

# STUDY

## HOW MUCH RAILWAY DOES ALBANIA NEED

(Albanian railways have failed)  
Railways are being ruined until full destruction.

The perspective of railway activity in Albania

THE COSTAL IZOIPSI VLORE-SHENGJIN ORIENTED NORTH-SOUTH IS LOCATED IN THE MIDDLE OF COSTAL LINE PIREU - PATRAS - VLORE – TRIESTE, CREATING A SHORT ROUTE FOR BALKAN COUNTRIES TO REACH ADRIATIC – MEDITERRANIAN SEAS. ALBANIAN COAST IS THE ONLY LOWER LINE IN ADRIATIC AND EASTERN JONIAN SEAS. AL THE COAST LINE IS A NATURAL PORT, BUT THE NATYRALY HAVE BEEN CREATED TO MORE PORTS IN THE VLORA BAY AND AROUND AND IN BETWEEN SHENGJIN AND VELIPOJA.

Without building the Shengjin Europort and Vlora Europort inside or around Vlora Bay, or without developing the Transit activity there is no future for the functioning of Albanian Railways.

Only Albania is not connected with the Euro-Balkan railway network.



(The concepts are based on the “White Paper”, European Policy of Transport 2010).  
Every ten years the EU publishes studies for the situation, performance and the perspective development of economic activities.

1. Railways are efficient for concentrated transport on a distance equal to 900 km.
2. Internal transport and the volume of exports/imports of Albania, Macedonia, Kosovo and Montenegro do not satisfy the economic efficiency of Albanian Railways.
3. From the statistical data of rail and sea transport of Montenegro through Albania results that are being transported only chemical items or dangerous goods. Montenegro doesn't need to transit and transport goods through Albanian sea routes. Montenegro has 25 certified ports and in its deep shores it can be anchored high capacity ships compared with Albanian ports, securing as such direct connections with Adriatic and Mediterranean sea routes.

But Montenegro, except Podgorica is dominated by mountainous and steep territory (average altitude is 955 m over the sea level), which does not favor the development of transit infrastructure to reach the inner Balkan. This means that it cannot compete with the territory and natural routes of Albanian coast in regard to Balkan and vice versa.

4. Reconstruction and modernization of Durres Port does not satisfy the minimal efficiency requirement of railway economic activity. Durres port has a favorable geographical position, but it has been built in the filling area of Durres Bay. Deepness conditions the capacity of processing ships, and the connection with the urban life of Durres limits the perspective extension of the processing industry and the goods being processed. Competition laws invest on stating the reconstruction perspective of Durres Port to block building of other ports.

5. The container port in the filling area in the Soda forest of Vlora Bay does not have a chance to be built. To reach the 10 m deep, the structural ports must be entered in the sea in a distance of 2,6 km. This intervention does more harm to the coast, tourism and the Vlora city, rather than reach the aimed goal to become a port.

6. Albanian Adriatic sea in general is not so deep, but the nature has created two geographical positions, in two geological formations that reach the required deepness, and have the building materials too, to build ports where can be processed all kind of ships, without impacting the urban and social environment.

One of the positions is the Vlora Bay or around it and the second is in between Shengjin and Velipoja. The last one has been awarded an international prize. This means, both posts represent great interest in transition of Euro-Balkan goods, have a low cost, can be funded by the associations of sea transport because they create a triangle between Piraeus – Gioia di Tauro and Shengjin or Vlora.

7. In the same line with studies and portal contracting out are indications of the rail network which will connect the new ports of Vlore, Shengjin and Durres with the Balkan rails (in Ferizaj ,Pristina, Nish , Leskovac, Manastir, Skopje, Plodvid , Instambul and Kozan – Thessaloniki) .

8. The strengthening of portal capacity of Vlore – Shengjin coast offers opportunities for the industrial activity of Sarajevo, Belgrade, Northeast and South Rumania, South Ukraine, Bulgaria, Macedonia, Northern Greece, European Turkey and Istanbul to South Central Italy and Mediterranean Gibraltar to be carried by Albanian ports of Vlore-Shengjin coast.

The volume of transit goods would require the building, reconstruction and connection of Albanian railways with the Balkan rail network.

9. But in the current conditions, Albanian government is not aware of the economic value of the country's geographical position, and does not transit a single ton of goods. Its concept on this Euro-Balkan potential is based on the philosophy of the Secretariat of Corridor \*VIII\* located in Bari, Italy, and Ministry of Transport, which consider the Albanian Coast as the shortest route to only for Brindizi and Bari or Southern Italy, **ignoring in this way the potential that the Albanian coast has as the shortest sea and land route for the Euro-Balkan transit of Southern Europe and Gibraltar in the Direction of Balkans and vice versa. They make propaganda about the limited potential of the Durres port as the future of internal and Balkan transit .**

**These concepts have consequences for the country economy and the development of railway infrastructure.**

## **EUROPEAN CONCEPT ON BALKAN RAILWAY NETWORK THE DEVELOPMENT PERSPECTIVE OF ALBANIAN RAILWAYS**

Railway services in Europe feature two contracting views. On one side there are fast speed trains, modern stations, and increasing needs for diverse services, on the other side are existing old lines, slow structures and services, ill-equipped and amortized.

In 1970 railway lines in Europe have transported 283 milliard Ton/km , and in 1998 have been transported only 241 milliard Ton / km. The transport level in Europe has decreased from 21 % to 8,4 % . The passenger transport in 1970 has been 217 milliard km passenger reaching 290 milliard km passenger in 1998. This decrease comes when the volume of transport in Europe has been growing.

