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## NEW POTENTIALS OF LINER SERVICE IN MARITIME TRADE

*Liner shipping, with all its specific features, plays an important role in the economic development of a country whose ports liner ships are calling at. Under classical liner shipping we understand the carriage of cargoes or passengers over long distances and by large vessels. However, it should be considered that a cargo, which has been discharged at the port of destination and has not yet reached the customer, has to be further transhipped onto a road vehicle. Likewise, a road vehicle carries cargo intended for sea transport to a port of shipment.*

*The article aims at presenting a detailed analysis of the weaknesses of the present-day cargo traffic from the shipper to the consignee involving sea and inland transport. It deals with the relation between sea and land transport, favouring the former to the latter. Organizational changes required to abandon the classical transport of cargo are based on the White Paper regarding the European transport policy up to the year 2010.*

**Key words:** *liner shipping, motorways of the sea, traffic accidents*

### 1. INTRODUCTION

Europe has experienced great political and economic changes. Barriers represented by state frontiers have been pulled down thus offering the possibilities for a new economic development. This requires a conformation of the shipping and maritime economy in general. Time conformation to economic changes is crucial. The classical liner shipping, with all its peculiarities, still remains one of the three basic types of shipping. However, changes in the European economy have point out to a new understanding of the liner shipping development.

Liner shipping, with all its specific features, plays an important role in the economic development of a country whose ports liner ships are calling at. Under classical liner shipping we understand the carriage of cargoes or passengers over long distances and by large vessels. However, it should be considered that a cargo, which has been discharged at the port of

destination and has not yet reached the customer, has to be further transhipped onto a road vehicle. Likewise, a road vehicle carries cargo intended for sea transport to a port of shipment.

Shipping is still one of those fields which do not easily change the already established and generally accepted rules. These give shipping a patina, a special attraction and, perhaps, a particular safety. Only those who are born for a maritime profession can live the Sisyphus' life and survive.

## 2. GEOGRAPHICAL POSITION OF A SEAPORT

The geographical position of a seaport, its economic power and the political system of its hinterland represent the decisive impact on the development of liner shipping. It can be anticipated that the choice of liner shipping ports is wider than is commonly believed. Up to now, the main factor in the choice of these ports has been the amount of liner cargo handled. However, the very latter factor has been the limiting factor for small countries with a relatively minor economic power. In such countries the way in which a liner ship operates should be taken into account. Considering the necessary amount of liner cargo, the paper further confines itself to the importance of the geographic position of the Mediterranean ports, particularly of the ports of the Adriatic Sea.

The Mediterranean area is considered to be the South door of the EU, expanding on 19.5 million km<sup>2</sup> with more than 400 million consumers. The area includes the countries which will in the near future become members of the great European and world economic integration as well. Yearly, and already at this very moment, they export and import more than 1.030 billion EUROS of various goods. They have high rates of economic growth and a rapid rise of living standards. The Adriatic ports are located along the shortest transport route, connecting Middle and Eastern Europe with the Mediterranean countries and those beyond the Suez Canal. The sea route is more than 2000 nautical miles shorter as compared to the North European ports, and the inland route to the main Middle European market centers is on average 500 km shorter. All the above mentioned facts have already pointed to the important cargo traffic, which, however, has yet to be directed and organized. However, several main conditions have to be fulfilled. The minimum conditions required to reach the economic justification are as follows:

1. It is necessary to direct and augment the cargo traffic through ports.
2. The ports should be organised, so as to speed up the cargo transshipment. In other words not to keep cargo in ports too long. Fast and good environmental infrastructure should be provided from sea ports to consumers.
3. Fast and modern information system should be introduced.
4. Simplified and unified customs procedure should be achieved.
5. More efficient standardization of cargo transport should be developed.

A seaport is successful when it permanently contributes to a positive GDP of a state and its basic product enables additional positive effect to a state GDP and, at the same time, preserves the required clean environment.

## **2.1. Increase of Cargo Traffic through Ports**

While speaking about the increase of cargo traffic through seaports we mostly think about new contracts of the carriage of goods by sea. This is a classical approach with its characteristics and limitations. The amount of the expected cargo to be handled and the port fees are certainly one of them. Furthermore, we shall focus on the expected amount of cargo handled.

One of the characteristics of liner shipping is the susceptibility to the cost of a liner ship. And this is frequently crucial for the liner ship carrier in selecting the seaport. Consequently, small countries with a relatively poorly developed economy will have then less chances that their port will be chosen as the port of call for liner ships. Therefore, solutions should be sought to develop liner shipping in order to be useful even there, where, for the said reasons, it has not been employed so far..

