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## RECLAIMING PUBLIC OPEN SPACE WITHIN LOCALIZATION OF SUSTAINABLE DEVELOPMENT GOAL 11: THE PERSPECTIVE OF THE CITY OF NIŠ, SERBIA

### *Abstract*

Public space is a highlighted topic in the 2030 Agenda for Sustainable Development. The City of Niš has undertaken the process of Voluntary Local Review, and selected, among others, to report on the progress in achieving the Sustainable Development Goal 11, including the indicator related to public open space (POS). This paper explores the phenomenon of POS, with a particular focus on residential areas. Global practices are discussed to provide background on the issue, along with some particularities of Serbian context involving legislative and planning treatment of POS. Current state of POS is explored in the territory of the City of Niš, as well as exploitation and maintenance challenges. These findings are used to establish context-specific POS typology and discuss potential pathways towards inclusive, safe, resilient and sustainable local communities.

*Keywords:* public open space, typology, legislation, revitalization

## РЕИНТЕГРИСАЊЕ ЈАВНОГ ОТВОРЕНОГ ПРОСТОРА У ОКВИРУ ЛОКАЛИЗАЦИЈЕ ЦИЉА ОДРЖИВОГ РАЗВОЈА 11: ПЕРСПЕКТИВА ГРАДА НИША, СРБИЈА

### *Сажетак*

Јавни простор је истакнута тема у Агенди за одрживи развој 2030. Град Ниш је покренуо процес израде Добровољног локалног извјештаја и изабрао, између осталог, да извјештава о напретку у постизању Циља одрживог развоја 11, укључујући индикатор који је везан за јавни отворени простор (ЈОП). Овај рад истражује феномен ЈОП-а, са посебним фокусом на стамбена подручја. Разматране су глобалне праксе како би се стекао увид у знања о овом питању, заједно са неким специфичностима српског контекста које укључују законодавни и плански третман ЈОП-а. Истражује се тренутно стање ЈОП-а на територији града Ниша, као и изазови у експлоатацији и одржавању. Резултати се користе за дефинисање специфичне типологије ПОС-а и разматрање потенцијалних праваца ка инклузивним, сигурним, отпорним и одрживим локалним заједницама.

*Кључне ријечи:* јавни отворени простор, типологија, законодавство, ревитализација

## 1. INTRODUCTION

From the beginning of the 1990's of the last century, and especially in the early transition period until the 2000's, the process of continuous degradation of existing public open space (from here on, POS) has been going on in Serbia, similar to other post-socialist cities [1], [2]. This period was also characterized by a complete absence of providing and furnishing new public spaces, within new developments. In turbulent times marked by the overall poverty, local administrations focused only on the necessary activities of maintaining the traffic and technical infrastructure, which were necessary for the functioning of cities.

Nowadays, 30 years later, the situation has not much improved. POS still does not have an important position in regulations, nor in strategic and urban plans, and its development potential is not recognized nor efficiently used in Serbian cities. Previous laws on the topic of planning, design and construction only determined boundaries between the so-called "public land" and "other land", without the obligation to establish norms for positioning, structuring, shaping and constructing POSs. The current Law on Planning and Construction recognizes "public use", "public interest" and "areas of public use", but not the terms "public space" nor "public open space". Additionally, the UN-Habitat definition of POS is not compatible with Serbian legislation, which often results in a variety of interpretations of the POS concept. This is a challenge that needs to be overcome, so that the data could be compared among urban settlements within the Republic of Serbia, and at the international level [3].

Intensive or uncontrolled urbanization in post-socialist development patterns in Niš led to urban decay, or even complete disappearance of POSs [4]. Some implications upon the urban landscape were obvious immediately after the first post-socialist residential developments were completed, such as infrastructure and parking overload, decrease in greenery and unattractive urban landscape, while others were grasped much later, like the negative effects of reducing POS on the environment and microclimate [5], involving air pollution, heat island effect, flooding risk, etc., or the implications on peoples' health due to the lack of shared spaces for outdoor activities and contact with nature. Current issues in maintaining and providing POS are particularly visible at the neighborhood level, in residential areas of the City of Niš.

In post-socialist cities such as Niš, POS is one of the key elements of urban structure for advancing the Sustainable Development Goals (SDGs) at the local level. Globally, United Nations member States work closely with local and regional governments on actively localizing the 2030 Agenda for Sustainable Development and the implementation of the SDGs that are outlined in this document. The 2030 Agenda encourages member States to perform regular and inclusive reviews of progress at the national and sub-national levels, and calls on major groups and other stakeholders, including local authorities, to report on their contribution to the implementation of the Agenda [6]. Consequently, local and regional governments are increasingly engaging in sub-national reviews of SDG implementation, also called Voluntary Local Reviews (VLRs), thereby strengthening the overall SDG implementation [7]. In July 2023, the City of Niš, Serbia has begun creating its first VLR with the support of the United Nations Human Settlements Program, within the project *Voluntary Local Reviews: Evidence for Greener, Resilient and Sustainable Urban Recovery in Eastern European and Central Asian Countries in Transition*. This also the first VLR in Serbia and the third in this region. Partners in the implementation of the project are: United Nations Human Settlements Program (UN-Habitat), United Nations Economic Commission for Europe (UNECE), United Nations Department for Economic and Social Affairs (UNDESA) and United Cities Local Governments (UCLG). Aside from Niš, the project also involves the following cities: Tbilisi (Georgia), Bishkek (Kyrgyzstan) and Dushanbe (Tajikistan). The VLR of the City of Niš is being developed until the mid 2024, and is to be published and officially launched afterwards<sup>1</sup>.

