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## CONTAINER TRAFFIC IN EUROPEAN PORTS

### ABSTRACT

Over the last fifteen years the European transport market has witnessed a growth of container traffic which today reaches approximately 50 million TEU per year. From 1997 to 2002, container traffic in the northern European ports increased from 14 to 20.6 million TEU per year, in the ports of the western Mediterranean from 6 to 10 million TEU per year, and in the northern Adriatic ports from 0.69 to 0.74 million TEU per year.

The ports of the northern Adriatic are located in three states (Slovenia, Croatia and Italy) with different statuses in relation to the common European market. In addition, different development levels of these states are reflected in different levels of international commercial exchange, the development of the existing infrastructure and plans for the construction of new infrastructures. However, all three countries share a common goal – to increase their competitiveness in comparison with the western European ports.

### KEY WORDS

feeder service, northern Adriatic ports, container vessel

### 1. INTRODUCTION

In recent years the European ports have witnessed major changes conditioned by strong political powers and market demands. Today, the competitiveness of individual ports primarily depends on their logistic networks and only after that on the port infrastructure and productivity. The tendency to transfer road traffic to more environmentally friendly modes also results in the increased demand for sea transport. Besides con-

gestion, another major drawback of road transport is high external costs. In Europe, these amount to 530 billion euros – as much as 91.5% of these costs is generated by road traffic, 6.1% by air traffic, 1.9% by rail traffic, and only 0.5% by sea traffic<sup>1</sup>. Therefore, it can be concluded that the sea represents the most important element in the European traffic development and that ports, as its constituent parts, will play an increasingly important role in the future. Efficient port operation requires good connections with the port's hinterland, which entail modern roads, a developed rail network and navigable inland waterways, where possible. In this manner the ports can engage in the door-to-door transport chain, when containers are loaded with cargo in the factories and then, in accordance with the just-in-time concept, delivered directly to the consumer. This is why containers and containerisation have become a world success story. Today, intermodal container transport has become a rule and all parties involved in the transport process will have to adapt to its principles.

### 2. WESTERN EUROPEAN PORTS

In northwestern Europe, four big container ports are located along a relatively short stretch of the Atlantic and North Sea coasts: Antwerp, Rotterdam, Bremerhaven and Hamburg.

Western European ports have a highly developed gravitational hinterland shared by all ports. To remain competitive, the economic policy of each port, the

Table 1 - Container traffic in the western European ports in TEU

TEU	Rotterdam	Hamburg	Antwerp	Bremerhaven	Zeebrugge	Total
1997	5,495,000	3,338,000	2,969,000	1,703,000	648,153	14,153,153
1998	6,032,000	3,546,900	3,265,750	1,811,014	776,357	15,432,021
1999	6,343,000	3,738,300	3,614,246	2,181,000	850,164	16,726,710
2000	6,275,000	4,248,247	4,082,334	2,751,793	965,345	18,322,719
2001	6,096,142	4,688,669	4,218,178	2,972,882	875,926	18,851,797
2002	6,515,449	5,373,999	4,777,152	3,031,587	958,942	20,657,129

Source: Cargo Systems supplement, June 2003

**Table 2 - Container traffic in the Mediterranean ports in TEU**

Port	1997	1998	1999	2000	2001	2002
GioiaTauro	1,448,531	2,093,650	2,202,951	2,652,701	2,488,332	2,954,571
Algeciras	1,538,000	1,826,000	1,832,557	2,009,122	2,151,770	2,229,141
Genoa	1,179,954	1,265,593	1,233,817	1,500,632	1,526,526	1,531,254
Valencia	812,000	1,005,000	1,170,191	1,308,010	1,500,000	1,816,526
Barcelona	971,921	1,095,113	1,235,000	1,387,570	1,400,000	1,421,040
Total	5,950,406	7,285,356	7,674,516	8,858,035	9,066,628	9,952,532

Source: Cargo Systems supplement, June 2003

charges for its services, and rapid and high quality services bear vital importance. Bearing these conditions in mind, the port of Rotterdam has several advantages in comparison with other ports: it has the best technological equipment, the ability to accept the largest container vessels, and has highly developed road and rail connections with European industrial centres.

Forecasts see the total container traffic in the western European ports increasing from 14 million TEU in 1997 to 35 million TEU in 2010.

### 3. MEDITERRANEAN PORTS

In comparison with the western European ports, the Mediterranean ports have a considerably lower cargo potential. This article only includes the five biggest Mediterranean ports, although approximately forty smaller container ports are located in the Mediterranean basin. Undoubtedly, large transoceanic vessels cannot be expected to call at ports with low container potential. That is why transshipment represents the only solution for Mediterranean ports – a mother-ship selects a hub port where its cargo is reloaded onto smaller vessels, feeder vessels, that will distribute the cargo to smaller ports. The table shows container traffic in the five biggest Mediterranean container ports.

Today, many Mediterranean ports would like to develop into the main port within the feeder system.

