

# **TRANSPORT IN THE BALKANS: CURRENT PROBLEMS AND FUTURE STRATEGIES**

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## **1. INTRODUCTION**

### **1.1 Background**

Transport patterns within the Balkan region are undergoing a series of step changes resulting from the break-up of the former Yugoslavia, the transition from centrally planned to market economies and the reorientation of trade to western Europe. This has on the one hand made parts of the transport system redundant or at best underutilised, e.g. some railway and inland waterway links, whilst on the other hand other parts of the transport network, e.g. certain ports and roads, are overloaded compared to their design standard.

Trade between the Balkan region and the EU is of regional significance and given Greece's geographical position, with no land borders with other EU countries, the efficient movement of freight between the Balkan region and the EU is of some importance to member states. Therefore as part of the need for a coherent and comprehensive strategy for the region, Sir Alexander Gibb and Partners Ltd (GIBB), was commissioned by the European Union's Phare aid programme, in conjunction with recipient countries, to undertake a transport study of the Balkans, covering freight transport using road, rail, ports, inland waterways, combined transport and short sea shipping modes. The study covered the countries of Albania, Bulgaria, and Romania; Slovenia and Hungary were also included as far as connecting infrastructure is concerned.

The views expressed in this paper are to be considered preliminary, at least as regards the final overall strategy, and are those of the author alone. They in no way form any agreed policy on behalf of the countries concerned or the European Commission.

### **1.2 Outline of Paper**

This paper will draw on the author's experience of the Balkans gained by continual and intensive visits to the region over the last three years, together with GIBB's studies in the region, in order to:

- give an overview of the condition of existing transport corridors;
- describe existing transport movements along the road, rail, inland waterways and short sea shipping corridors;
- outline existing bottlenecks, both infrastructural and institutional;
- describe transport development strategy for the region and the needs of each of the modes.

## **2.0 REVIEW OF EXISTING TRANSPORT CORRIDORS**

### **2.1 Road Corridors**

Principal international road corridors in the Balkans are shown in outline form in Figure 1 together with rail, combined transport and principal short sea shipping services. Before the break-up of Yugoslavia and the cessation of transit of any goods came into force in April 1993, the principal route from western Europe to the Balkan countries, and Greece and Turkey was the E75 through Serbia, Croatia and Slovenia. However, since 1993, alternative land routes through Romania and short sea shipping services from Turkey and Greece to Italy have become the principal corridors.

Road corridors throughout the region are well defined and in general have an acceptable international standard of vertical and horizontal alignment geometry. However, many of the roads are in a poor state of repair and are in urgent need of rehabilitation, particularly in Albania, Romania and sections of the Bulgarian road network. As a generalisation, most of the roads serving international traffic currently operate within capacity and therefore the main emphasis in the short term must be on road rehabilitation and improvement in safety characteristics.

### **2.2 Rail Corridors**

Rail was the favoured form of transport in the centrally planned economies and as a result the networks are (with the exception of Albania) extensive, with a reasonable geographical spread offering good coverage of the principal cities. However, as with the road network, the railways have not been well maintained in recent years and are in need of urgent repair. In addition, it is apparent that if the railways are to be run on a commercial basis there will need to be significant network rationalisation. Given existing and expected demand there would appear to be little justification for new railway lines in the short term, therefore rationalisation, coupled with improved maintenance and the establishment of commercially orientated operators, is the short term priority.

### **2.3 Combined Transport**

Combined transport (CT) is generally defined as the method whereby goods are interchanged between two or more modes of transport using a standardised unit load. For the purposes of this paper CT refers to combined road-rail transport, combined road-sea transport is dealt with under short sea shipping.

Existing CT services, with a few exceptions, concentrate on container and rolling highway traffic. However, many of the CT terminals are poorly located and rely on outdated technologies and operating practices. In addition the success of existing rolling highway services such as the Szeged (Kisundorozma) in Hungary to Wels in Austria and to Ljubljana in Slovenia is due to positive transport legislation in Hungary which imposes high transit taxes on traffic not using CT services (this only applies to those vehicles without transit licences purchased from their national governments and covered by bi-lateral agreement) and uneconomic track access charges levied by the national railways concerned.<sup>1</sup>

## **2.4 Ports and Short Sea Shipping**

There has been significant growth in short sea shipping services in the Balkan region over the last six years, particularly in ro-ro services which bypass the Balkan land corridors between Greece and Turkey on the one hand and the EU on the other. The principal services are described in outline in section 3 below. However, after a review of twenty ports in the region<sup>2</sup> it is apparent that, with the exception of Durres in Albania, Istanbul-Haydarpara in Turkey and Varna and Burgas in Bulgaria, all have sufficient existing capacity or have well-established plans for expansion and associated improvements to road and rail access where required, to meet current and projected medium-term demand.

In the case of Albania, expansion of ro-ro terminals and berths is required in the short term together with improvements to the scant container facilities. Better road access to the port would also be required if the port is to expand further.

The capacity of container facilities at Istanbul-Haydarpara, particularly storage and transshipment capacity, have been exceeded for some time and urgent action is required to remedy the situation. Failure to improve port facilities in Istanbul will have a direct knock-on effect on road and rail transit traffic through the Balkan region.

Although both Varna and Burgas have excess capacity in most cargo categories, new ro-ro and container facilities are required to enable expanded Black sea services to operate and foster the development of Crete Conference Corridor 8.<sup>3</sup>

## **2.5 Inland Waterways**

The main inland waterway running through the Balkan region is the River Danube which, with a length of 2 850 km, is the second longest river in Europe. Whilst the potential for the transport of goods along the Danube is considerable, there remain a number of infrastructural and institutional factors that will hinder the development to its full potential.

On the infrastructural side these can be summarised as low seasonal depths, icing of locks in winter, the need for strict ice control to prevent downstream flooding, and low bridge clearances that prevent the full capacity of barges being utilised, thus affecting unit costs. In addition the Rhine-Main-Danube canal, with an overall capacity of 15 million tonnes per year, can only accommodate either 2 barges (maximum of 4 000 tonnes) or a motor vessel (maximum of 3 300 tonnes); this will ultimately act as a constraining factor as far as total tonnage is concerned, particularly since only about 9% of total cargo capacity of the Danube fleet is accounted for by self-propelled vessels.

The main institutional issues are common standards for training and qualifications for crews, and restrictions on vessel classifications.

However, the short-term problem is the need to attract new traffic to the Danube and to revitalise the existing ports so that they become logistical centres capable of meeting tomorrow's transport requirements. This will require some rationalisation of

existing facilities and a move away from reliance on the movement of raw materials, a process which is already under way.

### **3.0 EXISTING TRANSPORT MOVEMENTS**

#### **3.1 Roads and Railways**

Existing international road and rail transport movements in and through the Balkan region have been described in detail elsewhere<sup>9</sup> and therefore this section is limited to new information not previously presented.

