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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.

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EDITORIAL

Dear readers,

In this volume of the journal *Spatium* we continue with the contributions from Serbian authors, mostly presenting the findings of current scientific research projects in the field, viz.: spatio-ecological networks; methods for improving procedural aspects of urban planning; management of smart and "greeen" cities; management of urban heritage; and the implementation of public interest in planning practice. Also, problems of the role of Danubian area in Serbia within the *New Urban Agenda* are commented here. The only contribution from international authors, i.e., from Iran, deals with some problems of urban design and planning in the areas of hot and dry climate.

Miodrag Vujošević
Editor-in-Chief

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THE INVESTIGATION OF THE FUNCTION OF THE CENTRAL COURTYARD IN MODERATING THE HARSH ENVIRONMENTAL CONDITIONS OF A HOT AND DRY CLIMATE (CASE STUDY: CITY OF YAZD, IRAN)

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As one of the arid areas of Iran, Yazd is always exposed to extreme winds with dust and shifting sands. Therefore, the architectural principles in the residential architecture of the city need be adapted to such environmental conditions in order to minimize the influence of the severe winds on the interior spaces. This study investigates the influence of storms on the interior space of the central courtyards in Yazd, constructed during the Muzaffarid, Safavid and Qajar periods using CFD simulation. Three-dimensional models were prepared via Gambit software and studied in Fluent software. The wind speed entering the computing field was equal to 26.4m/s and the Dutch wind nuisance standard NEN 8100 was applied as the comfort criterion. The results showed a relationship between the extent of the central courtyard and the impact of severe storms on it, since an increase in the area of the courtyard provides enough space for the wind flow and move around it. This feature reaches its climax if the length to height proportion increases, as the wind brings the shifting sands into large courtyards, therefore, the architects tried to provide better conditions by creating microclimates.

Key words: **residential architecture, Yazd area, CFD simulation, historical houses, storm.**

INTRODUCTION

The city of Yazd is located in an arid area, with summer temperatures very frequently above 40 °C (104 °F) in blazing sunshine and low humidity. Even at night the temperatures in summer are rather uncomfortable. In the winter, the days remain mild and sunny, but in the morning the thin air and low cloud cause very cold temperatures that can sometimes fall well below 0 °C (32 °F). Obviously this climate has a direct effect on the architectural principles in this city (Memarian and Brown, 2003).

Although the wind has always been a comforting element for the people, severe sand storms also affect people's lives at certain times of the year; these more or less destructive winds blow in a north-eastern – south-western direction and usually contain dust and shifting sands, thereby affecting the constructions in the city (Omidvar, 2010).

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The historical development of Yazd's residential architecture throughout different periods indicates no significant difference in locating spaces like summer and winter rooms, central courtyards, iwans and so on. Many houses from the Muzaffarid period (1314-1393 CE) and the Qajarid period (1789-1925 CE) have been identified in Yazd, most of which have a southwest-northeast oriented courtyard, since the summer quarters of the house are on the southwest and the winter quarters are located on the north-eastern side of the house. The direction of the house has a direct influence on the comfort of the residents by providing suitable interaction with solar energy, making the best use of the favorable wind and minimizing the effects of harsh winds (Appah-Dankyi and Koranteng, 2012). However, through more precise studies, some differences can be seen in the proportions between the central courtyard and the walls, and each of them has different ways of dealing with the climate in Yazd. The Muzaffarid houses have smaller courtyards with an area that does not exceed 30 m^2, whereas the area of the courtyards increased in the subsequent periods, for instance

the area of the courtyard of Lariha House is more than 600 m^2. Increasing the area of the courtyard and changing its proportion in relation to the surrounding walls directly influences the life of the residents because these proportions cause the courtyard to receive enough solar radiation and energy in the cold months (Mirdehqan, 2016). Accordingly, the traditional houses of Yazd have courtyards with a variety of different dimensions. The purpose of the current study is to investigate the performance of courtyards in the harsh conditions of the hot and dry climate of Yazd particularly in relation to their dimensions.

REVIEW OF THE RELATED LITERATURE

Climate and architecture are the most fascinating subjects in terms of the influence of the environment on residential buildings specifically and the human living space in general. Throughout history architects have been familiar with climatic factors and their influences over years of experience, so they have striven to control them by the optimal use of environmental factors to improve the living conditions as well as decrease their undesirable effects by means of creative strategies (Widera, 2014).

The role of climatic factors is even more crucial in the province of Yazd, taking into account the environmental conditions of this region. Wind is one of the main influential environmental elements in Yazd and the architectural spaces need to be designed in order to avoid harsh winds as much as possible and yet benefit from the favorable wind for the internal ventilation of buildings (Memarian and Brown, 2003).

Other factors such as dunes also stress the importance of the winds, since they are carried around by winds and clearly influence the lives of the residents. Dust storms require a wind speed of only about 14.4 km/h to lift the dust off the ground; however, most substantial dust storms have a much faster wind speed than this (Elbashan, 1981).

According to the synoptic weather station in Yazd, the wind speed was always more than 15 m/s during June, July and August in the period between 1952 and 2010. The station's wind rose results over the course of twenty years revealed that winds with a north-western – south-eastern directions are the main causes of the sand and dust storms in the region (Ekhtesasi *et al.*, 2006), while the lowest percentage of winds blow in a north-eastern – south-western direction with a relatively low speed (Omidvar, 2010). These storms can be considered as one of the reasons for avoiding the construction of residential space on the south-eastern side of the yard. Therefore, the central yard in the houses in Yazd must be in close interaction with their surrounding environment in order to benefit from suitable climatic condition such as solar energy or favorable winds, and also avoid harsh conditions such as sand storms.

In order to study the influence of the central yards' patterns on moderating the harsh environmental conditions of the hot and dry climate, simulation software was utilized. Using this software, researchers are able to completely simulate buildings and study the interactions between the house and the environment in as close a way as possible to real situations (Hensen *et al.*, 2004). This software can define factors, including the energy consumed within different periods and the cost of consuming energy, as well as make estimations of temperature and humidity, which are the main indicators of the energy performance of a building, in the form of different outputs (*Ibid.)*. In the presented study, to simulate the wind streams FLUENT 6.3.26 software was utilized.

Among studies using similar methods, Sami (2003) used CFD simulation in order to examine the Iranian wind catchers' function in relation to the natural ventilation and comfort in the traditional houses of Yazd. Nguyen *et al.* (2011) also studied the vernacular architecture strategies in providing thermal comfort conditions by means of CFD simulation. The results showed that although the vernacular architecture in Vietnam is totally adapted to the environmental conditions of the country, these houses cannot provide the required thermal comfort for the residents. In another study conducted by Hooshmand Aini *et al.* (2012), a type of wind catcher known as an Egyptian wind catcher was examined by means of CFD simulation. Kristianto *et al.* (2014) used the same method to investigate the indoor thermal comfort conditions in the traditional houses of Minahasa. Natural ventilation produced by underground spaces called Shavadoons[2] in the city of Dezfoul was examined via CFD simulation in the Design Builder software in a study conducted by Hazbei *et al.* (2014). Zarei and Behboodi (2016) used CFD simulation to study the buildings in the central part of Varmal castle settlements in the Sistan and Baluchestan Province, Iran.

Unlike the limited studies on historical houses, there are many studies regarding modern residential architecture, including Tantasavasdi *et al.*, 2001; Wang *et al.*, 2012; Sapian *et al.*, 2012; Zajiček and Kic., 2013; Khan *et al.*, 2014; etc.

GENERAL INTRODUCTION TO THE CITY OF YAZD

The samples required for the present study and the CFD simulation were selected from the city of Yazd. Located at the geographical coordinates of E: 52° 55' - 56° 37' and N: 29° 52' - 33° 27' and with an area of 99.5 km^2 and a population of 500,000, the city is the capital of the Yazd province, Iran (Soltanhosseini *et al.*, 2013) (Figure 1). The climate of this region is hot-dry. Whereas the maximum temperature in the summer reaches 50 °C, the minimum temperature at night in summer reaches 15 °C, which shows high fluctuations in temperature between daytime and night time. The urban design aspect of Yazd city provides a shady area for people (Mashhadi, 2012). Therefore, the city has a compressed urban form whereby all buildings are adjoined (Hejazi and Saradj, 2014).

According to local texts, Yazd was known in early times as Katha, after a fortress and prison alleged to have been founded by Alexander. According to legend, later foundations grew up on this site (Lambton, 2007). There is not much information about this city after the arrival of Islam in Iran by the 5th century AD; however, the archaeological data acquired from three seasons of excavation and speculation in the old city have not revealed any remains older than the early Islamic centuries (Mirdehqan *et al.* 2014). In the

[2] A space built at the depth of 5 to 12 meters underground to moderate and adapt the houses' climatic conditions.

11th century AD, the Kakuyids ruled (c. 1008–c. 1051) in Yazd. Within this period, there were many activities in the development and prosperity of the city of Yazd, including the construction of the tower of the city and various buildings with different usages, such as schools, mosques, inns, etc. (Katib, 1965). The shrine of Davazadeh Imam in the Fahadan neighborhood is one of the few memorials of this period, which, according to the inscription, was built in 1036 AD (Anisi, 2009).

After the Kakuyids, the Atabegs (c. 1141–c. 1319) gained power. For this period, there are also many measures regarding the development of the city that can be referred to as the expansion and modernization of the tower of Yazd and the construction of various buildings such as schools, mosques, inns, etc. (Katib, 1965). One of the most devastating events in this period was the Mongol invasion of Iran; however, Yazd was protected against the danger of destruction because of the policies adopted by the Atabaki ruler of Yazd.

It should be noted that the Muzaffarid period (c. 1314–c. 1393) is one of the most important historical periods in Yazd. Due to the great power of this family, Yazd became one of the most important cities of Iran at that time (Katib, 1965). Some of the measures that this dynasty made for the development of Yazd were the expansion of the city of Yazd and its neighborhoods inside the wall, the development of the tower, the securitization of the roads that led to the city's commercial prosperity, and the construction of various buildings such as mosques, schools, monasteries and inns. These actions caused Yazd to become one of the major cities of its time (Mustowfi Bafqi, 2006). During the attack of Amir Timur (c. 1370–c. 1405), the Muzaffarid dynasty collapsed, and until the formation of the Khavanin dynasty (c. 1748–c. 1830) Yazd was run by rulers appointed by the central government (Lambton, 2007). However, during the reign of Amir Chakhmmaq Shami, some measures were taken to further its development, yet the city lost its past prosperity.

During the time when the Khavanin Dynasty ruled, Yazd attained its importance again, and this dynasty did much for its development and prosperity. After this dynasty, by the end of the Qajar period (c. 1789–c. 1925), Yazd was run by rulers determined by the central government (*Ibid*).

THE SAMPLE HOUSES

As one of the most important elements for houses in a hot and dry climate, the courtyard has different usages (Memarian and Brown, 2006). "In the compact urban texture of historic towns such as Yazd, the house is usually bounded either by neighbouring dwellings or by narrow streets. Access could be circuitous and, for the reasons of privacy, openings on to the external spaces were avoided. The house was therefore entirely inward-looking and the courtyard became a small garden, which, with its pool, provided a cool space in the spring and summer. Also, seasonal rooms, private and reception areas were organised around different parts of the courtyard, which served to relate these different spaces one to another." (Memarian and Brown, 2003).

In addition, this element was important due to the climate, because it provided a microclimate inside the house, which created conditions for thermal comfort and reduced the amount of energy required to cool the building (Al-saud and Al-hemiddi, 2006). Accordingly, the important role of the yard in the hot and dry climate of Yazd region can be recognized. With regard to the purpose of the present research, three houses were selected as case studies, each of which has different dimensions of its courtyard. The aim of the selection of these examples was to investigate the relationship between the dimensions and proportions of the courtyard and its performance in creating comfortable conditions in the interior of the house in the hot and dry climate of the Yazd region, and also to investigate which one of the samples showed better performance.

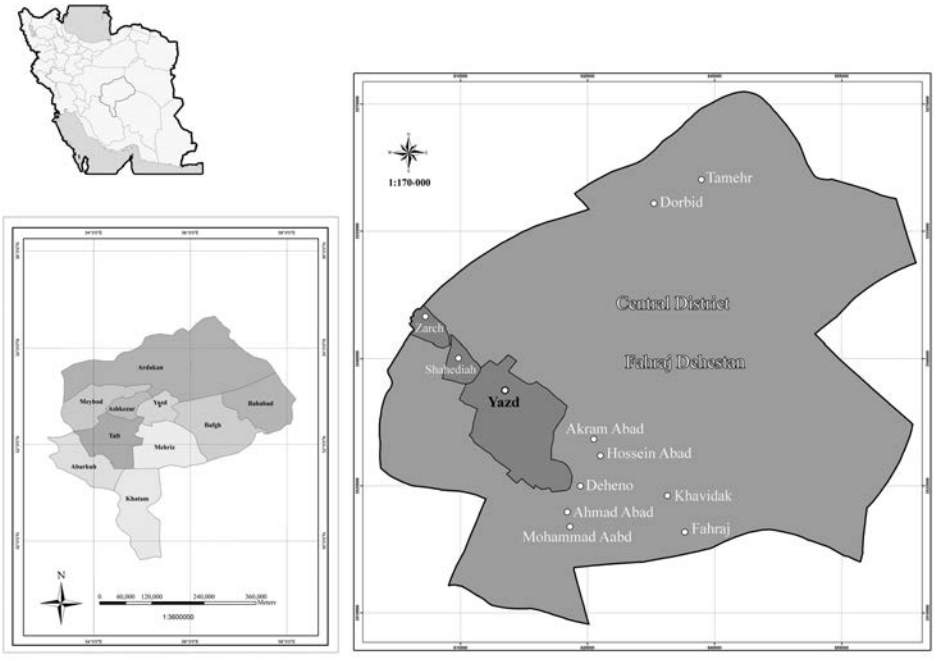


Figure 1. The location of the city of Yazd in the province of Yazd
(Source: Archive of cultural heritage, handicrafts and tourism of Yazd Province)

Like all traditional houses in Yazd, the three selected houses had a western south–eastern north orientation, and with the exception of the south-eastern front, residential spaces were spread over the other three fronts. As already mentioned, the reason for the lack of residential space on this front from the yard was the dominant wind direction that affected it.

The house of Karimi dates back to the Muzaffarid period. The entrance of the house, which has been destroyed, was on the north-eastern side of the house, and like similar houses it was connected to the central courtyard through a small iwan (eiwancheh)[3] with ninety-degree rotation. The area of the small, rectangular courtyard is about 17 m^2. The summer quarters of the house are on the south-western side and the winter quarters are on the north-eastern side of the courtyard. There are two small iwans (eiwancheh) on the other two sides of the courtyard providing access to other spaces and the roof as well. The main iwan is 8 meters high and stands much higher than the rest of the building; access to the adjoining chambers is only possible through this iwan. The garden behind the house, mentioned in local historic texts like the Sarabostan (Katib, 1965), has been totally destroyed. There is also a chamber behind the small iwan on the north-eastern side of the central courtyard which is only accessible through the small iwan (Figure 2). The length and width proportion of the courtyard in Karimi's house is about 1.27 and the proportion of the length and height, except the southwest side, is about 1.1 (Table 1). Note that the houses from the Muzzafarid period identified in different cities and villages of the Yazd region are comparable with each other in terms of their plan and proportion, and particularly their style of decoration (Zarei *et al*., 2016). For example, Boruni House is fully decorated, especially with mud decorations, while Karimi House is decorated using the common simple methods of that period *(Ibid*).

The Mashrootah House is located in the Shahzadeh Fazel Community. The central courtyard of the house with an area of 104 m^2 has created a microclimate by means of having several trees around a central pool. The summer quarters, with a large iwan and two wind catchers (Bad-gir) in each chamber of the room, are on the southwest side of the building and they are right in front of the winter quarters. Two entrances on both sides of the iwan provide access to this chamber. The residential units are built on the northwest of the courtyard, yet there is no residential section on the south-eastern side (Figure 3). The proportion of the length and width of the yard in this house is 1.3 and the proportion of the height and length of it is about 0.5 (Table 2).

The Shokuhi House dates back to the Qajar period, located in the Chaharsuq Community in the city of Yazd. The house contains four courtyards. The main one, which is called the inner courtyard (Andaruni[4]), has an area of 379 m^2 and like the previous sample has a microclimate influenced by

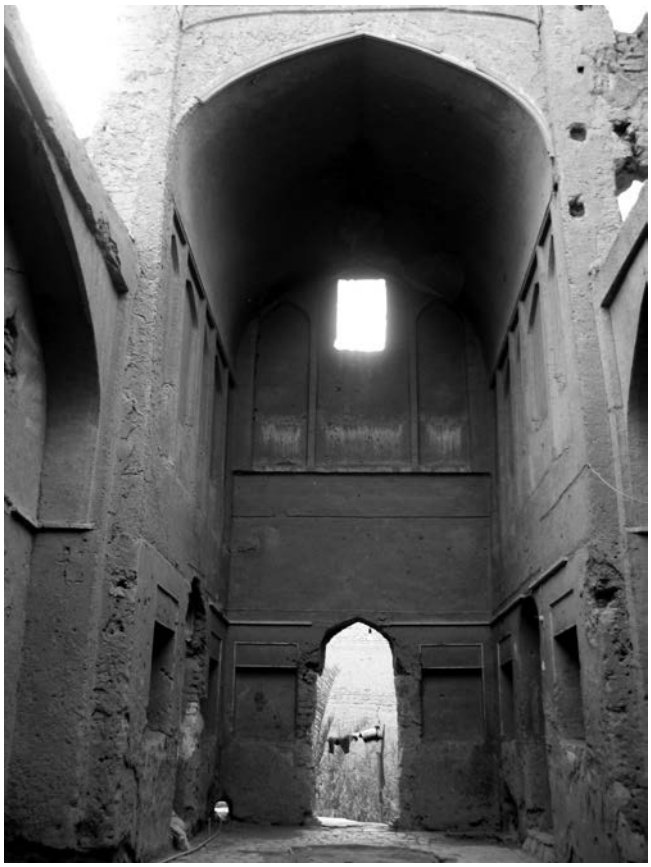


Figure 2: Karimi house
(Source: Archive of cultural heritage, handicrafts and tourism of Yazd Province)

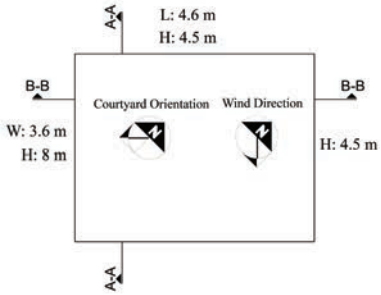
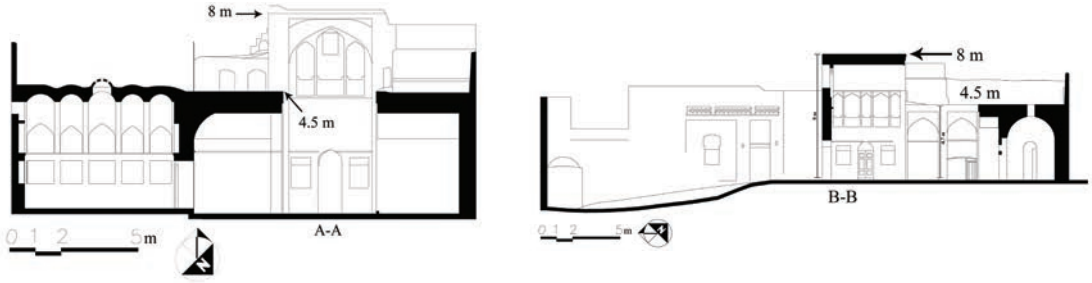
means of several trees and a central pool. The hall (summer quarters) of the house is on the south-western side and the winter quarters (Panjdari) are right in front of it. Despite the construction of the residential units on the north-eastern side of the courtyard with seasonal functions, the south-eastern side has no residential units. The other courtyard, which is called the outer courtyard (Biruni) also contains summer and winter quarters, as well as a small courtyard used to provide access to other adjoining sections such as the stable. The house has an octagonal wind catcher (Bad-gir),

Figure 3: Mashrootah house
(Source: Archive of cultural heritage, handicrafts and tourism of Yazd Province)

[3] In Iranian architecture, the Eiwancheh is a semi-open space that is smaller than the Iwan and provides access to other spaces (Shams 2009). It can be seen in some historical monuments such as the Shrine of Masoumeh in Qom (Blair, 1984).

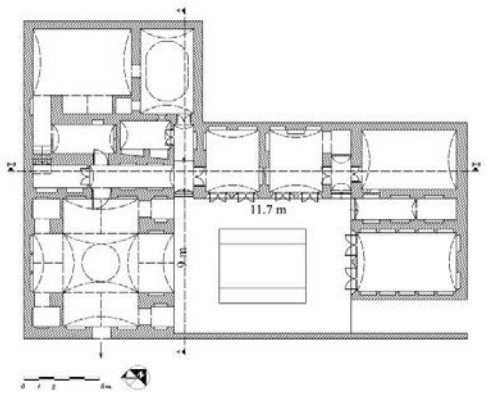
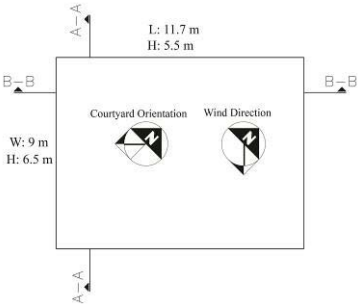
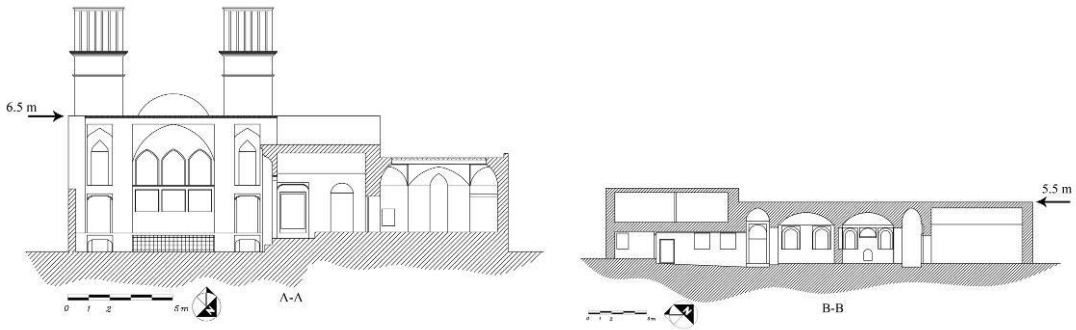
[4] In traditional Persian residential architecture, the andaruni, is in contrast to the biruni, and is part of the house in which the private quarters are established. This is specifically where the women of the House are free to move about without being seen by outsiders (Amiriparyan and Kiani, 2016)

Table 1. Karimi house

Plan and Proportions and courtyard's wall sizes		
Sections		
courtyard's Proportion	L/W ≈ 1.27 South-western Side: H/W ≈2.2 north-eastern Side : H/W ≈1.1 Other Sides: H/L ≈1.1	

(Source of Plan and sections: Archive of cultural heritage, handicrafts and tourism of Yazd Province)

Table 2. Mashrootah house

Plan and Proportions and courtyard's wall sizes		
Sections		
courtyard's Proportion	*L/W ≈ 1.3 H/W ≈0.7 H/L ≈ 0.5*	

(Source of Plan and sections: Archive of cultural heritage, handicrafts and tourism of Yazd Province)

and the Narnijestan yard[5] is right behind it with chambers on both sides (Figure 4). The proportion of the length and width of the courtyard to each other is approximately 1.17 the proportion of the height to length is 0.27 (Table 3).

METHODS

The main objective of the present study was to simulate the CFD using Fluent software in order to simulate the severe winds and storms blowing in the central courtyards of the three sample houses from the Muzzafarid, Safavid and Qajar periods. Gambit pre-processing software was utilized in order to construct three-dimensional models of the houses and then Fluent software was used to analyze the wind flow around them (Figure 5).

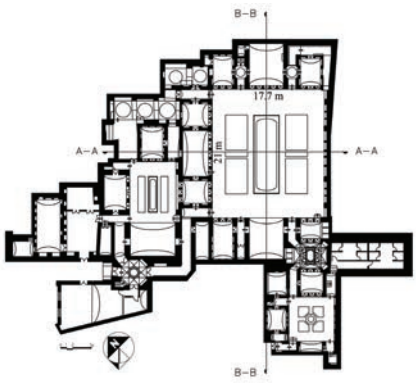
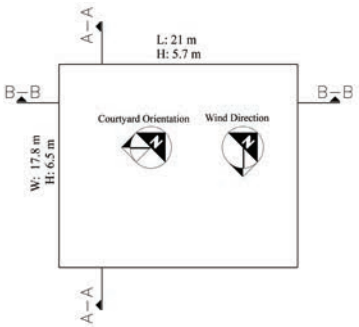
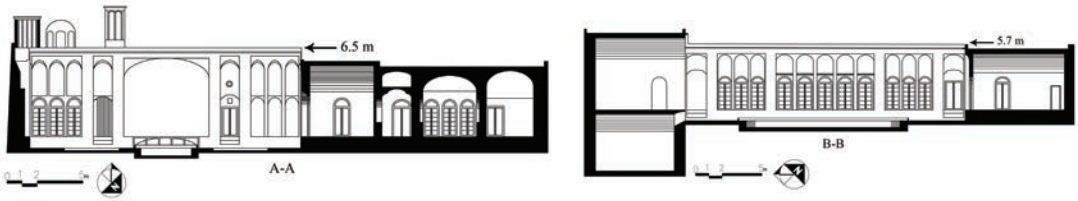
[5] A very small yard where the citrus, fruits and plants can be protected against the winter cold. (Amiriparyan and Kiani, 2016)

A numerical analysis was conducted in order to confirm the confrontation of the wind and the interior central courtyard of the houses. The theoretical approach of the analysis is based on the steady state solution of the three-dimensional equations of mass and momentum of the wind flow for the low-speed turbulent isothermal flows in the computing field. K-epsilon was the turbulence model considered in this study. The velocity boundary condition at the entrance point was determined based on the northwest – southeast direction of the wind perpendicular to the building. Regarding the extension of the computing field and the distance of the area's frontiers from each building, the boundary condition for the sides and top of the building was considered as symmetry and it was considered as the wind's outflow for the outlet.