Within the process undertaking this voluntary local review, the City of Niš initially selected a number of SDGs, Targets and Indicators to be reviewed, in order to report on the progress in achieving the SDGs in its territory. Given the significance of POS for creating inclusive, safe, resilient and sustainable cities as a context-important topic for Niš, one of the selected indicators

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<sup>1</sup> The Voluntary Local Review of the City of Niš is prepared by the Local Consultant Milena Dinić Branković, with the support of the Local-Regional Coordinator Tanja Obradović, the National Coordinator Siniša Trkulja, and the newly established Monitoring Department of the City of Niš. The VLR is under development as part of the UNDA Tranche 14 project implemented by the United Nations Human Settlements Programme, United Nations Economic Commission for Europe, United Nations Department of Economic and Social Affairs and United Cities and Local Governments.

involves *Indicator 11.7.1. Average share of the built-up area of cities that is open space for public use for all, by sex, age and persons with disabilities.*

It is the standpoint of this research that POSs are quite underused in the City of Niš, as well as in the entire country. This issue requires not only comprehensive review of POS treatment in legislative and planning framework, but also a shift in the perception of urban dwellers on POS as a valuable resource for the quality of urban living. In line with the framing issue, the main goals of this paper are: (1) to investigate the legislative and planning treatment of POS at the national and local level, and (2) to explore the current state (size, use, coverage, degree of publicity, morphology) and typologies of POS in the territory of the City of Niš. Additionally, the paper acknowledges local efforts of the City of Niš in advancing the SDG 11 that relates to public space, to show how far the City of Niš has come on the way towards inclusive, safe, resilient and sustainable local communities.

## 2. MATERIALS AND METHODS

This paper explores the phenomenon of POS, with a particular focus on POS in residential areas. For this purpose, the research uses review of relevant literature, legislative and planning documents, and empirical data obtained from various sources. Methodological framework is conceptualized on description, analysis and synthesis.

By exploring legislative documents at the national level, the shortcomings of POS treatment in legislation are identified, which are reflected in local planning documents, and consequently, in the provision and maintenance of POSs at the local level. These are further determined in the review of two standing planning documents of the City of Niš, and analysis of their implications: General Urban Plan of Niš 2010-2025 [8] and Plan of General Regulation of the City Municipality Medijana [9]. Analysis is firstly performed for POSs in the territory of the City of Niš, and further elaborated for POSs in residential areas within the City Municipality Medijana.

POS in residential areas is explored in more detail given its significant urban role, extensive surface area and underused potential in the City of Niš. The City Municipality Medijana was selected as a research polygon for the analysis of residential POS because it is the most urbanized of all City Municipalities, with compact urban form and extremely high population density of 7,768 inhabitants per hectare<sup>2</sup>. Additionally, in the City Municipality Medijana there are more than 100 registered plots of open space within multi-family housing areas. However, not all of the listed open spaces are indeed POSs in reality – even though they have potential, they do not have recreational use, are devastated and inadequately used, or their urban form does not foster access to the general public. Therefore, size, use, coverage, publicity level and morphological characteristics of urban blocks containing potential POSs in the City Municipality Medijana are investigated next, to determine their prospects to serve as public spaces and establish POS typology. In order to best reflect the context-suited typology of POSs, particular study sites for detailed POS analysis in the City Municipality Medijana were chosen to include POSs of various sizes, conceptualized within different urban forms, and with various functions of space. Current state and characteristics of POSs are determined on the basis of field observations, planning documents, satellite photo images and available data from Real Estate Cadastre.

The synthesis of study findings is then used to discuss the established challenges in legislative treatment, exploitation and maintenance of POS in the City of Niš, to overview the progress of the City in achieving the SDG 11 related to POS, and to explore potential pathways towards sustainable development of POS.

## 3. BACKGROUND

In order to understand the research context, background part of the paper explores the notions of *public space* and *open public space* in international context, in line with its significance for the overall quality of urban life. It further singles out some particularities of Serbian context related to the phenomenon of POS.

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<sup>2</sup> This is significantly higher compared to the rest of the City territory (418 in/ha).

### 3.1. PUBLIC SPACE IN THE AGENDA 2030

Public space is a highlighted topic within the framework of the 2030 Agenda for Sustainable Development, which outlines 17 SDGs. Particularly, SDG 11 and its Target 7 focus on public space: “By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, particularly for women and children, older persons and persons with disabilities” [7]. The share of the built-up area of cities that is open space for public use is being monitored via Indicator 11.7.1. in order to assess the progress that cities are making towards achieving this Target. At the global level, 3 in 4 cities have less than 20% of their area dedicated public spaces and streets, which is much lower than the target of 45-50% [7].

The Global Public Space toolkit, which was developed by the UN-Habitat, defines Public Space as all places that are publicly owned or of public use, accessible and enjoyable by all, for free and without a profit motive [10]. Accessibility of public space as a concept implies unrestricted access to space for all user categories, regardless of their age, gender, ethnicity, socio-economic status or disability status [11]. Therefore, it should be perceived as a core component of sustainable urban development. In its widest sense, “public space” is defined as the meeting or gathering places that exist outside the home and workplace that are generally accessible by members of the public, and which foster resident interaction and opportunities for contact and proximity [11]. This definition implies a higher level of community interaction, and places a focus on public involvement rather than public ownership or stewardship. Such public space is categorized into streets, open spaces and public facilities. However, for the purpose of monitoring and reporting on indicator 11.7.1, public space is defined as all places of public use, accessible by all, and comprises open public space, which is in the focus of this research, and streets.

