STUDIES AND RESEARCH

1999 EDITION

Intermodal freight transport — key statistical data

1992-1997

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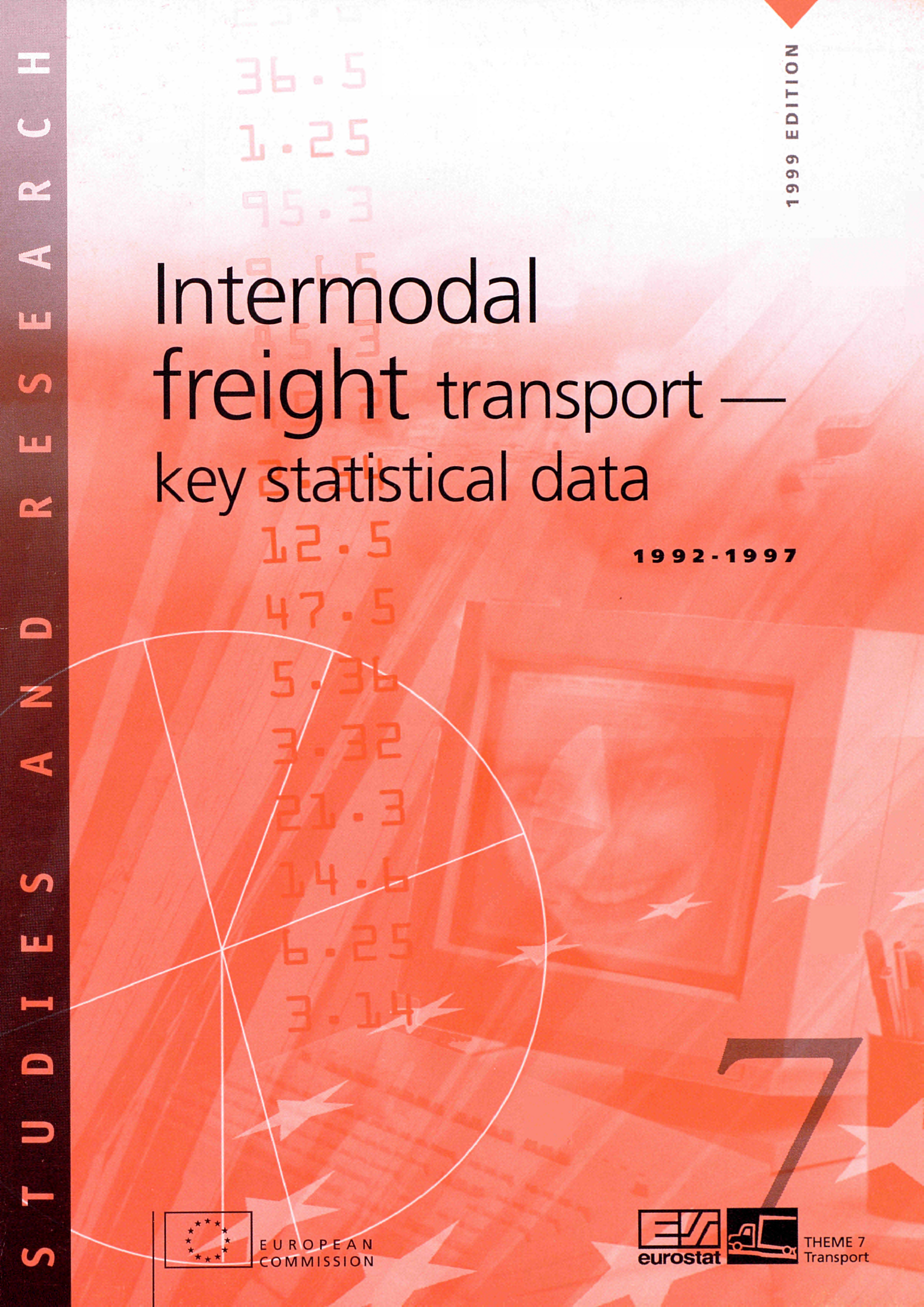

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Transport

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Luxembourg: Office for Official Publications of the European Communities, 1999

ISBN 92-828-7307-2

Printed in Luxembourg

PRINTED ON WHITE CHLORINE-FREE PAPER

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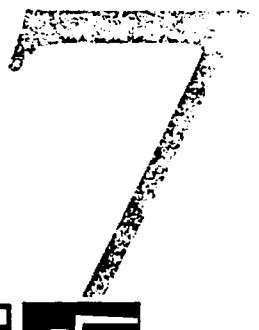

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Preface

This publication is the first step to publish existing non-harmonised statistical data on intermodal freight transport concerning the European Union. The publication will be progressively improved in the future when more data on intermodal transport becomes available.

All comments and suggestions to improve this publication are welcome and should be sent to the following address:

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TABLE OF CONTENTS

Introduction 7

Executive summary 8

Intermodal transport key data 10

General situation and trends of transport in Europe 11
Table 1.1 Transport in EU-15 by kind of commodities 12
Table 1.2 External trade EU-15 13
Chart 1.3 Growth of transport, gross domestic product and industrial production 14
Table 1.4 Share of each mode in the total inland transport 14
Chart 1.5 Evolution of the modal split for goods transport in EU-15 (1980-1996) 15

Transport infrastructure 17
Table 2.1 Road network 18
Table 2.2 Rail network 19
Table 2.3 Inland waterway network 20
Table 2.4 Inland waterway main container ports 21
Table 2.5 Top container ports 22
Table 2.6 Extension of the European combined transport network: main projects of new lines 23
Map 2.7.a Trans-European railway corridors and terminals 24
Map 2.7.b Trans-European railway corridors and terminals in Benelux-countries, Germany, France and Austria 25
Map 2.7.c Trans-European railway corridors and terminals in Spain, the United Kingdom, Ireland and Portugal 26
Map 2.7.d Trans-European railway corridors and terminals in Denmark, Sweden and Finland 27
Map 2.7.e Trans-European railway corridors in Greece and Italy 28
Map 2.7.f Trans-European combined transport plan inland waterways 29

Transport chains 31
Table 3.1 Continental and intercontinental transport chains, by type 32
Table 3.2 Inland traffic of maritime containers, by country and by inland transport mode 33
Table 3.3 Traffic of manufactured products by transport chain between Cataluna / Ruhrgebiet 34

Unitised transport by country 35
Chart 4.1 Unitised transport of the European railway companies 36
Table 4.2.a Intermodal transport including railway transport 37
Table 4.2.b Intermodal transport including railway transport 38
Table 4.3 International rail traffic of large containers 39
Table 4.4 National and transit rail traffic of large containers 39
Table 4.5 Road-rail traffic 40
Table 4.6.a Intermodal transport including maritime transport 41
Table 4.6.b Intermodal transport including maritime transport 42
Table 4.7 Rail-sea and road-sea traffic 43
Table 4.8 Container traffic of maritime ports by country 44
Table 4.9.a International unitised traffic of the UIRR members 45
Table 4.9.b International unitised traffic of the UIRR members 46

Unitised transport by operator **47**
Table 5.1 Intermodal transport main operators 48
Table 5.2 Intermodal rail traffic by operator 49
Table 5.3 Transit rail traffic by ICF members 50
Table 5.4 Unitised rail transport: import of large containers by kind of frontier point 51
Table 5.5 Unitised rail transport: export of large containers by kind of frontier point 52
Table 5.6 Unitised rail transport: transit of large containers by kind of frontier point 53
Table 5.7.a Traffic of ICF by origin and destination railway 54
Table 5.7.b Traffic of ICF by origin and destination railway 55
Table 5.8 Share of combined transport technologies (UIRR members) 56
Table 5.9 Top 20 container service maritime operators 57

Unitised transport by nodes and links **59**
Table 6.1 Port traffic (major European sea ports) 60
Table 6.2 Container traffic in major European ports 61
Table 6.3 Inland origins and destinations for the port of Rotterdam (example) 62
Table 6.4 Inland ports : fluvial and fluvio-maritime traffic 63
Table 6.5.a & b Inland containers shipping / journey times on the Rhine 64
Table 6.6 Freight traffic of major airports 65

