

DIGITAL PARTICIPATION FRAMEWORK FOR MOUNTAIN AREAS IN SERBIA*

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Abstract

Planning practice in Serbia is influenced by the transition to more efficient governance, including the digitalization of public administration. Urban areas adapt faster to new requirements in comparison to digital transition in rural areas (RA) and mountain areas (MA). This research aims to provide an understanding of the contextual factors for digital public participation in MA in the example of Serbia, with a focus on the Golija-Studenica Biosphere Reserve. The analysis is based on the contextual factors recognized in the recent literature and their testing through the available statistical data.

The results suggest that RA, especially MA, have advantages in comparison to the national average only regarding a smaller share of vulnerable groups, including women. On the other hand, disadvantages are an aging population, a low level of technological equipment, and accessibility to technological advancement and knowledge. Findings suggest that future public participation formats in MA should be hybrid.

Keywords: e-participation, urban planning, spatial planning, protected areas, Serbia.

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1. Introduction

The subject of transition to more efficient governance is rapidly emerging in policy formulation, daily planning practices, and academia. The adaptation of local policy to the multilevel governance in the EU requires the digitalization of services in member states and accession countries (Castelnovo, Misuraca and Savoldelli, 2016). These processes have impacts on planning regarding the acceleration of formal development procedures and innovations in policy implementation (Angelidou, 2014). On top of that, governing transition requires the development of new forms of social collaboration and the application of communication technologies to enable equal access to decision-making processes (Meijer and Bolivar, 2016). To establish a just platform for public participation in planning, the technology itself is not sufficient and requires 'political understanding and support for enhancing individual and institutional capacities through a collaborative approach' (Čolić *et al.*, 2020, p. 26).

COVID-19 accelerated the need for new formats of public participation worldwide (Rajhans *et al.*, 2020). Although digital participation formats in urban and spatial planning are not a novelty, their importance has recently gained a new impetus in the domain of responsiveness to the 'new normal' during and after the pandemic (Lissandrello and Sorensen, 2021). In uncertain circumstances, responsiveness relies on digital tools and requires the (re)establishment of mechanisms for deliberative citizen participation and stakeholder engagement (Pantić *et al.*, 2021; Čolić, Dželebdžić and Čolić, 2022).

According to the Interparliamentary Union Act (2015, p. 1), 'public participation is the bedrock on which democracy rests. It enriches democracy – including by helping to ensure better decision-making and strengthening politicians' accountability to the people'. Bearing this in mind, research that deals with the accessibility of all citizens to decision-making is of utmost importance in securing democratic planning practices. This stand is supported by the EU policy, such as the Treaty of Lisbon (2007) and the New Leipzig Charter (2020). The present research is thus embedded in the wider discussion of just transition to accessible decision-making, as well as to the notion that the most remote areas, such as rural areas (RA) and mountain areas (MA) face the least physical accessibility and are particularly valuable and fragile, which is proved by their UNESCO protection status.

Public participation in urban and spatial planning in Serbia was institutionalized in the 1950s (Basic Resolution on General Urban Plan, 1949), whereas the participatory culture has been changing with the socio-economic transition from the state-led socialist development to the free-market economy. Since the socialist planning era, public participation included methods such as the presentation of plans to local communities, questionnaires, expert discussions, public inquiry, and the possibility to submit a complaint that was reviewed by the designated planners (Nedović-Budić, Djordjević and Dabović, 2011). The domains of political, economic, and social transition, including that of collectivist ideology toward patterns of pluralism, went through radical changes with the transition from a socialist to a market-based economy (Čolić and Dželebdžić, 2018). However, the evolu-

tion of the planning system in terms of practicing innovative and inclusive participation methods did not subsequently follow the socio-economic transition or technological pathways, until the COVID-19 pandemic influenced all spheres of life and work.

A literature review suggests that practical experimentation in digital participatory planning is predominantly implemented in urban areas of more developed democratic societies using i.e., geographic information systems (GIS), gaming, virtual and computer-aided design, and social media (Williamson and Ruming, 2019). In cases where plans can be established as ‘virtual statements’, technology is seen as a useful tool for capacity building and a key element of ‘informationally enabled democracy’ (Sieber, 2006, p. 491; Hudson-Smith, Evans and Batty, 2005). The existing base of expertise in this domain has been revisited and extended across the national spatial planning systems during the COVID-19 pandemic. In Serbia, for example, formal and ‘live’ public participation in urban areas with established digital communication systems took the form of online meetings, online voting, phone consultations, submission of remarks and suggestions by e-mail or digital registry of the designated planning offices or ministries in charge of spatial planning, and/or use of mobile phone applications (Pantić *et al.*, 2021). At the same time, evidence of digital methods application in the RA, and especially MA, remains uninvestigated.