Reliable data on international TIR truck movements in the Balkan region is difficult to establish but Figure 2 presents data collected for the Balkan Transport Study representing annual traffic movements crossing international borders both on land and through ports in the region. From the available information it can be seen that ro-ro services to/from Turkey account for approximately 23% of the 230 000 (approx) annual international truck movements entering and leaving Turkey, whilst ro-ro services account for around 45% of the 540 000 annual international truck movements entering and leaving Greece.

From roadside interview surveys conducted by GIBB in 1994 and 1995, the general patterns of international TIR truck movements can be summarised as follows (percentages are approximate):

- over 90% of the traffic crossing the Bulgarian-Turkish border is travelling to/from Turkey, the remainder travelling on the Gulf region and the southern Asian Caucuses. Of the traffic travelling to the north, the main origins/destinations are Germany (30%), Bulgaria (20%), and Romania (12%), the rest being spread across most of the countries of Eastern, Central and Western Europe.
- around 90% of the traffic crossing the Greek-Bulgarian border is travelling between Greece and Bulgaria thus indicating that this route is not a major route for Greek traffic to access Western Europe.
- almost all the traffic crossing the Greek-Albanian border is travelling between Greece and Albania.
- of the traffic crossing the Bulgarian-Romanian border, 40% is travelling to/from Bulgaria, 43% to/from Turkey, 9% to/from the Former Yugoslav Republic Of Macedonia (FYROM) and 7% to/from Greece with around 1% travelling through the region.
- the majority of traffic crossing the Bulgarian-FYROM (around 97%), and the Albanian-FYROM borders (between 75% and 82%), is travelling to/from FYROM and therefore it can be deduced that this route is at present not used as a transit route.

The above analysis therefore demonstrates that the main international transit route for

TIR traffic travelling to/from Turkey is through Bulgaria, Romania and Hungary, whilst the majority of Greek traffic uses ro-ro services to Italy.

### **3.2 Combined Transport**

Accurate data on the tonnage carried by CT (e.g. swop bodies, semi-bodies, semi-trailer and tractor, trailer only and ISO containers) is difficult to obtain for the Balkan region given CT's small modal share. Recent studies have, however, identified daily traffic of less than 27 000 tonnes per day in the Balkan region with recent trends indicating a falling modal share.<sup>4</sup> Whilst Albania has no CT capability to speak of, Bulgaria (with nine terminals), Romania (thirteen), Hungary (eight) and Slovenia (three) each have a network of combined transport facilities. However, outdated facilities and practices have meant that operators have not been able to maintain their market shares in traditional markets, which are contracting, or to take advantage of the opportunities in growth sectors.

Furthermore, despite border delays and high transit charges through Hungary, the level of traffic using the RoLa link<sup>5</sup> between Kiskundorozsma in Hungary, Wels in Austria and Ljubljana in Slovenia has also fallen. The service to Wels which covers a distance of approximately 650 km with a transit time of 12.5 hrs and 1.5 hrs terminal time, costs 460 ECU for a one-way trip and ECU 820 for a return, whilst the Ljubljana service costs ECU 830 for a return. The total number of trucks carried by rail was approximately 16 200 in 1992, 29 000 in 1993, 26 000 in 1994 and 24 700 in 1995. According to Hungarian customs, Turkish lorries accounted for 60% of the traffic in 1995, Romanian 30% and Bulgarian 3%, with the remainder being made up of other nationalities.

### **3.3 Inland Waterways**

Based on statistics produced by the Danube Commission, total merchandise transported on the Danube has fallen considerably since 1989, when 75.2 million tonnes were carried, with traffic in 1993 being 21.7 million tonnes. The largest falls have been in carriage of goods by the Ukraine (down from 21.9 m to 7.7 m), Romania (20.4 m to 6.5 m), Former Yugoslavia (12.3 m to 0, due to embargo), and Hungary (9.3 m to 3 m). The fall in traffic is largely due to a decline in demand for raw materials associated with traditional heavy industry in the region and the UN embargo on trade with Serbia.

As regards the movement of international traffic in the Balkans, the decline in tonnage has not been so significant, with the quantity to/from Romania falling from 2.3 million in 1989 to 1.8 million in 1993. The equivalent figures for Bulgaria are 0.13 million to 0.11 million, and for Hungary 2.3 million to 2.0 million.

The main categories of goods carried through Romanian ports, comprising 68% of the traffic, were raw minerals, iron ore and scrap iron, with a further 30% being combustible solids and metals. The main commodities through Bulgarian borders were raw materials, (13.6%), iron ore/scrap iron (27.0%), combustible solids (41.4%) and metals (9.5%), whilst in Hungary the split was raw materials other than ore (44%), crude petroleum (21%), metals (13%) and iron ore and scrap metal (10%). Thus it can

be seen that in 1993 inland waterways traffic in the region was to a great extent reliant on the movement of raw materials and primary products associated with heavy industry.

### **3.4 Ports and Short Sea Shipping**

#### **3.4.1 Service patterns**

Information on ship calls were obtained from Lloyds Press by Lloyds agents in each port, supplemented by data collected by the study team. Whilst the Lloyds data is by no means 100% accurate it is nevertheless the most comprehensive data currently available. The data obtained covered the period October 1994 to September 1995 and was grouped into nine ship types. Ship calls by port (split by type of ship) and deadweight capacity of ships is shown in Figures 3 and 4 respectively. From these it can be seen that the ports of Piraeus, Patra, Constanta, Ancona and Brindisi are the busiest in terms of ship calls and that with the exception of Constanta and Piraeus, ro-ro accounts for almost all the ship calls. However, in terms of deadweight capacity offered, Piraeus, Constanta, and Trieste handled the largest capacity ships with tankers accounting for a sizeable percentage of the total at each port.

In order to have a better understanding of the shipping movements in the region and to model modal competition, the raw Lloyds shipping data, which provides annual information on the ports of call of all ships in the database that called at any one of the twenty ports in the study, was processed and input to GIBB's Central and East European Transport Model (CEETM). The annual pattern of movements in terms of frequency in the case of ro-ro and capacity in the case of general cargo, bulk cargo and container are shown in Figures 5,6,7 and 8 respectively. From these it can be seen that with the exception of ro-ro, there is a significant movement of ships and capacity provided between Black Sea/Aegean/Adriatic region and Northern Europe. In contrast, the ro-ro ships ply the Eastern Mediterranean/Aegean/Ionian/Adriatic Seas serving the Balkan region. Of particular note is the traffic between Greece and the Italian Adriatic coast and between Istanbul-Haydarpasa and Trieste. This traffic uses these ports and the associated shipping services to avoid the land corridor route through Bulgaria, Romania and Hungary because of inadequate infrastructure and border delays on that corridor.

