Cycling tourism is gaining attention as a form of sustainable tourism offering the opportunity to travel long-distances with minimum carbon impact on the environment. Cycling routes connect different regions and may extend from local to transnational scale covering vast territories and unifying them under various themes. Danube cycling route is part of the trans-European network of cycling routes (EuroVelo) and within the Upper basin of the Danube is a successful tourism product. Being identified by the European Union cycling tourism development is a newly introduced priority with strong potential for generating transnational relations among different stakeholders. As a result, a number of cross-border and transnational projects have been implemented with the financial support of EU funds. The current paper aims at providing an overview of cycling tourism potential and development level within the Middle and Lower Danube region with a focus on Danube cycling route. A comparative analysis of countries where the route passes is used to define the current status and propose recommendations to future initiatives and cooperation between stakeholders involved in development of cycling tourism routes.

Keywords: cycling routes, sustainable mobility, cycling tourism, regional development, transnational cooperation

ВЕЛОСИПЕДНИТЕ ТУРИСТИЧЕСКИ МАРШРУТИ – ИНСТРУМЕНТ ЗА РЕГИОНАЛНО РАЗВИТИЕ И ТРАНСНАЦИОНАЛНО СЪТРУДНИЧЕСТВО В СТРАНИТЕ ОТ ДОЛНОТО ПОРЕЧИЕ НА Р. ДУНАВ

Кирил Калоянов

Нарастващата популярност на велосипедния туризъм се дължи на възможността за пътуване на дълги разстояния с минимален въглероден отпечатък върху околната среда. Велосипедните маршрути свързват различни дестинации

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INTRODUCTION

In the early XXI century sustainable development is undoubtedly the most popular socioeconomic paradigm and is becoming more and more important driver of change in contemporary society. It is somehow natural that “sustainable development cannot lack cycling as an effective, environmentally friendly and humane branch of transportation” (Bike Project, 2014), which until now has remained in dormant state (Koch, 2013).

Along with sustainable development, the concept of sustainable tourism is another friendly host, which welcomes cycling as its integral part. At this scene, cycling merges with the desire for outdoor recreation, active holiday, individual travel and the discovery and exploration of new places at slow pace.

In Europe, sustainable mobility and tourism development in emerging destinations are priorities of the European Union, where development of cycling routes fits perfectly. A main prerequisite for development of cycling tourism is the availability of longer routes, which can offer several days of experience. It is estimated that cycling trips longer than a single day raise considerably the level of expenditure of cycling tourists (Downward et al., 2009). So in order to obtain the desired economic benefits destinations must develop routes of more than 100 km, which is very likely to spread among several administrative regions. This is an important driver for cooperation between different regions and countries, which is also a main priority of the European Union. Furthermore, cycling routes connect tourism destinations with peripheral rural regions, which enable economic impact from cycling tourism to spread more equally across vast areas (Ritchie and Hall, 1999; Piket, 2013).
Following all these tendencies, the European Cyclists Federation\(^2\) (ECF) created a brand called EuroVelo, which is a network of pan-European cycling routes that aim to connect different corners of Europe as cycling tourism destination, and along with that to provide bicycle access between communities for local people, where these routes pass through (www.eurovelo.com). One of these routes is called EuroVelo 6 and connects the Atlantic Ocean with the Black Sea. In its Eastern part it follows entirely the Danube River from the source to the Delta. In Germany and Austria, the Danube cycling route has turned into emblematic trail for European cyclists (Weston et al., 2012). In the Austrian town Krems the route attracted 198 000 cyclists in 2008 (Meschik, 2012).

Being the only big European River that flows eastward, the Danube is a strong attractor for bicycle tourists to undertake a journey until the very end of EuroVelo 6 at the Black Sea. Considering the fact that Danube River constitutes a border for most countries, the Danube cycle route connects many peripheral regions in border areas and the need for its development is shared by the countries where it passes. Consequently, the route has become a subject of many projects funded by EU cross-border and transnational programs (Table 1), and as a result some developments have taken

\[\text{Table 1}\]

\[\text{Projects for development of cycling routes along the Middle and Lower Danube countries}\]