Although RA and MA, as sparsely populated, were subjected to population influx during the pandemic for their healthy environments and opportunity for social distancing (Pitkänen *et al.*, 2020), these areas have been rarely included in the research on the application of (digital) participatory tools and outcomes (International Mountain Conference, 2022). So far, researchers focused on proving the relevance of participation and the (dis) advantages of particular methods (Jamei *et al.*, 2017; Olszewski *et al.*, 2017) and divide e.g. class divide (Graziano, 2021) or age divide (Alston, Dias and Phillips, 2015); but studies that take in account all relevant divides have not taken place yet. Protected MA research examined traditional (non-digital) public participation means (e.g., Meessen *et al.*, 2015; Escobedo *et al.*, 2022). However, the MA and perspective of different participation opportunities in the digitalized era were not a focus of academic studies, even though the impact on the participation of urban-rural differences was often addressed (Radovanović and Knežević, 2014; Williamson and Ruming, 2019; Rajhans *et al.*, 2020).

Given that public participation in Serbia is formally established as a normative basis that guarantees the rights of the public to participate in territorial development processes (Čolić and Dželebdžić, 2018), this work aims to identify contextual factors for digital participation in spatial planning within the scenario of MA as specific areas with rising attractiveness. The following chapter presents perspectives and limitations of digital public participation in urban and spatial planning worldwide. After this, the authors provide insight into the research design and methodology – describing data sources, justifying indicator selection, and limitations of the research. The indicators are analyzed and presented in the results and discussion chapter. Finally, this paper wraps up with the conclusion and recommendations for future practice and research.

2. Perspectives and limitations of digital public participation in urban and spatial planning

Current research in the field of participatory planning points out that digitalization progressively advances (Hudson-Smith, Evans and Batty, 2005). Improved accessibility to the internet, enhanced technological possibilities of authorities, planning departments, and households, simplified and more user-friendly interfaces i.e., GIS-based platforms, broaden the opportunities to involve stakeholders in spatial planning processes (Kahila-Tani, Kytä and Geertman, 2019). Still, digital participation is challenged even in well-established market economies when it comes to the accessibility to the internet and technical equipment (Pantić *et al.*, 2021). Equally distributed technical preconditions for digitalization are necessary components of well-established digital participation platforms in both urban and rural areas (Labrianidis *et al.*, 2004).

Taken that participation events are usually organized in urban areas, digital participation minimizes or eliminates travel costs for citizens living in remote areas (Rajhans *et al.*, 2020). Therefore, the application of digital participation methods holds the potential to motivate the participation of actors who were hard to reach from the perspective of physical distance (Hampton *et al.*, 2017). Even though the utilization of digital participatory tools might be a challenge for certain population groups (e.g., elderly, poor), the ‘modernization’ of participatory processes through new digital tools brings at least young people closer to planning practice, since the internet and online communication are an integral part of their daily routine (Vromen, 2008). In addition, studies from Jamei *et al.* (2017) and Olszewski *et al.* (2017) suggest that virtual and augmented reality has proved a useful tool to simplify and increase attractiveness in the presentation of plans.

The involvement of the urban population in digital participation diverges from the rural population due to limited technological equipment, tools, and capacities for use of new technologies in RA (Radovanović and Knežević, 2014). Secondly, the more and less affluent population has a different level of accessibility to digital participation tools, whereas low-income groups, including vulnerable groups, are usually excluded from digital participation processes (Bricout *et al.*, 2021; Graziano, 2021). Some differences regarding the extent to which digital participation in urban and spatial planning is used are recognized between (a) urban and rural population, (b) more and less affluent population, (c) young and elderly population, and (d) different genders (Cilliers *et al.*, 2020; Pantić *et al.*, 2021).