The opposite happens in USA. Railway transport delivers 40 % of goods, compared with 8,4 % delivered in Europe. The American example shows that railway structures can be renovated. The movement of goods through railways in Europe has reached a minimal speed 18 km / h or equal to that of the ice breaking machine in Baltic Sea. The decrease in the rail transport has resulted in many lines going out of service. As such in Europe and Balkan every year is estimated that 600 km rail are being moved and 1200 km roads are being added. And from 1990 – 1998 road transport has increased to 19,8 %. The contradict between the increase in passenger travel in 24 % and in transport of goods 38 %, during 90 - 99, and the decrease in the volume of rail transport, urge for a priority reconstruction policy toward the railways, underlining the transport of goods.

The policy of rail transport aims to unify the transport of goods in Europe and modernize e re-dimension the rail hubs and goods stations, and to reconstruct passenger lines to the European level.

Separating the lines for goods transport from passenger lines, it has been planned to reconstruct 50.000 km lines for the transport of goods. Having in mind the geographical position, capacities and specialization of Mediterranean ports, of the Black Sea, Eastern Atlantic, the Northern and Baltic, the perspective development of railways would reach the Silk Way ( Burgas-Istanbul - Georgia – Azerbaijan, Caspik Sea, Turkmenistan, Uzbekistan, Taxhikistan, Kirgizstan - Eastern China, with a distance of 4.400 km .

In the area of Ankara, the railways can be directed toward Syria, Iraq, Iran, etc. Long term objectives require that the oil from Middle East and minerals and human resources of Central Asia to be sent to Europe and USA through Black Sea and Balkan rather than the long route of Persic Gulf, Red Sea etc.

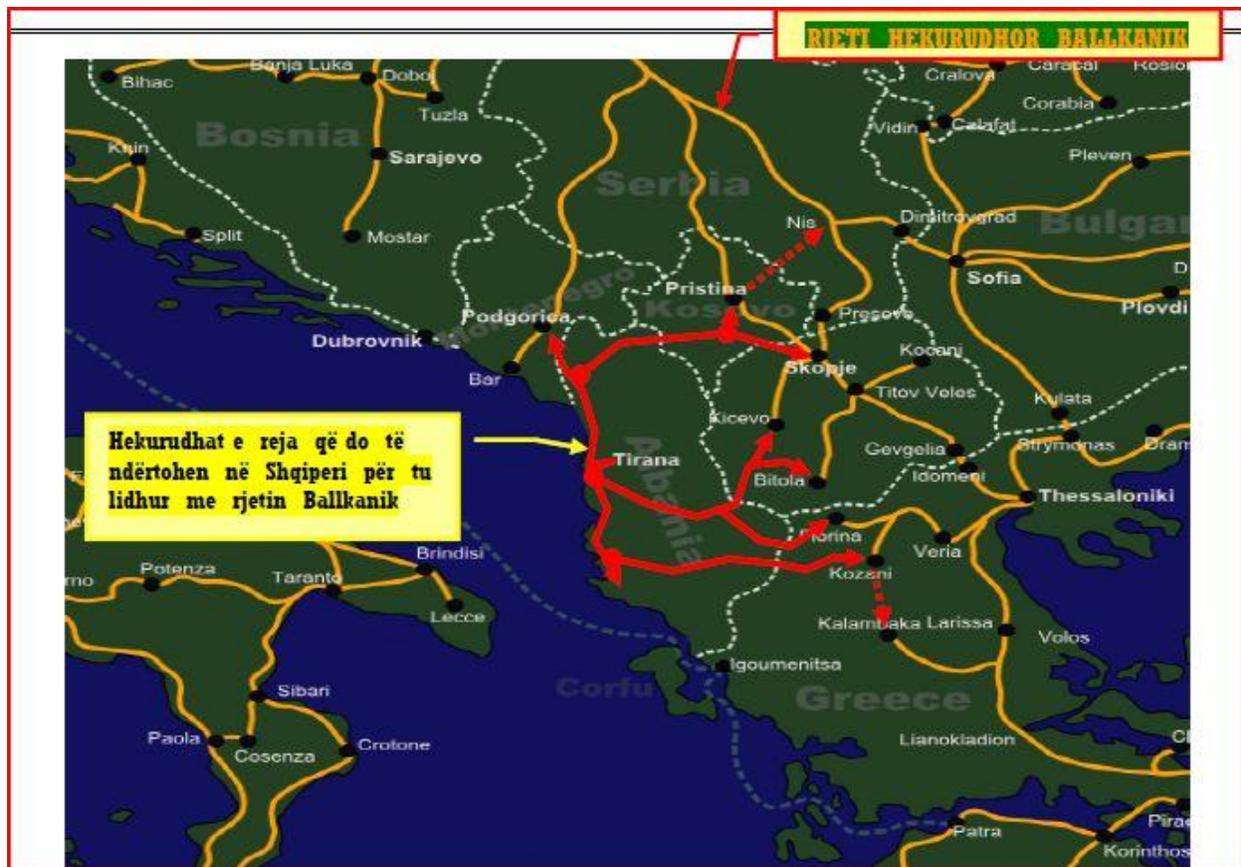
In the publication, The Strategy of Albanian Infrastructure we have analyzed the advantage of road transport of goods and passengers. The road transport for a distance of 500 – 900 km ensures the provision and sending of goods to the companies within one day from 3 days that is provided by the rail transport. Having in mind that production companies with 5 to 50 employees have a high production intensity, for them the use of road transport is very efficient.

