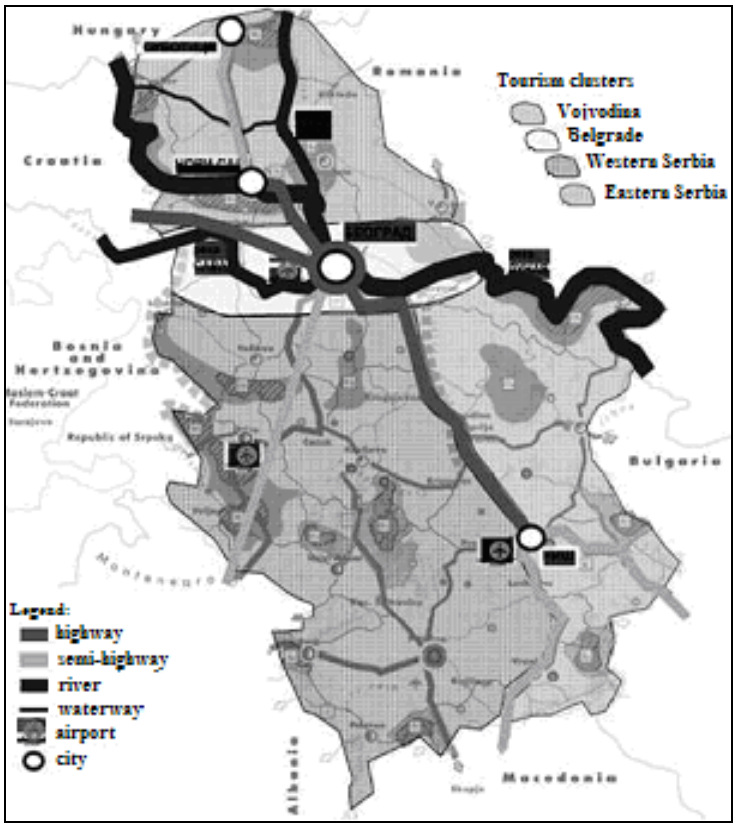

Figure 2. Tourism clusters of Serbia
Source: Tourism Development Strategy of the Republic of Serbia, (2006).

- Promoting the Carpathian region as destination of sustainable tourism based on unique common natural and cultural values, tradition and historical heritage of the Carpathians;
- Developing regional integrated tourism products and services and common high quality standards, regional tourism brands and promotional strategy, as well as marketing patterns;
- Enhancing the contribution of tourism to sustainable development of local economies in the Carpathians by ensuring an integrated development of infrastructure and accompanying activities and promotion and branding of products of local producer associations, especially traditional agricultural and craft products;
- Ensuring the contribution of tourism to conservation and sustainable use of biodiversity and landscapes in Carpathians, particularly to protected area management, amongst other things, by incorporating the CBD Guidelines on Biodiversity and Tourism Development into tourism development strategies and plans;
- Developing the Carpathian code of good practice in sustainable tourism, etc. (UNEP-ISCC, 2011a).

It is also envisaged to adopt the Strategy for Sustainable Tourism Development in the Carpathians. The signatory countries are required to ensure the successful implementation and supervision over the implementation of obligations set in the Protocol on the territory of the Carpathian region through appropriate legal and institutional measures.

Serbia has participated in defining and implementing the ***Danube Strategy*** calling for specific actions in the Carpathian region in different fields, including tourism. In addition to determining the strategy for sustainable development of tourism in the Carpathians, as a priority action in the field of tourism, initiated by the Danube Strategy, the Strategic Action Plan for the Carpathian area lists project ideas related to the development of the Carpathian tourism cluster (*Via Carpatica*, *Greening the Carpathian Tourism Industry – Ecocertification and Marketing Scheme*), education and promotion of best practices in the development of environmentally-friendly tourism in the Carpathians as priority actions in the field of tourism, initiated by the Danube Strategy (UNEP-ISCC, 2011b).

Special attention is given to the cooperation in developing the **sustainable tourism in**

protected areas of the Carpathian region. Sustainable tourism development is among priorities for cooperation between members of the ***Carpathian Network of Protected Areas*** (CNPA)[7]. The CNPA Medium-Term Strategy envisages actions related to the promotion of protected areas as a model of sustainable development and strengthening of international cooperation, as well as a participative process in planning the development of local communities (UNEP-ISCC, 2011c). In wider Europe, important activities in this field are carried out within the ***European Charter for Sustainable Tourism in Protected Areas***, instruments whose activities are coordinated by EUROPARC Federation. The membership in EUROPARC Federation is a precondition for membership in the Charter, as well as for participation in activities of the Protected Area Network created within the Charter (European Charter Net)[8].

Regardless of spatial and functional organization of tourism in the Carpathian region envisaged by national legal framework, it is obvious that the future sustainable tourism development will require linking of stake-holders within and at the level of the Carpathian region in Serbia, with appropriate support at the national level so as to take advantage of numerous opportunities provided by the dynamic international cooperation in this field. To this end, one of possible steps is to form tourism cluster, i.e. to consider the Carpathian region as a primary tourism area which will enable the networking of tourism destinations/zones. Through realized synergy, cluster ensure the quality of tourism products and services, as well as facilitate the introduction of innovations and exchange of knowledge, thus leading to increasing stability of regional economy and improvement of the quality of life of population and visitors. The Carpathian tourism cluster would also represent a framework for programs and projects of cooperation at the level of the Carpathian region as a whole. Practical implementation of this idea necessitates harmonization within institutional and organizational frameworks, as well as establishment of an adequate ***Regional Development Institution*** for coordinating development of tourism and accompanying activities at the level of the Carpathian region in the capacity of a regional *Destination Marketing Organization* (DMO) along with a support of the *Tourism Organization of Serbia* (TOS).

Prospective Forms of Tourism

Starting primarily from facts that: the area is spatially and geographically heterogeneous; natural and anthropogenic resources are numerous and valuable, but have been very little valorized so far; geographic position offers strategic possibilities for animating a large portion of tourist demand; and that until now the tourism has to a great extent developed in an uncontrolled manner, i.e. without inadequately pursued market and demand policy, it is necessary to carry out the territorial differentiation of the region so as to create possibilities for more precisely specifying the appropriate measures, policies and marketing and management strategies, which will contribute to the tourism development. To this aim, a preliminary division of the Carpathian region (including Ključ and Negotin lowlands as integral part of Carpathian landscape) into seven zones has been carried out[9], which would be a basic level of planning and coordination between activities of the TOS and future DMO, i.e. tourism cluster of the Carpathian region (Figure 3).

The Zone I is made up of the area adjacent to the Danube river (the Lower Danube Basin), with "Đerdap" National Park in its center (municipalities of Golubac, Majdanpek and hilly part of municipality of Kladovo). The largest part of zone II (lower part of the Kladovo municipality, municipality of Negotin and northern part of municipality of Zaječar) is made up of Negotinska krajina region, while the Zone III is made up of Homolje region (municipality of Kučevo and parts of municipalities of Žagubica and Petrovac on the Mlava River). The Zone IV comprises the Beljanica-Kučaj region (parts of municipalities of Petrovac on the Mlava River, Žagubica, Despotovac and the area on the edge of the Paraćin municipality). The Zone V comprises abundant tourism resources of the Bor municipality, while zones VI and VII comprise area on the edge of municipalities of Zaječar and Boljevac, and Sokobanja and Knjaževac, respectively, up to the line Ražanj – Ozren – Devica – Tupižnica, i.e. up to the northern boundary of the Stara Planina Mt. tourism destination. Because of their abundant natural and anthropogenic tourism resources, as well as considering the scope and character of this paper, they will be briefly analyzed, placing the accent on their use-value in terms of tourism development[10].

Zone I The Lower Danube Basin (historical zone of the Danube)

The Lower Danube Basin is characterized by the high quality and large quantities of natural and anthropogenic, active and potential

Figure 3. Tourism zones in the Carpathian region in Serbia

tourism resources found in a unique landscape formed at the breakthrough of the Danube river between the Carpathians and Rodop mountains at the Djerdap Gorge, the greatest and most attractive river gorge in Europe. The following tourism resources stand out:

• ***The Danube river with the Đerdap Lake and its riparian area*** offer large potential for the development of fishing, nautical and cruising tourism. Special attraction is the width of the Danube acquatorium of about 6 km, between Moldova and Golubac, just before entering the Golubac gorge, as well as the river depth of about 90m (in Kazan), which is the greatest river depth in Europe. The priority is given to the integration of tourism offer of the Danube and its riparian area. A part of the "Eurovelo 6" cycle route runs along the Danube, using the corridor of the Djerdap highway;

• "***Đerdap" National Park***, located along the river course in the direction from Golubac to Kladovo in the area of about 636 km^2 is characterized by many geomorphological, hydrological and biogeographical resources. Well-preserved eco-systems and landscape diversity provide possibilities for developing different forms of special interest tourism, as well as different types of sporting activities;

• ***Cultural and historical monuments and archeological sites*** represent a treasury of attractive cultural monuments, particularly those dating back to pre-historic times, Ancient Rome and medieval times (archaeological sites of Lepenski Vir, Diana Fortress, remains of the Trajan's Bridge and Trajan's Table, Golubac Fortress, etc.), but also Serbian ethno-architecture;

• ***Settlements on the banks of the Danube*** - Golubac, Majdanpek and Kladovo provide possibilities for rest and relaxation and other forms of urban tourism (congresses, excursions, etc.) with smaller-range capacities which would also be a part of the MICE[11] tourism;

• ***Large rural area and numerous rural ambience entities, traditional architecture and authentic gastronomy*** – represent a significant potential for rural tourism development; and

• ***Contents associated with customs and life of locals*** – that have stemmed from multiethnicity, offer a wide panoply of cultural events and spiritual values that should definitely be incorporated into different tourism products.

Zone II Negotinska krajina region

The Negotinska krajina region is located at the tri-border point of Serbia-Romania Bulgaria, which clearly indicates considerable possibilities for developing the tourism, particularly transit tourism. In addition, the Negotinska krajina region has plenty of tourism resources, among which the following stand out:

• ***Archeological sites*** - ancient site of Vrelo Šarkamen, the ancient Roman settlement "Vicus ad Aquas", etc., included in the "Roman Emperors Route";

• ***Ecologically preserved hilly landscape*** - between the Timok river and the Danube, above the hilly range of Vidrovac-Badnjevo-Bratujevac, up to Deli Jovan and Stol mountains, offer good conditions for the development of rural tourism and different forms of special interest tourism: hunting and fishing, mountain excursions and sports and recreation, etc.;

• ***The unique architectural complex of*** "Negotinske Pivnice" wine cellars indented for wine production, storage and tasting, dating back to the19th century. The most famous wine cellars are situated in villages of Rajac, Rogljevo and Štubik and represent a suitable basis for developing the wine tourism and wine routes; and

• ***Cultural values*** – the town of Negotin is known for a famous Serbian composer Stevan Stojanović Mokranjac and cultural manifestation "The days of Mokranjac", thus offering a good basis for manifestation tourism.

Zone III Homolje region

The zone of Homolje is bounded to the north and east by Homolje mountain range, while to the south by the Resava river and Beljanica mountain range and to the west by Gornjačke mountains. The Homolje region is connected to Stig by the Mlava River, while through the mountain pass "Crni Vrh" it touches the Timočka krajina region. Exceptional conditions for sustainable tourism development are offered by:

• ***Homolje mountains*** – with ecologically well-preserved landscapes offer possibilities for developing the excursion mountain tourism, ecotourism, different forms of special interest tourism, as well as rural tourism;

• ***The Mlava River*** and its river source **"Vrelo"** offer possibilities for developing the excursion, fishing and sport-recreational tourism;

• ***The Pek River*** – with a long history of gold washing which also left a large trace of human heritage, offers a possibility of tourism valorization;

• ***The Ceremošnja Cave*** – represents a basis for attracting tourists interested in speleology, i.e. special interest tourism; and

• ***Rich local specific and exceptionally attractive folk customs and many traditional manifestations*** in picturesque small towns (Kučevo, Žagubica, Petrovac on the Mlava River).

Zone IV Beljanica - Kučaj

This zone is bounded by the Danube to the north, Čestobrodica mountain pass to the south, Homolje mountains to the east, while the Velika Morava River to the west. The following attractive tourism resources stand out:

• ***The Beljanica mountain*** – the most attractive largest limestone mountain of eastern Serbia, and a potential ski stadium;

• ***The Kučaj mountains*** - with plenty of speleological sites, specific hydrological phenomena, craggy limestone slopes overgrown with pastures and forests, abundance of game species (the proclamation of the protected area of the "Beljanica-Kučaj" National Park will give an additional impetus to the development of nature tourism);

• ***The Resava Cave*** – is important for tourism development because of its underground relief and hydrology, but also remains of the earliest human settlements in this part of Europe; and

• ***Rural area*** – a large and ecologically well-preserved area, suitable for developing the rural tourism and plenty of others forms of nature tourism.

Zone V Bor

The town of Bor with its surroundings is bounded by slopes of Crni Vrh, Mali and Veliki Krš and Deli Jovan mountains (known for the greatest copper ore deposits in Serbia). Among the tourism resources, the following stand out:

• ***Bor Lake*** located at the foothill of Crni Vrh Mt., with potentials for the development of sport and recreational, as well as holiday tourism;

• ***Brestovac Spa*** suitable for the development of "wellness" and "spa" tourism;

• ***Dubašnica,*** as a limestone complex and mountain plateau with abundance of game species (fallow deer, mouflon, chamois, roe deer, wild boar), as well as the *Stol mountain*, offer excellent conditions for the development of hunting, excursion mountain, fishing and other forms of special interest tourism;

• ***Lazar's Canyon*** as one of the most important centers of plant species diversity in the Balkans offers possibilities for developing special interest tourism (paragliding, photo safari, etc.);

• ***Zlot Caves*** (Lazar's, Vodena, Mandina, Vernjikica and Hajdučica caves) accessible for speleologists, but not for tourists, etc.

Zone VI Zaječar – Boljevac

The Zaječar-Boljevac zone is intersected by the Crni Timok and Beli Timok rivers which meet and join near the town of Zaječar to form the Timok river. The following potential resources stand out:

- ***Felix Romuliana*** (Imperial Roman Palace included in the UNESCO World Cultural Heritage List in 2007) is one of the four Roman imperial towns in Serbia;
- ***Gamzigradska Banja*** is a spa nestled in the Crni Timok river valley, known for its sources of healing mineral waters, is a calm place with potential for health and holiday tourism, recreation, sport, hunting and fishing;
- ***Monasteries of Suvodol and Grliški*** – which can be included in the so-called monastery tours within cultural and religious tourism;
- ***Cultural values*** - Gitarijada in Zaječar is an international festival of non-affirmed rock bands, and one of the most important music events in the Balkans.