The simulated storm took place on May 29, 2003 and its influence was studied on the interior spaces of the

Figure 4. Shokuhi house
(Source: Archive of cultural heritage, handicrafts and tourism of Yazd Province)

Table 3. Shokuhi house

Plan and Proportions and courtyard's wall sizes		
Sections		
courtyard's Proportions	*L/W ≈ 1.17 H/W ≈0.36 H/L≈ 0.27*	

(Source of Plan and sections: Archive of cultural heritage, handicrafts and tourism of Yazd Province)

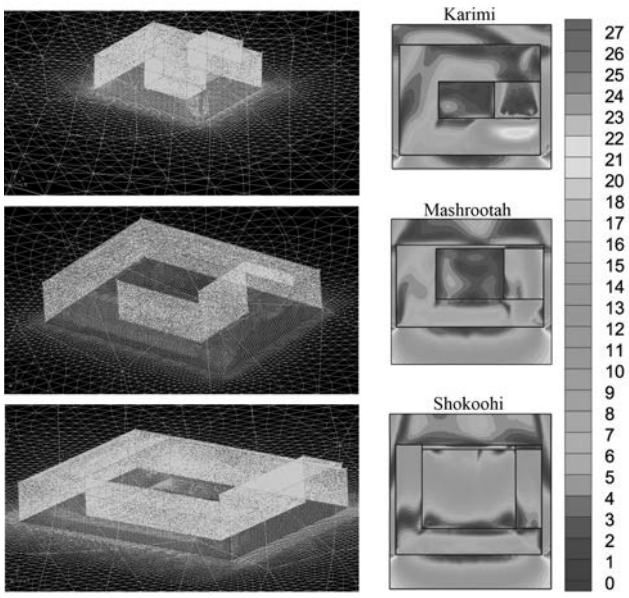


Figure 5 (left). Schematic view and the three-dimensional models of each of the houses in the computing field, respectively from up: Karimi, Mashrootah and Shokuhi

Figure 6 (right). The comfort condition of the central courtyard in stormy conditions on a plate with 1.75 meters height from the ground

houses' courtyards. This storm, with a dominant north-western direction passed through a large area with a speed of more than 25 m/s which increased up to 26.4 m/s in the city of Yazd and continued for 22 hours and 30 minutes of local time with lower speed. The storm caused severe dust in the region, which reduced the horizontal viewing to zero. The ambient pressure and temperature were 876.2 Hpa and 31° Celsius with a viscosity of N.s/m2-5 1/844 × 10, respectively (Omidvar, 2010); therefore, the wind's speed was considered to be 26.4 m/s in the simulation process. The elevation plate (contour plate) was considered as 1.75 m in order to assess the comfort condition. An elevation plate (contour plate) means that the wind flow condition is studied at this elevation and the results are clear; this elevation is almost equal to the average height of an adult who stands in the courtyard and feels the flow of the wind and the sand on his face. In other words, a hypothetical plate with a height of 1.75 m was considered in the courtyard and the wind speed in different parts of this plate is specified as a colored map. The descriptive mathematical equations were discretized using the finite volume method and the SIMPLE numerical method was also applied for coupling the velocity and pressure equations. The convergence criterion in a steady flow field for this matter was considered with an accuracy of 10-5 for all flow variables.

RESULTS

The results of the simulations revealed that the wind approached the north-western side of the buildings in all of the cases (bottom of the image) and passed through the south-eastern side (top of the image). The wind's flow reduced due to collision with the buildings and entered the central courtyard from the upper edge of the building and flowed all over the courtyard at different speeds. As the objective of the present study was to assess the comfort condition of the interior courtyard of the houses in stormy weather, the Dutch wind nuisance standard NEN 8100 was applied as the comfort criteria.

According to this standard, activities are divided into three categories of sitting, strolling and traversing so that the comfort conditions can be categorized into three states of good, moderate or poor at different rates of speed. Note that the speed threshold for the safety of the individuals is 15 m/s (Jadidi and Heidarinejad, 2014). Table 4 shows the summary of the comfort standard in the Dutch wind nuisance standard NEN 8100.

The initial velocity of the wind in all samples was identical and equal to 26.4 m/s. Figure 6 represents the wind's speed inside the central courtyard of Karimi house as 0 - 4 m/s in almost every corner of the courtyard; it also created a high speed eddy current in a small part of the courtyard, right in front of the winter quarters of the building whose quantitative value was approximately around 4 - 7 m/s. According to the Dutch standards, those parts of the house with low wind flow speed have comfort conditions in all of the three states; while in those parts with a wind speed of 2.5 – 3 m/s, the comfort condition is moderate for a sitting person, however, the two other states have good comfort conditions.

Figure 6 shows the wind speed in the courtyards of the Mashrootah where the speed is between 0 – 5 m/s. In comparison with the former case, the larger the courtyard the larger the area for swirling the wind and creating more and bigger eddy currents inside the courtyard; as a result, the wind flows at a higher speed in a larger space, and the quantitative amount is around 5 – 8 m/s. The Dutch criteria showed that most of the central courtyard of this house provides good comfort conditions for traversing and strolling positions while the comfort condition for the sitting position

Table 4. The summary of the comfort standard in the Dutch wind nuisance standard NEN 8100

Probability of Exceedance $P(V_{loc} > V_{threshold;wind\ nuisance})$ in percentages of the number of hours per year	Quality-level	Activity-level		
		I. Walking, normal pace	II. Walking Leisurely-strolling	III. Sitting longer time
< 2.5	A	Good	Good	Good
2.5 – 5	B	Good	Good	Moderate
5 – 10	C	Good	Moderate	Poor
10 – 20	D	Moderate	Poor	Poor
≥ 20	E	Poor	Poor	Poor

(Source: Aanen & Van Uffelen, 2009)

is moderate. However, in those parts of the courtyard which are capable of causing the eddy currents, only someone who is traversing can have comfortable conditions, while for strolling or sitting, the comfort conditions are poor.

The area of the courtyard in Shokuhi House is larger than the two previous cases. According to Figure 6, the analysis of the wind flow in the courtyard shows that the wind blows at high-speed in most of the courtyard and that it blows far from the front edge of the roof with a quantitative amount between 8 – 13 m/s. Note that the high speed of the wind affects the main iwan and the turmoil and high speed flow is obviously visible in that part, while this part was calmer in the two previously mentioned houses. The wind flow speed was only reduced between 0 – 2 m/s in a narrow strip area near the north-western side of the building which is where the wind enters the courtyard.

According to the Dutch standards, only this small part has suitable comfort conditions; however, most of the courtyard provides moderate comfort conditions for someone who is traversing and poor comfort conditions for a person who is strolling or sitting, which is due to the larger area of the courtyard in comparison with the other two houses. Moreover, the stronger the wind blows, the more the dust and sand spread inside the house and reduce the thermal comfort conditions of the house.

CONCLUSION

The presence of the courtyard in the traditional houses of Yazd has played an important role in creating thermal comfort conditions because it was considered as one of the key spaces in the home, which allowed access to most of the home spaces. The results of simulations show that houses with a length to height proportion of nearly 1.1 have better performance in hurricane conditions, since when the length and height proportion of the yard is close together, it creates a closed space that reduces the wind speed inside the central courtyard. This performance can be seen at Karimi house because the wind speed in the interior of the house is about 11 km / h. If this proportion changes and the length to height proportion increases, the courtyard will show a weaker performance, because the yard has enough space to inflate the wind and make non-thermal comfort conditions. This feature is visible in Shokouhí house because the wind speed in the interior of the house is around 46.8 km / h. The large central yard provides enough space for the wind to carry sand and dust inside the yard and disturb the residents. Creating a microclimate by means of planting trees and constructing central pools is a solution to overcome this problem; this is because the trees can act as a barrier against the wind and decrease the wind speed, and also the pool's water can absorb the particles in the air and prevent them from spreading everywhere in the house.

The simulation results indicate a direct relation between the courtyard area and the level of its interaction with strong storms. In small yards, like the Muzzafarid yards, this interaction is very desirable, while increasing the central yards' area directly influences this interaction, so the microclimate is used as a way to ameliorate the comfort condition. Modern designers can be inspired by this pattern in designing constructions and the use of small courtyards recommended for contemporary architecture by specifying the size, position, and the height of the walls in a hot and dry climate. Also, it can be said that the courtyard in the traditional houses of Yazd, with proper distribution of residential spaces, provides residents with thermal comfort and reduces the impact of the hot and dry climatic conditions in the Yazd area in the interior of the house, which has direct a connection to its the proper orientation.

Moreover, the high potential of the simulation software utilized in this study was also considerably useful in studying historical monuments from different aspects; since it provided precise results in the shortest time possible and at the lowest price. This software can be a great help in studying buildings that are partially destroyed, yet their proportions are still measurable; it is also possible to achieve a better comprehension about the architectural elements of different periods in order to apply previous experiences to modern architecture.

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OPERATIONALIZING THE PUBLIC INTEREST IN THE LOCAL PLANNING CONTEXT OF SERBIA

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The concept of the public interest has often been revisited within theoretical debates related to the fields of politics, decision making, and planning. While it has been claimed that the public interest should serve as one of the main pillars for decision-making, various authors reject the possibility of its operationalization, describing it as a vague criterion for any empirical analysis. With that in mind, the main aim of this paper is to present the role of the public interest and its long lasting tradition in Serbian planning practice from socialism until today, as well as its operational dimensions in relation to the specific post-socialist planning context.
This paper will first briefly discuss the nature of the public interest concept in relation to planning. It will go on to present some of the socio-economic aspects of Serbian socialist and post-socialist planning practice, so as to better understand the local context in which the public interest is framed. Finally, it will propose the dimensions of planning practice in which the public interest is articulated. The findings were derived from the analysis of the role of the public interest in planning theory, planning practice, and the Serbian legal planning framework.

***Key words*: public interest, operational dimensions, post-socialist planning practice, normative, procedural.**

INTRODUCTION

The idea that the public interest represents one of the main pillars of decision-making in planning practice has often been revisited in theoretical debates (Hoch, 1994; Campbell and Marshal, 2002:164; Alexander, 2002; Sandercock and Dovey, 2002:152; Petovar and Vujošević, 2008; Tait, 2016). Most of the authors that have engaged with the concept of public interest argue that, besides its long-lasting tradition and importance within public policymaking, planning, and other spheres of public legislation, the concept itself is often characterized by obscurity, debates and lack of empirical evidence (Bozeman, 2007; Klosterman, 1980; Petovar and Vujošević, 2008; Lennon, 2017). Nevertheless, Bozeman (2007:99) states that it may seem surprising that a concept "as ill-defined as the public interest, a concept that rarely yields instrumental measures, indices, or precise analytical tools", still survives, not only in the context of political and theoretical debates, but within the practical realm too.

Yet, there appears to be a lack of research that has empirically engaged with the concept of public interest and its role in planning practice, often rejecting it as a vague criterion for an empirical examination. On the other hand, the term 'in the public interest' has been used in Serbian planning legislation and daily practice, as a means of justifying planning action and / or planning decisions since the socialist era. Hence, the main aim of this paper is to examine the operational dimensions of the public interest in relation to the local planning context of Serbia, as opposed to following the widely adopted understanding that the concept itself cannot be empirically identified or examined. These are recognized as (1) normative / top-down dimensions, through the planning of public land-use and public services, and expropriation of land; and (2) procedural / bottom-up dimensions, through public participation and the engagement of planning professionals in daily planning practice.

This paper will first briefly discuss the nature of the public interest in relation to planning. It will go on to present some of the particularities of Serbian socialist and post-socialist planning practice, so as to better understand the local context in which the public interest is framed. Finally, it will propose the dimensions of planning practice where the public interest is articulated. The arguments presented in this paper are based on a content analysis of the existing literature on the role of the public interest in planning theory, Serbian planning practice since the socialist era, and the Serbian legal planning framework.

THE NATURE OF THE CONCEPT OF PUBLIC INTEREST

Despite the obscurity often attached to the concept of public interest, a number of authors have engaged internationally in

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attempts to define it (Cassinelli, 1958; Held, 1970; Bozeman, 2007), as well as its relation to urban planning (Hoch, 1994; Alexander, 2002; Campbell and Marshall, 2002; Tait, 2016). It is interesting to note that the term "public interest" dates from Aristotle, who recognized that a good constitution should be respectful towards the public interest, as an interest shared by members of the community. Similarly, St. Thomas Aquinas considered the public interest "a worthy goal of the government" (Bozeman, 2007:1).

In the most basic sense, the nature of the concept can be distinguished in relation to the collective and pluralist approach to defining and implementing what is in the public interest. The collective approach states that the public interest is shared by the members of the community, while the pluralist approach advocates the aggregation of individual interests (Klosterman, 1980; Alexander, 2000, 2002; Campbell and Marshall, 2002).

The collective approach recognizes two different methodologies to reaching an understanding of and implementing what is in the public interest. These are recognized through a unitary and shared-interest approach. The unitary approach is concerned with the "means of conceptualizing, explaining, and, sometimes, prescribing collective good" (Bozeman, 2007:99). In the case of the unitary approach, the public interest is prescribed as top-down, while the interests of "others" are usually observed as illegitimate. The shared-interest approach, on the other hand, requires an open and deliberative public arena in order to discursively address what is in the public interest in a bottom-up fashion. Harvey (1996), for example, advocates the collective right to shaping the city rather than aiming to improve individual status, by popularizing "the right to the city" approach that dates from Lefebvre (1978). Nevertheless, the shared-interest approach is often criticized as utopian by pluralists. Healey disagrees with Harvey by rejecting the practical possibility of addressing the "common interest". For Healey, the shared-interest approach cannot uphold the diversity in which we are living our lives, because it requires an understanding of how to deal with different preferences between the members of the community (Healey, 1997:242).

Through the perspective of political pluralism, the public interest is traditionally observed through the lenses of public goods which are non-rival and non-excludable in an economic sense (Kaul *et al.*, 2009). Nevertheless, some market-economy societies show tendencies to detach from this traditional role of the concept, and the public interest is often equated with the sum of individual economic interests through the most extreme view of pluralism – the utilitarian perspective (Fainstein, 1999; Petovar and Vujošević, 2008; Tait, 2016).

Different definitions of the concept of public interest can be attached to different thoughts in planning theory. While rational planning observes the public interest as an interest shared by the members of the community implemented top-down as the most desirable outcome of planning practice, the critique of the rational model implies that what is in the public interest should be agreed on through consensus and in a bottom-up fashion. Finally, political pluralism rejects the possibility that the public interest can be articulated as an interest shared by the members of the community, advocating that it requires a deliberative and communicative arena which enables the discovery of individual preferences and provides the possibility for their potential balance.

THE PUBLIC INTEREST IN THE CONTEXT OF A POST-SOCIALIST COUNTRY

Within the local context of planning in Serbia, the unitary approach to defining and implementing the public interest is used to describe the rational planning practice of the socialist era. During that period, the State alone could serve as the protagonist of an action "in the public interest" (Petovar and Vujošević, 2008; Lazarević-Bajec, 2011), and only objects owned by the State could have the status of a public good, and as such were protected (Tsenkova, 2006:30). Hence, what is in the public interest was presumably implemented top-down, and was rationalized and legitimized through a scientific, technical approach to planning without the legal obligation to submit complaints concerning the plan during a public hearing until the Law on Urban and Regional Spatial Planning in 1961 ("Official Gazette of the SRS", no. 47/61). According to Petovar (2003), during the early socialist era the public interest was equated with State intervention, its political establishment and ownership of land, the public goods and most other economic activities, while public participation obtained a more effective role in the late 1960s.

As Tsenkova and Nedović-Budić (2006) explain, post-socialist countries witnessed a three-dimensional transition process – the transition to democracy, markets and decentralized governance. These processes led to a need for acknowledging and balancing the new interests of new actors in the decision-making arena. Accordingly, current planning practice in Serbia offers the possibility of addressing the pluralism of interests due to legally obligatory public participation within formal planning practice and the possibility of submitting complaints concerning the plan, if compared to the early socialist era.

If it is taken that Serbia is a country which experienced the unitary / top-down approach to planning and development during early socialism, as well as more communicative planning practices within its later stages of development, this specific post-socialist planning context can be used for identifying the operational dimensions of public interest in planning. The following section will present some of the socio-economic aspects of Serbian socialist and post-socialist planning practice, so as to better understand the local context in which the public interest is framed.

Socialist era

The socialism that operated in the former Yugoslavia was based on the Marxist ideology of economic equity. In relation to planning, the former Yugoslavia abandoned the Soviet centralized planning model soon after WWII by adopting the Basic Regulation on the General Urban Plan in 1949 ("Official Gazette of the FNRJ" no. 78/49). Most scholars describe Yugoslav planning as rational and scientific. Allegedly, its main purpose was "the protection of public interest", while it was "carefree" of private and other interests (Lazarević-Bajec, 2011). Socialist planning

professionals were often described as technocrats, educated mainly in the field of engineering (Ferenčak, 2015; Vujošević and Petovar, 2006). It should be noted that, although the rational, technocratic role of a planner is usually equated with "value-free" planning practice, this view of value-free planning is arguably incorrect, because planning is always essentially political (Klosterman, 1978:37).

As in other socialist countries, in the Socialist Federal Republic of Yugoslavia the unitary State was the main pillar of the urbanization process, while the political elites made decisions on investments and development projects. The role of the State in socialist planning practice can be identified with the role of the "central investor" and initiator of urban development (Čaldarević, 2012; Petovar, 2012). Nevertheless, the decentralized character of this form of socialist planning meant that the municipality was "the basic and the most important local government unit, with considerable executive power" (Nedović-Budić *et al.*, 2011:440).

Some of the substantive characteristics of socialist planning in Serbia can be recognized in its normative orientation, physical planning determinism, hierarchical system of plans, State ownership over urban land, and more. Some of the main issues of socialist planning practice were seen as bureaucracy, the top-down approach to decision making, technocracy of employees and the lack of real public participation. In the Law on Urban and Regional Spatial Planning ("Official Gazette of the SRS", no. 47/61) the mandatory involvement of citizens in the planning process as well as the possibility of submitting a complaint concerning a plan were introduced. Hence, although the development in general was characterized as "in the public interest", the principles of decision-making were often criticized for their bureaucracy and predominantly top-down approach to planning.

The later era of the 1970s and 1980s was coloured by somewhat different practices in which the Law on Planning and Spatial Development ("Official Gazette of the SRS", no. 19/74) defined the role of public participation to provide legitimacy and verification of the plan, introduced public discussion to provide evaluation that affected the final plan, and enabled the submission of complaints about the plan. In this period, according to Nedović-Budić *et al.*, "preparation, discussion and implementation of planning decisions was over-loaded with various types of individual, group and general public participation processes" (2011:442). A system that promoted "cross acceptance" in the decision-making process was practiced in Yugoslavia for more than a decade before it became part of the practice of some of the traditional market-economy societies (Cullingworth, 1997 in Nedović-Budić *et al.*, 2011:442). On the other hand, the 1990s is often described as a battle for capital, in which planning "lost the ground beneath its feet" (Vujošević and Petovar, 2006).

1990s

The period between 1990 and 2000 was one of political and economic transition, involving the disintegration of Yugoslavia, civil wars and international military intervention. After the disintegration of the country, Serbia went through a post-socialist transformation. The 1990s saw changes whereby the existing form of socialism was replaced by political pluralization and other socio-economic reforms (Vujošević, 2003).

These changes were reflected in the re-centralization of political power, State monopoly over the economy, the emergence of an undemocratic political system, the weakening of local institutions and the replacement of "public" with "State" ownership (Vujošević and Nedović-Budić, 2006:280). At the same time, on-going civil wars in Croatia, Bosnia and Herzegovina and the province of Kosovo and Metohija, as well as the bombing of Serbia by NATO forces from March to June 1999 caused more political and socio-economic unrest. These circumstances led the country into international isolation and embargo, resulting in extremely weakened production, an informal sector economy, and the appearance of new and earlier hidden private interests operating in parallel with the "retreat of many previous, unequivocally public interests" (Nedović-Budić *et al.*, 2011:440).

The term "moment of discontinuity" can be used to describe the transitional character of planning practice in Serbia during the 1990s (Nedović-Budić *et al.*, 2011). With regard to the treatment of the public interest in planning and other areas of policy-making, various authors state that it was "put aside" due to the emergence of new, private interests (Vujošević, 2003). At the beginning of the 1990s, usurpation of public space and property took on a massive scale. In this time of economic and political crisis and instability, private investment in illegal real estate development was intensified. Nevertheless, the development of informal settlements was not only connected with satisfying the basic housing need of vulnerable and poor groups, but also the requirements of rich and powerful investors (Vujošević, 2003; Grubovac, 2006). Records show that during this period, almost 50 per cent of all the developed housing was informal (Petovar, 2012). The era of the 1990s was also characterized by the privatization of public housing stock and extraction of multifamily housing as a land-use "in the public interest" which could require the expropriation of land. Hence, the 1990s might have represented not only a "moment of discontinuity" in the transition to a market-economy, but also a "moment of obscurity" in terms of redefining the role of public interest in planning practice.

Although planning practice in the 1990s can be characterized as ambiguous in relation to the possibility of addressing and implementing the public interest, some scholars argue that other social concepts such as social capital were derived as a result of the unstable socio-economic conditions present at the time (Petrović, 2005; Ferenčak, 2015). Despite the lack of economic or financial capital, informal practices might have created some forms of social capital and networking between the affected social groups (Petrović, 2005). This notion is often attached to networking between the vulnerable groups in attaining housing solutions, or the provision of goods between individuals and groups during the time of the embargo and isolation of the country. While topics such as informal planning practices, the grey economy and informal housing are often revisited within existing research (Žegarac, 1999; Grubovac, 2006; Vuksanović-

Macura and Macura, 2014, and more), the subjects of social capital and networking as potential "soft" outcomes of such practices have not received much attention.

The 2000s

The first democratically upheld elections occurred in the early 2000s. Serbia started its transition a decade later than the majority of East European former communist countries (Lazarević-Bajec, 2009). Although there was "initial enthusiasm" for the transition to democracy, economic liberalization, marketization and political re-decentralization, various authors claim that the transition was mostly characterized by extreme "battles for capital" (Vujošević, 2003). This led to "economic liberalization and marketization that were manifested in the form of initial capitalist accumulation and a grab for resources [with urban land being a major target in this process]" (Nedović-Budić *et al.* 2011:411). Some other characteristics of this era were high unemployment and a lack of internal and especially external investments due to the unstable economy (Vujošević, 2003; Ferenčak, 2015). These circumstances required extreme effort to attract investments, privatization and the introduction of market-economy instruments for urban development.

These circumstances demanded a high level of flexibility in the field of planning, which included the possibility of private ownership over the previously State / societal urban construction land, as well as private ownership over the public land-use (public goods and public services). The Law on Planning and Construction ("Official Gazette of the RS" no. 47/2003) integrated the previously separate fields of spatial planning, urban planning, construction land, project management, development and legalization of informal settlements.

It should be mentioned that the Law on Planning and Construction has undergone eight amendments since 2003. During this period the Law was initiated to accelerate the procedures for: issuing construction permits to private investors; managing the regularization of large-scale informal development; and redefining the articles which regulate the ownership status of urban construction land. The Constitution from 2006 ("Official Gazette of the RS", no. 98/2006) introduced the possibility of private ownership of urban construction land. This definition differs from the previous one in which urban construction land can only take the State or societal form of ownership (Law on Planning and Construction, "Official Gazette of the RS", 47/2003). In addition, the last amendment of the Law on Planning and Construction ("Official Gazette of the RS", no. 145/14) proclaims that public land-use (public services and public goods) need not be publicly owned as had been the case since socialism, but instead can take any form of ownership (public, private or cooperative).

This brief overview of the amendments to the legal planning framework since the 2000s points out the tendency for introducing private property rights over the construction land. This era also includes the establishment of paradigms such as "investor planning" and "entrepreneurial urbanism", which involve adapting and subordinating the urban area to the interests of investors, who then establish the main criteria in the definition of planning solutions (Pušić, 2012:89). According to Petovar (2008), the paradigm itself implies the abolition of urban norms and establishes standards of physical planning, especially in the sphere of public goods. Although changes in the legal framework are intended to improve spatial planning and urban development practice, they appear as essentially motivated by political urgency and the influence of the market economy in directing future development. These changes also resulted in redefining the role of the public interest in planning, as further elaborated.

OPERATIONALIZING THE PUBLIC INTEREST IN CONTEMPORARY PLANNING PRACTICE

From the brief discussion above, it is clear that Serbian planning practice has seen a number of changes and challenges since the 1950s, when the term "in the public interest" was first mentioned in Serbian planning legislation (Expropriation Law, "Official Gazette of FNRJ", no. 28/47). Although the public interest has often been rejected as a criterion which cannot be operationalized in any substantive sense, the concept has been used in Serbian planning legislation and daily practice as a means of justifying planning action and / or planning decisions, since the socialist era.

The following section will aim to identify the operational dimensions of the public interest through the lenses of the planning context in a post-socialist country. These are recognized as normative and procedural operational dimensions. The expropriation of land and planning of public land-use and public services are identified as normative dimensions of the public interest, as they are defined in the legal framework and implemented within daily practice. Public participation, as a means of obtaining a bottom-up insight into what is actually in the interest of the public, and the daily planning practice of planning professionals in which the public and other interests are expressed, are identified as procedural dimensions of the concept.

The public interest as an instrument of expropriation

The term "public interest" has existed within Serbian planning legislation since 1947 in the Expropriation Law ("Official Gazette of FNRJ", no. 28/47), and it is used as a basis for the establishment of terms and conditions for conducting the compulsory purchase / expropriation of land. Within the legal framework, the term "public interest" was formally attached to converting ownership over the land and buildings from private into public ownership, with the aim of developing public land-use and public services (Expropriation Law, "Official Gazette of RS", no. 106/2016).

Some of the major differences between the socialist and contemporary definitions of the public interest within the legal framework concern changes in the definition of public land-use with regard to the Expropriation Law. The Expropriation Law (1947: Article 2) states that

> "real estate property and the rights over the property can be expropriated when the public interest is established for the purpose of the social-economic and cultural prosperity of the population."
>
> (1947: Article 2)

Hence, the law implies that both public and commercial activities (for example, a shopping mall) could be eligible for expropriation, due to being publicly / societally owned, and hence defined as "in the public interest". These regulations held for almost four decades, until the Expropriation Law ("Official Gazette of RS", no. 53/1995). This law extracted residential (mainly multifamily) housing and commercial activities from the list of land-use "in the public interest" eligible for the expropriation of land, because their ownership status was no longer within the public realm and they obtained a private form of ownership after the large-scale privatization of the 1990s.

Nevertheless, contemporary tendencies in Serbian planning practice mean that use of the term "in the public interest" for the purpose of expropriation of land is (again) attached to the legitimization of planning decisions which cannot be characterized as non-profit or public as defined in the Expropriation Law ("Official Gazette of RS", no. 106/2016). This kind of practice can be enabled for specific projects that are in the interest of the State by the adoption of a new legal framework at the national level – the *Lex Specialis*. *Lex Specialis* is a law that "has power" to enable the special legal status and new legal framework that abolishes all existing procedures such as expropriation, planning, administrative and control procedures.

The adoption of *Lex Specialis* may enable the expropriation of land under the banner of 'the public interest' for a profit project of national interest, which cannot be defined as public land-use or public services within the existing Expropriation Law. These actions mean that the term "in the public interest" is used in order to provide legitimacy for developments within the commercial / private domain, while operating in parallel with the formal legal framework which defines the public interest through non-profit and public land-use and services.

The public interest as public land-use and public services

Within Serbian legislation, the term "public interest" is formally attached to the Law on Planning and Construction, Expropriation Law, and the Law on Public Services ("Official Gazette of RS", no. 83/2014). The Law on Planning and Construction ("Official Gazette of RS", no. 145/2014: Article 2) defines the space for public land-use as an "area intended for construction of public facilities or public spaces which can require the proclamation of the public interest". Over a period of almost 60 years public land-use has been connected to the public ownership, and related to the Expropriation Law.