Vromen (2008) studied relations between the participation of the young population in the planning process and the role of the internet before COVID-19, finding that young people eagerly embrace the online world to build and share their attitudes, which does not necessarily comply with the official virtual participation tools offered by the government. Rikanović *et al.* (2020) suggest that young people in Serbia are not interested in of-line forms of participation as much as the middle-aged population because they are a generation comfortable with using new technologies and the advantages of the internet (Pantić *et al.*, 2021).

Gender sensitivity in participatory processes was the subject of several studies on digital participation (e.g., Goldberg, 2011; Jon, 2020; Rikanović *et al.*, 2020), mainly addressing

the exclusion of women. Hudson-Smith, Evans and Batty (2005) and Salerno Valdez and Gubrium (2020) further note that communities of color and persons with disabilities can aggravate the application of ICT in participation due to material deprivation. Cilliers *et al.* (2020) go further in identifying limitations in virtual participation, such as poorly targeted stakeholders, insufficient knowledge of virtual participation methodologies of the stakeholders, and depersonalized participation.

Even though digital participation advanced in different forms due to the popularization of the Internet (Sæbø *et al.*, 2008), it progressed unequally through the countries and different types of areas. Germany and the UK are more successful examples of the digitalized planning system in both urban and rural areas, whereas countries such as Greece, Poland, and Portugal lag in those terms (Labrianidis *et al.*, 2004). Those inequalities occur in the case of MA, since they are predominantly rural. The policy framework for the application of digital participation formats in planning in Serbia is constituted through the Planning System Act (2018), which outlines possible digital participation methods for public policy formation at the local level (i.e., the use of online forums). In addition, measures for the implementation of the Sustainable Urban Development Strategy of Serbia until 2030 (2019) recommend the application of digital participation, public consultations, citizen panels, and citizen initiatives in the formation of local sustainable development strategies. The Ministry of Construction, Transport and Infrastructure of the Republic of Serbia (in charge of urban and spatial planning) announced the 'New Planning Cycle in the Republic of Serbia – Spatial Planning and Digitalization' (Serbian Chamber of Engineers, 2019), intending to introduce changes in the field of participatory planning in Serbia supporting the application of different formats of digital participation. However, policy implementation requires careful consideration of the local context and planning culture. Today, according to the Statistical Office of the Republic of Serbia (SORS, 2021), 85.6% of households in urban settlements have internet connections in contrast to 74.7% of households in RA. Digitalization is not complete and RA progress slower in this regard, which can be also expected for the MA as being predominantly rural.

The strengthening of public participation in Serbia is particularly relevant when it comes to planning and development in protected areas. The local population is usually poorly informed about the restriction concerning building regulations, which stretches the established tendency to build without a construction permit (Pantić, Čolić and Milijić, 2021). Therefore, the understanding of the biosphere reserve's role would be improved through a larger involvement of local stakeholders in participatory processes. This would contribute to the preservation of Golija, as well as Man & Biosphere status (Pantić, Čolić and Milijić, 2021).

The research regarding the application of digital participation formats in the context of a transitional society is necessary on their way to a higher level of democracy (Jungmeier *et al.*, 2021). Additionally, the remote and rural nature of MA indicates potential difficulties when it comes to digitization. Therefore, they are representative case studies of overlapping sustainability, protection, participation, and vulnerability concepts (Getzner and Jungmeier, 2009; Jungmeier *et al.*, 2019). This paper aims to point out the contextual

factors for establishing digital participation in the Golija-Studenica Biosphere Reserve (GSBR) mountainous protected area. Furthermore, it identifies the potential and possible effects of setting digital participation formats in the designated area. The findings aim to reveal if ‘new forms of e-participation tools may provide opportunities for broader participation processes, with the potential to better address hitherto underrepresented groups’, as addressed in one of the International Mountain Conference 2022 sessions (Braun *et al.*, 2022).

3. Methodology

Public participation in the context of protected areas has gained interest in recent research (Jungmeier *et al.*, 2011; Romera *et al.*, 2021; Pantić, Čolić and Milijić, 2021). Mountainous biosphere reserves, constituting more than half of biosphere reserves (61%), are considered UNESCO’s international protection tool to support sustainable development. The fact that the World Network of Mountain Biosphere Reserves was recently established as a distinct working group, as well as the growing number of studies on MA (e.g., European Commission, 2004; Price, Jansky and Iatsenia, 2004; Castelein *et al.*, 2006; Pantić, 2019), suggest that MA require special attention.