<table>
<thead>
<tr>
<th>Project</th>
<th>Countries</th>
<th>Period</th>
<th>Funding program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signposting of Danube Cycling Route</td>
<td>Serbia</td>
<td>2007-2008</td>
<td>GIZ – German bureau for international technical cooperation</td>
</tr>
<tr>
<td>Enhancing the International Danube Cycling Route – Cycling Danube</td>
<td>Croatia – Serbia</td>
<td>2010-2011</td>
<td>IPA Croatia – Serbia</td>
</tr>
<tr>
<td>Danube bike – establishment of the regional cycling route Srem</td>
<td>Serbia</td>
<td>2013-2014</td>
<td>EU IPA and the Austrian Development Agency</td>
</tr>
<tr>
<td>Danube Velo Route</td>
<td>Romania – Bulgaria</td>
<td>2011-2012</td>
<td>Romania – Bulgaria CBC program</td>
</tr>
<tr>
<td>Iron Curtain Trail project and Transdanube project</td>
<td>Hungary – Croatia – Serbia – Romania – Bulgaria</td>
<td>2012-2014</td>
<td>South-East Europe transnational cooperation program</td>
</tr>
<tr>
<td>Danube Cycling – Middle and Lower Danube Cycling Routes</td>
<td>Croatia – Serbia – Romania – Bulgaria</td>
<td>2014-2015</td>
<td>START Danube Region Project Fund</td>
</tr>
</tbody>
</table>

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\(^2\) European Cyclists’ Federation is international non-government advocacy organization based in Brussels and working as umbrella of national, regional and local cyclists’ member associations in Europe (www.ecf.com).
place in all countries along the Danube including Hungary, Croatia, Serbia, Romania and Bulgaria. However, not much information seems to be available about this emerging cycling tourism destination both in the relevant literature and the public space.

The current paper aims to present a comparative analysis of cycling tourism potential and development in countries from the Middle and Lower Danube Basin with a focus on the Danube cycling route. Variety of similarities and difference are highlighted in order to show common trends and missing gaps of cycling tourism development in countries throughout the region. Based on the analysis, some recommendations to future development and research initiatives are proposed.

**METHODS**

The paper is focused on the Danube cycling route’s potential for development in Hungary, Croatia and Serbia, Bulgaria and Romania. Due to the scarcity of academic publications on this topic, the research includes information from existing publications, which treat the problem of cycling tourism development world-wide and within the research area, as far as they exist. The research is complemented with outcomes from the identified projects (presented in Table 1) such as studies, papers, websites, maps, videos, newsletters and presentations.

The method of comparative qualitative analysis is used to evaluate the current status of cycling tourism supply in each of the five countries regarding the following aspects:

- Region covered by the route and connections with other routes;
- Tourist attractions and services on the route;
- Road infrastructure;
- Organization and development.

The first aspect is represented by the general characteristics of the Danube cycling route’s geographical location in the whole target area. Connections with other routes are seen as an opportunity for diversification of the cycling experience offering varied choices of itineraries and providing access to other destinations.

Tourist attractions and services on the route are discussed in regard to their existence and variety of offer, which ensures quality of the tourist experience. The road infrastructure is included as a key element, because its characteristics define the safety and attractiveness of the route, and in the same time, it is a main target for investments which would stimulate wider participation in cycling tourism demand. The organization and development aspect of the analysis is important, as cycling tourism needs interaction among wide range of public and private stakeholders at different territorial levels.

The scope of the research is limited to the use of secondary data only, which impose many restrictions. Information was scattered and fragmented, making it difficult to generate a complete picture and compare different elements. However, the comparative analysis enabled the clearing out of commonalities and disparities between different countries and showed best practices to follow and main deficiencies to be overcome. The most clear tendencies where summarized and recommendations to future initiatives are proposed within the paper’s conclusions.

The following analysis presents details about the Danube cycling route in the selected countries and their approach to the problem for cycling tourism development.
RESULTS AND DISCUSSION

REGION COVERED BY THE ROUTE AND CONNECTIONS WITH OTHER ROUTES

In its Middle and Lower Basin the Danube flows through Hungary, Croatia, Serbia, Bulgaria and Romania, crosses two capital cities and constitutes a border line at some part for all these countries. The itinerary of EuroVelo 6 connects many different settlements, nature areas and heritage places - five of them listed as UNESCO World Heritage Sites. Map of the region and EuroVelo routes is shown in Figure 1. It is worth mentioning that according to the EuroVelo concept, routes that follow rivers may have itinerary on both banks of the river. As the Danube constitutes the border between countries in the area, at some places it runs simultaneously in two bordering countries. A summary of routes and regions is given in Table 2.