The modification of the Law on Planning and Construction ("Official Gazette of the RS", no. 145/14) involved a new definition of public land-use as "the facilities intended for public use only, and can be publicly owned, or can take any other form of ownership". This definition represents a significant change in relation to the legal framework of the 2000s (2003, 2006, 2009). Hence, urban construction land for public use in Serbia was mainly in public ownership, and it could not be privately owned until 2003. This land was either developed (public land-use / public services) or was still to be developed "to serve the public interest" (Zeković, 2009). Now, the public land-use can take any form of ownership, but only publicly owned land-use can be eligible for expropriation of the land.

The term "public interest" is also mentioned within the Law on Public Services ("Official Gazette of RS", no. 83/2014). Within the law, public services are defined as institutions, enterprises and other organizations that perform activities to ensure the realization of citizens' rights and needs. Public services are established in the field of education, science, culture, sport, student standard, health care, social care, child care, social security, and animal health care, in order "to ensure the realization of the rights provided by the law, and realization of the public interest".

As Petovar and Vujošević (2008) note, some of the basic social rights of citizens are realized through public services. The EU refers to Services of General Interest (hereafter SGIs), which meet people's daily needs and are vital to well-being. The definition of SGIs in international documents indicates their essential characteristics: equal access for all, reasonable conditions of accessibility, and high level of subsidies, since most of these services are not profitable. Although the subject of availability of public services is still lacking sufficient attention within the Serbian political and professional realm, it can be argued that the term "public interest relates to citizens" rights to use public services. Moreover, in Serbian planning practice, norms and standards for the development of public land-use and public services represent one of the main instruments for city design and regulation, serving to protect both the private interests of citizens and the public interest of the city as an entity (Petovar, 2010).

The public interest as public participation

The previous two dimensions of planning practice related to the expropriation of land and the provision of public land-use and public services can be seen as normative articulations of the public interest, at least in the local planning context of Serbia. This view is based on the notion that both the expropriation of land and planning of public land-use are regulated in the legal and planning framework, whereby their definition is imposed top-down and widely adopted by planning practitioners. On the other hand, international scholars consider public participation to be a procedural means of obtaining an understanding of a bottom-up expression of the public interest (Campbell and Marshall, 2002; Healey, 1997).

Public participation has a long tradition in planning processes in Serbia, where it has been an integral part of urban planning since the 1950s. In the last decade, both participation and stakeholder involvement have been further operationalized in the field of spatial and urban planning. The early socialist era was characterized by a lack of wide and meaningful public participation, while the amendment of the Law on Urban and Regional Spatial Planning in 1961 ("Official Gazette of the SRS", no. 47/61) introduced changes that implied public participation beyond "informing". The era of the 1970s and 1980s is often considered a "golden age" when planners practiced various forms of public participation and held public and expert discussions (Nedović-Budić *et al.*, 2011). After democratic political changes, the new Law from 2003 abolished

public discussion as an obligatory part of the participation process. A recent amendment of the Law on Planning and Construction (2014) introduced a new form of early public hearing in the phase of the pre-draft plan, in addition to the regular public hearing.

While it appears that the status of public participation as an instrument to reach an understanding on the bottom-up, procedural public interest has improved in comparison with the socialist era, or planning practice in the 1990s and 2000s, it is often suggested that contemporary planning processes are characterized by the scepticism of the professional elites and public administration in relation to participatory planning (Čolić *et al.*, 2013). Moreover, public participation processes in Serbian planning practice are often described as tokenistic. Until the introduction of the early public hearing in 2014, the only form of participation was the public hearing, which was carried out in a later phase of a plan's development. At this stage, the plan already possesses a significant level of "maturity", and therefore corrections and changes are challenging to implement. Although recent changes to the Law on Planning and Construction imply a broadening of the possibility to address the pluralism of interest at the initial stage of the planning process through an early public hearing, it is still unclear if this legal novelty will have any real effect on the actual outcomes of planning processes.

The daily practice of planning practitioners in the public interest

While the term "in the public interest" is commonly used to justify planning decisions and actions, "it is also taken to justify the position of planners as professionals able to both identify and serve the needs of the public" (Tait, 2017:336-337). Hence, the concept of public interest remains one of the central issues around the debate on the principles and ethics of planning practitioners (Alexander, 2002). As Forester explains:

> "like it or not, they [planners] are practical ethicists; their jobs demand that they make ethical judgments – judgments of good or bad, more valued and less valued, more significant or less – continually as they work."
>
> Forester (1999:31)

Nevertheless, the view of the planners' role as protectors of the public interest can be observed as a changing notion in relation to the rational / traditional ideology of planning and the communicative turn. According to the traditional ideology of planning, "the planner's appropriate role is to be a value-neutral advisor to decision-makers about the best way to serve the public interest, without promoting particular policy decisions" (Fainstein and Fainstein, 1971:342). This role of planning practitioners can be attached to technocratic practice and a rational approach to planning, which are terms widely used to describe the practice of socialist planners.

The recognition that planning operates within a certain political environment means that it is the planners' task to recognize and deal with the variety of interests within the planning process. While the rational approach implies that planners ought to be value neutral advisors in an environment in which desired outcomes direct the process of planning, the communicative turn in planning practice has brought forward a new role for planners as facilitators of the decision-making process (Forester, 1999; Healey, 1997). When it comes to the contemporary role of the public interest in a planner's daily practice, Forester explains that planners should act as

> "…active facilitators and mediators of public voice; not just as narrow technicians but as technically competent professionals able to listen to conflicting views, mediate between interdependent parties, and negotiate to protect various public interests as well."
>
> Forester (1999:155)

Forester suggests abandoning the technocratic approach to the daily practice of planning professionals towards developing competences that would meet the complex demands brought forward by the markets, decentralization and democracy. However, this change might represent a rather demanding task for professionals in a specific post-socialist context due to the long lasting tradition of technocracy, as well as difficulties attached to the complexity of balancing a variety of interests within a market economy.

CONCLUSION

The overall aim of this paper is to provide an understanding that the concept of the public interest has been operationalized within the local planning context of Serbia since the time of socialism, as opposed to the widely adopted view that it cannot be defined or verified in any empirical sense; also, the public interest represents a changing notion in relation to planning, at least within the local Serbian context. A more specific contribution of this paper is to propose that the public interest can be observed through normative, top-down and procedural, and bottom-up operational dimensions in relation to the Serbian local planning context. This is not to propose that these dimensions constitute a "hard framework" that cannot be changed regardless of the local context, availability of evidence, or other factors, but to provide a possibility for further investigation into the articulation of the public interest in Serbian planning practice.

An insight into Serbian political, economic and social transition, as well as the changes in planning practice and its legal framework since socialism, points out that terms such as "general" or "public" interest represent a changing notion in the current transitional circumstances. At the same time it appears that some normative dimensions of the concept are still present as a "left-over" from the socialist past and can be identified in some aspects of current practice and ideology among some planners. Hence, the public interest is often associated with the State's intervention in line with the socialist ideology, which presumably regards the concept in line with the provision of "public goods" – public land-use and public services. Moreover, the concept remains within the ethics of planning professionals as individuals, whereby the public interest has represented a certain norm or a code of conduct within their daily practice, from socialism until today.

On the other hand, the establishment of free markets and democracy would ideally provide circumstances that would

allow for the definition and implementation of a pluralist approach, where "what is in the public interest" is reached through communication between the State and its citizens. Nevertheless, adjusting to a market economy implies that there are various other interests to address and implement within the planning process besides, or even opposed to, the public interest. In these circumstances, most planning professionals perceive the normative dimensions of the concept (planning public land use and public services through technical norms and standards) as dominant ones, in order to protect public goods at a time in which private and economic interests prevail. This regulatory domain of professional planning practice requires transparency, exposure to public scrutiny, and the individual ethical engagement of professionals, in order to deal with the emergence of various other interests that are potentially harmful to the public interest.

It can be concluded that democracy and a market-economy do not necessarily imply the deliberation of and possibilities for addressing plural interests, especially within the complex post-socialist country planning context in which the interests of the public and other participants in the process are more often observed through the utilitarian pluralist perspective. Moreover, no wide and meaningful participatory process in which the public interest can be discovered through discursive practice can exist "in a vacuum". It requires certain preconditions such as the transparency of political and institutional arrangements, and an open public arena to recognize the pluralism of interests, as well as a strong civil society. The uncertainty attached to contemporary planning practice tends to reinforce the normative position to implementing the public interest through the planning and implementation of norms and standards for public land-use and public services. The question that arises is whether and how contemporary Serbian practice (and practitioners) might develop a planning methodology that will reconcile the demands of rationality and pluralism that cities require.

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SPATIAL PLANNING AND ECOLOGICAL NETWORKS IN SERBIA

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The paper explains the importance and role of spatial planning in the context of the preservation and sustainable use of ecological networks. The concept of ecological networks is presented in terms of its main goals, structure, functions and approaches to biodiversity conservation. The paper gives an overview of ecological network development in Serbia, but also an overview of the activities carried out in establishing the NATURA 2000 European ecological network. Possibilities for improving the spatial planning process in light of the functional development of ecological networks in Serbia are indicated through an analysis of the requirements arising from the policies relevant for spatial planning and the development of ecological networks using the example of drawn up spatial plans.

***Key words*: spatial planning, ecological networks, Serbia.**

INTRODUCTION

The establishment of ecological networks, as a set of functionally connected and spatially close ecologically important areas which contribute to biodiversity conservation and which are managed sustainably in accordance with the related policies, is one of the ways of implementing the *Convention on Biological Diversity* (CBD, 1992; Lefeuvre, 1998). Ecological networks can be international, European, regional, national or local. Their main elements, including core areas, corridors, protection zones, restoration areas and sustainable-use areas, are considered to be the essence of the natural elements (Jongman, 1998). Serbia, like all other countries that are potential candidates for EU membership, is obliged to establish a Natura 2000 European ecological network prior to its date of accession to the European Union. According to the *Strategic Plan for Biodiversity 2011-2020* of the *Convention on Biological Diversity* (UNEP/CBD/COP/DEC/X/2, 2010), the Signatory States to this Convention are invited, amongst other things, to reduce the direct pressures on biodiversity and to promote its sustainable use along with increasing the benefits for humans served by the ecosystem. These improvements are possible when spatial planning plays a greater role, primarily in the context of more harmonious distribution of functions and activities through the long-term and comprehensive consideration of the land use.

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The purpose of this paper is to indicate possibilities for improving the spatial planning process in light of the better understanding, establishment and functioning of ecological networks in Serbia. This is done by means of an analysis of policies in the field of spatial planning and ecological networks and activities carried out to date in establishing ecological networks, as well as examples of good practice in spatial planning.

THE CONCEPT OF ECOLOGICAL NETWORKS

An ecological network is a system of both spatially and functionally connected natural and/or semi-natural landscape elements, the main aim of which is to conserve and improve certain types of habitats as well as the habitats of wild plant and animal species of special conservation interest (Bennett and Wit, 2001; Law on Nature Protection, 2009-2016; Ferdinandova, 2011). Ecological networks can be international, European, regional, national or local (Jongman, 1998). Their common features include biodiversity conservation, strengthening of ecological interconnections, protection of environmentally sensitive areas from potentially harmful impacts, restoration of degraded ecosystems, and promotion of the sustainable use of natural resources (Bennett and Mulongoy, 2006). The main components and functions of ecological networks include: core areas – the primary role of which is to preserve biodiversity, regardless of its protection status; corridors – which establish ecological/physical connections and corridors between core areas; buffer zones – which protect

the core areas from potentially harmful external impacts and which are essentially the transition areas with compatible land use; restoration areas – in which degraded ecosystem functions are restored; and sustainable-use areas – which surround the ecological network and in which there is a possibility of the sustainable use of natural resources and preservation of ecosystem services (Bennett and Mulongoy, 2006; Ferdinandova, 2011).

The ecosystemic approach to ecological networks promotes the preservation of abiotic and biotic components of ecosystems and the sustainable and integrated use of natural resources. The essence of this approach lies in the developed awareness that there is neither economic growth nor human well-being without efficient ecosystem management (Shepherd, 2004: 30; Bennett and Mulongoy, 2006). The key characteristics of the ecosystemic approach include balancing the goals of the Convention on Biological Diversity against each other by placing man in the centre of biodiversity and having the broadest spectrum of sectoral interests (Hadley, 2000:31). Compared to the conventional approach, the ecosystemic approach includes: adaptive and integrated management instead of an emphasis on conservation and sectoral management; the inclusion of other knowledge in addition to scientific knowledge; an orientation towards environmental protection and towards society instead of towards the priority of nature protection; a top-down and bottom-up approach instead of only a top-down approach; long-term vision instead of short-term vision; consideration of ecosystem goods and services as a part of the management process, as opposed to a separate consideration of goods, on the one hand, and ecosystem services on the other (Pérez, 2008:106). The ecosystemic approach also advocates the reduction of risks of flooding, landslides, extremely hot weather, fire, long dry periods, etc. (Crnčević *et al.*, 2015).

ECOLOGICAL NETWORKS IN SERBIA

The Pan-European Ecological Network, the EMERALD Network and National Ecological Network are represented in the territory of Serbia, while efforts have been made to establish the NATURA 2000 European ecological network (Dobričić, 2012). After the Pan-European Biological and Landscape Diversity Strategy was adopted in 1995 by the European ministers for the environment, the first initiatives for nature conservation by creating a Pan-European ecological network were launched at the international level. The main objectives of the Strategy are to form and connect the ecological networks of international and national importance, as well as to ensure the favourable conservation status of ecosystems, habitats, species and landscapes (COE, 1995; ECNC, 2010).

The Emerald Network is an ecological network of special national and international importance for biodiversity conservation, made up of Areas of Special Conservation Interest (ASCI). The implementation of this network was initiated by the Council of Europe within the Bern Convention, with the adoption of Recommendation No.16 (1989) of the Standing Committee of the Bern Convention (COE, 2016). It was established by the Signatory Countries to the Convention on the Conservation of European Wildlife and Natural Habitats (*Ibid.*), and its main objective is to ensure the long-term conservation of wild plant and animal species and their habitats that require special protective measures. Within the international project entitled *The Establishment of the Emerald Network in South East Europe,* which was initiated by the Council of Europe in 2005 and implemented from 2005 to 2011, 61 potential Emerald sites were identified in Serbia covering a total area of 1,019,269 km^2, or 11.48% of the territory of Serbia (Sekulić and Šinžar-Sekulić, 2010). Most of the Emerald sites have protection status in accordance with national law (51 sites), amongst which are also areas of international importance (one UNESCO-MaB biosphere reserve, 10 Ramsar areas, 35 Important Plant Areas/IPAs), 35 Important Bird Areas/IBAs and 30 selected Prime Butterfly Areas/PBAs.

The *Decree on the Ecological Network* (2010) was passed in Serbia in accordance with the *Law on Nature Protection* (2009). The Decree so far includes 101 important ecological areas and ecological corridors of international importance. At the same time, the Decree defines measures for the preservation of the ecological network and protective measures for the protection zones. The ecologically important areas also include certain protected areas and areas in the protection procedure, as well as certain areas in which preliminary investigations have been carried out concerning their need of protection, selected potential Emerald areas, IPA areas, IBA areas and PBA areas, as well as the Ramsar areas. The ecological network covers 20.93% of the territory of Serbia, or an area of 1,849,201.77 ha (Mijović *et al.*, 2012). The ecological network is graphically documented by an easy-to-read map and a reference map (1:300,000). However, the boundaries of some parts of the ecological network have not yet been identified on the national ecological network map (1:5,000), something which should have been done within a period of two years as specified in the Decree. The ecological corridors connecting the important ecological areas have not been identified either. A study entitled *The Establishment of Ecological Networks in AP Vojvodina – an overview of the status, analysis and possibilities* was conducted for the area of the Autonomous Province of Vojvodina in 2009 by the Institute for Nature Conservation of Serbia from Novi Sad, while in 2013 the Provincial Institute for Nature Conservation began to identify the elements of the ecological network, aiming at reserving the space/areas important for the conservation of certain habitats and habitat types. This was done as part of the process for setting out the requirements for nature protection in spatial plans for special purpose areas, municipal spatial plans and lower-level spatial plans. In this context, it is expected that the establishment of an ecological network in Serbia will continue over the coming period, as well as activities related to managing areas to ensure the conservation of a favourable status of habitat types and the populations of wildlife species of national and international interest, and maintaining and improving the functional and spatial connectivity of parts of the ecological network through implementing adequate protective measures (Ministry of Agriculture and Environmental Protection, 2016). In this context, it is of particular importance to intensify the establishment of an ecological network in the Republic of Serbia and identifying and mapping the types of

habitats present in Serbia, as well as establishing a GIS, which Serbia has to carry out, since the Law on Nature Protection (2009-2016) envisages that the ecological network will be established and become part of the NATURA 2000 European ecological network by the date of Serbia's accession to the European Union. It should be mentioned that, in addition to the establishment of the ecological network at the international level, the basis for identifying the national ecological network also includes the *Code of Regulations on the Criteria for Determining Habitat Types, on Habitat Types, Vulnerable, Endangered, Rare, and Habitat Types of Priority for Protection and Safety Measures for their Conservation* (2010) and the *Code of Regulations on the Declaration and Protection of Strictly Protected and Protected Wild Species of Plants, Animals and Fungi* (2010-2016).

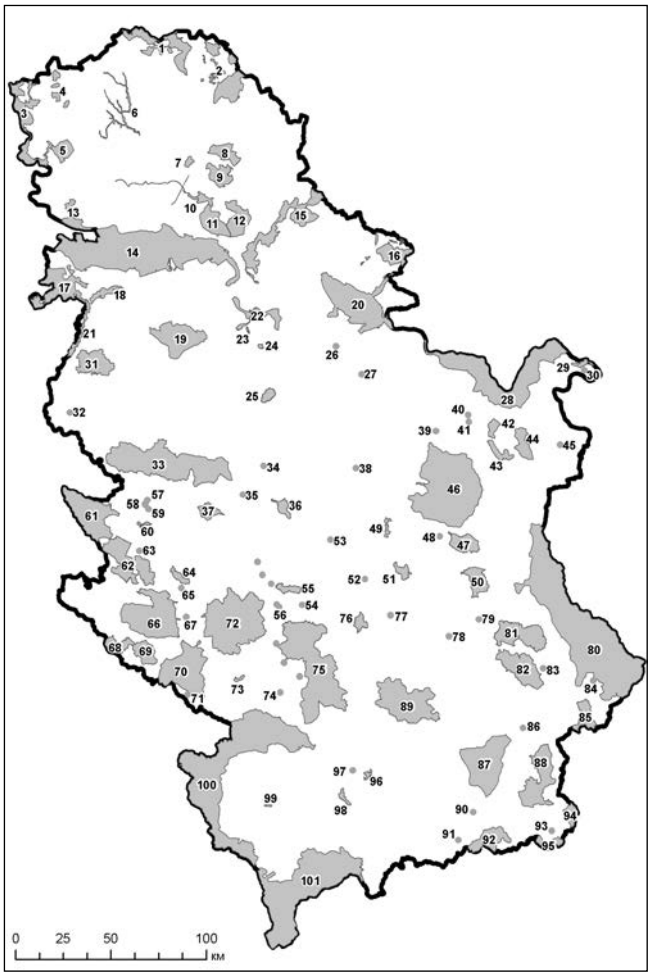

Figure 1. Ecologically important areas in Serbia, Institute for Nature Conservation of Serbia
(Source: Mijović et al., 2012:58)

NATURA 2000 is a network of sites selected to ensure the long-term survival of Europe's most valuable and threatened species and habitats (EEC, 1992). It includes Special Protection Areas (SPAs) designated under the *Directive on the conservation of wild birds* (EC, 2009) and Special Areas of Conservation (SACs) designated under the *Directive on the conservation of natural habitats and of wild fauna and flora* (EEC, 1992). Within the accession process, Serbia has so far prepared a preliminary list of habitat types and species present in Serbia for the NATURA 2000 European ecological network with the aim to prepare a list of proposed sites of community importance (pSCI) which will be verified as Special Areas of Conservation (SACs) further in the process of EU integration. A preliminary list has also been prepared of types of birds present in Serbia and a list of SPAs, which will be nominated upon joining the EU. In the period 2010-2011, within the IPA Program (Instrument for Pre-Accession Assistance), Serbia realized the IPA 2007 twinning project entitled *Strengthening Administrative Capacities for Protected Areas in Serbia (NATURA 2000)*, with the help of the consortium of the Environment Agency Austria and the European Public Law Organization from Athens, Greece (Mijović *et al.*, 2012). The BalCon Consortium from Hungary began another IPA 2012 twinning project entitled *Capacity Building to implement 'acquis' standards and conventions in nature protection – establishment of Natura 2000* at the end of 2015, but it was discontinued in 2016. With the transposition of the Directive on Habitats and Directive on Birds into the national legislation, and for the purpose of their further implementation and the establishment of the NATURA 2000 network, the realization of the following projects is ongoing: *Developing the ecological network in the Republic of Serbia, identification and mapping of habitat types in Serbia – collection and estimation of existing data, research and GIS setup* (2015-2020); *Building capacities for the implementation of Acquis Communitaire standards regarding nature protection – selecting Natura 2000 areas including the equipment and the computer program for Serbia (2015-2017)*; and *Creation of the red list of plants, animals and fungi in the Republic of Serbia* (2016-2020) (Ministry of Construction, Transport and Infrastructure, 2016), as well as the *Creation of the red book of birds*. The EU Birds and Habitats Directives have been almost fully transposed into national laws and the full transposition is planned for 2018, while the drafting of the Decree on the Assessment of Acceptability for the Ecological Network is ongoing, as a procedure through which possible influences of strategies, plans, programs, projects or activities on the objectives of the conservation and on the integrality of the ecological network area will be estimated.

SPATIAL PLANNING AS A SUPPORT TO THE PRESERVATION AND SUSTAINABLE USE OF ECOLOGICAL NETWORKS IN SERBIA

Overview of policies relevant for ecological networks and spatial planning in Europe

The main obligations and recommendations arising from the European policies relevant for spatial planning, also concerning the ecological networks[2], include: 1) the need to continuously develop the European ecological networks, as proposed in the NATURA 2000 Program, including the necessary connections between the protected areas of regional, national and transboundary importance, as well

[2] European Spatial Development Perspective – Towards Balanced and Sustainable Development of the Territory of the European Union (COE, 1999); Guiding Principles for Sustainable Spatial Development of the European Continent (COE, 2000b); Territorial Agenda of the European Union – Towards a More Competitive and Sustainable Europe of Diverse Regions (COE, 2007); Territorial Agenda of the European Union 2020 - Towards an Inclusive, Smart and Sustainable Europe of Diverse Regions (COE, 2011).

as those of importance across the EU (COE, 1999); 2) the requirement to observe the 1979 Bern Convention and the Pan-European Biological and Landscape Diversity Strategy adopted in Sofia in 1995, in the policy of sustainable spatial planning (COE, 2000b); 3) treating natural heritage as the main component of life - NATURA 2000 (COE, 2007); 4) nature and biodiversity conservation through establishing the NATURA 2000 network; 5) carrying out environmental impact and strategic impact assessments, which have an explicit dimension of spatial planning and territorial relevancy; 6) solving the problem of the loss of biodiversity and ecosystem services as a result of human activities; 7) the reduction of natural and semi-natural areas rich in biodiversity as a result of an increase in built areas (COE, 2011); etc. The abovementioned documents are a framework for the preparation of planning documents and policies (Dobričić, 2012).

Overview of policies relevant for ecological networks and spatial planning in Serbia

Relative to the national legislation, only the Law on Nature Protection (2009-2016) and the corresponding secondary legislation, such as the Decree on the Ecological Network (2010), Code of Regulations on the Criteria for Determining the Habitat Types, on Habitat Types, Vulnerable, Endangered, Rare, and Habitat Types of Priority for Protection and Safety Measures for their Conservation (2010) and the Code of Regulations on the Declaration and Protection of Strictly Protected and Protected Wild Species of Plants, Animals and Fungi (2010-2016), recognize or define concepts such as: ecological network; ecological corridor; ecologically important area; priority habitat types and favourable conservation status of the habitats; acceptability assessment; and the NATURA 2000 European ecological network, noting that they will be established by the date of Serbia's accession to the European Union (Dobričić, 2012). The provisions of the Bern Convention, Bonn Convention and the Birds and Habitats Directives are the basis for defining these concepts and for their implementation in practice under the principles of establishing the NATURA 2000 network. At the same time, the Law on Nature Protection defines the concept of a protection zone as an area outside the boundaries of the protected area, which is an ecologically important area and ecological corridor for the purpose of mitigating external impacts (pressures). The Law also provides the possibility of establishing the regimes of protection zones and the description of boundaries. However, the Law on Planning and Construction (2009-2014) and the corresponding secondary legislation have not yet defined the abovementioned concepts concerning the ecological network, neither have they defined the relationship towards the ecological networks and the acceptability estimation related to them.

Ecological networks in spatial planning practice in Serbia

Starting from the fact that spatial planning is considered as an important mechanism for the implementation of the concept of ecological networks and that it is of particular importance for the integration of ecological network development into all fields of development, planning and use of space (*Draft Nature Conservation Strategy 2016-2026*, 2016), the way in which and the extent to which ecological networks are included in the spatial planning process in Serbia is presented through the analysis of examples of spatial plans already drawn up (at national, regional and local levels).

The Spatial Plan of the Republic of Serbia 2010-2020 (2010) requires the establishment of a national ecological network and the identification of areas for the NATURA 2000 European ecological network, in addition to the establishment of an efficient management system for areas included in the abovementioned ecological networks. A preliminary estimate is that the area of ecological networks will cover approximately 20% of the territory of Serbia, whereby 61 potential areas of special conservation interest (ASCIs - Emerald Network) have been selected as a basis for the future national ecological network and NATURA 2000. The ecological areas and corridors of the ecological network that meet the criteria of the Birds and Habitats Directives will be proposed for the NATURA 2000 by the date of Serbia's accession to the European Union. The establishment of a national ecological network and identification of areas for the NATURA 2000 through specific projects are priority activities in the field of conservation of nature and natural heritage. The concept, objectives and priorities in the field of nature conservation, as well as the issues related to the development of ecological networks in Serbia, are defined in accordance with the study of the Institute for Nature Conservation of Serbia entitled *Report on the Protected Natural Resources*, 2009. The elements of the ecological network are presented in Reference map 5. *Tourism and protection of the environment and natural and cultural heritage* (1:300,000).