In terms of energy efficiency, one liter of diesel can transport 50 ton goods in 1 km of road, 97 Tons of good in railway lines, and 127 ton goods in sea route.

As we can see the rail transport is twice more efficient than the road one, without taking into account the CO2 pollution of the environment. But the rail transport of goods has its own shortcomings, including the volume, packaging, stations, the change of locomotives, the interim distance, etc. These problems have increased the costs and the number of personal vehicles, which in Europe increases with 3 million vehicles every year and there is an increasing trend. The difference between the two types of transport requires the modernization of railways with the aim of limiting the intensity of road transport.

## THE CONDITIONS AND PERSPECTIVE OF ALBANIAN RAILWAYS

1. THE RAIL TRANSPORT IS FISIBLE FOR TRANSPORTATION OF GOODS IN DISTANCES OF OVER 900 KM
2. ALBANIAN RAILWAY NETWORK IS NOT CONNECTED TO EUROBALCANIC RAILWAY LINES
3. ALBANIA LACKS LARGE SEA PORTS TO PROCESS GOODS NECESSARY TO SUPPLY RAILWAY LINES. ONE RAILWAY MUST MOVE AT A MINIMUM 3-6 MILLION TONS OF GOODS PER YEAR.
4. THE GEOGRAPHICAL POSITION OF ALBANIA IS VIABLE FOR TRANSITING OF GOODS TOWARDS BALKAN (MACEDONIA, BULGARIA, RUMANIA, UKRAINE, KOSOVO, SERBIA AND VICEVERSA)
5. TO ACTIVATE DHE RAILWAY IT IS NECESSARY TO CONSTRUCT THE SHENGJIN EUROPORT AND VLORA EUROPORT (DAJLAN OR KARABURUN)
6. TO CONNECT THE ALBANIAN RAILWAYS WITH THAT OF BALKAN RAILWAYS, FOUR NEW RAILWAYS MUST BE CONSTRUCTED AND RECONSTRUCTED DISTANCE 910 km  
( 1,2,3,4 )



\*\*\* ONLY ALBANIA IS NOT CONNECTED TO EURO-BALKAN NETWORK\*\*\*

CONNECTING THE ALBANIAN ROAD AND RAILWAY NETWORK WITH CORRIDOR \*X\* WOULD CONNECT THE COUNTRY WITH BALKAN AND WOULD PROVIDE THE BALKAN THE SHORTEST CONECTING PATH WITH ADRIATIC AND MEDITERANIAN SEA.

It is noteworthy that Balkans railway begun to function prior to 1900s. The period between 1945-1990 influenced the communist countries to construct a new railway network used for transportation of goods between these countries, between USSR and Balkans and between Balkans and Europe. The map of Balkan railways proves this.

The transport of certain groups of goods will increase the efficiency of rail transport. The relation characterizing the rail transport between Europe and the East has been successful when Eastern economy was centralized and production and transportation contracts were fulfilled despite of the costs that were billed to Eastern economies. The dissolving of eastern economies brought into light the problems of rail transport between Europe and the East and within Europe.

## **BALKAN RAILWAYS**

All Balkan states and countries between Balkan and Europe and Eastern Europe like Yugoslavia Bulgaria, Rumania, Hungary, Check Republic, Poland, Austria, Ukraine are part of the field basin of Danube. Regarding the geo-physical conditions building the rail network in the Balkans was not difficult. It is worth to note that all the rail network of Balkan countries was inter-connected, and was connected with the main cities in Europe as well as the main Mediterranean ports, ports of Northern Sea, Baltic Sea, etc. Danube is also connected with Northern Sea through the Ren – Meno - Danube channel, (Rotterdam - Danube – Black Sea 3500 km). A general view of import exports of Balkan countries results in the conclusion that the transport of goods was mainly between neighboring countries and 55 % was with the Soviet Union. All the rail transport contacts had to be respected and they created the idea that the rail transport was feasible. The exchange of goods during communist era between these countries and Europe was in the level of 10 %. After 1990, Balkan countries have increased their commercial exchanges toward Europe to 50 %, which has also revealed the true cost of rail transport. This situation calls for the reconstructions of railways and infrastructure in Balkan countries. And this is valid for Albania too. We share borders with three former- Yugoslav countries, which utilize Corridor “X” or the Sava river valley and Vardar river valley to connect with road and railway network.

Due to historic, politic and economic reasons, Albania did not have a significant economic relation with Balkan countries. The very centralized economy of Albania didn't need Balkan railways. The limited connection with the Balkans was through the roads. In regard to portal infrastructure Albania didn't have and still does not have processing capacities in the ports for the transit of goods. As a country without a core economic plan, Albania in 2010 realized 61 % of the export/imports, 25 % of passenger movement with the Coast, 18 % of commercial exchanges and 33 % of passenger movement with Greece, and exchanges with Balkan countries and Turkey are channeled through Macedonia, Kosovo and Montenegro.

All the movement of import-export goods is done through roads. Our country does not transit goods from Europe to Balkans and vice versa, because of the lack of portal capacities.

Given that Albania economy does not play A ROLE IN THE Balkan economy, the only economic value for Balkan and Europe is the geographical position of Albania, especially the coast line Vlore - Shengjin - Bune. This means that our country has to develop portal capacities and railway infrastructure, serving the Euro-Balkan transit.

