Scientific Bulletin of Politehnica University Timisoara
Transactions on HYDROTEHNICS

Volume 70(84), Issue 1, 2025

BEGA CANAL HISTORY AND FUTURE THROUGH REHABILITATION AND GREENING WORKS

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Abstract: Inland waterway transport is a major objective in the group, where there are over 37,000 km of inland waterways connecting hundreds of cities and industrial regions. Of the EU Member States, twenty have inland waterways, of which twelve have interconnected inland waterway networks. Inland waterway transport is a competitive alternative to road and rail transport, by reducing energy consumption, noise, and pollutant emissions, energy consumption per km/t is approximately 17% of the energy consumption of road transport and 50% of rail transport, and in terms of noise pollution and gas emissions, it is almost non-existent compared to road and rail transport. In addition to these advantages, inland waterway transport contributes substantially to the decongestion of roads in densely populated areas and guarantees increased safety for the transport of dangerous goods. According to recent studies carried out by the EU, the total cost of inland waterway transport, in terms of accidents, congestion, noise, pollutant emissions and other environmental impact conditions, is seven times lower than in the case of road transport.

Keywords: rehabilitation, greening works, waterway transport

1. INTRODUCTION AND GENERAL CONSIDERATIONS

Romania has a very rich hydrographic network:

– rivers with a length of over 500 km = 3752 kilometers on the territory of Romania;

– rivers with a length between 254 - 499 km = 2287 kilometers on the territory of Romania;

– rivers with a length of up to 249 km = 3354 km on the territory of Romania.

Total kilometers and rivers on the territory of Romania = 9393 kilometers.

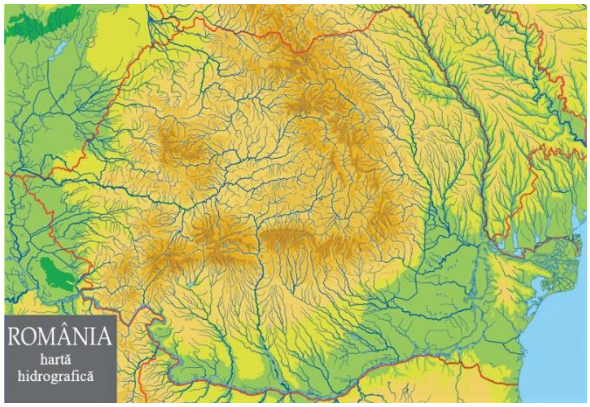

Figure 1 Romania hydrographical map [3]

Inland waterways in Romania currently:

Total km of navigable inland waters:

-1075 km (Danube);
-64.4 km (Danube-Black Sea canal);
-31.2 km (Poarta Alba-Midia-Navodari canal);
- 44.5 km (Bega canal).

Total km = 1215.1 km of which 1075 km is the Danube.

In other European countries, the situation of waterways shows much more extensive developments, in this regard I will present a few examples.

There are over 3,200 km of canals in England and Wales, attracting over 10 million tourists each year. Half of the UK population lives within 5 miles of a waterway. There are 1,569 locks built along the length of the waterways. 3,112 bridges are built over the waterways, and the waterways pass through 53 tunnels built specifically to keep the waterways clear for navigation. There are also 370 navigable aqueducts. The waterways offer opportunities for navigation, delighting tourists with unique views and new things to do. It would take 10 years to explore the entire network of waterways in these countries. Easily accessible, the inland waterways of England and Wales are ideal destinations for leisure boaters. Almost all watercourses, even small ones, have been rendered impassable inland.

Scotland has a 220-kilometer canal network, visited annually by millions of tourists for the special beauty of the places that can be visited by sailing on these canals.

Poland is making great efforts to attract tourists interested in inland waterway navigation and has even launched a program called "Welcome to Inland Waterways". Unfortunately, the connections to the east of the country and to the Black Sea are not navigable. However, there are 3000 km of navigable inland waterways in Poland.