In the context of developing an ecological network in the territory of AP Vojvodina, *the Regional Spatial Plan of the Autonomous Province of Vojvodina to 2020* (2011) selected 17 EMERALD areas, 20 ecologically important areas within the national ecological network, and ecological corridors of international, national, regional and local levels. The Regional Plan also defines appropriate protective measures concerning ecologically and internationally significant biodiversity conservation areas as follows: 1) in the protected areas and their protection zones; 2) in the habitats of the protected and strictly protected species of national importance; and 3) in the areas of ecological corridors. This planning document particularly highlights the importance of ecological corridors with the aim of preserving and improving their natural and semi-natural elements because of which the Plan sets forth the following protective measures: 1) outside the residential zones (ban on the construction of all facilities the use of which is directly related to water at the distance of not less than 50 m from the standing water shores, or from the line of middle water level of watercourses); 2) within the construction areas (improving the ecological corridors by providing a continuity of green areas the structure and use of which support the corridors' functions); 3) ban on change in the use of areas with ecological corridors that are covered by natural and semi-natural vegetation, as well as a ban on clearcutting or removal of other types of natural vegetation in such areas;

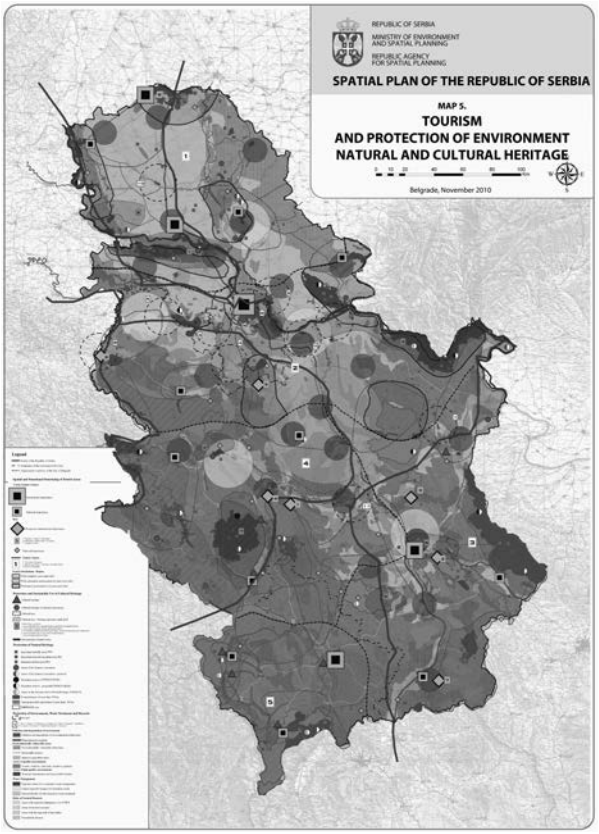

Figure 2. Reference map 5. Tourism and protection of the environment and natural and cultural heritage (1:300,000) (Source: rapp.gov.rs)

4) connecting the forest habitats of protected species by creating/renewing the high shelterbelts; 5) connecting the saltwater habitats of protected species by conserving the existing meadows and pastures along the ecological corridors; 6) connecting the steppe and forest-steppe habitats by creating field shelterbelts containing continuous strips of grassy vegetation; 7) stimulating the traditional forms of the use of the area contributing to biodiversity conservation and improvement in the ecological corridors; 8) providing the technical and technological solutions for the undisturbed movement of wildlife at the intersections of ecological corridors with elements of infrastructure systems which form barriers to species' migrations; 9) ban on growing invasive plant species, as well as a ban on the disposal of waste and other types of hazardous materials, the storage of hazardous materials and unregulated waste disposal in the area of ecological corridors and zones that have a direct impact on the approximately 200m wide ecological corridor. The elements of the ecological network are presented both graphically and in Reference map 3.1 *Natural Resource Protection* (1:200,000).

The Spatial Plan for the Special Purpose Area of Multifunctional Ecological Corridor of the Tisa River (2015) is the first spatial plan in Serbia, the special purpose of which relates to an ecological corridor, in this case to the international ecological corridor of the Tisa River, as a part of the national ecological network. In addition to the main special purpose relating to the ecological corridor, other special purposes of this planning document that are complementary to the main purpose also relate to the multi-functionality of the ecological corridor, namely to water resource management

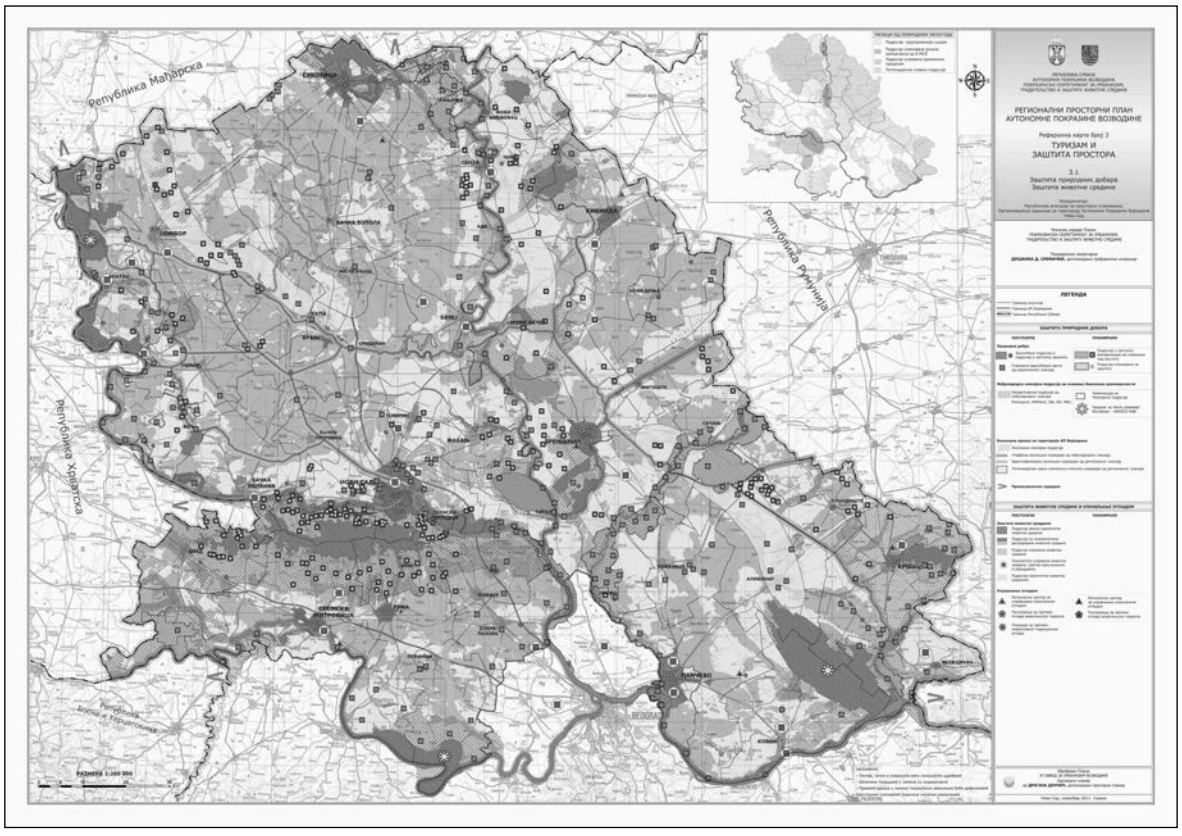

Figure 3. Reference map 3.1 Natural Resource Protection (1:200,000) (Source: PE Urban and Spatial Planning Institute of Vojvodina, 2011)

and tourism. The Spatial Plan was drawn up based on a study entitled *The professional and documentation basis in the field of nature protection for drawing up the Spatial Plan for the Special Purpose Area of Multifunctional Ecological Corridor of the Tisa River* that was made by the Provincial Institute for Nature Conservation, whereby the special purposes and measures for the protection of this corridor were established based on this study. The international ecological corridor of the Tisa River encompasses the Tisa River and its riparian zone, including the protected areas of the Kamaras Nature Park, The Old Tisa near Pearl Island Nature Park, and the areas envisaged for protection – the Upper and the Lower Tisa. In addition to the water body, the ecological corridor of the Tisa River also encompasses the non-defended river flood areas and areas of the river flood defence embankment, for the most part in the floodplain. In certain locations, the ecological corridor also encompasses parts of the defended flood areas which are important for the corridor's functioning (such as meadows, reed areas, etc.) and which belong to the floodplain. This Spatial Plan established protective measures for: 1) the ecological corridor of the Tisa River, i.e. measures for conserving and improving the natural and semi-natural elements of the ecological corridor of the river; 2) the habitats of protected and strictly protected wild species within the ecological corridor of the Tisa River; and 3) the protection zone of the ecological corridor of the Tisa River. The protection zone is determined in an area of 500 m around the ecological corridor of the Tisa River, while the protected natural resources have their protection zones formed in accordance with their specific needs. Based on the assessment of factors threatening biodiversity, the following zones in the protection zone of the ecological corridor of the Tisa River were selected according to the impact intensity, and appropriate measures were established for: 1) a strip up to 50 m from the corridor boundary where the intensity of impacts of the urban and agricultural environments are the highest, due to which the limitations are most numerous in this area; in this strip, the importance of the measures for improving the current status of space is emphasized, i.e. environmental improvement and the formation of green buffer strips; 2) a strip up to 200 m from the corridor boundary, where there are negative impacts of surface infrastructure and urbanization, particularly impacts of strong sources of light and noise; and 3) a strip up to 500 m from the corridor boundary, which is an external boundary of the protection zone for the ecological corridor, where there is a significant impact on the hydrological regime, as well as the impact of certain types of infrastructure such as wind farms. The elements of the ecological network in the planning area are presented in Reference map 5.1 *Natural Resource Protection* and Reference map (1:100,000) 5.2 *Areas of international significance for the conservation of biodiversity* (1:100,000).

The Spatial Plan of the Municipality of Novi Kneževac (2015) was adopted after the adoption of the Spatial Plan for the Special Purpose Area of the Multifunctional Ecological Corridor of the Tisa River. This Municipality is one of the 12 units of local self-government covered by the Spatial Plan for the Special Purpose Area of the Multifunctional Ecological Corridor of the Tisa River. The planning solutions in the Spatial Plan of the Municipality of Novi Kneževac

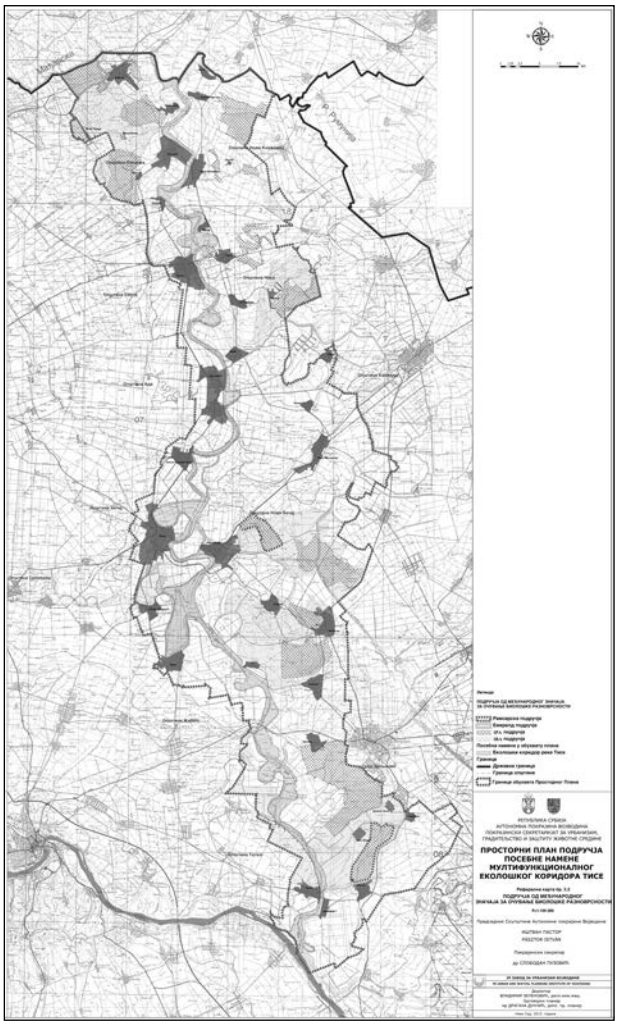

Figure 4. Reference map 5.2 Areas of international significance for the conservation of biodiversity (1:100,000)
(Source: PE Urban and Spatial Planning Institute of Vojvodina, 2015)

were aligned with the planning solutions in the Spatial Plan for the Special Purpose Area of the Multifunctional Ecological Corridor of the Tisa River, as well as with other higher-level planning documents (Regional Spatial Plan of the Autonomous Province of Vojvodina to 2020 and the Spatial Plan of the Republic of Serbia 2010-2020). The Spatial Plan of the Municipality of Novi Kneževac identified one ecologically important area – the Pašnjaci velike droplje Special Nature Reserve (Pastures of the Great Bustard), and ecological corridors (the Tisa and its riparian area – the ecological corridor of international importance, and local ecological corridors) as parts of the ecological network of Vojvodina, Serbia. The following measures were established for ecological corridors and the protection zones of ecological corridors: 1) measures for the conservation and improvement of ecological corridors (general measures for the conservation and improvement of the natural and semi-natural elements of ecological corridors and special measures for the preservation of ecological corridor functionality and wildlife mobility); and 2) measures for protecting the protection zone of the ecological corridor of the Tisa River and the protection zone (in the strips of 500, 200 and 50 m from the ecological corridor). These measures were established in accordance

with the Spatial Plan for the Special Purpose Area of the Multifunctional Ecological Corridor of the Tisa River. The ecological corridors (international and local) and protection zones of the ecological corridor of the Tisa River (up to 200 and 500 m), as well as the areas of international importance for biodiversity conservation (IBA and IPA), are presented both graphically and in Reference map 3. *Tourism and the Protection of Areas* (1:50,000).

The planning solutions relating to the ecological networks specified in the Spatial Plan of the Republic of Serbia 2010-2020, Regional Spatial Plan of the Autonomous Province of Vojvodina to 2020, Spatial Plan for the Special Purpose Area of the Multifunctional Ecological Corridor of the Tisa River and in the municipal spatial plan are binding on the preparation of lower-level planning documents in accordance with the Law on Planning and Construction (2009-2014), i.e. on drawing up the corresponding urban plans, where the competence for their adoption lies with units of local self-governments.

CONCLUDING CONSIDERATIONS

Starting from the requirements and contemporary approaches set out by the policies relevant for spatial planning and the development of ecological networks, the growing tendencies in the world to protect and conserve nature and the current practice in drawing up spatial plans in Serbia, some of the possibilities for the improvement of spatial planning and the preservation and sustainable use of ecological networks in Serbia can be considered. For the purpose of improving the legal basis for the preservation and management of ecological networks in Serbia, it is necessary to harmonize regulations with the relevant policies related to these issues. The Law on Nature Protection (2009-2016) is harmonized with European regulations and standards, and it is a powerful instrument for achieving the objectives of the preservation and sustainable development of ecological networks. However, it is necessary to align and harmonize different interests and regulations in other fields with the principles of sustainable development and with the basic principles of nature conservation, along with the conservation of geo-heritage, wild plant and animal species and their habitats, habitat types, ecosystems, ecologically important areas, protected areas, ecological corridors, ecological networks and landscapes. Defining the concepts and importance of ecological networks in legal documents for spatial planning and natural resources, which should powerfully support the conservation of the integrated values of areas, would improve the relationship with ecological networks, particularly concerning spatial planning. Serbia is required to identify the areas of importance for the NATURA 2000 European ecological network before its accession to the European Union in order to institutionalize the issues of conservation and management. Establishing an ecological network of national and international importance in Serbia is a special contribution to biodiversity conservation.

For the purpose of more efficient preservation and planning of ecological networks, and in accordance with the 2009 Law on Nature Protection, it is necessary to establish a national ecological network and a method for its management in the full sense of this word. This practically means that after the first step was taken by which the Government of the Republic of Serbia established a list of ecologically important areas and ecological corridors of international importance by passing the Decree on the Ecological Network in 2010, it is necessary to identify and graphically present the ecological network in a scale of 1:5,000, as a necessary precondition for the adequate treatment of the ecological network in spatial planning. The fulfilment of this requirement implies a continuous multi-year field investigation and engagement of an appropriate number of researchers, as well as the provision of continuous funding sources. Considering that preparing documentation and identifying areas to be included in the ecological network is a continuous process (except for the NATURA 2000 network which has to be established by the date of accession to the European Union) based on spatially confirmed and scientifically provable data on certain habitat types and habitats of the plant and animal species obtained during the field investigations, the preservation of natural heritage within the ecological network is ensured by reserving the area by means of spatial planning documentation. Without this it is difficult or even impossible to predict the survival of species and habitat types with favourable status. In addition to the abovementioned, it is also necessary to establish adequate management, financing and implementation of the protective measures and introduce mechanisms for estimating their acceptability, as an instrument for the conservation of NATURA 2000 network.

Methodologically, the network of ecologically important areas should be one of the key starting bases for the preparation of spatial plans, which should, by its integrated consideration of space, enable the achievement of objectives for conserving the ecologically important areas that are aligned with interests of development, as well as enable the visualization of their spatial distribution. The spatial plans need to increase the ecological connectivity of the network, its areas and corridors, through establishing linear, continuous ecosystems or transition areas (EEC, 1992). The inclusion and valorisation of ecosystem services as a specific aspect of the consideration of protected area networks and benefits that could arise from them and which could also contribute to their conservation inside and outside the network boundaries and be a support to the wider regional development, are a special challenge in achieving sustainable development, which implies carefully establishing the planning measures and instruments and the social, economic and ecological goals (Stojkov and Dobričić, 2012).

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TECHNICAL AND LOGICAL METHODS FOR IMPROVING THE PROCESS OF URBAN PLANNING IN SERBIA

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The subject of the paper is an analysis of the methodology for developing urban plans, considered in a normative, organizational and interest context. Based on current legislation defining the content and procedure for adopting a plan, and the institutional framework that defines the participants in the planning process, a basic methodological model for a planning solution was formed, which was then improved in the context of the collaborative planning paradigm. Starting from the assumption that harmonizing the different interests represents the "grey zone" of planning in Serbia, the paper explores various methodological steps that would give a space for better cooperation between all stakeholders, and therefore contribute to the improvement of procedures for developing plans and the quality of the planning solutions themselves. On the basis of this research, a methodology for urban planning is defined as a logical and technical method of successively configuring a planning solution in a normative, organizational and interest context. Through analysis of the application of the methodological model in practice and a case study, it was confirmed that the method of producing a plan that includes timely and meaningful cooperation can reconcile the interests of the different stakeholders in planning.

Key words: **urban plan, methodology, model, procedure, participation, interest.**

INTRODUCTION

Urban planning includes two basic types of activities: the process of developing the plan, which is directly dependent on the set methodological framework, and the procedure for the inspection and adoption of the plan, determined by the regulatory framework. Both activities are also under the constant influence of various policies and interests. The research presented in this paper aims to examine the methodology for drafting a plan and offer suggestions for its improvement, in such a way that the subsequent procedure for adopting the plan changes the suggested plan as little as possible, i.e. that all of the potential problems, incompatabilities and conflicts are solved during the plan's development. The basic hypothetical position in the paper is that the methodology for developing an urban plan depends upon the dominant issues and themes of the plan, so that by means of adequate methodology it is possible to improve the quality and sustainability of the planning solution.

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In which way is it possible to approach a consideration of the relationship between the methodology and procedures in urban planning? If we accept the assumption that the flow of the procedure for adopting a plan is actually the criticism and verification of its contents and methodology, which can be positive or negative and affect the planning solution itself, then by analyzing the flow of the procedure we can indirectly conclude whether methodological omissions have been made while developing the plan and which ones they are. However, if this relation goes in both directions, it can be said that adequate methodology guarantees a better flow of the procedure, thus producing a higher quality planning solution, and also that the assumption stands that different methodologies for developing a plan can be "tested" by means of the procedure for adopting it.

It is therefore necessary to consider and examine the methodology for developing a plan by means of an appropriate theoretical model. In addition, the methodology should be considered in the context of the collaborative paradigm, i.e., the interests of all relevant participants in planning, which should be harmonized, i.e., in the context of connecting the concept of interest with the concept of methodology.

The general place of urban planning in Serbia has been, for decades, that it can not adequately meet the needs imposed on it by the modern socio-political, cultural and economic context (Vujošević and Petovar, 2006, 2010), that its conformation is outdated (Lazarević Bajec, 2009), that it limits public participation (Čolić *et al*., 2013), that it is difficult to carry out its solutions, its procedures are to heavy handed and that, in addition to all of this, it is often lagging behind reality. The causes of this situation in urban planning can certainly be traced to the marginalization of its role, which came about in the first period of transition (Vujošević, 2003), and the move away from rational normative planning, conditionally speaking, to general, strategic and regulatory planning in the 2000s. However, still today, two decades after adopting the first law on planning in the period when the paradigm of sustainable development is becoming dominant globally, and public interest, the collaboration of stakeholders and participation of citizens are basic preconditions of planning, the process of urban planning is fundamentally criticised by the domestic scientific community, practically challenged by experts, instrumentalized by politicians and "big capital", and essentially unfamiliar to city residents (Petovar and Vujošević, 2008; Petovar and Jokić, 2011).

In accordance with the Law on Planning and Construction (2014), urban planning includes the development of general plans as strategic developmental plans with general elements of the spatial development of cities, followed by general regulatory plans that have a certain specification, and plans for more detailed regulation which involve division of the space into areas and zones, more detailed land use, regulation, leveling, the division of land, protective measures and rules for development and construction.

METHODOLOGY IN THE NORMATIVE AND ORGANIZATIONAL CONTEXT

An urban plan with its content defined in terms of applicable law can be a quality instrument of urban policy if it is developed in an appropriate way.

The Law on Planning and Construction defines the content of the plan and the procedure for its adoption, but not the methodology for developing the plan, which should, with the necessary adjustments, be determined by a model that is applicable to the theme and coverage of each plan. This model should cover all activities involved in developing the planning solution, from making the decision to develop the plan to the beginning of the procedure for expert inspection, which at certain points in the process overlap, influence and derive from each other, making the process itself nonlinear and a very complex system.

However, from the moment of introducing regulatory, i.e. detailed, urban planning into national legislation, this methodology is not theoretical enough, nor has its practice been investigated, and so the plan is developed empirically, more or less successfully, depending on the planning standards adopted or the experience of the planners themselves, and sometimes even a combination of events. This presents not only a qualitative problem that affects the planning solution and the length of the planning process itself, but it also raises the question of the justification of the whole process in the context of the official planning paradigm (Zeković *et al*., 2015, Vujošević *et al*., 2012).

In this sense, the key factors that influence the methodology of urban planning are as follows:

- The provisions of the Law on Planning and Construction concerning the content of the procedure;
- The institutional framework for planning, i.e., the provisions of the law and applicable secondary legal acts that apply to the participants and their role in the process of developing the plan;
- The working team that forms the planning solution in accordance with the theme of the plan;
- The wider regulatory framework of planning, the different instruments of urban policy, etc. that are relevant for decision-making during the formation of the planning solution;

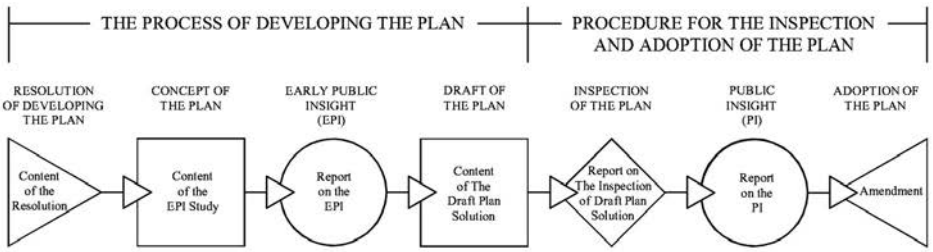

Figure 1. The process of developing an urban plan (Source: authors)

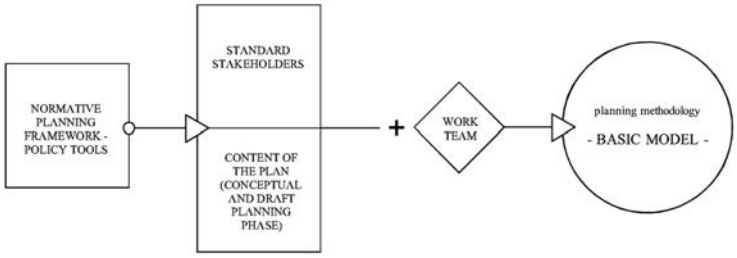

Figure 2. Factors that influence the formation of the basic methodological model (Source: authors)

In theoretical terms, there are several factors that have a dominant influence on the methodology of planning:

- institutional theory (Scott, 2004), which may explain the significance and impact of the "institutionalization" of different processes on developing urban plans and managing urban development through a regime of regulation (Stone, 2008);
- planning theories such as collabortive planning (Healey, 1997) or integrated urbanism (Ellin, 2006) or;
- and the official paradigm of sustainable development, in accordance with which all laws and subordinate legislation relevant to the process of planning should be passed (Taylor, 2004; UN HABITAT, 2007).

However, for the purposes of further research, it is necessary for the abstract concept of a methodology for developing a plan to be formalized into a basic methodological model which is "constant" in terms of its own organization, since it is based on the logical and technical connection of specific, known facts and factors in an organized whole.

This model is made up of a series of basic steps and discussions on the analysis, synthesis, finalization and evaluation of a planning solution, which should be carried out and organized by a working team during the development of an urban plan. It represents the initial subject of the research, because the steps are defined in such a way to ensure the legally defined minimum of cooperation between the different participants and the information necessary to create a solution. In this context, any other arrangement could be considered arbitrary, but not necessarily scientifically unfounded, which is the possibility on which this study is based.

METHODOLOGY IN THE CONTEXT OF INTERESTS

Interests from the aspect of this research that are considered relevant for the development of planning solutions in a methodological sense are the interests of citizens, that are the residents and users of the area in question, public interest, and the interests of the investors for whom the plan is being developed. It is precisely the interests of the different participants in planning, i.e. the role that urban planning has in their security, that represents a "grey zone" in the process of developing an urban plan, given that the concept of "interest" in urban planning practice has not been adequately defined, and cooperation with the interested parties is largely insufficient, formalist or outside of procedure.

The communicative and collaborative planning paradigm began to affect the dominant rationalist approach to planning in Europe in the 1980s (Forester, 1999), while in Serbia it is linked to first law that defined the concept of regulatory planning in 1995 (Law on planning and Regulation of Space and Settlement, 1995). However, some basis of participation were defined in Serbian planning legislation from 1949 (in Resolution on General Urban Plan) and first participatory procedures were established in the planning practice from 1970s. But, over the last twenty years, the transitional changes which occurred can be described as very frequent and, in fact, from the mid-nineties until today, nine different amendments to the law have been adopted. Among other things, some of them affected collaboration and participation processes.

