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SPATIAL PLANNING AS A LAND-USE AND BUILDING REGULATION TOOL FOR PROTECTED NATURAL AREAS IN SERBIA

Marijana Pantić

Institute of Architecture and Urban & Spatial Planning of Serbia, Serbia
PhD., Research Fellow, marijanap33@yahoo.com

Saša Milijić

Institute of Architecture and Urban & Spatial Planning of Serbia, Serbia
PhD., Scientific Advisor, sasam@iaus.ac.rs

Jelena Živanović Miljković

Institute of Architecture and Urban & Spatial Planning of Serbia, Serbia
PhD., Research Fellow, jelena@iaus.ac.rs

ABSTRACT

Urban planning in Serbia sets the land-use and building rules and conditions but limited on urban settlements and potentially on touristic centres in protected areas, particularly in the mountains. The land-use and building regulation outside of urban areas is, therefore, dependent on spatial plans of various purposes and territorial embracement. As monitoring over irregularities in building and absolutely spontaneous construction in sparsely populated areas is more difficult than in cities, countryside and nature protected areas in Serbia remain fragile and endangered by quality decrease or devastation of their landscape values, identity and nature protection.

This research will present problems and challenges in spatial planning when it comes to collision between building and nature protection. In relation to it, the article will reveal measures contained in spatial plans in order to regulate building outside of cities by taking Spatial Plan of the Republic of Serbia 2010-2020 as the base, and particularly four special purpose area spatial plans prepared for nature protected areas as case studies. Thus, besides the goal to show diversity and systematisation of existing measures in nature protected, this research will also contribute to understanding of challenges and bring up recommendations about future improvements of methodology in planning and implementation of plans in order to more successfully balance between development and protection.

Keywords: spatial planning; protected natural areas; land-use; building regulations; Serbia

1. INTRODUCTION

Even though the primary role of protected areas is to protect and preserve biodiversity, ecological and natural values and resources, natural environment can get added value if properly used for other purposes and activities because they become multifunctional (Sayer et al., 2003; Ranganathan, 2010; Bergandi et al., 2013). However, balance between development and protection is an ultimate challenge for societies aware of contemporary climate change issues and not so rare misuse of natural resources (Belokurov, 2010; HABIT CHANGE, 2013). Since urban planning and urban plans are predominantly aimed to make order in urban areas, one of the initial and key tools for balancing between development and protection outside of cities is spatial planning, particularly special purpose area spatial plans, as well as their direct or indirect elaboration in urban plans. Therefore, the task of this paper is to show how protected areas are integrated in spatial planning regarding regulation of nature protection and building.

In order to obtain results, few spatial planning documents were reviewed, compared and observations generalised. The first among plans that was considered is the latest Spatial Plan of the Republic of Serbia

(2010), followed by four spatial plans at lower hierarchical level – special purpose area spatial plans [SPASP]. At the moment of preparation of this paper, there were nineteen SPASP adopted by the Government of the Republic of Serbia and the Autonomous Region of Vojvodina, therefore, a set of criteria was created to support shrinking the list for the purpose of this research: (1) all plans together cover all types of protected areas treated in spatial planning in Serbia, (2) each spatial plan is chosen to represent different type of protected area, (3) all together, the spatial plans represent different geo-morphological areas – mountains, lowlands, large water accumulation, river basin and/or Ramsar areas, (4) spatial plans are representatives of a larger time-sequence from 2004 to 2015. Based on the criteria, the following SPASP were chosen for the analysis: the Vlasina Landscape of Exceptional Features (2004), the Kopaonik National Park (2009 and 2016), the Gornje Podunavlje (Upper Danube Area) Special Nature Reserve (2012) and the Tisa River Multifunctional Ecological Corridor (2015).

2. RELATIONS BETWEEN THE LEGISLATIVE ON NATURE PROTECTION AND SPATIAL PLANNING

The basic legal acts that regulate nature protection in Serbia are the Law on Nature Protection (2009) and the Order on Protection Regimes (2012a), while the spatial planning is being primarily regulated by the Law on Planning and Construction (2009). In sphere of spatial planning, national spatial plans could be also taken as legislative acts because they are being adopted and published in the same manner as any other law; anyhow, it will be more thoroughly represented in the following section of this paper, together with special purpose area spatial plans.

