

# THE TOURIST POTENTIAL OF THE MAIN HYDROTECHNICAL CONSTRUCTIONS FROM TIMIȘ COUNTY

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**ABSTRACT.** The tourist potential of the main hydrotechnical constructions from Timiș County. The Timiș and Bega rivers spring out of the Semenic Mountains, respectively the Poiana Ruscă Mountains, and represent the most important water courses that drain the Timiș county area. Only one hydrographical basin resulted following our anthropogenic intervention on the two water courses, built over almost three centuries. The water transfer between the Timiș and Bega rivers is performed with the help of the hydrotechnical knots from Coștei and Topolovățul Mic and through the connection channels that serve them (the Timiș-Bega Supply Channel, respectively the Bega-Timiș Discharge Channel). The adjustment of the water levels on the navigable portion of the Bega Channel is performed with the help of dams from Sânmihaiu Român and Sânmartinu Maghiar, while a part of the hydro-energetic potential of the rivers is reevaluated through the hydropower plants from Timișoara and Surduc. Following the analysis of the tourist potential of the specified hydrotechnical constructions, we found that these may represent important attraction points from Timiș County, through the variety, the history and uniqueness, which may be introduced in a themed tourist circuit, entirely new for the Banat area, but also for our country.

**Keywords:** Timiș river, Bega Channel, hydrotechnical constructions, watergate, tourist potential

## 1. INTRODUCTION

Located in the western part of the country, Timiș County has a wide network of hydrotechnical facilities, comprising drainage systems, dams systems, derivation and navigation channels, hydrotechnical knots and hydropower plants, as well as the permanent and temporary reservoirs.

From the 30 reservoirs, 13 are permanent, their volume reaching between 0.5 and 25 mil. m<sup>3</sup>. The Surduc reservoir stands out, having the highest volume and an average water surface of 357 ha (Banat Water Basins Administration).

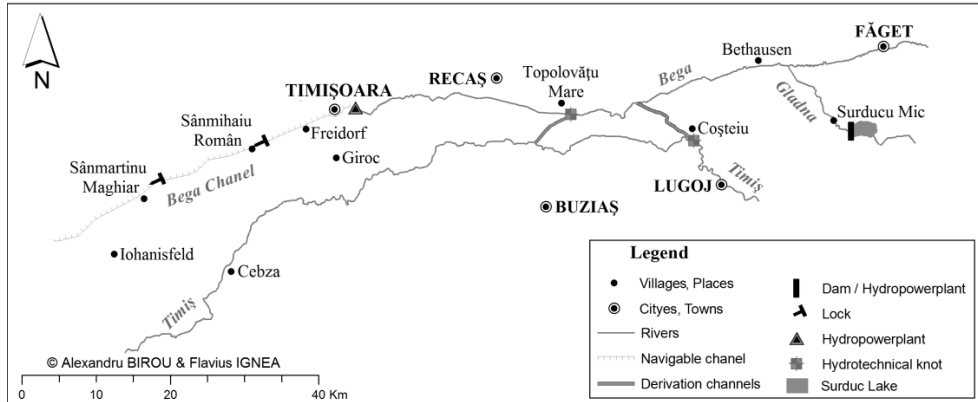
Among the hydrotechnical facilities, the double connection Timiș-Bega stands out through its complexity, formed of the Timiș-Bega Supply Channel and the Bega-Timiș Discharge Channel, served by the hydrotechnical knots from Coștei, respectively Topolovăț. The hydrographical basins are connected into one

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basin through the two derivation channels. The oldest artificial navigable way of the country, the Bega Channel, together with the micro-hydropower plant from Timișoara and the watergates from Sânmihaiu Român and Sânmartinu Maghiar become the most representative hydrotechnical facility from Timiș County.



**Fig. 1. The main hydrotechnical constructions from Timiș County**

Due to their importance and role in the hydrographical space, the main hydrotechnical facilities from Timiș county are represented by the Surduc dam and reservoir, the Timiș-Bega Supply Channel with the Coștei hydrotechnical knot, the Bega-Timiș Discharge Channel with Topolovăț hydrotechnical knot, the micro-hydropower plant from Timișoara, the navigable Bega Channel with the watergates from Sânmihaiu Român and Sânmartinu Maghiar (Fig. 1).