“Open public space” is any open piece of land that is undeveloped or land with no buildings (or other built structures) that is accessible to the public without charge, and provides recreational areas for residents and helps to enhance the beauty and environmental quality of neighborhoods [11]. According to the [12], open public space broadly includes parks, gardens, playgrounds, public beaches, riverbanks and waterfronts. These spaces are available to all without charge and are usually publicly owned and maintained.

In the global discourse on the topic of open public spaces, it is acknowledged that different cities have different types of these spaces, with variations in both size and typology suited to the local context. Two general classifications of open public space – by size and typology of the space – are presented here as relevant for this research.

Based on their *size and coverage area*, [12] establishes the following hierarchy of open public spaces:

- 1. Local/pocket open public spaces – these are small parklets that service the recreation needs of the immediate residential population within a walking distance or 400 meters (5-minute walk). Their average areas range from 0.03 to 0.04 hectares and are often used for recreation purposes. In some places, these may include small areas of nature space.
- 2. Neighborhood public open spaces – these are larger spaces which serve the recreational and social needs of a community. Their areas range from 0.04 and 0.4 hectares, and can easily be accessed within 400 meters walking distances from households. They can accommodate a variety of activities, such as recreation, sporting, and natural features conservation.
- 3. District/city open spaces or city open spaces – these spaces are mainly designed to provide for organized formal sport. They include substantial recreation areas and some nature spaces. They serve several neighborhoods with players and visitors traveling from surrounding districts. The size of the spaces ranges from 0.4 to 10 hectares, and are designed to serve populations within 800 meters (10-minute walking distance).
- 4. Regional open space/Larger city parks – these are substantial facilities for organized sport, play, social interaction, relaxation and enjoyment of nature. They serve one or more geographical or social regions and are likely to attract visitors from outside any one local government area. Their areas range between 10 and 50 hectares.
- 5. National/metropolitan open public spaces – these are large spaces whose areas range from 50 and 200 hectares. They support concurrent uses, and contain such services as recreational, sporting, and basic amenities.

*Typology* of open public space is established in line with the function of the space. According to the SDG Indicator Metadata Repository, various types of open public space include [11]: green public

areas, riparian reserves, parks and urban forests, playground, square, plazas, waterfronts, sports field, community gardens, parklets and pocket parks.

### 3.2. LEGISLATIVE CONTEXT IN SERBIA

In Serbian legislation, public space is associated with “areas of public use”, implying streets, parks, squares and other publicly owned areas [13]. Therefore, “areas of public use” are limited only to spaces that are in public ownership. Other types of land, which also serve as POS, are not reviewed at all. This is the case with undeveloped land and green areas in multi-family residential zones that are often located on “other land” (non-public land).

The ambiguity concerning the regime of undeveloped land and green areas surrounding buildings in residential zones is particularly visible in inherited housing estates from the socialist past. In the Real Estate Cadastre of the Republic of Serbia, it is very common for a residential building to be located on a cadastral plot of the same size as that building, with no regard to the regime and use of the land in the immediate surroundings of the buildings [14]. Such treatment of undeveloped space causes many problems in exploitation, because it remains unclear who the land belongs to, who has the right to use it, and who is obliged to maintain the space. It may also occur that the cadastral plot intended for POS also contains multi-family residential buildings, because the process of parcellation has not been completed, i.e. the land under the structures has not been segregated for residential use in Real Estate Cadastre.

The matter is further complicated in residential urban blocks, where it is defined by Law that the land surrounding the buildings is “land that is in public use”, so that it could serve the buildings within that residential block [13]. It should be noted that this formulation of “land in public use” enables different forms of ownership. The Law particularly highlights that the land should be in public use for urban blocks that were designed in an open system of spatial organization. In urban blocks that were developed in an enclosed or semi-enclosed system of spatial organization pre-dating and during the socialist period, which are to be found mostly in central city zone, the land may also be in public or mixed ownership. However, in practice the spatial organization and the enclosed form of urban block suggest limited access to the general public, and implicate the shared use of the inner residential courtyards only by the residents of the buildings within that particular housing complex.

Existing legislative framework and modalities of land management do not provide sufficient basis for the implementation of POS as quality spaces accessible to all, into the practice of urban planning and design in Serbia. Given the vagueness of terminology in Serbia, for the purpose of this research the term Public Open Space (POS) will be used, referring to quality open space having recreational use and excluding streets. Such POS implies open space regardless of its ownership status, which is intended for public use and accessible to all users.

## 4. TOWARDS RECLAIMING POS IN THE CITY OF NIŠ

### 4.1. OVERVIEW ON POS

The surface area of POS in the City of Niš cannot be determined in line with international standards due to different methodologies and lack of consistent data. Some research was however performed at the national level, resulting in data that cannot be compared to other cities beyond Serbia<sup>3</sup>. Total surface of land allocated to streets alone or POS alone is not available.

According to the data from the Urban indicators database of UN-Habitat [15], the average share of the built-up area of the City of Niš that is open space for public use for all for the year 2020 is presented in Figure 1. The low share of POS of 3.7% (excluding streets) in the built-up area of Niš also implicates poor access to these spaces to a significant share of Niš population. The same source lists that only 57.2% of Niš population has access to POSs.

The City of Niš arranges and maintains POSs that are “areas of public use”. Apart from the street network, these are the following POSs: parks, forest parks, squares, pedestrian streets and quay along

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<sup>3</sup> Based on a survey conducted in February 2023 performed by the Standing Conference of Towns and Municipalities, the share of POS in the construction area of Niš (plazas, squares, parks and other open spaces, including streets) is estimated at 25%. This value refers to POS in the construction area, which is developed or undeveloped urban land zoned for construction.