The Law on Nature Protection defines three types of protection: (1) protected areas, (2) protected species and (3) mobile protected nature documents. The last two types do not intersect with spatial planning because they are whether mobile – so they are not related to specific location – or they represent individual natural elements (e.g. a specific three) that take insignificant amount of space to be subject of spatial planning. In contrast to those types, protected areas comprise seven sub-types of protection, where four of them are foundation for ordering, preparing and adoption of a SPASP. These are national parks, landscapes of exceptional feature, nature parks and special nature reserves. Their common characteristics are interrelations between nature and culture, where predominantly natural areas are still inhabited by sparse settlements and by people that preserve forms of traditional life-style. Those areas could vary in size from couple of hectares to over 100.000 hectares. Another group of protected areas are natural monuments and protected habitants, which are usually rather smaller in terms of territorial sprawl, therefore, usually included in spatial plans with/within other protected areas or ecological corridors. The last category are strict nature reserves that are not inhabited and have solely nature protection role, for which they are not of particular interest in spatial planning.

Among other tools, the Law on Nature Protection recognises spatial and urban plans, as well as planning and project documentation as tools for planning, ordering and use of protected areas. There is one more connection between the Law on Nature Protection and the Law on Planning and Construction: preparation of strategic environmental assessment (additional, but inevitable document following a spatial plan preparation) and study for accessibility evaluation (a document defined by the Law on Nature Protection as a part of the strategic environmental assessment). If the mentioned documents show that environmental impact is too high and non-sustainable, measures defined by spatial plan cannot be implemented.

The Order on Protection Regimes defines three levels of protection within a protected area, which is also accepted in spatial planning and spatial plans, while the Law on Planning and Construction sets the principles and protection, order and development propositions. The planning legislative act also defines constructions in natural environment that does not need construction permit (e.g. hiking paths and infrastructure that follows the paths, etc.).

3. PROTECTED AREAS IN SPATIAL PLANS

3.1. Problems

Support to nature protection by spatial planning starts with the statement and elaboration of existing environmental problems. In general, but also regarding construction activities and building, the issue is conflict between development and protection. In spite of planning and urban documents, defined land-use and building regulations, attractive touristic and scenic locations are simply being overloaded by illegal construction. Most of the analysed plans indicate that there are unsolved issues on land market and that state

land privatization out of control lead to, not only to construction of illegal building, but also unplanned and spontaneous conversion of agricultural land to building land. These trends diminish identity and attractiveness values, but also bring negative impact on biodiversity and pollution. The main pollution comes from the liquid and solid waste, because illegally build areas are not equipped with appropriate infrastructure (water-supply, sewage system and waste disposal solutions). The Kopaonik National Park is one of representative examples in negative light: its high landscape attractiveness is 'punished' by uncontrolled building actions in such extent that this protected area is getting close to lose features that put it on the protected area list at the first place (Official Gazette, 2009 and 2016). In spite of several decades of spatial and urban planning for this area and proclamation of balanced distribution of tourism accommodation capacities, only a few locations have been in centre of interest for building (areas above 1.600 m), while many other locations, especially in lower altitude areas, have remained untouched. This is also the case in European mountains – the trend of shifting skiing related activities and infrastructure to higher altitudes due to the impacts of climate change and shift of upper snow line to lower altitudes (Marty, 2013).

Besides illegal land conversion and building, which is the common problem detected by each analysed plan, the planning documents also detect issues that might be specific for certain type of protected area. For example, major problem in Vojvodina region is shallow groundwater that is easily polluted by turning a well into cesspit, or slowing down a river flow due to embankment of riverbeds, which further leads to eutrophication of swamps (Official Gazette, 2012b; Official Gazette, 2015). This already indicates that not only absence of implemented plans, but also implemented projects can cause undesirable consequences. One of the examples is realisation of some plans for afforestation by allochthonous species that has led to the biodiversity loss, such as in case of the SPASP for the Tisa River Multifunctional Ecological Corridor (Official Gazette, 2015), giving open-hands in construction of small hydropower plants that turned to be almost absolutely out of control leading to loss of forests, excessive erosion, loss of river biodiversity and in some cases even to loss of entire streams, change of meso-climate, etc. (Vujić, 2018). Another example of unproper implementation of planning are ski-slopes, such as the case at Stara Planina (Ristić et al, 2009), or elsewhere because this sort of infrastructure requires interventions and even use of high mountain areas that are usually in the I or II zone of protection. Underground distribution of gas and fuel does not allowed growth of plans with deep roots, which put limits to sprawl of forests and agricultural activities (Official Gazette, 2015).