Freight traffic through the Alps **67**
Table 7.1 Traffic through the Mont-Cenis - Brenner segment 68
Table 7.2 Traffic between Germany / Benelux and Italy (Mont Cenis - Brenner segment) 68

Key contacts **69**

Appendix
Abbreviations (countries) 72
Acronyms and abbreviations 73
Glossary 74

Introduction

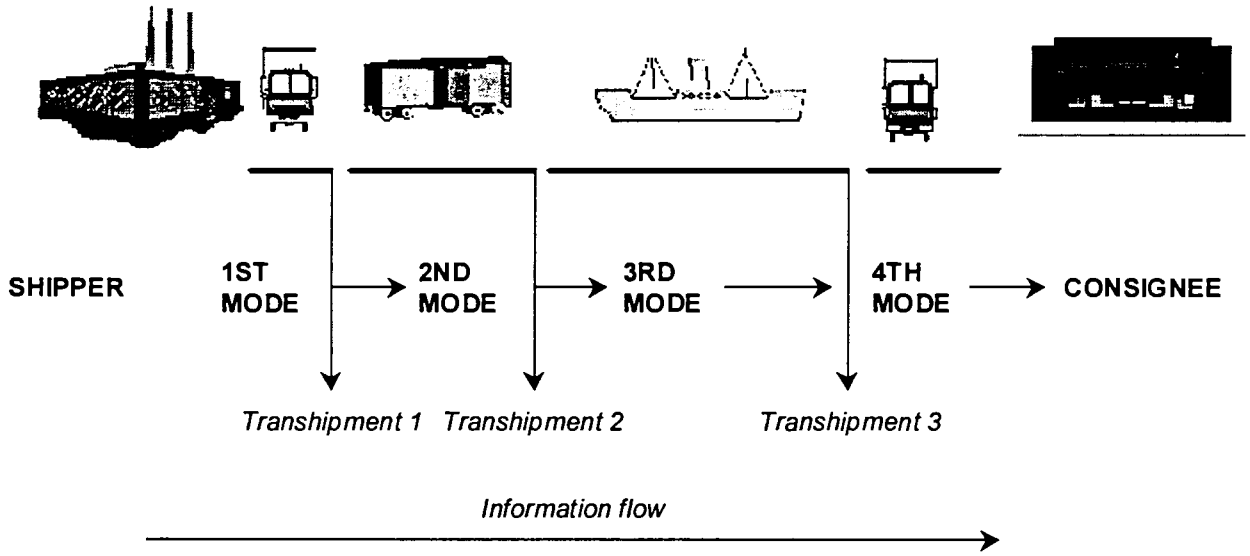
The promotion and development of intermodal transport is an important element of the Common Transport Policy.

The aim of intermodality is to combine the strong points of transport in the best possible way. Intermodality is a characteristic of a transport system that allows different modes to be used in an integrated manner in a door to door transport chain (COM (97) 243 dated 29th May 1997)[1]. This integrated approach focuses on the interlinkages between modes. Road, inland waterway, rail and other modes have in the past in many cases been developed independently. There is therefore a growing need for statistical data on intermodal transport. This need is explicitly referred to in the 1997 Communication from the Commission entitled "Intermodality and intermodal freight transport in the European Union".

Knowledge and understanding of mobility patterns, transport logistics and the evaluation of the impacts of different policy options on transport demand have to be based on reliable statistical data.

On long distance transport, each consignment generally uses different modes of transport or the same mode with transhipments (short haulage, then long haulage) between the first place where it is loaded and its final destination. A transport is considered as intermodal when different modes of transport are involved in the transport of a consignment. The following scheme illustrates an intermodal transport chain, as well as the corresponding information chain.

Example of a transport chain



[1] EU and ECMT define intermodality by two different concepts:
According to the COM (97) 243 (dated 29th May 1997) of the European Commission on intermodality and intermodal freight transport, intermodality is "a characteristic of a transport system, that allows different modes to be used in an integrated manner in a door to door transport chain".

According to the ECMT, intermodal transport is "the movement of goods in one and the same loading unit or vehicle which uses successively several modes of transport without handling of the goods themselves in changing modes". According to that definition, intermodal statistics concern unitised and combined transport.

Executive summary

This is the first effort to collect existing intermodal data in one publication.

A difficult conceptual problem: The construction of intermodal transport statistics (according to the transport chain definition) raises a difficult conceptual problem because every single consignment is shipped by a specific transport chain. Moreover, the mix of transport modes and the various transhipment nodes makes it difficult to set-up intermodal transport statistics on a European scale. Statistical observation is also difficult because spatial aspects are often outweighted by economic considerations (trade between two adjacent regions is often routed via distant national hubs to consolidate dispersed flows in an efficient way). Due to the scarcity and weakness of existing transport chain statistics, the current publication focuses essentially on the unitised and combined transport, which is only one part of intermodal transport. However, in the long run, this publication will focus increasingly on data dealing with the transport chain concept.

Looking at the scheme of the previous page representing a typical transport chain, it is significant that most data currently available are dealing with only one link of each transport chain (eg one mode or one combination of modes as rail-road for example) or with one node (for example the containerised traffic from/to a port).

Main users: The main potential users of this publication are the policy makers and statisticians at EU and Member States level, as well as the thousands of operators involved in the intermodal transport and logistics operations in the EU15 (shippers, forwarders, transport operators).

Sources of information: Several sources were used to prepare this publication, the main ones being: European Commission Directorate-General VII, Eurostat, ECMT, UNO, UIC, UIRR, ICF (Intercontainer-Interfrigo), the Containerisation Yearbook, the Institute of Shipping Economics and Logistics (Germany), the "Direction des Ports et de la Navigation Maritime", various port authorities, the European Federation of Inland Ports (EFIP). Data from FP4 research projects (IQ, IMPULSE) were also used, as well as from private data providers (NEA, MDS Transmodal). Details about all these sources are provided in appendix. Estimates have been used to a certain extent when no data has been available.

Transport chains: It is estimated that in 1992, the land-land transport chains represented 94% of the total continental freight traffic in Europe, with a strong predominance of unimodal road transport, which makes about 90% of all land - land transport. As far as intercontinental freight traffic is concerned, 88% of the total traffic was realised with sea-land transport chains.

Statistics on transport chains are more and more difficult to set up. The implementation of the internal free market within the European Union had major consequences on the transport statistical system. Concerning intra-community trade, the disappearance of the single administrative documents led to a loss of information. The introduction of the INTRASTAT system has led to the disappearance of the domestic mode of transport, of the nationality of the border-crossing mode and the mode of appearance at border, as well as the country of first origin or last destination.

Unitised rail transport: Unitised rail transport amounted to 8 million TEU in 1996. The total amount of unitised transport in that year was estimated to 140 - 145 million tonnes and 50 billion tonne-kilometres.

The railway companies and their subsidiaries originally concentrated their efforts on the maritime container business. In addition to mainly domestic marketing companies such as Compagnie Nouvelle de Conteneurs (France) and Transfracht (Germany), the European railway companies jointly formed Intercontainer, which became later Intercontainer-Interfrigo (ICF). Operating in competition with the hauliers and freight forwarders in the European inland transport, the container companies offer shippers the entire combined transport chain for land containers. The total traffic declared by ICF members of EU-15 and Swiss railways reached 1.35 Mio TEUs in 1996. Considering the railway of origin, D-Bahn, FS and SNCF performed almost 50% of the total ICF traffic (expressed in TEU).

Moreover, some combined transport companies structured on cooperative lines, that is freight forwarders, road hauliers and their organisations have come together in the "Union Internationale des sociétés de transport combiné Rail-Route" (UIRR). The UIRR companies organise and market terminal-to-terminal services by rail. Seven origins - destinations make 64% of this total, involving principally Germany, Italy, Austria, Greece and to a smaller extent Belgium, By country of origin, the share of Italy is 35%, Germany 29.8%, Austria 11.6%, Belgium 10.6% of the total tonne-kilometres.

There are also a number of other private hauliers who, in parallel with the groups of providers referred to above, operate combined-transport services on their own account either on certain routes or for specific categories of goods, eg chemicals and liquid products requiring tanker transport. Such operators also offer combined transport train capacities to third parties on the market. These private operators have increased significantly their market share during the last three years.