Nišava River. Total park area in Niš built-up area amounts to 49 hectares, and the largest city parks are Čair Park and the Park in Tvrđava. There are also two forest parks in the built-up area of the City: Bubanj Forest Park (40 hectares) in the urban area of Niš, and Koritnik Forest Park (40 hectares) in the urban area of Niška Banja. Other forest parks are located outside the built-up area. In the area of the General Urban Plan [8], which encompasses a much larger territory than the built-up area, the largest part of green areas consists of protective greenery and forests with forest land, while the share of parks and recreational areas that are available to citizens is quite small [16]. The share of green areas of only 1.2 m<sup>2</sup> of greenery per inhabitant [17] indicates not only that green areas are insufficiently represented on the territory of the City, but also corroborates low representation of POSs that accommodate these green areas. There are also several city squares, and the largest is King Milan Square in central city zone. The two most important pedestrian streets, Obrenovićeveva Street and Kazandžijsko Sokače, are located in the central zone.

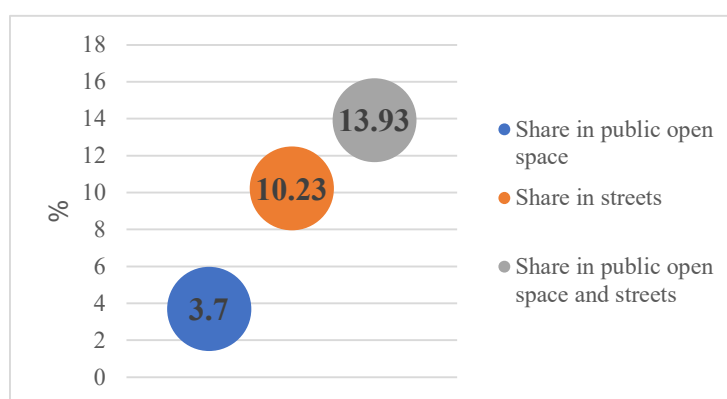


Figure 1. Average share of the built-up area of the City of Niš in 2020 that is open space for public use. Source: <https://data.unhabitat.org/datasets/GUO-UN-Habitat::11-7-1-provision-and-access-to-open-spaces-in-cities-2020/explore>

#### 4.1.2. POS IN RESIDENTIAL AREAS IN THE CITY MUNICIPALITY MEDIJANA

POS that is located in residential zones of multi-family housing represents a crucial issue for the City of Niš nowadays, particularly regarding the legislative treatment, exploitation and management of these spaces. Post-socialist densification of a significant portion of urban fabric has placed POS under the spotlight, thereby becoming a polygon of interest for multiple stakeholders - local communities, planning professionals, developers and decision makers.

Problems in the functioning of POSs adjacent to multi-family housing in Niš were recognized by relevant institutions more than a decade ago, and the City of Niš started some activities in addressing this issue. The first attempt involved identifying POSs within official planning documents, which is illustrated in the case of the City Municipality Medijana (Figure 2). Also, this map presents other categories of public space aside from POS: streets and public facilities, thus illustrating the complexity of the topic of public space. Areas of public use in this figure involve both POS with recreational use and public facilities, such as hospitals, schools, public buildings etc.

The Plan adopted for the City Municipality Medijana in 2015 [9] acknowledged some of the spaces that are, according to the Law, “land in public use that serves the buildings within that residential block”. Unfortunately, and due the overall complexity of the phenomenon of public space and rather confusing terminology, in the Plan itself these areas were named “areas of public use that serve the buildings within that residential block”, which is conflicting with the Law. POS in the vicinity of multi-family buildings is not area of public use, because housing cannot be considered a public use, even though this land might be in public ownership. This led to additional confusion regarding POSs in residential areas, and conflicts with the residents exploiting these spaces. However, it can be assumed that the intent of the Plan was to identify the areas surrounding residential buildings that could serve the as POS, and which are necessary for the normal functioning of residential land use. Regarding the land in public use that serves the buildings within that residential block, additional efforts by the City of Niš administration were made for the territory of City Municipality Medijana, beyond the classification illustrated in this Plan. With the initiative of the Chief Urban Planner in 2021, the City has begun the process of recording POSs in multi-family residential zones in its territory. So far, a comprehensive list of cadastral plots with open spaces in residential zones is completed for the City Municipality Medijana. This list only involves “land in public use that serves



the buildings within that residential block”, and excludes the street network and “areas of public use” (parks, squares, etc.).