However, the selection is limited to only a few that meet the conditions for becoming a hub port. The selection of a hub port for transshipment primarily depends on its geographic location, which must represent a minimal deviation from the planned route; i. e., the Gibraltar – Suez Canal axis in the Mediterranean basin. Another significant factor is its maritime connections with smaller ports, to which regular weekly liner services would be established. The most successful of the world's hub ports rely exclusively on feeder traffic and very low shares of their own cargo. And finally, because of demands for rapid transshipment and competitive transshipment rates, labour organisation in hub ports has to be outstanding.

### 4. NORTHERN ADRIATIC PORTS

The northern Adriatic ports are located deep in the European continent and have a relatively limited gravitational hinterland. In the last ten years, container traffic in these ports has not risen significantly. As a result, their future development can only be oriented toward the feeder service, which entails an increased rate of cooperation among the ports and their harmonious integration into the European traffic and world maritime markets.

The northern Adriatic port system encompasses the ports of Rijeka in Croatia, Koper in Slovenia, and

**Table 3 - Annual container traffic in the northern Adriatic ports**

	Koper	Trieste	Venice	Ravenna	Rijeka	Total
1997	66,869	204,318	211,969	191,223	15,858	690,237
1998	72,826	174,080	206,389	172,524	9,000	634,819
1999	78,204	185,163	199,803	173,405	9,500	646,075
2000	86,679	206,134	218,032	181,387	20,000*	712,232
2001	93,187	200,623	246,196	176,000	20,000*	736,006
2002	114,863	185,301	262,667	160,613	20,000*	743,444
index 97	172	91	124	84	126	108

Source: Port of Koper

\* estimate

Trieste, Porto Nogaro, Monfalcone, Venice and Ravenna in Italy. The geographical areas of these ports are rather limited but their gravitational orientations are considerably different and for decades their operations have been separate. The analysis of container traffic in the northern Adriatic ports does not include the ports of Porto Nogaro and Monfalcone because they do not handle container traffic.

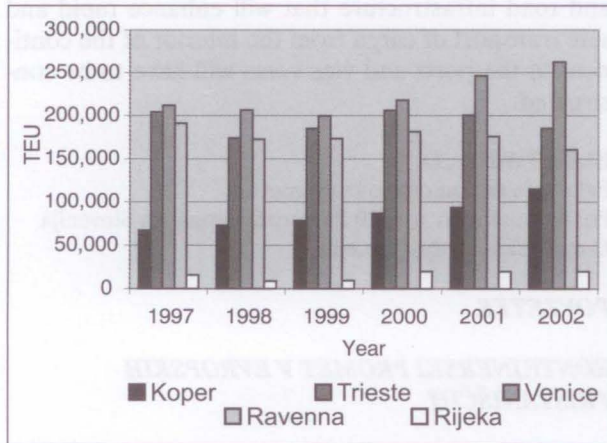


Figure 1 - Annual container traffic in the northern Adriatic ports

Source: author

In recent years, the biggest increase in container traffic by percentage has been recorded by the port of Koper. The increase can be accounted for by the decline of container traffic at Pier VII of the port of Trieste, which is under joint administration and has not yet generated the desired results. Nevertheless, the conditions on the Italian side are gradually improving and a growth of container traffic can be expected at both container terminals (in Trieste and Koper). The Vecon terminal at the port of Venice, the biggest northern Adriatic terminal in terms of the quantity of containers handled, has recorded an increase of container traffic, as well. Traffic at the port of Rijeka is gradually increasing but the pre-war throughput of 1991 can hardly be reached in the short-term. Unfortunately, the increase of container traffic in one of these ports mostly means a decrease in container traffic in a neighbouring port. All northern Adriatic ports should therefore adopt a joint operational strategy on the maritime market.

## 5. COMPARISON OF TRAFFIC IN EUROPEAN PORTS

A survey of the growth of container traffic in the presented northern Adriatic, Mediterranean and western European ports reveals a total increase of 40% in the last five years.

Table 4 - Comparison of container traffic in European ports

	Western European ports	Mediterranean ports	Northern Adriatic ports	Total
1997	14,153,153	5,950,406	690,237	20,795,793
1998	15,432,021	7,285,356	634,819	23,354,194
1999	16,726,710	7,674,516	643,565	25,046,790
2000	18,322,719	8,858,035	712,232	27,894,986
2001	18,851,797	9,066,628	736,006	28,656,432
2002	20,657,129	9,952,532	743,444	31,355,107
Index 97	146	167	108	151

In the five-year period presented, container traffic increased most in the Mediterranean ports and least in the northern Adriatic ports. Considering that the total world container traffic growth rate is approximately 10%, the total growth of 7% in the northern Adriatic ports in the last five years is a disappointment.

