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THE ROLE OF THE DANUBE RIVER AS THE MAIN WATERWAY OF CENTRAL AND SOUTH EASTERN EUROPE. GEOPOLITICAL AND ECONOMIC ASPECTS

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Résumé: De tous temps, le Danube a eu un rôle prépondérant pour cette partie du concaktinent européen. Les grandes puissances ont toujours manifesté un intérêt particulier, quelque soit la période historique. Cette étude a pour but de synthétiser les principaux éléments qui ont défini le rôle du Danube au cours de l'Histoire, ainsi que de présenter les relations contemporaines. Les repères économiques et géopolitiques sont à la base de toutes les relations qui peuvent s'établir entre pays voisins, mais ils sont aussi les bases des relations sociales, culturelles ou militaires. D'autre part, il fût un temps, où d'un certain point de vue, le Danube a eu un rôle de barrière qui doit s'annuler aujourd'hui grâce à la réalisation d'infrastructures. On dit qu'il y a des moyens insuffisants pour traverser le fleuve dans la zone inférieure du fleuve.

Mots-clés: le Danube, géopolitique, relations, économie, transport fluvial, canal

1. GENERAL CONSIDERATION

The River **Danube** – the second longest river in Europe, has got a drainage surface of almost 817.000 km^2, that means 8,8 % of the surface of Europe. Due to its location within the European continent, (NV-SE), the Danube has become a major axis, just as Napoleon Bonaparte once said – "Le Roi des fleuves de l'Europe" ("the king of European rivers") or as said by Al. Dimitrescu Aldem - the Danube "the avenue of Europe". With its springs in the high Black Forest mountains (Kendel range, 1241 m), in Germany[1], the Donauschingen and Furtwagen springs (35 km apart), it reaches a length of 2857 km and an yearly discharge of 6500 m^3/s. The Danube crosses the territories of 9 states and goes through 4 European capitals.

Out of the 300 tributaries, 120 are more important and only 39 are suitable for navigation.

In the Danube basin[2] there are some 80 million inhabitants as along time this river has favored cultural, social and economic relations among the peoples living here. The Danube „has had a three way role: road, border and political pole" (N. Al. Rădulescu, 1941).

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:

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[1] Brege and Brigach

[2] The Danube basin is located between 8°-30° long. E. şi 42°-50° lat. N.

- Upper Danube – from its origin all the way to the Devin spot, near Vienna (alpine sector);
- Middle Danube – from Devin point to Baziaş (the Panonia sector);
- Lower Danube – from Baziaş 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.

The Danube is a trans European waterway its importance having been enhanced by the construction of the River Danube –Black sea canal in 1984 and the River Danube – Main – Rhine canal in 1992, the resulting waterway having a total 3500 km length and connects the North Sea and Black Sea.

Along the Danube there are 70 cities (out of which 3 have got over 1 milion inhabitants– Viena, Budapesta, Belgrad, and 10 of them have got over 100.000 inhabitants (Ulm, Ingolstadt, Regensburg, Bratislava, Linz, Novisad, Drobeta-Turnu Severin, Ruse, Brăila, Galați).

If comparing the population density in the Danube basin, 98 loc./km^2) and the general population density in Europe, we notice that the first is 12 5 higher than the latter, yet another argument in favor of the high importance of the Danube valley inside Europe.

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.

2. GEOPOLITICAL ASPECTS

The great importance of the River Danube comes from its geographical location and the direction of its water flow: „the Danube is a natural extension all the way to Central and Western Europe, an extension of the ancient road for products of the east into Europe" (Gr. Antipa, 1921). This aspect has been mentioned by King Charles I of Romania who, when being advised not to accept the crown of a „futureless country", traced a line on the map and showed that the road coming from the Orient into Europe will bring a very important role for this country in the world trade". Karl Marx also said: "… he who holds the mouth of the river Danube will dominate the entire Danube (this road to Asia) and through this, it will dominate the trade of Sweden, Germany, Hungary, turkey and especially principalities of Moldova and Walachia".

