

THE IMPORTANCE OF DANUBE RIVER AS STRATEGIC NAVIGATION CORRIDOR

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ABSTRACT

Since the dawn of known history the Danube has connected the nations and civilizations living along its banks with each other and with the rest of the world. The Danube has been for a long time, an important transport route that connects the Black Sea to a large number of harbours in south-eastern and central European countries, with further connections to Western Europe (Germany and Rhine-Main-Danube Canal), Eastern Europe and Turkey. The Danube basin is the most multinational river basin in the world, and the fact that the river flows directly over territories of ten riparian countries (Austria, Bulgaria, Croatia, Germany, Hungary, Moldova, Romania, Serbia, Slovakia and Ukraine) and that the basin itself consists of additional 9 states (Albania, Slovenia, Bosnia and Herzegovina, the Czech Republic, Italy, FYR Macedonia, Poland, Montenegro and Switzerland) makes it very important for their economies and enables extraordinary opportunities for transport, trading, tourism and many other means of communication among the people that live there.

Key words: *Danube River, strategic transport corridor, legislation and international conventions*

1. INTRODUCTION

Since the dawn of known history the Danube has connected the nations and civilizations living along its banks with each other and with the rest of the world. After the Volga, the Danube is the second largest European river, with a basin covering 801,463 km² and hosting approximately 81 million inhabitants, with the total population of Danubian countries reaching 120 million. Population density is 102 persons per square kilometer.

The Danube basin is the most multinational river basin in the world, and the fact that the river flows directly over territories of ten riparian countries (Austria, Bulgaria, Croatia, Germany, Hungary, Moldova, Romania, Serbia, Slovakia and Ukraine) and that the basin itself consists of additional 9 states (Albania, Slovenia, Bosnia and Herzegovina, the Czech Republic, Italy, FYR Macedonia, Poland, Montenegro and Switzerland) makes it very important for their economies and enables extraordinary opportunities for transport, trading, tourism and many other means of communication among the people that live there.