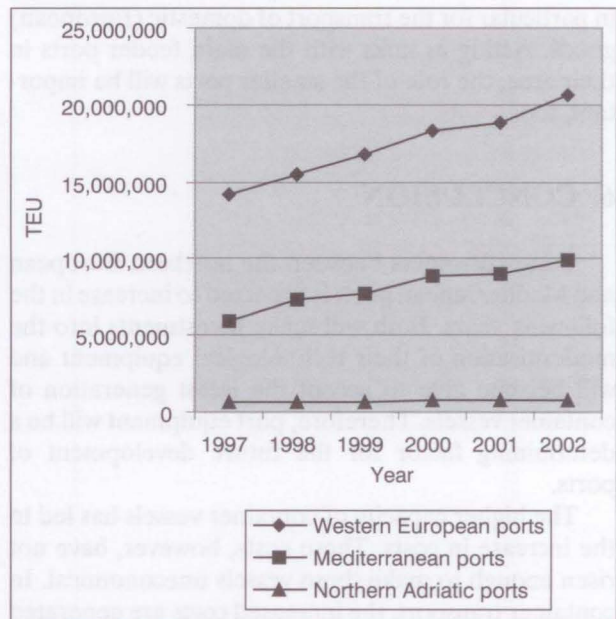


Figure 2 - Comparison of container traffic in European ports

Source: author

What can the northern Adriatic ports do in the future? They have several available alternatives: joint promotion of the northern Adriatic maritime route, joint promotion of all the ports on the European traffic market, joint investments into the development of infrastructural connections with the hinterland (in particular the construction of a modern railway network), etc.

The introduction of new feeder lines appears to be essential despite their questionable economic feasibility.

ity in the first years. Regular and more frequent feeder services to the northern Adriatic ports would attract more container traffic. In the long-term they would acquire new containers and be more competitive to the western European ports that service a big part of central and eastern Europe with block trains (when in fact this area could gravitate toward the northern Adriatic).

Important shipowners that would select the northern Adriatic ports as their direct entry ports are the solution that would generate the most immediate results, but this would not be easily accomplished.

Container traffic in the European ports has grown due to the increased commerce with Asian states (8%) and the USA (5%), and via feeder services (7%). Therefore, a growth in container traffic can also be expected in the western European and Mediterranean ports.

These tendencies of traffic growth reveal that in the future we cannot expect only one hub port in the western Europe and another in the Mediterranean. Probably, some ports will specialise in transshipment, which will result in the development of feeder traffic, in particular for the transport of domestic (European) goods. Acting as links with the main feeder ports in their area, the role of the smaller ports will be important, too.

## 6. CONCLUSION

Competitiveness between the northern European and Mediterranean ports is expected to increase in the following years. Both will make investments into the modernisation of their technological equipment and will become able to accept the latest generation of container vessels. Therefore, port equipment will be a determining factor for the future development of ports.

The higher capacity of container vessels has led to the increase in costs. These costs, however, have not risen enough to make these vessels uneconomical. In container transport, the increased costs are generated by ports; e. g., when inadequate cargo handling equipment causes waiting time. Therefore, ports influence the increase of costs in two ways: directly, with the rates for port services, and indirectly, with longer turn-around-times. Vessels make money only when they are at sea and each hour exceeding the optimal turn-around-time means a financial loss. That is why especially large container vessels, with a capacity of 5000 – 6000 TEU, require a rapid service.

In addition to sufficient sea depth (14 – 16m), ports need sufficient storage areas and post-Panamax cranes that can operate across the entire width of the vessel. Moreover, because the European continent is (geographically speaking) relatively small and shared

by the western European and Mediterranean ports that service central Europe, central France, Switzerland and Austria especially, adequate cargo handling equipment and operation management will have to be backed by good hinterland connections.

In the future, Europe will need big container ports with good connections to smaller container ports by means of feeder vessels. Furthermore, modern rail and road infrastructure that will enhance rapid and safe transport of cargo from the interior of the continent to the ports and vice versa will have to be constructed.

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## POVZETEK

### KONTEJNERSKI PROMET V EVROPSKIH PRISTANIŠČIH

*Na evropskem transportnem tržišču je v zadnjih petnajstih letih zaznati naraščanje kontejnerskega pomorskega prometa, ki danes dosega okoli 50 milijon TEU. V obdobju 1995-2001 se je kontejnerski promet v severnoevropskih pristaniščih povečal s 13 na 26 milijonov TEU, v pristaniščah zahodnega Sredozemlja s 6 na 14 milijonov TEU, v severnojadranskih pristaniščih pa 0,69 na 0,74 milijonov TEU.*

*Pristanišča severnega Jadrana se nahajajo v treh različnih državah, ki imajo na enotnem trgu Evropske unije različen status. Tudi v razvitosti so velike razlike, kar se odraža v razlikah v mednarodni blagovni menjavi, razlikah v obstoječi infrastrukturi in planih izgradnje nove infrastrukture. Vsa pa imajo skupni cilj in sicer povečanje konkurenčnosti v primerjavi z zahodnoevropskimi pristanišči.*

## KLJUČNE BESEDE

*feeder servis, severnojadranska pristanišča, kontejnerske ladje*

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