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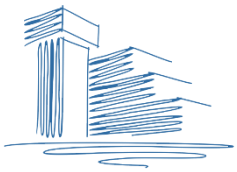

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PROCEEDINGS

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INTERNATIONAL CONFERENCE

on

CHANGING CITIES V

Spatial, Design, Landscape, Heritage & Socio-economic Dimensions

***Corfu Island, Greece,* June 20-25, 2022**

Organised by

Department of Planning and Regional Development, University of Thessaly
Laboraty of Urban Morphology and Design

in collaboration with

Department of History, Ionian University, Greece

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Residential preferences, housing affordability and building construction challenges during COVID-19 pandemics: Case study of Belgrade, Serbia

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Abstract
This paper analyses the impact of COVID-19 pandemic on residential preferences, housing affordability and building construction issues that have been experienced through housing sector in Serbia, especially in the case of its capital city Belgrade. The starting research question is whether COVID-19 pandemic further potentiated the already present socio-spatial issues emerging since the beginning of post-socialist urban transition. The methods used in this study include comparative analyses of statistical data and research findings on housing in the period 1990-2020 and available relevant data and knowledge in this field from the first quarter of 2020 until today. Regarding residential preferences, some recent research showed that the situation of pandemic exacerbated already encapsulated lifestyles and fear from economic recession, as well as it prompted changes of living patterns towards longer duration of staying at home. The pandemic has further disrupted affordability of housing for all social groups, and mostly for the disadvantaged ones. On the other hand, the world pandemic that nobody could predict the end of, has opened up some new opportunities in the construction sector, such as an intensified use of digital technology.

Keywords: COVID-19; residential preferences; affordable housing; building construction; digital technology; Belgrade

1. INTRODUCTION

The ongoing Coronavirus pandemic (COVID-19) is having a great impact on everyday life patterns and the global economy, thus affecting people's habits, needs and financial opportunities in the field of housing. In this paper we consider whether, and if so, in what way the crisis caused by COVID-19 pandemic has influenced the issue of residential preferences and housing affordability as well as the building construction dynamics in Serbia, on the example of the capital city Belgrade, since its outbreak in early 2020 until today.

People's preferences towards certain type or complex of residential settings are among many factors which have an impact on the overall physical patterns of our cities. Foundations of human needs are shaped by Quality of Life (QoL) components, e.g. job provision, sound economy, decent houses, good public services and healthy, attractive and safe environment [1]. Since it is in human behaviour to elect the place to reside in according to the aspired lifestyle and personal preferences it is necessary to include residential self-selection in the previous equation on QoL constitutes. Therefore, the research on what people consider an 'ideal' place while residing in a city, and where they may exercise this preferred lifestyle according to their financial means represents one of the main concepts analysed in this paper. In addition, from the dynamic point of view, the places people live in have to be adaptable to the changes they (people) require [2] as well as to the changes which happen due to some unprecedented circumstances like Covid-19 pandemic, which occurred two years ago and still has not been terminated. Here we refer to "revealed residential preferences", i.e. the "reasons for housing decisions that people actually make" and that have been in line with achieved housing opportunities. Therefore, it is not the aspirational residential preferences we are

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analysing in the context of Serbian capital city Belgrade, but certain set of old/new priorities of people who move in search of a new house or which they prioritise while choosing to continue to live in their current neighbourhood.

Eurostat data show that in the EU, housing prices have been rising steadily since 2013, when the housing market began to recover from the 2008 Global Financial Crisis [3]. Although the Coronavirus pandemic was expected to break this growth trend, statistic data and recent research show just the opposite, i.e., that the housing prices, as well as the rents, have continued to rise throughout Europe. At the same time, the pandemic has significantly reduced the disposable income of many households due to unemployment, absence from work, reducing the number of clients, reduced working hours, etc. Along with the already present process of residualisation of social housing sector in many European countries [4], such circumstances have further emphasized the issue of housing affordability, as well as the need to define appropriate housing policies strategies [5].

At the same time, obstacles that occurred in the construction industry during the COVID-19 pandemics raised construction costs, labor shortages, and imposed stricter regulations. All this has influenced the emergence of new trends in the construction industry, mostly related to the use of new digital technology tools and solutions.

The purpose of this paper is preliminary research on the tendencies of the COVID-19 pandemic impact on existing housing problems in post-socialist Serbia and Belgrade, taking into account available statistical data and research in the period before 2020 and in the past two years.