**Without the concept of two big ports between Shengjin and Velipoja, (Shengjin Europort and building a new port outside of Vlore bay, there is no opportunity for the development of railways. Given that the geographical distance between urban centers in Albania does not exceed 200 km from the capital, it is clear that the transport of passengers in not efficient to be realized through railways.**

1. Tiranë - Vaqar - Paper - Kuçovë 72 km
2. Tiranë - Vaqar - Paper - Kuçovë - Berat 84 km
3. Tiranë - Vaqar - Paper - Kuçovë - Berat - Memaliaj 130 km
4. Tiranë - Vaqar - Paper - Kuçovë - Berat - Memaliaj - Kardhiq - Sarandë 200 km
5. Tiranë - Vaqar - Paper - Kuçovë - Berat - Memaliaj - Gjirokatër – Kakavijë 200 km
6. Tiranë - Vaqar - Paper - Kuçovë - Berat - Memaliaj - Përmet - Tre Urat 200 km
7. Tiranë - Vaqar - Paper – Gramsh – Devoll - Voskopojë - Korçë 145 km
8. Tiranë - Vaqar - Paper - Kuçovë - Berat - Çorovodë - Ersekë 185 km
9. Tiranë - Milot - Kukës - Morinë 200 km
10. Tiranë – Prishtine - Kufi Medvegj 293 km
11. Tiranë – Prishtinë 255 km .
12. Tiranë – Prizren 181 km
13. Tiranë – Vau Dejës – Koman - Dushaj – Qaf Morinë 210 km
14. Tiranë – Shkodër – Hani Hotit 140 km
15. Tiranë – Shkodër – Muriqan 110 km

The above designations indicate partial distances of Tirana with some urban centers and border junctions. Meanwhile road and railway distances are indicated in following graphical plans.

Road and railway distances dictate the technical-economic provision that transport of passengers by rail is not profitable. The conclusion that Albanian railways are bankrupt is a product of geographical dimension of Albania, distance between urban centers, volumes of raw materials transported, etc. Therefore, the transport of passengers and transport of goods must be separated. The concept of transportation of goods via railway is associated with loading and unloading method of loads from the railway carriage at port, at destination or origin. The concept that seaport of Durres could become a supply center of railway lines or Euro-Balkan transit junction is not based on technical and functional grounds. But the economic crime has a spokesman the Ministry of Transportation, which says that at seaport Durres we can process ships of  $v=10-20-30$  thousand tons and our country has the free capacity to process up to  $v-14$  million tons of goods, of which  $v-11$  million could be process at seaport of Durres. Across the Adriatic coast we don't transport a single ton of goods and neither we have the processing capacity for transiting of goods.

Years ago was awarded the concession to reconstruct the railway between Tirana and Durres, which was invalidated. We are against investment to reconstruct the existing railway line. Given that we have performed measurements concerning the traffic we have concluded that constructing a tram line (inbound/outbound every 30 minutes) between Tirana and Durres, is feasible not only economically but for the community as well. Meanwhile, the other internal railway lines are of neither economic nor social interest. In the distant perspective railways could be connected through Athens railway and Central-Southern Corridor.

The most accurate definition is: failure as a structure, as social-economic activity and their function should be terminated as soon as possible.

## ALBANIA'S GEOGRAPHICAL POSITION AND RAILWAYS



Total area  $S = 28\,748 \text{ km}^2$

Water surface  $S = 1350 \text{ km}^2$

Surface of watershed basin  $S = 43\,305 \text{ km}^2$

Border length  $L = 1094 \text{ km}$

Terrestrial  $L = 667 \text{ km}$

Border with Kosovo  $L = 112 \text{ km}$  <http://sq.wikipedia.org/wiki/Shqip%C3%ABria>

Border with Monte-Negro  $L = 172 \text{ km}$  <http://sq.wikipedia.org/wiki/Shqip%C3%ABria> ..Buna

Border with Macedonia  $L = 151 \text{ km}$  <http://sq.wikipedia.org/wiki/Shqip%C3%ABria> Ohrid - Prespa

Border with Greece  $L = 271 \text{ km}$

Sea border  $L = 427 \text{ km}$

With Adriatic sea  $L = 273 \text{ km}$

With Ionian sea  $L = 154 \text{ km}$

Border lake  $L = 73 \text{ km}$

## THE CONDITION OF ALBANIAN RAILWAYS

The railway is state property.

Length of railways is  $V.2000 L = 447 \text{ km}$  and secondary lines length is  $L = 230 \text{ km}$

The railways are not electrically operated, are amortized, are with a single crossbeam, there are no crossovers at road truck intersections, the traveling speed is about  $V = 12 \dots + \dots \text{ km/hr}$ .

The railways are not safe and are part of the old Stephenson standard. The width is  $1435 \text{ mm}$  and the metal rails type. S-49 e and P-43; respectively for loads of  $49.43 \text{ kg/m}$  and  $44.61 \text{ kg/m}$  or  $38 \text{ kg/m}$ .

The crossbeams or metallic tracks are fastened to wooden running rails and in very minor cases are fastened to concrete.

The main lines curves have a radius of  $R_{\text{min}} = 500 \text{ m}$  and mountainous have a radius of  $R = 300 \text{ m}$  and a slope of  $9\text{-}18\% \dots \text{ per thousand}$ .