Zone VII Sokobanja - Knjaževac

The following resources stand out as an important basis for tourism development:

- ***Sokobanja*** **and** ***Rgoška banja*** with potentials for spa tourism;
- ***Mountains*** **- Ozren, Rtanj** and **Devica**, suitable for excursion mountain tourism;
- ***"Ozrenske livade" and "Lepterija-Sokograd" landscapes of outstanding values, the Moravica river, Vrmdžansko Lake and "Ripaljka" waterfall***, together with ***park zones in Sokobanja*** offer important potentials for developing excursion tourism and its integration with health and recreational tourism,
- ***Sokograd medieval fortress*** – built in 1413 on the foundations of a Roman castle, enriches the cultural offer of this area;
- ***Speleological sites*** – Ozren Cave and Seselačka Cave can be used for special interest tourism development; and
- ***Cultural values*** - "Amam" Turkish bath, dating back to Roman times and located in the central park in Sokobanja, etc.

VISIONS AND DIRECTIONS FOR THE DEVELOPMENT OF PROSPECTIVE–FORMS OF SUSTAINABLE TOURISM

The Carpathian region has significant, but insufficiently activated potentials and territorial capital for tourism development, which are based on the following: exceptionally rich natural values and rarities; large and ecologically well-preserved rural areas; plenty of archeological sites; possibilities for a new approach to tourism development, taking into account that it has not been activated on market to any greater extent. The **vision of sustainable tourism** is to increase its role in the development of, particularly peripheral, rural and cross-border areas, which will be based on preserved natural environment and tourism resources of international and national importance.

Pillars of tourism development are the following:

- ***completing and integrating the existing offer in the region*** (the Danube River Basin with the Đerdap Lake/NP "Đerdap", Sokobanja, Gamzigradska Banja, archeological sites of Felix Romuliana and Lepenski vir, etc.);
- ***planning and developing the tourism offer as well as the relating infrastructure,*** as major generators of all-year-round tourism offer of the region (nautical and tourism infrastructure on the Danube, diverse contents of offer for lakes, mountains, immovable cultural heritage, particularly ancient Roman archaeological sites on the stretch Knjaževac - Ravna - Gamzigrad - Kladovo - Viminicium, as well as in "Negotinske pivnice" wine cellars, tourist centers - towns and places/traditional manifestations, spas, rural settlements and hunting grounds, transit waterway and road corridors, etc.;
- ***joint marketing and promotional activities*** for the development of a unified tourism offer and functional integration of offers in the Carpathian region and with surrounding – neighboring regions in Serbia, Bulgaria and Romania;
- ***environmental improvement and protection***, as well as ***protection and promotion of valuable natural heritage*** and ***preservation of areas with natural values of importance for biodiversity and environmental quality***;
- ***protection and promotion of cultural and historical heritage,*** where it is necessary to advocate more intense valorization, presentation and use of cultural heritage, as well as their regulation (particularly related to archeological sites, churches and rural ethnic heritage).

For the purpose of realizing the concept of sustainable tourism development, it is necessary to obtain spatial-ecological support (reach the trade-offs in integration of development principles and documents, protection and development of tourism areas by optimally meeting the social, economic, spatial-ecological and cultural needs at national and local levels, as well as by meeting the interests of the market and conditions for cross-border and international cooperation) and institutional support at local, regional and national levels (Maksin *et al*., 2011).

Sustainable tourism development goals are the following:

- Introducing and respecting the principles of sustainable tourism development, primarily in relation to the rational use of natural resources and preservation, protection and improvement of natural environment and heritage;
- Complex valorization of natural and created tourism potentials, differentiated according to their values and contents in line with world and local demand trends, standards of international market and socio-economic interests of Serbia and local communities;
- Organizing the content-based and integrated offer of tourism areas, which contains recognizable motifs and enables affirmation of new tourism products of local and international demand, along with integrating the tourism development with complementary activities;
- Encouraging the development of tourism regions that provide the most favorable conditions for maximally extending the tourism season, as well as increasing the socio-economic effects of tourism;
- Improving the quality and quantity of tourist accommodation and catering capacities in destinations already affirmed to a certain extent, as well as activating the new areas containing tourism resources;
- Improving the conditions for tourism and recreation by opening and developing the picnic spots, building the marinas and wharfs on the Danube, etc., by developing the tourism and communal infrastructure in settlements, regulating the hunting grounds, cultural and historical entities, monuments, etc.; as well as enhancing their quality and accessibility by developing different modes of transportation;
- Educating the personnel for providing an adequate level of quality of tourism-related services;
- Improving efficiency in managing the development of tourism areas by coordinating the activities at the level of tourist settlements and tourism destination-region-cluster, by harmonizing interests in nature protection and tourism development; etc.

Based on the previously conducted analysis of conditions for tourism development, taking into account strategic directions of activities

defined for this region at the national level, as well as overtaken international obligations in the field of sustainable tourism development in the Danube-Carpathian region, the following **prospective forms of sustainable tourism** development in the Carpathian region in Serbia can be identified:

- Cruising and nautical tourism on the Danube;
- MICE and business travel;
- Nature tourism (sport and recreational tourism and special interest tourism, including ecotourism);
- Rural and agro-ecotourism;
- Spa (health/balneological, climate, wellness/recreational and spa) tourism;
- Excursion mountain tourism;
- Touring (circular and linear tourist travel/tours/roads, national parks and other protected areas, mountains, gorges, caves, archeological sites, Roman palaces and monuments, monasteries, the Danube motifs, wine and gastronomy, EuroVelo 6 cycle route, walking, horse riding, hunting, fishing, etc.); and
- Manifestation tourism.

Local authorities initiate sustainable tourism development process, while the success depends on the realized **partnership** between a wide range of stakeholders at the level of local communities, **coordination** between corresponding actors and policies at the national level and of **cooperation** and exchange of experiences with relevant international organizations[12]. Economic, social, political and other stakeholder power and influences overlap in this process, but significant benefits in tourism destination management are also created, while potential problems in cluster operations in destination are solved (Bakić, 2009).

Sustainable tourism provides an optimal contribution to local/regional economy in interaction with other activities through fostering a multi-sectoral and participative approach to sustainable development.

CONCLUSION

Rich and diverse natural and anthropogenic recourses for sustainable tourism development in the Carpathian region in Serbia have not been adequately valorized and used. The Carpathian region represents a tourism area comprising parts of tourism clusters with destinations/zones, touring routes, tourist places and places for rest mainly of national and international importance, and partly of regional importance. Sustainable tourism, in interaction with complementary activities, contributes to the rise in employment and growth of the Carpathian economy, seriously affected by depopulation and economic crises. The main precondition for sustainable tourism development is the engagement of a wide range of stakeholders within and at the level of the region, along with adequate support at the national level so as to take advantage of numerous possibilities provided by dynamic international cooperation in this field. One of possible steps is to form tourism cluster, i.e. to consider the Carpathian region in Serbia as a primary tourism area which will enable networking of the Carpathian tourism destinations/zones and joining their efforts to complete and integrate the existing all-year-round tourism offer, develop relating infrastructure and marketing activities, and protect and promote valuable natural and cultural heritage of the region.

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[1] Nature tourism includes a wide range of outdoor activities grouped into categories of the so-called soft adventure and hard adventure tourism, ecotourism, special interest tourism, and wildlife tourism.

[2] According the results of DAFNE and NGO Ekolibri-Bionet Project "Support and Capacity Building for Implementation of Ramsar and Carpathian Convention in Serbia" (2004-2006). At the time of signing the Carpathian Convention, only 732.35 km^2 of NP "Đerdap" and Đerdap Gorge from Golubac to HEPS "Đerdap I", including Novi Sip, were included within the boundaries of the Carpathian Serbia. The Convention envisages the possibility to further expand its geographic coverage, while this project is a part of an initiative in this direction (Angelus, 2006).

[3] Tourism clusters, as resource basis and major tourism development areas, represent spatial and functional entities of the unified tourism offer, with tourist destination/regions having related characteristics, urban tourist centers and places, spa tourist centers and places, as well as with comprised segments of circular and linear tourist directions and secondary tourism areas.

[4] According to the Tourism Development Strategy, Serbia is divided into four clusters: 1) Vojvodina, 2) Belgrade, 3) Western Serbia with Kosovo and Metohija, and 4) Eastern Serbia. According to the Spatial Plan of the Republic of Serbia, the territory of Serbia is divided into five tourism clusters, whose formation will be influenced by the market: 1) AP Vojvodina, 2) Belgrade, 3) Southeastern Serbia, 4) Central and Western Serbia and 5) AP Kosovo and Metohija.

[5] The problem has intensified over the past few years after the elaboration and adoption of numerous general and sectorial strategies and master plans (with different purposes) which are mostly not grounded within the legal framework, and for which the following is not defined the obligation of harmonization with spatial, environmental and sectorial planning basis, or jurisdiction over their adoption and implementation.

[6] For more details, please see: Maksin, Milijić, (2010).

[7] CNPA comprises: 36 national parks, 51 nature parks and landscapes of outstanding values, 19 biosphere reserves and about 200 other categories of protected areas in the Carpathian region. Amongst them being only NP „Djerdap" from the Carpathians Serbia, http://www.carpathianparks.org/, joined on 21st March 2012.

[8] http://www.european-charter.org/about-the-charter/, joined on 26th March 2012.

[9] The starting point in zoning the tourism areas has comprised solutions for this area envisaged by the Regional Spatial Plan for the Timočka krajina region (Official Gazette of the Republic of Serbia, 51/2011) and Draft Spatial Plan for the Special Purpose Area of the „Đerdap" National Park (IAUS, 2012).

[10] Particularly taking into account master plans for tourism destinations/regions of the Lower Danube Basin (2007a), Stig-Kučaj mountains-Beljanica (2007b), Sokobanja (2007c) and Roman Emperors Route (Felix Romuliana) (2007d).

[11] MICE (Meetings, Incentives, Congresses, Exhibitions) is a synonym for congress tourism and refers to a specific type of tourism in which a group of people, usually planned well in advance, are brought together for some particular purpose.

[12] An organized cooperation at the local level is a precondition for using support funds for rural tourism development within the national policy for supporting the rural development. In this, producer associations, clusters and local action groups have a decisive role (Popović *et al*., 2007; Tomić *at al*., 2009).

Received November 2012; accepted in revised form December 2012

VERSITA

SPATIUM *International Review*
No. 28, December 2012, pp. 53-59

UDC 711.8(497.11)"18" ;
626/628(497.11)"18"
Review paper
DOI: 10.2298/SPAT1228053C

WATER, SOCIETY AND URBANIZATION IN THE 19th CENTURY BELGRADE: LESSONS FOR ADAPTATION TO THE CLIMATE CHANGE

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This paper traces urban history of Belgrade in the 19th century by looking into its waterscape in the context of its transformation as the capital of the Princedom of Serbia. Aiming to underline the importance of water as a resource, with the view to contemporary environmental concerns, we explore how citizens historically related to waterscape in everyday life and created a specific socio-spatial water network through use of public baths on the river banks and public fountains, water features and devices in the city. The paper outlines the process of establishing the first modern public water supply system on the foundations of the city's historical Roman, Austrian and Ottoman waterworks. It also looks at the Topčider River as the most telling example of degradation of a culturally and historically significant urban watercourse from its natural, pastoral and civic past to its current polluted and hazardous state. Could the restitution of the Topčider River be considered as a legacy of sustainability for future generations, and are there lessons to be learned from the urban history which can point to methods of contemporary water management?

Key words: Belgrade, 19th century, urban history, waterscape, climate change.

INTRODUCTION

Geographically positioned at the confluence of two major rivers, the Sava and the Danube, Belgrade has historically been bound to the shifting relations to its broad waterscape. In geopolitical terms, ever since the split of the Roman Empire and into modern history, the two rivers formed borders between often conflicting empires (i.e., between Eastern and Western Roman Empires, Franks and Byzantine Empire, and Ottoman and Austrian/Austro-Hungarian Empires). Border on the Sava and Danube remained in force between Kingdom of Serbia and Austro-Hungary until the unification of the Kingdom of Serbs, Croats and Slovenes after World War I, and reinstated during World War II, dividing German occupied Serbia and the Axis puppet Independent State of Croatia. In terms of geomorphology, apart from Sava and Danube, the historical waterscape consisted of a complex web of small rivers and streams which played a significant role in the urban life and functioning of the city, but have since disappeared in the process of urbanization. Today, we look at the relationship of the city of Belgrade to its waterscape, and in contrast we see pollution, disrepair, unsustainable exploitation of rivers and lack of engagement coupled with the absence of general awareness of the importance of overall urban water management.

The purpose of this paper is to discuss historical relation of both citizens and policy makers to Belgrade waterscape in order to instigate thinking and research towards developing ways of including contemporary understanding of water management, water policy and the notion of *hydro-social contract*, which assumes new values and wider social consensus on how water should be managed. (Lundquist *et al*., 2001, in: Brown *et al*., 2009: 848) In this respect, we ask if there are lessons to be learned from urban history with regard to socio-cultural attitudes towards waterscape. In what ways had Belgrade's waterscape geopolitics, access to water, water supply and associated policies affected its urban development? How can past uses and experiences of waterscape researched through the discipline of urban history, be incorporated into sustainable town planning which fully embraces contemporary practice of water management, as one of the principal aspects of urban sustainability?

THE WATERSCAPE OF BELGRADE

Synonyms of the phrase *urban landscape* include *townscape*, *cityscape*, *city scene*, *city view*, all of which imply looking or gazing onto a city. Similarly, the term *waterscape*, the topic of this paper, contains the meaning of looking onto water, or within the context of the discipline of urban history, looking into the relationship of city and water through history. An absorbed look at waterscape, can lead to its

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This paper was realized as a part of the project "Studying climate change and its influence on the environment: impacts, adaptation and mitigation" (43007) financed by the Ministry of Education, Science and Technological Development of the Republic of Serbia within the framework of integrated and interdisciplinary research for the period 2011-2014.

better or more profound understanding, for instance as one passage from a 19th century travel writing relates:

> *"I pushed open the door, and there, completely secluded from the bustle of the town, and the view of the stranger, grew the vegetation as luxuriant as ever, relieving with its dark green frame the clear white of the numerous domes and minarets of the Turkish quarter, and the broad-bosomed Danube which filled up the centre of the picture; but the house and stable [...] were tenantless, ruinous, and silent."* (Paton, 1845: 51)

The described image of the Danube gazed upon from an abandoned house in a Turkish suburb of Belgrade offers a good metaphor for the dual nature of the waterscape: a skyline of myriad minarets and domes nestled in the green of gardens and arboreta against the backdrop of the massive waterway, the interplay of the two yielding a new quality, despite the ruinous surroundings.