France has a network of 8000 km of navigable inland waterways and thousands of locks and can be crossed, by means of rivers and navigable canals, from east to west and from north to south. Of note are the small rivers Brittanynay and Aquitine and the famous Canal du Midi, as well as many other navigable canals in Burgundy and Alsace. The old navigation canal, from the Marne to the Rhine, is still used today as much as in the past. Navigation in the Seine river basin, made up of the Seine and its tributaries: the Yonn, Loise Marne and Ainse, extends over 17 departments and 5 regions and totals over 1500 kilometers of inland waterways. These represent, in addition to the function

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of commercial and tourist navigation, an important source of water for the population and Industry [4].

For Romania, the most representative navigation channel is the Danube - Black Sea Canal.

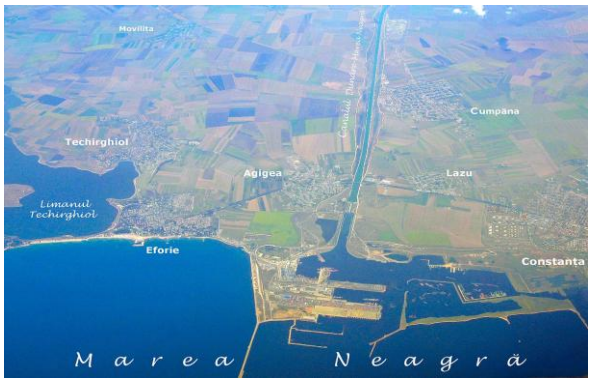

Figure 2 Danube - Black Sea Canal

The Danube-Black Sea Canal is a navigable canal located in Constanța County, connecting the ports of Cernavodă on the Danube and the ports of Constanța Midia Năvodari on the Black Sea, shortening the route to the port of Constanța by approximately 400 km. The canal is the third largest in the world after Suez and Panama.

The canal, with a total length of 95.6 km, consists of the main branch, 64.4 km long, and the northern branch (known as the Poarta Alba-Midia Năvodari Canal), 31.2 km long.

The Danube-Black Sea Canal is part of the important European waterway between the Black Sea and the North Sea (via the Rhine-Main-Danube Canal). Using this route, goods from Australia and the Far East, destined for Central Europe, shorten their journey by 400 kilometers.

Plans to build this canal had existed since the 19th century. Ever since Dobrogea was annexed to Romania in 1878, the idea of a fourth branch of the Danube, this time artificial, that would shorten the route to the Black Sea, had been floated. The technical conditions of the time made such an achievement extremely difficult and expensive, so King Carol I, a realist, refused to get involved in this project.

However, the idea was not abandoned; in 1928, the future academician Aurel Bărglăzan would conduct a study that practically indicated the current route of the canal. Later, Carol II also flirted with the idea of the canal, but the global economic crisis and then the beginning of World War II caused its completion to be postponed indefinitely.


Figure 3 Cernavoda Lock

Construction of the canal began in 1949, with many of the workers being political prisoners from communist prisons and members of ethnic and religious minorities. Work was halted in 1955 and resumed, with a new design, in 1976. The canal was inaugurated on Saturday, May 26, 1984, by Nicolae Ceaușescu. 294 million m3 were excavated for the main canal and another 87 million m3 for the northern branch, Poarta Albă-Midia Năvodari (25 million more than for the Suez Canal and 140 million more than for the Panama Canal), and 5 million m3 of concrete were poured.

The main canal is 64.4 km long, 7 m deep, 70 m wide at the base and 90-120 m wide at the surface, and has a maximum annual transport capacity of 80-100 million tons, and for the northern branch of 15-25 million tons of cargo. The maximum permissible draft is 5.5 m, thus allowing access to river and small maritime vessels. At each end there are two locks that allow traffic in both directions.

The canal crosses the localities of Cernavodă, Saligny, Mircea Vodă, Satu Nou, Medgidia, Castelu, Poarta Albă. Here the canal forks. The southern branch passes through Basarabi and Agigea. The northern branch, known as the Poarta Albă-Midia Năvodari Canal, with a length of 31.2 km, a depth of 5.5 m and a width of 50-66 m, passes through Nazarcea, Constanța, Ovidiu and Năvodari.