Planning for people and their real needs should actually be planning with people, i.e. carried out in the most open way possible, with simplified and modified public procedures, resulting in a planning solution that satisfies the majority, thus guaranteeing not only the formal adoption of the document, but also its implementation (Allmendinger, 2001; Bherer, 2010; Maksić, 2012). The experience of Anglo-Saxon practice shows that the involvement of all interested parties in the discussion on the objectives of the plan has a very important function, from the mutual exchange of information and ideas, through joint review of the suggested and possible answers to the questions asked and definition of the problem, to a general satisfaction with the quality of the planning solutions and commitment to their realization (Danilović Hristić and Stefanović, 2013, 2016). The participatory approach involves the inclusion of

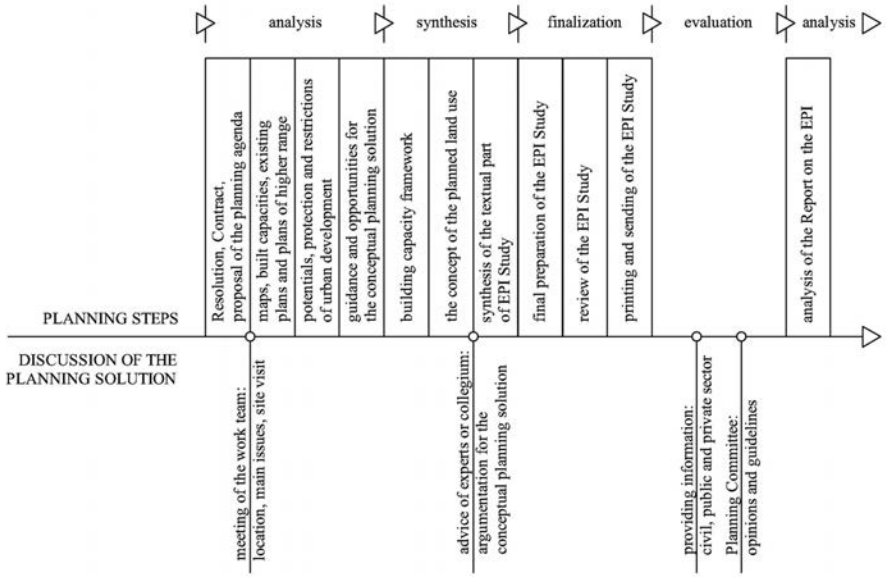

Figure 3. Basic methodological model for developing the concept for a planning solution and early public insight (Source: authors)

various actors, so that their views and concerns are analyzed and considered in all phases of the planning process – from the initial vision for developing the plan to the monitoring and evaluation of the plan's implementation (Stefanović *et al*., 2015). In addition to the participation of citizens it is important for all other interested parties to be involved, which makes it possible for the theme and area covered by the plan to be considered from different viewpoints and to define all of the possible interests, from general to individual, and also to define conflicts, as well as to respond to all of its set challenges. In this way, the planning process is open, transparent, inviting and inclusive, in other words democratic. This approach may require greater involvement during the development of the plan, more organized meetings, discussions – debates, perhaps the occasional "workshop" for those interested, presentation skills, and the knowledge of mediation as a process, but this is why the end result is also of a much higher quality in the procedure for adopting an "easier" plan (Danilović Hristić and Stefanović, 2016). The application of the participatory and collaborative model in several pilot projects in Serbia has achieved satisfactory results (Čolić, 2014), but since it is not legally required and requires additional work and resources, it is questionable whether it will be adopted as a normal part of the procedure in practice.

One of the main goals of every urban plan is the division of the area in question into public and other purposes, as well as defining protective measures and rules for development and construction. Based on the Law on Expropriation (2013), areas for public purposes are those that are determined by public interest (streets, schools, health centers), and since they are of public interest it is understood that various measures of protection apply (nature, the environment, cultural assets). However, there is the question of whether there is also public interest outside of these legally defined categories. Analogously, areas for other purposes are of interest to the residents and users of the area covered by the plan, and urban parameters and rules for construction for these areas are also defined within the urban plan (Živanović-Miljković and Popović, 2014). But does the interest of citizens exist outside of their own cadastral parcels? An investor in the plan could be a local government body or a private individual whose interests would relate to the public or other purposes of the land accordingly, however, does the local government have interests that are not in the "public" domain? Or does a private investor claim that his interests are "public"?

The participation of citizens and other interested parties (public utility companies, institutions and government bodies, local governments, investors, NGOs...) in the process of developing an urban plan has been made possible in every change of the law by means of the public insight procedure, which can be accessed after expert inspection, i.e. in the final phase of the plan, and by securing public interest by means of sectoral cooperation with the relevant institutions (conditions and reviews) in the earlier phases of the plan. The last amendment to the law in 2014 introduced a new model of citizen participation – early public insight, which should be a procedural form of giving timely information and improved public participation in the process of developing urban plans, given that it is organized in the intial phase of the plan's development. Hence, early review should offer residents and other interested parties better insight into the possibilities and limitations of the planned development and open space for dialogue, as well as offer planners better insight into the attitudes, wishes and interests of those involved in the planning.

However, the means of cooperation, or collaboration, between the interested parties is not defined by the law in Serbia, even though some authors from European practice indicate that it is exactly this fact which is key in the realization of planning solutions. This essentially corresponds with the previously set objectives and interests of individuals expressed through their participation, since it allows the whole process to be transparent. It also highlights that during collaboration, cooperation between investors and citizens is the weakest link in the whole process, because it is most commonly not institutionalized (Gardesse, 2015).

For these reasons, a set of criteria can be assumed based on which the process of developing an urban plan can be considered collaborative in the context of all of the relative interests, and which corresponds with the criteria for the successful management of urban development as the most important aspect of inclusive and sustainable urban planning, which UN HABITAT (2007) sets in its official documents. These criteria relate to: the clear identification of all stakeholders and their needs and interests; keeping the participants in planning well-informed; the possibility of making joint decisions; improving cross-sectoral cooperation; easy access to all relevant information; and the quality participation of citizens through organized consultations, forums and working groups.

FORMING AN IMPROVED METHODOLOGICAL MODEL

Accordingly, it can be concluded that the methodology of urban planning is a logical and technical method of the successive construction of a planning solution in the regulatory, organizational and interest context. Consideration of this context for the methodology for developing urban plans opens the topic of possible further development and improvement of the above basic methodological model. Further, the introduction of new steps in order to better consider the dominant interests to which the planned solution should provide an adequate response also opens up the possibility of diversification, by means of defining the different methodological models that will suit the basic problems dealt with in the plan. In order to confirm these assumptions, in accordance with the defined set of criteria, new steps were introduced to the basic methodological model for the development and discussion of the planning solution, which should make it possible to solve many potential problems that manifest themselves in urban practice during inspection and adoption of the plan. We can call this type of model an advanced methodological model.

This model introduces new steps primarily in the phase of analyzing the "input" data, on the basis of which the working team makes a synthesis of the planning solution, as well

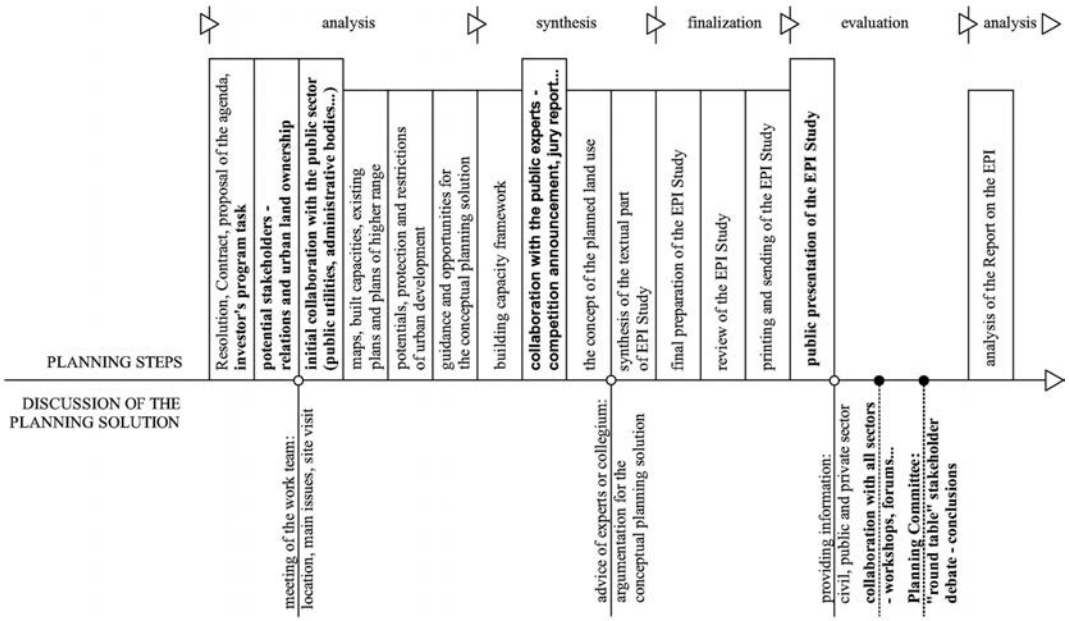

Figure 4. Improved methodological model for developing the concept of a planning solution and early public insight (Source: authors)

as the evaluation of that solution through the process of collaboration. The steps are established to respond to the pre-set criteria – relating to the identification of stakeholders and keeping them informed, joint decision making, inter-sectoral cooperation, etc. – but they are arranged to ensure the timely inclusion of all stakeholders in planning, or their interests, in the process of developing a plan, which is actually managed by a working team.

ANALYSIS OF THE MODEL IN URBAN PLANNING PRACTICE – A CASE STUDY

In the practice of urban planning the working team must cooperate with individual citizens, institutions and investors more and in a better way than the current legally defined minimum, and this cooperation must be organized and institutionalized. Since the law does not define the method of collaboration, it is necessary through an analysis of the flow of the procedure for adopting a plan to investigate whether and how many different interests have been represented and harmonized through the drafting of the planning solution This procedure of indirect reasoning on how the draft plan is made is the only possible one, given that the procedure includes official documents that can be studied from different aspects (the number of an issues in the complaints submitted, reasons for increasing expert inspection, the volume of changes in the planning solution etc.), while in most cases in the actual process of making a plan there is no valid documentation (adopted work protocol, minutes of the working team meetings, written reports, etc.).

For the purposes of this study, as an example for future more extensive analysis, a case study was carried out on 8 plans for the detailed regulation of different focus areas (developed for the construction area of Belgrade), in order to test and valorize the improved methodological model. The case studies made it possible on one hand to study the basic problems dealt with by the plan, and on the other to study the documentation base for the plans (official cooperation with relevant institutions, reports on completed expert inspection and reports on public insight) in order to determine which steps in the improved methodological model were present in the development of the planning solution (*), which were not, but need to be (x), and which steps were not necessary for solving the specific problems in the plan (-).

The detailed regulation plans were chosen in order to provide sufficient variability of the parameters being investigated, they have a unified legal and procedural framework, they have valid documentation and they are carried out under relatively constant conditions in terms of the adopted standards, norms and ways of cooperation during the development of the plan:

1. Plan for a bus and train station with a commercial center in Block 42 in New Belgrade;
2. Plan for a residential complex on the site of former factory "IKL" in Dalmatinska Street;
3. Plan for a section of the external main tangent – EMT;
4. Plan for a new building within housing block 9a in New Belgrade;
5. Plan for the reconstruction and construction of the Sugar Factory Complex in the Cultural and Historical Entity Topčider;
6. Plan for the residential area Altina 2 in Zemun;
7. Plan for a section of the heating system network;
8. Plan for developing Slavija Square.

The only steps included are those for which there was valid documentation, such as conceptual solutions, studies, memos or reports. The steps not included are those which were not carried out or they were carried out at an inadequate moment, such as the announcement of an urban competition that preceded the drafting of the plan, and thus contributed problems to the procedure for the plan's adoption, instead of being an integral part of the synthesis

PLANNING STEPS	1	2	3	4	5	6	7	8
Analysis of the investor's program task	*	x	*	x	x	-	*	*
Stakeholder analysis – relations and urban land ownership	x	x	x	x	x	x	-	x
Initial collaboration with the public sector	*	x	-	x	*	*	-	x
Colaboration with the public experts – competition announcement...	x	-	-	-	-	-	-	x
Public presentation of the EPI Study	x	x	x	x	x	x	x	x
Colaboration with all sectors – workshops, forums, work groups...	-	x	-	x	-	x	-	-
Planning Committee – "round table" stakeholders debate	x	x	x	x	x	x	x	x

Figure 5. Results of the analysis of the use of the improved methodological model on examples from the practice of urban planning (Source: authors)

of the planning solution. Unnecessary steps are those for which it can be said that they would have no purposeful impact on the planning solution.

In the context of the main issues with the plan, analysis of the case studies showed that plans with the same purpose (for example a residential complex/area) encounter different problems in the procedure for public insight depending on whether the investor for the plan is from the public or private sector, or whether the plans with predominantly public interest in the construction or reconstruction of particular areas (such as the construction and transformation of complexes for public purposes) have problems in the procedures for expert inspection related to whether the area in question is the subject of an urban competition or not. Also, through an analysis of the complaints submitted at the stage of public insight, we can see the need for more intensive cooperation with the public for plans involving residential purposes, while for other purposes, public presentation of the conceptual solution and debate among the participants in the early stages of the plan offer a sufficient level of collaboration. Analysis of the conditions of the competent institutions indicates that initial cooperation with the public sector is not essential in the case of making plans for public roads and infrastructural corridors.

Accordingly, it can be concluded that the methodology for the development of an urban plan is conditioned by the dominant issues that the plan addresses, and also the interests to which the plan must respond. By means of adequate methodology for the development of a plan it is possible to affect the quality of the final planning solution in urban plans which differ in terms of their theme, scope or the issues dealt with.

However, analysis of the case studies shows that for certain aspects of planning the methodology used in the plan has no influence. These aspects are mainly related to the administrative, political and ethical framework for planning, but also to the possibility that significant changes in the planning solution come in the final phase of adopting the plan, through the instrument of amendment at the local government assembly, in which the final outcome of the planning solution can be influenced by individuals who have no formal education in the area of urbanism, and consequently none of the responsibility thay comes from it.

CONCLUSION

On the basis of the research it can be concluded that the methodology of urban planning is a logical and technical method of the successive construction of a planning solution in a normative, organizational and interest context. Also, through the evaluation of different methodological models in practice, it can be confirmed that when the method of developing a plan includes timely and meaningful cooperation, it can reconcile the interests of different stakeholders in the planning. At the same time, in practice this can be checked and the criteria analyzed, on the basis of which the primary methodology for the plan can be improved in the context of collaboration. Therefore, the preparation of a plan can be improved within its legally defined content.

Appropriate use of the methodological model improves the efficiency of the planning process, which is the practical contribution of this research, given that using the "right" methodology for an urban plan can potentially solve many of the problems that arise during its adoption actually in its early stages, such as additional objections and requests or having to repeat a procedural step, and in this way the amount of subsequent corrections in the planning solution can be reduced. This domain of research is also closely linked to the preparation of an urban plan.

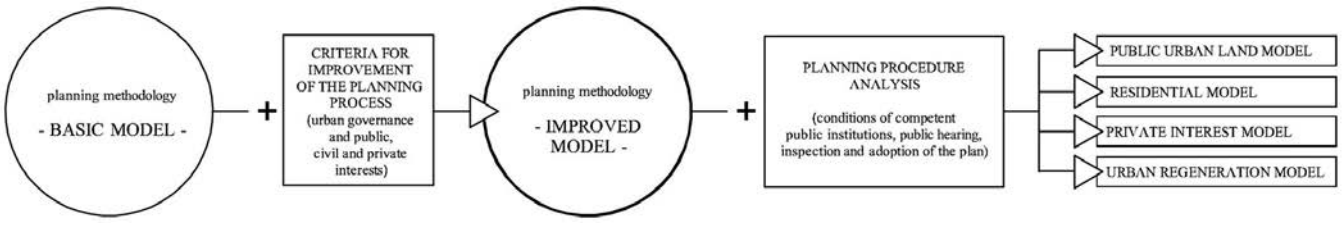

Figure 6: The process of diversifying methodological models with examples (Source: authors)

Improving the quality of managing the planning process is the general and practical contribution of this research, given that it relates to improving the instruments of urban policy that must "devise", supplement and harmonize in order to support the methodology established for developing a plan, which otherwise, in itself would not hold great significance. However, this research domain is also limited, because it applies to a very wide field of different incoherent aspects of general urban development policy, in which only a number of aspects can be given guidelines, while many other socio-political aspects that affect the methodology for any urban plan, such as administration and the real capacity of institutions to carry out planning or influence planning policy, simply go beyond the framework of this research.

The application and improvement of this methodological model, as well as the possibility of improving the quality of the final planning solution, is the theoretical contribution of the research, because the "collaborative" methodology for developing an urban plan is linked to better harmonization of different interests than currently present, which can be seen in the problems, remarks and conclusions of the expert inspection and public insight, that is, the procedure for adopting the plan. This research domain is related to the legally defined content of the plan, which is the unchangeable base of the research, while the actors in planning, the time, place and method of communication vary in relation to the legally defined "arrangements". On one hand, this approach can be seen as a drawback of the research, since it is based on an uncritical acceptance of the current content of the plan, however, on the other hand, only this kind of approach makes the whole research logically consequential, and not speculative**.**

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Deatailed Plan for Area between streets: Goce Delčeva, Palmira Toljatija, Džona Kenedija and Bulevard of Nikola Tesla – part of block 9a, City Municipalities Novi Beograd and Zemun ("Official Gazette of the City of Belgrade", No. 46/16) */ Plan detaljne regulacije za područje između ulica: Goce Delčeva, Palmira Toljatija, Džona Kenedija i Bulevara Nikole Tesle – deo bloka 9a, gradske opštine Novi Beograd i Zemun* ("Službeni list grada Beograda", br. 46/16)

Detailed Plan for Reconstruction and Annex of Heating System Network, from Heating Plant TP "New Belgrade" to the area of SPASU "Belgrade on Water" ("Official Gazette of the City of Belgrade", No. 04/16) */ Plan detaljne regulacije za rekonstrukciju i dogradnju toplovodne mreže od toplane TO "Novi Beograd" do područja PPPPN "Beograd na vodi* ("Službeni list grada Beograda", br. 04/16)

Detailed Plan for Spatial, Cultural and Historic Entity Topčider – phase II, part I, City Municipalities Čukarica and Savski venac ("Official Gazette of the City of Belgrade", No. 98/16) */ Plan detaljne regulacije prostorno kulturno istorijske celine Topčider – faza II, celina 1, gradske opštine Čukarica i Savski venac* ("Službeni list grada Beograda", br. 98/16)

Detailed Plan for Square Slavija, City Municipalities Vračar and Savski venac ("Official Gazette of the City of Belgrade", No. 30/15) */ Plan detaljne regulacije Trga Slavija, gradske opštine Vračar i Savski venac*, ("Službeni list grada Beograda", 30/15)

Detailed Plan for urban block between streets: Knez Danilova, Stanoja Glavaša, Dalmatinska and Starine Novaka, City Municipality Palilula ("Official Gazette of the City of Belgrade", No. 56/16) */ Plan detaljne regulacije za blok između ulica: Knez Danilove, Stanoja Glavaša, Dalmatinske i Starine Novaka, gradska opština Palilula* ("Službeni list grada Beograda", br. 56/16)

Detailed Plan of Bus and Train Station Compex in Block 42 in New Belgrade, City Municipality of New Belgrade ("Official Gazette of the City of Belgrade", No. 39/16) */ Plan detaljne regulacije kompleksa autobuske i železničke stanice u bloku 42 na Novom Beogradu, gradska opština Novi Beograd* ("Službeni list grada, Beograda", br. 39/16)

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GREEN INFRASTRUCTURE PLANNING FOR CLIMATE SMART AND "GREEN" CITIES

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The aim of the paper is to present green infrastructure planning within the concept of climate-smart cities. In this context the use of Geographic Information Systems (GIS), as part of green infrastructure planning, is stressed in the establishment of climate-smart cities. In addition to presenting international examples of good practice, such as using GIS data, maps and tools for support in the USA, or designing a tool for water management and water infrastructure planning in Chicago, the paper provides an insight into the current status of green infrastructure planning in Serbia. The "Green regulation of Belgrade" project is presented as a representative example.
The conclusions emphasise that the main preconditions for achieving climate-smart and green cities include legal and planning frameworks, as well as appropriate strategic and other programs that will further encourage the creation of GIS for green areas and create the conditions for climate-smart green infrastructure planning.

Key words: **green infrastructure, smart cities, climate change, planning, geographic information system (GIS).**

INTRODUCTION

The concept of Smart Cities involves the use of digital and communications technologies and, as such, it strives towards high quality resource management and service delivery (CAICT, 2014). It supports the reduction of cost and energy consumption, integrates public service functions and includes co-operation with citizens. Compared to other terms, such as "digital city" and "city of the future", the term "smart city" primarily means "smart" data management, and one of its important features is project implementation from the "bottom up" through the involvement of local communities (Đukić and Antonić, 2016). The concept of smart cities has over 100 definitions, since the urban environment "encompasses a number of requirements in relation to space and all these requirements are coordinated to the things expected from the way of living out of working time, ...basically it can be supposed that every civilization, in other words, society, has its own image of the frame desirable for everyday living" (Tošković, 2016:39). An in-depth analysis of the existing definitions resulted in the following definition: "A smart sustainable city (SSC) is an innovative city that uses information and communication technologies (ICTs) and other means to improve quality of life, efficiency of urban operation and services, and competitiveness, while ensuring that it meets the needs of present and future generations with respect to economic, social and environmental aspects" (ITU-T, Report, 2014).

The key criteria for achieving a smart city are a smart economy, smart citizens, a smart city administration, smart mobility, a smart living environment and a smart way of life (Giffinger *et al.*, 2007). It is necessary that cities become "smarter" to respond to the numerous challenges in the 21st century, which include environmental degradation, limited resources, urban migration and climate change. Thus, in order to support the EU's 20/20/20 climate action goals[2] the European Innovation Partnership (EIP) for Smart Cities and Communities encourages the reduction of high energy consumption and greenhouse gas emissions, including not only energy, but also transport and the ICT sector, with a budget of over € 365 Million (European Innovation Partnership on Smart Cities and Communities, 2013). Also, as one of the basic preconditions for increasing regional competitiveness and attractiveness for investors, the Thessaloniki Agenda for the Balkans from the year

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[2] The Europe 2020 strategy, the EU agenda for smart, sustainable and inclusive growth, has set the following targets: 20% cut in greenhouse gas emissions (from 1990 levels), 20% of EU energy from renewables and 20% improvement in energy efficiency (https://ec.europa.eu/info/strategy/european-semester/framework/europe-2020-strategy_en#thestrategysetouttargetsinthe5followingfields).

2003[3] distinguishes investments that are developing modern infrastructure in the field of energy, transport and telecommunications as a priority.

In the urban environment, in the context of climate change, green infrastructure (GI) has an important role in reducing the need for energy, providing ambient cooling effects, reducing floods at the local level, restoring local groundwater reserves, allowing the soil to absorb acidity, and so on. Regarding the smart environment, the GD IP (2014) description includes smart energy, including renewables, ICT enabled energy grids, metering, pollution control and monitoring, the renovation of buildings and amenities, green buildings and green urban planning, as well as the efficient use and reuse of resources and resource substitution to serve the above goals. Therefore, green infrastructure planning, greening of the environment and the use of related ICT contribute towards achieving climate-smart cities, whereby a significant contribution is accomplished by means of adaptation measures and limited, but still important, mitigation measures (Cvejić *et al.*, 2011).

Based on the analysis of the available documentation, the paper presents an overview of the role and current status of green infrastructure planning in the context of climate-smart and green cities worldwide. In this regard, the importance of the application of GIS in the planning and management of GI is especially emphasized. In addition to a review of the current situation within the Republic of Serbia, the "Green Regulation of Belgrade" project is presented as an example of good practice.

CLIMATE SMART CITIES AND GREEN INFRASTRUCTURE PLANNING

The ITU-T (2014:12) states that "a smart sustainable city is a city that leverages ICT infrastructure in a flexible, reliable, scalable, accessible, secure, safe and resilient way". ICT infrastructure is used in order to improve the quality of life and well-being of the inhabitants, as well as to ensure economic growth, establish an "environmentally responsible and sustainable approach", provide more efficient infrastructure, strengthen the prevention of disasters, mitigate climate change, and also provide regulatory and governance mechanisms (*Ibid.*). In the operationalization of the smart cities concept, one of the key elements is ICT, although it cannot be expected that a globally acceptable set of basic ICT standards for smart cities will be identified in the near future (Petrović *et al.*, 2015). Standards Developing Organizations, scientists and professionals, decision makers in cities and citizens will have a key role in this process (*Ibid.*). The Focus Group on Smart Sustainable Cities (FG-SSC) is an open platform for the exchange of information within ITU-T concerning issues, questions and ICT standards for smart cities from various stakeholders (academic and research institutes, municipalities, non-governmental organizations, ICT organizations, industry forums and consortia). It has, so far, published over 20 reports on its website covering issues related to indicators, standardization, integrated management for smart cities, etc. (Focus Group on Smart Sustainable Cities, 2017).

In the context of climate change, the benefits of the use of green infrastructure (GI) are numerous and positive as the impacts of climate change are becoming increasingly visible – such as the occurrence of drought, floods, waves of warm weather/heat and a rising sea level. Climate change has a negative impact on the population, built environment, infrastructure and natural resources. Regarding the use of GI in urban planning "... the main constraint identified by an international consortium was that the planning of green infrastructures was not integrated into typical urban planning processes and the possibility of optimizing effects towards cost not given" (Scharf, 2017). Marić *et al.* (2015) and Crnčević (2016) highlight the importance of local initiatives (programmes, strategies etc.) in which the existence of guidelines, principles and criteria for GI planning have given specific results. In the context of climate change and the contemporary planning context, GI is becoming an integral part of strategic frameworks, programs and standards within the urban planning process with the aim to promote the use of GI in adaptation strategies, while pointing out the necessity for finding the investments or mechanisms to provide financial support for establishing and managing green areas (GA) (Crnčević, 2016).

In relation to GI, within the process of creating climate-smart cities, the domains of ICT applications and improvements include: public space and utility services management, informing citizens and involving them in decision-making processes, the ability to perform various online activities (overlapping with economic needs) and similar. One of the applications of ICT is in the Geographic Information System (GIS), which can integrate data from various sources, and therefore it can be very helpful while "converting a city into a smart city or into a green city" (Rehmat, 2016). The GIS is a computer-aided system (hardware, software, data and users) for collecting, editing, storing, modelling and analyzing data, as well as for its alphanumerical and graphical presentation (Crnčević and Bakić, 2010; Bakić and Gajić, 2014). Thus, with the help of a GIS, it is possible to complete the parcel inventory of zoning areas, floodplains, industrial parks, land uses, trees and green spaces, and then perform an analysis of the percentage of land used in each category, the density levels according to neighborhoods, threats to residential amenities, and proximity to unwanted land uses, and in that way assist urban planning. Existing GIS packages can produce digital cartographic attachments that display selected phenomena, processes and their properties, and gather information and provide its visual representation, thus facilitating decision making in the planning process (Bakić and Đurđević, 2011). The basic application of GIS for gathering information has expanded into data visualization, which makes it possible to understand what is happening in selected locations, track events and direct the development of both individual space systems and the whole system (Figure 1).

[3] The "Thessaloniki Agenda for the Western Balkans: Moving towards European integration" (Thessaloniki Agenda) adopted in 2003 in Thessaloniki includes a number of instruments and other forms of cooperation between the EU and the countries of stabilization and association (Albania, Bosnia and Herzegovina, Montenegro, Croatia, Macedonia, Serbia and Kosovo under UN Resolution 1244/99) (www.europa.rs/upload/documents/key.../Thessaloniki%20Declaration%202003.doc,).