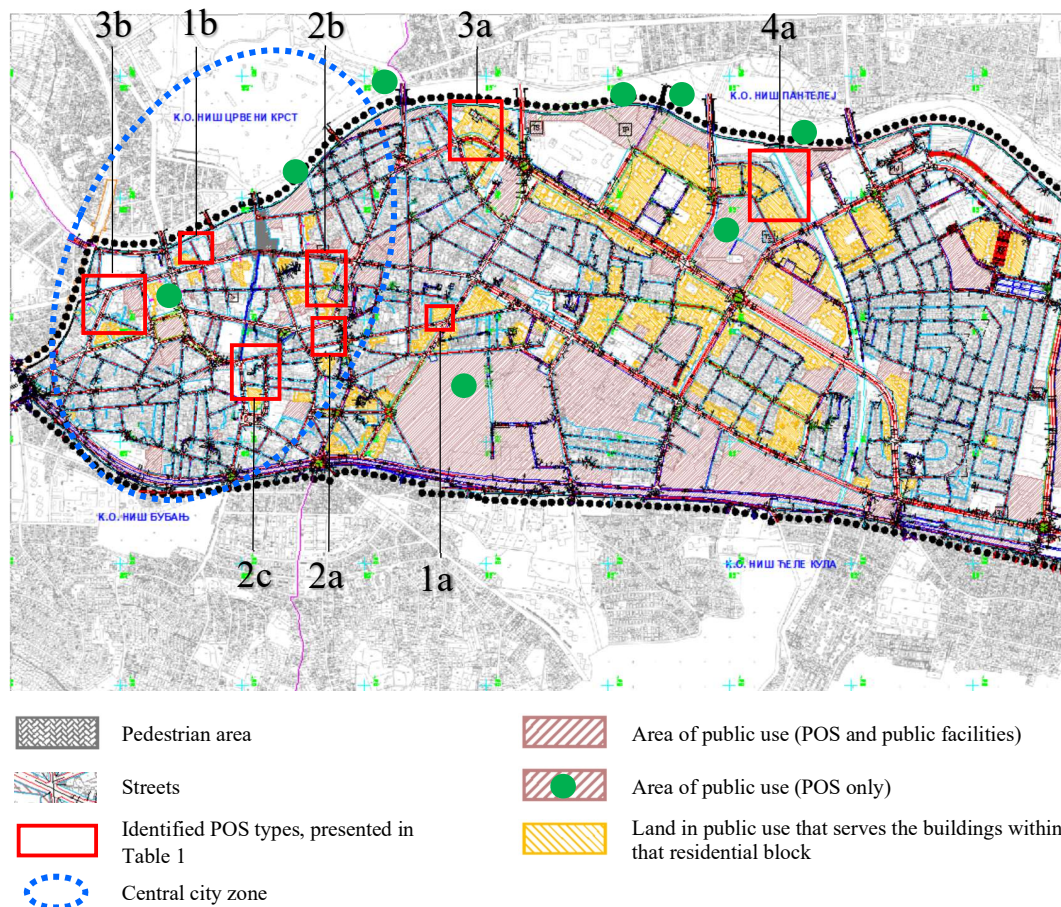


Figure 2. POSs within the Plan of General Regulation of the City Municipality Medijana, 2015 - Graphic: Traffic Solution and Areas of Public Use. Source: Own research based on the Plan, <http://www.eservis.ni.rs/urbanistickiprojekti/>

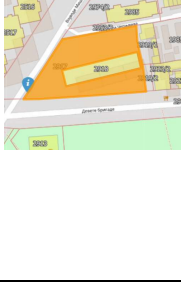

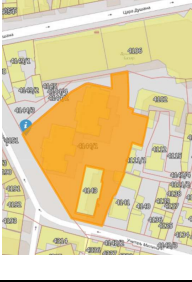

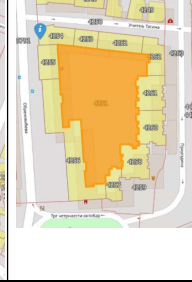
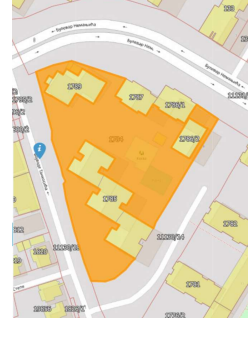
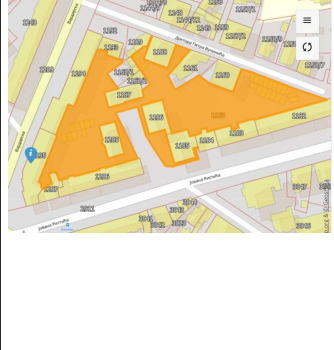
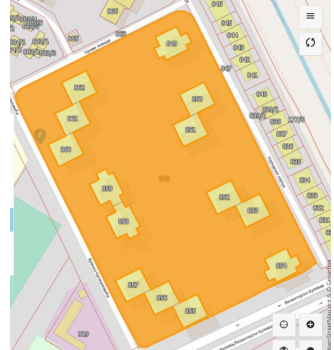
There are 124 such plots covering 76.85 hectares of land in the City Municipality Medijana<sup>4</sup>. The identified plots are of various sizes, with different urban forms, different character, various right of use and different share of green areas. Regarding the ownership, the plots are owned by the City or State, or have mixed ownership, and are located within different land uses. All analyzed plots designated for land in public use are actually undeveloped, except for the plot 2a where two residential buildings are also a part of the plot, because the process of parcellation is not yet completed.

Important features of the open spaces that are indeed POSs involve recreational and social use, easy access and public character. This is not case with all of the identified plots that are zoned as “land in public use that serves the buildings within that residential block”. Given the fact that POS features are dependent on size, use, coverage, degree of publicity and form of space, it is necessary to evaluate spatial, functional and morphological characteristics of that residential block, and establish which of the open spaces have to potential to serve as public space, and to what extent.

Having in mind the overall general classifications of POS based on size and function of the space established by the UN-Habitat, a context-specific typology of residential POSs in the territory of City Municipality Medijana is conceptualized. This classification is based on the criteria that were identified as relevant for the urban fabric of the City of Niš, and involve size and coverage, urban form and function of residential POS. The classification is presented in Table 1.

<sup>4</sup> Data obtained from the Office of the Chief Urban Planner of the City of Niš, 2022.