Figure 4 Agigea Lock [5]

The construction of the canal required an investment of about 2 billion dollars. Initial estimates provided for the recovery of the investment in 50 years. However, the exploitation of the canal brings annual revenues of about 3 million euros, which implies a recovery period of the investment of over 600 years.

2. HISTORY OF NAVIGATION ON THE BEGA CANAL

In 1728, the governor of Banat, Count Claudius Mercy, established a project to rebuild the city of Timişoara, as well as the entire region. For the economic development and profitability of the province, priorities included, among others, draining the swamps that made the air unhealthy and the water undrinkable, as well as finding an optimal solution for transporting wood and agricultural products - vital for supplying the army - and manufacturing [2].

To chieve these objectives, it was imperative to canalize the Bega River. In 1728, the Dutch engineer Maximilian Fremaunt, designed a canalization plan for the Bega - Timiş connection, with the idea of perfecting

the canal started by Mercy and ensuring the flow rate necessary for navigability on the Bega.

By implementing this project, the water of the Timiş could be directed, if necessary, into the canal, so that it would always be navigable, and if too much water had accumulated for navigation and for the mills installed there, as well as in the event of a danger of flooding the city of Timişoara, the surplus water could be directed, in turn, into the Timiş, through the lock and the 8 km canal, built at Topolovăt, to contain the surplus water.

After only four years of work without mechanized means, in November 1732, the canal was used by ships to Pancevo. Due to navigation difficulties, especially the numerous sandbars caused by numerous tortuous sections, the route was abandoned.

Between 1735 and 1754, a new version was built, further south, between Timişoara and Klekk. The new route is much straighter and more favorable for navigation, but it depends a lot on the water level, whose flow constantly fluctuates between extremes.

In 1739, Engineer Maximilian Fremaunt continued the canalization by intervening with dams to regulate the course of the Beghe. As a result, Timişoara benefited enormously from the reduction of the risk of flooding but especially from the drying of the surrounding marshes. Later, the canal began to be used to transport logs from the forests near Făget to the city.

By an imperial order issued in 1744, all the communes along the Bega canal were obliged to maintain the banks and dams, and to help regulate the canal.

In 1752, the Timişoara Port already existed in the Iosefin neighborhood. The amount of goods transported on the Bega was 20,000 tons.

The canal has undergone several modifications over time, including those in 1753-1754 (after the catastrophic floods of 1753), designed by the engineer Johann Karl von Stockhausen, director of the fortifications of the Timişoara fortress, which saw the cutting of a new 30 km canal between Itebej and Jancov Most <Serbia>, which were particularly important for better navigability on this first canal on the territory of today's Romania.

In 1756, the first regulation of navigation and trade on the Bega was drawn up.

Due to the very high flows of the Bega, in 1758, Fremaut began the construction of a hydrotechnical node upstream between Topolovăţ on the Bega and Coştei on the Timiş River. The node allows the transfer of flow between Bega and Timiş, depending on needs. This solved the problem of the flow on the Bega Canal, but also dramatically improved water management in an area historically known for its marshy lands and frequent floods. In 1775, the Timişoara Navigation Office was established. The catastrophic floods of 1859, which covered over 490,000 acres of arable land and the villages in the area in Timiş and Torontal counties, led for the first time to the idea of establishing a water regulation company.

In 1869, the first passenger trips were made on the Bega Canal. Timişoara thus became the first city on the current territory of Romania to use this means of public transport.

In 1872, the "Timiş - Bega Valley Regulation Company" was established, the proposed goal being that of unitary regulation of all the waters in this basin to prevent floods.

In 1884, a new project was developed to regulate the Bega Canal. It provided for the discharge of surplus water into the Bega Canal.

Banat was hit by floods again in 1886. After these floods, the dikes at Timiş and Bega were raised by one meter.