2. HOUSING IN POST-SOCIALIST SERBIA: CHOICES VS. NEEDS

Post-socialist housing reform in Serbia, accompanied by war crisis in 1990s and various demographic, social, economic and spatial tendencies, has made the housing affordability one of the key challenges to sustainable socio-economic and urban development during the past three decades.

First deficiency and then a slow and insufficient progress of the new social housing system and obsolescence of the instruments of urban development in the context of post-socialist transition, along with intensive migratory movements (refugees from former Yugoslavia and internally displaced persons from Kosovo and Metohija as well as migrations from the countryside and smaller settlements towards urban centres) gave impetus to the intensification of informal housing construction on the outskirts of larger cities in Serbia (primarily Belgrade and Novi Sad) [6]. Economic factors (such as cheap land, the possibility of prolonged phased construction and self-building, etc.) have influenced the residential choice of many households that have decided to settle in informal housing settlements on the outskirts of these cities to a much greater extent than the quality-of-life aspects (i.e., healthy environment, decent spatial comfort etc.) [7].

On the other side, people who are able to exercise their residential choice are influenced both by the dwelling and location (place, neighbourhood) characteristics. Traditionally in empirical analyses, residential choice [8] and residential mobility [9; 10] have been linked to stages in the family life-cycle. Life-cycle stages involve change of people's affluence, job changes, moving from renting to owning and from being single to starting a family. However, changes in households are probably the most important reason why families move [11]. They are measured by marital/partnership status, the relationships among household members, the presence of dependent children, etc. It is hypothesised that single-member households can opt much easier for the preferred new housing solution, because they are only guided by their personal needs and preferences [12; 13]. Still, single households generally have less financial means than say, for example, couples without children, because latter can accumulate means jointly to afford the preferred type of accommodation.

Under the conditions of prolonged post-socialist transition and slow economic recovery, all this accompanied with the traditional behaviour of Serbian population likewise other populations in the Balkans or Mediterranean countries, the young people are not motivated enough to leave their

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parents' home until their late 30s or 40s. Their already encapsulated lifestyles and fear from yet another economic recession raise the concern to invest in their own home, which in theory is typically the most valuable asset that people own [14]. Issue of precariousness is even more raised nowadays with all generations being affected by the situation of dependency on circumstances beyond their control, namely the uncertainty of one's job position, temporary work, minimal or inexistent workers' rights, and small pensions. For example, senior couples and senior single individuals have lower incomes but as a benefit from the previous system of state housing until the 1990s they kept residing in much larger flats that they acquired at prices much below the market ones while the process of housing privatisation. Sole parents and young couples display lower proportion of house ownership, but again this may vary according to their occupation, salary or their liability as bank credit holders. These housing trajectories do not permit sole source of investigation of the transition from renting to ownership however they highlight the dominant role of (inherent) lifestyle and its complex interactions with lifecycle stages in shaping residential location decisions to move.

Official statistics reveals only one part of the lack of housing in Serbia, which are mostly disguised, due to the high proportion of home-ownership and the lack of appropriate instruments for comprehensive and continuous monitoring of housing needs (including the problem of homelessness) as well as for the analysis of the national housing market on a regular basis [15].

Since the abandonment of the socialist state housing system and the beginning of the large-scale housing privatization, the share of dwellings owned by state in the total number of dwellings for permanent habitation in Serbia has decreased from 23.7% in 1991 to only 2.1% in 2002. According to the results of the latest 2011 Census, there are only 0.9% or 25,142 inhabited dwellings in the category of state-owned dwellings, while 0.7% dwellings are occupied on the basis of public renting [16]. As many as 98.3% of the occupied dwellings are privately owned, whereby 87.5% of households live in self-owned dwellings. In addition to subtenancy (5.1%), there is a significant share of households using dwellings on the basis of kinship (5.7%). In the last inter-census period, the number of unoccupied dwellings increased by about 76%, while the increase in abandoned dwellings was as high as 97.3%. Comparing the number of occupied dwellings with the number of households, we may conclude that in 2011 there were more households than the occupied dwellings, for a total of 64,678, which is an obvious indicator of the structural shortage of dwellings in Serbia.

Economic analysis of the housing affordability conducted within the *National Housing Strategy from 2020 to 2030 (Draft)* [17] indicate an extremely large disparity between the average market price of an average size apartment (55m2) and available household incomes in the Republic of Serbia. In the observed year 2017, the ratio of household's annual net income to the average price of an average size apartment was 1: 10.5 for the purchase in cash, or 1:14 for the purchase with housing loan. This is significantly higher than the ratio of 1:5, which is considered the threshold of housing unaffordability above which it is necessary to introduce appropriate housing subsidies. The same analysis show that the housing unaffordability is also very pronounced in the domain of private renting, given that the average monthly rent makes up 38% of the average monthly income of Serbian households, not taking into account utility costs, while this share in Belgrade is as much as 41%. In order for private rented sector to be affordable, the total cost of renting, utilities and ongoing maintenance should not exceed 1/3 of household income. Among the larger cities in Serbia, the unaffordability of both buying and private renting an apartment is the most pronounced in Belgrade.