Table 1. Overview on identified POS types in residential zones in City Municipality Medijana.  
Source: Own research based on data from the Office of the Chief Urban Planner

Type	Type 1 - Local POS		Type 2 - Community POS		
Urban form	a. POS in open system	b. Semi-enclosed residential courtyard	a. POS in open system	b. Semi-enclosed residential courtyard	c. Enclosed residential courtyard
Map					
Plot No	2917	1063	4144/1	840/3	4251
Plot size	1,830 m <sup>2</sup>	1,690 m <sup>2</sup>	3,809 m <sup>2</sup>	4,342 m <sup>2</sup>	3,205 m <sup>2</sup>
Ownership	State	State	State, City	Mixed (State, City, Private)	State
Land use	Medium-density housing in urban area	Business-residential zone	High-density housing in urban area	Medium-density housing in urban area	High-density housing in urban area
POS function	Green public areas, parking	Green public areas, parking	Green public areas, parking, sitting area	Green public areas, parking, sport field	Green public areas, parking, sitting area, sport field
Type	Type 3 – Neighborhood Unit POS		Type 4 - Residential Complex POS		
Urban form	a. POS in open system	b. Semi-enclosed residential courtyard	a. POS in open system		
Map					
Plot No	1784	1163	848		
Plot size	5,896 m <sup>2</sup>	5,276 m <sup>2</sup>	17,990 m <sup>2</sup>		
Ownership	State	City	City		
Land use	High-density housing in urban area	Medium-density housing in urban area	Medium-density housing in urban area		
POS function	Green public areas, parking, sitting area, sport field, playground	Green public areas, parking, sitting area, sport field, square	Green public areas, parking, sitting area, sport field, playground		

**Size and coverage.** Based on their individual sizes and catchment area, i.e. how far a user might travel to visit them, residential POS in the City Municipality Medijana can be classified into four categories: 1) Local POS, 2) Community POS, 3) Neighborhood Unit POS and 4) Residential Complex POS. Pocket open spaces are also present in the analyzed area, but were not mapped as a specific POS type. These local pocket parks are often a part of the existing larger plot, but can be identified as a distinctive spatial unit within that plot. Most often this refers to open space in-between



the building and the street, but can also be found as distinctive and arranged “nooks” adjacent to the buildings, or may include small areas of green space.

*Local POS* is the open space in the immediate vicinity of the apartment (50-100 m; 2-minute walk), mostly used by a local group of residents of that particular building only, from a couple of hundred up to 1.000 residents. *Community POS* is a shared space where social interactions and recreational activities take place at the level of a smaller community or urban block (up to 2.000 residents), in close proximity to the apartment (150-200 m; 3-minute walk)<sup>5</sup>. *Neighborhood Unit POS* is intended for a wider group of users (5.000 -8.000 users), accommodates a variety of activities and is easily accessed within a short walking distance (400 m; 5-minute walk)<sup>6</sup>. *Residential Complex POS* is a space that includes significant recreation areas and lush nature space, serves several communities (up to 15.000 users) within a larger residential zone (600 m; 8-minute walk).

Even though some of the plots in Medijana territory are larger in size than 10.000 hectares, which is the case with the identified POS in an open system of spatial organization (marked 4a), these areas surrounding residential buildings cannot be considered city or regional open space. This is primarily due to their dominant land use (residential), but also their spatial organization and fragmentation of space into smaller units. Therefore, this POS type is classified as Residential Complex POS.

**Urban form.** Urban form and morphology of a neighborhood significantly affect the use and maintenance of POS. In the urban territory of City Municipality Medijana, three types of POS are identified that reflect the urban form: 1) POS in an open system of spatial organization, 2) Residential courtyards in a semi-closed system of spatial organization, and 3) Residential courtyards in an enclosed system of spatial organization (Table 1).

Residential courtyards in an enclosed system are well-defined by buildings, and the space is fully framed in the vertical sense. Such urban form suggests belonging to a group of residential units, while the open space is shared and intended for only a certain group of inhabitants. Enclosed residential courtyard has a limited flow, and may also have access control in some cases. Given that it is not intended for a wider user group, the common area is characterized by a more intimate character. Therefore, they are characteristic of the first two types – Local and Community POSs. Enclosed residential courtyards are mainly found in the densely built central city zones [18].

Semi-enclosed residential courtyards also have a lower level of publicity compared to the POS for the general public, but enable easier access than the enclosed courtyard. In the City of Niš territory, this type is mainly a result of development circumstances and urban transformations from a single-family to a multi-family housing pattern. Therefore, these POSs often lean on both multi-storey residential buildings and low-rise housing on individual plots. They are mostly located throughout the central city and its surrounding wider area. Given their character and scale, they are represented within Local and Community POSs, similar to POSs in the enclosed form. Notwithstanding, semi-enclosed courtyards might also characterize Neighborhood Unit POS as a format of larger scale.

Unlike the first two POS types, POS in an open system of spatial organization is a truly public space that is easily accessible to residents and all other users, without any access regulation. Such spaces are the dominant type of residential POSs in the City of Niš. They are mainly located in large housing estates from the socialist past throughout Niš urban area, but may also be found in the city center in a smaller format. This is the only type of urban form that characterizes large scale POS, i.e. the type Residential complex POS.

**POS functions.** The structure and functions of POS also have a significant impact on the use and maintenance of that space. The identified plots in City Municipality Medijana are located in areas with the following land uses: 1) medium-density housing in urban area, 2) high-density housing in urban area, 3) business-residential zone. These are all land uses that provide good grounds for the provision of POS, since they generate a large number of POSs users.