## 2. THE TOURIST POTENTIAL

The tourist potential represents all the elements belonging to the natural and anthropogenic environment that may be reevaluated from a tourist point of view. The main hydrotechnical facilities from Timiș County are the result of the human intervention on the hydrographical network, thus these objectives are included in the category of anthropogenic tourist resources.

The specialty literature proposes to group the anthropogenic tourist resources in three main categories (Cocean, Dezsi, 2009): tourist buildings and units, social activities with a tourist nature and ethnographic tourist resources. The first category includes the tourist technical constructions that are part of the channels, the hydrotechnical knots, the dams and the reservoirs.

Glăvan (2000) quoted by Dezsi (2006) proposes a classification of the anthropogenic tourist potential as follows: cultural - historical, technical - economical and social - demographic.

In spite of the significant age, the main hydrographical facilities represent the technical and economical potential due to their intended purpose. The Timiș-Bega double connection stands out due to the methods applied in the preservation

of a constant water flow on the Bega Channel. The economic purpose of the navigable Bega Channel and of the watergates is emphasised by the facility of the commercial flows that have determined the economic progress of Timișoara from that time. The Surduc reservoir and the micro-hydropower plant from Timișoara are important due to their significant economic nature, contributing to the national energetic system.

### 3. TOURIST ATTRACTIVENESS

The tourist attractiveness and potential of the hydrotechnical facilities are determined based on the attributes revealing their features and specific. According to Cocean and Dezsi (2009), the features that define the attractiveness of the anthropogenic tourist objectives are: their age, uniqueness, originality, dimension, significance and function.

The tourist potential of the hydrotechnical facilities is validated by introducing the hydrotechnical knot from Coștei, the hydropower plant from Timișoara, as well as the watergate from Sânmihaiu Român in the Romanian cultural heritage. Thus, the hydrotechnical facilities from Coștei and Timișoara are historical monuments included Class A, of national importance, while the watergate from Sânmihaiu Român is a historical monument of local importance, included in Class B<sup>3</sup>.

The **oldest** hydrotechnical facility from Timiș county, in operation, is the Timiș-Bega double connection, built between 1757 and 1765. (Olaru, 2006). We mention the old Bega Channel, whose first navigable route was built between 1728 and 1732. Subsequently, between 1912 and 1914, the watergates from Sânmihaiu Român and Sânmartinu Maghiar were added, in order to support a more frequent navigation according to the economic development of Timișoara. Moreover, the building works on the micro-hydropower plant from Timișoara took place between 1907 and 1910, this being commissioned on 3 May 1910 (Jancsó, 2010).

Some of the hydrotechnical facilities from Timiș county represent several records, being the first of their kind on the current Romanian territory. The Timiș-Bega double connection is unique at a national level through its complexity and function and it is one of oldest hydrotechnical facilities. The Surduc reservoir dam is the narrowest dam according to the water volume retained - wideness ratio, being the largest reservoir in the county. The micro-hydropower facility from Timișoara was the first hydropower plant with corresponding dam built in Romania (Jancsó, 2010).

Their **originality** is another feature of the hydrotechnical facilities. Built using simple methods, but innovative techniques at that time, almost without exception, the hydrotechnical facilities have been operating for several centuries. These protected Timișoara from floods and ensured the water surplus during drought. Their constant use from their commissioning until the present, using the

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<sup>3</sup> <http://www.dccpcnjtimis.ro>

same manually driven mechanisms, confers them a special status and emphasises one of their most important features.

A small museum was organised in one annex of the hydrotechnical knot from Coștei, presenting the history of the hydrotechnical facilities from the region by exhibiting maps, plans, drawings, as well as a collection of instruments and measurement devices specific to the 19<sup>th</sup> century, while the events from the history of the hydropower plant from Timișoara may be seen in a themed exhibition with machinery and equipment, used within the hydropower plant over time.