Figure 1 shows the affordability of housing on the national housing market, by comparing the indicators of average household consumption by deciles (total and for housing) with the lowest amount of household income needed to meet specific housing needs. The chart shows that buying and renting an apartment on the housing market is affordable to only about 10% of households in

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Serbia, while improving the energy efficiency of an apartment (primarily by replacing windows or increasing thermal insulation) is available to about 20% of households.

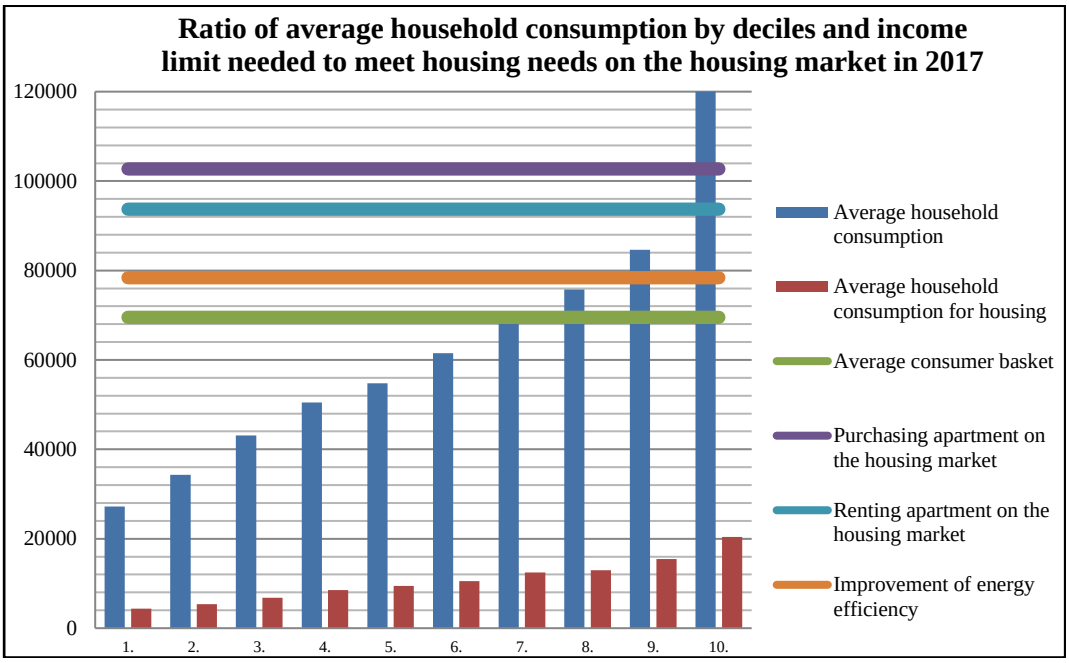

Figure 1. Affordability of housing and housing utilities in Serbia in 2017 (according to National Housing Strategy from 2020 to 2030 (Draft))

For further consideration of the level of housing affordability in Serbia and especially in comparison with the EU average, it is useful to mention the housing costs burden indicator which is the share of households spending more than 40% of equivalent disposable income on housing. The share of such households in Serbia in 2019 was 21.6%, or about 12 percentage points more than the EU average in the observed year. Observed by tenure status of households, this indicator had the highest value in the category of tenants who pay rent at market price (56,3% in Serbia and 24.2% in the EU), and the lowest in the case of owners without a mortgage or housing loan (19.4 % in Serbia and 5.3% in the EU). A special component of the economic dimension of housing deprivation is the subjective perception of the housing costs burden, showing that in 2019 housing costs represented a significant burden on the family budget for almost 60% of households in Serbia [18].

The presented data show that the housing market in Serbia is limited to a very small share of solvent households, while at the same time there is a large number of people excluded from this market, who can be considered as potential beneficiaries of various forms of social housing [15].

Despite the implementation of a number of programs and projects aimed at meeting housing needs of specific socially vulnerable categories over the past three decades, the size of the registered social housing stock is still extremely small. According to the data of the Ministry of Construction, Traffic and Infrastructure from 2019, there are a total of 3,282 publicly owned apartments that are used on the basis of leases on non-profit terms. Based on estimates and available data of the Ministry, in the period from 2000 to 2019, a total of 19,417 different types of housing assistance were realized (non-profit apartment lease, non-profit apartment purchase, allotment of a house in the village, allotment of construction materials, etc.).