Regarding their structure of uses and functions they perform, it can be stated that the analyzed POSs in the territory of City Municipality Medijana are designed and equipped quite modestly. Local POSs have no amenities other than greenery, and their surface area has been significantly eroded with informal parking. The spontaneous usurpation of open space with vehicles represents a common issue in all POS types, but it is more evident at the smaller scale. At a local and community POS level, a significant portion of open space, predominantly green space, is lost for recreational use in favor of parking. These spaces are thus characterized by vast paved areas. Community POSs

<sup>5</sup> Similar to the “Neighbourhood open space” established in the UN-Habitat (2018) typology

<sup>6</sup> Similar to the “District open space” established in the UN-Habitat (2018) typology

might have an additional amenity such as sitting area or a sport field, but these are also insufficiently equipped in regard to their catchment area.

Neighborhood Unit POSs have more varied functions compared to the first two types, with some additional pedestrian areas for gathering and social interactions of users. Urban design of such areas is also poor, and the pavement and urban furniture are often devastated and neglected. Loss of greenery is also evident at the neighborhood unit scale. The POS form of this size requires introducing motorized traffic into the inner-block area in order to provide access to the buildings, thereby fragmenting POS and resulting in extensive occupation of open space by parking. Residential complex POS has the largest green public areas due to its scale. Given that this POS type is conceptualized in an open system of spatial organization, POS is characterized by grandeur, high level of publicity and a high degree of physical and visual flow through space. Greenery, which was initially extensive and lush, is often poorly landscaped and maintained.

## 4.2. LOCAL INITIATIVES IN ADDRESSING POS ISSUES

### 4.2.1. COOPERATION OF THE CITY OF NIŠ AND THE FACULTY OF CIVIL ENGINEERING AND ARCHITECTURE OF NIŠ

One of the local efforts in reclaiming POS in the urban fabric of the City of Niš involve the cooperation of the City and the Faculty of Civil Engineering and Architecture of Niš<sup>7</sup>. Three joint actions on the remodeling of POSs in residential areas were realized in the past several years<sup>8</sup>. The first two were initiated by Chief Urban Planners (2018 and 2020), and the third by the local residents' association Zeleni zid (2021). In 2018 and 2021, the POSs chosen for remodeling were both located within large housing estates from the socialist period, which were designed in an open system of spatial organization. These involved urban blocks in Pasterova Street (2018) and in Knjaževačka Street (2021). In 2020, four locations were selected in the area of Niš central zone, involving residential courtyards in an enclosed or semi-closed system of spatial organization in Nade Tomić Street and Genrala Tranjija Street. Student projects resulted in inspiring proposals, which were presented to a wider audience in the exhibitions of works that were organized after project completion. Until today, these proposals remained only on paper due to lack of funding, and the implementation is still challenging.

#### 4.1.1. Innovative actions underway – Implementation of the RePOS Project

The City of Niš has also endorsed the project entitled Reclaiming Public Open Space in Residential Areas: Shifting Planning Paradigms and Design Perspectives for a Resilient Urban Future (RePOS), with a Letter of support. RePOS project is financed by the Science Fund within the Prisma program, and started its implementation in January 2024. The project carrier is the Faculty of Civil Engineering and Architecture of the University of Niš, and the partner institution is the Faculty of Architecture of the University of Belgrade<sup>9</sup>. The project aims to re-introduce POS into residential areas of Serbian cities, through a novel integrated approach in urban planning and design. Project results will inspire updating of legislation and planning regulations, help local governments with decision-making, assist planners in guiding (re)development processes and benefit local communities by enhancing the quality of housing. The new POS concept generated by the Project will serve both as an “urban oasis” that brings prosperity and well-being to urban residents, and a “mitigation spot” that aids cities in coping with climate change challenges. RePOS is expected to result in the improved urban planning approach to (re)creation and scaling-up of the created model of POS in residential areas across Serbian cities.

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<sup>7</sup> The cooperation between the City and the Faculty was first established in 2000's, included different topics and continued throughout the years.

<sup>8</sup> The idea was carried out by engaging the students of the IX semester of integrated academic studies of the study program Architecture, within the elective course *Urban design and composition*. Under mentor supervision, the students performed the analysis of standing planning documents and existing state, identified user's needs by conducting a survey and interviewed key actors in the area (tenants, users, local administration), and finally proposed urban design for the explored sites.

<sup>9</sup> The RePOS project's Principal Investigator is Milena Dinić Branković, Associate Professor.

### 4.3. DISCUSSION: POS CHALLENGES AND POTENTIALS

POS in residential environment in the City of Niš do not fulfill their potential. In light of the analyzed plots of POSs, which are acknowledged in the Plan of General Regulation of the City Municipality Medijana [9], it can indeed be stated that a significant portion of this land has the character of POS (shared recreational spaces and green areas). Some plots or their parts are occupied by parking lots to a large extent, and consequently, these areas cannot not be associated with the term POS. They, however, have the potential to become quality POS on the grounds of their treatment in the planning document, their ownership status and their overall character.

Most of the challenges in providing quality POS in the City of Niš are actually related to the treatment of POS in legislation at the national level, and the failure to recognize the concept of “public open space”. Particularly, undeveloped land and green areas in residential zones that are located on “other land” (non-public land) represent a major challenge for the City of Niš. Since they are not considered “areas of public use” by Law, they cannot be managed by other actors (city institutions, private companies), except for the inhabitants themselves. This is a crucial point for their quality, maintenance and usage. Unclear management regime of open spaces in residential environment, and the lack of precise instruction on both rights of use and duties involving this land and multiple stakeholders, all result in frequent disputes between the City and the residents.