Because of amortization the maximum car load is  $P = 8 \text{ tons}$ . In 1995 supplying was done using locomotives and cars of secondary quality and out of standards. Many secondary lines are destroyed and out of function. The distances within Albanian territory are short. They should be carried through electrified railways.

Currently the Albanian Railway has an inventory of 66 passenger cars, 225 for transport of goods and 25 locomotives. With this rolling stock, 1.5-2 million passengers and about 400-500 thousand tons of goods could be transported.

These data are not so accurate.

There is no detailed study about the future of Albanian railways. After 1990, Albanian economy it's opened toward the Balkan and Europe. In these conditions there is a need to have new concepts and new studies about Albanian railways. This study fills this gap and is based on the Euro-Balkan context.

### THE PERSPECTIVE DEVELOPMENT OF ALBANIAN RAILWAYS.

The above overview describes the condition of Albanian railways, their amortization, which has resulted mainly from economic changes and wrong policies of the Ministry of Transport. Other branches of economy have been adapted to new changes, and the railway sector is falling behind. In this context there is a question. What is the perspective for Albanian railways, how can it be positioned in relation to internal economy, and transport of goods, Balkan infrastructure, and transport of goods through sea routes?

We recommend that the development and the reconstruction of railways is intertwined with the transit of goods from Balkan in Europe and vice versa. We are bringing into light again the geographical position of the country and the economic value of such position in relation to Euro-Balkan transit.



## **\* WHAT IS CORRIDOR \*VIII\*, THE TRANSIT AND ECONOMIC VALUE OF ALBANIAN GEOGRAPHICAL POSITION REGARDING INFRASTRUCTURE.**

Portal capacity of Albania, of Vlore – Shengjin coastal line and the land route capacities of Qaf Morine - Morinë - Qaf Thanë - Tre Urat , offer opportunities that 50 million people of the Balkan to transit passengers and goods to Southern Italy, South-Western Europe, Mediterranean Africa and Gibraltar Straits, saving 600 - 920 km road, compared to the advantages of Hellenic ports..

Albania is not only the shortest route for the Southern Italy and Puglia region (Bari – Brindisi), but for the goods that come from Gibraltar as well, which are 2,5 – 3 times more than those that come from Italian ports in the Balkans. Balkan goods to South-Central Italy going through Albania save 920 km road, and when their destination is the Mediterranean region and Gibraltar they save 600 km. At the same time the Albanian coast line creates a corridor to bring the fuel from Central Asia in the Mediterranean region (Silk Road)

Albanian territory creates a favorable transit area. This is because the valleys of Albanian rivers go deep in the heart of the Balkan. Albanian coast Vlorë - Shëngjin – Bunë creates a low strip of land, the only one from Patras to Trieste. The coast Vlore- Shëngjin is the only coastal zoips and creates a natural port coined as the \* GIBRALTAR OF THE ERAST.

From the data about the movement of goods and passengers it is estimated that there are 500 thousand km<sup>2</sup> of Balkan territory and 50 million people that want to transit goods through Albanian Coast.

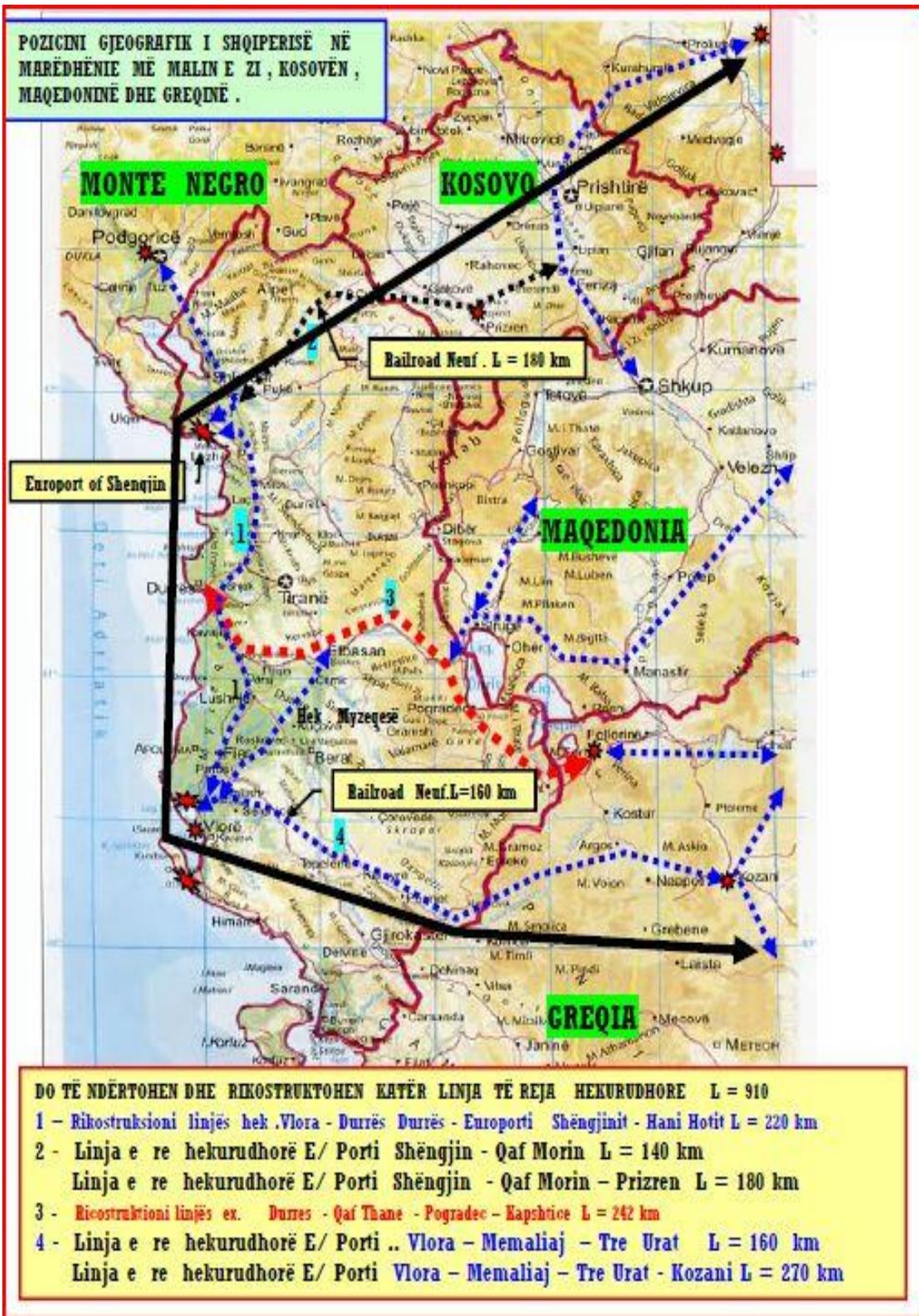
In the current conditions, Albania does not transit a single ton of goods to the Balkan and vice versa. From the maps it is clear that all the urban centers of the Balkan, such as Podgorica , Sarajevo, Belgrade, Nish , Skopje , Craiova , Sofia , Bucharest, South-West Ukraine, European, Turkey, Istanbul and Thessaloniki have the Albanian Coast as the shortest route to reach the South of Italy, South-Western Europe, North-East Africa, America, United Kingdom, etc. According to estimations the volume of goods that can be exchanged through Albanian coast can reach up to 30 million ton. But the lack of portal capacities in Albania results in these goods reaching their destination through the ports of Thessaloniki, Igumenica, Piraeus, Black sea ports, Dalmatic sea port, etc.