3.2. Zoning

One of the basic actions by which spatial planning protects environment, as well as general interest, is land-use zoning. Since protected areas already have their three zones distinguished by level of protection, spatial planning integrates them into land-use planning process and add to it another layer of zoning typical for planning procedure – division on water-, forest-, agricultural- and building-land. It would be useful to mention here that in practice spatial plans usually cover a slightly broader area than the protected area itself, which allows the planners to put these extra zones in function of additional protection, but also proclaim them for zones with no additional limitations.

Taking in account zones defined in protected areas, analysed spatial plans concentrate the greatest amount of activities in the zone of III level of protection, more restricted functions and use they allow in the zone of the II level of protection – usually soft-impact activities and inevitable constructions of public interest, while the zone I of the protection is prohibited for any type of construction and activities basically limit to scientific research and hiking. The task for spatial planning is to, within defined protection zones that allow few or more diverse types of construction, subtract locations where these activities are still prohibited – this again refers to locations of public and general interest such as water-source zones, protection belts, etc. In the particular case of SPASP for Vlasina Landscape of Exceptional Features, there are also defined locations where tourism activities are prohibited – the area upstream from the dam, places of water inlets into the accumulation, swamp areas and floating islands (Official Gazette, 2004).

Another aspect in zoning is, for example, prohibition of building for private and personal use, but opened possibility for building tourism accommodation. Besides, in the II level of protection zone is allowed construction of small water accumulations for local water supply of mentioned accommodation, and in case of ski-centres is also allowed construction of objects related to functioning of cable cars and ski-slopes. This indicates that ski centres represent the case in which the II zone of protection is the mail area of activity and is the most intensively used. The spatial planning practice tries to minimize the impact by proclamation of minimal removal of forest cover, obligatory recovery of terrain after interventions through grassing and afforestation with autochthonous species of trees. Hiking paths and paths for Nordic skiing use already existing

forest paths, therefore, their impact is minimal if existing at all. In addition, some of the analysed spatial plans prepare tourism development zones that differ in type and extent of permitted tourism activities, as well as in type and extent of building (intensive/extensive, small/large extent, etc.).

When it comes to zoning according to land-use type, water-land is, almost as the rule and independently from kind of area that is being subject of a plan, aimed for water protection and protection from water; hence, constructions and buildings on this type of land is predominantly in accordance with its functions, but could also allow soft-impact activities such as tourism, recreation and sports. Further on, agricultural land is intended for agricultural production and other agricultural activities, which means that the type of building allowed is in function of it, as well as forest-land is limited to constructions in function of forests, forestry and hunting. All three types of zones/land-use allow constructions of lineal infrastructure (e.g. electricity, gas and fuel transport). Economically speaking, the most valuable zone, therefore the most commonly mis-used and the most difficult to control, is zone of building-land. In effort to protect natural resources, spatial plans proclaim building regulations for building-land outside of settlements, because settlements should be covered by urban plans. General tendency in analysed plans is enlargement of building-land, but with efforts to decrease it in any location where it is possible, and with focused sprawl in contact zones between settlements or other built areas. The plans also highly recommend building-land re-use and use of brownfield locations – so to say 'land recycling'.

3.3. Building regulations

There are two major types of constructions and buildings that spatial planning deals with: buildings made for public interest and buildings made for private interest. In contrast to the most of private building constructions, public interest buildings are not only in function of protected areas use, but also in function of their protection.

Some examples of constructions that are aimed to proper use of protected areas have already been mentioned in previous paragraphs: cable-cars, ski-slopes, tourism resorts, electricity-supply infrastructure. In addition, there can be mentioned other tourism and development infrastructure such as parking lots, garages, bus stops, roads, ports, docks, moors, marinas, car-camps or development of inter-modal transport zones. However, regarding the topic of this paper, it is even more relevant to list examples of nature protection, starting with anti-erosion measures, wind-safety belts, sewage-systems, canals for atmospheric water, water-purification systems (waste-water management), re-cultivation planned and spontaneously organized landfills (solid-waste management).