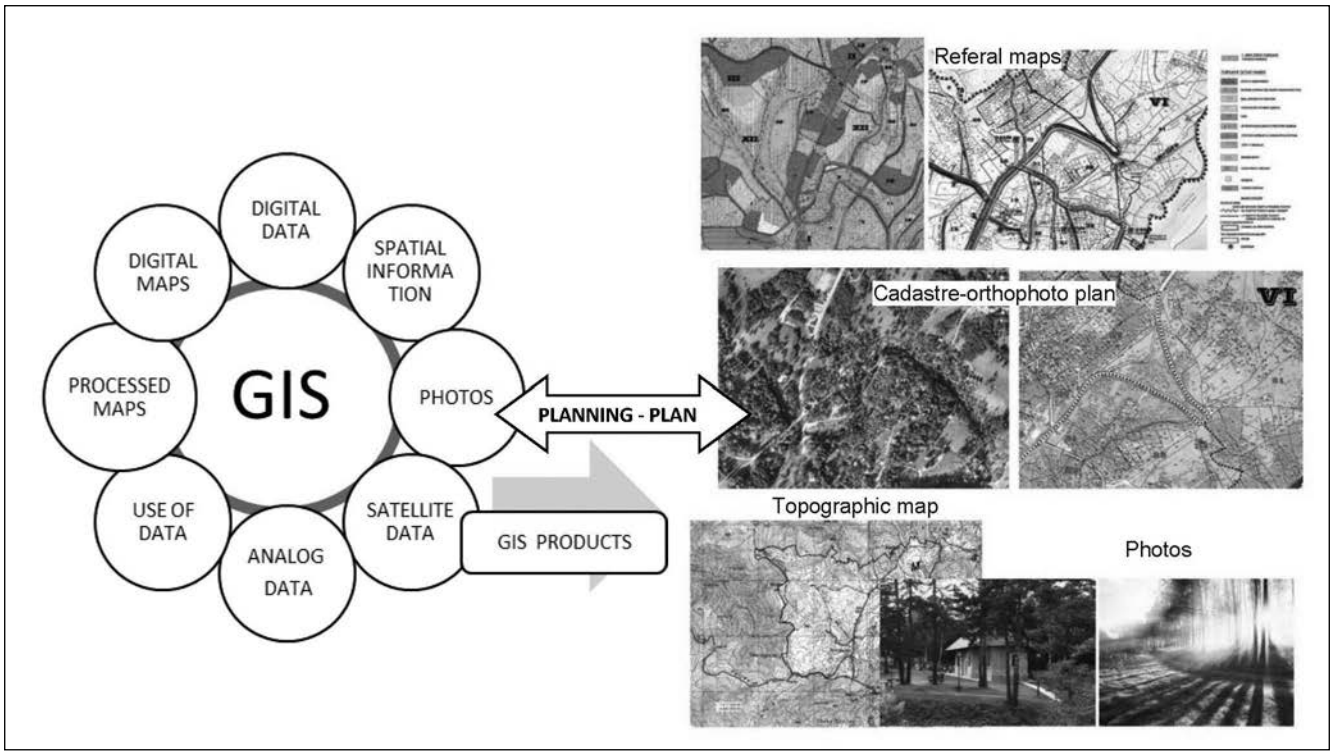

Figure 1. Integration of spatial information in GIS
(Source: authors)

Therefore, in answer to the universal question of how to set development policies that support everyone (Esri,GI, 2017) with the help of GIS, it is possible to identify locally valuable areas and to prioritize them for protection as well as to visualize their connection with the space beyond the boundaries of the plan. Esri, a GIS consultancy in the USA, provides data, maps and tools for GI planning, (*Ibid.*). Using Esri's tools, the GI plan was produced for South Carolina after it was hit by hurricane Joaquin, a two-day storm that resulted in flooding, the destruction of infrastructure, and the loss of life and up to 160,000 homes. Considering that "most disaster recovery and development strategies focus on rebuilding and extending existing man-made infrastructure" (*Ibid.)* and dismiss green infrastructure, a new plan was formulated in which, this time, GI was included in the main plan. The plan was the result of partnership between the planning and conservation departments in Richland County, South Carolina (USA) whereby the green infrastructure plan was developed using Esri's GIS tools for creating asset maps and maps of intact habitats, conducting landscape analyses, assessing fragmentation and risks, developing a core quality index, and prioritizing opportunities (*Ibid.*).

Taking into account that every city on the globe has its own priorities, many of them are developing frameworks which promote the concept of smart cities. A significant incentive is an international smart city competition (Smart City Forum, 2017), which involves a combination of urban density (high and medium) with a high quality of life. The most common projects representing the concept of smart cities, apart from technological centers, are smart electricity grids, the introduction of electric buses, schemes for the common use of bicycles, and green urban areas (CAICT, 2014). One such project related to climate-smart and green cities, the "City Digital's Smart Green Infrastructure Project" (SGIM) is presented here. The main aim of the SGIM project is to create a tool for water management and water infrastructure planning in Chicago (USA), i.e. to monitor the quantity of water, how it flows, and whether it is flowing (Smart Cities Connect, 2017). By incorporating sensors within green infrastructure for five selected sites in Chicago, it is possible to collect data covering storm water runoff, the amount of precipitation, humidity levels, soil moisture, air pressure levels and chemical absorption rates (*Ibid.*). As the project progresses, these data will be communicated via a cellular network into an analytics platform where the performance of selected green infrastructure installations will be monitored in real time, enabling historical analysis of the data. The expected results, which will be available to the public on a public portal, will show which green elements work best and where, which could be of interest for other cities in the area of GI planning (*Ibid.*).

GREEN INFRASTRUCTURE PLANNING IN SERBIA FOR CLIMATE-SMART AND "GREEN" CITES

The application of ICT technologies in the Republic of Serbia is "in the initial phase of development at all levels of governance, which places Serbia in an unfavourable position in relation to developed countries" (Lalović *et al.*, 2016: 474). On the other hand, the results of ICT research in the Republic of Serbia[4] indicate a positive trend in terms of providing

[4] The survey was conducted in April 2015. The type of research was a telephone interview that covered 1361 companies. The response rate was 92.7% (1261 enterprises, with 10 more employees in the fields of the manufacturing industry, electricity supply, waste water management, construction, wholesale and retail trade, transport, storage and communications, accommodation and food services, information and communication, real estate business and others).

technical infrastructure (Kovačević *et al.*, 2015). Thus, 100% of companies use computers in their business and 99.1% of them have internet connections. As many as 94.5% of companies use electronic public administration services, mostly for obtaining information (93.5%), filling in forms (91.7%), and for returning completed forms (88.2%). An increase in the number of household appliances (TV, cable, mobile phone) in relation to the previous years was noticed: 7.4% more than in 2013. The results reveal that 65.8% of the population use computers, 91.4% use a mobile telephone and 65.3% use the internet. The respondents said that they use the internet, to a large extent, for seeking information on goods and services (67.7%) and for reading online newspapers and magazines (62.3%) as well as for participation in social networks such as Facebook and Twitter (75.6%). The survey also showed that 38.9% of respondents that used the internet in relation to public services used it to obtain information from the public institution's website. However, although a significant shift has been made regarding the use of ICT in planning, the view still dominates that the quality of public information does not provide an adequate contribution to sustainable planning and development management. Although there are a wide range of applications based on GIS planning and management technology, the "implementation of these solutions in Serbia's planning practice practically is completely absent" (Lalović *et al.*, 2016:472).

The use of GI in planning is, in practice, a complex process which can be facilitated by using GIS tools. The GIS of green areas (GA) is the information system for these areas that maintains units within them. It is a model that is used to consider specified system requirements, hardware, software, data collection methods, organizational charts and a method for maintaining the system (Crnčević and Bakić, 2010, 2012). It is a modern tool for better, more efficient and more economical maintenance of existing green areas, for planning and developing new green areas and for protecting urban green spaces (*Ibid.*). Efficient maintenance is made possible by collecting and providing accurate information on green areas and their content, which can facilitate planning, implementation and record keeping. Developing the GIS GA basic system allows more efficient planning and control of funds. By comparing the expense data, one can more objectively answer the question of whether the expenditure is justified. As the GIS GA connects environmental and statistical data, it is an important basis within the GI planning process for planning green infrastructure both as a system and as individual green areas. The GIS GA data show the disparities in supplying green areas and their ecological features. They also provide information on the need for renewal and enable the simulation of new or more economical solutions. The following stages are included in the process of establishing a GIS GA: (1) analyzing the existing state of the data; (2) reviewing the available cartographic material; (3) elaborating methods to survey and digitize data; (4) developing a catalogue of units involved; (5) digitizing maintenance units; (6) controlling the mapping quality and data entry; and (6) entering the data in the GIS.

Regarding GI planning in the Republic of Serbia, the main limitation for climate-smart and GI planning is the inadequate legislative support and information base. The Law on Planning and Construction of the Republic of Serbia (Official Gazette RS, No. 72/09, 81/09-correction, 64/10-UC, 24/11, 121/12, 42/13-UC, 50/13-UC, 98/13-UC, 132/14 and 145/14) does not provide direct support for GI because it does not refer to green areas or green surfaces. Therefore, the GI planning framework follows the requirements related to infrastructure. The Law on Environmental Protection (Official Gazette RS, No. 135/04, 36/09 and 72/09-43/11-US) establishes the conditions for formulating a special law that would address the issues of planning and management related to GIs. However, the Draft of the "Decision on the protection and improvement of green areas of Belgrade" (in accordance with the Project "Green regulation of Belgrade") has been in the procedure for adoption for over a decade, which points to the lack of adequate procedural support for its adoption (Marić *et al.*, 2015; Crnčević and Sekulić, 2012).

However, despite the inadequate legislative and planning context, a review of the existing practice in Serbia has shown that there are examples of good practice in GI planning, such as the GI plan for Vrnjačka Spa where, within GIS, a topographic key for visualizing GI for all spa areas was created (Crnčević and Bakić, 2010) and others, among which the city of Belgrade stands out (Crnčević and Bakić, 2010; Manić *et al.*, 2012, etc.).

Example of Belgrade

In the review of the implementation of the General Plan 2021 for Belgrade, analysis of the current state of data and prospects for the development of Belgrade's green areas has shown that Belgrade did not have a clearly defined strategy for the development of GI as a system, or any adequate legislation to this regard (JUP Urbanistički Zavod Beograda, 2017). On the initiative of the Secretariat for the Environmental Protection of Belgrade, the Executive Committee of the City Assembly decided in December 2002 to initiate the project "Green Regulation of Belgrade"[5] aiming to regulate the management of Belgrade's green space system, i.e. its planning, development, arrangement, maintenance and protection (Cvejić *et al.*, 2004). The project's design had four phases: (I) Analysis of the situation and preparation of the document "Decisions on the Protection and Improvement of the Green Areas of Belgrade"; (II) "Preparation of the Content and Program for the Development of a GIS of Belgrade's Green Areas", "Preparing the Content and Defining the Procedure for Mapping Belgrade's Biotope"; (III) "Mapping and Evaluation of Belgrade's Biotope" and (IV) "Plan for the General Regulation of Green Areas in Belgrade".

The first phase included assessment of the current state of Belgrade's GA and identified the problems related to its planning, development, maintenance and protection. A significant result of this phase was the document "*Decision on the protection and improvement of the green areas of Belgrade*" which defines the subject of regulation, conditions, procedure and method of planning, design, maintenance, protection and use of green areas as a unique system. The second phase of the project included preparation of the content and program for developing a GIS of GA for Belgrade, together with a proposal for the

[5] Hereafter referred to as Project.

process of creating and later maintaining the system with hardware and software requirements, methods of data collection and an organizational scheme. The main project for the GIS of Belgrade's GA, completed in 2008, provided more detailed software, hardware and telecommunication specifications, project organization and project design. This phase also included defining the main procedures for mapping Belgrade's biotope, which was an important input for the next phase – "Mapping and evaluation of biotopes of Belgrade", carried out for a territory of 77,460 ha. The methodology applied to the Biotope Mapping of Belgrade is mainly based on the experience of German cities and the instructions made by the "Working Team for Biotope Mapping in Built Areas" in Stuttgart, Germany (Ermer *et al.*, 1996). The biotope map outlined the conditions for sustainable urban planning through: the application of domestic and international regulations based on sustainability principles; the introduction of ecological principles into the planning process; the introduction of mapping and evaluation of biotope as an information basis in the planning process; the requirement to provide a realistic picture of the state of the environment necessary for developing a Strategic Impact Assessment (SEA); the impact of development on the formation of strategic commitments in terms of sustainable planning and monitoring the information base of biotopes of Belgrade. Within the fourth phase, the "Plan of General Regulation of the Green Areas of Belgrade", a Draft Plan was prepared and its adoption is in progress. The Plan defines the spatial coverage, typology of green areas, public and other purposes, conditions for and types of their use, and measures for their protection, improvement and development.

Belgrade GIS for GA

The content scope of the Belgrade GIS GA consists of the different types of green areas defined within the General Regulation Plan for the built-up areas of the local self-government unit – the City of Belgrade (Official Gazette RS No. 20/16.). The Public Utility Company (PUC) "Belgrade Greenery" maintains the following green areas: (1) parks; (2) squares; (3) street corridors (including greenery along the road network and street line trees); (4) arranged parts of urban and suburban forests and forests on river islands (derived from the basic type of green areas: city forest, forest and suburban forest and forest on a river island); (5) green areas of residential housing of an open type (derived from their basic purpose – housing, type – open block) (Cvejić *et al.* 2004) . These green areas are the subject of the GIS of GA on the level of the surface and maintenance unit, and they are the primary content of the system. Types of green areas such as city forests, suburban forests, protective forests and forests on river islands make up the content of spatial coverage of the GIS GA of Belgrade only on the level of the surface. The cadaster for these areas is managed by the public companies, PC "Srbijašume" (Serbia Forests) - FE "Belgrade" and PWC "Srbijavode" (Serbia Water), which are responsible for maintaining these areas. Other types of green areas such as special green complexes, nurseries, forests and green areas, unregulated land and wetlands are not subject to the Belgrade GIS GA.

In terms of content the goal of the project was to clearly define the scope of the GIS GA, including the objects of the system and the participants and their roles in it.Furthermore, the project objectives were to create a model of basic system processes, specify the system's requirements, and propose the initial creation and subsequent system maintenance processes. This needed to include hardware and software settings, methods of data collection, an organizational scheme and the basic cost of works. This project was mostly based on the use of element-oriented methods of system modelling and the application of ISO TC 211 and Open Geospatial standards, as relevant global standards in the field of geo-informatics (Senate Department for ETCP, 2017).

The GIS of Belgrade GA, covering about 3,000 hectares of public green areas of different types, is in its final phase of implementation. It will be a significant information base for the development of the strategy for climate change adaptation and in the creation of a climate-smart and green city of Belgrade. Overlapping the green area maps of the GIS GA with temperature maps and maps of the catchment areas of the city will enable the proper distribution of green

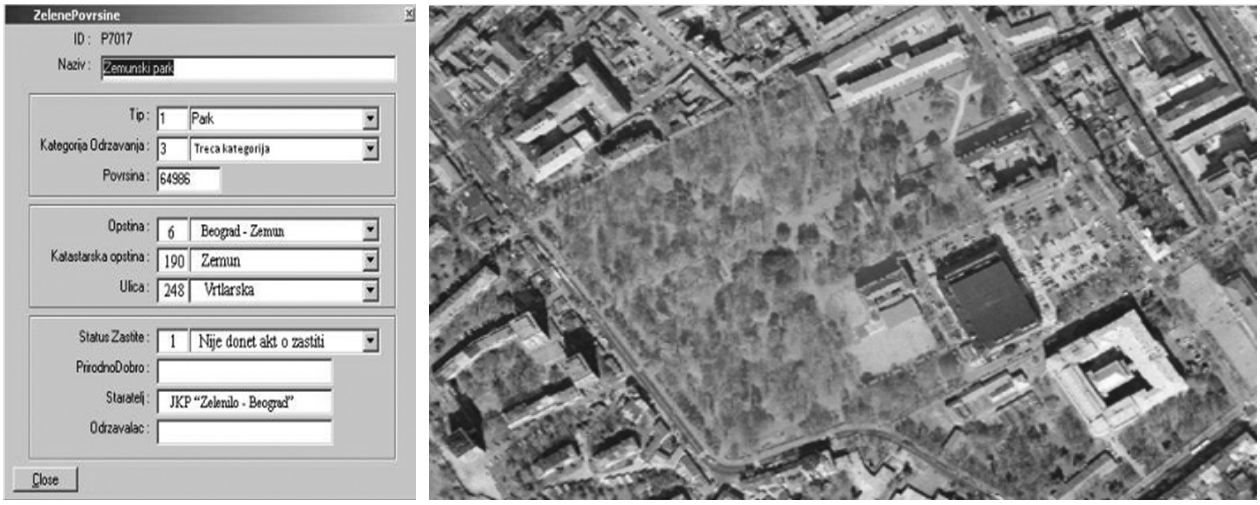

Figure 2. Defining boundaries and attribute values of green areas
(Source: Cvejić et al., 2004):

areas and contribute to regulating temperatures at the micro location level and the further management of surface waters.

CONCLUSION

Within contemporary planning practice there is a challenge to achieve climate-smart and green cities because the position of GI within urban planning is unsatisfactory. The climate change issues have made a distinct impact on the promotion of GI in the planning process within the framework of strategic planning because GI is used in planning climate adaptation measures and has further encouraged the application of other ICT tools in their planning.

Having adequate support within GIS such as data, maps and tools, as designed by Esri in the USA, or creating a tool for water management and water infrastructure planning within urban areas as seen in Chicago, are examples that should be aspired to. In Serbia, Belgrade is an example of the way forward, with proper support from local authorities and an applicable program base to establish the necessary frameworks for smart planning and management of the city's GI, despite an inadequate legislative and planning framework. The creation of the GIS GA for Belgrade provides the basis for more efficient and economical maintenance, planning and development of green areas. By becoming a part of the business system of public enterprises and institutions dealing with the public GA of the city, GIS GA will contribute toward achieving a climate-smart and green city. Therefore, the expected benefits from the use of GIS GA are numerous, such as determining the condition of GA, managing the maintenance costs, having better communication within the administration and public enterprises, comprehensive transparency, formation of an information basis for decision making and measures in the planning of green and open areas, etc. The example of Belgrade is representative because the resulting experiences can be applied to other cities in Serbia. Certainly, in order to achieve climate-smart and green cities, appropriate legislative and planning frameworks are needed, as well as appropriate strategic and other program bases such as guidelines and standards that will encourage the creation of GIS GA and create conditions for climate-smart GI planning.

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NOTES ON THE DEVELOPMENT OF THE URBAN HERITAGE MANAGEMENT CONCEPT IN CONTEMPORARY POLICIES

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This paper seeks to present an overview of the development of the urban heritage management (UHM) concept by analysing documents from key international organisations in this field. The period 1964-2011 is deemed to have been marked by a paradigm shift in the discipline of conservation. Over the course of the last decade, the discussion has been focused on the development of the historic urban landscape (HUL), a concept that incorporates principles of conservation into the integral urban planning framework. However, it seems that the gap between conservation and development is yet to be bridged in practice.
The first part of the paper briefly outlines the most important theoretical thought in the fields of conservation and urban planning that contributed to the development of the urban heritage (UH) concept in the 20th century. The second section reviews the UHM policies presented in documents, with an emphasis placed on the roles of particular stakeholders in the process. This paper contributes to overviewing the key aspects of contemporary UHM policies and highlighting perspectives for its future development.

Key words: **urban heritage management (UHM), urban planning, historic urban landscape (HUL), documents, policies.**

INTRODUCTION

Changes to the concept of heritage and conservation strategies are closely linked to processes that are part of the broader social, cultural, and economic context of the development of cities. UH has found itself under increasing pressure since the 1980s, in parallel with economic globalisation (Van Oers *et al.*, 2010: 7), which can be connected to the rise of neo-liberalism, urban entrepreneurship (Swyngedouw *et al.*, 2002; Harvey, 1989) and the strategic role of cities (Sassen, 2011). Issues of urban (re)development have become the object of complex networks of interests, which induces transformations that are larger and more rapid than previously. Discussing the problems of neo-liberal urbanisation, Swyngedouw *et al.* (2002: 550-551) emphasise that "re-positioning the city on the map of the competitive landscape" has meant an innovative re-creation of the urban landscape, with the objective of attracting primarily foreign, outside audiences: investors, tourists, and businesspeople. On the other hand, and also under the influence of globalisation and the prioritisation of goals connected with urban competitiveness (UN Habitat, 2008: 3), the identity of the city has been increasing in importance. This phenomenon is particularly pronounced in Europe, in parallel with the decline of national identities on the one hand, and the growing multi-culturalism of cities owing to large-scale migration (King, 1993; Castells, 1993), on the other. Castells (1993) believes this leads to greater orientation of cities towards the local built heritage. Cultural resources are also being used for branding, to create a recognisable and attractive image in competitive strategies (Evans, 2009). Consequently, the commodification of culture, mostly linked to the rise in mass tourism, has been acknowledged as a major threat posed by globalisation to local heritage, as it homogenises and trivialises its essence (UNESCO, 2016: 21).

From the perspective of urban conservation, and in the light of the ever-present demand for sustainable urban development, theorists have been reiterating that planning practices ought to learn from what is already there. In 2015, with the adoption of the United Nations' 17 Sustainable Development Goals, culture was formally made a key resource in making cities attractive, creative, and sustainable (UNESCO, 2016: 17). UH is presented not

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only in the light of identity and cultural significance, but also as a non-renewable capital resource (Rodwell, 2007: 207), which encompasses its embodied energy, materials, and financial investment.

As the 20th century progressed, UHM became increasingly oriented towards the attainment of socio-economic objectives, especially those in the service of the local community (Veldpaus, 2015; Bandarin and Van Oers, 2012; UNESCO, 2011).

The need for integrating urban conservation into comprehensive urban planning systems and development programmes was officially recognised in international policy documents adopted in the mid-20th century, and has received particular prominence over the past two decades, in parallel with the rise of the concept of sustainability. The historic urban landscape (HUL) is the latest proposed approach and it is seen as having come the closest to achieving this goal. However, conservation and development are in practice still treated as mutually opposed notions: this is also borne out by the fact that calls for integration appear even in the most recent documents adopted by international organisations. It is exactly this gap between theoretical doctrine and practical reality that poses the main problem and motivates research. Understanding the problem of integrating urban conservation and development, and translating the principle of continuity into the reality of the development of cities, first requires awareness of what the UHM concept means, and what it is based on.

THEORY OF URBAN CONSERVATION

First, it is important to clarify the most important notions which will be used in the discussion.

According to one of the contemporary definitions (UNESCO, 2011) we use the term "urban heritage" (UH) to encompass following categories: 1) monumental heritage of exceptional cultural value; 2) non-exceptional heritage elements but present in a coherent way with a relative abundance; 3) new urban elements to be considered: the urban built form; streets, public open spaces; and urban infrastructures. It could be conditionally conceived as close to notions like historic settings, areas, environment, cities, and landscapes, which are found in the literature. UH, including its tangible and intangible components, constitutes a key resource in enhancing the livability of urban areas and fosters economic development and social cohesion in a changing global environment.

While using the term "urban heritage management" (UHM), we refer to the practices undertaken with the aim to preserve cultural continuity and quality of life in urban environments. Having in mind one of the latest definitions of urban conservation from UNESCO (2011), where it is conceived as "a strategy to achieve a balance between urban growth and quality of life on a sustainable basis", and is not "limited to the preservation of single buildings, but views architecture as but one element of the overall urban setting, making it a complex and multifaceted discipline", the terms of urban conservation and UHM may be used interchangeably in this context.

Although urban conservation did not exist as a discipline until the mid-20th century, the roots of UHM theory are considered to reach back into the 19th century (Siravo, 2011; Bandarin and Van Oers, 2012). In general, the heritage concept represented an effort to strengthen the identities of modern-day nation-states and build tradition (Bandarin and Van Oers, 2012: 1). The idea of a historic city as heritage emerged at a later date (*ibid.,* 10) and is mainly linked to reactions to the large-scale transformations of industrialised cities (Siravo, 2011: 4). Theorists that have contributed the most to the development of urban conservation concepts include Ruskin (1849), Sitte (1901), Geddes (1915), Giovannoni (1931). Geddes' thought was particularly influential: theorists consider his recognition that the process is more important than the final picture to be the foundation of the integrated planning approach (Veldpaus *et al.*, 2013: 40; Colenbrander, 1999). Giovannoni (1873-1947) emphasised the need for a coexistence of the historic and the modern city. Such synergy between conservation and modernisation is based upon the social values of local communities (Siravo, 2011: 5).

Although it has existed in theory since the late 19th century, the UH concept gained traction in international policy as late as the second half of the 20th century and has seen particularly rapid development over the past several decades. The adoption of the Venice Charter (1964) is generally taken as the pivotal moment in its growth, as this document extended the notion of heritage to include broader settings in which monuments are located. Jokilehto (2007) believes the UHM trend became applicable to the urban context as late as the 1990s.

Conservationists are today said to be aware of the gap between the "ideal world of conservation principles and practical reality" (Bandarin and Van Oers, 2012: 13), which leads to the view that conservation must overcome both its isolated disciplinary and spatial framework. The discussion hinges on the emphasis by current urban conservation theories of continuity – of relationships, values, and management (Van Oers, 2007).

Over the course of the past decade, debates about the future of urban conservation have focused on the HUL approach, which aims at comprehensively integrating heritage management into the planning and development framework (Bandarin and Van Oers, 2012; UNESCO, 2011). It is aimed at the development of tools to integrate policies and practices. In a practical sense, the HUL approach reflects the need to control the development and manage changes in areas not under the aegis of official protection. As such, the HUL concept deals with managing the nature of change.

REVIEW AND ANALYSIS OF OFFICIAL DOCUMENTS (1964-2011)

Methodology

A review of the theoretical literature suggests that the task of UHM has been shifting from a focus on the preservation of the physical state of the UH towards the management of interdisciplinary change in urban environments. Nevertheless, in order to uncover how changes of concepts translate into UHM policies as part of planning and

development processes, identifying the roles of the various stakeholders is the key.

Accordingly, the analysis is structured in a way to seek answers to two types of questions, formulated as follows:

1) related to the concept of UH: what is considered UH and why? How is the relationship between objects of protection, or attributes, and values ascribed to them conceived?

2) related to policies, aimed at translating the concept of UH into the practice of UHM: who has interests in UHM and which roles do various stakeholders play in this process?

Theoretical literature provided the basis for selecting potential documents for review. The primary criterion for selection was that a document had to introduce an innovation or change in some of the aspects previously mentioned. The review encompassed a total of fifteen documents issued by key international organisations:

- six adopted by ICOMOS:

(i) The International Charter for the Conservation of Monuments and Sites (Venice Charter, 1964); (v) The Declaration of Amsterdam (1975); (vii) the Washington Charter for the Conservation of Historic Towns and Urban Areas (1987); (ix) the Charter of Krakow – Principles for Conservation and Restoration of Built Heritage (2000); (xiii) The ICOMOS Charter for the Interpretation and Presentation of Cultural Heritage Sites (2008); (xv) the Valletta Principles for the Safeguarding and Management of Historic Cities, Towns and Urban Areas (2011);

- six by UNESCO:

(ii) Convention Concerning the Protection of the World Cultural and Natural Heritage (WHC, 1972); (iii) Recommendation concerning the Protection, at National Level, of the Cultural and Natural Heritage (1972); (iv) the Nairobi Recommendation Concerning the Safeguarding and Contemporary Role of Historic Areas (1976); (x) the Convention for the Safeguarding of the Intangible Cultural Heritage (IHC, 2003); (xi) Vienna Memorandum on "World Heritage and Contemporary Architecture – Managing the Historic Urban Landscape" (2005); (xiv) Recommendation on the Historic Urban Landscape (HUL Recommendation, 2011);

- three by the Council of Europe:

(vi) Convention on the Protection of the Architectural Heritage of Europe, Granada (1985); (viii) the European Landscape Convention (ELC, 2000); (xii) Convention on the Value of Cultural Heritage for Society (Faro Convention, 2005).