## **3. LINER SHIPPING**

Classical liner shipping is based on the following presumptions:

1. The voyage of a liner ship is predetermined, i.e. the ports of call are known in advance, as well as the schedule. Liner ships are different from bulk carriers in construction and equipment.
2. Liner ships generally do not offer the whole cargo space but only a part of it in the port of shipment. The cargo loaded in the port of shipment is usually different. The same route mainly employs several liner ships.
3. Cargo holds are rarely 100% utilised and cargo is loaded and discharged at the same ports.
4. The relation between the supply and demand of cargo space and the oscillation of this relation do not have such impact on freight rates as is the case in tramp shipping.
5. More than to the relation between the supply and demand of cargo space, liner shipping is susceptible to the changes in the expenses of liner shipping operations. The organization of liner shipping companies is complex and more expensive than the organisation of tramp shipping companies.

Each country, having a direct exit to the open sea via its own seaport, has a natural advantage over countries which do not have it. Unlike land traffic infrastructure, which has to be built, sea routes are already there, only the access to them, i.e. ports, has to be built and equipped. The possibilities of exploiting seaports vary of course, depending on natural circumstances.

### **3.1. Liner Ship Service**

Large liner ships increasingly reduce the number of ports of call. The reason for this trend lies in the cost of liner ship operations. The second reason is the size of liner ships.

Container ships, for example, are so large that they cannot call at all ports. The third reason is the incapability of certain ports to meet the modern lay day standards, in other words, they cannot tranship cargo within the acceptable loading or discharging time. The question arises how to provide conditions for minor ports to take part in the distribution of such a cargo?

Before answering this question, we should distinguish two types of cargo. The first type comprises the ship cargo waiting in collecting ports to be shipped to the port of destination. This cargo is not delivered to the port of destination due to one of the said reasons in the first paragraph of this chapter. The second type of cargo is available in the port of shipment, but its amount is so small that it is not worth carrying it by a tramp ship. Both types of cargo can be shipped to the port of destination by a smaller liner ship.

In the first case, the cargo is most frequently carried by an alternative means of transport to the buyer, either by road or by rail. In both cases the »door to door« service is applied. The time factor is often favourable. In the second case, there are two options. When the use of the landside infrastructure is impossible and considering that the sea lies between the shipper and the consignee, the cargo is carried by sea, but only as far as the appropriate seaport from where the landwise infrastructure is to be used again. The time factor of such a transport is frequently unfavourable. However, when the use of the landwise infrastructure is possible, considering that there is no sea between the shipper and the consignee, the option offered by the landwise infrastructure is used.

Based on the above mentioned facts, we should aim at the following goals:

1. Sea transport should be used to the user's nearest point.
2. Inland transport from the seaport to the user should be carried out by the means of transport which pollute environment the least.

Both goals should meet two requirements. First, the carriage by sea is the cheapest way of transport and it pollutes the environment the least. Second, rail transport should have advantages over road transport. Both goals are in compliance with the implementation of the Kyoto agreement, ratified by the EU on May 31, 2002. They also follow the directives of the European White Paper about the transport policy up to 2010 [3]. Yet, the above goals require adequate organization and newly set business regulations. Besides, they introduce new elements in the classical liner shipping operations.

#### **4. SHORT SEA SHIPPING**

Based on what is said so far, the conception of the liner shipping development should change essentially. This is particularly due to the environmental protection and safety of lives. The globalisation of the world economy has made us realize that the transport of goods must also meet the requirements of the environmental protection. Although liner shipping tends to preserve the tradition, it is now faced with new tasks in the transportation chain. Therefore, on its way from the shipper to the consignee the following conditions must be provided:

1. Transport means must be selected in order to pollute environment the least.
2. Duration of transport must be short.
3. Transport must be safe.
4. Transport must be cost efficient and competitive.

According to the analysis in chapter 3.2 and considering the above four conditions the order of the choice of transport should be as follows:

1. Sea or other waterway transport.
2. Railway transport.
3. Road transport.

As sea transport meets the most of the required conditions, the development of short sea liner shipping should be encouraged in the future.