The first geologic map of Serbia, published in 1842, includes information about the geologic history of the terrain, as well as of the geopolitical situation of the day. It shows the Belgrade waterscape as an intertwinement of waterways framed by the river border between Serbia and the Austro-Hungarian Empire (Figure 1). The state border on the Danube and Sava, established between the Ottoman and Austrian Empires in 1739 (Treaty of Belgrade), decisively affected the form that the urbanization of the city took over 18th and 19th centuries. After passing the 1830 Turkish Law, Belgrade was a seat to both the Serbian and the Turkish administration, remaining the only Serbian town where the Turkish civilian population was still permitted to live, but apart from the remaining population, no new Turkish citizens were allowed to settle in the city thereafter. The town space was structured into three principal parts: the town proper encircled by the Moat and palisade embankments; the Fortress held by the Turkish garrison poised above the rivers confluence and separated from the town space by the wide Kalemegdan field; and the village-suburbs outside the Moat. In 1834, Belgrade had total of some 12,700 inhabitants, as follows: 5,503 Serbs and 1,530 Jews in 769 houses, and 5,704 Turks – 4,600 civilians and 1,104 soldiers – in 830 houses (Jovanović *et al*., 2003: 13). The civilian Turkish population concentrated on the side of the town sloping towards the Danube, the Jewish population inhabiting the lower areas, and the Serbian population in the centre and on the opposite side of town sloping towards the river Sava, as well as in the village-suburbs.

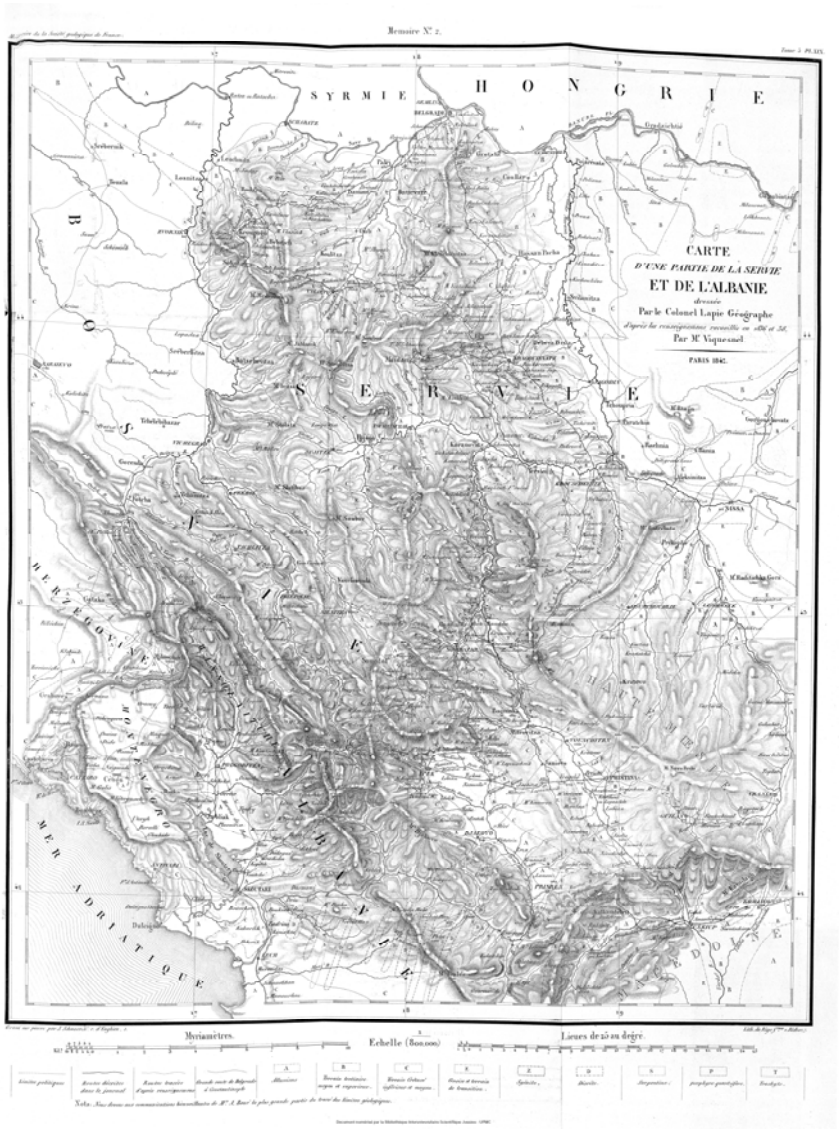

Figure 1. Geologic map of Serbia (Viquesnel, 1842: Pl. XIX)

Bound by the border and the fortress, the city grew inland, lopsided in relation to its rivers, and it was not until modern history after the World War II that the urban structure crossed over the Sava, with the planning and construction of the modern city of New Belgrade (Blagojević, 2009, Blagojević, 2007).

Waterscape and Everyday Life

Viewed from the neighboring city of Zemun on the Austro-Hungarian side of the border, 19th century Belgrade was a city without much life on the water. Fear of the plague and strict quarantine regulations forced ships to pass by Belgrade, holding as much as possible to the Austro-Hungarian side. As opposed to the view from the river, for the sojourner arriving by way of land, the city was "unusually colorful, prettier and more European-like than any other city" in Serbia (Hervé, 1837, in: Momčilović, 1993: 49). Nevertheless, in 1847, the German Karl (Dragutin) Karlovanski opened the first bathing and swimming area on the Sava on the river bank below the city Fortress and Kalemegdan, which was at the time still held by the Turkish military and administration. Visitors to the baths, mostly children and youth, could learn to swim and use the river safely in the wooden pool of approximately 26 meters by 7 meters constructed in the water, which also had 10 changing rooms on the side. "Seeing the scarcity of baths on the river" (*Srbske*, 1856: 423), captain Miša Anastasijević, wealthy merchant and benefactor, built a bathing area in 1854, also on the Sava, which was open to all citizens without charge. The demand was so great that during the summer people sometimes waited up to an hour in line to get in. In 1856, the municipal government appealed to citizens for donations to help build a general bathing area on the Sava which would allow 50 people at a time to bathe. These bathing areas, "one of the centers of Belgrade life of the day,"

(Deroko in: *Beograd u*, 1977: 26) were made from wooden planks on floating barrels, marking off the area of the pool. Towards the end of the century, life on the water intensified with more traffic, industry, entertainment and recreation including swimming, rowing and diving competitions, the latter held from the only bridge on the two rivers, the Railway Bridge. The city was deeply engaged with the rivers, even though, or possibly precisely because *over there* was a border and a foreign land beyond. In 1904, The Rowing, Fishing and Swimming Society built a bathing area on the Sava with an accompanying club house, naming it *Six Poplars*. All sports and recreation activities, swimming, rowing practice and competitions, took place parallel with the river bank and water flow, up to the imaginary line in the middle of the river. In 19th century, everyone who spent time on the riverbanks and on the water, all the travelers, merchants, fishermen, soldiers, bathers, rowers, or anyone otherwise connected to the river, formed part of the waterscape. In the 1920-30s, however, based on plans of the Ministry of Transport the railway tracks network was extended and new depots, utility cargo and passenger stations along the Sava and the Danube bank were constructed, thus creating an iron barrier between the city and its rivers (Đorđević, 1966: 4).

The Waterscape as Source for the Public Water Supply System

The network of waterways, sources, streams and underground waterways had an important role in the past, as they were the backbone of the city's water supply system. Up until the last decade of the 19th century, Belgrade's water supply system was made up of three systems, all created in different historical periods, and in different traditions and cultures: Roman, Ottoman and Austrian waterworks. What they had in common was that they sourced water in the south-eastern part of the city region, from whence it was channeled to the fortress and the town proper. The hydro-geological map of Belgrade and the region shows the clearly divided watersheds, that is river-basins of the streams Mokri Lug and Bulbulder (Nightingale Stream, in Turkish: *bulbule*, nightingale; *dere*, valley, stream), which were the major contributories to the old water supply systems (Figure 2). The water was supplied to public fountains, usually erected at roads intersections. The Austrian system supplied the Sava slope, whereas the Ottoman system followed the Bulbulder stream and brought water to fountains in the Turkish parts of town on the Danube slope. The Roman waterworks traced its way in between the other two along a canal where Knez Mihailova Street is today, and entered the Belgrade fortress.

The 19th century Belgrade had some 50 publicly accessible fountains fed by three old waterworks systems and another 20 built at various water sources in the peripheral areas. In addition, there were some 1,200 private yard and garden wells. From official and police documents of the first half of the 19th century we can see the importance of their use and maintenance. To that end, the municipality employed a person to "oversee and maintain in good condition all the fountains in the city, as well as in the army barracks, at municipal cost." (Jovanović *et al*., 2003: 366) Still, tensions and conflicts arose with regard to water, be it concerning water supply from public fountains within the city or streams in the vicinity, or concerning shipping and fishing on the Sava and Danube. Rules passed in 1838 prescribed ways of shipping, navigation and fishing to prevent conflicts between boatmen, merchants and fishermen with Austrian authorities (Jovanović *et al*., 2003: 179-180). Nevertheless, the agreed-upon and sanctioned ways of water use were often broken, and there were illegal redirections of water flow both by the Ottoman and Serbian government, as well as by the citizenry.

The public fountains had a significant role in city's cultural history. For example, the site of the old Bulbulder fountain at the source of the Ottoman water system, that had been used for annual celebrations of Belgrade's Turkish population in the 19th century, was also the place of the new fountain of the "Conscripts of the Third Call (*Trećepozivačka*)", installed ca. 1915 to commemorate World War I battle of Varovnica. The fountain was renovated in 1927 under the patronage of the Society for the Beautifying of Bulbulder and more recently, in 1982. The Pasha's (Turkish: *paşa*) fountain, for instance, was placed at the likely site of death of Vizier Suleyman Pasha and his entourage in 1807. Known also as "Colorful Source" (Serbian: *Šareni izvor*), this fountain was actually placed at the source of the ancient Roman water system. It was renovated after World War I, in honor of the soldiers from the nearby village of Mali Mokri Lug. The Ottoman water system contained along its length structures similar to water towers, which served as reservoirs and methods of distributing water among public fountains, in other words, a kind of scale for measuring out water. One of the three water towers named after the Turkish word for a scale – *terazi*, is known to had been located at the centre of today's Belgrade. It was replaced by

Figure 2. Hydro-geology map of Belgrade (Dukić, 1970: 12-13)

the European style public fountain in 1860, even though, its Turkish name "Terazije" persists to this day, not only as the name of the fountain itself but of the street and the central area around it. Even though blueprints were drawn in 1846 and again in 1855, during the reign of Prince Aleksandar (reigned 1841-58) of the Karđorđević dynasty, this fountain was only erected,under the new draft, after the dynastic change, marking the second reign of Miloš Obrenović (reigned 1815-39, 1859-60). The fountain drew crowds both as an important symbolic representation of Obrenović dynasty rule and power, but also by the sheer fact that public water fountain was brought to that very spot in the centre. In 1911, new plans were drawn for the roads, traffic solution and public space with the monumental proposal for the new fountain with the statue of the Victor by the sculptor Ivan Meštrović, but the Balkan Wars and World War I discontinued its construction (Vanušić, 2008). Opposed by local population on grounds of obscenity, the Victor being represented as a naked man (Borić, 2005), the Meštrović fountain was never completed in its envisaged form. The statue of the Victor, however, was installed on to the promontory position of the city Fortress above the confluence of Sava into Danube, where it still stands today as the most powerful symbol of Belgrade. In the process of planning, the old Terazije fountain was moved out of the city centre, into the yard of the Church of Saint Apostles Peter and Paul in Obrenović dynasty suburb of Topčider, where it stayed from 1911 until it was reinstalled to its original location at Terazije in 1976.

Notwithstanding the historical, social and symbolic function of the public fountains, the citizenry of Belgrade in the 19th century suffered the lack of hygienic and modern water supply. The first modern urban plan of Belgrade was presented in 1867 in the changing political climate following the mass moving out of both the Turkish garrison from the fortress and civilian population from the city, and the subsequent transformation of the inherited Ottoman urban structure. After three years of surveying the city in detail, the author of the plan Emilijan Josimović, an engineer and mathematician, published the "Explanation and plan of urban regularization of that part of the city which lay within the Moat", which forms the basis of modern European Belgrade. In his assessment of the condition of the existing structures as well as the quality of the streets and urban sanitary conditions, Josimović specifically points to the lack of trees, parks, gardens and green space in general, which he calls "reservoirs of air", as well as of drinking and household water, and a proper sewer system for excess rain and waste water. As an alternative to the existing water supply from surrounding streams, he suggested using technological devices for supply with treated river water pumped up to the upper part of the fortress from the Danube. Josimović envisaged a "steam machine sufficing of just a few horse powers" to pump water up into storage basin or reservoir placed half way up the fortress hill, and then another machine pumping up to the top sedimentation basin and reservoir placed in the fortress area, from where it would be distributed throughout the city (Josimović, 1867: 44-45).

After 1867, a series of regulations were passed, with the goal of improving sanitary and hygienic conditions, such as the ones forbidding private individuals to dump household waste water into the existing system of drainage, "since the poorly built street pipes are thus overloaded, blocked, and spill into the street." (Stanojević, 1966: 143) Rather, citizens were required to dig septic tanks in their yards for that purpose. At that time, for instance, the waste water was collected into 500 ℓ barrels and carted out of the city area to be dumped into the Danube. Following an epidemic of cholera in 1884, the president of the municipal government, Dr. Vladan Đorđević, declared the construction of a sewer system more important than that of the water supply system.

