

NATURAL RESOURCES AND THE ENVIRONMENT OF UPPER DANUBE

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Abstract

The Upper Danube area is in the northwest of Backa of Serbia along the left bank of the Danube on the border with Croatia and Hungary. This is very specific and unique complex of wetlands and floodplains in the Danube area. The area was declared a special nature reserve because of the great biodiversity which was established here. Upper Danube is the subject of strategic documents at national and international level, particularly delineated and implemented measures for the protection and conservation of biodiversity of these ecosystems is also emphasis on individual forest species, bird species and fish stocks. The aim of this paper is to analyze the environmental situation of the region with special emphasis on the individual municipalities that are related to this area. According to the available data were analyzed indicators related to the state of the forests in this area and highlighted the importance of preserving natural resources and the principles of sustainable development, which are the potential of the area in terms of tourism and economic development.

Keywords: Upper Danube, biodiversity, forests, sustainable development.

Introduction

Connecting communities and nature conservation in the European Green Belt initiative is one of the first projects in coordination IUCN- Programme of Office for South-East Europe. Planned activities in the field are focused on cross floodplains bordering Croatia, Hungary and Serbia, which is one of the last major floodplains of the Danube. The main objectives are to strengthen cross-border cooperation, raise awareness in local communities about the importance of biodiversity and capacity building of all interested parties associated with protected areas in the region. In this way, the projects contributes to the harmonization of management plans in three adjacent protected areas and involve local economy management programs are one of the key solutions for a sustainable future.

Special nature reserve Upper Danube is a protected natural asset, which extends along the left bank of the Danube, from the 1367th the 1433rd km of its course. Part of a large marsh complex that extends through neighboring Hungary and Croatia, and considered as a whole, is one of the last major flood-prone areas in the territory of the European continent.

Special Nature Reserve Upper Danube declared 2001th as a protected natural area of great importance, and the first category, based on the Regulation on the Protection of the special nature reserve "Upper Danube" (" Official Gazette of RS", no. 45/01, 81/08 and 107/09). Reserve a rarely preserved marsh complex (Monostorski and Apatinski rit) with specific natural, cultural, historical, tourist, environmental and other values. Upper Danube and enjoys international protection. Because of the known ornithological value of this natural resource is identified as a Bird Area (IBA) and the plants and butterflies (IPA PBA). Upper Danube was registered in the Ramsar list as a significant wetland according to Ramsar Convention. Upper Danube is a part of the Emerald Network, which covers areas important for the protection and conservation of wildlife species and their habitats, and a potential reserve of Biosphere (UNESCO-MAB).

In the northwest part of Backa, on the left bank of the Danube, bordering with Croatia and Hungary, there is rarely preserved flooded complex, irregular and elongated as authentic testimony original nature, special nature reserve Upper Danube. Along the neighboring Croatian coast stretches Nature Park "Kopacki rit", while to the north, the Special Nature Reserve bordering the Upper Danube Drava National Park and makes them one of the largest wetland whole of Europe. Special Nature Reserve Upper Danube includes two big marshes - Monostorski and Apatinski, which together make up 19 605 ha of forests, meadows, ponds and wetlands, including the river Danube and its meanders. The special nature reserve Upper Danube is present 51 species of mammals, 248 species of birds, 50 species of fish, 11 species of amphibians, 9 reptiles, large numbers of invertebrates, especially butterflies from over 60 species of butterflies. There are more than 1000 species of plants. With a variety of swamps, and canals rich in flora and fauna, the area of the Upper Danube region is ideal for variety of recreational and tourist activities.

The EuroVelo project "EuroVelo" is a project of the European Cyclists' Federation (ECF), through which developed network of bicycle routes of Europe. It consists of 12 trans-continental routes that go all over the continent with a length of over 60,000 km. Route "Euro Velo 6" connects the Atlantic coast of the Black Sea and beside the tracks Serbia has entered the Route 11 project Route No. 6 moves from France and go through Vienna, Bratislava, Budapest, Novi Sad, Belgrade, Bucharest and Constanta. Part of this route, which follows the Danube is called "Danube cycling route" and follow the course of the river starting in Budapest and to its mouth, and the part that follows the river through our country debt is 665 km. On part of the route through the Upper Danube, from the border with Hungary and Croatia set up a complete cycle signals, signs and demonstration table, in full accordance with the European standard for labeling these cycling routes, with tourists in the EU is enjoying growing popularity (<http://www.eurovelo.org/>).

Upper Danube is a unique whole vast ecosystem of flooded forest (black and white poplar, red and white willow, the higher areas of oak, ash and other species), numerous tributaries and canals and ponds and meadows. In these living communities inhabited marsh animals: marsh deer, wild boar, fox, deer, wildcats, otters and more. Since birds can come here to meet waterfowl and eagles, as well as very rare species such as the black stork and white-tailed eagle. Ornithological importance of the Ramsar site as a habitat for many waterfowl (considered to be more than 20.000 most numerous distinguished grebes, cormorants, herons, ducks, geese, gulls and terns. Among the other species of this community are home to many fish, amphibians, reptiles and insects. The Public company Vojvodinasume - Woodlands Sombor managed and planned to have natural resource reserve Upper Danube (www.vojvodinasume.rs access).

Material and Method

Upper Danube is analyzed in this paper in terms of natural resources. A particular within the state of the environment and biodiversity considered state forest fund. The applied analytical methods were based on the collected statistical and other documented information that was available.