#### **4.1. Organization of Short Sea Liner Shipping**

The organization of short-sea liner shipping requires a completely new approach. Before setting the conditions for the economical liner cargo transport, we should define the range of the operation of the whole transport chain:

1. Short-sea liner shipping should involve the coastal member states of the EU as well as other coastal candidate-members for the EU.
2. Short-sea liner shipping should be economical and more cost effective than road or rail transport.
3. Short-sea liner ships are usually smaller than classical liner ships.
4. The choice of seaports must provide the shortest landwise transport to the users of goods.
5. The chosen seaports must have a good connection with the hinterland.
6. The chosen seaports must provide fast and safe cargo transshipment.
7. Customs operations must be simplified so as not to delay cargo delivery on its way to the consignee.
8. It is necessary to standardise loading units to enable the development of intermodal transport.

A successful short-sea transport along the motorways of the sea depends on its organization and it involves promotion centers on the managerial and practical level [11].

The managerial level is represented by the National Focal Points. These are managed by highly qualified officials in charge of liner shipping in national administrations. Their activity is harmonized with the European Commission and the policy of the EU. On the initiative of the Commission the focal points are related on the European level, experience is exchanged and the way of encouraging short sea shipping is analysed. Their task is to reduce bottlenecks, which obstruct the development of such transport, and to provide new strategies to make liner shipping more attractive. The Maritime Industries Forum branches take part in yearly observers meetings. Thus the necessary relation is achieved between planning (National Focal

Points) and implementation (Maritime Industries Forum).

Short Sea Promotion Centers are organized and operate on the national level but in accordance with the EU Commission. Their task is to promote short sea shipping and give information to potential users. Promotion includes virtual meetings, creation of electronic network, data bank etc.. The sea carriers and road hauliers represent a special target group. The centers are united in the network all over Europe with customers on both sides of the short distance. Thus they can take advantages of all opportunities offered by their geographical locations.

The organization of short sea liner shipping calls for the interconnection of the Mediterranean states in the field of cargo traffic. That is to say, the organization of cargo traffic in the Mediterranean must comply with the set rules. This will enable the right choice of seaports and the financial aid by the EU. The Masterplan of the Mediterranean motorways of the sea includes the basic rules for the choice of maritime seaports connected in the Mediterranean sea motorways. However, we must be aware that some cargo traffic has already been established in the Mediterranean Sea. Given that the Masterplan is in its initial stage, such individual established flows of freight have to be somehow incorporated in the plan. The working group, established by the Mediterranean member states, decided in June and July 2004 that the Masterplan should consider the existing sea routes. [12]. Such decision was taken on the basis of previous meetings of the said working group on Malta and in Ljubljana.

## 5. MOTORWAYS OF THE SEA

The European Commission on July 2, 2004 in its final report about short sea shipping reported to the European Parliament the following [9]:

The White Paper about the European traffic policy up to 2010 stressed the concept of » motorways of the sea «. This should become the constituent part of the Trans - European Network (TEN-T). The sea motorways should reduce the overburdening of roads and improve the access to peripheral and island countries. Apart from reducing the number of lorries on roads, they could, in some cases, also contribute to the development of the sea passenger traffic, as some ships can simultaneously carry both cargo and passengers.

The motorways of the sea should become the constituent part of the logistic chain »port to port« and offer efficient, regular and reliable services, which could compete with road traffic in terms of transit time and cost efficiency. Ports connected with these motorways must have good hinterland connections, fast administrative procedures and high quality short sea shipping services.

The future development of liner shipping should spread to all suitable seaports. The definition of the new term » motorways of the sea « more precisely explains the tasks of short sea shipping [10]: *“The trans – European network of motorways of the sea is intended to concentrate flows of freight on sea-based logistical intermodal routes in such ways as to improve existing maritime links or to establish new viable, regular and frequent maritime links for the transport of the goods between Member States so as to reduce road congestion and/or improve access to peripheral and island regions and States. Motorways of the sea should not exclude the combined transport of persons and goods, provided that freight is predominant”.*

The definition gives new dimensions to the classical operation of short sea liner shipping. Unlike the classical understanding of the choice of liner shipping ports, the new definition gives precedence to the geographical position of a seaport. In other words it is not crucial anymore whether a seaport can receive a liner ship with respect to access circumstances or the amount of cargo. But the geographical position of a port with respect to the logistic route has become more important. Further, a principle should be applied to select such port to minimize the length of road transport in favour of railway transport.