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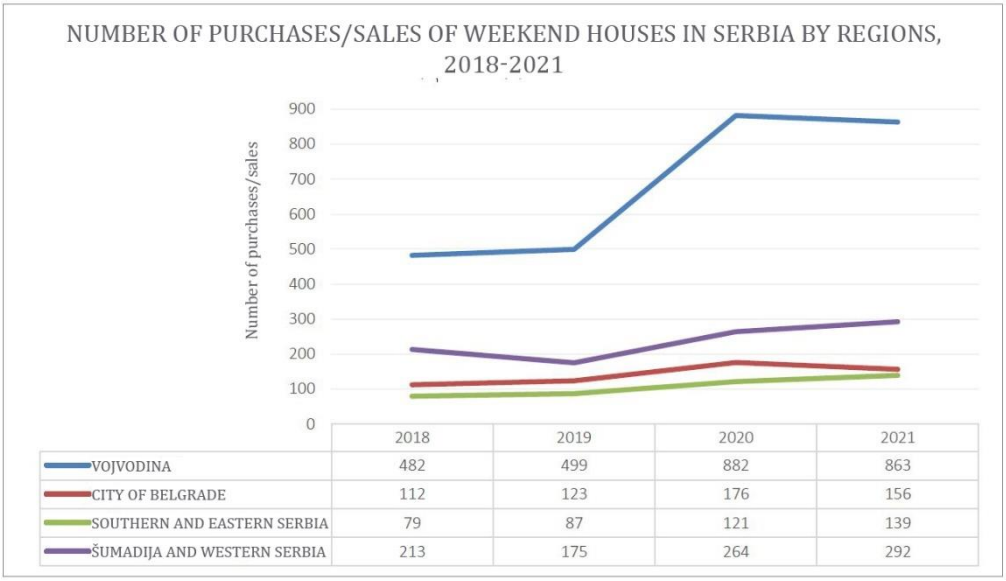
3. HOUSING DYNAMICS AND CHALLENGES IN SERBIA AND THE CITY OF BELGRADE DURING COVID-19 PANDEMIC

3.1 Towards re-evaluation of residential choices?

The COVID-19 virus is a classic "disruptor" influencing new challenges as well as the new "problem-solving" methods when we consider that under all conditions 'the city, and therefore, housing, should function smoothly' [19]. For most people, the pandemic has made an already encapsulated lifestyle even more "distanced", especially in the shelter of home as a place of residence (and work) and car as a chief transportation mean. During the lock down many non-essential Governmental workers, parents with pre-school and school children, as well as a number of private companies, switched to work from home. These conditions gave an impetus to activation of so-called "weekend houses" outside big cities, surrounded by greenery or alongside riverbanks, up to 2 hour's drive from the city centre and with stable internet connection. Consequently, property sales of secondary homes, standalone weekend houses, experienced surge in some of the resorts of exurban living in Serbia, mainly because of the growth in demand for this kind of properties. According to Republic Geodetic Authority (RGZ), the turnover of weekend houses in Serbia had a significant increase during 2020, by as much as 134% compared to 2019, and then it decreased by 28% in 2021, but still remained much higher than in the period before COVID-19 pandemics [20]. Figure 2. illustrates that the number of purchases/sales of weekend houses increased in all the regions in Serbia in 2020 and the most sharply in Vojvodina.



	2018	2019	2020	2021
VOJVODINA	482	499	882	863
CITY OF BELGRADE	112	123	176	156
SOUTHERN AND EASTERN SERBIA	79	87	121	139
ŠUMADIJA AND WESTERN SERBIA	213	175	264	292

Figure 2. Number of purchases/sales of weekend houses in Serbia by regions, 2018-2021 (according to Republic Geodetic Authority, 2021)

However, this cannot be interpreted as a radical shift in residential choices. There is a strong correlation between scope of real-estate transactions and the higher level of municipal development (80-100% or above of the Republic of Serbia average). The highest value of real estate sales is in Belgrade region, about 50% of the total market, and especially in its urban municipalities: Zemun, Voždovac, Zvezdara, and Novi Beograd. This market "jump" in 2021 is followed by the second biggest city in the country, i.e. Novi Sad [21]. Regionally, Vojvodina amounted to 28% of real estate sales in Serbia, followed by Šumadija and Western Serbia (15%), and South and East Serbia (7%).