#### **3.4.2 Maritime Trade Flows**

Data on cargo activity at each of the principal ports in the region has been obtained from each port and is summarised in Table 1. From this table it can be seen that:

- with exception of Trieste, container activity in the Adriatic is not well developed. This is because the ports are off the main shipping routes and inland transport is more competitive for traffic to Europe given their geographical position;
- the movement of trucks, which are largely made up of traffic travelling between Greece and Italy, is significant in the Adriatic;

- a large percentage of the tonnage through Koper is transit traffic, which is principally destined for Austria, Hungary, the Czech Republic, and the Slovak Republic.

**Table 1 Total Tonnages For Principal Ports in Balkans**

<b>PORT</b>	<b>Year of Data</b>	<b>Non Liquid cargo 000 Tonnes</b>	<b>Transit or Inter 000 Tonnes</b>	<b>Containers TEU (Tonnes, 000)</b>	<b>Trucks or (Tonnage by Trucks)</b>
<b>Rijeka, Croatia</b>	1994	3 923	1 357	50 000	10 567
<b>Koper, Slovenia</b>	1995	5 429	4 237	58 000 (893)	
<b>Trieste, Italy</b>	1995	8 892		1 517 000 (1 154)	73 762 (2 089)
<b>Ancona, Italy</b>	1994	3 435		30 000 (250)	79 923
<b>Bari, Italy</b>	1994	3 000			88 979
<b>Brindisi, Italy</b>	1994	2 760			100 229
<b>Durres, Albania</b>	1994	684	70		30 000
<b>Igoumenitsa, Greece</b>	1994	899	593		59 327
<b>Patra, Greece</b>	1994	2 552	2 518		193 212
<b>Piraeus, Greece</b>	1994	8 975	5 900	556 000 (8 940)	
<b>Thessaloniki, Greece</b>	1994	5 821	4 951	101 196	
<b>Izmir, Turkey</b>	1994	4 623		275 000 (24 000)	
<b>Haydarpasa, Turkey</b>	1995	4 640		316 000 (2 400)	
<b>Burgas, Bulgaria</b>	1994	7 439			
<b>Varna, Bulgaria</b>	1995	8 300			
<b>Constanta, Romania</b>	1995	28 523			12 372

Note: Igoumenitsa trucks are international only

Source: Balkan Transport Study, Sir Alexander Gibb & Partners Ltd.

## 4.0 TRANSPORT CORRIDOR BOTTLENECKS

### 4.1 Basis of Analysis

Through a series of in-depth interviews with freight forwarders, discussions with representatives of national governments and reviews of documents, transport corridor bottlenecks in the Balkan region were identified.<sup>6</sup> As part of the Balkan Transport Study, detailed questionnaires were distributed to the largest freight forwarders, covering all modes, in each of the countries included within the study. In all sixty-three freight forwarder questionnaires were returned and analysed. Table 2 summarises the response rates by country and mode. Analysis of the size of companies, number of employees and turnover of respondents confirmed that a reasonably representative sample was achieved.

**Table 2 - Freight forwarders responses by country and predominant mode**

	<b>ROAD</b>	<b>RAIL</b>	<b>PORTS</b>	<b>COMBINED</b>	<b>TOTAL</b>
ALBANIA	2	1	1	5	9
BULGARIA	1	1	0	6	8
GREECE	5	0	0	5	10
HUNGARY	1	2	0	7	10
ROMANIA	2	0	12	0	14
SLOVENIA	2	0	0	1	3
TURKEY	4	0	0	5	9
<b>TOTAL</b>	<b>15</b>	<b>3</b>	<b>13</b>	<b>29</b>	<b>63</b>

Source: Balkan Transport Study, Sir Alexander Gibb & Partners Ltd.

### 4.2 Infrastructural Bottlenecks

Interviews with freight forwarders gave an interesting insight into freight charges and the relative importance of factors such as speed, cost, security and reliability. Not surprisingly, 57% of respondents ranked speed as being the main factor in using road transport; however, 35% mentioned greater control over transport and 31% greater reliability, whilst only 26% mentioned cost. For rail users, cost was the most important factor (35%) whilst 60% of those forwarders using short sea shipping quoted cost as being the most important factor. In addition to modal choice issues, the general concerns of transport users with regard to bottlenecks and deficiencies in the transport system was obtained. These identified a clear need for improved border crossing facilities, which have already been well documented,<sup>7</sup> and for improved maintenance of existing transport infrastructure and routes.

### **4.3 Institutional Bottlenecks**

There are three key institutional issues which act as a constraint on the efficient operation of the transport systems in the Balkan region, namely border crossing issues, commercial practices, and legislative frameworks.

Infrastructural and institutional bottlenecks relating to border crossing issues have by and large been (or are currently being) addressed with the help of Phare funds.<sup>7</sup> Even so, sufficient customs staff with the right training and attitude, together with improved communications both locally and regionally, will be essential if the benefits from current and committed investments are to be maximised. However, proper presentation of transit papers at road borders will also help to speed up transit times considerably as it is the "problem vehicles" that cause unnecessary delay.

Commercial practices, particularly those of the railways, are outdated and in need of improvement. Cooperation between national railways in terms of cross-charging structures, tariffs and marketing strategy is poor and, as a result the railways have not been able to compete with road haulage companies, particularly in the growth sectors.

The legislative framework in relation to road user transit charges in the region is not coordinated, and as a result modal competition is distorted in some countries due to prohibitive transit charges which encourage the use of CT services, whilst in others lower charges result in much greater use of road transport to the detriment of the environment.

## **5.0 FUTURE TRANSPORT STRATEGIES AND MODAL PRIORITIES**

### **5.1 Roads**

Given their environmental impact, roads are not generally considered to be the favoured element in sustainable transport development strategies in European Union countries at least as far as stated transport policy is concerned, although in reality roads still get the lion's share of funding. However, the road network will need to play a very significant role in providing efficient movement of goods between countries within the Balkans and between the Balkans and the EU. Indeed in the short term, given the current state of the rail network and more importantly the management of rail services, any move to curb the use of international road transport will adversely affect the competitiveness of goods produced in the Balkans and will slow down the process of change in the rail sector (through lack of competition). The road network in the Balkans is not as developed, nor as well maintained as that in the EU, and therefore short-term policy should be concentrated on rehabilitation and selective upgrading of infrastructure, including village bypasses. In the medium term and longer term, and where demand justifies it, international road corridors, as identified by the Crete Conference, should be developed to motorway design standard. However, the medium-and long-term strategy for roads must be focused on supporting a sustainable transport strategy based on increased use of the other modes and therefore improvement in road access to ports, inland waterways and CT terminals must be given adequate priority.