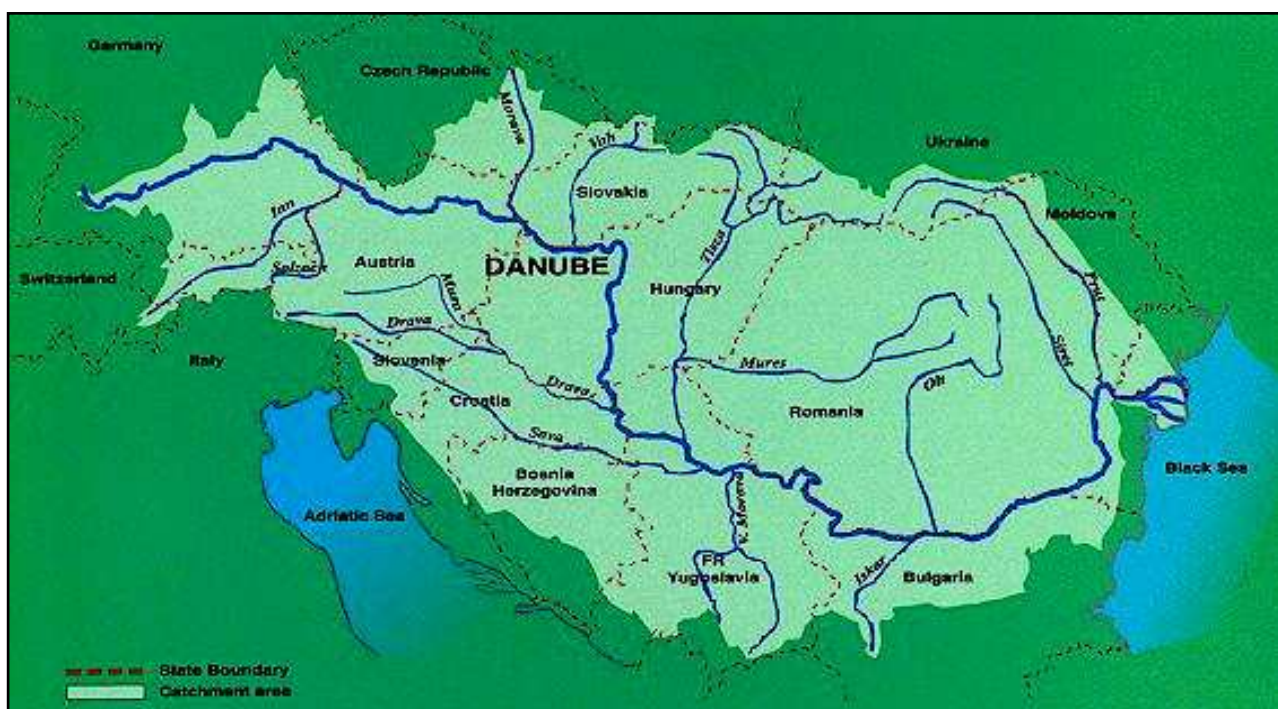


Figure 1. Danube River Basin

Source: *** The RAMSAR Convention of Wetlands, New "Ecological Expert Group" launched for Ramsar Management in the Danube River Basin, January 1st, 2002

Out of the 300 tributaries of the Danube River, 120 are more important and only 39 are suitable for

navigation. It passes through 4 national capitals: Vienna

(Austria), Bratislava (Slovakia), Budapest (Hungary) and Belgrade (Serbia).

Also, Danube is connected through artificial channels with the rivers Main and Rhein, offering a unique opportunity for movement from the biggest Atlantic Ocean ports—Hamburg in northern Germany or Holland's Rotterdam, all the way through the heart of Europe to the Black Sea and further, to the Mediterranean.

The genetic features, the structure of the basin, the hydrographical features as aspects that have generated the three sector divisions of the river valley (Velcea Valeria, 2001), that seem to have almost the same lengths:

- *Upper Danube*, from its origin all the way to the Devin spot, near Vienna (alpine sector);
- *Middle Danube*, from Devin point to Bazias (the Panonian sector);
- *Lower Danube*, from Bazias to its mouth at the Black Sea (the Carpathian and Pontic sector).

The river is suitable for navigation on almost 2600 km, between Ulm (257 km from its origin) and Sulina. It is also the only European river that has imposed the name of *Danube states* for all the countries that it crosses.

2. HISTORY AND REGULATIONS

The Danube rises in Germany's Black Forest, flows through the heartland of Austria, forms the border with Austria and Slovakia, then Slovakia and Hungary, before flowing through Hungary, into Croatia and Serbia, to then form the boundary between Serbia and Romania, then Romania and Bulgaria, where it finally empties into the Black Sea.

The Danube has been for a long time, an important transport route that connects the Black Sea to a large number of harbours in south-eastern and central European countries, with further connections to Western Europe (Germany and Rhine-Main-Danube Canal), Eastern Europe and Turkey.

A Danube sector, of more than 150 km also allows the traffic of ships, from the Black Sea on Sulina branch and then on Tulcea branch and upstream on the Danube towards the harbours of Galati and Braila.

Romania has many Danube harbours that have been economically improved benefiting by the possibility of goods shipment along the river: Orsova, Turnu Severin, Calafat, Corabia, Turnu Magurele, Zimnicea, Giurgiu, Oltenita, Calarasi, Cernavoda, Fetesti, Braila, Galati, Tulcea. It is important to know there are 53 major harbours on the banks of the Danube and among them, 24 are located in Romania.

Other harbours on the lower Danube are those from Serbia, Bulgaria, Republic of Moldova, Ukraine. The most important of them, except the Romanian ones, are:

- Germany - Passau, Regensburg, Kelheim și Deggendorf;
- Austria - Viena, Linz, Enns și Krems;
- Slovakia - Bratislava și Komarno;
- Hungary - Budapesta, Dunauvaros, Komarom, Győr, Almásfüzitő-Szőni și Mohaci;

- Croatia - Vukovar;
- Serbia - Novi-Sad, Belgrad, Pancevo, Smederevo și Prahovo;
- Bulgaria - Silistra, Ruse, Lom, Vidin, Somovit, Svistov și Tutrakan;
- Ukraine - Chilia, Izmail, Reni și Usti Dunaisk.