### **WHAT ARE THE FINDINGS OF THE STUDIES:**

1. Albanian railways will continue to fail until full destruction.
2. There is an urgent need to give with concession the building of the Shengjin Europort , “The Eagle of Adriatic, which has been given an international award. Its processing capacity equals 60 million ton goods annually, and its cost is 2,2 milliard euro, doubling the capacity in the future. Another finding is the building of the port of Vlora Bay.
3. The containers port in the Soda Forest will not be build, because it is located in a shallow area, and there is a 10 m deepness standard and to reach this level all the portal structures need to go 2,6 km into the sea.

1. At the same time with the building of the ports, there is a need to give with concession the railway lines of the Drini Corridor, Shëngjin - Torovicë - Koman - Tetaj – Dushaj - Qaf Morinë ( tunnel ) - Gjakovë – Prizren - Ferizaj and Vlorë - Selenicë - Memaliaj - Tre Urat - Kozan. Portal companies will be interested to build railway lines)
2. Riconstruction of lines Vlorë - Fier - Durrës - Shkodër - Hani Hotit .
3. Buiding of Fier- Thanës lake - Belsh - Elbasan 60 km ( Myzeqe Corridor )
4. Riconstruction of lines Rrogozhinë - Elbasan - Ohër
5. Riconstruction of mine lines Shëngjin – South East area (to be carried out by concessionary companies and the government. Concessionary companies do not invest in railway lines because there are no terminals to process the minerals)
6. Building the tram line Tiranë - Beach - Durrës (along the highway)

POZICINI GJEORAFIKI I SHQIPERISË NË  
MARËDHËNIË MË MALIN E ZI, KOSOVËN,  
MAQEDONINË DHE GREQINË .



DO TË NDËRTOHEN DHE RIKOSTRUKTOHEN KATËR LINJA TË REJA HEKURUDHORE L = 910

- 1 - Rikostruksioni linjës hek .Vlora - Durrës Durrës - Europorti Shëngjinit - Hani Hotit L = 220 km
- 2 - Linja e re hekurudhorë E/ Porti Shëngjin - Qaf Morin L = 140 km  
Linja e re hekurudhorë E/ Porti Shëngjin - Qaf Morin - Prizren L = 180 km
- 3 - Rikostruksioni linjës ex. Durrës - Qaf Thane - Pogradec - Kapshtice L = 242 km
- 4 - Linja e re hekurudhorë E/ Porti .. Vlorë - Memaliaj - Tre Urat L = 160 km  
Linja e re hekurudhorë E/ Porti Vlorë - Memaliaj - Tre Urat - Kozani L = 270 km



Albanian territory differs from the territory of other Balkan countries. Other Balkan countries are located in the water basin of Danube river, with the exception of Albania, Greece, part of Macedonia and Kosovo. According to geophysical and hydrologic studies Albania has a watershed basin around 43 305 km<sup>2</sup>

1. Albanian coastline is 273 km (watershed basin is 43 305 km<sup>2</sup> )
2. The coastline Bunë – Trieste is 6197 km (watershed basin is 46 544 km<sup>2</sup> )

As such the Albanian watershed basin is quite equal to the one of the Dalmatic coast, which has a longer coast line, 6197 km. This means that the water volume that flows from Vlore coast to Buna delta is quite equal to the waters that flow from Buda delta to Trieste. It is this water flow that has created the only low field in all the Ionian and Adriatic seas coastline from Piraeus to Trieste. At the same time the valleys of Vjosa and Drini rivers cut deep into the Balkans, creating a natural shape favorable to transit movements. These rivers also create natural tracks that can be utilized to build roads and railways from the coast to inner Balkans and vice versa.