Water supply, however took precedence over the sewer system construction. The clearing of forests in the area, as well as the growth in population after 1867 weakened the water sources in the city's surroundings, causing an ever poorer water supply. The renewal of the water supply system in 1890-91, which comprised of connecting of the Roman and Austrian systems, and then the Austrian and Ottoman ones, as well as cleaning of sources, partial replacement of pipes and the construction of several new reservoirs, did not solve the problem. The first step towards the installation of a modern water system was the suggestion of the municipal president Živko Karabiberović in 1880 to charge the city customs in order to collect funds for public works. The first phase plan for the construction of utility systems, that is paving of streets, street lighting, water supply and sewerage, finally got underway with the legalization of taxing and earmarking funds in 1884-85. As 50% of the projected utility designs concerned access to water and its use, the municipality founded a "Permanent Technical Committee" in charge of water supply. During the 1888 examination of the Makiška plain, between the villages Ostružnica, Železnik and Žarkovo, it was established that there is a far-reaching and strong network of underground waters, flowing downwards towards Čukarica and the Sava. It was determined that this water basin could cover the city's water needs, not only for the current population, but taking into account future city growth. The digging of the first wells began in 1889. At the same time, the existing waterworks systems were reconstructed, and the building of a new one was under way. The new waterworks system opened June 29th 1892 with the capacity of 2,800 m^3 per day, i.e., a daily average of 50 liters per inhabitant (by 1914, increasing to 8,000 m^3 per day, average 100 ℓ per inhabitant).

The turning over of water supply for public use was marked by a ceremonial switching on of the Terazije fountain by the municipal president Milovan Marković. On his signal, a jet of water shot several meters into the air, announced by the sounds of the military band playing the national anthem. The citizens and dignitaries present were served cups of water. The same evening, a celebration was organized in Kalemegdan, in honor of what was announced as an "epic moment in the life of Belgrade." The celebration included the lighting of "a thousand lamps," a concert, and fireworks which "made known to all that Belgrade was in every way set upon the path of progress, development, and modern life!" (*Beogradske*, 1892, in: Lujanović, 1992: 30-31)

The establishment of modern sewerage began in 1905, with the city centre network finalized by 1910 and plans to cover 2/3 of the whole city area by 1914. Until the war stopped works, 71 km of the sewage network was constructed. In 1929, there were 108 km of sewer system network covering some 5000 houses, i.e., ca. 45% of population. (Stanojević, 1966: 150) In 1920s, the Bulbulder, Mokri Lug, and Čubura streams were incorporated into the new system, their beds paved and tunnels constructed intermittently. In addition, entire rivers coursing through the Belgrade underground have since been tamed. The strength and importance of brooks of the past is reflected in the importance of individual streets to the overall traffic network built atop. The underground waters gush in full force when foundations for big structures are struck or trenches for infrastructure are dug. Not much is known about these water networks, since the extant maps are arbitrary and out-of-date. In the late 1930s underground waters network was partly surveyed for purposes of an waterworks operation plan in case of war. Several wells were dug, mostly in parks, and some of the source fountains were redesigned with a view towards creating an alternative supply system should the need arise. The map

of underground water networks was destroyed during the bombing of Belgrade in 1941. The first General plan of Belgrade sewer system (with New Belgrade and Zemun) was drawn up only in 1950. Today, the sewerage consists of huge underground utility lines, the most notable being the Mokroluški collector designed to receive storm water from the catchment areas of the Mokri Lug stream, one of the most expensive sanitation facilities in the history of Belgrade, which runs beneath the highway Belgrade-Niš. The total volume of the wastewater is discharging into the Danube and Sava rivers at 29 locations.

Contested Waterscape: the Case of Topčider River

Topčider River in the suburb of the same name, denoting "cannon valley" (Turkish: *top*, cannon; *topçu*, artillery man; *dere*, valley, stream), is interesting for study of the changed relationship of Belgrade to its waterscape. In the 18th century this marshy valley with a meandering river was sparsely populated, with some Austrian hunting lodges and summer houses, and several villages of German settlers (Figure 3). At the beginning of the 19th century, the Turkish artillery units used to perform training practice there, and it was also used as *çayır* (Turkish: a field) for horse grazing, or as a resort and hunting ground of Turkish prelates. In 1831, Topčider acquired a highly significant political status, as Prince Miloš built his residence (*Milošev Konak*) there. By ordering the displacement of villages and denying the right to the use of land for horse grazing, he depopulated the area and turned the land for use as the park around the residence. The formation of the park began in 1842, when Atanasije Nikolić, an engineer educated in Vienna, was appointed for its arrangement. Nikolić, who was both professor and engineer, also founded a seed-plot in Topčider, as well as the School of Agriculture, the first of its kind in the Balkans. The park in Topčider was the first Serbian park system based on European models of the palace complex located in the "natural, yet cultivated environment." (Milanović, 2008: 79) It replicates the English garden style with its meandering paths, lush vegetation, and abundant presence of still water, as well as with several aquatic devices, and adds to these a few classical elements.

A distinct feature of the park is the Topčider River, which flows through it. Right bank tributary of the river Sava and one of the water flows that dominates the hilly southern terrain of Belgrade, the Topčider River is about 30 km long and has a basin of 148 km^2. Its source is in the Lipovica forest on the mountain Kosmaj, and it flows through four current city municipalities. The earliest archival records show unplanned expenditure in the budget of the princely grounds, caused by the river overflow in 1850s. Geodesic survey of the river and park was carried out in 1857-58 by cadets of the Gunnery school (Military Academy), and the river was regulated in 1863 under the supervision of engineer Jakov Slivić, when Topčider was officially incorporated into Belgrade. There are historical records of a crossing ferry and a custom house on Topčider River, which was at the time one of seventeen total on the Sava and Danube. Swimming areas with the sandy beach were designated along of the river bank, and there was a steam bath in the park near by. In the 1880s, at the time of King Milan Obrenović (reigned 1872-89), a fountain was built between the park's obelisk and the glasshouse. The fountain had a decorative bowl in the centre of a basin, containing exotic aquatic plants and the sculpture of a boy with a heron, since demolished. Today, Topčider park with its area of 12.8 hectares is one of the favorite recreation areas in Belgrade. It has three parts: the part near the glasshouse and the drinking fountain that bears the name of Prince Miloš, with an area of 2.5 hectares; the park around Prince Miloš's Residence, with ornamental flower beds *parterre*, measuring 7.1 hectares; and last, the part with a surface of 3.2 hectares containing playgrounds for children and an artificial lake constructed in the second half of the 20th century. The park has more than a thousand trees and over one hundred different species of trees and shrubs. Together with the neighboring forest of Košutnjak, the park in Topčider makes a unique complex from a natural, ambient, cultural and historical point of view. Košutnjak forest area of 267 hectares, which was used as the hunting ground of the Obrenović dynasty, serves today as the link between urban and suburban green, and a reservoir of fresh air that reduces weather

Figure 3. Belgrade and its environs in 1721, by Captain Aman (Miljanić, 1985: 48)

extremes and affects the city's climate.

Presently, the Topčider River is regulated in the part that runs through the city proper and it flows into the Sava at the particularly congested traffic intersection of road and rail networks and at the point of a newly constructed major bridge. The river itself is polluted and characterized by a high degree of environmental degradation, with several ecological incidents recorded in the last few years. It tends to flood during periods of sudden an abundant rainfall. As the most frequent type of natural disasters in Serbia are caused by torrential floods, scientists insist that their frequency of occurrence and destructivity in the last 15 years indicate a necessity to achieve a higher degree of coordination of different activities related to the problems of erosion control and torrential floods. Taking the cue from the scientific approach to assessment of the flood risk at watershed level being based on a historical overview of floods (Ristić *et al*., 2011: 5, 2), we would also argue for the historical overview of cultural relation to water. In the area of Topčider River, better understanding of historical aspects of waterscape could provide guidance for contemporary *Sustainable Urban Water Management* in this location of prime historical, cultural and ecological importance. Could we trace examples from history in order to achieve "stormwater management as art form" or "artful rainwater design" (Echols and Pennypacker, 2008: 269)? This approach requires learning about historical water condition through different ways and design techniques, such as: making stormwater trail visible and legible, creating a narrative of the historical water condition and employing expressive symbols of historical water condition (*ibid*.: 272).

Towards Sustainable Waterscape: Lessons To Be Learned

Recent scholarship on *Sustainable Urban Water Management* might be useful to point to new theoretical framework and relationship of society towards water in a *hydro-social contract* which can be relevant for Belgrade. By exploring ideological and technological characteristics of this relationship in different historical periods, the research of ongoing process of development of urban water transitions policy in four largest Australian cities (presented in: Brown *et al*., 2009) differentiates six stages: *Water Supply City*, *Sewered City*, *Drained City*, *Waterways City*, *Water Cycle City*, *Water Sustainable City*. The first three belong to the 19th and first half of the 20th century, the fourth and fifth represent a current recommendation for a comprehensive regulation of waters, and the last one is the stage towards which the cities aspire to in the future. *Waterways City* promotes, among other things, new normative values in the context of the protection of the natural environment, as well as an integration of urban waters in planning, as an important visual and recreational aspect. *Water Cycle City* includes the protection of water networks by: "finding fit-for purpose diverse water supplies at a range of scales that are also sensitive to the energy and nutrient cycles and ultimately contingent on protecting waterway health." (*Ibid*.: 853) Finally, *Water Sustainable City* implies a complete change and integration: "the normative values of environmental repair and protection, supply security, flood control, public health, amenity, livability and economic sustainability". (*ibid*.: 854) The research shows that each of accomplished stages demonstrates a strong correlation with the cultural context and the importance of knowing and understanding both historical and current socio-political context in establishing "cumulative socio-political drivers" (*ibid*.: 850) leading to more sustainable urban water management.

Based on these interpretations, this paper marks the three initial stages as already achieved in Belgrade, and points to sustainable regulation of its urban waters in connection with redefinition of public green areas in 21st century in order to fully achieve the stage of *Waterways City.* In that sense, urban history of Josimović's plans projecting a healthy city with reservoirs of air, greenery and water, is understood as anticipatory of current thinking of sustainable future in the conditions of climate change. Current hydrology research points to importance of water storage reservoirs on a large scale (Đorđević and Dašić, 2011: 15), but can we think on a different scale of an analogous city network of water and greenery reservoirs along the lines of Josimović ideas, as part of the overall strategy of urban water management and striving to achieving *Water Cycle City*? Also, urban history can help identify how and where urbanization had effected natural water balance and hydro-social/political/cultural contract, which would help develop the principles of policy on urban water, including stormwater policy in relation to specific context and history of the city.

CONCLUDING NOTE

Awareness of climate change and the importance of water as a vital resource requires a radically new consideration of the relation of urban landscape and waterscape. By substituting technical and technological solutions for the romantic images of the 19th century, contemporary urban design strategy moves towards synergy of infrastructure, landscaping and ecological design, place-making, circulation and urban function, with the specific focus on flood risk and stormwater management. In conclusion, we believe that Topčider River, the backbone of the Spatial cultural and historic ensemble of the outstanding value Topčider, and as such included in normative and planning documents as an important part of the area, could also be thought of as a paradigmatic case of sustainable urban water management practice. Research of historical layers of architectural, social and urban experience of Topčider River adds to understanding the generative potential of waterscape as cultural heritage and challenges traditional boundaries between disciplines in rethinking, re-imagining and adaptation to the climate change towards the *Water Sustainable City.* In that sense, a new generation of strategic schemes of truly sustainable development needs to fully address the issue of reconciliation of conservation, heritage protection and culture-led agendas with the integrated sustainable landscape, infrastructure and urban water management techniques and technologies. Only by complex and multidisciplinary reinterpretation and with the open and transparent hydro-social contract in place, can Belgrade waterscape be hoped to recover its nearly lost comparative advantages in local, regional and European context.

Acknowledgements

We wish to thank the anonymous reviewers for constructive comments which led to the improvement of this paper.

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Received October 2012; accepted in revised form December 2012

VERSITA

SPATIUM *International Review*
No. 28, December 2012, pp. 60-66

UDC 72:502.131.1(497.11) ;
711:502.131.1(497.11)
Review paper
DOI: 10.2298/SPAT1228060B

ARCHITECTS' PERSPECTIVE ON SUSTAINABILITY IN SERBIA: ESTABLISHING KEY TOPICS

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This article deals with the problem of sustainable architecture and planning in Serbia. It starts by describing how environmental, social and economic global problems are multilayered, complex and interrelated. It continues by tackling the issues of sustainable development on a local level, highlighting architects' role in building a more resilient future. It proposes a set of key social, environmental and economic sustainability topics and indicators arising from the contemporary international research. The research results are expected to act as an invitation and stimuli for architects and planners, especially in Serbia, to reconsider their practice and start to observe their work through a prism of sustainable development.

***Key words:** sustainable development, sustainable architecture and planning, sustainability key themes, Serbia.*

INTRODUCTION TO GLOBAL CHALLENGES AND SUSTAINABLE DEVELOPMENT [1]

The talk about sustainability, as a leading concept for solving ever-growing number of environmental, economic and social challenges, is rare in Serbia as well as in the whole Balkans region. When architects occasionally describe their buildings as sustainable, a lack of deeper comprehension of what sustainability means is obvious. In these cases only one dimension of sustainability is mentioned – the environmental one. Therefore, it is no wonder that there are very few experts in the field of sustainable architecture.

In addressing this problem a group of architects and construction engineers from the University Union-Nikola Tesla, initiated the project "Innovative, Intelligent Eco-Concepts, Technologies, Materials and Constructions Aimed at Improving Sustainable Development Processes in Spatial Planning, City Planning, Architectural Design and Building in the Natural and Built Environment", and obtained the funding from the Serbian Ministry of Education and Science (MES, 2011).

Scientists claim with confidence that "the global average net effect of human activities since 1750 has been one of warming" (Solomon *et al.*, 2007:3). If we want to bring to a halt this galloping climate change, the biggest industrialised countries must reduce CO_2 emission by 80-95% by 2050 (Parry *et al*., 2007).

Unfortunately, this is not the only negative effect humans have on the environment. Since the industrial revolution, unprecedented technological, industrial and scientific growth led to increased consumption of resources, increased wealth, better health, and population explosion (Goudie, 2005). Today, this translates into serious problems.