Combined transport: The most common form of combined transport is transport with containers, swap bodies and semi-trailers. This unaccompanied transport, in which only the loading units are transported by rail, has a market share of around 80%. If transport of maritime containers by inland rail is included, the share is as high as 90%. In 1997, the share of swap-bodies and containers reached 71% of all consignments carried by UIRR members. Conversely, the share of semi-trailers decreased from 18% in 1992 to 10% in 1997. The accompanied transport maintained its position.

Unitised transport by sea: The 31.2 million TEUs loaded and unloaded in EU ports represent 1/7 of the cargo handled in EU ports. The traffic of UK, Dutch and German ports accounted for 48% of the total EU traffic in 1996. Total container port-traffic in EU-15 increased by 45% between 1992 and 1996. The relative growth of container traffic was particularly impressive in the Spanish (+94%), Italian (+216%) and Finnish (+94%) ports during the period 1992/96. Rotterdam, Hamburg and Antwerp account for 1/3 of the containers transported in EU ports in the year 1997. The container transport of some Mediterranean container ports grew quickly during the three last years. The ports are Barcelona, Genoa, Algeciras and the new container port of Gioia Tauro (since 1997 the biggest container port of Italy with 1,4 Mio TEU).

Unitised transport on inland waterways: Around two million TEUs per year are transported on the EU inland waterways. The share of hinterland traffic of the ports of Rotterdam (Rhine corridor) and Antwerp as well as the Rotterdam-Antwerp feeder traffic is more than 90% of the total fluvial traffic in the EU. Container traffic on the Rhine increased annually by 20 % in the 1980s and by 7 % in the 1990s.

Unitised transport by air: The four main airport-platforms, Frankfurt, Schiphol, Heathrow and Charles de Gaulle, represented 35% of the freight tons transported by the 25 largest airports in the EU in the year 1996. The freight transport of East Midlans increased from 11 thousand to 105 thousand tons between the years 1992 and 1996. During this period the increase of the total transport of these airports was 40%. Freight transport of Luxembourg airport increased by 85%, London Stansted by 99% and Oostende by 113% between the years 1992 and 1996. Freight transport of the UK airports of Gatwick and Manchester grew between the years 1994 and 1996 due to the role of these airports in the decongestion of the airports of the the London area. The freight traffic of the airport of Milano Malpensa decreased by more than 20% during these years due to traffic congestion problems. As a whole, the freight traffic of the 25 largest airports increased by 14% between the years 1994 and 1996.

TRANSPORT KEY DATA RELATED TO INTERMODAL TRANSPORT

Total EU transport traffic (billion tkm, 1996)		2,640
of which:	- road	44%
	- rail	8%
	- inland waterway	4%
	- sea (intra-EU)	41%
	- pipe-line	3%
Total goods transport growth (1970-1996)		2,6% per year
Total unitised traffic (Mio TEU, 1996)		
	- by EU railways	8.2
	- on inland waterways	2
	- on roads	n.a
	- by sea (containers (loaded +unloaded) in ports)	30.5
Total unitised traffic (Mio tonnes, 1996)		
	- by EU railways	140/145
	- by air (major EU airports traffic)	7.6
	- on inland waterways	n.a
	- on roads	n.a
	- by sea (containers (loaded +unloaded) in ports)	240
Total unitised traffic (Mio tkm, 1996)		
	- rail	53,70
	- road	n.a
	- inland waterway	4,7
Total unitised traffic growth (1994-1996, UIRR members)		31% (in tonnes)
Unitised traffic (% of total tkm transported by each mode)		
	- rail	30%
	- inland waterway	n.a
	- road	n.a
	- air	>90%
Inland traffic of maritime containers (Mio TEU, 1996)		21.3
	- rail	16.9%
	- inland waterway	8.9%
	- road	73.2%
Rail-sea (bimodal) traffic		8,824 wagons
Road-sea (bimodal) traffic		12,254 trucks
Share of combined transport technologies (by UIRR members, 1997)		
	- semi-trailers	10%
	- accompanied transport	19%
	- containers and swap-bodies	71%

Sources : Eurostat, UIC, UIRR, ICF, Sofres estimates, DGVII.

GENERAL SITUATION AND TRENDS OF TRANSPORT IN EUROPE

Table 1.1

Transport in EU-15 by kind of commodities
Year 1997
Unit : % of tkm, except specifically indicated

	Road	Rail	Inland Waterway	Sea (intra-EU)	Pipe-lines	Total
Total EU-15 (billion tkm)	1,100	220	110	1070	90	1,920
%	44%	8%	4%	41%	3%	100%
(Breakdown in %)						
*Agricultural products (0,1) **	29	13	13	n.a	0%	25
*Coal, other solid mineral fuels (2) **	1	12	12	n.a	0%	4
*Petroleum and petroleum products (3) **	5	8	19	n.a	100%	6
*Iron ore, steel, other metal products (4,5) **	8	20	18	n.a	0%	11
*Cement, building materials (6) **	19	11	25	n.a	0%	18
*Chemicals, fertilizers (7,8) **	9	11	10	n.a	0%	10
*Machinery, manufactured articles (9) **	29	25	3	n.a	0%	26
All goods	100	100	100	-	100	100

(*) NST/R classification groups in brackets

Source : DG VII / Eurostat

(**) Data by groups of goods refer to EU12, 1992

The total number of freight transport tonne-kilometres was 1,920 billion in the EU15 in the year 1995. The share of road transport was 58%, while the share of rail transport was 11%.

Agricultural products and manufactured articles including machinery accounted for more than 50% of the total tonne-kilometres transported by inland modes of transport. Machinery and manufactured articles are partly transported by containers. Other kinds of commodities are mainly transported in bulk. The majority of freight tonnes are transported short distances. In 1992 60% of the freight transport in tonnes involved distances of less than 50 km and 81% less than 150 km. Thus, a majority of goods transported is far below the threshold of 300 to 400 km commonly admitted as the limit under which intermodal transport is not competitive. The current EU policy aims at supporting technological and logistical improvements in order to reduce this threshold.

Table 1.2

External trade EU-15
Year 1996
Unit: billion ECU

	EXPORTS to									IMPORTS from								
	Total Export	EU-15		PECO		Mediterr. Countries		USA		Total Import	EU-15		PECO		Mediterr. Countries		USA	
B+L	138,9	106,4	77%	2,7	2%	5,3	4%	5,8	4%	130,8	95,2	73%	1,6	1%	2,9	2%	8,9	7%
DK	40,1	27,0	67%	1,4	3%	0,7	2%	1,6	4%	35,5	25,2	71%	1,0	3%	0,3	1%	1,6	5%
D	410,7	234,6	57%	29,1	7%	16,7	4%	31,5	8%	359,1	215,6	60%	23,3	6%	12,5	3%	20,5	6%
EL	8,9	4,6	52%	1,1	13%	1,9	21%	0,4	4%	21,3	13,3	63%	0,8	4%	1,3	6%	0,7	3%
E	80,8	54,0	67%	1,4	2%	4,3	5%	3,3	4%	89,7	60,9	68%	0,9	1%	3,5	4%	5,0	6%
F	240,3	149,7	62%	5,3	2%	13,2	5%	14,6	6%	231,0	156,7	68%	3,4	1%	8,6	4%	15,2	7%
IRL	37,8	26,9	71%	0,4	1%	0,6	1%	3,5	9%	27,4	18,3	67%	0,2	1%	0,2	1%	3,9	14%
I	197,8	109,2	55%	11,5	6%	15,6	8%	14,4	7%	163,1	99,3	61%	6,7	4%	11,0	7%	8,0	5%
NL	160,3	129,3	81%	3,2	2%	3,4	2%	5,0	3%	150,2	92,0	61%	2,6	2%	2,7	2%	12,6	8%
A	45,9	29,4	64%	6,2	14%	2,2	5%	1,5	3%	54,0	40,1	74%	4,4	8%	1,5	3%	1,8	3%
P	18,8	15,0	80%	0,1	1%	0,3	2%	0,9	5%	26,9	20,3	76%	0,1	1%	0,6	2%	0,9	3%
FIN	32,4	17,7	54%	2,2	7%	0,6	2%	2,6	8%	24,7	16,2	65%	0,8	3%	0,1	0%	1,4	6%
S	66,8	38,1	57%	2,2	3%	1,6	2%	5,5	8%	52,6	36,1	69%	1,3	3%	0,3	1%	3,4	6%
UK	203,7	117,4	58%	3,9	2%	6,3	3%	23,8	12%	227,7	124,1	55%	2,8	1%	4,0	2%	28,8	13%
EU-15	1 683,1	1 059,2	63%	70,7	4%	72,7	4%	114,3	7%	1 594,0	1 013,2	64%	50,0	3%	49,5	3%	112,6	7%