Golija-Studenica Biosphere Reserve (GSBR) is the first biosphere reserve in Serbia, established in 2001. It is the western edge of the Dinaric Alps inhabited by almost 5,000 inhabitants in 25 rural settlements. The north-eastern edge also holds the status of a UNESCO cultural World Heritage site i.e. Studenica Monastery (UNESCO, 2017). As a rural mountainous protected area that should operate in line with the sustainable development goals, GSBR is a good example of a specific and remote area that requires adaptation to new challenges in participation on the one hand, and a prospective area that finds ways to preserve natural and cultural heritage, as well as the local population on the other hand.

It should be noted that the demographic, geographic, and economic characteristics of GSBR are similar to other MA in the country (Pantić, 2019). It is a rural area with a population predominantly engaged in husbandry, agricultural production, herb collection, and recently tourism (Pantić, Čolić and Milijić, 2021). Most of the settlements are completely within the GSBR, whereas Erčeg and Medovine settlements pertain to it with approximately half of their territories, and Zasad, Orlja Glava, and Savovo with only their small parts (Figure 1). The GSBR delimitation does not necessarily follow administrative borders, therefore, there is no comprehensive monitoring or statistical reporting, which forces the approximation of the data at the broader level. Bearing this in mind, settlements that are only partially part of the GSBR were also analyzed because their socio-economic similarity to other settlements in the GSBR does not distort the results.

Most of the statistical data is available at higher levels than the level of the settlement. Therefore, it was necessary to use data that refer to the City of Kraljevo and the Municipality of Ivanjica instead of 25 GSBR settlements. Even though they do not represent specific values for the GSBR, they are expected to indicate the differences between the protected mountain area and the national average.

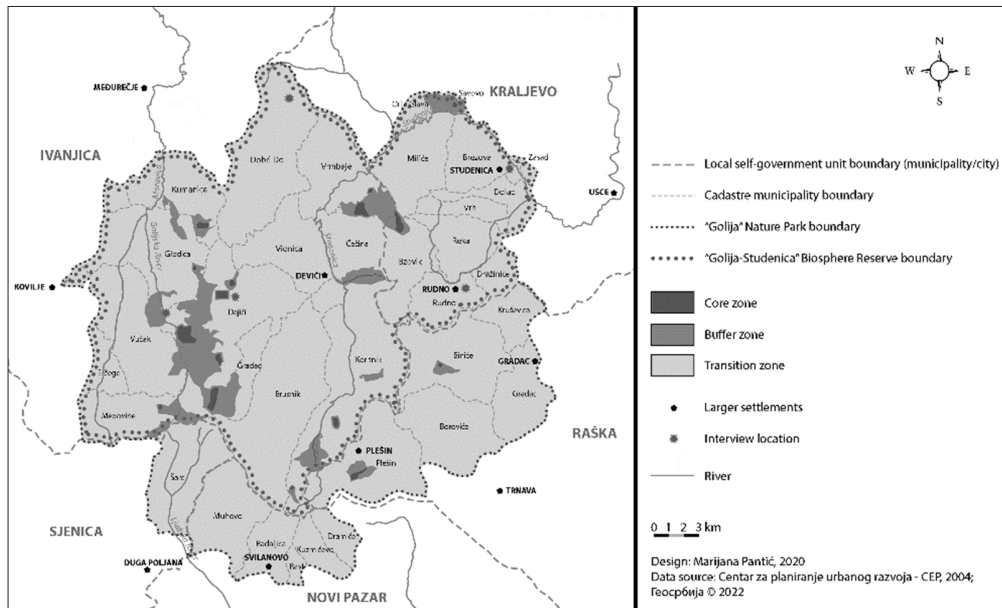


Figure 1: Golija-Studenica Biosphere Reserve (GSBR)

Source: The authors

The contextual factors for the development of digital participation were recognized in the recent literature and applied in the analysis of GSBR. The analytical framework derives from the aforementioned differences in digital participation in planning between (a) urban and rural population, (b) more and less affluent population, (c) young and elderly population, and (d) different genders (Hampton *et al.*, 2017; Cilliers *et al.*, 2020; Salerno Valdez and Gubrium, 2020; Jaeweon *et al.*, 2021; Pantić *et al.*, 2021) (see Table 1). The authors chose a few indicators per contextual factor from the available statistical data, thus reaching 20 indicators in total.