- 38% of Earth's surface area is appropriated for cultivated land (FAO, 2009), 47% of world's forests are lost and 50% of the Earth's wetlands vanished (WRI, 2010). This seriously impacts the climate, biodiversity, global water cycle, and the quality of air, soil, and water (Clarke, King, 2006).
- Population growth is tightly related to consumption. The Western world consumption levels are so high that there is not enough biologically productive land to provide all the resources needed and absorb the waste produced by an average global citizen (WWFN, 2008). Moreover, most of the growth will happen in booming economies, like those of India and China, where people aspire to live according to the Western world standards.
- Cities take up 3-4% of the Earth's surface area, and use 80% of its resources (Parry *et al.*, 2007). The problem is that cities, especially in the Western world, are top energy and resource consumers. They are highly dependant on unsustainable fossil fuels. As the global supplies are diminishing, many countries are forced to import resources from other nations (WWFN, 2008). This is exactly what leads to political instability, social tensions, disruptions and even wars.
- 47% of all people live in urbanised areas, and it is expected that that percent should increase to 60% by 2030 (Parry *et al.*, 2007). As cities are seen as places where dreams of a better life, salvation, and social empowerment come true, people are constantly migrating there. As these people come from a totally different cultural background, this results in exclusion, lack of participation and ghettoisation of new-comers. Unfortunately, poorly planned integration programmes are not giving any significant results (Davis, 2006).
- In a failing society business cannot succeed. After the 1950s the population of the planet doubled, food production tripled, energy consumption quadrupled, and global economic activity quintupled (NRC, 1999). Clearly, as communities grow, the environment declines. Therefore, capitalism must be seriously reconsidered, as otherwise Earth

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will continue to be just a mere resource for exploitation, treated as a commodity (Bookchin, 2004).

– Contemporary problems are also the result of dysfunctional social arrangements (Bookchin, 2004). Thus, solutions should not be sought just in technical, biological, physical and economic studies. A better understanding of the essential social processes must be incorporated.

Clearly, people on the planet Earth are not living sustainably. Sustainable development is a paradigm proposed as a guideline for solving previously mentioned problems. This paradigm "...is about stabilising the currently disruptive relationship between Earth's two most complex systems – human culture and the living world" (Hawken, 2007:172). This concept is very broad and differently interpreted by many authors with various educational backgrounds, thus it lacks consensus. It is not always understood that sustainability is not a destination that could be reached, but a constant work towards a better future. Lastly, when we discuss sustainability, all the "pillars", i.e. environmental, economic, and social factors, have to be taken into consideration. It is precisely these facts that make the implementation of sustainable development arduous. Therefore, challenges must be discovered and actors mobilised at the local level, and at the level of municipalities, cities and regions (Camagni, 2002).

THE ROLE OF ARCHITECTS IN CREATING A MORE SUSTAINABLE FUTURE

When architects are faced with the concern for our planet's current condition, not all of them react in the same way. Not all architects are able to comprehend the broader context of their work and take greater responsibility. Hence, architects and their work are sometimes perceived as a part of the problem, and sometimes as a part of the solution. For example, architects can affect people's health through a building design. "Sick building syndrome" is the result of architects' lack of knowledge about heating, ventilation and air conditioning principles; about materials that contain volatile organic compounds; and about insulation technologies that can lead to the potentially deadly mould growth. Additionally, architects and their designs affect people by deteriorating the natural environment. Lack of social engagement and responsibility, narrow and parochial views, egocentricity, overemphasised individualistic design statements, and devaluation of the natural environment can, unfortunately, be seen in many architectural practices.

On the other hand, many architects are trying to contribute to the solution of the problem by planning and making interventions in the built environment that respect nature and minimise the impact on the environment. Only in this way can they enable their buildings to live in harmony with the environment. Through their design, architects are able not just to sustain the neutral position by not harming people and the environment, but are in the position to affect them therapeutically. Recent research shows that views on the natural surroundings from hospital buildings help patients recover faster, use less medication, and reduce levels of aggression (Lawson *et al*., 2003). Clearly, architecture is not a panacea, but it can, and should, be an agent of change.

Moreover, the building design should truly reflect the ongoing search for expressing our solution to the ever-growing number of global and local challenges. Some of the results of this approach are today's zero carbon buildings, and buildings designed with sustainability in mind. The list of architects that made enormous effort and took responsibility to make this world better and more livable place is long (see Sinclar and Stohr, 2006). Great examples of such practice arethe Beddington Zero Energy Development (BedZED) in the United Kingdom (Chance, 2009) and the Solar Ship in Freiburg, Germany (Goethe-Institut, 2006). Both settlements use advanced technology for creating positive balance of energy. Not only do they reduce the environmental impact, but they also support the social involvement of community, reduce operating and living costs, thus contributing to social and financial effectiveness. It has been argued that buildings designed in this way can have a direct effect on how people assimilate, learn, and integrate with each other, and how we, as a society, can live sustainably. These buildings have the potential to teach and convey messages through which sustainable principles materialise. Therefore, buildings can make us feel, and they can make us think, and therefore the whole building can be a lesson (Goldberger, 2009).

Architecture is influential profession and there is enormous potential for architects to address the change towards a more sustainable future positively. Design can play a crucial role because designers give new forms to various needs of the future (Bell and Wakeford, 2008). Today "architecture and all design professions are undergoing a major transformation that is both proactive and reactive: proactive as a search for roles with a greater relevance, and a reactive as a response to the humanitarian and environmental crisis facing the world" (Bell and Wakeford, 2008: 8). Architects have to be able to analyse the past and the forseeable future, they have to recognise, isolate, define, and solve problems. Secondly, they have to be acquainted with local challenges to which architecture must respond. This enables them to create buildings that can act as local stabilisers and safeguards of the future. Architects have to realise that power implies certain responsibility as well. As Sinclair and Stohr (2006:25) explain "we have to recognise that acting in the world means taking responsibility for the consequences of those actions". Adopting previously mentioned principle, architects and their designs can act as catalysts of change on our way to a more sustainable future.

PROBLEMS WITH SUSTAINABLE ARCHITECTURE IN SERBIA

When labelling buildings as sustainable, architects in Serbia usually focus on the environmental impact only. As mentioned before, it is necessary to develop deeper comprehension of what sustainability actually means. This approach, called "shallow" by Harding (1997), implies that through recycling, saving resources and reducing carbon dioxide emission, architecture can reduce its impact on the environment and contribute to a more sustainable life. Through their work, architects are able to do much more. They are in the position to affect our choices, preferences and human behaviour in general (Ledoux *et al*., 2005). Many experts stress this is exactly what we need to transform our life on the planet into a sustainable one. Unfortunately, these and similar ideas are shyly penetrating academic and architectural circles in Serbia.

However, some architects have observed that "spatial and urban planning shows a number of arbitrary and inappropriate paradigms, unrelated and unbalanced connections between physical, architectural, urban landscaping and structures, capabilities, capacities and possibilities" in relation to sustainability; and stress that "there is an urgent need to correct and properly direct that entire range for the benefit of local community" (Milošević, 2011:13). Additionally, some environmental, economic, and social aspects of sustainable architecture have been discussed. For example, Pucar and Nenković-Riznić (2007) considered legislative frame for energy efficient buildings; Stevanović et al, (2009) explained the potential of solar energy usage in residential buildings; Crnčević (2007) stressed the importance of public participation. It is clear that the debate on this topic is existent and alive in Serbia. Though, there is much to be added in order to prevent the

discussion from being fragmented and incomplete. For that reason, several factors that impact the lack of understanding of what sustainable architecture is will be delineated.

The Serbian National Sustainable Development Strategy has thoroughly analysed the majority of environmental, social and economic challenges since 2008 (MEMSP, 2008). Furthermore, according to the Millennium Developmental Goals, national aims were set and indicators established for monitoring the progress. The strategy states that for the purpose of reaching a more sustainable future active involvement is necessary on all professional and institutional levels. However, it does not suggest any sub-strategies or institutions responsible for providing guidelines on the participation of different professions. Additionally, to our best knowledge, there are no financial mechanisms (except programs for monitoring the sustainability parameters), supporting the involvement of the wide range of professionals.

Moreover, in professional architectural magazines, as well as peer reviewed journals, eco or green architecture are often confused with the sustainable one. To a certain extent, this misinterpretation occurring in popular magazines can be understood. Yet, some fragmented and incomplete definitions of sustainable architecture, such as "sustainable architecture presumes environmental considerations, then the use of passive solar systems, protection from the adverse conditions of climate, noise and micro location" (Marić, Manić, 2006: 48); or "the most important principles of sustainable development on which (architectural) design is based are: producing and storage of heat acquired from solar energy, using passive cooling and heating, reduction of heat loss through walls, and using systems that do not pollute the environment" (Savić and Milanović, 2010: 121) are just deepening the sustainable architecture understanding gap.

Lastly, the competitions and awards celebrating eco buildings and classifying them as sustainable, are not contributing to better understanding of sustainable architecture. To illustrate this – a live-and-work building was built in Belgrade city centre three years ago. A positive fact is that smart systems for communication, lighting, cooling/heating, fire safety and security were applied, and one economic sustainability issue – operating costs decrease – was carefully considered. It was predicted that the smart systems used could reduce the energy consumption by 30%-40%. On the other hand, the building was built on a park space, further reducing already scarce green areas in the city centre. Secondly, the building narrows a pathway through which Belgrade's city centre is naturally cleansed by air flow. Thirdly, no social sustainability factors were taken into consideration. It is clear that the building could be defined as eco or green, but certainly not as sustainable.

KEY TOPICS AND INDICATORS OF ENVIRONMENTAL, SOCIAL AND ECONOMIC SUSTAINABILITY

Some of the most challenging issues relating to sustainability are common to Serbia, as well as to other countries globally. They represent a shift from short-term to long–term perspective, a fragmented and incomplete understanding of how ecosystems are indispensable for human existence, and ignorance of the fact that destructive human impact on the environment has its limits (Edwards, 2005). Therefore, until today, a large number of themes and indicators have been developed so the human impact on the environment could be assessed and monitored. They are considered to be very useful for Serbia as well.

It must be pointed out that they are the most useful once sustainability is defined and indicators determined at local level (McKenzie, 2004). Definitions and themes derived at global level are sometimes too broad to use in the local context. Additionally, when a problem or a situation at local level is approached with a pre-existing set of themes and indicators, there is a danger of overseeing the main challenges. Therefore, the set indicators suggested here could be used as a framework or guidelines for further exploration of themes and indicators. Sustainability themes will be presented and accompanied by their main indicators (Figure 1.). Architects and planners should cooperate with community members while discussing both adaptation and further development at local level, in accordance with the existing problems, interests and needs, so as to be entirely relevant.

Environmental sustainability and its main themes

Decisions on the land use are key to sustainability – they determine human connection with natural and built environment, housing and transportation patterns, access to diverse services, and, lastly, the quality of our life. Decisions on the land use mix (decisions about the land appropriated for residential, commercial, industrial and green areas) (Tomalty *et al.*, 2007), have a significant effect on the growth direction in urbanised areas, reduction of pressure on farmland and nature, the costs of building and maintaining the urban

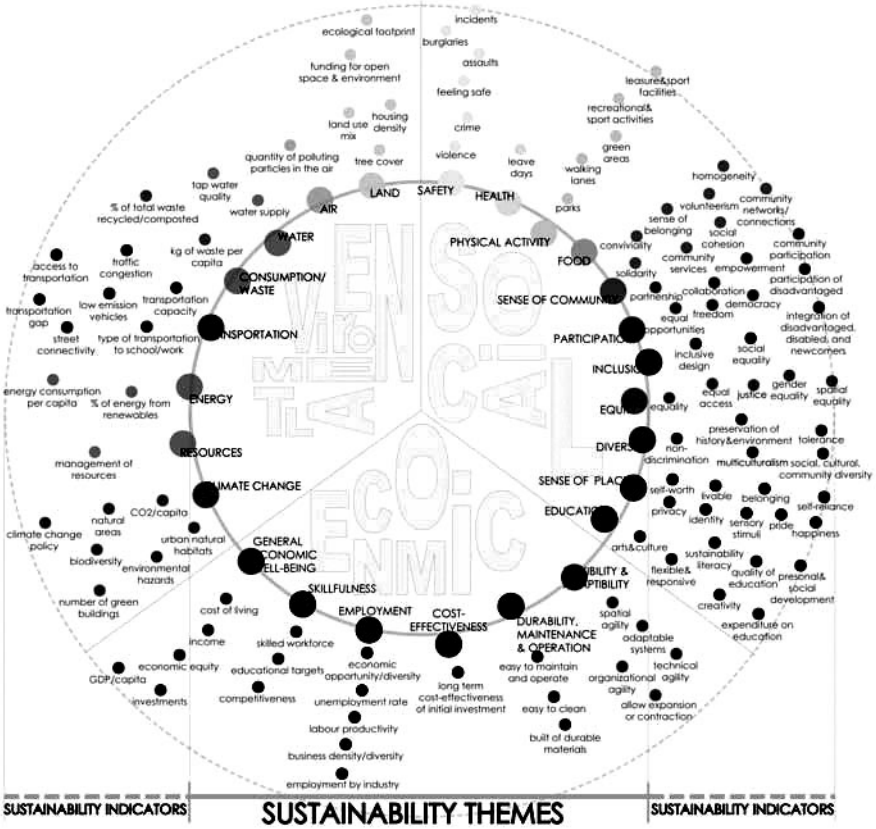

Figure 1. Sustainability key themes and indicators (Authors' compilation)

infrastructure, and the costs of community services (FBC, 2010). A careful land use planning implies a more compact community design. In this way CO_2 emission is reduced, air quality improved, and public health increased. Besides, the existence of local services and jobs enables biking and walking to school or work, and promotes effective transportation (FBC, 2010).

The air quality is one of the most significant characteristics of our environment. Today a large number of deaths occur due to exposure to air pollution. Additionally, child asthma, low weight at birth, and premature births are brought in connection with air pollution (FBC, 2010). All the mentioned reasons suggest the quality of air should be monitored.

Apart from the quality of the air, water quality is also important indicator of environmental conditions. High quality water, as well as steady and secure water supply, is a prerequisite for leading a good life. It is of utter importance that the water infrastructure is carefully planned, since a long distance water import increases energy consumptions (BIS, 2010). Additionally, potential construction sites must be organised in a way to keep pollutants away from the water.

Excessive consumption leads to excessive waste production. Devising construction strategies, practices and policies for diminishing consumption and waste generation is of crucial importance. It is known that stimulating local production and buying local materials significantly decreases the use of fuel and greenhouse gas emissions, which result from a long distance transportation of materials (FBC, 2010).

