
STATE OF INTERMODAL TRANSPORT IN CROATIA AND SERBIA

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Abstract: *Efficient and competitive transport system is of great importance for the economy of any country, especially due the process of globalization, production of goods and services are increasingly distant from the place of their consumption. In order to achieve socio-economic and environmental sustainability, Europe promotes the use of intermodal transport as a more efficient and cost-effective system for transport of goods. The main goal of this paper is to present and analyze the real situation of intermodal transport in the Republic of Croatia and Republic of Serbia, with regard to the leading EU countries that have high use of intermodal transport. This paper will make a theoretical analysis of intermodal transportation, related to the terminology, development and basic technologies which are used. Analysis of the state of intermodal transport in Republic of Croatia and Republic of Serbia, will be made through the flow of goods and transport corridors which pass through the Republic of Croatia and Republic of Serbia, analysis of the network of intermodal terminals, as well as specific problems that occur, which are related to the legislative, organizational, technical and technological problems.*

Keywords: *intermodal transport, intermodal terminal, cargo flows, transport corridors.*

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1. INTRODUCTION

The main principle that economy of each country depends on is the development of the transport system and there is a situation that countries with developed industrial production have highly developed transport system. Since the transport costs are increased with globalization, conventional transport is no longer acceptable therefore, a solution is intermodal transport. Development of this kind of transport requires all kinds of transport modes to develop, so that each mode can provide the maximum of its possibilities. Therefore it is very important to know the flow of goods, the condition of the transport infrastructure and network terminals in order that intermodal transport could operate smoothly.

In order to develop a logistics and intermodal transportation system it is necessary to establish and develop the intermodal transport network with logistics centers, which represent a modern connection of different modes and technologies of transportation. Logistics, multimodal transportation network has been largely developed in the European

Union (EU). Nevertheless, in the region of the Croatia and Serbia there are many disadvantages related to logistics and transport network, which represent limitation for the application of intermodal transport technologies.

2. INTERMODAL TRANSPORT IN REPUBLIC OF CROATIA

Croatia has an excellent geographic location, via connection through V, VII and X corridor associated with the European transport corridors and the ports on the Adriatic it provides the shortest and most economical route that connects Europe with Asia. These are great opportunities for the development of intermodal transport, but the real situation is very bad. The main reason for this is the bad implementation of the transport policy, which has favored road transport through a lot of years, which is well developed, and on the other side a rail system, and a system of inland waterways are completely neglected. For example railway line Botovo-Zagreb-Rijeka, which is important because it connects the Port of Rijeka with the interior of the country, has only one track and because of its

characteristics in the most parts does not correspond to the modern needs of transportation. [2] How the situation is alarming can be confirmed by the fact that the average speed of freight trains in Croatia is only 23 kilometres per hour. Also a big disadvantage of railways is impossibility to provide transport services "door to door" because of lack of industrial tracks. Furthermore, rail freight transport is slow, because it occurs on the same infrastructure as well as passenger transport, where the lowest priority is given to freight transport, being performed mostly at night, which stalls the execution of transportation service. Traffic on inland waterways is in even worse condition than railways. The total length of waterways in Croatia is 804 km, but only 287 km corresponds to conditions of IV class. Devastating is the fact that Croatian rivers annually carry only about 1.5 % of the total volume of goods transported. There are also a large number of laws and regulations that limit future development of intermodal transport. Another problem is the fact that there is no adequate network of intermodal terminals on which can take place transshipment operations. Because of these problems, only 25% of containers from port of Rijeka are transported by rail and 75 % by road. [3]

In Croatia there is no an adequate network of intermodal terminals. As the right terminals we can mention only terminals in Port of Rijeka, Port of Ploče and Container Terminal Zagreb - Vrapče.

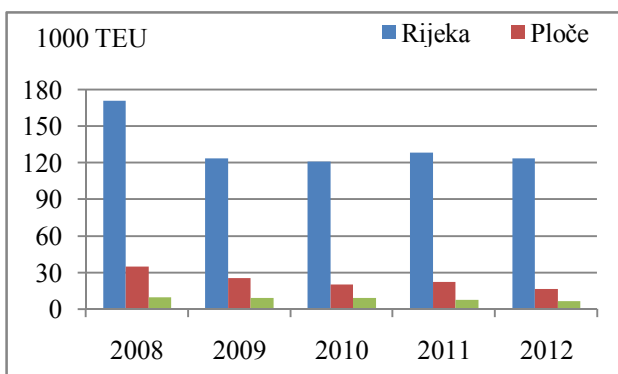


Figure 1. Number of TEU on terminals in Rijeka, Ploče and Zagreb [8]

Terminals in Osijek, Slavonski Brod and Split we can only tentatively regard container, because of a series of infrastructure characteristics which do not meet the necessary conditions, and small amounts of cargo.