The majority of the analyzed data refer to the last available census data in Serbia – the year 2011. This is the data at the settlement level or the rural parts of the local self-governing units – the City of Kraljevo and the Municipality of Ivanjica. Annual statistical reports enabled analysis at the municipal/city level. A Survey on Income and Living Conditions (SILC), an instrument developed by EU for the fact-based decision-making, was used as another type of data source to support discussion on the level of contextual factors originating from the urban-rural divide. The SILC is specific for (1) measuring subjective perspectives on living conditions, (2) being based on the representative national population sample, and (3) reporting at the level of urban, rural, and transitional areas (i.e., Degree of Urbanization – DEGURBA methodology). As original databases are not publicly available, the authors relied on the SILC results published in Pantić (2021), referring to the year 2013.

The data for urban and rural categories obtained in the SILC were compared, where the GSBR was taken for the representative of RA. Other selected indicators were presented at

Table 1: Contextual factors for digital participation, indicators, and indicators' details

Contextual factors for digital participation	Indicator	Source	A level applied in GSBR interpretation	Reference year
Vulnerable groups	Roma people (%)*	SORS	Municipal level	2011
	Serbian as a mother tongue (%)	SORS	Municipal level	2011
	Population with disabilities (%)	SORS	Rural settlements in the local self-government units**	2011
Comprehension and skills	High education is the highest level of education attained (%)	SORS	Rural settlements in the local self-government units	2011
		SILC	Urban-rural areas	2013
	Computer illiterate (%)	SORS	Rural settlements in the local self-government units	2011
Gender structure	Female population (%)	SORS	Settlement level	2011
	The female population with high education as the highest level of education attained (%)	SORS	Rural settlements in the local self-government units	2011
	Computer illiterate female population (%)	SORS	Rural settlements in the local self-government units	2011
Technological endowment	Possession of a telephone – including a mobile phone (%)	SILC	Urban-rural areas	2013
	Possession of a computer (%)	SILC	Urban-rural areas	2013
	Affordability of an internet connection at home (%)	SILC	Urban-rural areas	2013
Population age structure	Young population (%)	SORS	Settlement level	2011
	Elderly population (%)	SORS	Settlement level	2011
	Average population age	SORS	Settlement level	2011
Material status	Average income (EUR)	SORS	Municipal level	2011
	Unemployment rate	SORS	Municipal level	2020
	Lowest possible amount to make ends meet (%)	SILC	Urban-rural areas	2013
Degree of urbanization	Cities larger than 100.000 inhabitants	SORS	Settlement level	2011
	Population in RA (%)	SORS	Settlement level	2011
	Agricultural households (%)	SORS	Settlement level	2011
Physical accessibility	Large distance or inaccessibility of adequate transportation as the main reason for not visiting a doctor (%)	SILC	Urban-rural areas	2013
	Distance from the regional public viewing/public discussion venue (by car) (km and min.)	Google Maps	-	2022
	Distance from the national public viewing/public discussion venue by car (km and min.)	Google Maps	-	2022
	Distance from the local public viewing/public discussion venue (by car) (km and min.)	Google Maps	-	2022

Legend: * Roma people were the subject of this analysis as the second-largest minority group in the country (2.1%) and the largest minority group in the City of Kraljevo and the Municipality of Ivanjica (SORS, 2013a).

** The GSBR encompasses parts of the City of Kraljevo and the Municipality of Ivanjica.

Source: The authors

both GSBR and national levels to indicate if the contextual factors for digital participation put GSBR in a more (un)favorable position when compared to the national average. As an additional accessibility indicator, the authors calculated the average distance of GSBR villages to the local, regional, and national participation venues. These distances were calculated as an arithmetic means of the distance/time required for a car to travel from the nearest (Kumanica in Ivanjica and Brezova in Kraljevo) and the most remote settlements (Brezova in Ivanjica and Rudno in Kraljevo) to the local, regional and national centers (Ivanjica, Kraljevo, and Belgrade).