## 5.2 Railways

The railways must form the core of any sustainable transport strategy; its full potential cannot, however, be realised without considerable changes in the organisational and operational structure of national operators. The historical dominance of heavy industry in Bulgaria, Romania and Hungary and the bias to rail has created a captive market for rail in the Balkan region which has inevitably resulted in the stifling of commercial acumen and marketing flair; however the decline in these industries and increased competition from road haulage companies means that national railways will have to import or develop these skills if they are to survive with limited government subsidy. The involvement of the private sector in commercial ventures, particularly in the combined transport sector, is essential if rail's modal share is to be increased. Improved coordination, in operational and marketing matters, between national operators will be required if rail is to offer a viable alternative to road and short sea shipping on longer distance hauls, an area in which it should naturally be competitive.

In the short term, investment in the rail sector (excluding CT which is discussed separately below) should be concentrated on rationalisation of the network, rehabilitation of the core network, overhaul of the management and commercial operation of companies concerned and development of new and improved freight services based on a clear understanding of the market. Only when these tasks are complete, and deemed to have been successful, should investment in enhanced rail infrastructure be considered, since without the basic commercial foundations any venture will be fraught with significant financial risk.

## 5.3 Combined Transport

There appears to be strong political support for combined transport in the Balkan region, given its environmental, traffic safety and economic efficiency benefits but this needs to be translated into positive actions and policies if CT is to gain a significant market share of international traffic.

Initial attention is being concentrated on RoLa services given its cheaper start-up costs (assuming no rail gauge problems), its simpler administrative requirements and quick results. However, RoLa is unlikely to gain a large market share without strong government support, particularly in relation to transit charges and licences, given that drivers have to travel with their vehicles thus making the trip less efficient than unaccompanied CT and other modes, and thus only competitive over short distances (200 km to 400 km). RoLa can therefore only be seen as a short-term solution, and the development of unaccompanied transport services is essential if CT is to gain a greater market share.

A key element of CT strategy must therefore be the development of CT terminals at key nodes in the region which have excellent logistical capabilities, good road access and efficient management and procedures. Existing terminal sites are largely unsuitable since they are generally located in cramped urban sites with limited room for expansion and have poor road access. New sites adjacent to rail lines, with modern equipment, will therefore need to be developed.

Nevertheless the success of CT will depend on favourable legislative and transport policies such as:

- enforcement of the laws regarding lorry drivers' hours and rest periods.
- partial or full tax relief for road vehicles used for combined transport.
- improved customs procedures for rail and CT services.
- authorisation for CT terminals to operate at weekends and holidays, whilst implementing bans on road haulage over these periods.
- agreement on common standards for CT technologies e.g. widths etc;
- exemption from transit licences for vehicles using CT.
- greater private sector involvement in CT and rail operations.
- coordination of national transport policies in Balkan countries.

As regards new rail infrastructure, traffic levels are likely to be insufficient in the short and medium term to justify anything other than rehabilitation of existing lines; therefore development of lines to the AGTC agreement,<sup>8</sup> enabling improvements in line speed and axle load, is only likely in the longer term, although there may well be scope for more limited and localised improvements below AGTC standards.

#### **5.4 The Role of Inland Waterways**

The potential of the Danube to serve international transport needs has been much vaunted since the opening of the Rhine-Main-Danube canal in 1993; however, the physical and institutional bottlenecks identified in this paper have demonstrated challenges that lie ahead which must be addressed if Inland Waterways Transport (IWT) is to play a significant supporting role. As with the rail sector, inland waterways traffic has been reliant on heavy industry and the decline of this sector has had a significant effect on the total tonnage carried. Again improvements in management and marketing of the ports and IWT services will be required.

The short-and medium-term priority must therefore be the development of multi-modal transport terminals at key locations in each of the countries through which the Danube runs to enable inland waterway operators to offer CT services to clients in the growth sectors of industry, such as manufacturing, and to reduce their reliance on the carriage of raw materials. Investment in modern self-propelled craft capable of travelling along the entire length of the Rhine-Main-Danube corridor will also be required, given the different navigational and regulatory problems. However, IWT is unlikely to be the dominant mode and its role should be to complement the other modes in certain commodity sectors rather than trying to compete with road and rail in sectors where it does not have an inherent advantage. Given that in many cases IWT traffic is transhipped to other modes at terminal points, IWT operators need to coordinate their marketing and operations with road and rail operators.

#### **5.5 The Role of Short Sea Shipping and Ports**

Short sea shipping services in the Balkan region are already well developed, with relatively low freight rates, frequent sailing and space generally available without the need for pre-booking or queueing. Sea transport carries a major element of the regions' international trade and its share is likely to increase through market forces, given the

current state of transport and customs delays on the competing land transport corridors.

The main thrust of any transport strategy as far short sea shipping services is concerned is to ensure that:

- the ports in the region are adequately developed over the medium term to deal with anticipated traffic, and have good road and rail links to their hinterlands.
- competition in the shipping sector is monitored to ensure that no single carrier or group of carriers develops a dominant position, thereby enabling it to charge monopolistic rates.
- port charges are kept as low as possible (privatisation of the ports in the region may help in this regard). Analysis of the current market indicates that rates are competitive and there would appear to be no dominant carriers, with a large number of companies owning a small number of ships (although this does not take into account chartering of vessels).

## 6.0 CONCLUSIONS

The analysis of the transport situation presented in this paper has demonstrated the contribution that is currently being made by all the modes of transport in the Balkan region, particularly that of short sea shipping. Each mode has a role to play in providing safe and cost-effective transport of goods that will foster the development of trade within the region and between the region and the European Union.

The continuing focus on the environment and the need to reduce the role of road transport in the European Union should not distract governments in the region from developing a viable road network able to serve local, regional and international needs. Whilst short sea shipping, rail, inland waterways and combined transport will all have a vital role to play in facilitating medium-and long-distance transport requirements a good road network is vital in the short term, both in terms of regional distribution and in terms of providing a fast, efficient and reliable service able to respond to changes in the market place. Therefore in the short term the existing strategic road network needs to be rehabilitated to basic international standards, particularly in terms of surface condition and rural and urban bypasses. In the medium and longer term development of a motorway network comparable to that in the EU will be required as demand increases.

The immediate priority for the rail network is one of rationalisation, and modernisation of the core network coupled with improvements in management and marketing. Improved coordination between national railways in operations and marketing of services is essential if market shares are to be maintained let alone increased. In the case of combined road/rail transport improvements to terminal facility and operations are required in order to offer the type of service required by modern industry. Involvement of the private sector in the funding and management of CT terminals will speed up the process of change and help railway operators appreciate the realities of the commercial environment in which they must now work. Enhancements in speed and loading gauge may well not be justified until well into

the next century, given current traffic levels, and therefore more modest improvements need to be considered.