Presently speaking, the geopolitical reality means that the Danube can connect Western, Central and South Eastern Europe. The collapse of communism has created the conditions the approach the issues in a complex way, even though there are enormous economic difficulties in the countries that the river is crossing.

It is very important, from a geopolitical perspective that some landlocked European states such as (Austria, Czech Republic, Slovakia and Hungary) have access to the Black Sea through the Danube River.

The Danube is considered to be the only international waterway of Europe, an aspect that is enhanced by the fact that the Rhine and the Danube – Black Sea canal now connect the eastern and western parts of the continent, Constanta and Rotterdam.

The Danube is a real geopolitical element of the European continent. The lower sector of the Danube has always attracted the neighbouring power's attention. At a regional level, the mouths of the river Danube have always been subjected to claims coming from different nations, especially in the 19 and 20 century, gaining control of them being a symbol of regional dominance. The main reason – easy access to the Middle East through the Black Sea. Moreover, the possibility of easy transport all the way to the interior of Europe has always been a very important aspect. Obviously, the construction of the Danube – Black Sea canal and the Rhine – Main –Danube canal has given extra economic importance to this waterway. When considering the system of canals that connect the Rhine and the Rhone and the possibility of connecting the Danube with the Oder and the Elba River, it could be said that Europe has got a unique river system that will support economic relations within Europe and between Europe and Africa or the Middle East. At first sight things might not look this way at all, but the geopolitical value of the Danube as proven by history has surely had a negative impact on Romania, mainly because of neighboring powers.

There have been, and probably there will also be a lot of factors that could change this theory. The best proof is the present economic state. The collapse of communism has lead to economic regression in the east, and this has had an impact on the life of people along the Danube. While connecting these problems with the political and military conflicts of the former Yugoslav republics (conflicts have lead to blocking of the waterway) we might be able to find an explanation to the balance of economic activities that favors the western sectors of the river valley. A comparison between the goods traffic on the Rhine and the Danube (*fig. 1*) will prove this[3].

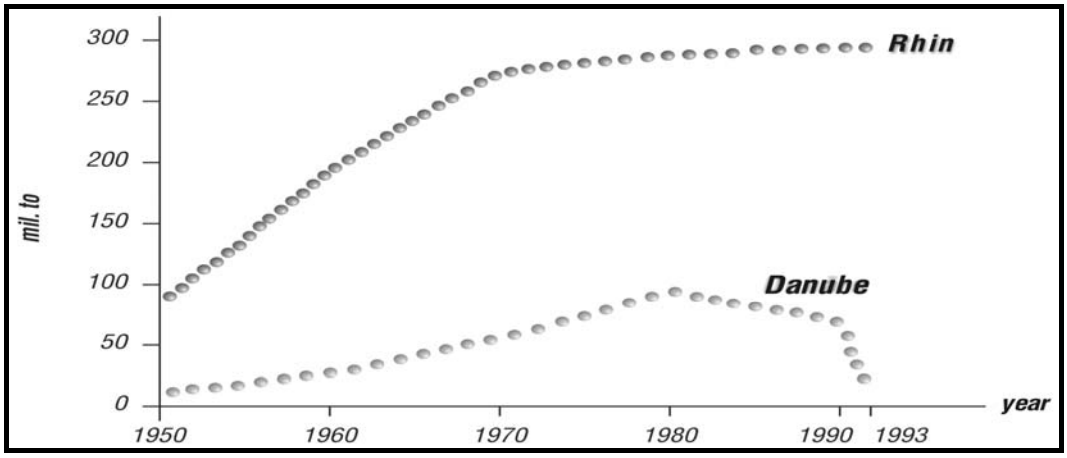

Fig. 1 The evolution of traffic volume on the Rhine and the river Danube

One way to explain the present state is the different administrative conditions for navigation. These conditions are unitary on the Rhine, with all ships being subjected to the same rules, no matter their origins, whilst the Danube shows different rules for navigation from one country to another (border tax and costs). Such things are often perceived as legal, economic and infrastructural obstacles.