4. Results and discussion

The indicators related to the contextual factors for digital participation in GSBR show that RA, especially MA, have advantages in comparison to the national average only in a few aspects (see Table 2 and Table 3). The most significant advantage of MA in Serbia, as well as GSBR, is a smaller share of vulnerable groups because the population in RA such as GSBR is more socially and culturally coherent. Roma population, as the most numerous minority in GSBR, tends to inhabit urban areas due to their lifestyle (Radovanović and Knežević, 2014), hence national minorities or the use of different languages are not common within the biosphere reserve.

Data collection on persons with disabilities in Serbia is based on the ‘sociological approach’, which means that the persons officially registered as disabled provided a subjective evaluation of having a problem in seeing, hearing, walking, memorizing, independently clothing themselves, independently taking care of personal hygiene, or communicating (SORS, 2013b). The analysis shows that the share of disabled persons is higher in GSBR than at the national level, which according to Cilliers *et al.* (2020) stands for difficulty in using technology as a relevant aspect of digital participation (e.g., computers and mobile phones). Taking into account that the share of the elderly is also higher in the GSBR (SORS, 2013c) and some mountain communities in Serbia consist only of elderly persons (Pantić, 2019), the interpretation of disability might be related to the fact that sight, hearing, etc. problems are related to GSBR population age structure.

The average population age in Serbia is high, and in GSBR is even higher (SORS, 2013c) (Table 2). The percentage of highly educated persons in Serbia was 16.2% in 2011 (SORS, 2013d) and in GSBR 6.5%. The difference is significant and it can be related to the older population structure in GSBR, which is a precondition for lower digital participation, as argued by Vromen (2008), Rikanović *et al.* (2020), and Pantić *et al.* (2021). These authors indicate that lack of knowledge (i.e. education) represents a disadvantage in digital participation, especially regarding the use of a computer and other technologies.

Recent research in the fields of sociology and planning suggests that women do not take part in participatory planning processes equally as men (Goldberg, 2011; Rikanović *et al.*, 2020; Bricout *et al.*, 2021; Pantić *et al.*, 2021). As a consequence of the civil wars in the Balkans in the first half of the 1990s, the re-patriarchy of the Serbian society grew parallel with militarization. In the socio-economic and political transition that followed, both

patriarchy and emancipation advanced so that, as Vujadinović and Stanimirović (2016, pp. 197-198) state, ‘Women of the elite become winners of the transition, but most women and men of the impoverished masses [who inhabit rural/mountainous areas] are the losers of the transition ... in the sphere of education, work, and health ...’. Although the share of women as computer illiterate and less educated is lower in the GSBR than at the national level (SORS, 2013d), this slight advantage seems to be annulled by the effect of delayed emancipation.

Table 2: SORS indicators

Digital participation disadvantages	Indicator	National level	GSBR
Vulnerable groups	Roma people in total population (%)	2.1	0.8
	Serbian as a mother tongue (%)	88.1	97.6
	Population with disabilities (%)	8.0	9.9
Comprehension and skills	High education is the highest level of education attained (%)	16.2	6.5
	Computer illiterate (%)	51.0	67.4
Gender structure	Women in the total population (%)	51.3	50.5
	The female population with high education as the highest level of education attained (%)	16.3	6.4
	Computer illiterate female population (%)	53.2	68.6
Population age structure	Young population (0-14) (%)	14.3	10.3
	Elderly population (65 and above) (%)	17.4	31.5
	Average population age	42.2	51.3
Material status	Average income (EUR)	546.1	429.8
	Unemployment rate	71.2	80.4
Degree of Urbanization	Cities larger than 100,000 inhabitants	4	0
	Population in RA (%)	40.6	100.0
	Agricultural households* (%)	67.5	83.8

Legend: * Agricultural households are understood as those households who produce at least one and at least once a year an agricultural product that they sell instead of using it for their consumption.

Source: based on SORS 2013a, 2013b, 2013c, 2013d, 2014, 2021

Subsistent agricultural production is common in Serbian rural MA (Pantić, 2019). The share of agricultural households in GSBR is over 80% (Table 2), which is higher than at the national level. The subsistent production allows certain households with no employment or with lower income to meet ends (Table 2 and Table 3), which is related to the higher unemployment rate and the lower average income in GSBR than at the national level.