Croatia has the highest trade with Italy and Germany, while Bosnia and Herzegovina and Serbia are the countries with which export is higher than import (Table 2).

Table 1. Number of TEUs on terminals in Osijek, Slavonski Brod and Split [5]

Terminals	2010	2011	2012
Osijek	1 179	1 042	695
Slavonski Brod	613	701	873
Split	3 397	3 627	3 642

Table 2. Foreign trade of Croatia with the European countries, 2012 (in 1000 euros) [8]

Country	Import	Export
Italy	179 299	89 941
Germany	138 490	77 680
Slovenia	67 520	55 678
Bosnia and Herzegovina	34 105	74 151
Serbia	13 566	25 539

3. INTERMODAL TRANSPORT IN REPUBLIC OF SERBIA

Geographically, Serbia occupies the central part of the Balkan Peninsula, and from the traffic point of view its position is one the intersection of two Pan-European corridors (road and rail Corridor X and Corridor VII, the Danube River). In this way, it represents an intersection between the south and the north, the west and the east of the Europe. On the other hand, the tri-modal approach allows a higher concentration of flows and their direction towards intermodal technologies. In the past, a network of logistics centres and intermodal terminals has been defined more than once, but the partial approach to the problems did not enable achievement of specific effects. Some of the potentially favourable locations for the development of logistics centres and intermodal terminals have reached a certain degree of physical development, for some has been made planning documents, and some have neither planning nor physical elements of development. [4] Within the project *Facilitating intermodal transport in Serbia*, financed by the European Union, the development of a logistics centre with a modern intermodal terminal in Belgrade is defined. [1] This centre represents a significant development initiative for intermodal transport and logistics in Serbia and the region. In addition, the expected intensification of economic development of Serbia and the region, the growth of export-import and transit flows, European initiatives and support in establishing institutions and harmonization of legislation, represent opportunities for development of intermodal transport in Serbia.

However, despite its great location, the existence of qualified personnel and a number of potentials, intermodal transport in Serbia did not revive. There are still some bottlenecks, and the main reasons are: unclear government policy, institutional and operational problems, inadequate infrastructure and lack of awareness of the benefits offered by intermodal system (Figure 2).

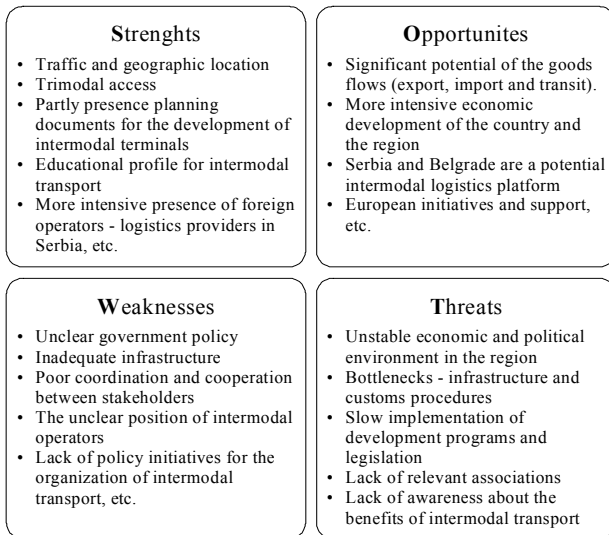


Figure 2. SWOT analysis of intermodal transport in Serbia

Institutions are inadequately organized and there are no relevant associations. Coordination and cooperation among stakeholders within the transport chain is weak, the position of intermodal operator is vague and there is lack of political initiative for the organization of intermodal transport. Infrastructure is inadequate and poorly developed, the old machinery and equipment is being applied, and the organization of transport and transport networks is poor. On the other hand, many stakeholders do not have developed awareness of the benefits of intermodal system, and marketing and promotion are inadequate.