Currently, EuroVelo 11 (the East Europe Route) connects Nordkap (Norway) with Athens (Greece) and crosses with EuroVelo 6 (the Danube Route) at Belgrade. EuroVelo 13 (the Iron Curtain Trail) is a historic route, which follows the border between former Eastern and Western Block countries. It connects with EuroVelo 6 at Mohacs (Hungary) and along the Serbian-Romanian border both routes overlap to pass through the Iron Gate gorge.

In the future EuroVelo 6 may also have connections with routes, which are still in the planning stage. It is worth mentioning the concept of Sava bicycle route, which will connect Ljubljana (Slovenia), Zagreb (Croatia) and Belgrade (Serbia) (Koželj, 2015), as well as the concept for the Black Sea EuroVelo Route from Odessa to Istanbul (Danube Cycling Project, 2015).

Sources: European Cyclists Federation (ECF, 2016)
Fig. 1. Map of EuroVelo routes in the Middle and Lower Danube
| Table 2
<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>Regions covered by the Danube cycling route and connections to other routes</strong></td>
</tr>
<tr>
<td><strong>Region covered by the route</strong></td>
</tr>
<tr>
<td>Along the border with Slovakia; Across the country from North to South</td>
</tr>
<tr>
<td>Connections with <strong>EuroVelo routes</strong></td>
</tr>
<tr>
<td>Connections with regional routes</td>
</tr>
</tbody>
</table>

**TOURIST ATTRACTIONS AND SERVICES ON THE ROUTE**

The Danube cycling route connects many natural and cultural attractions in all countries where it passes. The most remarkable natural areas include the Szigetköz Island in Hungary, Kopački Rit National Park in Croatia, Fruška Gora and Djerdap National Parks (Iron Gate) in Serbia, Persin and Rusenski Lom Nature parks in Bulgaria, the Biosphere reserves Srebarna in Bulgaria and the Danube Delta in Romania.

In the list of cultural attractions, the most important are the capital cities of Budapest and Belgrade, as well as the smaller cities of Pécs, Osijek, Novi Sad, Ruse and Tulcea. Other most frequent attractions are medieval fortresses and manors, remains from Roman cities, ethno villages and wine cellars.

The availability of tourist services varies considerably along the route. In Hungary the Danube cycling route offers variety of accommodations available. Despite that fact, there are no common efforts for quality development yet (Bike Project, 2014), e.g. cycling-friendly labelling. The main tourism area of Croatia is along the coast in the Western part of the country, thus the Danube cycling route region, which is located in Eastern Croatia, is characterized by countryside tourism establishments including pensions and small hotels. In Serbia, except for Belgrade and Novi Sad, the offer along the route, is also dominated by rural tourism establishments, e.g. in Fruska Gora (Bogdanovic, 2016) and Djerdap National parks.

In Bulgaria and Romania the potential of existing tourism attractions is significant. Many ancient Roman sites are situated on the Bulgarian banks of the river, although their potential is not fully used and many of them are not properly exposed. Natural attractions like the Danube Delta and Srebarna Lake support the operation...
of tourist facilities, but at some places, the access to the points of interest by bicycle is not on the desired level. On the other hand, there are large sections where tourist services are scarce and there is no varied choice of accommodation facilities both in Bulgaria and Romania (Danube Velo Route Project, 2012).

ROAD INFRASTRUCTURE

A basic principle in the development of EuroVelo routes is using the existing infrastructure when available. This is possible on rural roads with low density of traffic when it is safe enough to mix cycling with motor vehicles. In cases when cycling must be separated from motor traffic different kinds of infrastructure is available according to characteristics of the area which are presented in Table 3 (Klarich, 2015).

Except for specially designed bicycle roads and low traffic roads, the cycling routes use also forestry or agriculture roads and even asphalted former railway tracks, e.g. Greenways (www.aevv-egwa.org).

In some cases river dykes are also available for cycling and some of them are asphalted, too. Such infrastructure is available along the Danube cycling route in Hungary as well as on the Three Rivers route and gives remarkable experience with nice views to the rivers (Pamer et al., 2014). There is further need for access to the banks of the Danube in all countries to enable an authentic Danube experience (Šimunović et al., 2012).