As a result of lower income and higher dependency on subsistent agricultural production (with no or insignificant income), inhabitants of rural MA do not possess mobile phones or computers as often as urban inhabitants (Pantić, 2021) (Table 3). The sample in the SILC conducted in 2013 showed that barely 20% of rural inhabitants in Serbia can

afford an internet connection at home. Some authors (e.g., Hampton *et al.*, 2017; Salerno Valdez and Gubrium, 2020; Jaeweon *et al.*, 2021) highlight that social status is correlated with the opportunity to get involved in participatory processes, especially digital participation as being dependent on technical/technological equipment that costs. This adds up to the case of the GSBR as a rural area with a significant share of the population depending on subsistent agricultural production.

Table 3: SILC indicators

Contextual factors for digital participation	Indicator	Urban	Rural
Comprehension and skills	High education is the highest level of education attained (%)	28.1	6.2
Technological endowment	Possession of a telephone – including a mobile phone (%)	98.8	95.2
	Possession of a computer (%)	69.2	41.9
	Affordability of an internet connection at home (%)	39.1	20.2
Material status	Lowest possible amount to make ends meet (%)	852.3	630.5
Physical accessibility	Large distance or inaccessibility of adequate transportation as the main reason for not visiting a doctor (%)	0.2	1.4

Source: Pantić, 2021.

Rurality often relates to peripherality and remoteness (Máliková, Farrell and McDonagh, 2016). The GSBR is a rural area with a 29 km (45 min.) average distance to the administrative center of Ivanjica and 77 km (81 min.) to the City of Kraljevo. This is the average time inhabitants invest to get to the venue of a public inquiry. For a public discussion on the regional plans, inhabitants of the municipality of Ivanjica travel to Čačak as a regional center, which takes an average of 80 km (120 min.). The latest example of the national planning document, the Spatial Plan of the Republic of Serbia, showed that public discussion was organized only in the capital city, for which inhabitants of the GSBR need an average of 252 km (222 min.) to reach. Those trips require money, time, and a vehicle because of the limited public transportation in GSBR. The SILC data also informs about the inaccessibility of adequate transportation, which prevents rural inhabitants from regularly visiting a doctor more likely than the population in urban areas (Pantić, 2021).

Digital participation in urban and spatial planning in Serbia is not only a matter of challenge but also an opportunity. This resonates with Jiminez-Zarco *et al.* (2014) who recognize that digitalization of the participation processes mitigates physical distance. Also, Hampton *et al.* (2017), Salerno Valdez and Gubrium (2020) and Rajhans *et al.* (2020) notice that digital participation saves time and money both for participants and participation hosts. The flexibility in choosing a time when to participate digitally, i.e., writing and submitting comments via an online platform or completing an online survey could be done independently of the working time of administrative employees or the precise schedule of the discussion meetings (Pantić *et al.*, 2021). Those factors together extend the reachabil-

ity of stakeholders (Pantić *et al.*, 2021). Cases analyzed by Jamei *et al.* (2017), Olszewski *et al.* (2017), and Rajhans *et al.* (2020) show that digital visual presentation of plans, such as graphs, virtual and augmented reality, increases the understandability of the proposed urban and spatial plans. These methods make the planning solutions closer to a broader range of stakeholders. They can be used by the participants that feel uncomfortable sharing their opinion in open settings during meetings and who would feel more comfortable taking part in a written format or anonymously in an online voting (Green, 2014).

Contextual factors for digital participation affect both in-person and digital participation. However, limitations for the wide application of digital participation could be of a greater extent in RA and MA, because comprehension and skills in digital participation involve both understandings of the subject of discussion (i.e., the details of the planning document including norms, standards, urban design) and the skills on how to express one's views and needs in a digital world. In-person participation omits disadvantages related to the use of technical devices and software. Other contextual factors represent the difficulties in the implementation of traditional means of participation, but, in RA, these difficulties are emphasized by the more pronounced aging population and gender misbalance, economic issues (material status), and social issues (degree of urbanization) compared with urban areas.

The results of this research rise awareness of differences and specificities of different types of areas (depending on density, remoteness, predominant economic activities, relief, etc.) that should be reflected in policy related to the democratization of decision-making processes. The need to adopt the aspect of regional differences refers particularly to marginalized areas in the era of digitalization. For example, the Serbian Planning and Building Act (2021) regulates minimal requirements for the application of participation methods and dynamics. The law does not recognize a methodological or dynamic difference between urban or rural, lowland or mountainous areas, or level of planning document (national or local), and an online display of urban and spatial plans is the only aspect of digital participation. Taken that different policies in the domains of local administration, urban governance, and digitalization in Serbia recognize the need for inclusive governance practices at national and local levels of decision-making, there is a need for an integrated and holistic approach in the implementation of the specific measures within the priority areas of spatial intervention in RA and MA.