[3] For example the traffic volume in the Romanian sector in 1993 is only 18,95% of that of 1989.

Another negative element that has affected the navigation on the Danube river is the ship wreck of the „ROSTOK" at Sulina, in the middle of the canal thus bring heavy goods ships to a halt. Economic damage has once again been done, with the clearing of the canal having been quite costly.

To reach the North Sea starting from the Black Sea usually takes 23-30 day by using the rivers ways whilst navigating on the sea takes 6 days (totally different from the theoretical expectations – that will later be presented).

At first sight these arguments are correct even though somewhat limited in perspective, as the Danube waterway offers access to the seaside to landlocked nations in Central Europe[4].

Presently speaking, the relationships between the ports on the banks of the Danube are made possible by the existence of the 2 canals. Even though not as important as expected, the Danube –Rhine link through the Main River is of great significance to the central, southern and eastern parts of Europe and stresses the potential of the Danube- Black Sea canal. According to the latest statistical data, the existence of this east-west link has lead to intensifying traffic between the Black Sea neighbors. When considering the enlargement of the European Union, the river Danube might be seen as the most important economic and cultural axis of Europe.

Presently speaking the Danube- Black Sea canal isn't too economically efficient (the tax almost fails to cover the administration costs), but its future perspectives and its environmental role (avoiding transit in the Danube Delta) have made it a very important spot on the economic, geopolitical and strategic maps.

The strategic and geopolitical value of the Constanța – Rotterdam waterway will grow once the Rhine and Rhone will be connected for the purpose of building access to the Mediterranean and the Baltic.

3. ECONOMIC ASPECTS

There are 53 major ports on the banks of the Danube; among them, 24[5] are located in Romania.

The most important ports on the banks of the Danube (except the Romanian ones) are:

- Germany – Passau, Regensburg, Kelheim şi Deggendorf;
- Austria – Viena, Linz, Enns şi Krems;
- Slovakia – Bratislava şi Komarno;
- Hungary – Budapesta, Dunauvaros, Komarom, Györ, Almàsfüzitö-Szöni şi Mohaci;
- Croatia – Vukovar;
- Serbia– Novi-Sad, Belgrad, Pancevo, Smederevo şi Prahovo;
- Bulgaria – Silistra, Ruse, Lom, Vidin, Somovit, Svistov şi Tutrakan;
- Ukraine – Chilia, Izmail, Reni şi Usti Dunaisk.

The river is crossed by 39 major bridges out of which 8 railway ones and 27 road ones.

The World Bank scheme for trans European corridors shows the Danube river as Corridor VII „the Danube river and its ports".

[4] The concept of internationalizing the river Danube has been started by the landlocked states of Europe. This has been put into practice starting with 1792, when the mouth of the Escat river have been cleared, that have been closed from 1648 in order to defend Anvers.

[5] Six of the Romanian ports are rural settlements Bechet, Bistreț, Cetate, Gruia, Drencova and Baziaș.