The hydrographical basins of Timiș and Bega, as well as the completion of the works on the double connection, have led to a sole hydrographical basin, characterised by a controlled flow. The manner in which the technicians of the 18th century managed to solve the issue of the water supply and the preservation of a constant level on the Bega Channel, represents a distinct feature.

Timișoara was connected to the European network of river and maritime transport through the river harbour on the navigable Bega Channel, reaching further the Danube river. During the economic development period from the first half of the 20th century, trading relations were carried out with remote states, such as England, France, Turkey, Norway or Finland. Usually, grains and technical plants were exported and cotton, paper, porcelain and machinery or devices were imported (Hațieganu, 1947).

The **size** of the hydrotechnical facilities is also an important issue in the analysis of the tourist potential. With a length of 44 km (on the territory of the country) and a width of 30 m, the navigable Bega Channel is the widest hydrotechnical facility from Timiș county. We mention the discharge space of the hydrotechnical knot from Coștei, built on the Timiș river, having remarkable sizes, a length of 130 m and a height of 10 m. The hydrotechnical knot from Topolovăț is impressive as well, being formed of a dam with an opening of 10 m and a discharge space with a length of 65 m (Olaru, 2006).

The hydropower plant from Timișoara uses a water fall between 5.2 and 6.2 m, and the volume caught upstream from the dam is of 1.2 mil. m<sup>3</sup> (Jancsó, 2010), this being formed of three different bodies: the turbine hall and the two dams with openings of 12 m, respectively 35 m.

The dam from the Surduc reservoir is the biggest hydrotechnical construction from Timiș county, having a length of 130 m and a height of 34 m. The volume of the reservoir is of approximately 25 mil. m<sup>3</sup> (Teodorescu, 2008) while the water surface has a surface of 350 hectares.

Regarding **the function of** the objectives, all the facilities from Timiș county have as primary purpose the mitigation of risks of flood occurrence in the region. Besides that, there are other purposes such as the catchment of certain water reserves or the production of electrical energy. For instance, the Surduc reservoir represents the strategic water reserve of Timișoara, but the reservoir waters are used to produce electrical energy as well.

The Timiș-Bega double connection presents a double functionality, on the one hand of protecting against floods, and on the other hand of supplying the city

of Timișoara with water, while the purpose of the micro-hydropower plant from Timișoara is to reevaluate the hydroenergetic potential of the Bega Channel waters. The three components of the Bega hydrotechnical system have facilitated the river transport on the channel, this being one of their role as well.

For the Timiș county area, the hydrotechnical facilities have a special **meaning**, representing a symbol of the early technical progress and the economic development.

The technical progress of the civil engineering reached in the 18<sup>th</sup> century made possible the achievement of complex hydrotechnical systems in terms of function and space, these being located on tens of kilometres.

In the collective mind of the people from Timișoara, the Bega Channel is considered the backbone of the city, owing to this water course a large part of the technical and civil construction development of Timișoara in the 18<sup>th</sup> and 19<sup>th</sup> centuries. The channel is considered the link between the three urban nuclei forming Timișoara, but also between the city and the Western Europe through the harbour. Timișoara and the surrounding space became the social, economic and technological outpost of Romania within its current limits.

Besides the analysis of the attributes that reveal the features and the specific of the hydrotechnical facilities (age, size, function, uniqueness), we have chosen to quantify the above-mentioned attributes within the study of their tourist attractiveness. Moreover, a series of new indicators (the historical monument status, the accessibility, future fitting possibilities, the existence of themed exhibitions) have been added, considered to be relevant for the tourist potential quantification (Table 1).