Besides regulation of public infrastructure, spatial plans regulate building rules for individual and private building projects. In accordance with Law on Planning and Construction, SPASP contain the division of planning areas into zones with specific regulations (regulation rules and construction rules with urban parameters, parcel subdivisions, etc.). Therefore, planning solutions and propositions establish the 'regime of use', i.e. obligations and restrictions regarding the manner of use (Živanović Miljković, 2018). Since protected areas are in the focus here, these regulations often put limitations or prohibition in building in order to preserve sustainable use of natural resources. Not all spatial plans give the same regulations, nor they regulate the same aspects, however, these are the various urban parameters and land use regulations found in the analysed examples:

- Number of floors (sometimes prohibition of increase of floor numbers for already build buildings);
- Gross population density allowed (e.g. 46 stationary users per ha);
- Overall number of beds in tourism accommodation;
- Number of allowed buildings on one plot (usually one holiday house + accompanying construction – garage, storage place, etc.);
- Minimal area size of a plot;
- Minimal width of a plot;
- Land occupancy index (usually low, about 10%);
- Floor area ration (also usually low, about 0.3);
- Maximal gross area of main and accompanying building;
- Position of a building on a plot – in reference to side borders of a plot, and regulation line towards road and towards e.g. river bank;
- Roof slope;
- Minimal distance from one building to another;

- Allowance/disapproval for balcony, porch or pergola construction;
- Hight of bottom and top edge of a fence (in order to secure free movement/migration of wild animals);
- Type of a fence allowed (green, transparent, etc) or prohibition of any type of fence;
- Hight of a fence;
- Removal of certain type of buildings/activities (e.g. farms);
- Types of allowed house designs – usually based on local tradition and local materials.

In order to secure nature protection, SPASP do not stop at listed regulations, but also define procedures that need to be followed on the way from an idea of potential intervention in space to its implementation. Thus, plans call for necessary preparation of urban plans and engineer projects before building. In another words, a potential constructor or resource exploiter must contact corresponding institutions for obtaining necessary permits based on prepared documentation. If it is more influential intervention, investors are obliged to finance preparation of impact assessment on its own expense. Spatial plans also mark areas that need further elaboration in terms of urban and detailed urban planning. Often, given locations represent simply rough suggestions that get practical use only through preparation of urban plans and projects that elaborate them into details. There is even open possibility that one special purpose area spatial plan calls for preparation of another spatial plan of the same kind within its territory, e.g. Spatial Plan for Donje Podunavlje Special Nature Reserve (Official Gazette, 2012b).

The problem of illegal building has been already stated in the article. It is also included in building regulations defined by spatial plans, and the general tactic is removal of the buildings, but also prohibition of their further enlargement if the building is located in the newly defined building-land. If a building was illegally built outside of building-land, their legalization is not permitted and its future is on local government to decide. If a building has obtained building permit before the spatial plan defined new building locations, the owner should build waste-water and solid waste system disposal and additionally thoroughly examine and harmonize with new set of regulations. In any other case of construction are applicable rules and regulations defined by spatial plans.

In addition to detailed building regulations, spatial plans can also address more general rules such as prohibition of constructing barriers in riverbeds in order to keep fish migratory habits, prohibition for building commercial buildings, waste disposal and landfills in vicinity of rivers. On the other hand, greening of spaces between build areas is supported and their minimal mutual distance defined (100-300 m), path paving and paving in general are also put under regulation (e.g. not closer than 20 m from river bank) and pavement slope limited to 45 % in order to ensure easy transit of wild animals. If a protected area is related to a larger river, spatial plans also defined desirable locations for beaches with mobile equipment, as well as they define conditions for changes in riverbeds (minimal depth, width, curve radius, etc.). For the places where infrastructural corridors intersect ecological corridors, spatial plans recommend preparation of a technical solution for provision of unrestricted migration of animals, including solutions against electrocution of birds (Official Gazette, 2015).

Fiscal policy, decrease of local taxes and provision of bank loans for energy efficient building are some of the suggestions in analysed spatial plans that connect building regulation and nature protection, although indirectly. Therefore, role of national and local government is significant in provision of incentives, but, as analysed spatial plans additionally address, governmental role is crucial in sphere of prevention and inspection of illegal building activities – the problem that must be put under the control.