Many centuries ago, some Danube sectors have been used for transport by local population, as well as the Byzantines and the Genovese have set commercial locations at the Danube mouth. Navigation on the Lower Danube was controlled by the Ottoman Empire in the XVth century.

Navigation on the Danube connects three capitals from three European states (Vienna, Budapest, Belgrade) to the Black Sea.

The use of navigable way on the Danube has been regulated by successive agreements between some states, during the last centuries:

- the Austrian-Turkish Treaty of 1616;
- the Russian-Turkish Treaty of 1774;
- Treaty of Paris of 1856 by which the Danube was settled as international river and the Danube European Commission was established;
- Paris Convention in 1921 that established the International Commission of the Danube;
- The Convention on the Regime of Navigation on the Danube in 1948 (modified by a Protocol in 2000), signed in Belgrade, by which the Danube Commission was established; this Commission has its headquarters in Budapest.

Taking into consideration the multiple uses of this water course, Declaration of the Danube Countries to Cooperate in the field of Danube Water Management, especially for the Danube protection against pollution (Bucharest Declaration) was signed in 1985.

The Convention on cooperation for sustainable protection and use of the Danube River (Convention for the Danube River protection, Sofia, 1994) was signed in the last decade of the XXth century; as a result, the International Commission for the Protection of the Danube River (ICPDR), with its headquarters in Vienna, was set up.

This Convention provides that the contracting parties will make efforts in order to meet the aims of a water sustainable management, including rational conservation, improvement and use of surface and ground waters within the hydrographic basin, to the extent that all of them are possible.

International Commission for the Protection of the Danube River and Danube Commission within the Convention Regarding the Regime of Navigation on the Danube, considering the development of inland navigation, have prepared the following document: Joint Statement on Guiding Principles for the Development of Inland Navigation and Environmental Protection in the Danube River Basin.

The European program NAIADES for promoting the transport by inland waterways (The European Action Programme for the Promotion of Inland Waterway Transport) sets an action framework to improve this transportation mean and shipping, from environmental point of view and the development of waterways

infrastructure. One of the priority projects within the Trans-European Transport (TEN-T) Guidelines includes the Danube, that is the main transport axis.

On the other hand, the European Agreement on Main Inland Waterways of International Importance (AGN) sets features of navigability for these transport ways on water.

More general directions, from the viewpoint of sustainable development requirements are mentioned within the sustainable development strategy of the European Union (Renewed EU Sustainable Development Strategy). One of the main discussed problems is that of sustainable transport and transport on inland waterways was promoted.

The Belgrade Convention sets that navigation on the Danube will be free and open to commercial vessels and goods from all the states that are on a footing of equality regarding the harbour rights and navigation fees, as well as conditions to which the commercial shipping is subject (mentioning that these requirements will not be applied to the traffic between harbours belonging to the same state).

The Convention is applied to the navigable part of the Danube, from Kelheim to the Black Sea, following the arm of Sulina with access to the sea, by Sulina channel.

This convention provides the commitment of the Danube states to maintain their sectors on the Danube, under navigability conditions for inland ships, and with regards of sectors belonging to faring ships, to execute the works necessary to ensure and improve the navigation conditions and not to inhibit the navigation on navigable channels of the Danube.

3. GENERAL NAVIGATION ADVANTAGES COMPARING TO OTHER TRANSPORT SYSTEMS

Water transport capacity is high due to ship tonnage and its weight may be comparable with that of the other main transport ways: railway and road transport. The water transport has a specific lower cost per ton of goods and km, comparable with the other transport systems.

Goods transport system on navigable ways is among the safest ones, due to the following aspects: the high level of standardization for transport vessels, relatively regular traffic with a minimum number of exceedings, relatively low number of crossings and ship approaches, low velocities.

Regarding the specific energy consumption per ton and kilometer, the inland navigation has a convenient position comparable with the other transport systems. Emissions of greenhouse gases are smaller for the same volume of transported goods. Therefore, developing the transport on water results in smaller values of greenhouse gas emissions in comparison with values that would result from road transport development for a similar volume of goods.