The development of the UH(M) concept

(i)

The *Venice Charter* (1964) is taken as the starting document in this analysis, as for the first time it extends the concept of heritage from individual monuments to historic settings. The domain of conservation was thus broadened to include the preservation of more modest structures within each setting: although these buildings may have no particular artistic value, they have nevertheless acquired cultural significance with the passage of time. The document is directly addressed to architects and technical professionals. It calls for co-operation between disciplines in all fields of science and technology that can contribute to conserving built heritage. Managing heritage is based on assessment by experts and decision-making by expert and administrative authorities.

(ii)

The WHC (1972) distinguishes between a number of categories of heritage, and does not specifically single out cities and urban areas. Nevertheless, living cities are included in ensembles, defined as "groups of separate or connected buildings which, because of their architecture, their homogeneity or their place in the landscape, are of Outstanding Universal Value from the point of view of history, art or science". Universality here reflects the view that heritage holds value not just for individual nations, but for mankind as a whole. At the global level, this Convention has created a foundation for the establishment of coherent policies, and introduced the requirement for member states to enact national, regional, and local policies that will conform to that foundation. The Convention is the first instrument that calls for the integration of the conservation principle into comprehensive planning programmes.

(iii)

The *Paris Recommendation* (1972), while re-affirming the view present in (ii), provides further guidelines for UHM. Several important groups of stakeholders involved in the protection, conservation and presentation activities are noted, such as: authorities, specialised public services, advisory bodies, educational and cultural institutions, voluntary organisations, the local population, private sector, owners and users. The responsibility of authorities is to arrange for concerted action by all the public and private services concerned, with a view to drawing up and applying an active conservation policy. They should also make available increasingly significant financial resources for those purposes. Member states should co-operate, and when appropriate seek aid from international organisations for purposes such as: the organisation of seminars and working parties; exchange of information and publications; students, research workers and technicians. Specialised public services, consisting of experts, are given the most important role in UHM. They are responsible for: developing and putting into effect measures – scientific, technical, legal and financial – which are specified in the document; organising inter-disciplinary co-operation; making final decisions about any demolition, building or modification proposal that affects the appearance of or is in the vicinity of a protected site; and ensuring that owners or tenants carry out the necessary restoration work and provide for the upkeep of buildings in the best artistic and technical conditions. They should collaborate with advisory bodies, consisting of experts, preservation societies and administration representatives, and carry out their work in liaison with other public services, particularly those responsible for regional development planning, major public works, the environment, and economic and social planning. Voluntary organisations should be set up to support the efforts of national and local authorities and, if

necessary, to obtain funds for them. Owners or users should be granted tax concessions on the condition that they carry out work for the protection, conservation, presentation and rehabilitation of their properties in accordance with approved standards. Financial incentives should be given for owners, depending on their observance of certain conditions laid down for the benefit of the public, such as allowing the buildings and spaces to be accessed and enjoyed by visitors. This is the first such document to call for the involvement of the local population in conservation actions: they should be called on for suggestions and help, with particular reference to showing regard for and the surveillance of UH, as well as through financial support from the private sector.

(iv)

In the *Declaration of Amsterdam* (1975) UH is recognised as: areas of towns or villages of historic or cultural interest. The attributes to be preserved are: the texture of urban and rural areas, notably their structure, their complex functions, and the architectural and volumetric characteristics of their built-up and open spaces. A concept of integrated conservation is proposed, and justified in terms of the benefits it can provide concerning the social problems of urban life. The use-value of buildings is posited as being equal to their cultural value.

Regarding UHM, it is emphasised that a large measure of decentralisation is a precondition for the full development of a continuous policy of conservation. There must be people responsible at all levels (central, regional and local) at which planning decisions are taken. Local authorities have a special responsibility and should assist one another with the exchange of ideas and information. They should improve their techniques of consultation for ascertaining the opinions of interested parties on conservation plans and should take these opinions into account from the earliest stages of planning. Proposals or alternatives put forward by groups or individuals should be considered as an important contribution to planning. Decisions should be taken in the public eye. To avoid the laws of the market having free play in restored and rehabilitated districts, public authorities should intervene to reduce the effect of economic factors. Adequate financial assistance should be made available to local authorities and financial support should likewise be made available to private owners. Participation is of essential importance in UHM because it is "a matter not only of restoring a few privileged buildings but of rehabilitating whole areas". The population, on the basis of full and objective information, should take part in every stage of the work, from the drawing up of inventories to the preparation of decisions. In order to enable the population to participate, they must be given the necessary facts, through explaining both the heritage values and the practical implications of permanent or temporary rehousing. Methods such as public meetings, exhibitions, opinion polls, the use of the mass media and all other appropriate methods should become common practice.

(v)

In the *Nairobi Recommendation* (1976), objects of protection are historic areas and their surroundings, which "should be considered in their totality as a coherent whole, whose balance and specific nature depend on the fusion of the parts of which it is composed". Elements to be safeguarded, apart from buildings and the open spaces, include intangible aspects like human activities – "however modest". The notion of the environment, which comprises natural and man-made settings, accentuates the awareness of the threats that urban development transformations in the surroundings of monuments and protected areas pose on the perception and character of the UH as a whole. Public authorities and institutions are again given the most prominence in the UHM: they are in charge of drawing up a national, regional and local policy so that legal, technical, economic, and social measures may be taken; they should set out the general principles relating to the establishment of the necessary plans and documents, including the designation of the body responsible for authorising any restoration, modification, new construction or demolition within the protected perimeter; and they are responsible for the means by which the safeguarding programmes are to be financed and carried out. Authorities should also: encourage the setting up of public and/or private financing agencies for the safeguarding of UH, empowered to receive gifts from donors; facilitate the creation of nonprofit-making associations responsible for buying and, where appropriate after restoration, selling buildings by using revolving funds established for the special purpose of enabling owners of historic buildings who wish to safeguard them and preserve their character to continue to reside there. Financial measures concerning tax concessions, grants, and loans for owners are prescribed equally as in (iii). In cases of renovation, similar to the proposal in (iv), authorities should facilitate compensation for rises in rent for the poor inhabitants that could enable them to keep their homes.

The objectives and means for achieving the participation of community members, including owners, users, and inhabitants, are explained here similar to in (iv). Participation could be encouraged through methods such as information and surveys, but also through the establishment of advisory groups attached to planning teams, consisting of community representatives. In this way, the community has an advisory role in UHM.

(vi)

The *Convention in Granada* (1985) deals with issues of protecting architectural heritage in Europe, where the concept of UH is recognised as "homogenous groups of buildings, conspicuous for their historical, archaeological, artistic, scientific, social or technical interest which are sufficiently coherent to form topographically definable units". It re-affirms and complements the view from (i) by means of the statement that the urban planning process should facilitate, whenever possible, the conservation and use of certain buildings whose intrinsic importance would not warrant protection within a legal framework, but which are of interest from the point of view of their setting in the urban or rural environment and of the quality of life.

According to the Convention, it is important to widen the impact of public authority measures for the identification, protection, restoration, maintenance, management, and promotion of the architectural heritage. It is the duty of public authorities to establish, in the various stages of the decision-

making process, appropriate machinery for the supply of information, consultation and co-operation between the State, the regional and local authorities, cultural institutions and associations, and the public. Policies for disseminating information and fostering increased awareness among the public should be promoted, especially by the use of modern communication and promotion techniques. The Parties undertake to exchange information on their conservation policies and methods adopted and afford mutual technical assistance, similar to in (iv).

(vii)

The *Washington Charter* (1987) refers to historic towns and urban areas. A broader spectrum of the material and spiritual elements that should be preserved is provided: urban patterns as defined by lots and streets; relationships between buildings and green and open spaces; the formal appearance of buildings as defined by scale, size, style, construction, materials, colour and decoration; the relationship between the urban area and its surrounding setting, both natural and man-made; and various functions that the area has acquired over time.

It is emphasised that the conservation of historic cities and urban areas "concerns their residents first of all" and that their support is essential for the success of conservation plans, posited as the key instruments in UHM. Residents can be won over, firstly, by raising their awareness, and by encouraging their interest. To this end, the Charter recommends setting up information programmes for all residents, beginning with children of school age.

(viii)

The ELC (2000) places major emphasis on values that stem from the relationship between culture and nature. What matters is a "balanced and harmonious relationship between social needs, economic activity, and the environment". The document proposes national measures that should be undertaken in order to integrate landscape protection, management, and planning into regional and town planning policies and documents, including procedures for participation of all interested parties.

(ix)

The *Charter of Krakow* (2000) marks a major change in the attitude towards values. Heritage is defined as "the result of an identification with various associated moments in history and social-cultural contexts". According to The Charter, the UHM consists of appropriate regulation, making choices, and monitoring outcomes. It is necessary to identify risks, anticipate appropriate prevention systems, and create emergency plans of action. Related to the awareness of cultural diversity, the Charter acknowledges the plurality of values and interests, and, consequently, the possible conflicts between them. Accordingly, the document requires the creation of a communication structure that allows, in addition to specialists and administrators, the effective participation of inhabitants in the process. Nevertheless, experts are still given a leading, decision-making role in UHM since it is stated that greater legal and administrative actions should be taken, in order to ensure that conservation work is only undertaken by, or under the supervision of, conservation professionals.

(x)

Although not the first instrument to recognise the need for preserving intangible cultural property (iv, v), the IHC (2003) defines this concept in more detail. Protection is here accorded to "practices, representations, expressions, knowledge, skills – as well as the instruments, objects, artifacts and cultural spaces associated therewith – that communities, groups and, in some cases, individuals recognize as part of their cultural heritage". It is important to note that valued intangible attributes also comprise the material elements they are associated with. This means that a building, space, etc. can find itself protected solely by virtue of its connection with an intangible attribute. The IHC sees heritage as "the mainspring of cultural diversity and guarantee of sustainable development". The view made here is clear: conservation is not just about preserving the past; it is also a precondition for a sustainable future.

In accordance with this, it is the obligation of the authorities to ensure the widest possible participation of communities, groups and, where appropriate, individuals that create, maintain and transmit immaterial heritage, and to involve them actively in its management.

(xi)

The *Vienna Memorandum* introduces the term HUL, which refers to "ensembles of any group of buildings, structures, and open spaces, in their natural and ecological context, including archaeological and palaeontological sites, constituting human settlements in an urban environment over a relevant period of time, the cohesion and value of which are recognised from the archaeological, architectural, prehistoric, historic, scientific, aesthetic, socio-cultural or ecological point of view". This concept is composed of character-defining elements that also include: land uses and patterns, spatial organisation, visual relationships, topography and soils, vegetation, and all elements of the technical infrastructure, including small-scale objects and details of construction. The elements that form the identity include roofscapes, main visual axes, and building plots and types.

The ways and means for UHM should be formalised in a Management Plan, according to the Operational Guidelines for the Implementation of the World Heritage Convention.

Apart from requiring the participation of an interdisciplinary team of experts and professionals in the development of management plans for historic urban landscapes, the document also calls for the timely initiation of comprehensive public consultation as a measure specifically intended to promote participation.

(xii)

According to the definition given in the *Faro Convention* (2005), cultural heritage is "a group of resources inherited from the past which people identify, independently of ownership, as a reflection and expression of their constantly evolving values, beliefs, knowledge, and traditions". This underscores not just the existence of a multitude of values, but also their dynamic nature. Values alter over time and through processes of intercultural communication. The list of stakeholders mentioned in the Faro Convention includes

public authorities, experts, owners, investors, businesses, non-governmental organisations and civil society. The principles for UHM regarding co-operation and joint activity between stakeholders, as well as the formation of voluntary organisations, are underlined here in a similar manner to the previous documents (iv, vi).

(xiii)

This *Charter* (2008) defines principles on which the interpretation and presentation of cultural heritage sites should be based. Among the stakeholders that should be integrated into the formulation of programmes, the Charter mentions the multidisciplinary expertise of scholars, community members, conservation experts, governmental authorities, site managers and interpreters, tourism operators, and other professionals. Visitors and members of associated communities, as well as heritage professionals, should be involved in this evaluation process.

(xiv)

The *HUL Recommendation* (2011) complements the definition from (xi), making the concept of HUL clearer: "the urban area understood as the result of a historic layering of cultural and natural values and attributes, extending beyond the notion of 'historic centre' or 'ensemble' to include the broader urban context and its geographical setting". As landscape has no clear boundaries, the field of urban conservation is hereby expanded. Anything that contributes to this layered nature can be an attribute. Moreover, the very definition suggests that the historical process of stratification can be valued more highly than its final result. Heritage is seen as a social, cultural, and economic asset, and conservation is defined as a strategy for striking a balance between urban growth and quality of life.

The document elaborates on the responsibilities and duties of the various stakeholders, which include public and private entities at all levels – from local to international. This document defines communities, decision-makers, and professionals and managers as the key stakeholders. A number of management tools are offered, which are divided into civic engagement tools, knowledge and planning tools, regulatory systems, and financial tools. Civic engagement tools are particularly significant, as they are used to ensure participation in practice. These tools are seen as an integral part of urban governance dynamics and their objective is seen as the facilitation of inter-cultural dialogue by learning from communities about their histories, traditions, values, needs, and aspirations, and by facilitating mediation and negotiation between groups with conflicting interests. In the sphere of regulation, traditional and customary systems, as part of the immaterial heritage, should be recognised and reinforced as necessary.

(xv)

According to the *Valletta Principles* (2011), heritage ought to be viewed as a resource, a part of the urban ecosystem. The document provides a systematic overview of the attributes of historic cities and urban areas, which makes it easier to contrast them squarely with the values attributed to them. Good governance is highlighted as a precondition for the appropriate and successful conservation and sustainable development of historic cities and urban areas. The authorities' key task is to provide regulations that will permit coordination between different stakeholders. Urban planning procedures should allow sufficient time for participation. Multidisciplinary studies should lead to concrete proposals that can be taken up by political decision makers, and social and economic agents, as well as by residents.

DISCUSSION AND CONCLUSION

The review of documents bears out the assumption that conservation is, by its very nature, dynamic, and that its concepts and approaches call for continuous re-examination in line with changes to the political, social, economic context and accordingly, evolving values. The practical applicability of the urban conservation concept depends on how adjusted its principles are to modern-day needs, which entails alignment with the social, economic, and ecological components of sustainable development. In essence, understanding the evolution of UH concepts is fundamental to envisaging the opportunities and challenges of UHM in the future. The key aspects of the development of the UH and UHM concept during the period we have taken into consideration (1964-2011), are summarised in Figure 1.

A comparative analysis reveals three important changes in the UH concept, which will be further explained below:

1. introduction of new categories of heritage and broadening of the spectrum of elements to be conserved;
2. change in the concept of value and its relationship with objects of heritage: value is a relative and dynamic category, rather than fixed; objects are seen as intermediaries in the creation of value, rather than as symbols that stand for values; and
3. introduction of the term "*attribute*" to denote objects of conservation or bearers of value.

The UH concept has found a place in international doctrine with the spread of the perception that structures modest in scale have cultural value acquired over time (i), as manifested in the extension of the heritage concept from individual monuments to entire settings or groups of structures. However, the contemporary notion of UH comprises a whole range of attributes, tangible and intangible. The recognition that the value of UH was not based on the physical integrity of each individual structure, but rather on their pattern, the matrix they are constructed on, their typology, common structural and urban features, as well as on the social fabric, human activities and living traditions, and the character of the wider surroundings, represents a major step forward in the relationship between protection and development. This makes room for creativity and development, at the same time respecting continuity. Such flexibility is characteristic of the HUL concept (xii, xv), where anything that contributes to layering can be an attribute. In HUL, layers are not considered in isolation, rather, their mutual compatibility is highlighted as a particular criterion for assigning value. The evolution process is valued as an attribute unto itself in parallel with acknowledging the economic and ecological categories of value; all of these are characteristics of the landscape concept.

The definition of the contemporary heritage concept (xii) places at its heart the identification of the community, as a reflection of its relative and constantly evolving values. This means that the concept of value in UH is less linked to the past – to artistic and historic authenticity – and more to present needs.

The use of the term *attribute* (xiv, xv) is rather a formal aspect of change, but we find it significant because it materialises two previous aspects of change. It allows a clearer distinction to be made between *what* is protected and *why* it is protected. This is interpreted as a significant step in constructing the methodological foundation of UHM, as precise terminology is a precondition for effective communication between the stakeholders in UHM.

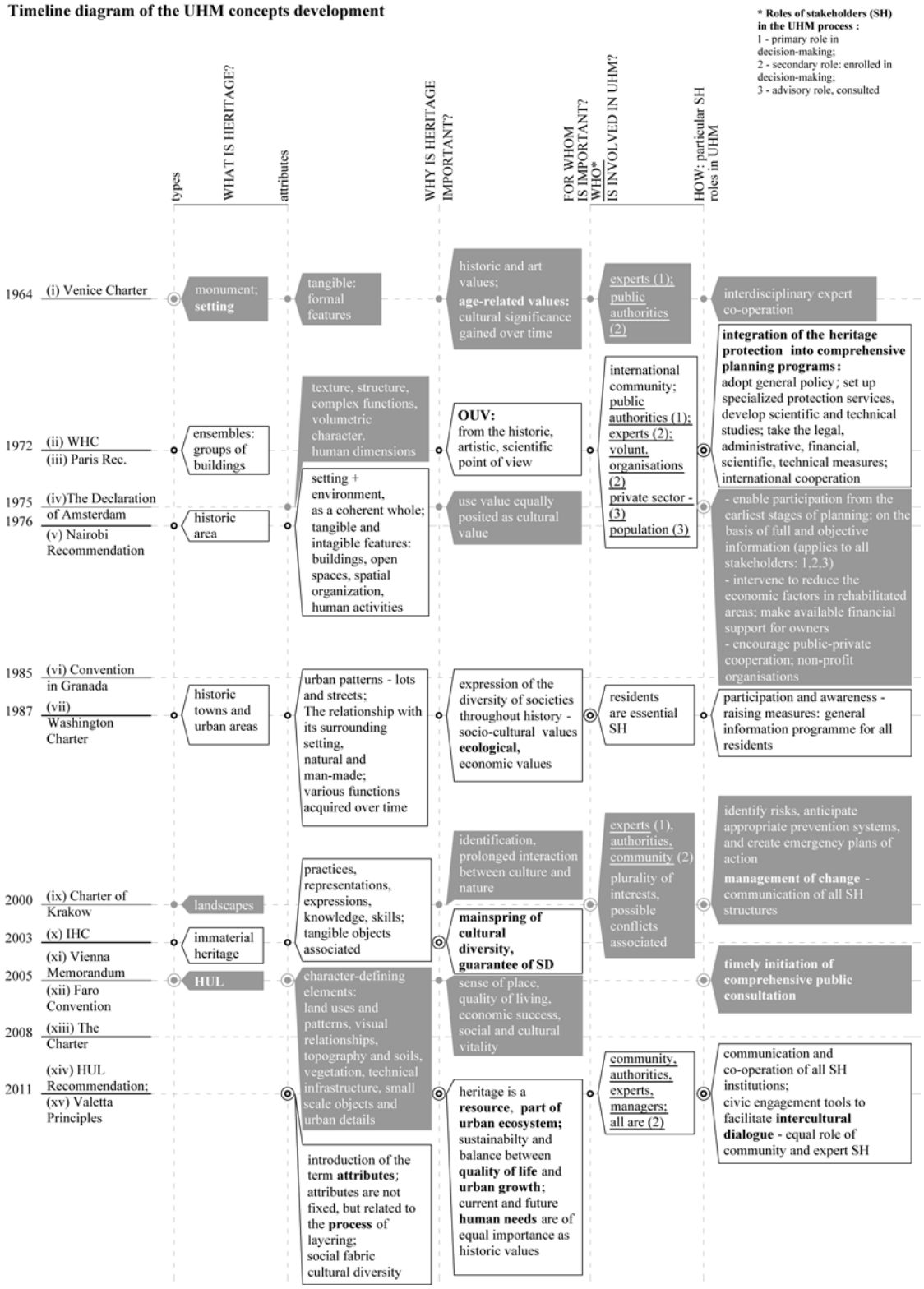

Figure 1. Timeline diagram of the UHM concepts development (Source: authors)

As with values and attributes, the evolution of views on the participation of stakeholders in conservation has resulted in the broadening of the range of entities that can potentially be involved, as well as in a closer definition of their responsibilities, powers, and rights. Considerations of social interest appear as early as the Venice Charter (i), but historic and artistic values of monuments are still accorded priority, and decision-making is wholly entrusted to experts. The call for involvement of the local population in UHM is documented for the first time in 1972 (iii). However, their role is merely advisory and action can only be in the interest of conservation, which is defined by experts, to whom all decision making is entrusted. In accordance with a deeper defence of the social and use aspects of UH, the importance of participation is magnified in 1975 (v). In UHM, because it is a matter of rehabilitating whole areas, the opinion of all stakeholders should be consulted, and the population should be actively involved, on the basis on full and objective information, at every stage of work, and decision making should be transparent. Facilitating the participation and cooperation of stakeholders is mentioned among the basic responsibilities of the public authorities in all later documents analysed. In most of them, still, it is clear that decision making lays in the hands of public authorities and institutions, while the role of community/population stays advisory (v, vii, viii).

From 2000 onwards, linked to the understanding of the relative and dynamic nature of the relationship between the notion of value and objects of UH, we notice some aspects of paradigm shift: Awareness of the cultural diversity, plurality of values and interests, and the possibility of conflicts between them (ix) reflects an important step towards meeting conservation ideals with practical realities. In UHM, preservation of the past physical state is taken over by change management. These are interpreted as major factors that have directed governance policies more towards participation and co-operation. The role of authorities in making decisions has weakened in parallel with the growth of its responsibility as mediator in inter-cultural dialogue between various stakeholders – the public sector, experts, the private sector, and the community – primarily users or residents. This is the view expressed in the two most recent documents analysed (xiv, xv).

Essential change refers to how heritage is understood: it is no longer seen solely as the physical result of a past creative process, but rather a resource of cultural diversity and creativity based on living traditions. Therefore, the social community should be the primary stakeholder in UHM and its role in safeguarding and creating new values is key.

Through elaboration of the responsibilities and competencies of various stakeholders, as well as of tools to achieve appropriate planning and management, where the claim for equality in participation is highlighted, the HUL approach provides a conceptual framework that can be used to establish national, regional, and local policies. Indeed, translating this concept to suit each context-specific case is the primary challenge.

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SERBIA AND THE DANUBE AREA IN THE LIGHT OF THE NEW URBAN AGENDA

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A new global framework to guide urban development and housing policy in the next twenty years – *the New Urban Agenda* was adopted at the end of the Habitat III Conference held in Quito, Ecuador. This time, the Agenda was tailored and adopted to the requirements of the Sustainable Development Goals and particularly to the requirements of Goal 11 – Make cities inclusive, safe, resilient and sustainable, established in 2015. The paper outlines the basic facts indicating the complexity of Agenda-making and the entire Habitat III process. It also points to the first controversies that have arisen around and after the conference in Quito and examines the importance attached, and the one that the Agenda might have in the future in the Danube countries, especially in Serbia, taking into account demographic trends, diversity in the level of the existing quality of urban life and challenges to be met.

***Key words*: NUA, Danube region, Serbia, sustainable urban development.**

INTRODUCTION

The third Habitat Conference held in Quito and a new global document dedicated to sustainable urban development which was adopted at that occasion show a still present ability of the Habitat initiative to identify new challenges and try to turn them into appropriate solutions or at least common objectives to be achieved in the next twenty years. Of the many ongoing processes, the one crucial for the Habitat initiative is the pace of urbanization, the share of urban population increasing from 37.9% at the time of the first conference in Vancouver (1976) to 45.1% at the time of the second conference in Istanbul (1996) and 54.5% at the time of the conference in Quito (2016). This is complemented by the following facts of equal importance: the cities that occupy only 2% of the total land mass generate 70% of GDP, but consume 60% of global energy and produce 70% of greenhouse gases as well as of the global waste (Habitat III, 2016d). Based on these benchmarks, and taking into account other global documents and commitments, the Habitat Program has produced *the New Urban Agenda* by using various forms of participation in a complex process, described in the first part. The other two chapters examine the influence and importance of the Agenda on two overlapping territories – the Danube macro-region and Serbia. Though small on the globe, these territories indicate the justifiability of the large number of topics included in the Agenda, and that some might not immediately associate with the European continent.

NEW URBAN AGENDA

The new global urban development framework – *New Urban Agenda* (NUA) was endorsed at the 68th Plenary Meeting of the 71st Session of the General Assembly of the UN, held on 23 December 2016 in New York. The process of the consolidation of the text started earlier that year, the Draft NUA being adopted at the UN Conference on Housing and Sustainable Urban Development (Habitat III) gathering 30,000 participants from 167 countries around nearly 1,000 different events and held from 17 to 20 October 2016 in Quito, Ecuador.

The preparation of both NUA and Habitat III Conference was a simultaneous, multi-layered endeavour arising from two resolutions of the UN General Assembly – Resolution 66/207 and Resolution 67/216 providing that: "The conference will result in a concise, focused, forward-looking and action-oriented outcome document, which shall reinvigorate the global commitment to and support for housing and sustainable urban development and the implementation of a *New Urban Agenda*". Resolution 67/216 also called for taking into account the principles and achievements of other relevant UN documents including the outcome document of the United Nations Conference on Sustainable Development – *The future we want*. In its paragraphs 245 to 251, the latter anticipated the definition of sustainable development goals

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that would build on the previous Millennium Development Goals whose time limit expired in 2015. After a year-long negotiation process, 17 Sustainable Development Goals were agreed and the UN member states approved them by adopting a new agenda – *Transforming our World: The 2030 Agenda for Sustainable Development*, Goal 11: Make cities inclusive, safe, resilient and sustainable (SDG 11) being finally a decisive framework for the NUA.

In addition to the achievements of other UN initiatives, the whole Habitat III process was based on two fundamental facts: that today more than half the world's population lives in cities and that this urban population is expected to nearly double by 2050, posing "massive sustainability challenges in terms of housing, infrastructure, basic services, food security, health, education, decent jobs, safety and natural resources, among others" (NUA, par. 2). The above-mentioned facts are complemented by those highlighted by SDG 11, to number only few: "95 per cent of urban expansion in the next decades will take place in developing world"; "828 million people live in slums today and the number keeps rising"; "the world's cities occupy just 3 per cent of the Earth's land, but account for 60-80 per cent of energy consumption and 75 per cent of carbon emissions"... Besides processing such disturbing information, the NUA preparatory process was also grounded in 22 Habitat III Issue Papers that were prepared by 10 Policy Units in six different areas and in all six official UN languages plus Portuguese,[2] as well as in National Reports for Habitat III Conference that analysed achievements and challenges in urban development between last two Habitat conferences. National Reports were provided by 107 UN member states and Palestine as an observer, though some were delivered, like in the case of Serbia, just before the Conference. The structure of the National Reports, determined by the UN Habitat, included six key topics, thirty issues and twelve indicators.[3] The NUA preparatory process was also supported by seven thematic and regional meetings, several informal intergovernmental meetings and hearings, three sessions of the Preparatory Committee and an on-line debate/forum.