Nowadays, transportation is regarded to be a major contributor to greenhouse gas emissions. Therefore, it has been suggested that compact communities should be planned. Since there are local services and employment opportunities in such communities, it means that cycling and walking could be regarded as attractive and useful activities. In this way a number of vehicles on the road could be decreased. Furthermore, the good quality transportation system reduces the pressure on agricultural land and green areas, thus diminishing its impact on health, climate change and degradation of the environment (Ledoux *et al*., 2005). Transportation also contributes to social equity. A diverse transportation makes services more available to everyone, households less dependent on their own cars, and household costs lower (FBC, 2010).

Natural resources provide all the life necessities such as food, water, air, habitats, as well as different raw materials. Although the nature has the ability to adapt to small changes, the results of architects' and urban planners' activities (appropriation of green field for construction sites, use of unsustainable materials, excessive energy consumption by buildings, etc.) can have serious negative effects. For this reason, during the planning phase architects must assess how their building design will interfere with the health and sustainability of ecosystems in which architects immerse their designs. The architectural and urban design must be examined as a part of complex interrelations of socioeconomic and environmental factors. This is crucial, since new constructions make changes in ecosystems.

Energy consumption has dramatically increased lately. In spite of the boost in renewable energy use, the worrying fact is that fossil fuels and gas use are constantly growing (Ledoux et al., 2005). Thus, CO_2 footprint must be reduced, both during the construction and the occupation time of a building (BIS, 2010).

Social sustainability and its main issues

In the last couple of years social sustainability has gained importance within the sustainability agenda. Until the 2000s, social sustainability was not in the focus of policy makers, unlike environmental and economic sustainability. This is due to the fact that sustainability was born out of two movements – environmentalism in the 1960s, and „basic need" in the 1970s, and also because social aspects are hardly quantifiable, thus hard to measure (Colantonio, 2008). A literature review revealed that in most cases the social sustainability was entwined in discussion on creating socially sustainable communities, neighbourhoods, cities and urban environments (Barron and Gauntlett, 2002). The set of the most important issues discovered will be presented and discussed in the following text.

People want to feel safe and secure in their communities. They need a safe and secure environment, safe streets and safe city, safe and secure living and working conditions for so they can plan their future (Barron and Gauntlett, 2002). This is the first social sustainability issue, and a large number of indicators have been used so far (Figure 1.) to assess it.

Sustainable development is not achievable when devastating illnesses exist, nor is good health maintainable in places where bad environmental conditions prevail (von Schirnding, 2002). Thus, health is another key social sustainability issue. It is obvious that human well-being and health depend on their environment – both natural (air, soil, water, food) and built (neighbourhood, housing and traffic). In an urban environment people's health is strongly determined by social, economic, political, cultural and physical factors. These include migration, social aggregation, industrialisation and modernisation, as well as urban living circumstances (WHO, 2010). Moreover, not only does the human environment affect physical health, but social and emotional as well – the health of spirit, mind and body. From this perspective, it is clear that health is one of the main factors affecting the quality of life (McKenzie, 2004). For all these reasons, health should be seen as a key issue of both social and environmental sustainability.

Physical activity is recognised as one of the leading factors influencing physical and emotional well-being. Therefore, whenever possible, architects and urban designers should try to incorporate the opportunities for physical activity in natural and built environments.

Safe, secure, healthy, and reliable food supply is one of the most important factors influencing health and well-being of all people. Due to extensive agriculture and its negative effects on the natural environment, and the increasing concern for financial costs and environmental consequences, food quality (especially locally produced) is rising on the sustainability agenda (FBC, 2010). City farms, roof farms, community gardens and raised beds in school yards are among many interesting examples of how architects tried to engage their communities in producing food on local levels.

Sense of community is a feeling of belonging among community members. It means building civil and social capacity – "social networks and the norms of reciprocity and trustworthiness that arise from them" (Putnam, 2000:19). Therefore, civil and social capacity do not consist of a number of institutions, connections and standards – they include multitude of social interactions which glue everything together. Designing spaces within neighbourhoods (parks, patios, plazas, etc.) that invite neighbours to stop, talk and socialise means strengthening the sense of community, and strengthening good connections within the community. Such a space could assist community members to meet, develop mechanisms for discovering their strengths and weaknesses, and also develop their ability and responsibility to pass the awareness of social sustainability on the next generation (McKenzie, 2004).

Participation is one of the crucial characteristics of a democratic society. Democratic governance

toward sustainable development must entail a broad vision and deep democratic practice. All citizens must be involved and encouraged to take part not only in elections, but in various political and decision making activities as well, particularly at local level (McKenzie, 2004). Therefore, architects and urban planners should start consulting occupants on all matters relevant to them. Participatory design process is a true expression of one's democratic right to be involved in every decision making process regarding their living environment. This process can enable all the members to articulate their needs and wishes, which are later carried out in the form of a building design. Secondly, all the policies regarding the later use of the building, the ones that take into account members' opinions, will be efficiently and effectively delivered, because they are in tune with the members' requirements and needs (Rydin and Pennington, 2000).

Inclusion and equity as important social sustainability themes are defined as an opportunity and right for all members to contribute to and participate in community life, have an access to community resources thus working toward carrying out community goals (City of Vancouver, 2005). Social interaction, support and access to various spaces foster inclusion (Barron and Gauntlett, 2002). For this reason, architects and urban planners should respect the principles of inclusive design or "design that recognises the diversity of users, regardless of their ability, age, gender, income, sexuality, race, and culture" (Morrow, 2000:48). This means that the places they design can be approached, entered and used by any individual, regardless of their abilities (Pivik, 2010). By creating opportunities and facilities meant for community members to meet, they are less exclusive of disadvantaged people, the disabled and new community members, and more inclusive of all age, cultural and ethnical groups.

Additionally, socially sustainable communities value different views, integrate a myriad of cultures, promote their positive characteristics (McKenzie, 2004), appreciate and celebrate difference, and see this as strength not weakness. For this reason, spaces that accommodate local celebrations and events, promote cultural heritage, local nature, and history are crucial (Barron, Gauntlett, 2002).

Stedman (1999:765) defines the sense of a place as "meaning and attachments that community residents have towards their community". Unique community ethos and identity should be interpreted through design. In this way community members could be proud of it and cherish it. Such spaces are liveable and friendly. They are places where members can live their values and be happy. They also contribute to the sense of belonging, self-worth and sense of self reliance; they allow privacy and enable connection with nature (Barron and Gauntlett, 2002).

Education enhancement is one of our top priorities on the road toward a more sustainable future. Education has a central role in transforming our life on the planet into a more sustainable one. Hence, a decade of education for sustainable development, from 2005 to 2014, was announced. This declaration states that education has the power to affect behaviour and provide pupils/students with the key competencies for the journey towards a more resilient future. According to this, the education of architects and urban planners should be changed. They should be informed about the importance of the sustainability approach in design from the very beginning. In order to fully comprehend the challenges of sustainable architecture they should be immersed in real life projects and designs in their local communities. By tackling the questions of energy consumption, land degradation, health, transportation, etc. through their design, they will be empowered to contribute to finding proper solutions. Thus, they will be given the opportunity to become highly conscious experts.

Economic sustainability and its main themes

Sustainability is supposed to include justice in the domain of humans of different generations, humans of the same generation and humans and nature (Baumgartner and Quaas, 2010). Economics is defined as efficient satisfaction of human wants and needs. So, "sustainability economics" means efficient relationship between humans and nature over distant future. Discussions about economic sustainability relevant to architects and planners, are usually dealing with both sustainability of communities and sustainability of buildings.

Local communities must utilise their own solutions to global economic problems, and create a long-term capacity. In this way, architects and urban planners, assisted by economic experts, must consider a series of economic sustainability indicators before proposing any infra- or suprastructural changes or additions. Some of the most commonly used are: general economic well-being or GDP per capita (Gross Domestic Product per Capita or capability of a certain economy to provide welfare to its population), investments, income, economic equity and living costs within a community (Baumgartner and Quaas, 2010). These indicators show whether a community can meet its needs, be secure, be able to participate in a society, and whether there are significant inequalities within the community. Furthermore, skillfulness of the local community should be examined in the planning and construction phase of the project, and employment opportunities arising from the project must also be examined, as they will immensely impact the project implementation costs. All of these indicators signal the economic performance of a community, and help architects and urban planners propose the best quality design for the amount of money a community can afford at a certain moment.

Economic sustainability of a building is usually assessed by using cost-effectiveness, durability, maintenance and operation, and flexibility and adaptability as key issues. Cost-effectiveness of a building means examining whether the initial investment is cost effective long-term. Exploring the quality of the building, as well as all the materials and systems used, will assess potential durability of both the building and all its elements (CABE, 2008). Third issue - maintenance and operation, analyses whether the building, together with the built-in systems, is easy to maintain, operate and replace (CABE, 2008). The last issue – flexibility and adaptability – questions whether the building design will allow flexibility and adaptability on day-to-day basis, and in the future as well (if the future extensions are predicted; are the services grouped so that the costs of interior reconfiguration are reduced; is rapid expansion of technology taken into consideration) (CABE, 2008). In other words, spatial agility (can space be easily rearranged), technical agility (can ICT and light be changed easily) and organisational agility (can space be reconfigured) should be explored before the building is built (EQES, 2009).

CONCLUSIONS AND RECOMMENDATIONS

On the way to a better tomorrow all professionals should make certain contributions. Architects and urban planners also belong to this group. The evaluation of sustainable architecture in Serbia reveals that there is much more room for improvement. The question of broad and holistic understanding of all three aspects of sustainable design must be dealt with. As practitioners, architects and urban planners, as well as those working in academia, are supposed to contribute to the debate on the matter. Realising this, we assembled a series of key social, environ-

mental, and economic sustainability issues arising from the contemporary international research. These issues should be considered by architects and planners working in the built environment sector, as well as by professors and students in architectural design and planning studios. Moreover, this set of issues should not be seen as definite, inflexible and rigid. It has been suggested that the set should serve as a framework or guidelines for further research. Architects, planners, professors and students of architecture should adapt and develop it further, at the local level, with the local communities, in accordance with the existing problems, interests and needs, so as to be entirely appropriate and relevant.

The framework will aid to deeper understanding of the main sustainability issues, provide a solid background for future explorations of the topic, and enable initial evaluation of architectural and urban design. Hopefully, the results of this article will act as an invitation and stimuli for architects and planners, especially Serbia, to reconsider their work in academia and practice, and start observing their work through the prism of sustainable development.

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Received August 2012, accepted in revised form December 2012

VERSITA

SPATIUM *International Review*
No. 28, December 2012, pp. 67-73

UDC 007:711.2]004 ;
711.4:004.738.5
Review paper
DOI: 10.2298/SPAT1228067B

WEB-BASED SUPPORT OF SPATIAL PLANNING IN SERBIA

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High-speed access to the Internet and mobile broadband create a new web-based support of spatial planning in Serbia. Perhaps most importantly, this support provides unprecedented opportunities to empower individuals across all social and economic strata. The authors present this view within the framework of two fundamental focal points: (i) relational approach to spatial planning that recognizes the multiple dimensions of diverse people who interact with place and space in complex and unpredictable ways; and (ii) democratic achievement in spatial planning model and governance framework to share information and collaborate across a municipalities' hyperconnected ecosystem.

***Key words:** web-based support, spatial planning, relational approach, democratic achievement.*

INTRODUCTION

According to Serbia Investment and Export Promotion Agency (SIEPA) Serbia is 'a small country but/albeit with well educated, hard-working, fast-learning, and multilingual labour force'. Serbian experts have enough theoretical knowledge both about ICT and spatial planning process, but without adequate chances to implement this knowledge. Current dissemination of knowledge and experience through the web could allow Serbia to leapfrog to the latest procedures and methodologies and avoid repeating the mistakes of other, more developed, countries in Information and Knowledge Society development (Bazik, 2008a). The best chance might be found within the new Internet platforms, Web 2.0 concept and open source applications. Satellite data are routinely available at the global level on the Internet and there are many opportunities such as 'add content' to the virtual globe Google Earth. In 2008 there were only 16 different georeferenced 3D models of Belgrade buildings, contributed individually, that could be viewed on Google Earth, and four years later there are more than 1600 3D models created in the voluntary action 'Let's build digital Belgrade'.

At the same time, between 2008 and 2010 the Republic of Serbia recorded one of the most dramatic changes in worldwide broadband affordability, as reported in the International Telecommunication Union's 'Measuring the Information Society 2011' report (ITU 2011). Access to entry-level broadband services in Serbia cost just over 3% of average monthly income in 2010 and was down from more than 6% in 2008. Broadband affordability in Serbia now easily meets the targets set by the Broadband Commission for bringing broadband to the majority of households in the country. In September 2012 the Broadband Commission appointed by the International Telecommunication Union made a report: 'The State of Broadband 2012: Achieving Digital Inclusion for All'. Serbia was ranked 30th in terms of mobile-broadband penetration, with 34.5 active subscribers per 100 inhabitants, listing 177 member countries worldwide according to the 2011 data on high-speed Internet subscribers (ITU, 2012). The good result achieved in the mobile broadband segment is owed to the fact that all three operators (Telekom Srbija, Telenor and Vip mobile) hold the 3G mobile network licence and that the number of subscribers using 3G network for data transmission and Internet access is constantly increasing (RATEL, Republic Agency for Electronic Communications). Obviously, the main prerequisite for such result is adequate ICT equipment, but it could not be accomplished without subscribers' ICT literacy and motivation for ICT adoption and use. In the same report Serbia ranked 57th in terms of fixed (wired) broadband penetration, with 10.8 subscribers per 100 inhabitants, which is about three times less than in the case of mobile-broadband options. The main obstacle is the infrastructure implementation. Accordingly, the spontaneous individual initiatives found the alternative way of self-realization in mobile-broadband high spread Internet. Already there are innovative platforms created by Serbian innovators for Augmented Reality (AR) enabling mobile ticketing or QR walking tours that could be supported by more organized contributions through emerging scholarly and governance consideration.

First steps were already made when the Republic of Serbia fulfilled minimum conditions for access to the Open Government Partnership on September 20, 2011 that could represent an encouraging environment for the progress of inventiveness. The Open Government Partnership is a new multilateral initiative (52 countries) aiming to provide support and greater engagement of the worldwide governments in the fields such as transparency of their work, cooperation with the civil society organizations, anti-corruption activity, and a more open, efficient and responsible work of

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The paper was prepared within the research project „The Role and Implementation of the National Spatial Plan and Regional Development Documents in Renewal of Strategic Research, Thinking and Governance in Serbia", number III-47014, financed by the Republic of Serbia, Ministry of Education, Science and Technological

public administration bodies supported by new technologies (Digital Agenda, Serbia).