Unstable economic and political situation does not inspire confidence, it is slowing down the process of integration of Serbia and the region and it represents a serious threat to the development of intermodal transport in Serbia. Customs formalities with a lot of administrative work create additional costs and complicate intermodal transport. On the other hand, the legislation concerning the transport is significantly improved, and many regulations are in line with European practice. However, the application of the laws is inadequate and slow, especially those related to rail transport.

In Serbia, there are no official statistics on the volume of intermodal transport. Based on research and consultation with operators, it is estimated that

the transport of containers to/from Serbia in 2012 was about 60 000 TEUs. The majority (about 80%) are import containers with goods from Far East, primarily from China. Ports that are most commonly used by ocean carriers in Serbia are the Port of Rijeka (about 70%) and the Port of Bar (20%). A small part of the container flows are realized through the ports of Koper, Constanta and Thessaloniki, while the share of North-European ARA ports is negligible (about 1%). Transport of containers from/to the port is mainly realized by road transport. Rail transport is present only in the realization of flows to/from the Port of Rijeka (20%) and the Port of Bar (10%). The plan is to establish the official line with the block train that will transport the containers between the Port of Rijeka and terminal ŽIT in Belgrade, 2 times a week. The line which would operate once a week is planned between the Port of Koper and Belgrade. In practice, the transit times offered by the Serbian Railways are considered unacceptable and unreliable.

4. INTERMODAL TRANSPORT IN EU

In Europe, intermodal transport has an important role in the transport system, because Europe has realized long time ago the fact that the marine, rail, road and inland waterway transport should act as an unique system on the market, and not to be a competition to each other.

Sea ports are the main generators of cargo flows and intermodal transport, and as the most developed we can mention the Netherlands, Germany, Belgium, France, Spain and Italy. However, the worrying fact is that in the sea ports of the EU-27 loading and unloading during 2010 was about 77,74 mill. TEUs, and in 2011 about 62,84 mill. TEUs which is a decrease of over 19 %. [7]. This becomes even more important if it is known that the container transport at the global level in 2011 increased 5.8 % compared to the previous year. [9] The decreasing trend of container transshipment in European ports is continued in 2012 (about 8 %). [6]

The great advantage of northern European ports is a good rail connection with the interior and developed traffic on inland waterways. In this way, large amounts of cargo can be transported to the end user, with low transportation costs, while there is no congestion on the roads.

For example, in Rotterdam every week about 900 barges are moving towards different destinations. When we look at the railways, in 2007 was opened a track called "Betuwe Route" which is linking Netherlands with the German railway network. It is a double track railway line designed exclusively for

freight traffic, and its capacity is 10 trains per hour in each direction. Port of Genoa is located on the city area, and there are no major opportunities for further expansion, and has a similar problem as Croatian port Rijeka. Because of this, it is connected by rail with the "Rivalta Scrivia" terminal that actually functions as a dry port of Genoa. Port of Koper has almost a constant increase of container traffic, and it is the main port for the Hungarian transit. For the Austrian market it is currently the second port behind the Rotterdam. Basically we can say that around 70 % of freight is intended for transit. [3]

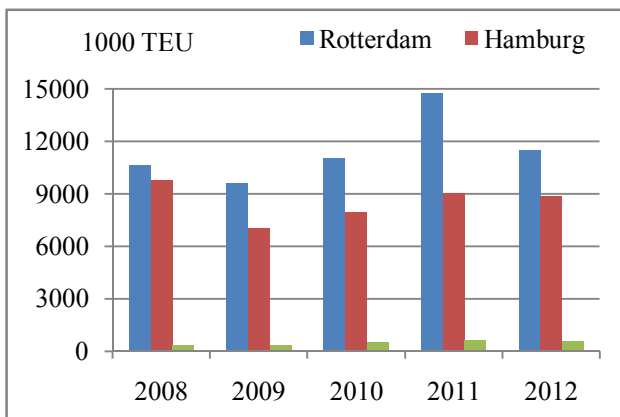


Figure 3. Number of TEUs in ports of Rotterdam, Hamburg and Koper [6]