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Among the indicators of recent housing demand in the capital city are the prices of apartments and trends of their changes by municipalities, which are officially classified in two categories (urban and suburban) but with significant differences regarding the level of centrality. According to SORS, the largest jump of newly built apartments in Belgrade in the period 2019-2021 has been in urban municipalities of Čukarica (29,8%) and Rakovica (28,7%), which are regarded as a part of urban periphery of Belgrade [22] (Table 1). According to RGZ (based on collected data from real estates sales and purchase agreements), these two municipalities were among those with the largest increase in the prices of old apartments as well in the period 2019 (III quarter) - 2021 (III quarter) - Čukarica (26,9%); Rakovica (24,4%) [23]. These data in a certain way support the trend of growing demand for apartments outside the central areas of larger cities during the outbreak of the COVID-19 pandemics, but it is too early to make conclusions on the actual degree of influence of the pandemic circumstances on complex and sometimes unpredictable changes in the urban development of the capital city.

Belgrade municipalities*	Type	Average price per m2, in EUR			Change in price, 2019-2021 (%)
		2019	**2020**	**2021**	
Voždovac	urban	1606	1644	1878	16.9
Vračar	urban	2044	2173	2254	10.3
Zvezdara	urban	1368	1472	1680	22.9
Zemun	urban	1572	1646	1779	13.2
Lazarevac	suburban	851	876	896	5.2
Mladenovac	suburban	727	761	833	14.5
Novi Beograd	urban	2334	2329	2316	-0.8
Obrenovac	suburban	852	830	932	9.4
Palilula	urban	1290	1313	1574	22.0
Rakovica	urban	1037	1225	1335	28.7
Savski venac	urban	2951	3383	3188	8.0
Stari grad	urban	2303	2652	2713	17.8
Čukarica	urban	1323	1628	1717	29.8
Surčin	suburban	1058	1043	1277	20.7

*Suburban municipalities of Barajevo, Grocka and Sopot are excluded from this list, because complete data are not available for the analysed period.

Table 1. Average prices of newly constructed apartments in Belgrade municipalities in period 2019-2021 (according to SORS, 2021)

Average price of properties as per sq. m is not the main factor why people choose certain location to reside in. There is a clear demand for the most exclusive real estate developments in the two biggest cities in Serbia, i.e. Belgrade and Novi Sad. According to RGZ [21] real estates in Serbia were mostly paid in cash, staggering 85% in 2021. 99% of all purchases of land (construction land, agricultural land) was settled in cash. The purchase of 66% of apartments was paid in cash, and only 34% from bank loans/mortgages, which, if we compare to other European countries, is a very high percentage of cash payments. According to presented data we can deduce that in Belgrade, Serbia exercising of residential choices is dominantly shaped by possession of financial means in cash by the prospective owners.

3.2 Housing affordability issues

According to available statistical data and sources of information, the COVID-19 pandemic has further increased social disparities in Serbia by reducing the affordability of housing for most households. Regarding the increase in the level of housing prices, as well as the housing unaffordability, the capital city Belgrade has been in the lead over the past two years, far ahead of other larger cities in Serbia. According to the "price to income ratio" indicator of the Numbeo base

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in 2022, which amounts to 21.36, Belgrade ranks as the third European city with the most unaffordable housing, right after Moscow - Russia (22.23) and Cascais - Portugal (22.08) [24].[1]
The latest data from the Statistical Office of the Republic of Serbia (SORS) show that the average price of a newly built apartment in Belgrade in 2021 was 2,170 €/m^2, which is significantly higher than the average price of newly built apartments in other major urban centers in Serbia in the observed year (Novi Sad (1,345 €/m^2), Kragujevac (1,015 €/m^2); Niš (990 €/m^2)) [22].
The highest price of the newly built residential square meter is recorded in the municipality of Savski venac (3,188 €/m2), where a drastic price increase followed the construction of the exclusive residential and business settlement Belgrade Waterfront. As seen in Table 2, the price of a square meter in this residential complex ranges from 2,452 €/m^2 to even 9,195 €/m^2, which is far more expensive than in other most exclusive newly built settlements in Belgrade [20].