Formal policy requirements for the involvement of citizens and other stakeholders in decision-making can be complemented with non-binding participatory methods (Witt, 2016). The example of Bonn (Germany) shows that the application of legally non-binding participation can lead to binding decisions: citizens were asked to submit their budget proposals online, out of which the administration chose top suggestions and adopted most of them (Witt, 2016). Therefore, the creativity of local administration and planners in the application of alternative means of participation should be supported by the central government and it would be inevitably rewarded by the citizens who would be shown trust and responsibility.

5. Conclusion

Although there is a base for establishing technological preconditions, rurality and the aging population¹ are some of the factors hampering wide and deliberate digital participation in decision-making processes in the planning of mountain and RA in Serbia. An additional issue is an emphasized patriarchy. Women are often neglected in households as an influential subject, which can be considered as one of the reasons why they depart from the RA and mountain villages more than men. This emigration trend resulted in fewer women and those who remained most probably complied with patriarchy; if women will not represent their interests, it might further emphasize their shaky motivation to stay or return to mountain settlements.

Urban-rural, gender, ethnicity, and other divides recognized in Serbian and other societies (Pantić *et al.*, 2021) indicate that the relevance of this study is beyond the national (Serbian) context. Namely, this research classified fields of division and possible indicators that can be applied in other contexts in the estimation of accessibility to digital participation. Some aspects, such as rurality and gender structure are common for EU mountain communities, but on the other hand, levels of patriarchy and ethnicity structure are rather different. Their comparability is possible by application of the methodology applied in this research, i.e., due to its replicability.

The main opportunity for digital participation in protected MA is the change of peripherality, i.e., increased accessibility to the decision-making process by reducing financial and time expenditures. The advancement of digital technologies allows more understandable presentation and participation, which also contributes to meaningful inclusion of stakeholders in areas of older demographic age, lower attained education, and more disabilities. However, progress in mastering technological achievements is hard to achieve without adequate technological equipment or training, which is not a stronger side of the protected MA. In that sense, the role of local gatekeepers and established governance networks is important. A local action group already operates in the area of the GSBR alongside mountaineering clubs, and rural and cultural tourism representatives, which can be considered an asset in the transition of governance practices.

GSBR and similar areas have weaker prospects to adapt to new conditions and trends of participation in urban and spatial planning in comparison with urban areas and the national average. There is a danger that the aging local population remains isolated from the participation process. These circumstances suggest that the concept of rurality should be seriously reconsidered and rural transformation should be enhanced to fulfill the needs of returnees and younger immigrants. This transformation should create new conditions for work and income. It should also take part in the transformation of management over protected assets and strengthen the positive aspects of digitalization. Unlike the transformation of rural and mountain areas that require strategic and systemic engagement, the

1 The share of disabled persons, computer illiterate, lower understating of planning processes, bad internet connection, and more.

novelty in digitalization and means of digital participation advance faster towards understandability, friendly interface, and reachability. This is a positive process that can meanwhile help the inclusion of disadvantaged populations as well.

For the higher share of disabled persons, digital means of participation should be adapted to special needs, e.g., the possibility to turn up the volume of the presentation, enlarge the picture/map, use contrasting colors that help visibility, and leave options for audio messaging or applications with automatic transcription. These improvements would help both the disabled and elderly citizens. Since technological innovation comes later in RA, decision-makers should consider training citizens before participation itself. The development of informatics centers – with computers and staff – closer to remote communities might contribute to solving technology accessibility issues and training requirements. This would be of particular relevance for the population involved with agricultural activities because they are lacking digital devices, good internet connection, and digital literacy. The increase of female participation might be improved by setting the rules of the minimal share of their participation in order to recognize the participation process as legit. If informatics centers had a corner for kids, this would allow a woman with children to get involved without leaving their children unattended at home.

The results show by which aspects the population in the mountain, rural, and remote areas are at significantly greater risk of being omitted from the public participation process. This only partially reveals where future research should look for solutions to overcoming the disadvantages in MA, also leaving an open question about the most efficient ways to overcome them.

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