5. COMPARISON OF CROATIA AND SERBIA WITH THE EU IN INTERMODAL TRANSPORT

The transport process can be divided into two main parts. The first part refers to the sea route, and if the ship is moving from port Shanghai in China and travels to Rijeka and Rotterdam, theoretically and geographically the fairway to Rijeka is shorter about 6 days. However, it is true and justified only in theory, while in reality it's not like that. In real life, the ship on which there are containers for the Port of Rijeka does not sail directly from Shanghai to the Rijeka, because it stops in several ports, while ships which carry containers to Rotterdam sail directly, or possibly with a stop at one or two transfer ports. So there is a difference of 6 days in travelling and actually Rijeka loses its potential advantage over Rotterdam and other large ports in Europe. Because of this, container road to Rijeka often takes longer than to Rotterdam. [10] But if we look at the part that involves handling of cargo at the port, and transport to the final user Croatia also lags behind Europe. Containers are wasting their time at various depots and warehouses, what is not the case in developed EU countries. With the purchasing of

new machinery, Port of Rijeka could be much more advanced, but that is not enough, because there is still a huge problem with the inadequate state of rail infrastructure and outdated locomotives and wagons which are often not adequate to perform all tasks.

Goods originating from the Middle East, Asia and America, intended for the Serbian market, are unloading in the Adriatic ports, primarily in the Port of Rijeka. Goods are containerized, so there is an interest to keep it that way all the way to Belgrade and other towns in Serbia. Delivery of containers by rail, from the Port of Rijeka to Croatian – Serbian border, is realizing in less than half a day. Although 80% of the distance is reached, most of the containers are being unloaded from the train and stored in Šid, and the goods are being reloaded onto road freight vehicles in order to deliver it by the road to Belgrade. Manipulation is cheaper in Šid than in Belgrade, and road transport lasts for several hours, while transportation by Serbian railways cannot guarantee any timeline for reaching the train station in Belgrade. In practice, the transit times are between 7 and 14 days, and that is unacceptable and significantly worse than road transport. If the working conditions of the Serbian Railways would be better, these containers could reach Belgrade in one day. For this purpose, it is necessary to improve the situation of international railway transport, especially in Serbia. Serbian Railways are working on bureaucratic way and they are uninterested for the concerns of economic subjects. In order to change this, it is necessary to open the market for other rail operators in exploitation field, i.e. to separate the management of infrastructure and operations of transportation. In order to increase the share of rail transport between Adriatic ports and Serbia, it is necessary to promote the transportation with pre-defined times (shuttle type), because regularity of departures/arrivals is the only thing that can attract traffic as competition from road transport is very hard, due to the declining trend of costs and flexibility of "door to door" delivery. In order to keep track of containers, it is necessary to establish more suitable communication links between all chain participants, i.e. connect Adriatic ports, national railways and economic subjects in informational sense.

So the basic lack of Croatia, Serbia and countries in the region is weak correlation with the the hinterland, what means that there is a very bad rail connectivity, which should be the backbone of intermodal transport. An additional problem is the lack of intermodal terminals and their bad connection. In order to overcome the problems, it is necessary to establish promotional centres and work

on associating industrial, commercial, transport and logistics, public and private companies, customs administrations, sanitary and phytosanitary public agencies and other relevant government institutions along the transport, logistics corridors and to form corridor logistics alliances that would build competitive corridor and integrate it into international supply chains.

6. CONCLUSION

Trends and experiences clearly show the need, importance, objectives, directions, measures and solutions of development of logistics and intermodal transport. Transport systems in Croatia and Serbia are not adequate for the development of intermodal transport because it was developed without a clearly defined strategy, investments were made only in road transport network, while the railways and inland waterways were neglected. There is no network of intermodal terminals, which are the key points in this system. Analogically to that, logistics and intermodal transport have long been the main factors of economic development, spatial connectivity and market integration in developed countries. EU countries take all possible actions that the majority goods can be transported by rail, inland waterways or sea.

Croatia and Serbia in the last few years try to encourage the development of intermodal transport, but in the moment, there are no large and concrete steps. Exception in Croatia is the Port of Rijeka where the progress is seen, but for which the most deserving is foreign concessionaire. Project and development of intermodal terminal in Belgrade is very important initiator of the development of the

entire economic system of the Serbia and region. Inclusion of Croatia and Serbia into the European transport and logistics system, international goods and transport flows is not possible without the use of intermodal technologies. In this regard, it is necessary to take a series of measures and recommendations that support the further development of logistics and intermodal transport.

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