Results and discussion

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amphibians, reptiles and insects. The Public company JP Vojvodinašume and Lumber camp ŠG “Sombor” Sombor managed and planned to have natural resource reserve Upper Danube. (Fishing Area Management Programme Reserve "Upper Danube" for 2012-2021. Year, summary, JP "Vojvodinašume" Novi Sad, ŠG "Sombor" Sombor, Novi Sad, 20012th

In the area of the Upper Danube examined the Apatin, Bac, Backa Palanka and Sombor. The Plan strategy for rural development in Serbia researched all of these municipalities and the city belongs to Region 1 - High-efficiency agriculture and integrated farming. This region has a developed economy and economic indicators point to a well diversified industry and a good economic infrastructure (Strategy Plan for Rural Development, 2009-2013., Ministry of Agriculture, Forestry and water management, Republic of Serbia).

The main objective of forest management in forest areas is sustainable (permanent) forest management, including the management and use of forests and forest lands in a way and in such an instance, to preserve the biodiversity and productivity, regeneration, vitality and potential of forests to bring the level which meet the relevant environmental, economic and social needs of the present and future generations, both at the local and national level, taking into account at the same time not to interfere with and damage other ecosystems.

The concept of spatial development of forest area of Upper Danube includes the following starting points:

- establishing zones with differentiated protection schemes;
- conservation and protection of forests and forest lands;
- improving the management of the development, protection and regulation in forest area;
- implementation of the Convention, protection standards and development of forests in forest areas, law reform, sector strategies, instruments, measures and policies to the alignment of inter-sectoral coordination and participation of the competent institution has and the local community;
- sustainable development of environmentally friendly events and activities in relation to poly-functional importance of forests;
- improve transport accessibility and connection with the environment;
- functional linkages and integration of forestry with other sectors of the economy that occur in forested areas and in this regard the continuous development;
- use of forests as a renewable energy source (multi-use forests and forest land).

(Spatial plan of special purpose special nature reserve Upper Danube, the draft plan, Novi Sad 2011th).

Table 1. Shows of the total forest area in Serbia and examined municipalities and the city of Sombor in the Upper Danube and percentage

Region, area, city, municipality	Forested area (ha)	%
The Republic of Serbia	1.962.335,00	100
Region of Vojvodina	117.091,00	5,966
Apatin	4.657,16	0,237
Sombor	7.238,38	0,368
Ba	2.978,21	0,151
Ba ka Palanka	1.277,98	0,065

Source: Municipalities and Regions of the Republic of Serbia, 2012. Statistical Office of the Republic of Serbia.

The data presented in Tab. 1 point to a small area of forest at the level of Vojvodina, reflecting the large influence of anthropogenic factors in terms of the development of agriculture in the fertile Pannonian fields. In addition to development plans at the state and local level, this fact should be taken into account in some of the municipalities analyzed in terms of afforestation reached a certain result.

Table 2. Shows the forest area on municipalities for some of the years.

Forested area per year (ha)	1979.	2005.	2008.	2011.
Municipality				
Sombor	7.076	6.644	6.626	7.238
Apatin	2.984	4.877	4.350	4.657
Ba	3.140	4.114	4.616	2.978
Ba ka Palanka	2.810	10.277	4.808	1.277

Source: Municipalities in Serbia in 1980., 2006th, 2009th, and Municipalities and regions in Serbia, 2012. Statistical Office of the Republic of Serbia.

Sombor is a city in their territory of 1.178 km² has 7.238 ha of forest (which represents 6,14%). Part of the town is the Upper Danube Nature Reserve. In the city of Sombor, great attention is paid to the greening of the city and is considered the center with a relatively low level of threat. The problem of forest cover in Sombor (which is presented of inadequate maintenance of forests and uncontrolled logging) to be resolved. According to documented plans, measures to protect plant and animal species through the following activities:

- control of hunting and fishing
- controlling deforestation
- planning and raising forest plantations and increase forest coverage from 5 to 10%.

Special emphasis is placed on the protection of sensitive ecosystems such as wet meadows, salt marshes, wetlands, steppes and the like. Also in terrestrial habitats are plowing land and conversion of arable land had reduced suppression and disappearance of authentic biocenosis.

Apatin municipality has under management (of the total 332 km²) 4.657 hectares, which is 14% (below the national average). A special contribution to biodiversity of this municipality is famous Apatinski rit.

Bac is a municipality in the observed area, which has 8,15 % of its territory covered with forest (total area of 36.500 ha of forest is 2.978 ha) (Municipalities and regions in Serbia 2012). Largest forest area is in the southern and western part of this municipality. The largest area of forest is in the southern and western part of the municipality. From represented dendroflora most American ash, poplar domestic, acacia, oak and oak as well as natural communities, and has a plantation forest. Forests are being built here to protect against flooding and strong winds. The alleys outside the forests have also erected along the roads and on farms.

For a municipality Backa Palanka is largely under the influence of human activity changed the original natural environment and biocenosis loess terraces were turned into arable land. Some parts of the former municipalities have preserved the original appearance and preserved natural vegetation and scrub steppe grasslands, especially in the Danube area. At present hilled less forest area consisting of dendroflora locust and oak. The largest forest is a forest Popina (Bagremara). Forested areas are only 2,13 % (from 57.500 ha area of the municipality is 1.277 ha of forest).

Conclusion

Based on the analysis of the environment of the Upper Danube region and state forests as an important factor in the conservation and enhancement of natural resources led to the following conclusions:

- Upper Danube area along the banks of the Danube preserved wetland ecosystem and it is important to preserve the biodiversity of the reserve.
- Consideration of the municipality where the reserve around in the forest areas as well as the entire territory of the Vojvodina region of deficit and the measures planned afforestation undertaken and must continue to work on their implementation.
- In the context of sustainable development and conservation of nature and Upper Danube, which belongs to Serbia, is considered and treated in the context of cross-border cooperation with neighboring Hungary and Croatia and with respect to documents and conventions relating to the Danube countries and in the context of integration into the European Union.

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