Attractive locations in Belgrade	Average price	Price spread	
		Min	Max
	€ per m^2	€ per m^2	€ per m^2
Belgrade Waterfront	3,316	2,452	9,195
Kneza Miloša Residence	3,149	2,200	3,806
West 65	3,130	1,336	3,730
Dorćol Centre	2,925	1,560	3,373
New Dorćol	2,766	2,604	3,096
Park 11	2,731	2,624	2,906
K district	2,724	1,815	3,650
Wellport	2,549	2,015	2,859
Savada 3	2,366	2,003	2,679
The one (Novi Beograd)	2,320	1,516	2,714
City Residence (Vračar)	2,280	1,773	2,960
Ex Ing Home 65	2,233	1,747	2,678
Gates of Vračar	2,002	1,217	2,317
Vožd's Gate	1,962	1,729	2,159
Green Avenue	1,946	1,094	2,182
East Side (Zvezdara)	1,794	1,540	1,967
Zemun Gates	1,783	1,452	1,902

Table 2. Prices in the most exclusive residential real estate developments in Belgrade in 2021 (RGZ, 2021b)

Official statistics show that in the period from 2019 to 2021 there was a significant rise in prices of apartments in new construction in the Republic of Serbia (9.3%), and that this increase was the most pronounced in Belgrade (as much as 18.3%) compared to other larger city centers (14.5% in Novi Sad; 4.8% in Niš and 2.9% in Kragujevac) [22]. In 2021, the ratio of household's annual net income to the average price of an average size apartment for the purchase in cash was 1:12 in Serbia, a 1:14 in the City of Belgrade. Based on a comparison with 2019 data when the same indicator amounted 1:11.6 in Serbia and 1:13 in the City of Belgrade, there has been a further decline in housing affordability over the past two years.

[1] *Price to Income Ratio* is calculated as the ratio of median apartment prices to median familial disposable income, expressed as years of income (although variations are used also elsewhere). Numbeo formula assumes and uses: 1) net disposable family income, as defined as 1.5 * the average net salary (50% is assumed percentage of women in the workforce); 2) median apartment size is 90 square meters; 3) price per square meter (the formula uses) is the average price of square meter in the city center and outside of the city center.

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According to the data of the RGZ [23], there was growth in prices of apartments in old buildings by 19.8% and 29.2% in new buildings from the third quarter of 2019 to the same period of 2021 in Belgrade. The increase in prices of the newly built dwellings in some municipalities was as much as about 30%. It can be noticed that the prices of old apartments have been keeping pace with the rise in prices of new apartments, especially in the municipalities of Čukarica, Zvezdara and Rakovica, where the price jump within the old housing stock in the same period was 26.9%, 26.8% and 24.4%, respectively.
RGZ data also show that the demand for real estates in general has significantly increased in the period from 2019 until 2021 at the level of the Republic of Serbia. This is primarily reflected in the number of sales and purchase agreements in 2021, which grew by as much as 31.5%, in comparison to 2019. The volume of funds on the real estate market increased by 48.8% in the Republic of Serbia in 2021 compared to the same period in 2019 (in Belgrade by 43%). In the total amount of money on the real estate market in 2021, the largest share had sold apartments - 54% whereas 10% had residential buildings (houses, weekend houses, apartment buildings).

As the key factors of the upward trend in housing prices during the COVID-19 pandemic in Serbia, it is possible to distinguish the following:
1. Increased demand and limited supply of housing. Augmented housing demand under COVID-19 pandemic conditions in the national context is explained primarily by people's need for "smart investment" of their life savings, especially when there is no better alternative for investing money on the capital market, while the interest rates for savings accounts are low. As in the earlier period, the dominant motivation on the housing demand side remains the need for investing money and turning a profit, rather than buying an apartment to live in it. Accumulation of capital via purchasing apartments further encourages the growth of the new housing construction as well as the urban sprawl and urban intensification processes, while at the same time it creates unused housing stock. Another specific activity in residential real estate market is also "house flipping", which is the rapid profit-making through the purchase and sale of apartments, with or without additional investment in renovation. In 2021, the largest share of apartments in Serbia (68%) and in Belgrade (60%) was financed in cash [20]. There is an opinion that part of that cash money comes from intensive internal migrations, which mostly rely on the sale of properties in smaller inland settlements. At the same time, the supply of apartments is significantly lower than in regular circumstances because people find it harder to decide to sell their properties in times of economic instability and unpredictable movements in house prices. Imbalance between rising demand and limited supply increases the prices of the available apartments on the market, both in new and in the old housing stock.
2. Low interest rates that intensify the demand for housing loans. In addition to historically low interest rates, the demand for housing loans, especially among young families, is motivated by rising private rental prices and by thinking that it is more rational to pay the monthly loan instalment for their own housing property. The percentage of purchasing apartments from bank loans in Serbia is constantly growing. According to RGZ, in the period from 2018 until 2021, the share of purchases of apartments from the bank loans increased from 27% to 34% in Serbia, and from 30% to as much as 40% in Belgrade [20].