The Danube waterway makes possible the ship access and shipping between the Black Sea and riverine countries up to Central and Western Europe. On the Romanian sector of the Danube, the harbours of Tulcea,

Galați and the upstream ones have the capacity to manage significant amounts of the vessel traffic.

APDF data on goods shipping along the Danube within the riverine harbours, in 2009 are the following:

- within Moldova Veche harbour: 2982 tons of loads and unloads, total handling of 51 ships;
- within Orșova harbour: 63124 tons, total handling of 72 ships;
- within Drobeta Turnu Severin harbour: 431633 tons, total handling of 495 ships;
- within Calafat harbour: 57476 tons, total handling of 52 ships;
- within Giurgiu harbour: 290988 tons, total handling of 303 ships;
- within Oltenita harbour: 205860 tons, total handling of 188 ships;
- within Chiciu harbour: 939021 tons, total handling of 864 ships;
- within Cernavoda harbour: 196071 tons, total handling of 205 ships.

In 2009, loading and unloading activities were carried out for 2230 ships, for an amount of 2187155 tons of goods. Other ships loaded and unloaded goods within inland harbours on the Bulgarian bank of the Danube.

The vessel traffic with its destination or origin in upstream harbours (Germany, Austria, Slovakia, Hungary and Serbia) and those from the maritime Danube (Romania, Ukraine) are added to the above mentioned harbours.

Freight transport volume on the river Danube increased by 18.6% in 2010. Goods receipt rose by 25.4%. According to Statistics Austria, a total of 11.1 million tons (t) of goods was transported as freight transport on the Austrian section of the Danube in 2010, which constitutes an increase of 1.7 million t (+18.6%) compared to 2009.

The total transport performance (i. e. the product of transport volume and distance travelled) on the Danube was 11.5 billion ton kilometres (tkm) (+19.4%). On Austrian national territory, the transport performance amounted to 2.4 billion tkm (+18.6%). The number of laden journeys rose by 7.5% to 10 391.

The international goods receipt grew by remarkable 25.4% to 6.2 million t compared to the previous year. International goods dispatch showed an increase in transport volume of 5.5% to 1.7 million t. For transit a growth of 10.6% to 2.7 million t was determined. The tonnage in inland transport rose by 38.6% to 0.5 million t in the reference year.

4. RELEVANT LEGISLATION IN ROMANIA

The Romanian legislation complies with the European Union legislation in the field of environment.

The main components of European environmental legislation and Romanian legislation concerning environmental protection and water management are the following:

- General legal framework for environmental protection and procedures to assess the environmental impact of projects, plans and programs;

➤ Specific legislation on environmental components (water quality, air quality and climate changes, soil pollution, noise level, nature protection), hazardous matters, waste management, pollution control and risk management.

Water framework Directive, 2000/60/EC has been adopted at the European level. This Directive, addressed to Member States, has the purpose to protect and improve the state of the water bodies.

One of the main provided tools is the River basin management plan, that has to be prepared for each main river.

The Danube River Basin Management Plan is based on the proposals submitted to ICPDR by the riparian states and it will be finalized by the end of the year 2009.

States that participated in the Convention of 1994, for protection of the Danube River committed themselves to cooperate for essential issues of water management and will take all the necessary legal, administrative and technical measures to maintain at least and improve the present status of environment and quality conditions for the Danube water and those from its hydrographic basin, in order to prevent and reduce, as possible, unfriendly impacts and changes that occur or might be caused.

Taking into account the emergency of pollution reducing measures and necessity for rational and sustainable use of water, the parties will establish the appropriate priorities and enhance, harmonize and coordinate the taken measures and those planned to be taken at national and international level for the whole Danube basin, aiming at sustainable development and protection of the Danube River environment, providing a sustainable use of water resources in order to supply with drinking and industrial water and that for irrigation works, as well as to preserve and reconstruct the ecosystems.

The management in the field of water management will be focussed on a sustainable management of waters, beginning with criteria of an appropriate ecological and stable development, that aims, at the same time, to maintain the general quality of life and continuous access to natural resources, avoid long lasting ecological damages and provide ecosystem protection and applying a preventive approach.