PECO = Central and Eastern European Countries

Source: DG VII - Eurostat

Mediterranean Countries = Gibraltar, Malta, ex Yugoslavia, Turkey, Albania, Ceuta and Melilla, Morocco, Algeria, Tunisia, Libya, Egypt, Cyprus, Lebanon, Syria, Israel and Jordan

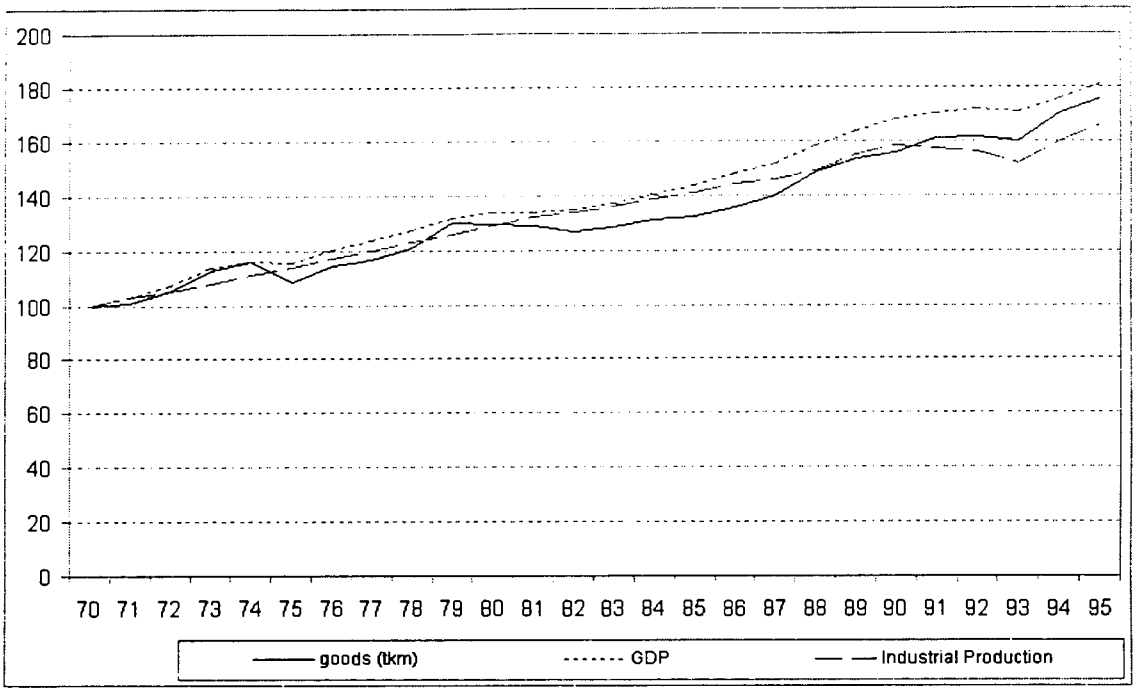
The total value of exports of the EU-15 Member States was 1,683 Billion ECU in 1995. The figure includes the intra-EU exports from Member State to Member State. The share of export between Member States is 63% of the total exports.

For extra-EU exports, the share of exports to the USA was the largest one, 7% of the total. The value of exports to the Central and Eastern European Countries and to the Mediterranean countries was 4% of the total for both destinations.

As for imports, the structure is roughly the same. The other importing zones of the world, not indicated in the table, make 22% of the total value of the EU exports and 23% of that of EU imports.

The share of Germany, France, Italy and the UK of the total EU-15 exports is 63%.

Chart 1.3 **Growth of transport, gross domestic product and industrial production**
1970 – 1995
Unit: tkm and ECU



Source: DG VII - Eurostat

The average growth rate of freight transport (in tkm) and GDP was 3.5% per year during the period 1970-1995.

Table 1.4 **Share of each mode of the total inland transport**
Year 1997
Unit: tkm in %

	Road	Rail	Inland waterway	Pipelines
B	70.4	14.6	12.0	3.0
DK*	73.2	8.1	0.0	18.7
D	67.1	16.1	13.8	2.9
EL*	98.1	1.9	0.0	0.0
E	84.2	10.1	0.0	5.7
F	74.4	16.9	1.8	6.9
IRL	91.3	8.7	0.0	0.0
I	85.1	9.4	0.1	5.4
L*	68.7	20.5	10.8	0.0
NL*	47.0	3.6	42.8	6.7
A	38.2	37.0	5.1	19.7
P*	85.7	14.3	0.0	0.0
FIN	71.0	27.6	1.4	0.0
S	63.4	36.6	0.0	0.0
UK	84.8	9.1	0.1	6.0
EU-15	**73.2**	**14.4**	**7.2**	**5.2**

(*) Modal Split based on national and international road traffic of vehicles registered in the country *Source: DG VII - Eurostat*

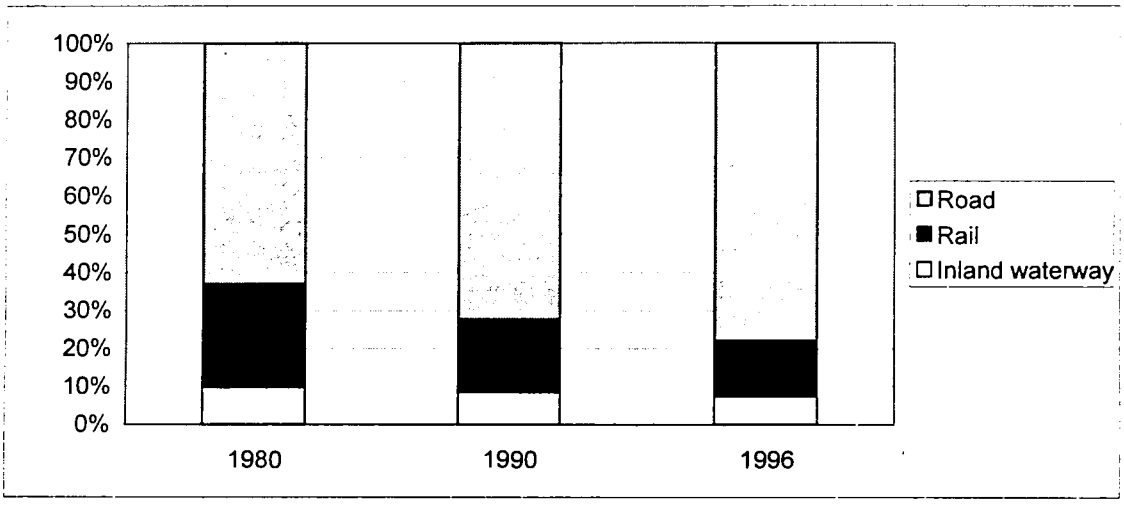
In all Member States; except Austria, the share of road transport of the total inland transport exceeds 50%.

In Ireland and Greece the share of road transport is more than 90%. These countries have no inland waterways transport and the share of rail freight transport is small. In the Netherlands the use of inland waterway has been maximised and the share of this mode is 42.8%. Also in Germany inland waterway transport has a significant share. Luxembourg, Austria, Finland and Sweden are the EU countries where rail transport is important.

Chart 1.5 **Evolution of the modal split for inland goods transport in EU-15**

1980-1996

(% of tkm)



The share of road transport of the total inland freight transport has increased continuously - from 58% to 74% - during the last 16 years. This has led to road capacity and safety problems.

Intermodal transport policy is aiming essentially at promoting the use of combined and multimodal freight transport instead of the use of monomodal road transport.