Short sea shipping is taking a significant share of truck traffic travelling between the region and the European Union and this should continue if development plans at the ports reviewed go ahead and port bottlenecks are eliminated. Good connecting transport infrastructure will however, be required to enable the modal shift to short sea shipping services to continue.

The transport strategy currently being developed by the author and others will therefore seek to identify the optimum role to be played by each mode both on a commodity/travel distance basis and a corridor basis.

## NOTES

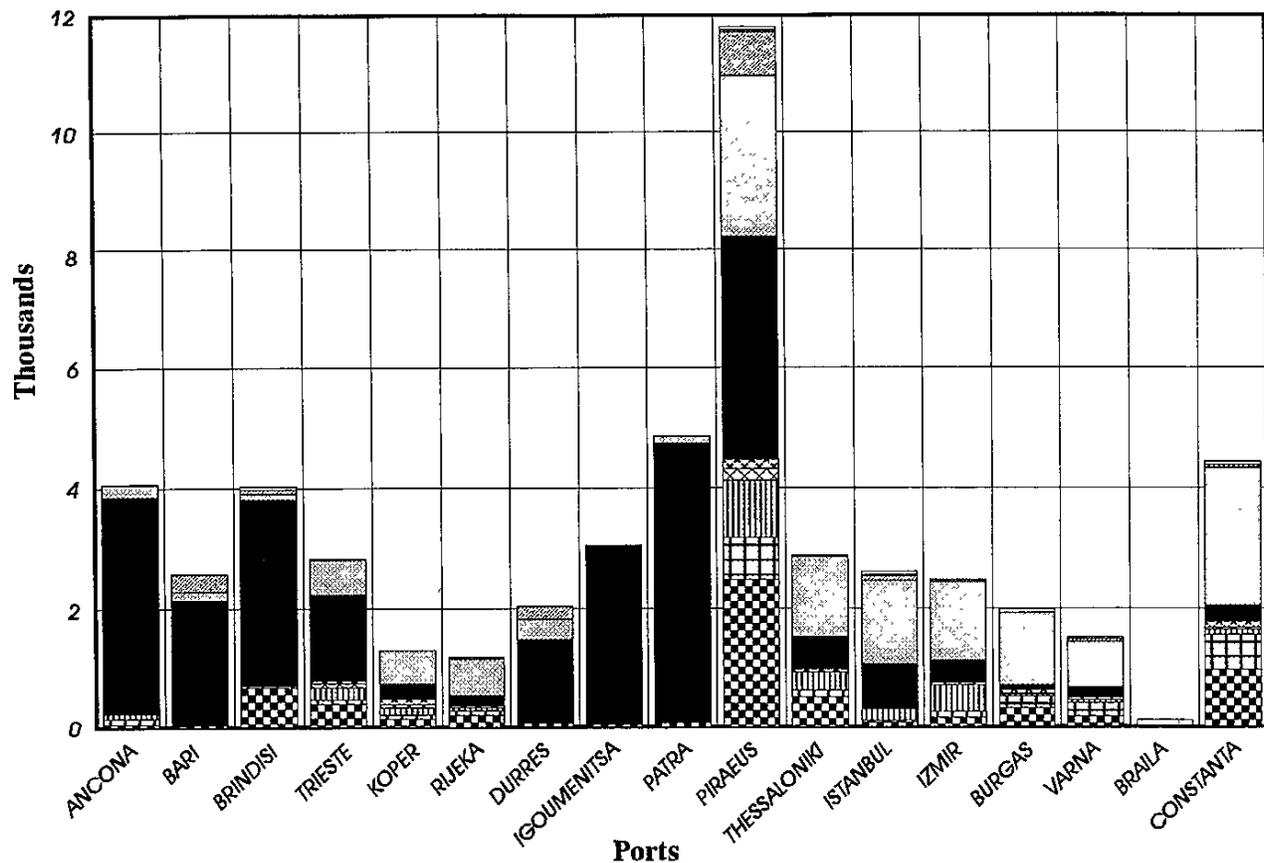
- 1 see Prognos/SGKV report on Combined Transport by Rola between Kiskundorozsma and Wels for EBRD, 1995.
- 2 Rijeka, Koper, Trieste, Ancona, Durres, Bari, Brindisi, Igoumenitsa, Patra, Piraeus, Thessiloniki, Izmir, Istanbul-Haydarpasa, Burgas, Varna, Constanta, Braila, Tulcea, Ruse, Lom.
- 3 Crete Corridor 8 links the Black Sea ports of Varna and Burgas with the Albanian port of Durres on the Adriatic via Sofia, (Bulgaria), Skopje,(FYROM) and Tirane, (Albania).
- 4 see TEAM Group, Rome, (1994) Feasibility Study for the Development of Railway and Combined Transport on International Trans-European Axes in Central and Eastern Europe, Vols 0,1,2,3 and 4, European Commission DG1 (Phare).
- 5 The term "RoLa" stands for "Rollende Landstrasse", a German technical term, meaning the transport by rail of complete heavy goods vehicles with ro-ro loading and unloading.
- 6 See Sir Alexander Gibb & Partners Ltd, Balkan Transport Study Services Contract No 95-0800 00, European Commission DG1 (Phare) -Inception Report (March 1996 issue 2).
- 7 See Ove Arup, (1994) Short Term Action Plan for the Balkan Region -Report of Study Mission to Eliminate Main Border Crossing Bottlenecks, European Commission DG1 (Phare) and Ove Arup, (1995) Central European Border Study, European Commission DG1 (Phare)
- 8 European Agreement on Important International Combined Transport Lines and Related Installations.
- 9 Ash, N.A. (1995) New International Transport Corridors in the Balkans and Their Economic and Financial Evaluation, *Proceedings of the 23rd European Transport Forum. Rail*, PTRC, London.