In 1884, a new regulation project was developed in the technical office of the Bega Canal in Timişoara. Initially, the project was based on the idea of trying to discharge the surplus water into the Bega Canal. However, the great floods of 1886 proved the ineffectiveness of the project. As a first measure, the dikes at Timiş and Bega were raised by one meter. The even greater floods of 1887 broke a large part of these dikes, but the exact quantity of water brought by the flood into the Bega was managed; Based on these data, it was possible to establish the level of the catastrophic flood of 1859, which was 455.5 cubic meters per second, while the Bega Canal could only contain a quantity of 83.5 cubic meters per second. Between 1901 and 1916, the Bega Canal was equipped with modern facilities (5 locks) that are still in operation today. Navigation increased considerably.

Law XXII of 1902 will establish the necessary regulations for the functioning of the Bega Canal and the Timiş Valley Regulation and Flood Prevention Society. As a basis for the law, the solution was accepted that the surplus water from the Bega Canal would be transferred through the Topolovat canal to the Timiş and its tributaries, and the dikes on the Timiş would be resized for the highest flood level. In order to ensure the necessary depth for navigation and to reduce the speed of the water, in 1907, at Titel and Ecka <Serbia>, two locks were built that made navigation possible even during periods when the water level was low. During this period, ships could circulate between Timişoara and Zrenjanin only when the water level was normal, and after Zrenjanin also when the level was low. To remedy this situation, seven dams were built, three of which are on the current territory of Romania (Timişoara, Sânmihaiu Român and Sânmihaiu German). The state spent 100,000 crowns annually for the maintenance of the navigable canal.

On May 3, 1910, the Hydroelectric Power Plant in the Fabric neighborhood was put into operation. It is one of the oldest hydroelectric power plants in Romania.

The works proved their efficiency because they did not fall prey to the floods of 1912, the largest up to that time, except for the localities of Cebza, Macedonia and Petroman, by breaking the dam, downstream of the Peciul Nou bridge. Also this year, 415,000 quintals of cargo are loaded in the Port of Timişoara, of which 310,000 quintals represent wheat and flour, and about 200,000 quintals of cargo are unloaded.

In 1917, there were 563 commercial vessels on the canal, sailing for 305 days a year.

In 1930, vessels up to 70 m long and loaded with 50 wagons could operate on the Bega Canal and in the Port of Timişoara, the operations characteristic of navigation not being conditioned by the depths of the waters, they remained invariable, for this purpose Bega was provided with locks. The port's connections were on the Danube upstream to Regensburg and by transshipment, on the Rhine, to the North Sea, and on the Danube downstream, through Brăila - Sulina, to the Black Sea.

The Timişoara Port Authority also subordinated the Otelec port located downstream. In 1937, its name was changed from "Otelec Port Authority" to "Otelec Port Office", remaining subordinate to the "Ministry of Air and Navy, Commercial Marine Directorate".

Between 1937 and 1938, the volume of transported goods reached a maximum of 250,000 tons/year.

In 1940, barge return basins were built in the ports of Timişoara, Utvin, Uivar and at the two existing locks on the Romanian section of Sânmihaiu Român and Otelec. Today, only the basin in the Port of Timişoara remains, largely clogged. It is located on the opposite bank of the Solventul Petrochemical Plant.

International naval traffic was not interrupted during the war, and even passenger transport on the canal reached a peak of approximately 500 thousand passengers in 1944.

The year 1945 is dedicated to the activities related to the lifting of the bridges at Otelec and Timişoara from the Bega Canal, destroyed by bombing by the British and American air forces, as well as the reforming of the boats damaged by bombing by the German air force during the withdrawal.

Figure 5 Bega Canal, from Timişoara to the Danube

Some sources (articles published in newspapers and on the internet) state that since 1958, for various political and economic reasons, navigation on the Bega Canal has been interrupted. This is only partly true. Naval activity continues, however, even if with an increasingly lower intensity, transporting mainly construction materials. Thus, in the "Table of NAVROM river vessels and passenger vessels" of 1958, there were also vessels registered with the Timişoara Port Authority that were still carrying out various transports.

Navigation on the Bega Canal continued until 1986, transporting people, equipment, various goods and agricultural products until 1986, with 20 functional ships registered at the Timişoara Port Authority.