Transport infrastructure

Table 2.1 **Road network: length of motorways at the end of the year**
1970 – 1996
Unit: km

	B	DK	D (-W)	D-E	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	EU15	index 1970=100
1970	488	184	4 461	1 600	11	387	1 553	0	3 913	7	1 209	439	66	108	403	1 073	**15 902**	100
1980	1 192	516	7 538	1 687	91	1 933	5 264	0	5 900	44	1 773	869	132	204	850	2 573	**30 566**	192
1990	1 666	601	8 959	1 850	190	4 425	6 824	26	6 185	78	2 092	1 470	318	225	939	3 181	**39 029**	245
1991	1 650	653	10 955	D	225	5 065	7 080	32	6 214	84	2 118	1 532	474	249	968	3 211	**40 510**	255
1992	1 667	706	11 013	D	280	6 209	7 408	32	6 289	95	2 134	1 554	519	318	1 005	3 246	**42 475**	267
1993	1 686	747	11 080	D	330	6 577	7 614	50	6 401	100	2 150	1 567	579	334	1 044	3 252	**43 511**	274
1994	1 665	786	11 143	D	380	6 485	7 956	56	6 401	121	2 167	1 589	587	388	1 141	3 286	**44 151**	278
1995	1 666	830	11 190	D	420	6 962	8 275	70	6 401	123	2 300	1 596	687	394	1 231	3 308	**45 453**	286
1996	1 674	880	11 300	D	470	7 293	***8 300***	80	6 439	115	2 360	1 607	710	431	1 330	***3 344***	**46 333**	291

Estimates in bold italic D : included in D(-W) *Sources : EUROSTAT, IRF, National Statistics*

The construction of the main highway axes occurred during the period 1970-1990. In the 1990s more than 70% of the total EU motorways are in Germany, France, Spain and Italy.

After that the extension of the highway network has been rather slow with the exception of Spain and France. In Spain the length of motorways increased by almost 3000 kilometres during the 1990s. This explains a large part of the total EU-15 increase of the network during this period.

Table 2.2

Rail network: length of lines
1970 – 1996
Unit: km

	B	DK	D(-W)	D-E	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	EU-15	index 1970=100
1970	4 232	2 352	29 527	14 250	2 571	13 668	36 117	2 189	16 069	271	3 148	5 907	3 591	5 870	11 550	19 691	**171 003**	100
1980	3 978	2 015	28 517	14 248	2 461	13 542	34 382	1 987	16 133	270	2 760	5 847	3 588	6 096	11 382	18 490	**165 696**	97
1990	3 479	2 344	26 950	14 031	2 484	12 560	34 260	1 944	16 086	271	2 798	5 624	3 592	5 867	10 801	17 406	**160 497**	94
1993	3 410	2 349	40 369	D	2 484	12 601	32 579	1 944	15 942	275	2 757	5 600	3 062	5 885	9 476	16 996	**155 729**	91
1994	3 398	2 306	41 355	D	2 464	12 646	32 275	1 944	16 002	275	2 757	5 636	2 699	5 880	9 661	16 998	**156 296**	91
1995	3 368	2 349	41 719	D	2 474	12 280	31 939	1 947	15 998	275	2 739	5 672	2 850	5 880	9 782	17 026	**156 298**	91
1996	3 380	2 349	40 826	D	2 474	12 284	31 852	1 945	16 014	274	2 739	5 672	2 850	5 881	10 923	17 128	**156 591**	92

of which, % electrified :

1996	73%	17%	45%	D	0%	56%	45%	2%	64%	95%	73%	60%	22%	35%	68%	30%	**47%**

Main railway gauge and electric current used :

mm	1435	1435	1435	1435	1435	**1668**	1435	**1600**	1435	1435	1435	1435	**1668**	**1524**	1435	1435
dc volts	3000	3000				3000	1500	1500	3000		1500					
ac volts		25000 50Hz	15000 16.7Hz	15000 16.7Hz			25000 50Hz			25000 50Hz		15000 16.7Hz	25000 50Hz	25000 50Hz	15000 16.7Hz	25000 50Hz

D : included in D(-W) 1435 mm = standard gauge *Source : UIC, data for UIC member railways*

With 40,000 and 32,000 km of railway lines respectively, Germany and France have by far the most extended railway networks in the EU-15.

Contrary to the highway network, railway network has decreased during the 1970's and the 1980's. After that period the length of the UIC rail network in the EU has been around 156 000 km, of which 47% is electrified. Electrification of the railway lines is particularly high in the Benelux countries. The length of the railways of the non-UIC members is around 10 000 km.

The disparities of railway gauges and electric current used affect negatively the efficiency of international rail freight. Spain, Portugal, Finland and Ireland do not have the same gauge as the other EU countries. The electrification of lines is an important characteristic of the combined transport network. In some countries there are line sections used for combined transport which still remain unelectrified. This is problematic since it makes a change of the locomotive necessary. For example in Spain out of the 107 combined transport trains for 20 the locomotive has to be changed at least once during transport. The structure gauge is a major constraint in Ireland and Great Britain, where low platform wagons are needed to allow for units to be carried on trains. Greece has also small structure gauges. On the other hand, there are national networks with large structure gauges such as Finland, Sweden, Denmark, the Netherlands, most of Belgium, most of Germany and most of Austria.

Table 2.3 Inland waterway network: length in use of navigable canals, rivers and lakes

1970 – 1996

Unit: km

	B	D(-W)	D-E	DK	E	F	EL	I	IRL	L	NL	A	P	FIN	S	UK	EU-15	index 1970=100
1970	1 553	4 508	***2 300***	-	-	7 433	-	2 337	-	37	5 599	350	-	***6 000***	na	2 351	**32 468**	100
1980	1 510	4 395	2 302	-	-	6 568	-	2 337	-	37	4 843	350	-	6 057	na	2 351	**30 750**	95
1990	1 513	4 350	2 319	-	-	6 197	-	***1 366***	-	37	5 046	351	-	6 160	na	2 351	**29 690**	91
1991	1 513	7 341	D	-	-	5 951	-	1 366	-	37	5 046	351	-	6 160	na	2 353	**30 118**	93
1992	1 513	7 341	D	-	-	5 867	-	1 466	-	37	5 046	351	-	6 120	na	2 353	**30 094**	93
1993	1 513	7 681	D	-	-	5 825	-	1 466	-	37	5 046	351	-	6 120	na	2 353	**30 392**	94
1994	1 513	7 681	D	-	-	5 703	-	1 466	-	37	5 046	351	-	6 120	na	2 353	**30 270**	93
1995	1 513	7 343	D	-	-	5 962	-	1 466	-	37	5 046	351	-	6 120	na	2 353	**30 191**	93

Estimates in bold italics -: nil D : included in D(-W) Sweden: data not available (na) *Source : EUROSTAT , UN*

Underlined : change in time series

The total length of inland waterways remained quite stable during the last fifteen years in all countries, with a total of about 30,000 km.

The network is particularly developed in Germany, the Netherlands, France and Finland. However, it is only in the first two countries that the loading gauge is sufficiently high to allow very high annual tonnages to be transported. In Denmark, Ireland, Greece, Spain and Portugal there are no inland waterway networks with significant freight traffic.

Table 2.4 Inland waterway main container ports: classes of network and their characteristics

Waterway	Port	Country	Class
Danube (RMD canal)	Krems	A	VI *
Danube (RMD canal)	Linz	A	VI *
Danube (RMD canal)	Linz-Voest	A	VI *
Danube (RMD canal)	Wien	A	VI *
Maas / Meuse, Canal Albert	Liège	B	V
Rhine	Bonn	D	V
Danube (RMD canal)	Deggendorf	D	VI *
Rhine	Duisburg-Ruhrort	D	VI
Rhine	Düsseldorf	D	V
Rhine	Emmerich	D	VI
Main	Frankfurt	D	V
Rhine	Germersheim	D	V
Rhine	Homberg	D	VI
Rhine	Karlsruhe	D	V
Rhine	Kehl	D	V
Rhine	Koblenz	D	V
Rhine	Köln	D	V
Rhine	Krefeld	D	V
Rhine	Leverkusen	D	V
Rhine	Ludwigshafen	D	V
Rhine	Mainz	D	V
Rhine	Mannheim	D	V
Rhine	Neuss	D	V
Danube (RMD canal)	Regensburg	D	VI *
Rhine	Wesel	D	VI
Rhine	Woerth	D	V
Guadalquivir	Sevilla	ES	VI
Saône	Chalons	F	VI
Seine	Le Havre	F	VI
Saône	Lyon	F	VI
Saône	Mâcon	F	VI
Seine	Paris (Genevilliers)	F	VI
Seine	Rouen	F	VI
Rhine	Strasbourg	F	V
Saône	Villefranche	F	VI
Danube (RMD canal)	Baja	HU	VI
Danube (RMD canal)	Budapest	HU	VI
Mass / Meuse	Born	NL	V
Waal	Nijmegen	NL	V
Mass / Meuse	Oss	NL	V
A'dam-Rhein-Kanal	Utrecht	NL	VI
Danube (RMD canal)	Reni	RO	VI
Danube (RMD canal)	Bratislava	Slo.	VI
Danube (RMD canal)	Komarno	Slo.	VI
Rhine	Basel	CH	V

(*) Other sources indicate IV

Source: IMPULSE project (FP4)

ECMT waterway class	Vessel characteristics (capacity in tonnes)
0	< 250
Ia	250
Ib	300
II	600
III	1,000
IVa	1,500
IVb	2,700
V	3,200
VI	> 10,000

Source: SIMET "Technical Parameters for Inland Containers"

Most of the large inland waterway container ports in the EU are located on the Rhine river.