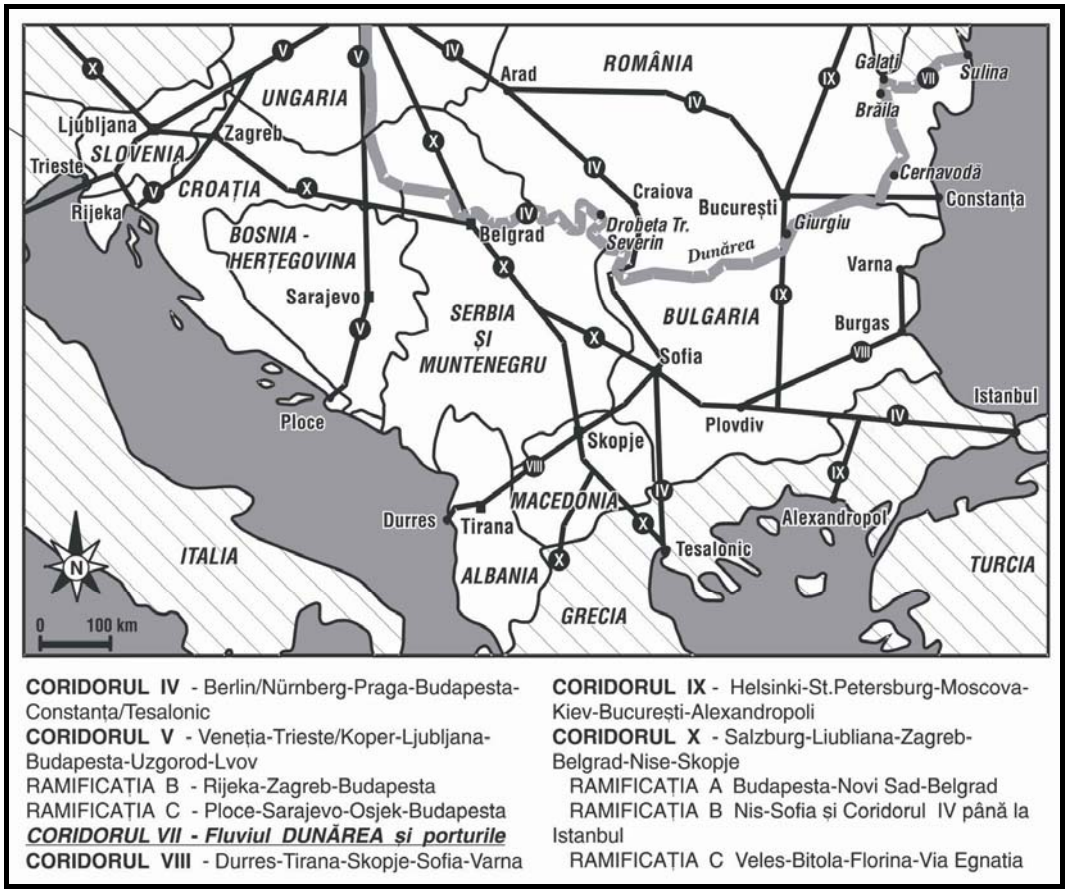

Fig. 2 The position of the river Danube and the trans european transit corridors in south eastern Europe

Water transport is by far the cheapest one due to its price 0,003 cents/ton/km for sea navigation and between 0,02-0,1 cents/ton/km for river transport.River transport if very efficient in the case of rivers that suitable for ships larger than 1.000 tons. The navigation sectors of the Danube are presented in the following table (Table 1).

The need to connect the Danube with the Rhine and the North Sea has got a long history. Over the ages, there have been a series of construction works that were later interrupted due to economic and political reasons.

The idea of creating these canals is an old one. Cutting the distance to the sea has been a Romanian though just as linking the Danube and main rivers started during the rule of Charles the Great. Later, the Austrians had the idea of cutting a canal through the Dobrogea region Ulterior, (around 1840) and later adopted by the English (1850), and then abandoned for a long time. In the economic and strategic European context the construction of the Rhine – Main – Danube becomes major. Due to the existence of this canal, the status of Rotterdam in Holland and western Europe will be similar to that of Constanța in Romanian and south east Europe.

Because of the vital importance of these canals, a short history could be quite relevant.