The resumption of navigation on the Bega Canal was also the subject of studies developed by IPTANA both in 1987-1988, but especially in the period 1991-1996. As is known, the developments on the Bega River and the construction of the homonymous canal began over 2 centuries ago. It was modernized in the first decades of the 20th century. Until its confluence with the Tisa, the Bega waterway is 118.3 km long, of which 45.5 km overlap the regulated course of the river, and 72.8 km represent the canal itself.

In 1990, the reopening of the canal was discussed again, but the authorities at the time did not have the necessary funds to dredge the canal and restore navigation.

In 2000 - only the "Şoimul" was still sailing on the Bega Canal, which made pleasure trips from the pier in the Children's Park to the Iron Bridge, the passenger ship "Pelican" used both as a terrace and as a pleasure ship, sailing from Timişoara to the Sanmihaiul Roman Lock, and the boat "Lugojel 1" belonging to the Banat Water Basin Administration, used as an intervention boat.

At present, navigation on the Bega Canal, on the territory of Romania, is limited to a small number of public transport boats (hydrobuses) in the area of the Municipality of Timisoara, respectively pleasure boats (hydrobikes, boats) and for sports activities (rowing training and competitions).

The Timisoara City Hall acquired the following ships for public transport in 2015: Decebal, Traian, Burebista, Ferdinand, Savoya, Glad and Huniade.

3. DEVELOPMENT PROPOSALS:

In the spring of 2000, Romania, Serbia and Hungary decided to work together to rehabilitate the Bega Canal. At the request of the Timişoara City Hall, the feasibility study Sustainable Development of the Bega Canal and its Neighboring Areas was prepared, a study provided by an expert from the Management Cooperation Program from the Netherlands. As a result, in July 2002 the study Repair and Rehabilitation of the Bega Canal was prepared, the aim of which was to restore the Bega Canal to its original section, uses and appearance. Another project, proposed by German and Romanian experts, concerns the sustainable development of our city's infrastructure. The project is the result of the collaboration of a team formed by experts from the German Fraunhofer IPA Institute, the Timişoara City Hall, the Timişoara Polytechnic University, together with specialists from Municipal Roads, RATT, Regionala CFR, Traian Vuia International Airport. The collaboration has given rise to projects targeting interconnected areas: railway, public transport, airport, roads – and which offer a coherent vision on how the transport system can be developed not only at the level of the city of Timişoara, but also of the peri-urban areas, where more and more people live who work, come to school and shop and spend their free time in Timişoara. Passenger transport envisages projects regarding the optimized connection of rail transport with individual, motorized transport, achieved through several measures: modernization of

railway stations; arrangement of bus stations for routes in the metropolitan area; creation of a parking system in public transport nodes, where those who come to Timișoara can leave their personal cars and continue their journey in the city by public transport; expansion of the tram, trolleybus, bus networks, as well as capitalizing on the potential of naval traffic on the Bega Canal, by introducing a public passenger transport system with passenger ships. The project Valorization of cross-border tourism potential, including cycle paths along the Bega River, downstream of Timișoara led to the signing of the project Partnership Agreement with Serbia. The value of the project is 2.35 million euros and its funding sources are the European Union, the Ministry of Regional Development and Tourism and the Timiș County Council with a participation quota of 2% of the total eligible cost of the project, respectively, 52,526 euros. The cycle path, 40 kilometers long, is arranged on the dam and has a width of two meters along the entire length of the river, in both directions. It starts near the Modoș Bridge on the route: Splaiul Sofocle – Freidorf Industrial Park – Utvin – Uivar – Otelec and will continue in Serbia, to the town of Zrenjanin. In P.A.T.J. Timiș, Stage III, volume V - Communication and transport routes, January 2013 version, in the subchapter Current waterways, it is highlighted that, at the moment, the AQUAPROIECT project is underway, through which the embankments of the Bega canal are being developed. Particularly important is the detailing of the stage of works on the Bega River and the Bega Canal and the way the projects will be carried out until 2014. Among these, it is worth noting the Bega Canal greening project on the Timișoara-Serbian border sector, with a deadline of 2013, as well as the project to make the Sânmihaiu Român hydrotechnical node safe, with a deadline of 2014. The PATJ also analyzes traffic data on the Bega Canal, or rather, the lack of traffic on the canal, and refers to the Zonal Urban Plan – Banks of the Bega Canal Timișoara, which shows the need to reintroduce passenger transport on the canal. The dysfunctions at the level of the analyzed waterways raise the issue of completing the arrangements for integrating transport on the canal into the public transport network. The last unclogging was carried out between 2008-2010, and to avoid clogging of the canal, the rehabilitation of the hydrotechnical node at Sânmihaiu Român remains an objective that must be achieved.