They are accessible to large vessels (up to 10,000 tonnes capacity). There are in total 39 inland waterway container ports off classes V and VI in Europe (excluding sea ports). The breakdown by country is as follows: Germany: 27, France: 7, Austria: 5, the Netherlands: 4, Belgium: 1, Spain:1.

Table 2.5 **Top container ports: yard gantry cranes / straddle carrier distribution**
Year 1997

Container port	Country	Type of equipment	Number
Antwerp	B	Straddle carrier	166
Bremerhaven / Bremen	D	Straddle carrier	90
Felixstowe	UK	RTG crane	63
Genoa	I	RMG / OHB / crane	14
Giaoa Tauro	I	Straddle carrier	51
Hamburg	D	RMG / OHB / crane	10
Hamburg	D	Straddle carrier	156
La Spezia	I	RMG / OHB / crane	10
Le Havre	F	Straddle carrier	74
Piraeus	EL	Straddle carrier	63
Rotterdam	NL	RMG / OHB / crane	95
Rotterdam	NL	*Straddle carrier*	121
Southampton	UK	*Straddle carrier*	52
Thamesport	UK	RMG / OHB / crane	14

Source: Containerisation International - Hardware Market Analysis

Note : RTG = Rubber-tyred gantry crane
RMG = Rail mounted gantry crane
OHB = Overhead bridge

In total 979 handling cranes and carriers are in operation in the top twelve ports listed above. 78% of them are located in the Belgian, Dutch and German ports.

Table 2.6 Extension of the European combined transport network: Main projects of new lines

Project	Area connected	Details
Betuwe line	Port of Rotterdam / Ruhr Region (Germany)	Length: 160 km, dedicated for freight traffic Double stack on the Dutch section of the line Expected capacity: 150 Mio tonnes / year
NEAT (Neue Alpen Transversable)*	Alpine transit from Germany and France through Switzerland to Italy.	New line Arth-Goldau and Lugano, including the tunnels of St Gotthard (57km) and Mt Cenis (33km) New line between Frutigen region and Steg, including the Lötschberg tunnel (33km)
Brenner axis	Verona (Italy) / München and Nürnberg - Berlin line via Erfurt - Halle and Leipzig: transit through the Alps between Austria and Italy	The line Verona-München includes the construction of a 54 km tunnel under the Brenner, east of the existing one
Lyon-Torino	Link through the Alps between Ambérieu (France) and Torino (Italy)	Includes a base tunnel (54 km) and the Belledone tunnel Mixed passengers (high speed) / freight link
Perpignan-Barcelona	France to Spain	Mixed passenger (high speed)/freight link. European standard gauge.
Sweden-Denmark	Fixed link between Sweden and Denmark	Rail and road access between Copenhagen and the coast: four lane motorway (10km) + double track railway (12km) Oresund fixed link to Malmö (Sweden) : double track railway link + four lane motorway
Fehmarn Belt	Fixed link between Denmark and the German islands of Fehmarn	Would allow continuation of the fixed link between Sweden and Denmark to south of Copenhagen.

(*) Also called "Alptransit"

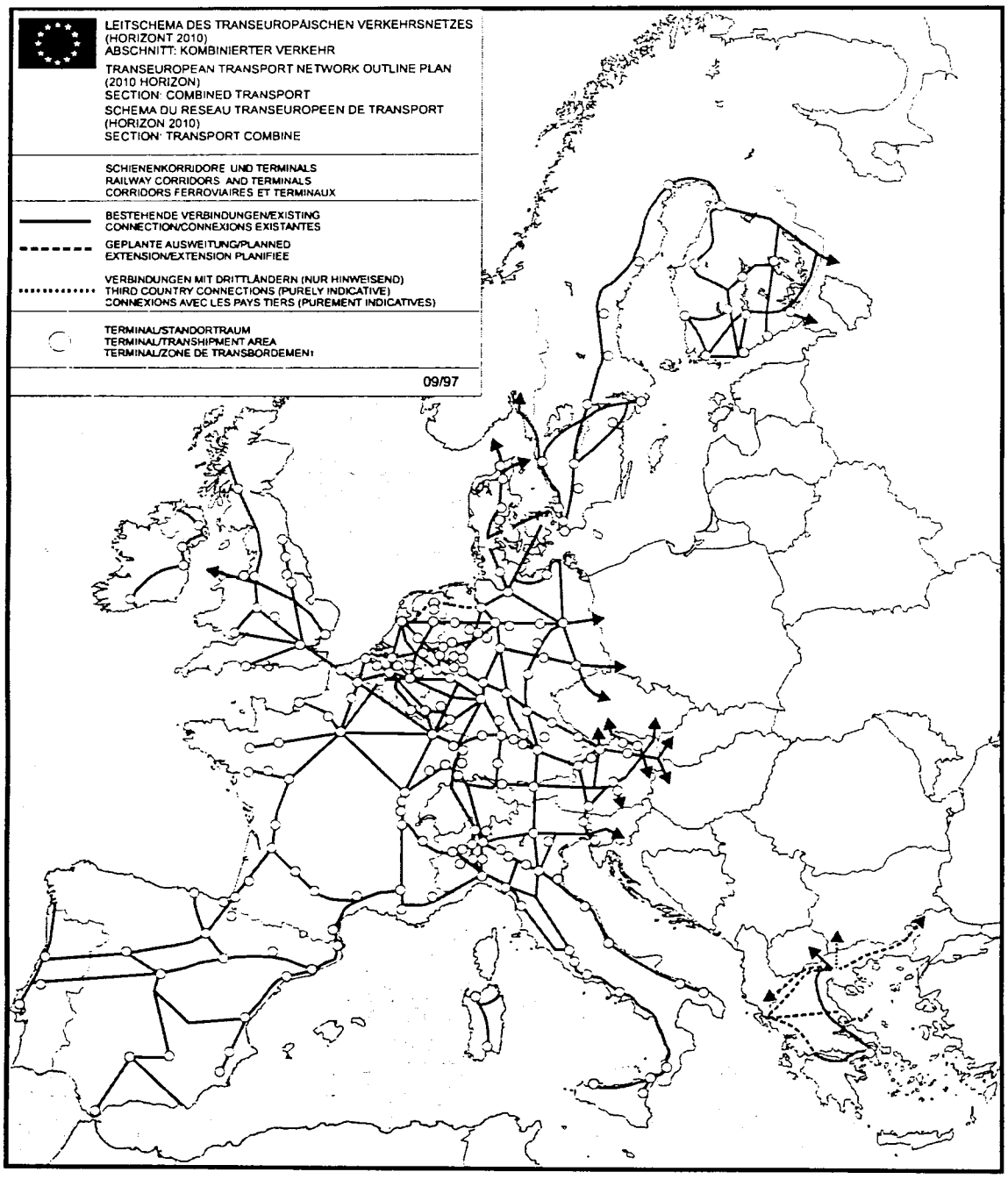
Source: IMPULSE Project FP4

Map 2.7. Trans-European railway corridors and inland waterway network
Time horizon: Year 2010

The maps of the following pages below illustrate the trans-European rail and inland waterways transport network outline plan for the time horizon 2010. They are included in the Commission proposal for the integration of ports and other interconnection points in the trans-European network (COM 681). The proposal has been adopted by the Commission and it is currently being examined by the other European institutions.