Motorways of the sea, therefore, do not exclude the criteria of the classical liner shipping but add a new important criterion. In October 2003, the European Commission suggested changes of the European Guidelines about the development of the Trans-European Transport Network (TEN-T), including the implementation of 29 priority projects, which are in the »European interest«, accordingly they would be preferentially financed from adequate sources of the Community. The project no. 21 is a priority project about the development of motorways of the sea. Within this priority project four motorways of the sea were recommended [9]:

- Motorway of the Baltic Sea (linking the Baltic Sea Member States with the Member States in Central and Western Europe, including the route through the North Sea/Baltic Sea canal);
- Motorway of the Sea of Western Europe (leading from Portugal and Spain via the Atlantic Arc to the North Sea and the Irish Sea);
- Motorway of the Sea of South-east (connecting the Adriatic Sea to the Ionian Sea and the Eastern Mediterranean, including Cyprus);
- Motorway of the Sea of South-west Europe (western Mediterranean, connecting Spain, France, Italy and including Malta and linking with the Motorway of the Sea of South-east Europe and including links to the Black Sea).

The European Parliament confirmed the proposal of the Commission. So there is a possibility now for the financial assistance to the Trans-European Network (New article 12a on the motorways of the sea).

## **6. PROTECTION OF THE ENVIRONMENT AND THE SAFETY OF TRANSPORT**

The European White Paper about the transport policy up to 2010 significantly reverses negative trends, which are the result of current practices to transport goods from the shipper to the consignee, using the landwise traffic infrastructure. The policy gives a special priority to all waterway routes, sea and river. The landwise routes should be as short as possible and environmental friendly.

The situation in the field of environmental protection from pollution with greenhouse gases, resulting mostly from road transport, is insufficient in the EU. The research into the amount of landwise transport of goods already shows, for the countries EU-15, a significant rise. [4] The growth index in road transport between 1990 and 1997 was over 26%, unlike rail transport, which fell in the same period for 7%. Although new statistical data for the year 2004 for the countries EU-25 is not yet available, we can anticipate even worse indicators, as

the statistical data for the year 2000 show the rise in the number of road transport vehicles and the growth of CO<sub>2</sub> emissions in all European countries (the only exception is the Former Yugoslav Republic of Macedonia) [5].

Table 1 shows the rise of the number of road vehicles between 1985 and 2001 and the pollution of environment with CO<sub>2</sub> for a few selected states, which, with the exception of Macedonia, border with Slovenia [6]. As seen from the table, all states, including Slovenia, should reduce the existing burdening of environment with the greenhouse gases.

*Table 1. The rise in the number of road transport vehicles between 1985 and 2001*

Country	The number of lorries per 1000 inhabitants		CO <sub>2</sub> emissions in million tons per year		Required reduction according to the Kyoto agreement. until 2012
	1985	2001	1990	2000	
Austria	27	41	56,9	62,8	- 13%
Italy	31	56	400,1	425,7	- 6,5%
Croatia	9	28	No data	17,8	- 5%
Hungary	14	35	70,5	55,2	- 6%
Slovenia	17	26	12,5	14,5	- 8%
Macedonia	11	10	9,2	8,4	No requirement

Table 2 shows the amount of consumed fuel and the amount of greenhouse gases with which environment is burdened by individual transport [4]. The average fuel consumption and the emission of gases in the environment is calculated with g/km.

Table 2 shows that road transport most severely pollutes the environment. Since it is realistically expected that road transport of goods will grow even more in the future due to the fast development of the road infrastructure, a deviation of the latter to railway and waterway routes should follow. It is believed that road transport will increase in the EU for 50% by the year 2010 unless the said deviation takes place. This would then result in the increase of the road infrastructure burdening for 12 billion tons-kilometres per year. [7] The General Directorate for Energy and Transport of the EU finds that, considering the said increase, the share of CO<sub>2</sub> would rise to 84%. [3]

Given the above mentioned, the transport policy supported by the relative directives is self evident. In the transport of goods the traffic infrastructure which pollutes the environment the least should be used. In doing this the said transport should be redirected from roads to railway or waterways wherever possible. The condition of the safety of lives in the field of transport is insufficient. The European Commission was presented with the following data [8]:

In the EU 96% of all accidents take place on roads, causing about 40.000 losses of lives. In the rail traffic the loss is 115 people (information refers to the years 1990-96), and in the European part of the sea 140 people.