Currently, the infrastructure on the whole route has many sections, which need further investment in separate cycling facilities in order to ensure maximum safety for the cyclists. This is an important improvement that will allow a wider group of cyclists with various capabilities to choose the route for cycling. Separate cycling infrastructure will also raise the safety for commuting cyclists, because only in Osijek and Vukovar Counties in Croatia there are between 100-150 accidents involving cyclists per year, of which from 1 to 10 with fatalities in the period between 2005 and 2010 (Šimunović et al. 2012). Other problematic sections include entrances in Bel-

<table>
<thead>
<tr>
<th>Type of infrastructure</th>
<th>Bicycle lane on the road</th>
<th>Bicycle path separated from the roadway</th>
<th>Bicycle road</th>
<th>Bicycle pathway</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definition</td>
<td>Part of the road designed for bicycle traffic stretching parallel with the road and marked with longitudinal line and prescribed traffic sign</td>
<td>Built-up traffic area designed for bicycle traffic separated from the motor traffic and marked with longitudinal line and prescribed traffic sign</td>
<td>Asphalted road or other form of solid surface designed for bicycle traffic stretching outside of road corridor marked with horizontal lines and prescribed traffic sign</td>
<td>Built-up traffic free area designed for bicycles without solid surface outside of road corridor marked with prescribed traffic sign</td>
</tr>
</tbody>
</table>
grade and Apatin in Serbia, the road through Iron Gates in Romania, as well as the section between Vidin and Dobri Dol (35 km) and between Obretenik and Dve mogili (1 km) which are not suitable for cyclists due to intense cargo traffic (Danube Cycling Project, 2015). For such sections bypass roads or public transport services could be temporary alternative.

In Hungary the Danube cycling route is signposted for almost the entire itinerary, although the design of the signs is outdated. In Croatia and Serbia a uniform signposting system navigates the tourists along the route (Damir, 2012). Interestingly, a research on cyclists’ opinion about route conditions along the Croatian-Serbian section shows that main underperformance of the route is the absence of more dedicated information on the road, e.g. gradation of the route section severity, navigating signs to accommodation and restaurant places and gradation of the tourist spots attractiveness (Vujko, 2014).

In Bulgaria, the route is signposted only on the section from Bregovo to Nikopol. The bicycle signs were installed under the project Danube Velo Route (2011-2012), but some of them were removed by the Regional Road Authorities, because it was treated as advertisement. In Romania no signposting is available.

ORGANIZATION AND DEVELOPMENT

Development of cycling infrastructure in Hungary started in 1990s by local governments establishing bicycle paths along heavy traffic road arteries. The process had really taken off at the middle of the 2000s, in the beginning by national public funding, later replaced by European Union assistance. From 2004 until 2012 altogether 708 km of bicycle roads have been constructed (Pamer et al., 2014).

Nevertheless, the development in Hungary is rather fragmented and coordination is not on the desired level. Many of the routes are isolated and not planned in regard to a consistent network development. During the early stages many of the initiatives had been carried out by local authorities as beneficiaries of the projects, but later on a governmental decree was issued in order to define which governmental bodies were entitled to participate in projects concerning development of national public road infrastructure (Hungarian Public Roads Nonprofit Plc., National Infrastructure Development Plc.). As a result some of the early constructed routes are currently in a run-down situation (Pamer et al., 2014).

The newly presented National Cycling Program (2014-2020) represents an upgrade for Hungarian cycling development. A cycling coordination body is in process of being set-up in order to: “harmonize diverse developments, knowledge and experience of different institutions, define and create a standardized system of objectives and measures, provide conditions for more efficient use of resources, financial savings, and avoid parallel developments” (NCP, 2015).

The establishment of such coordination bodies in every country is a policy of ECF for development of EuroVelo routes at national level. The ideal situation is that such organization coordinates all cycling routes in the country including national, regional and local cycling routes and represents a consortium with members from public and private sector. The tasks of the organization include route and signposting coordination, marketing, communication, monitoring and maintenance of the cycling route network (Freire, 2015).
Croatia, as a main tourism attractor on the Adriatic coast is also active in development of cycling tourism. In 2014 an Action plan for the development of cycling tourism was prepared as a common effort of Croatian Ministry of Tourism, Institute for Tourism in Zagreb and several cycling NGOs (Klarich, 2015). Among the activities three main priorities have been identified:

- Definition of the national network of cycling tourist routes and finding a way to finance their construction from EU funds;
- Establishment of a National coordination center for cycling;
- Unification and marketing preparation of national cycling tourism supply.

In 2015 the National Cycle Tourism Coordination Centre was established in Croatia to follow the action plan with identified functions of each institution (Table 4).