Navigation Sectors of the DANUBE

Table 1

Sector	Danube (km)		Length (km)	Number of dykes	Other aspects
	from	to			
Kelheim – Straubing	2414	2324	90	4	canalised
Straubing – Vilshofen	2324	2249	75	-	Suitable for small scle ships
Vilshofen – Melk	2249	2038	211	8	canalised
Melk – Dürnstein	2038	2008	30	-	Suitable for small scale ships
Dürnstein – Viena	2008	1921	87	3	canalised
Viena – Cunovo	1921	1853	68	-	Suitable for small scale ships
Cunovo – Palkovicovo	1853	1811	42	1	canalised
Palkovicovo – Budapesta	1811	1646	165	-	Suitable for small scale ships
Budapesta – Slankamen	1646	1215	413	-	Free navigation
Slankamen – Porţile de Fier II	1215	863	352	2	canalised
Porţile de Fier II – Braţul Borcea	863	346	517	-	Free navigation
Braţul Borcea – Giurgeni	346	240	106	-	Free navigation
Giurgeni – Brăila	240	170	70	-	Free navigation
Brăila – Sulina	170	0	170	-	Seaside sector
Braţul Borcea – Cernavodă	346	299	47	-	Suitable for small scale ships
Cernavodă – Giurgeni	299	240	59	-	Free navigation
Cernavodă – Constanţa	64	0	64	2	Canal suitable for navigation
Braţul Chilia – Marea Neagră	116	0	116	-	Free navigation

Source: European Danube Transport Research (EUDET)

A. *RHIN–MAIN–DANUBE CANAL*

In 793, king Charles the Great hires an army of men to dig a canal (Foss Carolina) 2,5 m deep between the 2 rivers. Due to inadequate technology and other, more important issues that needed to be solved the construction work was abandoned only 2 months in progress. The areas nearby Graben still hold remnants of the Fosse Carolina (6 m dirt banks; 60 m wide in the upper part and 9 m wide at the basis).

Linking the Danube and the Main , will be available in the first part of the 19 century. Between 1837-1845, king Ludovic I of Bavaria built a 171 km long canal, with 100 locks and a transport capacity of 200.000 t/year between Bamberg and Kelheim.

Having been inaugurated in 1850, it has functioned for more than a century but gradually its transport capacity has twinkled to only a third of its initial capacity (64.000 t/year in 1912). Because of the difficulties in capitalizing it (the locks were only 16 feet wide) the canal has been abandoned immediately after the World War II.

The construction of the present day canal started after the First World War.

In 1921 RMD ("Rhein – Main – Donau A.G. Company") started building a new canal, of bigger capacity that was supposed to be part of a greater project of waterways totaling some 618 km between Aschaffenburg and the German-Austrian border, including a large part of the Main river, the Altmuhl river (a tributary of the Danube) and another sector, from Kelheim to Jochenstein,

belonging to the Danube.

Work had started at different sectors (table 2), with the final stages being:

- Bamberg-Nurnberg (72 km) – 1960-1972;
- Nurnberg-Kelheim (99 km) – 1971-1989.

Stages of Construction of the Danube–Main–Rhin

Table 2

Main river	Perioad	Sector	Length (km)	Stage
Main	1926-39	Aschaff – Wurzburg	165	13
	1938-62	Wurzburg – Bamberg	132	14
The canal	1960-72	Bamberg – Nurnberg	72	7
	1971-85	Nurnberg – Roth	22	2
	1975-89	Kelheim – Riedenburg	18	1
Danube	1972-78	Kelheim – Regensburg	33	2
	1976-85	Regensburg – Geisling	25	1
	1930-69	Geisling – Vilsfofen	103	*
	1922-28	Vilsfofen – frontieră	48	1
	1952-56	Jochenstein	-	1