*Table 2. The analysis of the amount of the consumed fuel and the emission of greenhouse gases*

	Fuel consumption (g/km)	CO <sub>2</sub>	CO	HC	NO <sub>x</sub>	SO <sub>2</sub>	Solid particles
Roads	31,330	98,301	0,479	0,227	0,978	0,031	0,078
Railways	8,911	28,338	0,196	0,098	0,472	0,036	0,027
Sea	4,828	15,45	0,036	0,012	0,311	0,29	0,006

The death toll, considering the above data and calculated per 100 million km covered, is as follows:

- Sea transport 1,4 deaths
- Road transport 100 deaths
- Railway transport 40 deaths.

Table 3 shows the number of deaths in 2001 in road traffic accidents in Slovenia and the neighbouring countries [5]:

*Table 3. Number of deaths in road traffic accidents in 2001*

	Overall deaths	Those under 25 years of age
Austria	958	246
Italy *	6410	1435
Croatia	647	174
Hungary	958	226
Slovenia	278	76

*\* Valid for the year 2000.*

The White Paper about the transport policy up to 2010 represents also the calculated costs structure for lorries using European motorways. Table 4 shows the structure of costs in EUROS per 100 km of Motorways.

*Table 4. Costs structure for lorries using European motorways*

Costs structure	Range (EUROs)
Air pollution (medical treatment expenses and the loss of harvest)	2,3 – 15
Consequences of climate changes (changes in precipitation and the harvest)	0,2 – 1,54
Use of infrastructure (return from investments)	2,1 – 3,3
Noise (costs of medical treatment)	0,7 – 4
Accidents (costs of medical treatment)	0,2 – 2,6
Traffic congestions (loss of time)	2,7 – 9,3
Overall	8,0 – 36,0

Considering the said goals of the European transport policy up to 2010, it is realistically expected that fees for the use of roads will considerably increase. Such policy will encourage the use of railways and waterways.

## 6. CONCLUSION

Considering all the above mentioned facts, the following conclusions can be made:

1. Long distance liner shipping preserves all its basic characteristics, however the liner carrier should also take into account the smaller amount of cargo which he would normally not load or discharge in the port of call. Short sea shipping can now solve these problems, provided new approach has been adopted, based on fast and accurate information. The logistics operators are faced with new challenges. The evil anticipated by Prof. Stromme Svendsen seems to be the consequence of the unstoppable development of liner trade.
2. The geographical position of the seaports in the Mediterranean is of crucial importance. Those seaports, from wher the landwise transport to consumers is the shortest one, have the most advantageous position, considering they are also located near the main European transport routes. The possibility of fast transport by railway to the user is of utmost importance as it is most cost efficient. The fact that the use of road infrastructure will become even more expensive should be taken into consideration
3. Seaports having good geographical position must also have enough land space so as to be able to locate and eventually process goods. The development of seaports should take into account that some goods will always have to be kept in stock. However, these trends require new technology and organization of work resulting in the added value.
4. A successful development of short sea shipping is expected to necessitate the organization of oligopoly in the field, but only when the development has reached a relatively high level.

7. Logistics operators are expected to gain in importance, as they will have to become part of the promotion network on the practical level. Anyway, the future role of logistics operators needs special consideration.
8. Short sea seaports will provide additional multiplicative effect on the national landwise transport budget. The investment in the short sea shipping should, therefore, be also in the national interest of each member state.

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## NOVE MOGUĆNOSTI BRODOVA LINIJSKE PLOVIDBE

### SAŽETAK

*Linijsko brodarstvo, sa svim svojim specifičnostima, igra značajnu ulogu u gospodarstvenom razvoju zemlje u čije luke uplovljavaju brodovi linijske plovidbe. Pod klasičnim pojmom linijskog brodarstva podrazumijeva se prijevoz tereta i putnika velikim brodovima na velike udaljenosti. Međutim, treba se uzeti u obzir činjenicu da se teret, koji se iskrcao u odredišnoj luci i koji još nije stigao do kupca, mora još prekrcati u cestovno vozilo. Na isti se način doprema teret, namijenjen prijevozu brodom, cestovnim vozilom do otpremne luke.*

*U članku se detaljno analiziraju slabosti postojećeg prometa tereta od krcatelja do primatelja, a koji uključuje i pomorski i kopneni prijevoz. Analizira se i veza koja postoji između pomorskog i kopnenog prijevoza, dajući pri tome prednost pomorskom nad kopnenim prijevozom. Promjene u samoj organizaciji prijevoza, koje je potrebno izvršiti ukoliko se želi napustiti klasični način prijevoza tereta, temelje se na Bijeloj knjizi o europskoj prijevoznoj politici do 2010. godine.*

**Ključne riječi:** linijsko brodarstvo, morske autoceste, prometne nesreće

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