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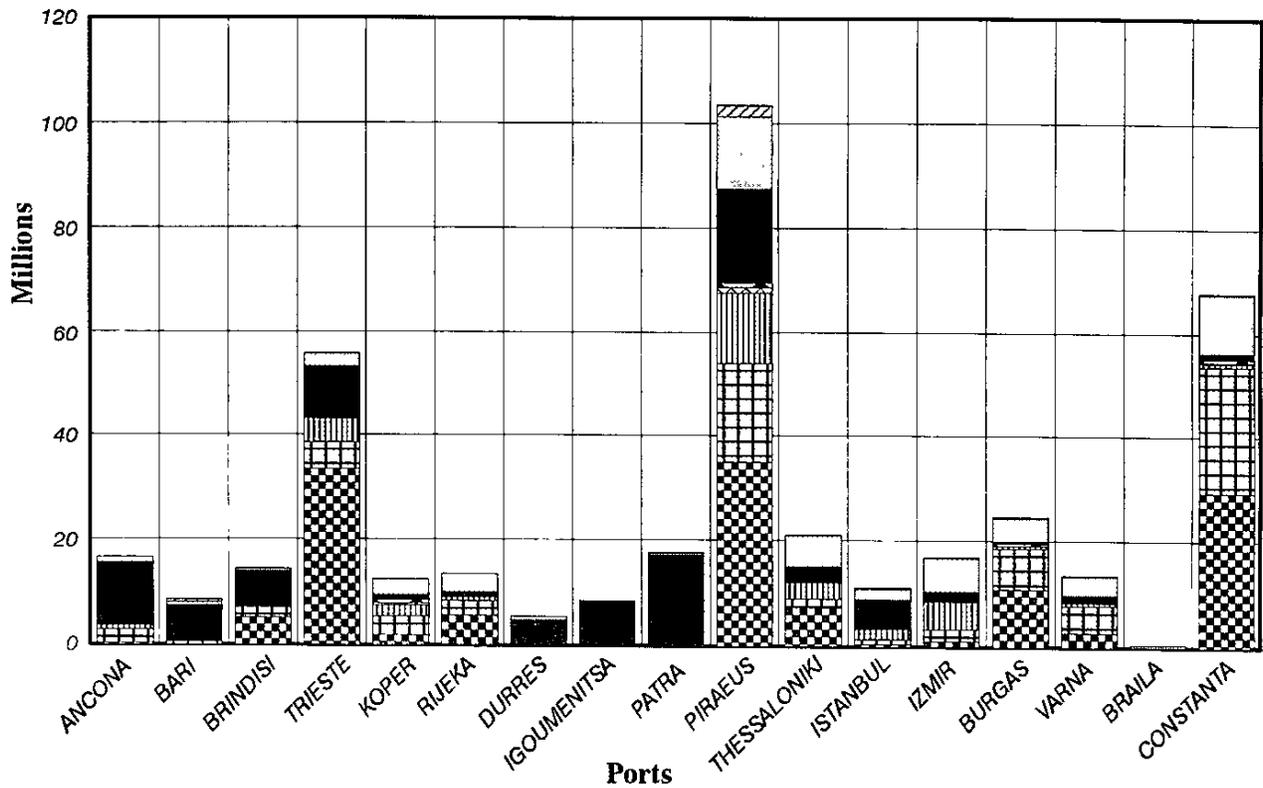


	Tanker	Dry bulk	Container	Spec'd	Reefer	Ro-ro cargo	General cargo	Passenger	Misc	Total
Ancona	53	99	79	2	2	3822	197	8	10	4072
Bari	31	22	-	5	1	2078	152	275	19	2583
Brindisi	678	30	-	1	1	3097	99	74	49	4029
Trieste	404	85	212	70	41	1438	589	1	12	2830
Koper	144	74	124	45	94	258	566	-	4	1309
Rijeka	205	87	46	4	27	170	629	1	22	1191
Durres	77	9	-	2	2	1402	336	106	14	2040
Igoumenitsa	35	32	-	-	-	2983	1	-	-	3051
Patras	77	8	-	-	7	4655	110	8	2	4865
Piraeus	2481	688	947	182	180	3764	2738	742	92	11602
Thessaloniki	510	120	283	9	45	550	1322	18	17	2884
Istanbul	61	25	199	24	8	733	1389	78	74	2611
Izmir	158	105	448	35	27	359	1304	30	12	2478
Burgas	328	191	38	14	82	88	1209	3	47	1978
Varna	179	228	52	35	12	170	778	38	35	1525
Braila	5	8	-	6	2	-	102	-	1	122
Constantza	974	588	84	33	85	279	2274	19	91	4435
<b>Total</b>	<b>6418</b>	<b>2369</b>	<b>2522</b>	<b>477</b>	<b>588</b>	<b>25644</b>	<b>13797</b>	<b>1491</b>	<b>501</b>	<b>53805</b>

**Key:**

	Tanker		Ro-ro cargo
	Dry bulk		General cargo
	Container		Passenger
	Specialised		Misc
	Reefer		