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3. Increase in the construction material prices and construction delays. The rise in construction materials prices has been significantly fueling the average building costs per square meter in the new housing construction thus affecting the current prices of the new apartments in Serbia. In 2021, some construction materials in Serbia increased in price by up to 100% in just a few months, such as: extruded polystyrene foam, metal products - iron, reinforcement bars, etc.; wood products, especially construction formwork and certain brick products; while e.g. the price of OSB boards jumped by more than 200%[2]. Most of these prices growth was dictated by changing prices of certain raw materials on the world market as well as the rising prices of transportation. In parallel with the raise of the construction materials prices, reduction of labor force on construction sites and slower completion of already started projects due to pandemic circumstances, especially during 2020, have undoubtedly contributed to the increase in prices of total construction activities.

3.3 Digitalization in the construction industry

The global pandemic, which no one could have predicted the end of, opened up new opportunities in the construction sector, such as the intensified use of digital technology. Some of the main reasons for the adoption of digital technologies in the construction and architectural professions in Serbia were to increase the speed and control of work, incentivize competitiveness of companies, productivity, and adequately follow up the new working and collaboration environment during COVID-19 pandemic, which "pushed" the entire industry into the world of digitalization.

At the beginning of 2020, Serbia was in a strict lockdown. The country's economic development has stalled. At that time, all types of business in the field of construction were possible, focused on the digital type of business.

The research of *PLANRADAR* company from Serbia about the use of digital technology in construction shows that 36% of construction companies rely only on pen and paper, while 34% have a limited understanding of digital platforms in the construction industry [25]. In the construction industry, the term digital platform refers to software that enables storage and connection of documentation, design, and monitoring of construction activities in one place. The needs of users of these platforms are directly related to working in drawing and design programs, such as AutoCAD, BIM software, GIS, etc. Therefore, the education of employees in the construction sector is primary for understanding and working in the world of digital technologies. According to a survey of professionals in the field of construction about their openness to change, acquisition of new knowledge and education of employees, the results showed that 93% of civil engineers and architects state that they are ready to use digital solutions; 95% are willing to learn new software that will improve their performance; and 50% agree that the COVID-19 pandemic has affected the increased need for digital technology in their company [25].

However, the moment that was crucial in the construction industry at the time of stagnant development and since the beginning of the pandemic was the well-coordinated and elaborated system of the E-Government portal in Serbia.

3.3.1. E-Government Portal - Central evidence of unified procedures for issuance of construction permits

In the second half of 2020, the global pandemic affected the reduction in numbers of the real estate sold, which affected the growth of real estate prices, especially in markets where the housing was already in short supply. The key goal in the pandemic period, which concerned the construction industry and public sector affairs, was to create a very clear hierarchy in the performance of construction applications and construction approvals.

[2] https://rs-n1info-com.translate.goog/biznis/visoke-cene-gradjevinskog-repromaterijala-poskupljenja-i-do-100-odsto/?_x_tr_sl=sr&_x_tr_tl=sr&_x_tr_hl=sr-Latn&_x_tr_pto=sc, accessed April 30, 2022.

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The E-Government portal in Serbia was launched in June 2010. A large number of state institutions and local self-governments published information about electronic services and information related to the services they provide to citizens and the economic sector on the portal. In response to the demand for a faster process of reporting construction works, electronic construction permits were for the first time introduced to the E-Government portal in 2018 [26].
The Register of Unified Procedures has been established as well, representing a type of electronic database maintained by the competent authority Central Information System – CIS [27]. Central evidence of unified procedures for issuance of construction permits is a single, central, public, electronic database kept within the Republic of Serbia-Business Registry Agency. Republic of Serbia-Business Registry Agency combines data and documentation of all registers of Unified procedures in the territory of the Republic of Serbia, which is publicly available and defined by the *Rulebook on the procedure for implementing the unified procedure electronically* ("Official Gazette of RS", no. 68/2019). [28].

							during COVID-19 pandemic				
			2018/January		2019/ January		2020/ January		2021/ January		2022/ January	
			Total	New construction	Total	New construction	Total	New construction	Total	New construction	Total	New construction
Indicator	**Territory-NST**											
Number of issued building permits [number]	**Republic of Serbia**	**total**	1011	513	982	450	1289	620	1480	795	1702 (p)	712 (p)
	Belgrade	**total**	162	**62**	110	**42**	166	**68**	208	**110**	165 (p)	**93** (p)

(p) Provisional value

Table 3. Number of issued building permits in the Republic of Serbia and Belgrade, 2018-2022 (Source: SORS, 2022.)

