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SPATIAL PLANNING AND ECOLOGICAL NETWORKS IN SERBIA

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

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

INTRODUCTION

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

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

THE CONCEPT OF ECOLOGICAL NETWORKS

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

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

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

ECOLOGICAL NETWORKS IN SERBIA

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

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

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

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

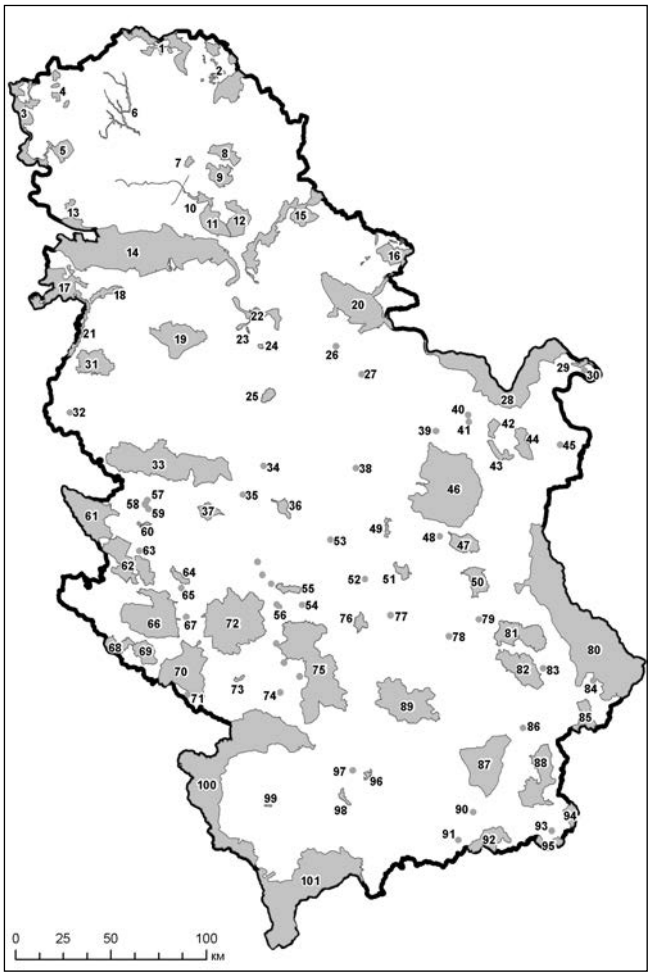

Figure 1. Ecologically important areas in Serbia, Institute for Nature Conservation of Serbia
(Source: Mijović et al., 2012:58)

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

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

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

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

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

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

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

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

Ecological networks in spatial planning practice in Serbia

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

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

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

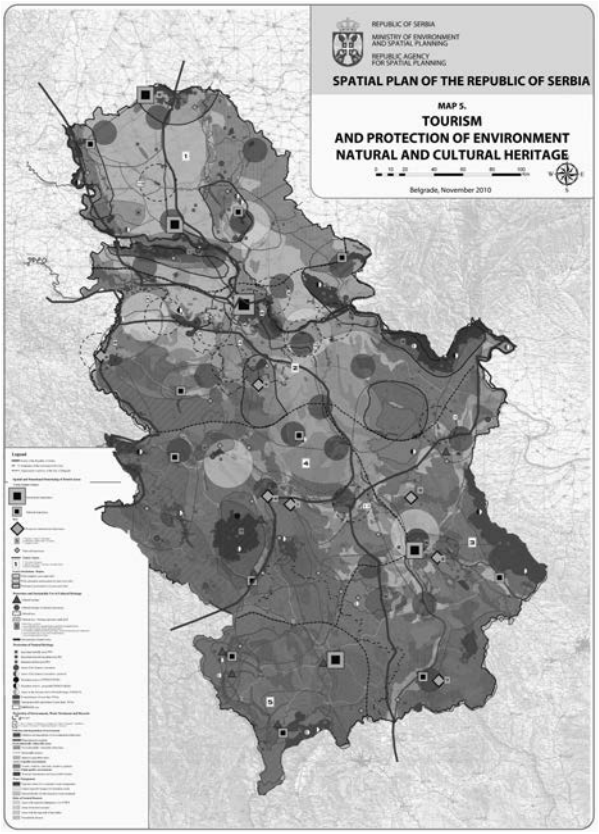

Figure 2. Reference map 5. Tourism and protection of the environment and natural and cultural heritage (1:300,000) (Source: rapp.gov.rs)