3.4. Principles

The latest Spatial Plan of the Republic of Serbia (2010) has defined, among other, a goal that relates to environment and nature protection. According to the goal, up to 2020 Serbia should obtain increase of protected area by 10%, or for almost 100% compared to 2008. On the way to reach the aspiration, the national spatial plan, as well as other plans analysed here, follow and promote a set of principles. Some of them are in direct relation to the topic of nature protection and building, while others should bring indirect benefits with this regard and should be also set by SPASP as it follows:

- Sustainability – governing and development of nature assets so that they will be preserved for the following generations, too;

- Relativization of conflict between nature protection and development – e.g. between nature protection and tourism development in mountain areas, or between nature protection and alternative rural economies in river/accumulation basins;
- 'Urban recycling' – rather reuse of neglected buildings and location on building land than sprawl of building land;
- Identity – creation of attractive settlement and landscape identity by means of architecture and construction in rural areas, too;
- Tradition – support to traditional styles and forms of building and space arrangement and by use of autochthonous materials;
- Synchronized capacities – number of beds for tourists must be in accordance with other capacities such as ski-lifts, ski-slopes, water supply and sewage infrastructure, nature revitalisation capacity, etc.;
- Realisation in phases – tourism services and buildings are planned to be built in phase so the it is followed by timely construction of supra- and infra-structure and for potential observation of required changes;
- Participation – reconstruction of settlements conducted through special programs that include successors of 'old' households;
- Public-private partnership;
- Improvement of organisation and staff skills – especially of local institutions and inspection sector;
- It is not too late – if the existing building/construction does not fit newly set regulations, it should be adapted to new rules by any following reconstruction and intervention;
- Infrastructure at the first place – no construction or building is allowed before prepared infrastructure, primarily sewage system;
- After exploitation comes re-cultivation – use of local resources is supported in building, but only with previous permit by local authorities and with obligation of beneficiary to re-cultivate the site; and
- Density over sprawl – rather plan increase of population density than sprawl of building land.

4. CONCLUSIONS

The role of spatial planning in nature conservation appears to be relevant, particularly for territories that are not in focus of urban development such as cities, towns and tourism resorts. In practice, various land-use regulation instruments are implemented, based on planning solutions and propositions, regarding the fact that plans are legally binding (Živanović Miljković, 2018). As presented, special purpose area spatial plans can set generally binding content for land-use and building in protected areas, which is mandatory for everyone, irrespective if buildings are made for public or private use, or land is public or private. As it is presented through this paper, relations between planning, building, land-use and nature protection have been recognized in a few areas of action – from planning and regulation of large infrastructural constructions of national importance (e.g. touristic centres, supra- and infrastructure, etc.) to rather precise regulation of building and fence height or building materials. At the very precise level, spatial plans define building instructions in a manner usually expected for urban detailed planning, although they are being defined for areas outside of cities.

Recognition and statement of different environmental problems caused by human activity is one of the efforts of spatial planners to raise awareness on diverse issues, if not broader, then within the professionals involved in development, decision-making and governance. Parallel consideretion of several zoning criteria and relativisation of conflicts between nature protection and development – level of protection regime and land-use – represent foundation in the planning process, which also shows that planning for naturally valuable areas is the main precondition in creation of special purpose area spatial plans. By following sustainability and other principles based on sustainability, planning practice puts effort in order to reach balance between protection and development, so to keep values and identity of countryside and nature in Serbia.

In spite of the efforts, there are the cases when interventions and investments in space reach only short-term benefits, but on the expense of long-term damages. It is not necessarily about unsuccessful planning, but poor implementation and partiality in decision-making proces (Milijić, 2015). However, lessons should be learned and future planning should emphasize potential negative consequences that interventions in fragile natural surrounding could cause and define instructions for implementation phase as precise as possible.

It is easier to understand identification of a great number of illegally build objects in protected areas that have been put under the protection just recently. But, it is alarming to notice that each spatial plan analysed here states the same problem even though some of the areas are under protection and regulated by spatial and urban plans for decades. As it was identified in other sources (Bryson, 1993; Pantić, 2014; Pantić et al., 2018), absence of implementation of spatial plans – their regulations and measures – is the problem, and not the absence of planning documents. Therefore, it is of a crucial relevance to point out the gap between planning and realization of plans – the field where is the most expected from the governance at the national and at the local level. Only after awareness on the problem is raised among professionals and local communities, responsible actions and support can be expected from citizens themselves. One of the most operational tools reccommended by analysed documents is enforcement of the inspection sector.

In summary, the role of spatial planning is decisive for development of protected natural areas in Serbia, but it is not the action where development ends. In contrary, an adoption of a spatial plan represents only an initial phase and foundation that further on must be completed and upbuilt by plans at lower hierarchy level, responsible implementation, inspection and monitoring.

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