Table 3 shows that municipalities in Belgrade issued a significantly higher number of construction permits since the COVID-19 pandemic started compared to the previous period. Also, we can conclude that good organization and training of employees, as well as well-designed software E-Government portal, have affected the efficiency in the electronic issuance of building permits.
The Central record of unified procedures is suitable not only for the public sector and local governments but also for investors and construction companies. After submitting the project, investors can apply for obtaining the location conditions, construction permits, works registration, construction announcements, infrastructure connections, use permits, and/or property registration. According to the Republic of Serbia-Business Registry Agency, the E-Government system has significantly reduced the time spent on the document verification process and the procedure prior to the construction of the facilities.

3.3.2 Remote construction site management

One of the imposed types of business and project realization in the construction sector during the COVID-19 pandemic was remote management of construction sites using the construction software. In many companies, team coordination was organized electronically through online communication platforms. Some of the multi-purpose applications that were available to construction companies in Serbia for a fee are: PLANRADAR and FIELDWIRE, mobile CAD applications - for designers, planners and architects, such as AutoCad, FingerCad, GnaCad applications. Applications for the site and team management that were available free of charge and had a multilingual option of use with a trial period of free use are: Buildo - Construction Diary, Slack, Asana: Your work manager Wrike [25].

4. CONCLUSION

This paper discusses the issues of residential preferences and housing affordability in Belgrade and Serbia in light of the pandemic circumstances of the COVID-19 virus, as well as the acceleration of

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digitalization as a response of the building industry to emerging challenges in construction activities, including development of new housing.

In post-socialist Serbia, prior to 2020, a large amount of population was already excluded from the housing market, having no possibility to make a residential choice, nor to obtain adequate housing support, due to underdevelopment of the existing social housing system. The latest pre-pandemic housing market analysis show that affordability of buying and renting an apartment in Serbia was already reduced to only 10% of the population, while the most expensive housing market was recorded in Belgrade. Dwellings in Serbia have been unaffordable for years in relation to the average net salary of population, according to the internationally accepted affordability indicator ("price-to-income" ratio of the average price of an average size apartment and the average annual net income) which should be a maximum of 5, and in Serbia it amounted 12 and in Belgrade even 14 in 2021, according to SORS data. Such a high ratio clearly indicates the necessity of more dedicated state intervention in providing affordable housing for those in need, primarily through the improvement of the existing extremely residual system of the housing support.

Despite the COVID-19-induced economic uncertainty, there has been a significant increase in housing estates prices in larger urban centres and especially in Belgrade, where this jump reached as much as about 30% in some municipalities, both in the newly constructed buildings and in the old housing stock. In the pandemic-related circumstances, this trend is explained by increased demand and limited supply of housing, low interest rates that intensify the demand for housing loans and rising construction material prices as well as construction delays in finishing already started projects. It is not certain that there will be a bursting of the "housing market balloon" in the near future and what could possibly cause a change in the current movements in this sector. There is a real danger that the expected large investments, such as Belgrade metro project and other major infrastructure and residential and business developments will cause additional growth in already unattainable prices of apartments in many parts of the capital city. It can be noticed that the dominant motivation for increasing demand of residential properties is not the need for "a roof over one's head" but the need for accumulation of capital of more affluent and certainly fewer members of society. Different types of speculative activities on the housing market gain even more momentum during the pandemic crisis, which further affects the growth of unused housing stock, disguises the actual housing needs and reduces the affordability of housing for households with average or below-average incomes.

Regarding the changes in residential preferences caused by pandemic, official statistics clearly show higher demand for vacation or "weekend" houses outside big cities, the transactions of which increased by as much as 134% in 2020 compared to 2019 at the republic level, and remained relatively the same in the following period. It is not certain, however, whether the higher demand for apartments in the peripheral urban areas of Belgrade is the result of COVID-19 pandemic or a consequence of the financial related criteria or a combination of multiple factors. Also, it is still very early the talk about potential impact of war in Ukraine on real estate market in Belgrade and Novi Sad, which are the two most attractive destinations in Serbia for Russians and Ukrainians who moved with their business and families in escape from the critical situation in their respective countries.

The COVID-19 pandemic has definitely opened up some new opportunities in the construction sector, such as the increased use of digitalization which should continue to contribute to greater efficiency and productivity in this domain, which is an important driver of economic growth in Serbia. However, speeding up the procedures for issuance of construction permits should by no means be an additional tool for encouraging speculative activities in the housing market or detrimental to the quality standards of housing and the overall urban development.

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