Map 2.7.a Trans-European rail network; railways corridors and terminals

7.1.0



Source: DGVII

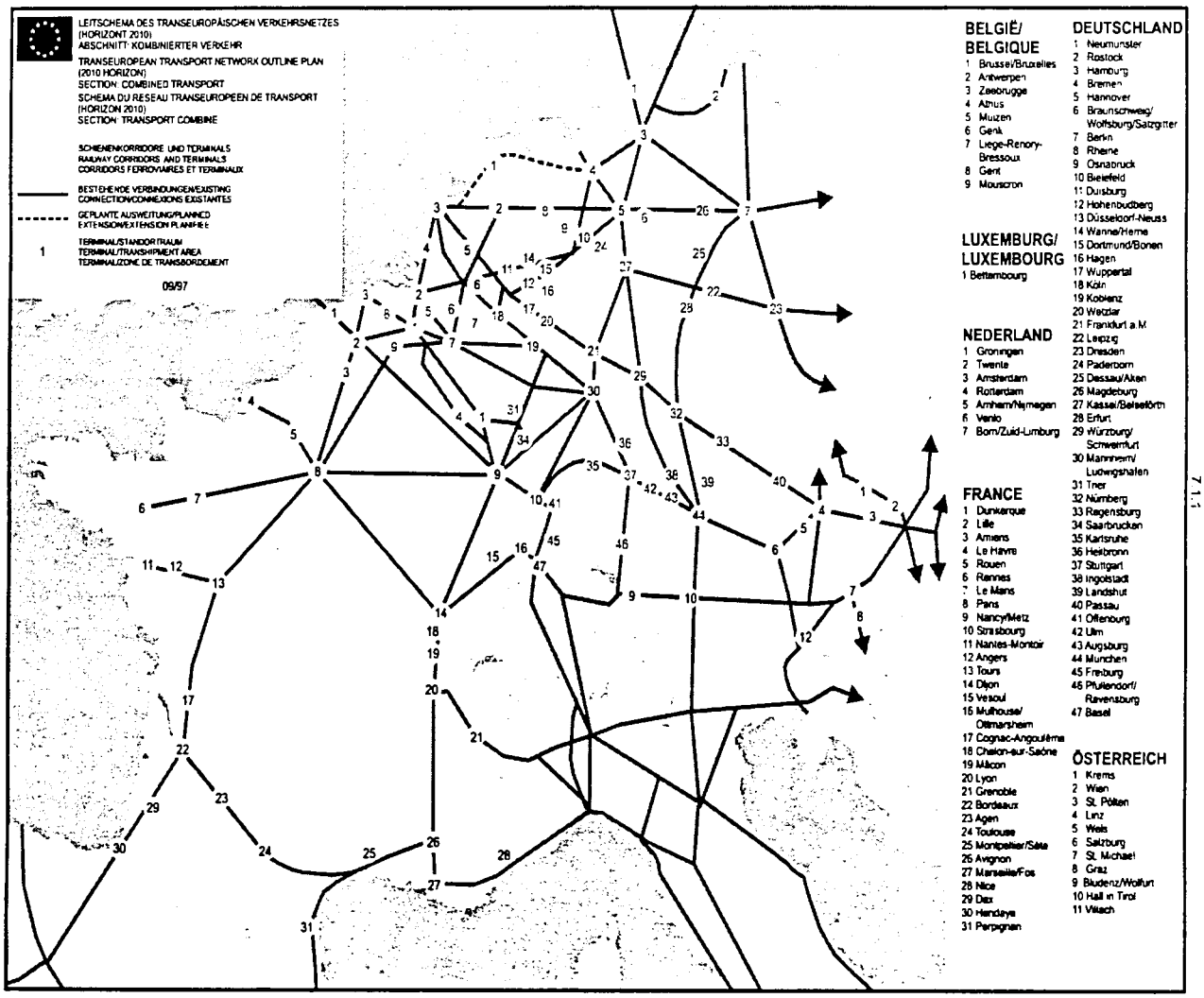
Map 2.7.b

Trans-European railway corridors and terminals in Benelux-countries, Germany, France and Austria

Time horizon: year 2010

The map below shows the trans-European combined transport rail corridors and terminals as well as the planned extensions of the network plan for Belgium, Germany, France, the Netherlands, Austria and Luxembourg. The time horizon is year 2010.

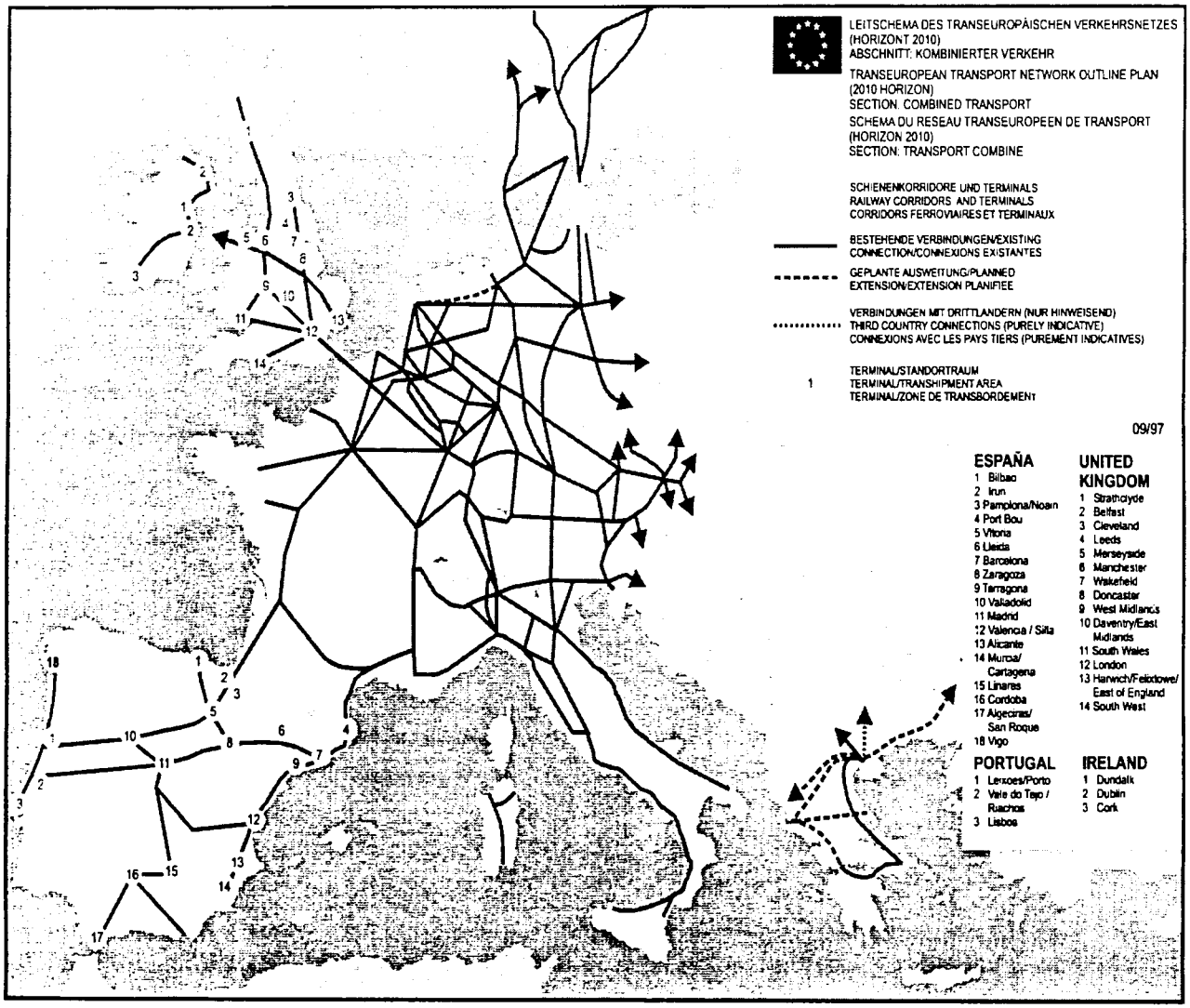
An extension is planned between Bremen through Groningen to Amsterdam.