* regularly to lower stream

Source: RMD, 1992

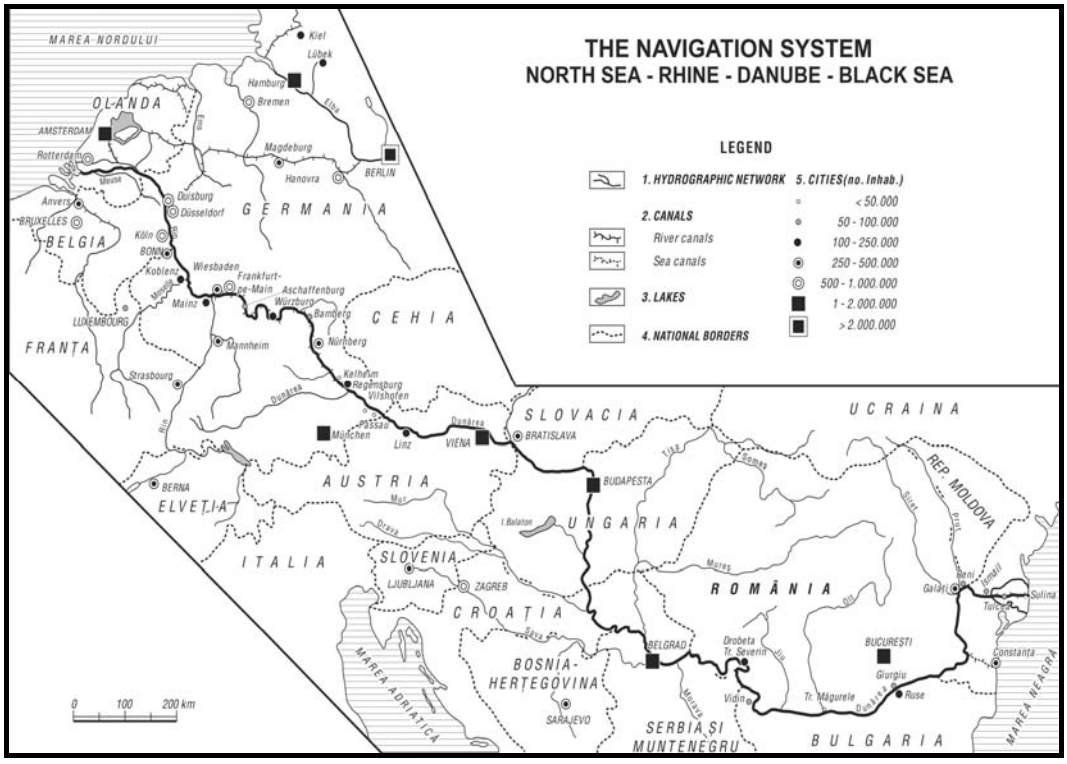

Fig. 3 The navigation system North Sea–Rhine–Danube–Black Sea

Source: Baltălungă A. A. (2004)

The canal was functional on 25 September 1992, 70 years after work had started on it; most construction took place after 1960. It is 55 m wide, 4,5 m draught and allows ships of 3.300 tdw to travel on it.

The Danube–Main–Rhin canal crossed a region of low lying plateaus in the drainage basin of the Main River and slightly higher plateaus in the basin of the Danube River. The border between the 2 basins is located at the Frankische Alb heights (over 400 m). The canal crosses this plateau south of Rothsee, at a height of 406 m, a spot marked by a landmark. From this sight, the highest lying waterway in Europe one can easily reach the Black and North Sea.

The Danube–Main canal follows, starting from Bamberg, Regnitz valley (tributary of the Main), west of Furth city a steal frame over the Zenn River. It then leaves the Rednitz valley after Leerstetten in order to cross the basin border of the Danube and Rhine after having crossed Schwarzach valley and then, along the Altmuhl valley all the way to the Danube confluence.

In order to support navigation on the canal, the Geisling – Vilshofen sector, has been transformed into a major waterway of 100 m wide and a 2,80 m draught, with 24 m wide and 230 m long locks.

Navigation on the canal is made possible through the 16 existing locks out of which 7 are found in Bamberg and Nurnberg. Each lock is 185 m in length, 11,40 m wide and allows a 2,70 m draught. The water volume of the lock is 180.000 cubic meters.

Outside the canal there are 2 pumping stations, one on the Danube and one on the Main at Langenprozelten.

The maximum capacity of yearly traffic on the Bavarian canal is 50 million tones. The goods transport is done with the so called euro-barges that have a 3.300 tones capacity, as well as ships that do not carry more than 1.350 tones.

This is one of the reasons why the Bavarian sector of the canal is considered to be a limitation one.