*Table 1. Quantification of the touristic potential of main hydrotechnical constructions from Timiș County*

No.	Hydrotechnical facilities / Aspect	Oldness	Dimension	Function	Uniqueness	Statute	Exhibition	Accessibility	Improvement	TOTAL
1.	Surduc Lake	1	3	3	1	0	0	2	3	13
2.	Coștei hydrotechnical knot	3	3	3	2	2	1	3	1	18
3.	Topolovăț hydrotechnical knot	2	1	2	1	0	0	1	1	8
4.	Timișoara hydropower plant	2	2	3	2	2	1	3	0	15
5.	Sânmihaiu Român Lock	2	1	1	1	1	0	2	1	9
6.	Sânmartinu Maghiar Lock	2	1	1	1	0	0	1	1	7

According to the age, 3 points have been granted to the objectives built during the Habsburg administration, 2 points for the ones built between 1867 and 1918, 1 point for the newer ones. The size has been quantified starting from the

volume of the objective, the largest ones scoring 3 points, and the smallest ones 1 point. The objectives with a complex function are considered as having a wider degree of tourist attractiveness, these benefiting from a higher score compared to the others. In addition, the tourist attractiveness degree is directly proportional with the uniqueness of the facilities, thus the objectives that have this feature have received a higher score compared to the ones lacking uniqueness.

We have considered an advantage the status of historical monument of the hydrotechnical facilities, the ones from Class A (national important) scoring 2 points, and the ones of local importance 1 point. The objectives with themed exhibitions organised inside the facility have an advantage in the tourist reevaluation, scoring 1 point. We have also considered the accessibility degree while quantifying the tourist potential, classifying it on a scale from 3 to 1 points. The last quantified issue is the future possibility of fitting the objectives and the surrounding area in order to best reevaluate the tourist potential.

As you may notice from table 1, following the quantification of the tourist potential of the hydrotechnical facilities, the hydrotechnical knot from Coștei stands out, being followed by the micro-hydropower plant from Timișoara and the Surduc reservoir. We also mention the fact that the facility from Coștei has a tradition regarding the tourist reevaluation, being a highly appreciated camping point in the past. The hydrotechnical knot from Topolovăț and the two watergates on the Bega Channel from Sânmihaiu Român and Sânmartinu Maghiar have a lower tourist potential.

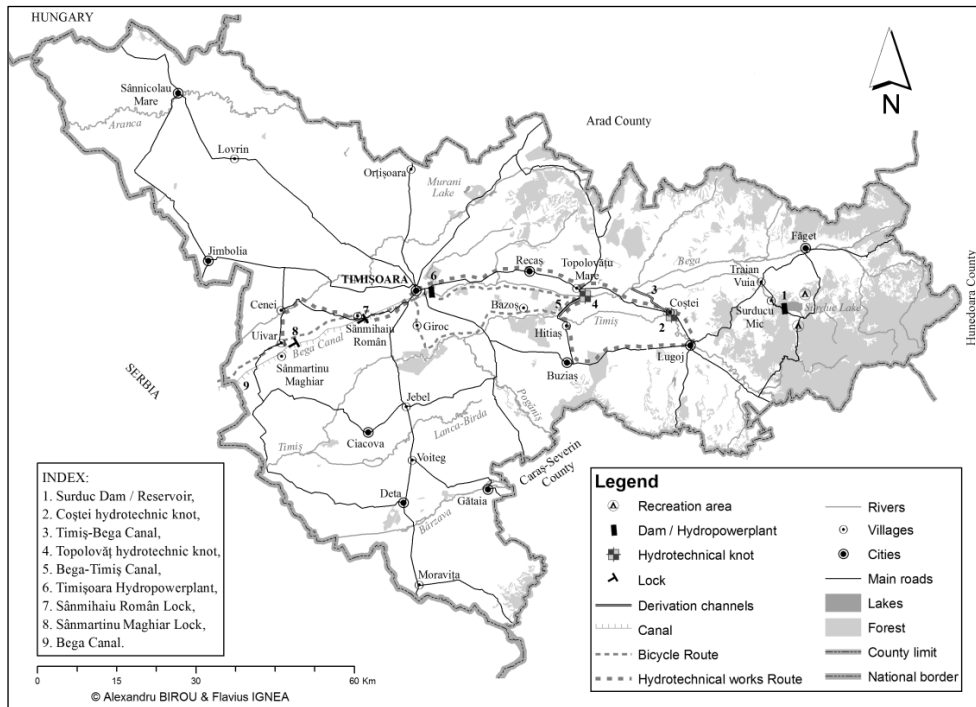
#### **4. TOURIST REVALUATION**

The geographical location, the accessibility, the access ways, the transport means and the connections with other subsystems represent several of the elements that need to be considered when the aim is the tourist reevaluation of a territory, as mentioned by Erdeli and Gheorghilaș (2006).