**FIGURE: 3**  
**SHIP CALLS BY PORT BY TYPE OF SHIP,**  
**OCTOBER 1994 TO SEPTEMBER 1995**

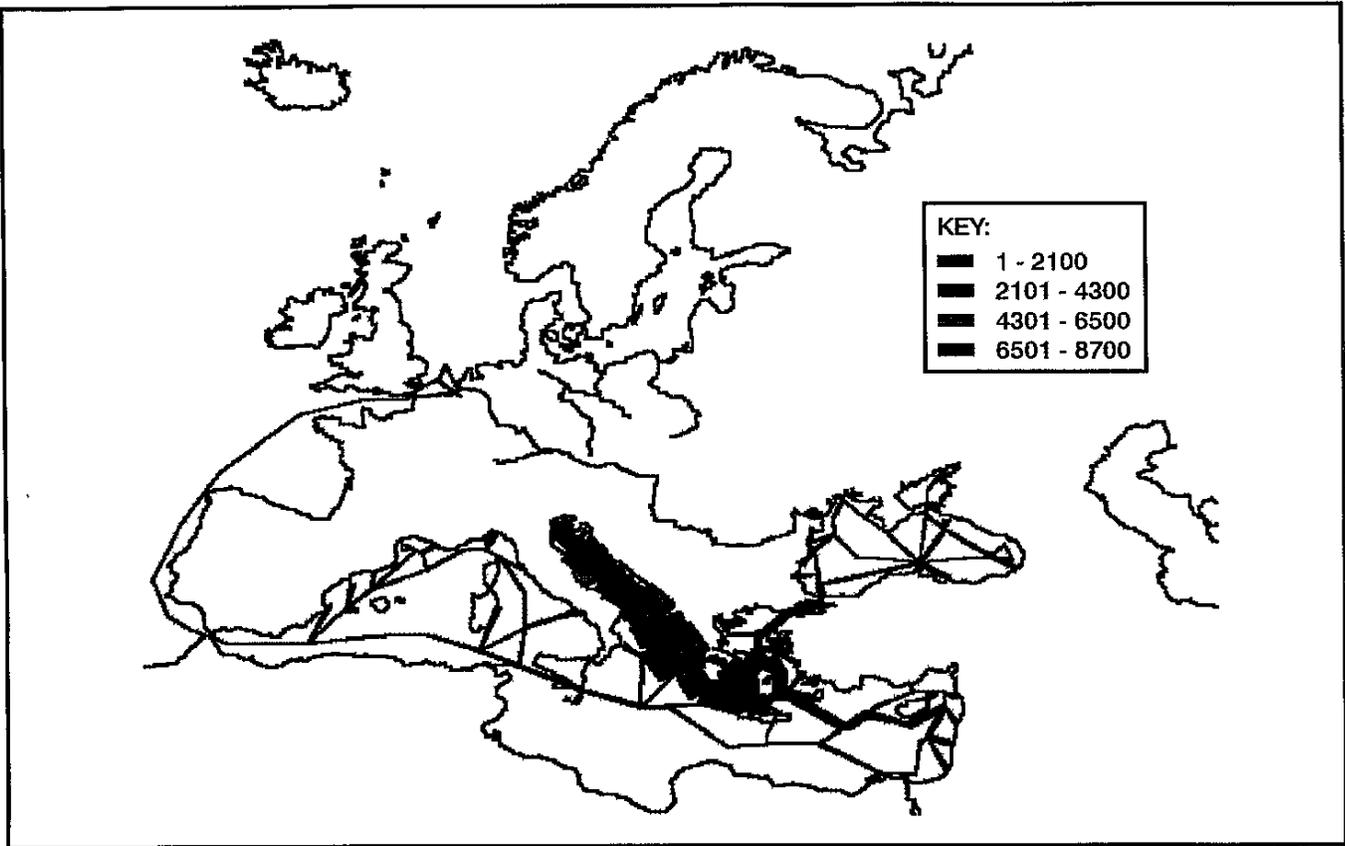


	Tanker	Dry bulk	Container	Spec'd	Reefer	Ro-ro cargo	General cargo	Passenger	Misc	Total
Ancona	344	2558	837	5	4	11789	1034	17	25	16591
Bari	66	525	-	8	4	6811	648	443	19	6524
Brindisi	5183	1847	-	2	4	6868	400	19	101	14444
Trieste	33487	5131	4466	102	171	9947	2490	1	14	55839
Koper	1971	3418	2151	375	547	1095	2897	-	13	12465
Rijeka	5614	2698	701	34	267	728	3483	-	32	13565
Durres	195	128	-	3	4	4489	676	18	22	5535
Igoumenitsa	63	178	-	-	-	8233	3	-	-	8478
Patras	219	213	-	-	23	16850	388	35	1	17527
Piraeus	34952	18984	13742	1024	957	17705	13963	2050	106	103483
Thessaloniki	7361	1499	3130	38	197	2764	5863	52	21	21025
Istanbul	457	990	1858	58	12	5453	2037	138	90	11091
Izmir	1075	2228	5212	110	82	1695	6226	122	20	16770
Burgas	10840	7659	488	115	347	487	4494	3	126	24519
Varna	2739	5097	511	184	42	1207	3572	105	73	13530
Braila	12	129	-	10	5	-	451	-	1	608
Constantza	29179	24507	680	171	635	1041	11443	49	195	67900
<b>Total</b>	<b>133767</b>	<b>77784</b>	<b>33776</b>	<b>2239</b>	<b>3301</b>	<b>796942</b>	<b>60178</b>	<b>3048</b>	<b>859</b>	<b>411894</b>

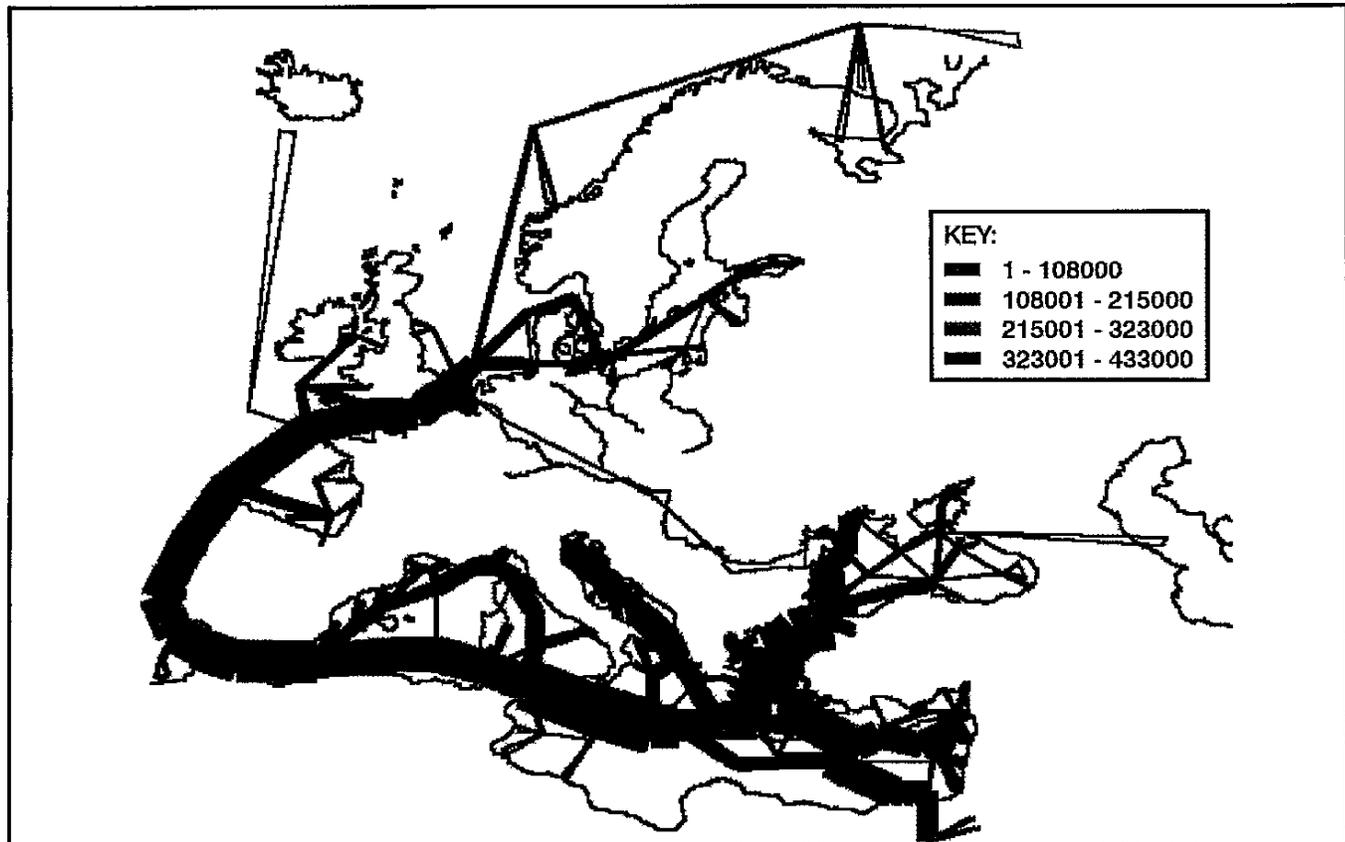
Note: Above figures are in thousand's of tonnes.