The development proposals for the waterway network mention Law 363/2006, Annex 5, in the development directions provided for in the National Spatial Planning Plan – Section I – Transport Networks, the development works for the Bega Canal, on the Timișoara-border sector and the new port on the Bega Canal are provided. Annex no. VII of the law presents the development directions for the waterway network. Proposals are also made for the use of the Bega Canal as a transport infrastructure based on the Zonal Urban Plan – Banks of the Bega Canal (Bega – Green Boulevard of Timișoara) – Rehabilitation of the urban public infrastructure of the banks of the Bega Canal. The chapter on the program of measures highlights measures and proposals regarding the naval transport network. Importantly, the widening of the Bega Canal, the rehabilitation and modernization of the locks are also mentioned, which will lead to an increase in the class of the canal and the navigation path, in accordance with European and Blue Book norms, through which greater funds from the European Union will be accessible. In order to achieve the proposed objectives, two and three stages of achieving these objectives are specified. A monitoring program for the inland waterway transport network is also specified. The studies undertaken show that the resumption of navigation on the Bega Canal and the development of the Timișoara port require relatively low investments, but the economic effects are substantial. In addition, the resumption of navigation on this artery and the connection of the Timișoara municipality to the Trans-European Transport Corridor no. 7 will give the city and the region an important economic boost.

In the field of traffic networks, it is planned to prepare studies on the implementation of the latest technological solutions in the construction of traffic infrastructures. Regarding hydrotechnical systems and land improvement, it is planned to complete the repair and construction works at the hydrotechnical nodes in the Timis-Bega basin, in order to improve the conditions for their coordinated exploitation. A regulation for the exploitation of the Bega canal will be developed and dredging and bank protection actions will be undertaken, aiming at the exploitation of the canal for navigation, recreation, sports, etc.

It is planned to preserve and restore the current irrigation-drainage system and to stimulate the irrigation of agricultural areas arranged for this purpose. The measures related to the conservation and protection of green areas provide for the maintenance and revitalization of existing green spaces - in order to use them for rest, recreation and leisure - under the conditions of the ecological reconstruction of the area, as well as the expansion of planted green areas to increase the degree of urban comfort. Tree plantations will be carried out, aiming at creating protective curtains, including on the banks of the Bega Canal. It is intended to amplify the exploitation of the potential of geothermal waters, for health and leisure, by building a Spa Complex.

4. BEGA CANAL REHABILITATION WORKS:

The term "dredging" means the removal of sediment from an underwater environment, usually using a floating excavator called a dredge. Dredging involves the mechanical excavation, raking, cutting, or hydraulic cleaning of the bed of a waterway by dislodging the sediment. Once dislodged, the sediment can be removed through a waterway, either mechanically with buckets or hydraulically by pumping.

Sediment treatment technologies are generally classified as:
– biological,
– chemical,
– extraction or washing,
– solidification and stabilization,
– thermal (destruction).

The Bega Canal was designed for ships up to 500 tons. The ship sizes are restricted by the sizes of the

locks that are built in the Bega Canal at Sânmihaiu Roman and Sânmartinu Maghiar. The sizes of the locks are L = 72.1m, B = l0m, H = 2.50 m [1].

Thus, the ships and convoys used in this analysis were defined in accordance with the UNECE-1992 classification. International class IV waterway provides navigation conditions for self-propelled ships with the following dimensions: length l = 80-85m; width b = 9.5 m, draft d = 2.5m, having a capacity of 1000-1500 [t], as well as for rigid pusher convoys, such as the E1 type, with dimensions Lmax x b x d = 85 x 9.5 x 2.5 -2.8 (m), tonnage 1000-1500 tons [7].