The Surduc reservoir is located in the eastern part of Timiș county, at 30 km from Lugoj and approximately 100 km from Timișoara. It can be accessed on the county road DJ 681A, way connected to the national road 68A Lugoj-Făget. The hydrotechnical knot from Coștei is located at 10 km from Lugoj, and the knot from Topolovăț is located at half of the distance between Lugoj and Timișoara, situated in the immediate proximity of the national road DN6. The micro-hydropower plant is located in the eastern part of Timișoara, close to the national road DN 6. The watergates, located in the south-west of Timișoara, can be accessed through the county road DJ591 and the national road DN59B. The knots from Sânmihaiu Român and Sânmartinu Maghiar are located at 12 km and 35 km from Timișoara.

Through their complex nature, the hydrotechnical facilities of Timiș county may constitute attractions for the following types and tourism forms: industrial or technical tourism, itinerary tourism, cyclotourism, recreational tourism or weekend tourism.

The optimal revaluation of the tourist potential may be achieved through the integration of the hydrotechnical facilities into a themed tourist circuit with a length of 216 km that may be divided into two parts. The first part of the circuit (136 km) includes a visit to the hydrotechnical knot from Topolovățul Mic, to the Bega-Timiș Discharge Channel and to the hydrotechnical knot from Coștei on the following route: Timișoara - Recaş - Topolovățul Mare - Hitiaș - Buziaș - Lugoj - Coștei. The route back to Timișoara is through Recas (Fig. 2).



**Fig. 2. The hydrographical space of Timiș county. Hydrotechnical constructions and tourist circuit proposals.**

The second part of the circuit (80 km) consists of the visit to the micro-hydropower plant from Timișoara, as well as to the two hydrotechnical facilities on the Bega Channel; the route proposed being the following: Timișoara - Sânmihaiu Român - Cenei - Uivar. The return to Timișoara would follow the same route.

The development of cyclotourism is considered by building of a bicycle track between Timișoara and the Serbian town Becicherecul Mare (Zrenjanin), on the Bega Channel dam. The track shall have a length of 70 kilometres and shall follow to route Timișoara - Freidorf - Utvin (left dam); Utvin - Sânmihaiu Român - Uivar - Otelec - Torac - Becicherecul Mare (right bank) (Fig. 2.). The works were started in 2013, and are to be completed in 2014 (P.A.T.J. Timiș, 2013).

Moreover, we propose the achievement of another cyclotourist route (80 km), as follows: Timișoara - Giroc - Pădurea Giroc - Pădurea Chevereș – Hitiaș

(the right bank of Timiș river) – Topolovăț – Remetea Mare – Ghiroda – Timișoara (the left bank of Bega Channel).

The weekend or recreational tourism, the itinerary tourism, the cyclotourism or the agro-tourism could be practised in the area of the Surduc reservoir (with the possibility of building a route around the lake).

## 5. CONCLUSIONS

The main hydrotechnical facilities benefit from a favourable location in the county, on the route Timișoara-Lugoj, fact that allows their exploitation in terms of tourism. The diversity and innovation of the hydrotechnical facilities constitute the main advantages in the revaluation of the tourist potential.

The tourist attractiveness of the facilities consists of their specific features. Their age of over two centuries, unique in the current Romanian space, their impressive dimensions, technical features and permanent operation since their commissioning up to the present are reasons conferring their value.

The integration of the hydrotechnical facilities in a themed tourist circuit shall ensure their place on the map of the important tourist objectives from Timiș county.

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