Key:			
	Tanker		Ro-ro cargo
	Dry bulk		General cargo
	Container		Passenger
	Specialised		Misc
	Reefer		

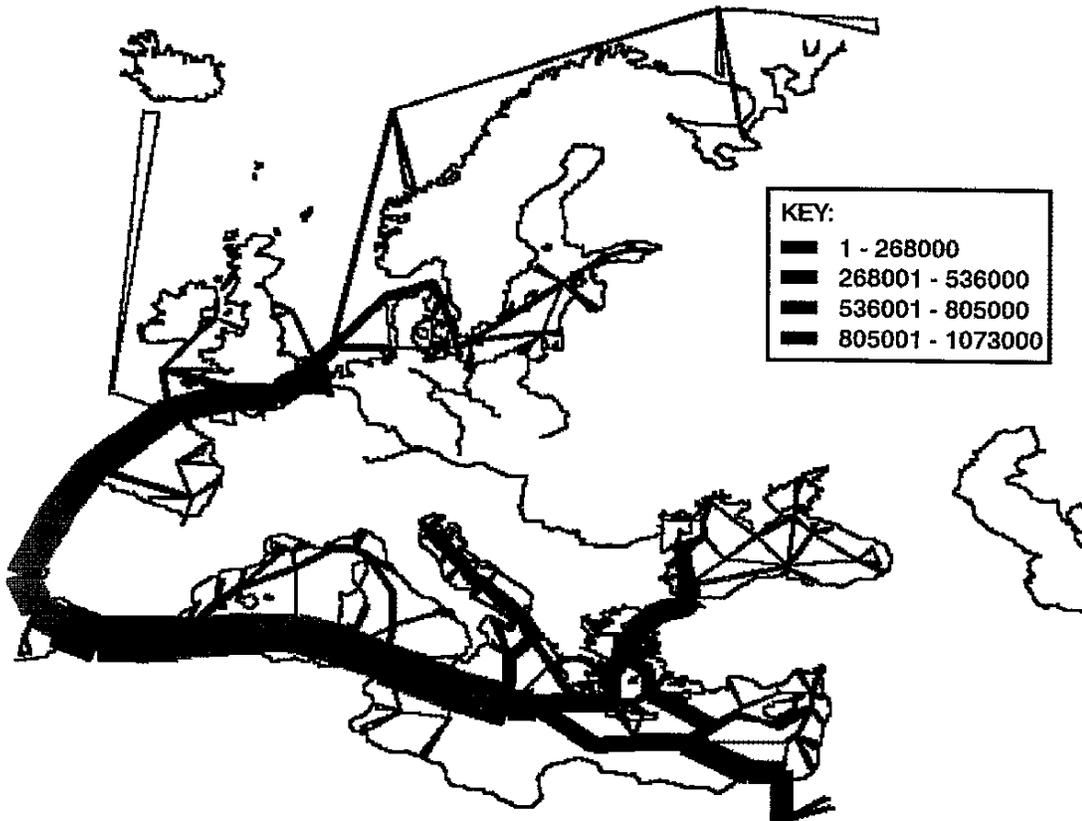
**FIGURE: 4**  
**DEADWEIGHT CAPACITY OF SHIPS**  
**CALLING BY PORT, BY TYPE OF SHIP**  
**OCTOBER 1994 TO SEPTEMBER 1995**



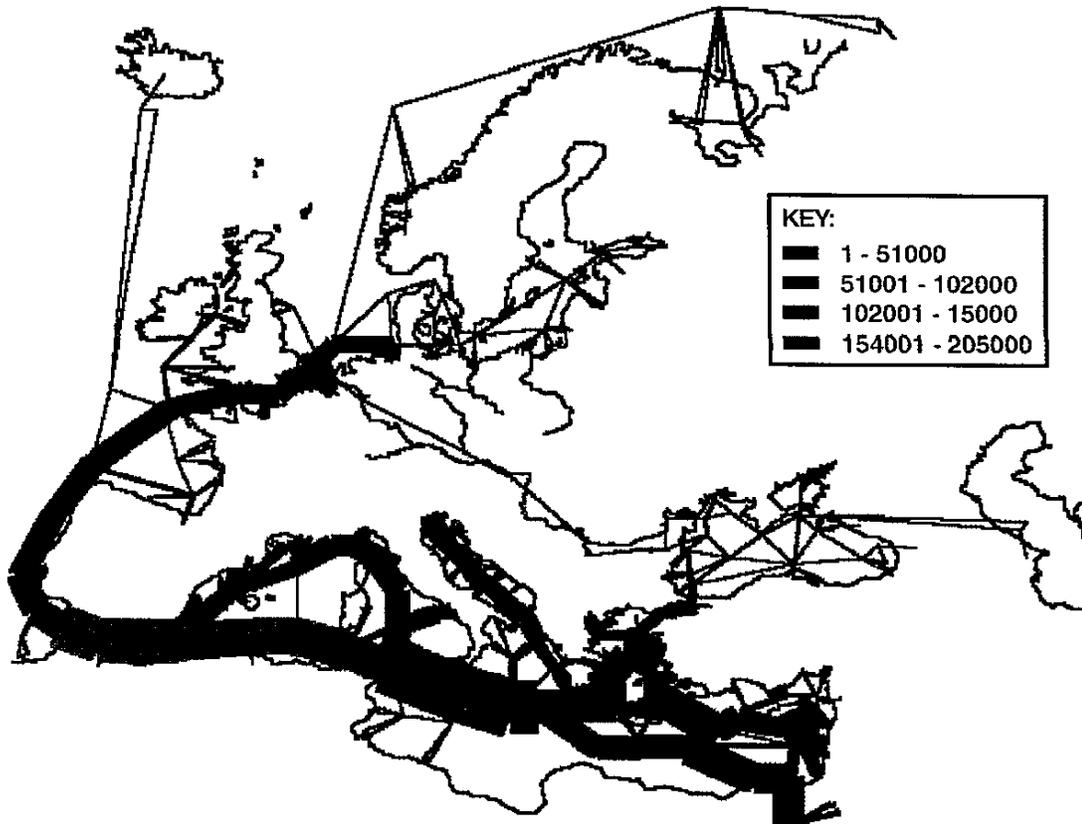
**FIGURE: 5**  
**ANNUAL PATTERN OF RORO VESSELS**  
**OCTOBER 1994 - SEPTEMBER 1995**  
**(FREQUENCY)**



**FIGURE: 6**  
**ANNUAL PATTERN OF GENERAL CARGO VESSELS**  
**OCTOBER 1994 - SEPTEMBER 1995**  
**(DEADWEIGHT TONNAGE)**



**FIGURE: 7**  
**ANNUAL PATTERN OF BULK CARGO VESSELS**  
**OCTOBER 1994 - SEPTEMBER 1995**  
**(DEADWEIGHT TONNAGE)**



**FIGURE: 8**  
**ANNUAL PATTERN OF CONTAINER CARGO VESSELS**  
**OCTOBER 1994 - SEPTEMBER 1995**  
**(DEADWEIGHT TONNAGE)**