The framework for water management in Romania is specified by the Water Law 107/1996, with amendments and annexes, including Law 310/2004 and Law 112/2006.

Provisions of the Water Framework Directive are applied in Romania by:

➤ Law 310/2004 for modification and amendment of Water Law 107/1996 (definitions, provisions, annexes of the Framework Directive 2000/60/EC).

➤ Law 112/2006 for modification and amendment of Water Law 107/1996 (pollution control, extraction of sand and gravel, dredging works on the navigable ways, protection of water and aquatic ecosystems, protection against floods). Locations and conditions for the dredged material storage are annually set by: National Administration "Apele Romane", River Administration of

the Lower Danube and CN Administration of Navigable channels, Constanta.

➤ GUO 12/2007 to modify and complete some standards that transpose the Acquis communautaire in the field of environmental protection. This adds new articles (on communication to the European Commission and European Union Member States) to Water Law no. 107/1996, completing the national legislation related to Water Framework Directive.

➤ MO 161/2006 to approve the Standard on classification of surface water quality in order to establish the ecological conditions of water bodies.

Romanian legislation regarding the other environmental factors and waste management, toxic and hazardous substances management, biodiversity (including the Natura 2000 network of protected areas) is harmonized with European legislation. The regime of protected areas and Natura 2000 sites in Romania are set by:

➤ OUG 57/2007 on the regime of natural protected areas, conservation of natural habitats, wild flora and fauna, (based on the Birds Directive 79/409/EEC with amendments, Habitats Directive 92/43/EEC with amendments, Directive 2006/105/EC to comply with other environmental directives after the accession of Bulgaria and Romania). There are mentioned natural protected areas of national, international, community, local or county interest. GEO 57/2007 has provisions on administration responsibilities for natural protected areas, management plans, conservation of natural habitats and wild flora and fauna species, conservation of other assets belonging to the natural heritage (caves, for example).

➤ GD 1284/2007 on declaring the areas of special bird fauna protection, as integral part of the European ecological network Natura 2000 in Romania. 108 areas are declared by this Governmental Decision. For all projects that are to be developed within areas of special bird fauna protection, as well as in their vicinity, the environmental impact assessment report has to emphasize all the bird species of community interest from this site and propose measures to reduce the project impact, conservation and/or compensatory measures, as necessary.

➤ MO 1964/2007 on appointing the regime of natural protected area for sites of community importance, as integral part of the European ecological network Natura 2000 in Romania. 273 areas are declared by this order. For all projects that are to be developed within sites of community importance, as well as in their vicinity, the environmental impact assessment report has to emphasize all the species and/or types of habitats of community interest whose conservation was appointed by this site and propose measures to reduce the impact on them, conservation and/or compensatory measures, as necessary.

The procedure for environmental impact assessment is based on the following regulations:

➤ MO 860/2002 to approve the Procedure for environmental impact assessment and environmental agreement issuing

➤ MO 863/2002 on approving the methodological guidelines which are applied to stages of framework procedure for environmental impact assessment

➤ GD 1213/2006 on setting up the framework procedure for environmental impact assessment for certain public and private projects (based on EIA Directive 85/337/EEC, amended by Directives 97/11/EC and 2003/35/EC, as well as on Aarhus Convention on access to information, public participation in decision-making in environmental matters).

➤ Law 86/2000 regarding the Convention on access to information, Public participation in Decision-making and Access to Justice in Environmental matters (Aarhus).

The procedure for environmental impact assessment and environmental agreement issuing for a project is specified by competent authorities for environmental protection, after they receive the request related to the project.

Environmental protection authorities submit a guideline for environmental impact assessment, where they mention specific matters that are to be investigated.

Public participation is provided within the procedure of environmental impact assessment and environmental agreement issuing, according to legislation in force.

5. LEGISLATION FOR TRANSBOUNDARY IMPACT ASSESSMENT

Romanian legislation regarding projects with potential transboundary impact follows the procedure of notifying other states, according to provisions of national and international legislation:

➤ Convention on Environmental Impact Assessment in a Transboundary Context (Espoo);

➤ Law 22/2001 regarding the Convention on Environmental Impact Assessment in a Transboundary Context (Espoo);

➤ OM 864/2002 to approve the Procedure for environmental impact assessment in the transboundary context and public participation in decision making in case of transboundary impact projects.