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

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

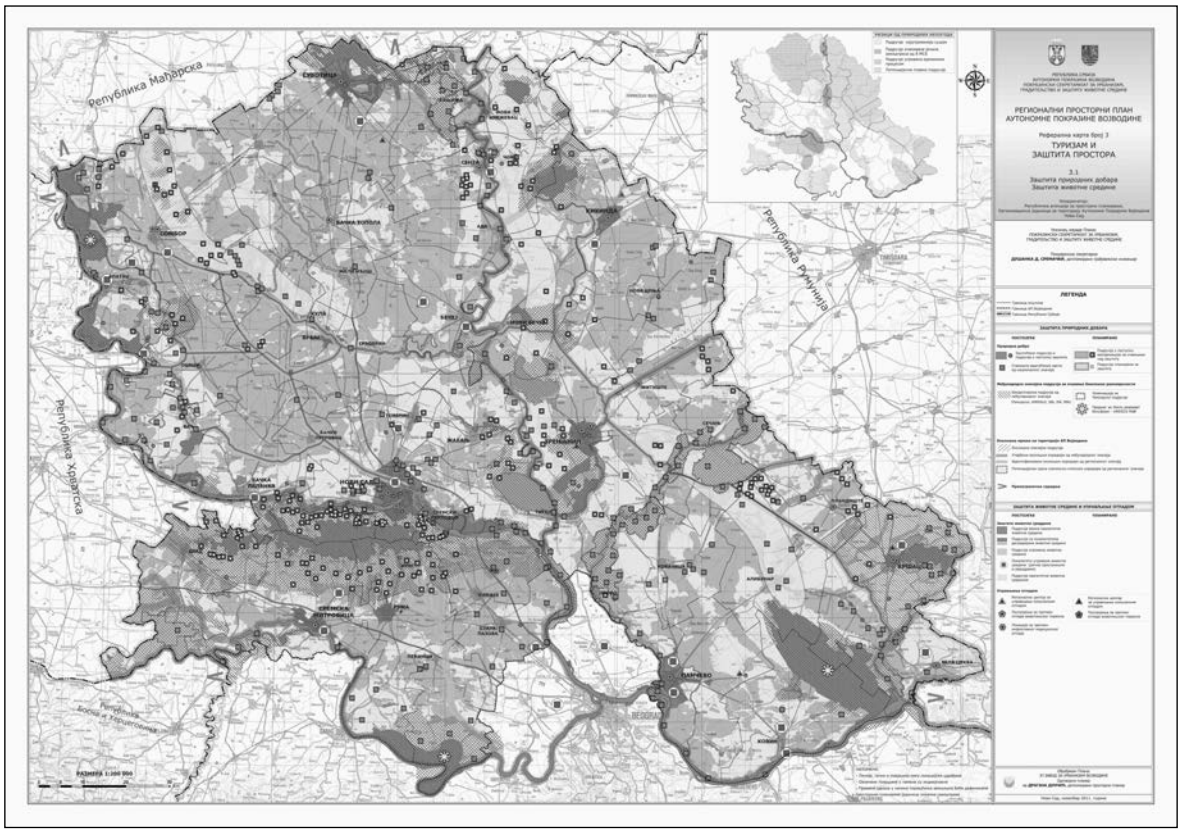

Figure 3. Reference map 3.1 Natural Resource Protection (1:200,000) (Source: PE Urban and Spatial Planning Institute of Vojvodina, 2011)

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

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

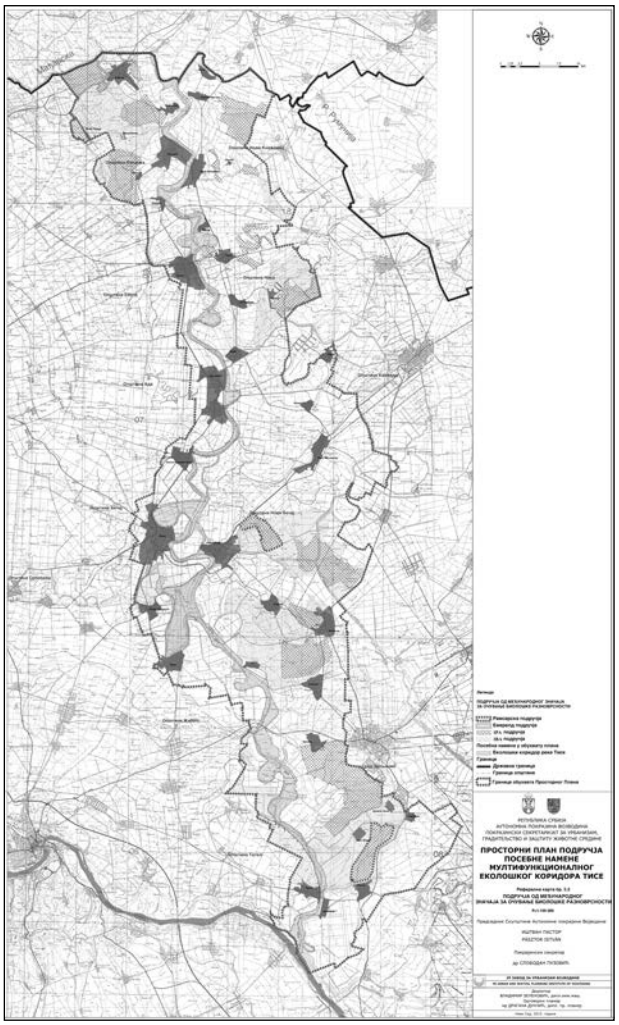

Figure 4. Reference map 5.2 Areas of international significance for the conservation of biodiversity (1:100,000)
(Source: PE Urban and Spatial Planning Institute of Vojvodina, 2015)

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

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

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

CONCLUDING CONSIDERATIONS

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

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

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

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