Recently, the new Minister of Tourism has announced that “the funds for infrastructural project financed by the Ministry allocated in the mainland will mostly be used for the development of new cycling routes and other infrastructural projects needed for the development of cycling tourism” (Matijaca, 2016).

Development of the Danube cycle route in Serbia started in 2004 with the support of German bureau for international technical cooperation (GTZ, lately transformed into GIZ) and in 2007 the Serbian part was entirely signposted. The Ministry of Trade, Tourism and Telecommunications provides financial support for maintenance of EuroVelo 6, and for development of EuroVelo 13. The National Tourism Board of Serbia supports development of EuroVelo and other cycling routes in the

<table>
<thead>
<tr>
<th>Institution</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ministry of tourism</td>
<td>Coordinator and leader of the Action plan for the development of cycling tourism</td>
</tr>
<tr>
<td>Ministry of Maritime Affairs and Transport</td>
<td>Planning of national cycling tourist network and creation of legislation dealing with the movement of cycling tourists on public roads</td>
</tr>
<tr>
<td>Croatian Roads Agency</td>
<td>Leading entity responsible for the construction of national cycling tourist network</td>
</tr>
<tr>
<td>Croatian Water Agency</td>
<td>Adaptation of the river embankments to the needs of cycling tourists</td>
</tr>
<tr>
<td>Regional Development Agencies</td>
<td>Attraction and usage of EU funds for the development of cycling tourism</td>
</tr>
<tr>
<td>Cycling Associations</td>
<td>Planning and monitoring of cycling tourist routes, maintenance of info bases about routes and support in production of cycling tourist maps</td>
</tr>
<tr>
<td>Local Tourism Boards</td>
<td>Organization of cycling tourist activities in destinations, promotion of cycling tourism and support of the development of routes</td>
</tr>
<tr>
<td>Entrepreneurs</td>
<td>Provision of various services for cycling tourists in destinations (accommodation, catering, services, rent-a-bike)</td>
</tr>
</tbody>
</table>
country. Many local municipalities and tourism organizations also support the development of cycling routes logistically and financially. Certain number of them participated in projects of cycling routes development as partners or lead partners (Iron Curtain Trail Project, 2014).

In Bulgaria and Romania cycling tourism has not been identified as a tool for regional development by state authorities, yet. Considerable effort has been put from several bicycle NGOs, but their voice has not provided any result. So far, cycling initiatives are scattered over both countries with no synergy between them (Danube Cycling Project, 2015).

**CONCLUSIONS**

The concept of the EuroVelo 6 cycling route has the capacity to provide not only valuable cycling experience across Europe, but also promising perspectives for regional development and transnational cooperation between countries on the Danube. Many projects have targeted the route development. Nevertheless, it seems that such transnational concept needs much more coordination and cross-country interaction, so these are only the first steps.

It is clear though that in the last 10 years a lot have been done focusing primarily on the supply side of cycling tourism with measures for route signposting, research and dissemination of the concept of cycling tourism along the Danube. Not much attention has been paid though on research about tourist’s expectations and satisfaction from cycling on the route. Such information is critical to be taken into consideration during the current stage of development to ensure that further investment measures will properly target the tourist’s needs.

From the brief comparison analysis presented in this paper it is evident that the cycling routes development in Hungary, Croatia and Serbia is at a higher level than in Bulgaria and Romania. However, in both groups of countries, the funding programs cannot guarantee that synergies between different projects result in confluent development as it is affected by each country or region general economic and political situation. Two recommendations appear from this conclusion. Firstly, next projects have to induce wider, but focused and more coherent approach towards cycling tourism development. And secondly, cycling tourism needs national coordination with the active participation of the state institutions in the first place and only then shall projects contribute with common activities and transfer of knowledge between organizations in different states, which share the route.

Based on the analysis several recommendations are applicable for all the countries from Hungary to Romania. Efforts are needed to provide better access to the river by bicycle, so that longer parts of the route have direct contact with the beautiful scenery of the river. Investments in appropriate infrastructure are needed at many places in terms of bicycle roads, signposting and dedicated tourist information.

Specific recommendations for Bulgaria and Romania emerge from both countries’ lagging behind at all analyzed aspects of cycling routes development. Unfortunately, organizations from these countries only participate sporadically when projects are available, but their public institutions have not yet identified cycling tourism as something to work on. Both Bulgaria and Romania need to prepare appropriate strategies and action plans to provide coordination framework for cycling tourism.
REFERENCES