6. ENVIRONMENTAL ISSUES

The Danube is home to 7 fish species found nowhere else in the world, 10 diadromous fish including 5 sturgeon species, and altogether 103 fish species, which is more than half of the sum of European species.

The basin has 88 freshwater mollusks (with 18 found only in this basin), over 18 amphibian species and 65 Ramsar wetlands of international importance (WWF, 2010). Today only 6.6% of the basin is protected.

The habitats created by the Danube and its tributaries host a unique mix of species, with about 2,000 vascular plants and more than 5,000 animal species, including over 40 mammals, about 180 breeding birds, a dozen reptiles as well as amphibians (ICPDR, 2010).

New infrastructures for shipping, eight planned large dams, flood protection systems, but first of all industrial pollution are main threats to the wild life and

precious unique species living in the Danube like the white pelican, the white-tailed eagle or the black stork.

The Danube delta on the Black Sea is one of Europe's most ecologically important areas and is shared 80% by Romania and 20% by Ukraine. It is one of the Europe's most valuable habitats for wetland wildlife and biodiversity.

The total delta area of 679,000 ha is under legal protection, including floodplains and marine areas, and the delta is still spreading seaward at a rate of 24 to 30 meters annually. Since 1991 the core of the reserve (312,400 ha) has been designated as a World Natural Heritage Site.

Up to 75 different species of fish can be found in the delta's unique ecosystems, consisting of a labyrinthine network of river channels, shallow bays and lakes and extensive marshes, which form a valuable natural buffer zone, filtering out pollutants from the River Danube, and helping to improve water quality in the vulnerable waters of the north-western Black Sea.

It is, though, affected by changes upstream, such as pollution and the manipulation of water discharge, as well as by ecological changes in the delta itself.

7. CONCLUSIONS

Even though the Danube is the second longest river in Europe after the Volga, it is the most important one. Unlike the other major rivers of Europe, the Danube crosses Europe on a west-east direction, thus amplifying its position as an economic and geopolitical strongpoint of Europe.

This river crosses various regions, with very different economies, relief and influences that come from the Mediterranean, Atlantic and continental Europe.

It is obvious that the EU is showing a high interest in the River Danube, not only as an international traffic corridor and valuable economic and natural resource of the continent, but for all countries whether member states or not of the wider Danube basin.

The Danube valley has long been an area of attraction for human communities due to the various natural resources. The capitalization form of these natural resources has been quite different, according to the needs of time and the features of the local communities.

Numerous projects, programs and The Danube Strategy itself are dealing with all aspects of the economic, cultural, political and social life of the more than 100 million inhabitants of this region. All of them should (and will) benefit from close cooperation between Danube countries, their universities, companies and citizens.

The economic value of this river is huge, not only to riparian and basin countries, but for the whole of Europe and the Mediterranean region as well. There are no obstacles, natural or formal, to river transport carrying goods between the Mediterranean and Central Europe without re-loading, and even North Sea ports are accessible through the Rhine-Main-Danube channel.

Hydroenergy as one of the cleanest sustainable sources of electric power, highly effective and already technologically developed, gives a great chance to Danubian countries to make themselves energetically independent and gain profit by exporting power.

Drinkable water, one of most precious natural resources in years to come, is at hand and irrigation potential is also there. Development of all varieties of tourism and related services is a chance for a good and constant source of income as well.

Using the Danube as an international “water highway” not only for commercial transport, but for individual travel too, and the development both of commercial ports and marinas for small craft along this trans European corridor will surely lead to increases in direct and indirect employment in local communities, boost existing and introduce new businesses while at the same time bringing international interaction and cooperation to a higher level, making the flow of knowledge, goods, money, and ideas closer to the people of all the regions involved.

The Danube provides a chance to all people to cooperate, travel, meet various cultures and nations, to learn more about each other interact and obtain firsthand experience of the richness and diversity of human society.

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