The other important impediment for the sustainability of POSs concerns limited financial recourses. In the City of Niš, there are no stable sources of funding, nor sufficient human capacity for efficient organization of POSs and financing their arrangement and maintenance. Local self-governments in Serbia, including the City of Niš, mostly deal with the arrangement of public parks, squares and streets only, which are publicly owned, in line with the limitations of their budgets [14]. They do not have enough resources to invest in the arrangement of other spaces that do not represent areas of public use, but have the character of POS. It is therefore necessary to identify all public spaces in the City of Niš - both those that are in public ownership (areas of public use), and all other public spaces that are used by the everyone, regardless of sex, age or other limitations.

Analysis of other areas of multi-family housing within the Medijana territory, which was performed in the Office of the Chief Urban Planner of the City of Niš, revealed other potential POS sites. These residential open spaces have similar urban settings as the analyzed POS plots in the Plan of General Regulation of the City Municipality Medijana [9], but were not acknowledged by this Plan. Therefore, areas having the character of POS in City Municipality Medijana need further exploring, in order to be accurately defined. Equally important, data on POSs in other City Municipalities remains to be collected in the future, to establish a valid database of residential POSs in the City of Niš.

An additional problem for POSs in Niš is the low social and environmental awareness of citizens, who often do not accept responsibility for arranging, preserving and improving POSs in their living environment. This disregard for the extended living environment often results in neglected and devastated spaces in the immediate surroundings of residential buildings.

Although existing POSs in Niš are accessible to all regardless of age, gender, ethnicity or socio-economic status, not all population groups may feel comfortable in using them. Recent research performed by the Center for Girls investigated the safety of women in public places in Niš, within the project *SAFE: Empowering girls and women to feel safer in public places in Niš*, supported by UN Women [19]. The results show that as many as 51.9% of respondents feel moderately safe in public places in Niš, while only 6.6% of them feel completely safe. When asked in which public places they do not feel safe, the respondents singled out Tvrdava (52.7%), quay of Nišava River (47.7%) and the bus station (44.8%) as the most unsafe public places. Poor lighting is often identified as one of the main causes of discomfort and unsafety in POSs. This is often the result of insufficient maintenance of POS, particularly of the lack of financial resources.

The residential open spaces explored in this research could be revitalized to accommodate recreation and social interactions, and become quality POSs. POS types in an open system have the greatest potential to contribute to quality public spaces because of their conceptual layout and accessibility, regardless of their size. These spaces have high levels of publicity and may accommodate various activities to serve the neighborhood unit or a residential complex. POSs in a semi-enclosed system of spatial organization also provide good accessibility to users from a wider residential area. Aside from local community, semi-enclosed POSs of larger scale (over 4,000 m<sup>2</sup>) may also serve the entire neighborhood unit and have a very public character. On the other hand, enclosed residential courtyards appear to be better suited to smaller user groups - the residents of particular buildings framing that open space. Therefore, these POSs often result in a shared space for residents only, with semi-public character, even though they do not restrict access to a wider audience. Some

enclosed courtyards may become Community POSs, serving the users beyond that urban block, but this requires larger plot area.

Regarding the progress in achieving the SDG 11 related to public space, the City of Niš has invested significant efforts in cooperating with the civil sector and academia, particularly regarding the treatment of POS in multi-family housing areas. In spite of institutional efforts in the last decade in the City of Niš to raise awareness on the significance of POSs, and enthusiastic projects created, not much has been done concerning POS revitalization in the field. Lack of financial resources and lack of effective planning instruments have delayed the actual implementation of revitalization projects.

## 5. CONCLUSION

Public space is a vital component of urban fabric that greatly contributes to the overall quality of urban life. Particularly, POSs in residential zones have an important role because they help to build a sense of community, mitigate adverse effects of natural hazards and create healthy and safe living environment. This paper explored the topical issue of POS, as key resource for sustainable local communities in the City of Niš.

In line with the first research aim, all the challenges identified in this study point towards the fact that the issue of POS must first be regulated at the national level by the fundamental law in urban planning, design and construction, as well as by accompanying regulations [14]. This is especially important for the identified open space in residential zones.

Regarding the second research aim, the results provided an overview on the current state of POSs in the territory of the City of Niš, and identified several potential types of POS in residential areas. It can be concluded that the City is still faced with many challenges in treatment, exploitation and maintenance of POSs. Therefore, POS revitalization should be the priority action for the immediate future. Revitalizing existing POSs in the City of Niš in order to become social and recreational focal points requires significant efforts on part of multiple stakeholders, including the local communities. This would also imply new allocation of duties and responsibilities amongst the stakeholders, additional sources of funding and new management solutions. POS typologies established in this research should help with this complex task. When allocating POSs throughout residential fabric, the planning documents could benefit from the established links between spatial, functional and morphological characteristics of residential urban blocks containing POSs.

Local initiatives presented in this research confirm that there is strong commitment of local authorities to address the issue of POSs in residential environments, but their options for action are limited. The possibilities at the local level for acting in current circumstances involve potential cooperation of the City with investors on the arrangement of POSs, by motivating them and obliging them to improve also the environment of newly constructed structures (through tax benefits, benefits in obtaining a building permit, square footage bonuses, etc.), and developing local regulations that would support such mechanisms.

Further POS studies should build on the established typology in order to create a comprehensive database of public spaces that could be used for upgrading POS treatment in legislation. Given the number and significance of residential open spaces within the system of POSs in the City of Niš, it is necessary to urgently develop POS revitalization model, which is expected to be accomplished through the RePOS Project. Finally, as a key process for advancing SDG implementation at local level, the VLR of the City of Niš has acknowledged the role of POS in developing inclusive, safe, resilient and sustainable local communities, thereby providing good grounds for a systemic and planned POS revitalization action.

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