Given the fact that Drini valley represents multiple interests, the study brings some geo-hydrological details.

### **DRINI RIVER**

Drini river represents the longest river of Albania and the most leveled of Adriatic and Ionian shores. The riverbed of Drin forms a natural track for road building, railroads tourism. Even though this is not related with object of study, it is noteworthy the Drini river after Valley of Valbona forms (without any comparison) Balkan's the most scenic relief. The valley, the lake, the basin, the nature particularly from Koman up to Fierze form a natural beauty, environmental flows, micro climate and all the categories of tourism attractions are of highest tourist breadths. Even hydro technical constructions have not done any damage to the natural vision of Drini valley. As one of the most developed branches the Albanian Hydro Technology has been studied and utilized rationally for electricity production...and creating a scenic view and adding to the beauty to an already refracted valley of Drini river.

Currently the Drini river produces 70% of electricity. To utilize the full potential of Drini river three dams have been built one which for three hydroelectric stations. The first dam was built in the village of Fierze (according to delta of Valbona river valley on Drini river )at the quota h = 140m.



In the village of Koman another dam in 1978 -1985 was built (with concrete coating),  $h=155\text{m}$  creating a lake with a volume of the  $450\text{million m}^3$  and installed power of  $n=600\text{MW}$ . The maximum level of the lake is up to  $176\text{m}$  before the delat of river of Valbona (Dushaj). The lake of Koman is navigable from Koman to Dushaj (the delta of Valbona). The lack of a road from Koman to Dushaj forces people to use the ferries. The lake of Koman is also considered an axiom of natural beauty.



In the lower side of Drini river at Vau i Dejes the dam of Zadeje and Qyrsaç have been build, which form the lake of Vau i Dejes. This lake has volume of  $v = 600\text{million/m}^3$  and has an installed power of  $n=250\text{MW}$ . The maximum level is  $76\text{m}$ . The lake of Vau i Dejes is located  $23\text{km}$  from Shkodra. It has a surface of  $24.7\text{km}^2$  and a maximum depth of  $52\text{m}$ . The lake was built in 1971.

### **THE BLACK DRIN (DRINI i ZI)**

The base of Drini river traverses the SouthEastern side of Balkan peninsula, going through Kosovo, Macedonia and Albania. In Albanian language it is called Drini, in Serbo-Croatian language it is called Дрим/Drim. The length of the river is  $290\text{km}$ . The average flow is  $q = 352\text{m}^3/\text{sec}$  and the watershed basin of  $S=11\,756\text{km}^2$ . The river takes the real shape northwest city of Kukes. At this juncture both Black Drin and White Drin (Drini i Bardhe and Drini i Zi) merge. The Black Drin river flows out of lake of Ohrid at the height of  $695\text{m}$  passing through a very mountainous area. In Diber te Madhe the river is systematized and utilized through a lake of a quota of  $h = 670\text{m}$  and goes through Albanian border below Gjorica e Siperme, towards north. The river has a length of  $L=149\text{km}$ . With the construction of lake of Fierza, the Black Drin (Drini i Zi) streams at the same volume of the lake south of city of Kukes, thus losing the bed of origin.

## **THE WHITE DRIN (DRINI i BARDHË/ Бели Дрим)**

The watershed basin of White Drin begins at western wreaths of city of Peja or so called the Plateau of Dukaghin and Metohija. The White Drin has a length of 134km and is considered to be the longest river of Kosovo. In Gjakova the White Drin has a quota of  $h=340m$ , because it collects the waters of Deçan where it becomes a real flow. About 8.4 km from West of Prizren, the Bistrica of Prizren river merges with White Drin at the quota of  $h=283m$ . After merging with river of Prizren it goes towards South-West and flows into lake of Fierza. At the maximum quota, the lake of Fierza partially goes through Kosovo territory.

After merging in the Fierza lake, White and Black Drin are named simply Drin river. On the left side of the White Drin lies the highway Kukes-Kukës –Prizren, which at the Morina check point reached the height 327 m. On the Drin river, down the Fierza lake flows the Valbona river (delta reaches the quota 168 m ). Valbona river has a low valley too. In this river flows the Bistrica river, which reaches the height 255 m . Valbona river takes a turn toward the north, while Bistrica goes toward Tropoja and reaches the border between Albania and Kosovo, on Qafe Morine on the quota of 567 m . Qafe Morine heights serve as a separating lane between the urban areas of Gjakovo and mark the stream on White Drin on Gjakovo territory. From the delta of Valbona river, the road goes on the left of the Bistrica river then toward Gjakovo, through the so called Qafe Morine.

Traveling in the Drin valley and looking into the flat territory with no major breaks, someone wonders, how it is possible that the government does not utilize these natural corridors created by the Drin valleys to build roads and highways. ....

## **THE RAILWAY ON THE DRIN VALLEY**

Shengjin Europort - Qaf Morin 140 km  
Qaf Morin – Gjakov – Prizren 40 km

The natural slope is six times lower than the technical requirements. For the pass from Drini river to Prizren field there are two passage points. These natural points are Morina, which is located in the highway corridor Kukës - Morinë - Prizren. Morina lies on the quota of 327 m. The other point is Qaf Morina, which is located in between Tropoja and Gjakova on 567 m over the sea level.