TOWARD THE RELATIONAL PLANNING APPROACH

Why is Serbia's access to the Open Government Partnership significant? Because this membership comprises: (i) fiscal transparency; (ii) free access to the information of public interest; (iii) transparency of the officials' incomes and property; and (iv) participation of citizens and civil society organizations in the governing processes. This ongoing 'information-isation' and 'EU-isation' of the Serbian society creates a new dynamic and more complex environment for spatial planning reinvention. Simultaneously, in the period of post-socialist transition there is a need for a new planning approach that will respond to changed conditions: free market, privatization and political pluralism. There are generally two concepts of change: (i) complete reform of the planning system; and (ii) the 'step by step' approach (Dželebdžić *et al*., 2011). The first alternative means the 'transplantation' of sophisticated planning systems from a European country which requires existence of a developed institutional network working on its own. The 'step by step' approach seems much more appropriate. Problems could be solved one by one, measure by measure, in an adequate order, with a purpose to fill the gap between theory and practice (Boelens, 2010). It is the only achievable option under the conditions when the market is not fully functional, when the actors and competences have not been articulated, nor have distinct actions been orientated towards rational (market) parameters to a sufficient degree, and with decentralization existing only declaratively.

Additionally, the analysis shows that the 'rational' model, which was present in Serbia during socialism and has in many aspects continued to live in practice even today, is not a rational one in the true sense of its meaning. Also, according to research findings the 'collaborative model' essentially does not replace the rational one, and neither it does in the developed world, but presents the expansion and more precise articulation of the previous model in accordance with recognition of the powers influencing planning in the given social and economic conditions (Lazarević-Bajec, 2009). The country is now facing a 'Europeanization of Serbia outside the EU and with its limited support' during predictably prolonged overall crisis, and a narrowed manoeuvring space for interventions of the public sector aimed at social, economic and territorial redistribution. There is no doubt that the prospects of developing as a 'civil society' via a model of a complex social, economic and environmental transformation are rather weak – which is at the very basis of the most recent national spatial plan – especially under the circumstances of pending bankruptcy (Vujošević, 2010).

In such contextual framework the Spatial Plan of the Republic of Serbia 2010-2020 (SPRS) adopted in October 2010 ambitiously emphasizes that the spatial development of Serbia will present a continual responsibility for all stakeholders, namely (i) authorities and competent institutions on all levels; (ii) public and private sector which will, through their activities, exert influence on spatial development and its elements, and (iii) spatial planners, town planners, engineers and other experts whose activities will influence changes in space, that is, the quality of changes in certain municipalities, districts or regions (SPRS, 2010). It defined proposals and directives as the Law on Spatial Plan of the Republic of Serbia from 2010 to 2020 for all spatial development issues upon the same methodological matrix consisting of problem definition, basic principles, objectives and tasks, concept with directives or policies, strategic projects (priorities), and measures and instruments for their implementing. This should serve as the guide to all regional and local, general and sectoral plans, strategies and programs in their preparation, since the SPRS is on the top of vertical coordination and integration pyramid for all plans and strategies related to spatial development. In December 2011 the Serbian government adopted the Decree on establishment of the Program of Implementation of the SPRS for the period from 2011 to 2015 that elaborates three key areas of implementation monitoring: (i) strategic priorities/projects of the SPRS; (ii) indicators of spatial development as the starting point for monitoring and evaluation of spatial changes; and (iii) model of information system for monitoring and evaluation of the realization of the SPRS.

In accordance with the article 58 of the in force Law on Planning and Construction, the first Report on the SPRS Implementation and Spatial Development Status was established in March 2012. The Report presents the status of spatial development based on indicators with the aim of monitoring the realization of five main goals of the SPRS and the implementation in accordance with the Program of Implementation. It contains 24 (out of 106 established) selected indicators and an overview of the implementation of strategic priorities of the Spatial Plan, coverage of the territory of Serbia by spatial plans at all levels and a summary of activities concerning the information system for monitoring and evaluation of the SPRS implementation. The first Report represents an outline of relevant data status and the referent level for future spatial development appraisal, as well as the model of future institutional cooperation in data collection, storage, processing and distribution.

A lot of scholars' papers discuss the adopted SPRS and create a comprehensive overview of the following: the present conditions in post-socialist Serbia; context, laws and practice of planning in Serbia; the transformation of 'plan-making' as a dominant mode of planning; vertical hierarchical integration and horizontal coordination in spatial planning; the way to renew the collapsed strategic thinking; the comparison of the existing comprehensive 'rational' and the new 'collaborative' model of planning; as well as the comparison of institutional framework in Serbia with experiences of developed European countries (Lazarević-Bajec, 2009, 2011, Nedović-Budić *et al.,* 2011, Dželebdžić *et al.,* 2011, Vujošević, 2011, Maksić, 2012). The dominant problems, from our point of view, can be found in (i) a lack of knowledge and readiness to reflect numerous new challenges in the planning process (Lazarević-Bajec, 2011); and (ii) the collapse and re-centralization of former institutions by weakening the constitutional role of municipalities and introducing the 'top-down' principle of government (Nedović-Budić *et al.*, 2011).

In this paper we reflect the new challenges of emerging planning practices based upon an actor-relational approach of planning (Boelens, 2010) and grounded in a relational understanding of space (Murdoch, 2006). At the same time, we consider the experience of European planning practice recognized the need for multi-level governance and rescaling of governance that takes various directions: 'down-scaling' of the state and 'up-scaling' of municipalities (Dželebdžić *et al.,* 2011). It requires spatial planning to adopt bottom-up approaches also. 'Likewise, private stakeholders and investors are gaining in importance as financers, designers and implementers of planning objectives. Meanwhile, citizens and interest groups increasingly challenge the legitimacy of planning interventions' (Waterhout *et al*., 2009:7).

We already discussed the concept of relational space grounded in the duality of information phenomenon and contemporary expression of the space notion (Dželebdžić *et al.,* 2011). We perceived that the public knowledge presen-

tation *(information process)* is separated as reality or existing fact, and the information *(information system)* is contemplated as a hypothetical product (Bazik, *et al.,* 1996). Main exploration of *absolute*, *relative* and *relational* space in this paper could be: a concept of *absolute* space is adequate for issues of property boundaries and border determinations, but their placement on the property market depends on *relative* space in correlation with location, position, functionality and equipment, or on *relational* space that considers the relationship of and information on financial and energy flows as well as the their compatibility with personal vision, spatial understanding and aesthetic criteria of process participant (Bazik, 2008b). Accordingly, relational space is a *hypothetical construct* and could be considered as a *model of knowledge* separately from its emitter or receiver that is the main characteristic of ICT Age and network society.

Jonathan Murdoch (2006) considers an approach that sets traditional divides, urban–rural and society–nature, within an ecological context that is made up of heterogeneous relations. Yet it sees a continuing relevance for topographical spatial definitions, and urges the creation of a new interaction between spatial relation and spatial location. It admonishes readers to view space not simply as a container, but to attend to processes of spatial emergence. It asks planners to embrace ecological criteria on equal terms with more traditional social ones, and to include previously excluded groups and their concerns as well as an explicit concern for non-human others. It assesses networks one against the other in terms of their impacts on landscapes, cultures and ecologies. And it outlines a distinctive 'eco-subjectivity' to help create action for change (Pothukuchi, 2007). A relational view of power and therefore space is layered with a discussion of actor-network theories that describe spatial relations as networks of heterogeneity. The spatial complexity is expressed by networks that may be stable or negotiated as a space of multiplicity. It creates specific time-space configurations and topographical territories that should be combined with a consideration of *topological* processes that refer to the interactions between relations. Murdoch describes a politics of zoning that gave way to 'a politics of becoming' in the emergence of heterogeneous relations that combined urban and rural, and social and natural, in new ways.

Relational approach to spatial planning grounded in relational understanding of space offers new possibilities for adopting a real world complexity. The focal points are transferred from objects in isolation to their relations and from arrangements on the surface to element interactions. Simultaneously, the spatial planning outcome framework for comprehensive monitoring of spatial development contains a set of quality expectations derived from the objectives of planning. It should be space-temporal defined within topology process recognizable for all network actors. The visualization by a traditional map with two-dimensional space cannot be sufficient to reflect the relational complexity of multi-scalar and space-temporal planning entities. Accordingly, the spatial planning 'outcome' represents the dynamic 'model of knowledge' in a 'relational' space context and the most acceptable option for creating web-based support of the spatial planning in Serbia.

WEB-BASED SUPPORT AS DEMOCRATIC ACHIEVEMENT

The question about the significance of Serbian membership in Open Government Partnership in 2011 should be mentioned again (Digital Agenda, Serbia). The free web-based access to the information of public interest and the inclusion of citizens and civil society organizations in the governing/planning processes with high degree of the transparency, however, create the basic framework of democratic achievement in general. At the same time, it represents the precondition of democratizing contemporary planning praxis within participatory planning process and new actor-relational approach. The initiative 'how to create a more open government in Serbia' comprises bringing of the national action plan for open government improvement and establishing the mechanism for monitoring its realization within ICT use.

After the year 2000 the democratic market-oriented system in Serbia was introduced declaratively. The market forces operate, however, without any control and unregulated. The interests of one or few actors are satisfied, but their agreed actions do not go in the direction of attaining the social goals. Non-existence or inefficiency of the defined institutions on which the regulated system is founded results in mass corruptive behaviour, the one of exclusively satisfying the partial interests and policies and deformed spatial development (Lazarević-Bajec, 2009). The illustrative evaluation of the level of Serbia's development by the World Economic Forum (WEF) points out in the best way the key problem and key potential Serbia is encountering. Since 2005, the WEF has based its competitiveness analysis on the Global Competitiveness Index (GCI), a comprehensive tool that measures the microeconomic and macroeconomic foundations of national competitiveness. The GCI expresses a weighted average of many different components grouped into 12 pillars, each measuring a different aspect of competitiveness.

According to the Global Competitiveness Report 2012–2013 Serbia's GCI is ranked 95th among 144 worldwide countries. It is very interesting that the most relevant factors for our analysis cover the worst and the best place of 12 GCI pillars that Serbia takes. The worst 130th place Serbia took for the development of *Institutions,* that is the first GCI pillar, and the best 58th place for the *Technological readiness* as the ninth GCI pillar. Inefficient government bureaucracy and corruption are the first two most problematic factors for doing business in Serbia and government instability/coups took the sixth place on that list. On the other side, according to the Internet bandwidth, kb/s per user, Serbia is ranked 20^{th,} and according to the Mobile broadband Internet subscriptions/100 people it took 32nd place out of 144 countries. Obviously, the basic factor for creating a better framework for global-isation and EU-isation processes is the first pillar of the GCI named *Institutions* with 22 indicators. There are, among others, *property rights, public trust in politicians* and *transparency of government policymaking* as the key precondition of democracy implementation. It is a government-driven and comprehensive long-term process and we consider that the potential of the nineth GCI pillar named *Technological readiness* should be the most powerful generator of further development of Serbia.

The first Report on the SPRS Implementation and Spatial Development Status presents the status of spatial development based on adopted main objectives that perform a general concept of spatial development in Serbia through qualitative, rather than quantitative, information set for further spatial monitoring. The first level of main objectives operationalization represents the 'spatial outcome framework' with quality expectations for phenomena that cannot be directly seen, but reflect the territorial policies concept that is of great significance for decisions-makers. The second level exhibits output indicators that are measurable and quantitative (Dželebdžić *et al.* 2011). In the case of ICT development the levels of information set are: (1) the first SPRS main objective *More even-balanced regional development and improved social cohesion*; (2) 'spatial outcome framework' that includes *Improving access to infrastructure and information* and *Improving access to ICT*; and (3) 'spatial outcome framework' that comprises the share of households with Internet

access. According to the survey of Statistical Office of the Republic of Serbia and the report 'Usage of Information–Communication Technologies in the Republic of Serbia 2012', 47.5% of the households in the Republic of Serbia have the Internet connection – an increase of 6.3% in relation to 2011, 8.5% compared to 2010 and 10.8% increase in relation to 2009. The greatest proportion of the Internet connections is in Belgrade, reaching 60.5%. It amounts to 49.3% in Vojvodina, and 40.6% in Central Serbia. Over 2,100,000 persons use the Internet every day, or almost every day, and over 840,000 persons use electronic services of public administration. As for the enterprises, results of the survey show that 98.7% of the enterprises in Serbia use computers for their business. Analysis of enterprises by size shows that 100% of big enterprises have the Internet connection, 99% of middle-sized enterprises and 97.3% of small enterprises, while 87.4% of the enterprises with the Internet connection use the electronic services of public administration.

Regarding the worldwide context presented in 'The Global Information Technology Report 2012: Living in a Hyperconnected World' reported by WEF, the Networked Readiness Index (NRI) of Serbia is ranked 85th out of 142 countries, with average score of 10 pillars 3.6/7.0 (Fig. 1).

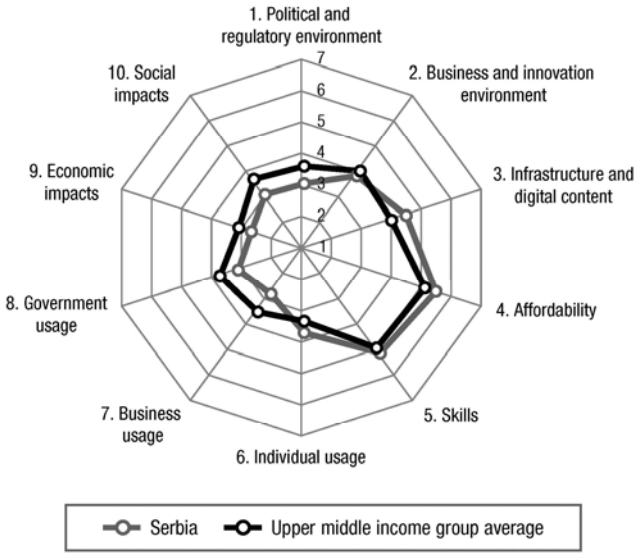

Figure 1. Networked Readiness Index 2012 of Serbia (Dutta et al., 2012)

Analysis of NRI shows that Central and Eastern Europe presents a mixed picture in terms of ICT development. While some large countries in Central Europe share similar characteristics, other countries are confronted with specific challenges that influence their capacity to take more or less advantage of the potential of ICT. In the Baltic states, Estonia, in 24th place, following the example of the Nordic countries, has widely recognized the role that ICT can play to transform its economy and society. Slovenia (37th) and Croatia (45th) have both managed to develop a fairly good ICT infrastructure that, coupled with high rates of adult literacy and secondary education enrolment, allows for important penetration rates (37th and 47th, respectively). Improving the quality of the educational system and strengthening the overall innovation system so that ICT investments can be fully integrated and yield better economic results remain an outstanding challenge, especially for Croatia. In contrast with this rather good outlook, Bosnia and Herzegovina and Serbia are relegated to 84th and 85th position, respectively, in the rankings. These scores are the result not so much of the level of infrastructure development or the skill base of their populations, but of the actual ICT adoption, especially by the business community (126th and 133th, respectively) and the government (123rd and 115th, respectively). In addition, serious weaknesses in their innovation systems, which need to be restructured and expanded, hinder their capacity to leverage ICT for deeper economic and social impacts (Dutta *et al.,* 2012). Accordingly, this is another survey that could underpin the consideration that Serbia poses potential for bottom-up democratic upgrading.