B. *THE DANUBE–BLACK SEA CANAL*

Having been inaugurated on 26 May 1984, the Danube-Black Sea canal is 64,4 km long, and 70-80 m wide, a 6 m draught and easily allows ships of over.000 tdw. Its construction took 8 years. In 1988 the Poarta Albă-Midia-Năvodari canal also became functional, totaling a 26,5 km in length, as a branch of the Danube–Black Sea starting at km 35. It starts south of Cernavodă and ends south of Constanta (Agigea), shortening the rip by some 400 km. The travel speed is usually around 10-12 km/h.

Favored by its geographical location, the linking of the Danube – Black Sea canal to the hinterland of European waterways has meant connecting the ports of Rotterdam and Constanțaand shortening the duration of traveling by half, from the 6.000 km on the sea route to only 3.000 km through the canals. This allows, at least theoretically speaking a travel time of only 3 days and 8 hours as compared to the 11 days on the other route[6].

Traffic on the Danube–Black Sea Canal has increased as the ferry link between Constanta and Samsun (Turkey) was established.

In the space of the former Yugoslavia finalizing the work on the Danube–Tisa–Danube canal, as well as the future project of connecting the Danube with the Mediterranean Sea through a canal, could lead to a boost in the development of Danube valley.

Further on, other project such as the Oder – Danube 316 km long link in

[6] As mentioned before, the real situation is different, especially because of the small number of locks on the Rhine – Main –Danube and the long time it takes to cross this canal.

Moravia will prove to be the missing link towards the Baltic Sea.

After 1990 the differences in traffic volume between the Danube and the Rhine unexpectedly grew; the Rhine, (1326 km, out of which 870 km suitable for navigation) with a drainage basin of (193.000 square km) four times smaller than that of the Danube has had a total traffic of 291,7 mil. Tones in 1993, that is 12,3 times more than the traffic volume on the Danube. Unlike the latter, the Rhine crossed the western part of Germany, an area that holds one of the largest industrial areas in Europe – Ruhr as well as the Baden – Wurtenberg region with the first tier metros such as: Frankfurth, Koln, and Dusseldorf, Duisburg together with the French city of Strasbourg. Furthermore, the Rhine in linked with the Rhone, and in Holland through a series of canals it is linked with the Meuse, Schelde, Ijssel and Ems. Holland only has a territory of Olanda 30.500 km^2 with some 7.000 km of canals, out of which 1.300 km are suitable for navigation. This is why the traffic volume on the canals is 2 times larger that the traffic volume on the railways.

Foto 1 – The Danube – Black Sea Canal

The opening, in 1992 of the Danube-Main-Rhine canal offers the chance for landlocked states such as Austria, Slovakia and Hungary to increase their trade with European partners. One negative aspect that is being overcome is that of the embargo imposed to Yugoslavia, an aspect that has split the river.

The largest incomes from transport on the Danube are made by Austria, Germany and Poland. It must be said that countries such as Belgium and Holland also gain from this, even though they are not on the riverbanks of the Danube.

CONCLUSIONS

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.

Unfortunately, in the present European context, the potential of the Danube valley as the most important European waterway is yet to be capitalized on due to various barriers of all types.

Sooner or later the river axis of the Danube linking the North and Black Sea will be capitalized; this will happen as the major cities along the Danube develop (Rotterdam, Frankfurt, Nürnberg, Vienna, Bratislava, Budapesta, Belgrade, Giurgiu, Ruse, Galaţi, Brăila, Ismail, Constanţa).

Tourism activities could also be the solution to economic and social development for the nearby cities and regions. Tourism might have a booming effect on the local economies as presently speaking; tourism revenues are larger than those coming from fishing activities.

The dynamics of the Romanian sector of the Danube could use an older idea, that of constructing the Danube – Bucharest canal; it has a large advantage; the work has partially been done, as construction started during the communist regime.

More than this, the elimination of the barrier status for the Romanian sectors of the Danube can only be done through the construction of several bridges across the river, as in the case of the Vidin - Calfat and Braila – Macin project bridges.

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