From the first Zero Draft released on 6 May 2016, the NUA evolved into an even more concise final document that starts with the *Quito Declaration on Sustainable Cities and Human Settlements for All* underlying, among other things, that the NUA reaffirms global commitment to sustainable urban development "as a critical step for realizing sustainable development in an integrated and coordinated manner at the global, regional, national, sub-national and local levels, with the participation of all relevant actors" and that its implementation contributes "to the implementation and localization of the 2030 Agenda for Sustainable Development in an integrated manner", and to the achievement of its goals and targets, including Goal 11. The shared vision of "cities for all", strongly based on (fundamental) human rights, pictures cities that fulfil their social, economic, environmental

Figure 1. The New Urban Agenda,
(Source: http://habitat3.org/wp-content/uploads/NUA-English.pdf)

and territorial functions taking into account different individual situations (especially of those in need) with the aim of fostering prosperity and quality of life. The essential commitment of the *Quito Declaration* consists of working towards an urban paradigm shift, including reviewing and changing the way of planning and management of cities in order to strengthen their sustainability in all aspects. In its *Call for action*, the Declaration states that "the New Urban Agenda is universal in scope, participatory and people-centred, protects the planet and has a long-term vision, setting out priorities and actions at the global, regional, national, sub-national and local levels that Governments and other relevant stakeholders in every country can adopt based on their needs", paying particular attention to developing (including small island, landlocked and African states) and middle-income countries, as well as countries and territories in situations of (post-)conflict or under foreign occupation and countries affected by natural and human-made disasters.

The core part of the document is the *Quito implementation plan for the New Urban Agenda* that includes three chapters: *Transformative commitments* with interrelated commitments in three areas, *Effective implementation*, calling, among others, for the implementation of financial measures and the UN guidelines for decentralization and planning, stronger cooperation, establishment of legal and policy frameworks, coherence between sectoral goals and measures, stronger capacities, participation, long-term goals and flexibility in urban and territorial planning, inclusive housing policies, transport accessibility, transparency, etc. and the *Follow-up and review*. The *Plan* has already been put into practice, for the time being as a web platform to collect

[2] The full list can be consulted at: https://habitat3.org/the-new-urban-agenda/issue-papers

[3] Guidelines for the preparation of National Reports can be consulted at: https://unhabitat.org/wp-content/uploads/2014/07/Guidelines-and-Format-for-the-Preparation-of-National-Reports-On-Six-Key-Topics-Thirty-Issues-and-Twelve-Indicators.pdf, the reports provided being available at: https://habitat3.org/documents

voluntary commitments by various partners that "seek to be concrete actions, measurable and achievable, focused on implementation, and with great depth of information for future accountability and transparency". Paragraph 128 of the NUA calls for an "evidence-based and practical guidance for the implementation of the NUA" to be developed by the UN Habitat programme. However, every UN member state should take into consideration commitments and obligations arising from the Agenda and adapt them to its own context with the help of *International Guidelines on Decentralization and Access to Basic Services for All*, *International Guidelines on Urban and Territorial Planning* and other relevant tools, not to forget the importance of the *SDG 11 Monitoring Framework – a guide to assist national and local governments to monitor and report on SDG 11 Indicators*, provided in February 2016 .

Although quite a few (non-scientific) articles were circulated about the NUA so far, one can discern a few impressions. One is that the NUA and Habitat III address mainly the challenges facing developing cities, as stated by Richard Sennett, one of the authors of the *Quito Papers*[4] (Greenspan, 2016), and confirmed in the sentence: "While for some signing this Agenda may be a break-through, for some others this vision and principles are already considered as granted." (URBACT, 2016). Whereas admiring the entire preparatory process and especially its participatory methods and achievements, URBACT further argues if the universality of the NUA could be its weakness "as the lack of unconventional and creative spirit, operational plan, targets, indicators, and way of working makes it more like a wish list rather than an innovative and transformative agenda of the future." This, however, can be considered as a foregone conclusion firstly because it was difficult to reach the consensus on commitments although goals were unquestionably acceptable to all (Scruggs, 2016a), secondly, because indicators and the entire monitoring framework had already been developed for SDG 11 and thirdly because the implementation phase was at its very beginning, the review of the outcome of the Habitat III Conference and the implementation of the NUA being on the agenda of the 26th session of the Governing Council of the UN Habitat Programme held from 8 to 12 May 2017 in Nairobi, Kenya. The latest was immediately followed by the Second International Conference on National Urban Policy entitled *National Urban Policies: Implementing the SDGs and the New Urban Agenda* held from 15 to 18 May 2017 in Paris.

THE DANUBE REGION AND THE NUA

Out of 19 European countries that provided National Reports to the Habitat III Conference, eight came from countries under the auspices of the European Strategy for the Danube Region (EUSDR), namely Germany, Czech Republic, Austria, Slovenia, Croatia, Serbia, Romania and Moldova. Most of these documents were delivered just in time for the Quito conference, the exception being the timely prepared reports from Romania, Germany and the Czech Republic. In addition to differences in national priorities, needs and attitudes toward global guidelines and commitments, one of the reasons for the incoherent approach to a new global urban development framework among fourteen EUSDR countries certainly lies in a number of European initiatives that emerged and drew the attention of the European states, especially EU member states after the Habitat II Conference (URBACT, 2016). Yet, this history is shorter than the Habitat initiative, especially when taking into account different stages of the EU construction and enlargement as well as still insufficiently clear perspective of presently five non-EU Danube countries that are ineligible for many EU funded programmes including URBACT. Besides, occasional turning back to global frameworks should be considered as fruitful exercise aimed at reassessing previously set goals both in the national and in the wider regional context. The contribution of the eight Danube countries has firmly shown such determination.

Heterogeneous in many respects (Đorđević and Živanović, 2011), the Danube Region is certainly not one of those parts of Europe where the NUA "vision and principles are already considered as granted". This allegation is supported by the official representatives of the Danube countries in their speeches at the conference in Quito, by submitted National Reports as well as by the EUSDR itself. In this regard, it is clear that the objectives of the NUA have been already largely attained in the old EU member states of the Danube Region, and that these countries are now focusing on further improvement of the achieved quality of life as well as on addressing other (global) issues such as integration of immigrants/migrants, security, climate change and disaster risk reduction. On the other hand, the newer and non-EU member states are, generally speaking, still struggling with the provision of new and improvement of existing utilities and other infrastructure networks, implementation of polycentric development, housing quality and affordability and even poverty.

Provided National Reports present a particularly rich source of information based on which, with due respect for the dangers and shortcomings of generalization, it is possible to perform more than a few important conclusions. Firstly, while the level of the quality of life obviously decreases going from west to east, the awareness of the need to raise living standards through a critical review of the results achieved so far knows no direction. Secondly, the pressure of urbanization in the Danube countries is far less pronounced than in some other parts of the world, especially as, with the exception of Austria, all countries are faced with a lasting population decrease. The problem of aging is, however, omnipresent. In this context, the challenges of urbanization are typical only for the capital and several other big cities, while smaller cities and towns need support for the sustention of the existing services. Thirdly, while all Danube countries call for stronger decentralization, coordination, cooperation and public involvement and pay significant attention to land consumption, urban-rural linkages, elderly care, excessive share of car and road traffic in general, climate change and natural disasters as well as the use of renewable energy sources, these common features must, however, be put in different political and consequently

[4] *Quito Papers* is a new urban concept that emerged from a critical review of the Athens Charter and the observations of the composition of cities in developing countries that call for flexible solutions. The concept was developed by Joan Clos, Saskia Sassen, Richard Sennett and Ricky Burdett in parallel to the Habitat III process.

Figure 2. The Danube Region,
(Source: http://www.danube-region.eu/about/the-danube-region)

economic contexts as the situation in each individual Danube country is strongly influenced by the status towards and the level of achievement of the European Union objectives. Of importance to the Habitat process and the NUA in this regard is the fact that several Danube states are also post-conflict countries that, in addition to the political transition, have to overcome both physical and demographic consequences of armed conflicts, some of the latter having been spilled over into other Danube states. Fourthly, all countries except Germany, Austria and the Czech Republic report significant out-migration movements (including *brain drain* phenomenon) that reflect unfavourable working and living conditions in general, disturbing additionally the adverse demographic and consequently economic and social structure of their country of origin. The phenomenon is also strongly linked to the provision of adequate housing – the issue that makes a strong divide between Germany, Austria and the Czech Republic on one side, and the remaining countries on the other, where an often sudden privatization of state/publicly-owned housing stock during the 1990s raised private ownership to over 90% without providing adequate measures for proper maintenance and access to housing for all, including young professionals, but also different disadvantaged groups. Although Danube countries deny the existence of slums, they point to a specific sub-standard conditions and settlements in which Roma population lives. Last but not least, while the two most developed countries – Germany and Austria, also point to urban sprawl, this issue is much more pronounced in other Danube countries, with extreme examples of illegal and/or excessive construction in Croatia and Serbia. As a special curiosity which is not subject, at least not explicitly, to generalization, it is worth mentioning the courageous observation of the Czech Republic that the "dependence of the fundamental concepts of territorial development on political and other pressures" compromises their long-term sustainability!

During the Habitat III Conference, a document entitled *Macro-regional strategies in changing times - EUSBSR, EUSDR, EUSALP and EUSAIR headed towards the future together* was presented, a brief overview of the accomplishments of the EU Danube Strategy being given under two chapters: *Multi-level governance as part of a macro-regional strategy: the EUSDR civil society experience* and *Achievements in cooperation with the EU enlargement and neighbourhood countries*. While the first points to the vulnerable social situation of Roma community and highlights the success of the Danube Civil Society Forum (DCSF), the second emphasizes the importance of the EU macro-regional strategies for the Danube Region (EUSDR) and for the Adriatic and Ionian Region (EUSAIR) for allowing "participating enlargement and neighbourhood countries to take – and implement – decisions on an equal footing as the EU Member States" while pointing at the same time to the lack of capacity of certain non-EU countries in this regard. However, while pillars and priority areas of the EUSDR are fully in line with the issues considered under the NUA, the focus of this strategy is not on urban areas, urban issues being mainly observed through the prism of other realities of the Danube macro-region. The importance of cities is emphasized only in Priority Area 10 of the EUSDR Action plan *To Step Up Institutional Capacity and Cooperation*, the notion of "urban" in other Priority Areas being sporadically tackled in the context of negative impacts on the environment and landscape, then in relation to mobility, water quality and waste water treatment, climate change, competitiveness of rural areas, migration flows and demographic change, urban

revitalization, urban technologies as well as in the context of governance. The matter of housing is also not among the priorities of the EUSDR and its Action plan, the issue being challenged under the scope of energy efficiency, climate change, Roma communities, demographic and migration challenges, information flow and innovations. This situation, however, does not prevent the Danube countries to propose projects that would more directly address urban development and housing challenges, which were, among others, defined during the preparation of National Reports for the Habitat III Conference. The basic framework for proposing and implementing projects is, in the first place, the Danube Transnational Program with its four priority axes and 10 specific objectives, the examples of projects selected under the 1st Call being 3Smart, AgriGo4Cities, CHESTNUT, CityWalk, eGUTS, etc.

The EU has adopted the *Urban Agenda for the EU – Pact of Amsterdam* in May 2016. Its link to Habitat III is expressed in paragraph 8 saying that: "The Urban Agenda for the EU will contribute to the implementation of the UN 2030 Agenda for Sustainable Development, notably Goal 11 'Make cities inclusive, safe, resilient and sustainable' and the global 'New Urban Agenda' as part of the Habitat III process." The Agenda defines 12 Priority Themes whereas its implementation is principally foreseen through Thematic Partnerships. This Agenda, however, directly concerns only EU member states and its institutions leaving in this way five Danube countries aside. Yet, this might be seen as a good motive for these countries to stick more firmly to the implementation of the NUA, the needs and objectives addressed by this global framework usually better corresponding to their realities then the highly set objectives of the EU. In any case, it is about complementary processes that share the same final goal – dignified urban life of each and every citizen based on the respect of fundamental human rights.

SERBIA AND THE NUA

Bearing in mind its political status as well as its social and economic circumstances, Serbia should be equally interested in both the NUA and the relevant European frameworks, especially those concerning the Danube macro-region. When, however, we look at dynamics and track record in the process of accession to the European Union on the one hand, and presently insufficient interest of the state administration for the Habitat III initiative on the other, it becomes clear that the commitments arising from the European and global frameworks in the field of housing and urban development have to be taken more seriously.

Preparations for the Habitat III Conference were initiated during the Second Workshop of the project "Strengthening national capacities for sustainable housing in countries with economies in transition" – an UNDA-financed project implemented by the UNECE in partnership with the UN-Habitat from 2014 to 2017 in Armenia, Moldova, Serbia and Tajikistan, the workshop being held in November 2015 in Belgrade. The initiative was headed by the presentations on the Habitat III process and the Guidelines for the preparation of the National Report, while the main conclusions included proposals to establish a National Committee for the preparation of the report with the participation of all relevant stakeholders at both national and local level (through the Standing Conference of Towns and Municipalities – SCTM) and to consequently translate the achievements of this endeavour into the *National Urban Development Policy*. By reason of political circumstances, the National Committee was not set up, the Report being prepared at the last moment for its completion before the conference in Quito by the newly established Department for housing and architectural policies, public utilities and energy efficiency of the Ministry of Construction, Transport and Infrastructure. The Department also participated in the preparation of the NUA through contacts with the Ministry of Foreign Affairs, the Office of Habitat III as well as with individuals who took part in the Second Workshop of the UNDA financed project. Both activities, especially the preparation of the Report were supported by the experts of the SCTM. Such report is certainly neither a product of consensus among different interested parties, nor a result of a profound independent research. Still, its content is based on a number of laws, national strategic and other documents, statistics as well as other relevant sources, the Report being modelled on the example of other national contributions and in accordance with the Guidelines. The Report was first presented to the public during the Third Workshop of the UNDA project held from 31 January till 2 February 2017 in Belgrade. As for the Quito conference, Serbia did not have an official delegation at the event. Still, such delegation has been nominated for the Governing Council in Nairobi.

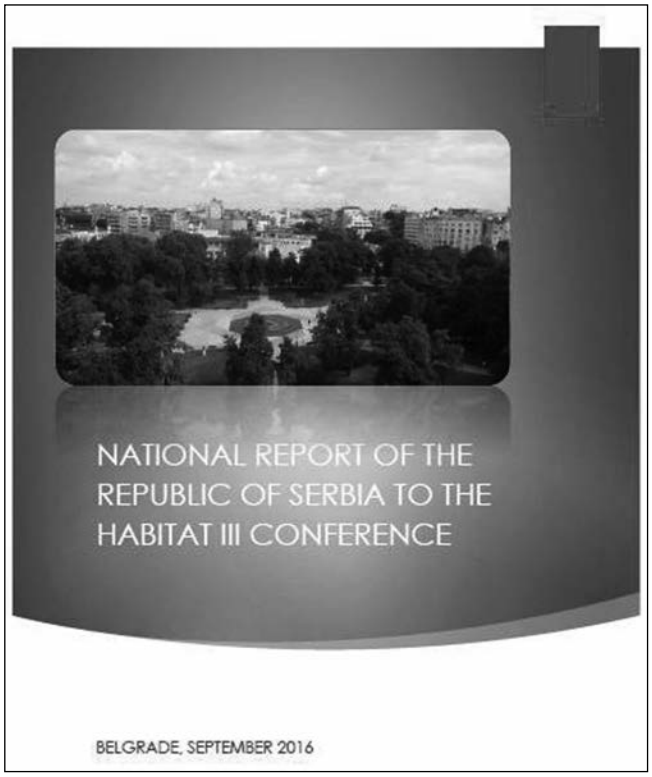

Figure 3. National Report of Serbia, (Source: https://habitat3.org/documents)

What would be the most important conclusions that could be derived from the National Report of Serbia? According to the Census 2011, the share of urban population is 59.44% while the main demographic and social challenges

are depopulation, aging (further connected to poverty, lack of institutional support and health care as well as housing vulnerability), unemployment and migration (including internal rural-urban migrations, refugees and internally-displaced persons, *brain drain* and asylum seekers) resulting in spatial and functional imbalances and illegal construction. There are also special challenges in this respect such as poverty (especially in rural areas and affecting older population), poor prospects of the younger population (unemployment rate – NEET of those aged 15–24 being 19.7%, *brain drain*, residential dependence, risky behaviour), gender equality (a large number of institutions but poor performance, unequal access to education and employment, parenting issues, violence, particularly unfavourable position of women from vulnerable social groups) and the improvement of the quality of life in suburban areas. As for planning, Serbia is fully covered by spatial plans at all territorial levels (national, regional and local) but urban plans are still missing, the Central Registry of planning documents being recently established. The principles defined by the Law are mainly declarative, and there is a need for their additional concretization at the level of urban planning. Sustainable urban development (including urban regeneration and activation of *brownfields*) is often confronted with the usurpation of agricultural land, illegal construction and *greenfield* investments. Concerning land management, the problem of illegal construction requires further consolidation of planning and land management through restitution, completion of cadastre and creation of geo-databases (in accordance with the EU Directive INSPIRE). On the other hand, the steps for the authorization of building permits have been unified and the permits are now electronic. As far as food production is concerned, sub-urban farming is recognized as a special form of agriculture. While organic farming is regulated by law, there is no such framework for integrated farming, urban farming/gardening being in an initial phase. Domination of bus transport is among the biggest urban mobility challenges. Cycling is seen as a mean of public transportation only in the northern part of the country, while pedestrians face many barriers everywhere. As for technical capacities, the institutional framework is in place, but problems arise in terms of personnel structure, ICT, law enforcement, unenviable financial and statutory position of public enterprises, short deadlines for the development and adoption of planning documents and transition from CAD to GIS technology. According to the 2015 progress report of the European Commission, Serbia is in an early stage of adjusting to environmental standards. Legal and institutional frameworks for risk management are in place but there is a need for better coordination between different services. The road network is the most developed transport network while the railroads are in poor condition, reconstruction and modernization projects taking place gradually. By reason of lacking bypasses, cities are the main bottlenecks. Air quality monitoring is uneven, industrial cities/agglomerations being the most polluted. Legal framework for planning brought many changes since 2003, however, it is in permanent reform, the same applying to laws on legalization. The decentralization process is slow. After several reforms of public finances, local governments today dispose with four types of income but they should switch to program budgeting. Local economic development has become local governments' jurisdiction only in 2007 and there are now LER offices in most local governments. Generally speaking, the major challenge is the informal economy wherefore there is a need for stronger support to entrepreneurship and inspection. Substandard (illegal) settlements are mainly inhabited by Roma population and are being treated through special programmes, the same being applied for meeting housing needs of refugees and IDPs. Social housing has a relatively new framework. The supply of fresh drinking water is better than sanitation. However, the losses are significant and the quality control must be improved. Only 16.8% of waste water is processed, and most cities do not have treatment plants while 30% of solid waste ends up in illegal dumps. Serbia is relatively rich in renewables, which accounted for 16% of total production in 2013. As for indicators, by reason of the lack of available data only half of them could be completed.

Presented observations and figures reflect the transitional character of Serbian society, which has so far invested a lot of effort in, above all, the creation of necessary legal and policy frameworks, but which still lacks the synchronization of adopted measures, and especially the mechanisms for their implementation. Frequent changes of political course and discourse and their repercussions on professional performance further complicate the issue. That is why the NUA and the UN Habitat guidelines for planning and decentralization should be seen as useful tools for the consolidation of the country's own capabilities in providing truly sustainable and long-term solutions.

Serbia had an active role in the preparation of the EUSDR and is responsible for coordinating activities within two priority areas: the Priority Area 1)b – To improve mobility and multimodality – Rail, road and air transport (together with Slovenia) and the Priority Area 7) To develop the knowledge society through research, education and information technologies (together with Slovakia). In addition to the EU Danube Strategy, other European documents of importance for the development of the Danube corridor and the Danube area in Serbia have also been identified (Maksin *et al.*, 2014). Serbia also often makes reference to the *Leipzig Charter on Sustainable European Cities* and is involved in reporting on its implementation. The country, however, belongs to those non-EU Danube countries with limited access to some European initiatives, including *the Urban Agenda for the EU*. At the crossroads of different initiatives and development benchmarks and opportunities, Serbia has every reason to be simultaneously guided by the European, Danube Region and global frameworks.

CONCLUSION

The NUA is not the first global document of this kind, its predecessor – *the Habitat Agenda* being adopted at the time of the second Habitat conference held in Istanbul in 1996. While this was to some extent helpful, the circumstances in which the two documents were prepared significantly differed. Brought four years ahead of the Millennium Development Goals, *the Habitat Agenda* was a longer and less specific document, whereas *the New Urban Agenda* is

closely linked to the Sustainable Development Goals agreed in 2015, and to SDG 11 in particular. Besides, in the period between the adoption of the two agendas the global urban population passed a historical threshold of 50%, whereas a new, and also historical agreement on climate change was reached in Paris, not to mention the other global processes that affected the quality of life in cities around the globe. This has all led to a key conclusion that "Our struggle for global sustainability will be won or lost in cities", as stressed by the former UN Secretary-General Ban Ki-moon at the 25th session of the UN-Habitat Governing Council and repeated many times at other occasions.

Although Europe is often a synonym for the high standard of living in global terms, both European continent and the European Union are characterized by numerous imbalances. This is particularly evident at the regional, as well as macro-regional level, which has occupied a special attention of the EU in recent years. The Danube Region is the biggest and the most heterogeneous of all macro-regions that have been subject to the EU integrated development strategies so far. It involves nine EU, two candidate, one potential candidate and two neighbouring countries. Though many EU urban development initiatives have taken place since the 1990s, even the most developed old EU member states have shown their interest in the Habitat III process. When coupled with the conclusions driven from the individual National Reports, it becomes clear that the NUA should play an important role, and that it can serve as a complementary framework for overcoming the differences in the achieved level of urban development between the Danube countries. This consequently concerns Serbia whose challenges, no matter how specific, can be recognized in the provisions of the NUA. In this respect, the NUA should be seen as an additional tool for the operationalization of the adopted legal and policy framework, but also for the definition and then implementation of the *National Urban Development Policy*, new Spatial Plan of the Republic of Serbia as well as other (spatial and urban) planning documents to be prepared and/or adopted after 2020.

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IN MEMORIAM

The Institute of Architecture and Urban & Spatial Planning of Serbia is sad to report the death of Dr. Nedjeljko Neđa Borovnica, architect, senior research fellow of the Institute. He died on the 12 December 2017. Dr. Borovnica was among the most prominent urban planners in Serbia, and a member of the Institute in the period of almost 40 years. Apart from acting in a large number of various scientific research, urban planning and design, housing and architectural design projects, he was also taking some managerial posts in the Institute, in sum for more than 15 years.

Dr. Borovnica was born in 1938 in the village of Donji Taškovac (Bosansko Grahovo in Bosnia and Herzegovina). After the end of the Second World War, in 1945 his family moved to a colonist village of Nakovo in the northern Banat (Vojvodina). After the completed grammar school in Kikinda, he was studying architecture at the Faculty of Architecture, University of Belgrade, in the period 1957-1962. Having took his academic degree from the Faculty, he joined the Institute of Architecture and Urban & Spatial Planning of Serbia, Belgrade, where he spent his entire work career, until his retirement in 2001.

Housing, urban planning and design, as well as some specific spatial planning issues, were the main professional fields of interest of Dr. Borovnica. For a long period, he was the leading researcher and designer in Serbia in the sphere of normatives for urban planning & design and housing. He realized a large number of housing-and-urban-settlements projects, mostly in Serbia, e.g., Bor, Paraćin, Knjaževac, Valjevo, Gornji Milanovac, Borča, Belgrade (Miljakovac), etc. For a period of 20 years or so, he worked on a number of urban development planning projects in Budva (Montenegro), and spatial-urban development projects for tourist areas in the coastal area of Montenegro, thereby developing his reputation as one of the most knowledgeable and influential urban planners there. In the second half of 1960s and first half of 1970s, he was engaged in the work on the so-called *I Element* and *III Element* of *the Spatial Plan of the Republic of Serbia*.

In sum, Dr. Borovnica produced some 30 urban planning & design and architectural projects, and some 20 urban and spatial plans. His specific professional ''sentiments'' went to his native village of Nakovo, where he did an urban scheme for the central part of Nakovo, in parallel with the architectural projects for a number of mostly public buildings. He was very proud of the Annual Award he got from Nakovo (2015), for his many contributions for the settlement development and public life of this village.

Another very important stream of professional engagement of Dr. Borovnica went to his participation at various urban and architectural competitions. Regarding this, he got a number of awards, perhaps the most important being the following ones:

- Preliminary ideas in Urban competition for the central areas of Belgrade (Slavija-Kalemegdan), in 1969, when he contributed with the best traffic scheme for the Kalemegdan-Sava urban tract;
- First prize at the International competition for the housing area of Gocław in Warsaw (as a member of the team, with Milan Lojanica, Predrag Cagić, and others), 1972; and
- First prize at the Competition for the housing settlement Cerak-Vinogradi (Belgrade), with architects Milenija Marušić and Darko Marušić, for which they were awarded in 1981 with the Octobar Award of Belgrade, the most prominent public recognition for their professional work.

In terms of scientific and professional research, Dr. Borovnica produced a large number of articles in scientific and professional journals, conferences, and other occasions. Also, he frequently acted as a member of professional juries, panels, commissions, review teams, etc. His Ph. D. thesis *Parametri za planiranje i projektovanje stanova u gradskim naseljima* (*Parameters for housing planning and design in urban settlements*), taken at the Faculty of Architecture, University of Belgrade, in 1988, and later published as a book, represented a crucial achievement and a demarcation line in this field. Another two thematic monographs of Dr. Borovnica also assumed high professional reputation, viz., *Prilagođavanje porodične stambene izgradnje morfološkim oblicima tla* (*Adjustment of the family housing to the terrain morphology*), 1973, and *Urbanistički modeli gradskog stanovanja u niskim grupacijama* (*Urban housing models for low buildings*), 1993.

Dr. Borovnica was member of a number of professional associations.

Among of his hobbies, three were most important for Dr. Borovnica: first, research and developing of physical models in the tradition of Platonian-Euclidean geometry; second, combing through the historical passages of the area of Bosansko Grahovo, the remote origin of his family, as well as through the history of Nakovo and its regional surroundings; and writing "anecdotes and notes" on the everyday work, life and actors in the Instutute, also internally published as *Institutske priče* (*The Tales from the Institute*).

The Institute of Architecture and Urban & Spatial Planning of Serbia, broader professional public, and especially those in the Institute and from other places who were closely co-working with Dr. Borovnica, will miss him for: his utmost humane and professional qualities; his witty and humorous stance under almost all circumstances, and towards almost all problems, however difficult and complex; his collegial support; and so on. *Only humor may save us from, otherwise illusive, self-centered understanding of our relevance and importance*, to rephrase here the words he was often repeating in the more recent period, in his "portly" and humorous way.

Miodrag Vujošević, Editor-in-Chief,
Institute of Architecture and Urban & Spatial Planning of Serbia, Belgrade

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