Depths were measured with a SIMRAD CX33 echosounder connected to a notebook, and data collection was performed with the HYPACK 2014 software application. We note that where there is vegetation in the riverbed, the depth measured by the echosounder may be the distance to this vegetation and not to the bottom of the riverbed. The coordinates in the plan (X, Y - Stereo 70 projection) were recorded using a differential GPS mounted above the echosounder. We note here that under and near bridges, due to the decrease in satellite reception, positioning errors are greater. Primary processing was performed in the HYPACK 2014 application, and the graphic presentation was performed in QGIS 2.4. The Sânmihai Amonte elevation, on 25.11.2014, 6 am, was 84.86. The measured depths are valid at this water level [6].

5. CONCLUSIONS

Navigation on the Bega Canal between Timişoara and Tisa-Danube was interrupted in 1948, the canal being used by our country only for internal transport. In 1958, internal freight traffic was completely stopped, and in 1967, passenger traffic. In order to establish the opportunity to resume navigation on the Bega Canal, in 1991 and 1996 IPTANA prepared a series of studies and investigations that highlighted the economic agents and the volume of goods/raw materials that can be transported by water under economically advantageous conditions, the volume of works and the investments necessary to rehabilitate the canal and its installations, including the location and development of the Timişoara port. The studies undertaken showed that the resumption of navigation on the Bega Canal and the development of the Timişoara port require relatively low investments, but the economic effects are substantial. In addition, respecting navigation on this artery and connecting Timisoara to Trans-European Transport Corridor No. 7 will give the city and the region an important economic boost.

The port of Timisoara was connected to Europe through the Bega Canal, the Tisa River and the Danube River to Regensburg and then, by transshipment on the Rhine, to the North Sea, facilitating the transport of Banat agricultural products to Vienna, but also to the Adriatic coast. The Bega Canal transported more than 250,000 tons of goods per year and the first passenger trips on the Bega Canal, in 1869, transported over 50,000 people annually, reaching 500,000 in 1944. Navigation on the Bega Canal between Timisoara and the Tisa-Danube was interrupted in 1948, the canal being used by our country only for internal transport. In 1958, internal goods traffic was completely stopped, and in 1967, passenger traffic.

On the Bega Canal, from Timisoara to the confluence with the Tisa River, six hydrotechnical nodes equipped with locks for navigation are built, of which on the territory of Romania there are two hydrotechnical nodes equipped with locks, at Sanmihaiul Roman and Sanmihaiul Maghiar, and on the territory of Serbia there are four equipped with locks, at Itebej, Klek, Stajicevo (Ecsa) and Titel. Through these hydrographic nodes, average depths of 2.5-4 m have been achieved, ensuring both the draft of ships and the minimum level for water intakes. The access of maximum flows from the upstream basin is calibrated through the Topolovat hydrotechnical node, part of the double Timis-Bega connection, so that floods of 5% and 1% are controlled and floods are excluded. The defining hydrotechnical nodes in the quantitative and qualitative management of waters in the Timis-Bega basin, which determine the NH Costei - NH Topolovat, NH Topolovat-UHE Timisoara, UHE Timisoara-NH Sanmihaiul Roman, NH Sanmihaiul Roman-NH Sanmartin, correspond to the capacity to regulate flows and levels for the purpose of flood protection, flow regulation in order to ensure consumer uses, capitalize on hydropower potential, achieve the levels necessary for sports and leisure activities and also take into account the provisions of the "Common Regulation, (Romanian-Serbian) on flood protection".

The reopening of the Bega Canal became relevant again after 1990, being considered an opportunity of regional and European interest. In the spring of 2000, Romania, Serbia and Hungary decided to work together for the rehabilitation of the Bega Canal.

In 2008, the Banat Water Directorate (DAB) managed to start the cleaning works of the Bega Canal, a project worth approximately 17 million euros.

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