The study suggests that the railway track from Shengjin Europort to Prizren to go mainly on the river bed and the right shore of Drini river till it reaches Dushaj, then deviate to the valley of Valbona river, and in Bujan to deviate again to reach the Bistrica river.

Passing through the Qafe Morine, the study suggests one option which is building the highway and going through Qafe Morine using a tunnel with a distance of 500 m ). After leaving the Qafe Morina, the tracks will go through White Drin, then in Gjakovo and latter in the Prizren field. In Prizren, the railway will get connected with the Kosovo network and from there with the Balkan network. What is special for the Drin valley is that it cuts the alps crown and then goes deep onto the continental Balkan and reaches Fushe Kosovo neighboring the Danube watershed basin.

It is worth noting that Prizren urban center lies on the quota of 350 and Bistrica of Prizren goes through the town. Prizren historically has been a commercial center favored by the triangle of Pristina - Skopje – and Prizren, which has Ferizaj in the center.

Prizren lowland is part of the White Drin watershed basin. Fushe-Kosovo hills feed the Vardar River that goes through Skopje.

Summarizing, from the above description is clear that in between Prizren – Ferizaj and Pristina start the Danube waters, Vardar and White Drin. This means that between Prizren, Shkup and Pristina there are no big heights or maintain breaks that can become obstacles for the building of the railway. And in regards to Albania, if the rail network is connected with that of Prizren, Ferizajn or Pristina, then the Albanian railways can reach the Euro-Balkan network. And this could be made possible through the very picturesque Drin valley. Geo-physical difficulties result only on the Vila stream, (above the Koman), and later the Drin banks became softer and the rails tracks can be laid without difficulty.

In order to build rail tracks, the slope has to be 1,5 % or 15 % per thousand. Drin river has a natural slope from Komani to Kukës, which is no more than 3- 4 ‰. In technical terms the slope of Drin banks is around four times smaller that the standard slope for building railways. And if the natural slope of Qafe Morine is followed there is no need for tunnels.

THE NAVIGATORY CORRIDOR OF VJOSA RIVER 140 km

Europorti Vlorës – Memaliaj – Tre Urat 140 km

Europorti Vlorës – Memaliaj – Tre Urat - Kozani 270 km

Europorti Vlorës – Memaliaj – Tre Urat - Kozani - Selanik 340 km

In the northern border the nature has bestowed us with the flat bed of the Drin river, and in the south with the Vjosa river. According to the definitions of the geographical position related to the transit of goods and passengers, Vjosa river bed creates the southern line of the transit areas or the natural corridor of the South to go from Albanian coast to Thessaloniki.

## **ROADS IN ALBANIA**

The total distance is 18,000 km. The primary network length is 1,138 km

Main interurban roads 3636 km

Secondary interurban and local roads 10500km up to 11000 km

Highways 160 km

The valley of river Vjosa is fully populated and the information regarding the riverbed is known.

The table of absolute quotas regarding the riverbed of river Vjosa has also been provided during study of corridor of Vjosa river. Even though it is not a normal practice to provide the same material twice, the fact is that the railway of Vjosa could not be conceived without pertaining data of riverbed. The railway tracks from seaport of Vlora to Sevaster could be constructed by reconstructing the tracks of Vlora-Selenice railway or on the left side of stream. Meanwhile from Permet to Tre Urat the railway could be constructed from both side of the river... according to the site. The construction of Vlora-Selenica-Memaliaj-Permet-Tre Urat has not topographic barriers, the riverbed is lowland that allows for construction of railway track with slope of  $n=4$  times less then allowed slope for railway tracks.

The river of Vjosa is sustainable for the geological perspective. All of the construction material could be locally supplied.

As technical guidance the railway tracks from Vlora to Selenica-Sevaster could be constructed on the left side or following the direction, from Sevaster-Kalivac, the spring of Corushi, Qesarat, Vasjar-Memaliaj. In Memaliaj, there are several ways in which it can be accomplished. The most viable one is to construct the city loop on the right side of shore, without having to construct a new bridge in river of Vjosa, which is near the existing city loop. Following the right side of the shore the railway comes across the highway of Vjosa, below Beçisht, and both follow the direction on the right side of river Vjosa stream until they reach Permet. From Permet to Carçove-Tre Urat the railroad tracks follow the existing road but it will be necessary to build bridges and overpasses in the area of river of Carçova, etc.

There is no interest to construct the Vjosa railway corridor internal traffic and economic-social needs, but solely as a hypotenuse to connect Selanik with bay of Vlora and for the sake of conjoining of Adriatic sea with Ionian sea.

**THE CONNECTION OF ALBANIAN COAST AND THE CAPITAL WITH THE CORRIDOR \* X \***

LUBIANË - ZAGREB – BEOGRAD – NISH – SHKUP SELANIK IS 1365 KM AND

LUBIANË - ZAGREB – BEOGRAD – NISH – SOFIE – EDERNE – STAMBOLL IS 1547 KM

SHENGJIN EUROPORT IN ALBANIA IS 290 KM AND 330 KM AWAY FROM THE CORRIDOR \* X \*

The new highway + reconstruction Shëngjin Europort - Qaf Morin – Prizren - Prishtina - Besiane - Nish  
330 km

The new highway + reconstruction Europorti Shëngjin - Qaf Morin – Prizren - Ferizaj – Shkup 290 km