Global computing process is the reality and it extends very fast. Networks' development provides data, information and services for millions as new knowledge generators. The major computing paradigm is moving from closed to open system; from limited to inter-operative system in real time; and from independent to application with flexible use. That offers the possibility for end-user to work with any types and formats of data within one application environment and in continual workflow. Computers, which were once thought of solely as instruments for better scientific understanding, are rapidly becoming a part of the physical infrastructure itself, controlling new infrastructure, electronic highways and smart buildings through their software, influencing the use of that infrastructure and thus affecting communication, information and cognitive function of urban space, both in real and in virtual world (Bazik, 2008b). Nowadays we witness the creation of networked connection between everyday objects named Internet of Things (IoT). There are a lot of mobile devices and smart phones in software clouds and social networks with interrelations and interactivity that create informal informatics infrastructure and relational space and place of 'smart city'. Smart cities are not simply those that deploy ICT. They combine new technology with smart new ways of thinking about the role of technology in organization, design and planning (Buscher, 2011). Considering that – in the context of relational approach to spatial planning and multi-level governance that takes various directions: 'down-scaling' of the state and 'up-scaling' of municipalities – the authors implemented a specific survey of the web-support of spatial planning in Serbia. There was no intention here to review the professional options like: the status of the realization of the Strategy For Establishment of Spatial Data Infrastructure in Republic of Serbia, or the pilot 'geoportal' of National Spatial Data Infrastructure (NSDI); or the potential of web-based GIS for spatial planning; or even the concept for Information System for Spatial Planning and Development (SP&D IS) that is the part of the first report of SPRS. The authors' first paper about informatics infrastructure appeared in 1996 and was named the *Informatics Infrastructure Development: The Precondition of Sustainable Development*. Web Interactive maps, Virtual and Augmented Reality, Real-time City Hyperconnectivity and Internet of Things represent new ICT phenomena that influence, or will very soon, people's every-day life. Consequently, we analyzed present, 'real-life' activity status of municipalities' web-addresses in Serbia within the time line March 2006 – November 2007 – November 2012, with the intent to recognize possible impacts of new ICT potential.

The number of municipalities is 167 and in March 2006 active web addresses had 51 municipalities or 30.54% of total number, while in November 2007 that number more than doubled – 124 (74.25%). In the present day number of active websites amounts to almost 100 percent – 158 (94.61%) (Table 1). All municipalities have web addressess, but 12 are under construction.

The result of this research could be considered in two ways: (i) as the observation and analysis; and (ii) as looking at the state's or city's 'reflection in the mirror'. This paper will not delve into in-depth analysis of the results presented in the table above. Instead, the intention is to point out that the ICT age offers some new possibilities and tools to recognize partial preferences and relations in considering different levels of space. These issues merit much deeper research and detailed analysis, but the most significant highlight is the growth of motivation for online communication in Serbia. We can find it in the numbers in the table above as: 24% of municipalities have an online system for citizens' reports, and nearly the third of Serbian municipalities maintain trustful and friendly relations with their citizens through some social network. On the other side, only nine municipalities prepare online reports of different ecological impacts of climate change mitigation and adaptation, which could be marked as a problem to be overcome in future government behavior.

Table 1. Content of Official Internet sites of Serbian Municipalities

total number of municipalities 167 / 100%	March 2006		November 2007		November 2012	
content of Internet site	number	percent	number	percent	number	percent
active web-addresses	51	30.54	124	74.25	158	94.61
e-documents			85	50.90	148	88.62
strategy and plan			50	29.94	112	67.07
interactive e-administration			32	19.16	121	72.46
interactive forum and inquiry	19	11.38	67	40.12	89	53.29
interactive GIS			5	2.99	28	16.77
system 48hours / citizens' report online					40	23.95
report of ecological impacts					9	5.39
social network, image/video hosting, RSS					51	30.54
active multilingual					39	23.35
weather data, daily currency__					74	44.31
specific__wap, mobile					5	2.99
specific__QR virtual tour					2	1.20

At the same time, with the help of adequate visualization we could analyze relation considering abovementioned 'reflection in the mirror'. Some of the municipalities' web portals are very 'silent' and without any call for interaction. They exist because of directive, without any further ideas of communication and competition. The others are so 'noisy' and aggressive that it is hard to recognize the message. There are no rules, such as – the web presentation of a municipality is better in regions with high degree of individual usage – and the systematization of analysis could be extremely varied. For example, the web presentations of Trstenik and Pirot municipalities are very communicative and informative although both of them belong to the area with the lower share of households with Internet access (First SPRS report). Inđija, which accepted ICT promptly and at the very beginning realized the interactive

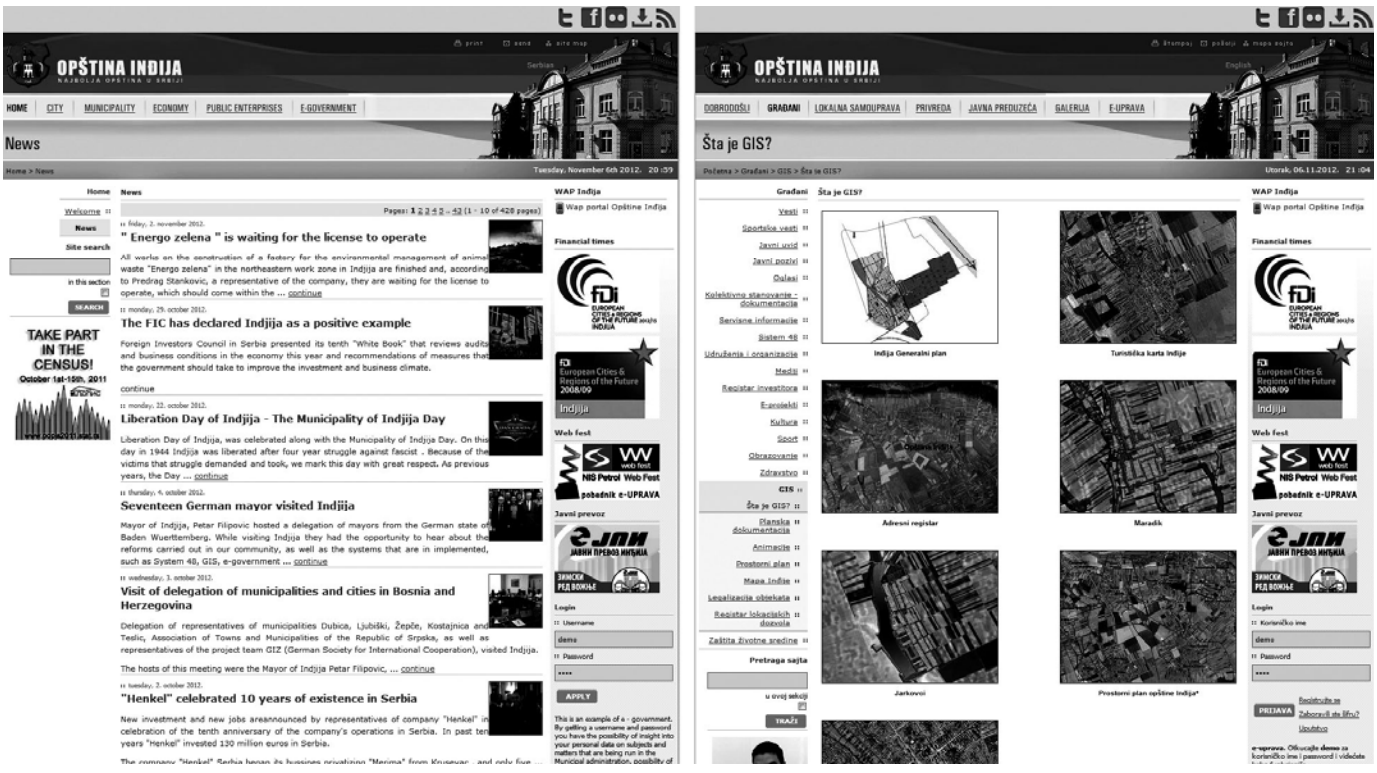

Figure 2. Visualization _ official web portal of Inđija

GIS, the most significant content of municipality official web site, represents the best 'web-support' example. Web-based GIS, as the element of spatial data infrastructure, supports the spatial planning in Serbia in a specific way within the 'relation space' of all other data relevant for the municipality and its citizens, including noise level or 'what's happening' on Twitter. All those links to different networks, the portal for mobile devices and bus schedules, point out the difference between governance and government, as well as between an open and friendly and an official municipal web site. This is particularly important in the field of democratic achievements in vertical hierarchical pyramid of spatial planning in Serbia.

We could conclude that the adequate use of Serbia's potential within the *Technological readiness* contributed to Inđija overcoming the worst 120th place in the domain of the GCI first pillar – *Institutions,* quite successfully (in March 2012, in Cannes, the Mayor of Inđija accepted the award from prestigious fDi Magazine as European City of the Future 2012/13 being the second best European destination of the future for cost effectiveness). Inđija produces data that can be integrated with higher levels more efficiently and we expect that it will be the first town in Serbia with relevant data in real-time and City Dashboard on Inđija web-site.

CONCLUSION REMARKS

This paper has highlighted the improvement of ICT in Serbia that contributes to spatial planning process. It is in the domain of broadband fixed and mobile technology which redefines Internet access and empowers individuals. Serbia was ranked 30th in terms of mobile-broadband penetration, with 34.5 active subscribers per 100 inhabitants, listing 177 member countries worldwide according to the 2011 data on high-speed Internet subscribers (ITU, 2012).

As we already discussed, the former conceptualization of spatial planning in Serbia was rooted in a rational comprehensive tradition and was too rigidly structured to solve fast and basic changes in socially unstable conditions. On the other side, soft spaces, fuzzy borders and borderlessness request a research into how the regulatory planning system can be made more flexibly interrelated with the particular 'times and places' rather than with generalized theories or accepted methodological protocols (Dželebdžić *et al.,* 2011). According to Boelens (2009), while the debate on the significance of relational geography has influenced *how* planners plan, it has failed to change, in a meaningful way, *what* planners plan. More case studies (Healey 2007, Davoudi and Strange, 2009) show that planners experience immense difficulty with imagining the complexity of space and place in relational ways. At this point we found the opportunity for the great achievement of high-speed access to the Internet and other data services over fixed and mobile networks.

Over the past decade, the world has become increasingly 'hyperconnected'. We live in an environment where the Internet and its associated services are accessible and immediate, where people and businesses can communicate with each other instantly, and where machines are equally interconnected with each other. This 'hyperconnectivity' is deeply redefining relationships between individuals, consumers and enterprises, and citizens and governments; it is introducing new opportunities, but also new challenges and risks in terms of individual rights and privacy, security, cybercrime, the flow of personal data, and access to information. As a result, our economies and societies will undergo fundamental transformations (Dutta *et al.,* 2012).

The operational framework of this paper analyzed the activity status of municipalities' web-addresses in Serbia within the time line March 2006 – November 2007 – November 2012 with intent to recognize possible impact of new ICT potential. These are the conclusion notes:

- The degree of 94.61% of active web-portals underlines the stimulatory political and regulatory environment for supporting ICT uptake;
- 88.62% of web-existing e-documents of municipalities governance creates different degree of transparent framework with adequate economic and social impact;
- 72.46% of web-interactive e-administration enhances the degree of individual usage;
- 67.07% of web-existing strategies and plans in digital form and 16.77% of existing interactive GIS, highlight the capacity of relevant equipment and network – informatics infrastructure and its affordability – and represent significant web-based support to spatial planning in Serbia;
- 53.29% of interactive forums and inquiries and 23.95% of citizens' reports online create motivation for democratic participation and represent the degree of a society's preparation to make adequate use of an affordable ICT infrastructure; and
- 44.31% with useful information for citizens and 30.54% with different accounts on social networks and portals create the trustworthy and friendly environment.

The fact that only 9 out of 167 municipalities prepare online reports of different ecological impacts of climate change mitigation and adaptation strongly points out the need for further ICT development in this direction in Serbia. Experts in metropolitan data from UCL's Centre for Advanced Spatial Analysis launched the City Dashboard, a hub for real-time data and a live feed of information including weather, transport, local news, radiation levels (London only) and social media trends for eight UK cities. Advances in technology and web-based innovations have made it possible for complex systems to be managed – and self-managed – in radically different ways that enable cities to deliver enhanced services to residents, manage traffic flow and operate public transportation more effectively, and make better use of real-estate resources (Kim *et al*., 2011). On the other side, social development and social cohesion are no longer the sole responsibility of governments but also the responsibility of private companies and the community. Consequently, a major challenge should be in developing spatial planning model and governance framework supported by public-private partnerships that enable government and the ICT industry to share information and collaborate across a municipalities' hyperconnected ecosystem.

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Received November 2012, accepted November 2012

SPATIUM *International Review*

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CIP – Katalogizacija u publikaciji
Narodna biblioteka Srbije, Beograd

71/72

SPATIUM : urban and spatial planning, architecture, housing, building, geodesia, environment / editor in chief Miodrag Vujošević. - 1997, no. 1 (sept.)- . - Belgrade : Institute of Architecture and Urban & Spatial Planning of Serbia, 1997- . - 29 cm

Polugodišnje
ISSN 1450-569X = Spatium (Belgrade)
COBISS.SR-ID 150289159