Map 2.7.c

Trans-European railway corridors and terminals in Spain The United Kingdom, Ireland and Portugal

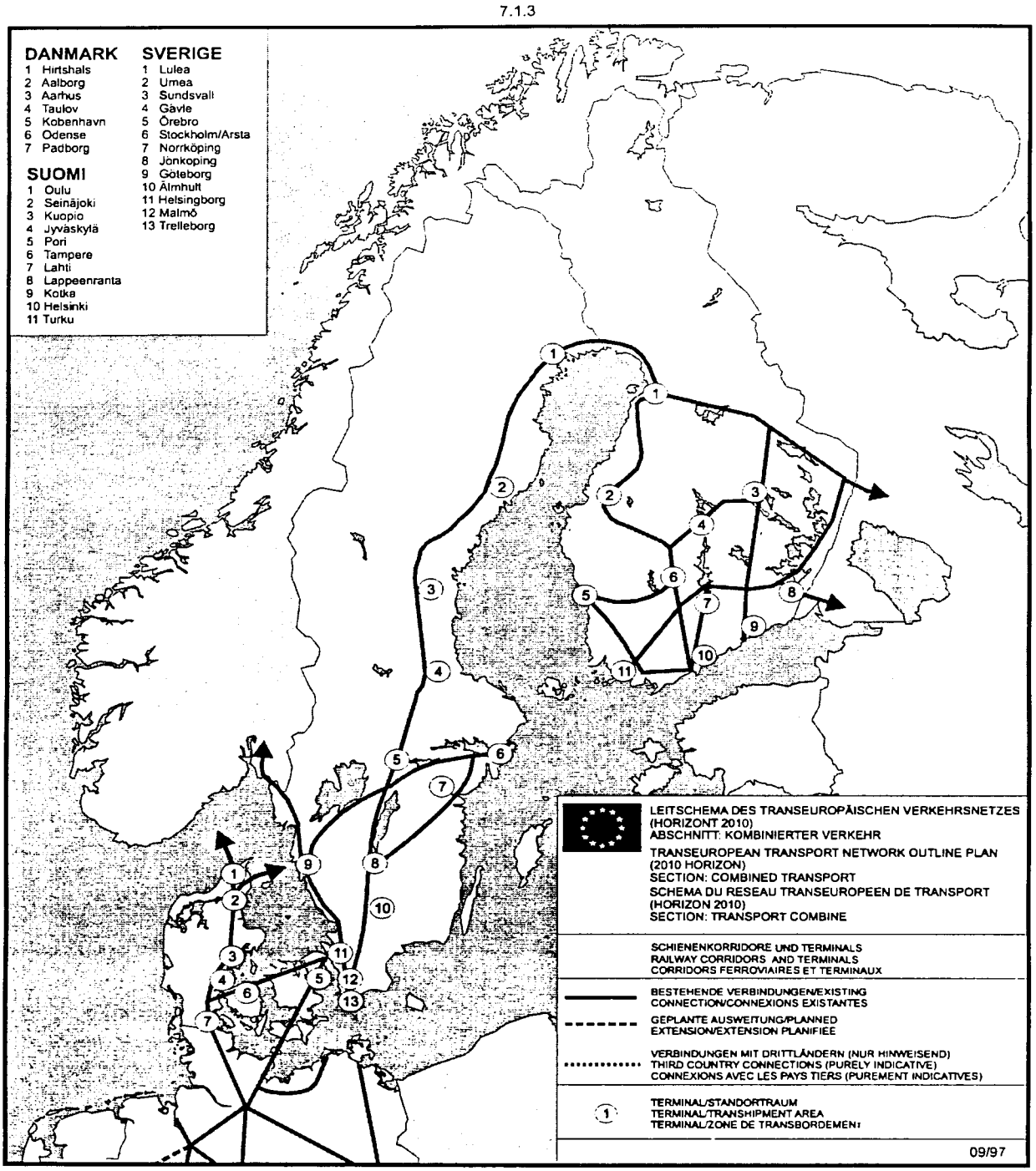
Time horizon: year 2010



Map 2.7.d

Trans-European railway corridors and terminals in Denmark, Sweden and Finland

Time horizon: year 2010



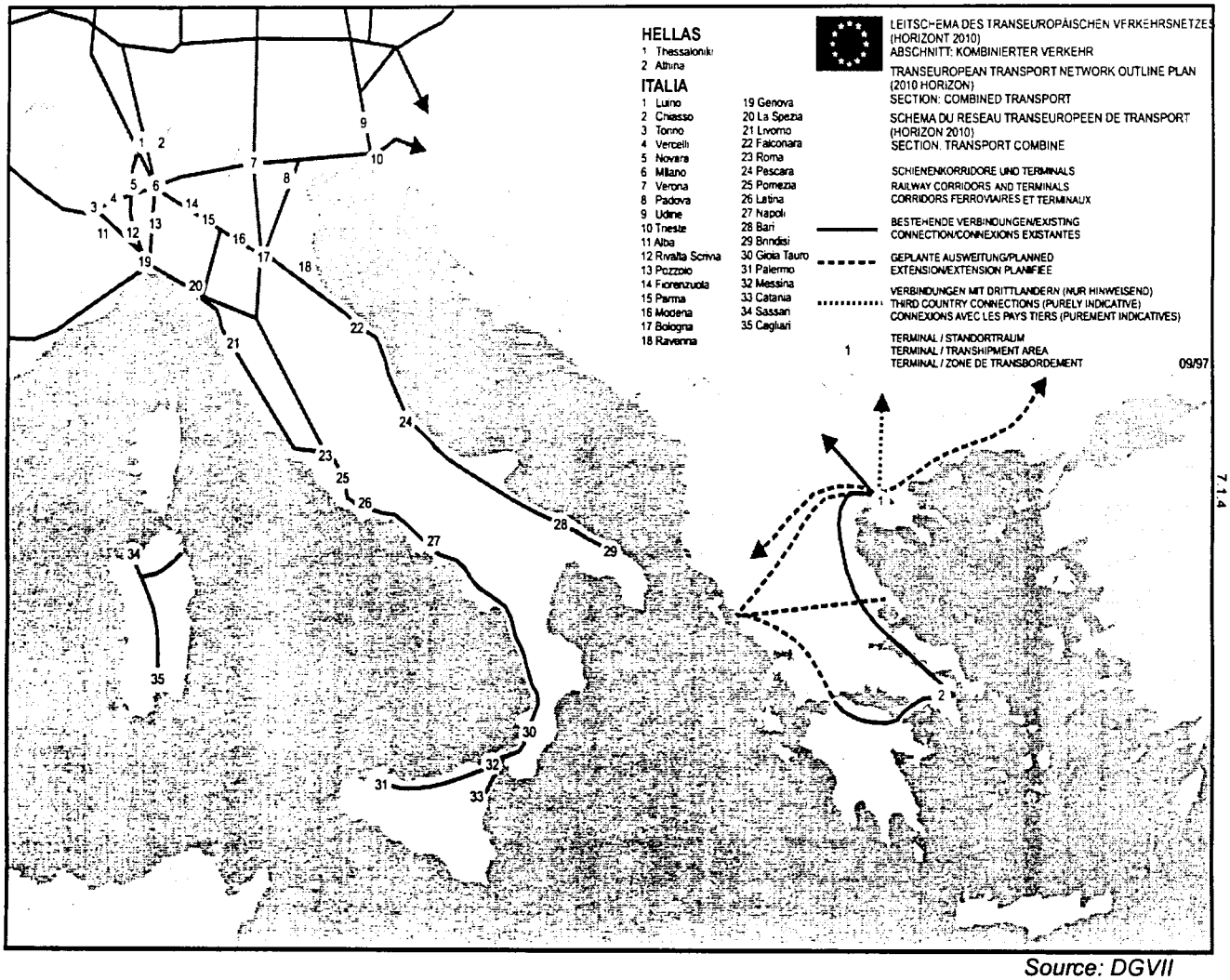
Source: DG VII

Map 2.7.e

Trans-European railway corridors in Greece and Italy

Time horizon: year 2010

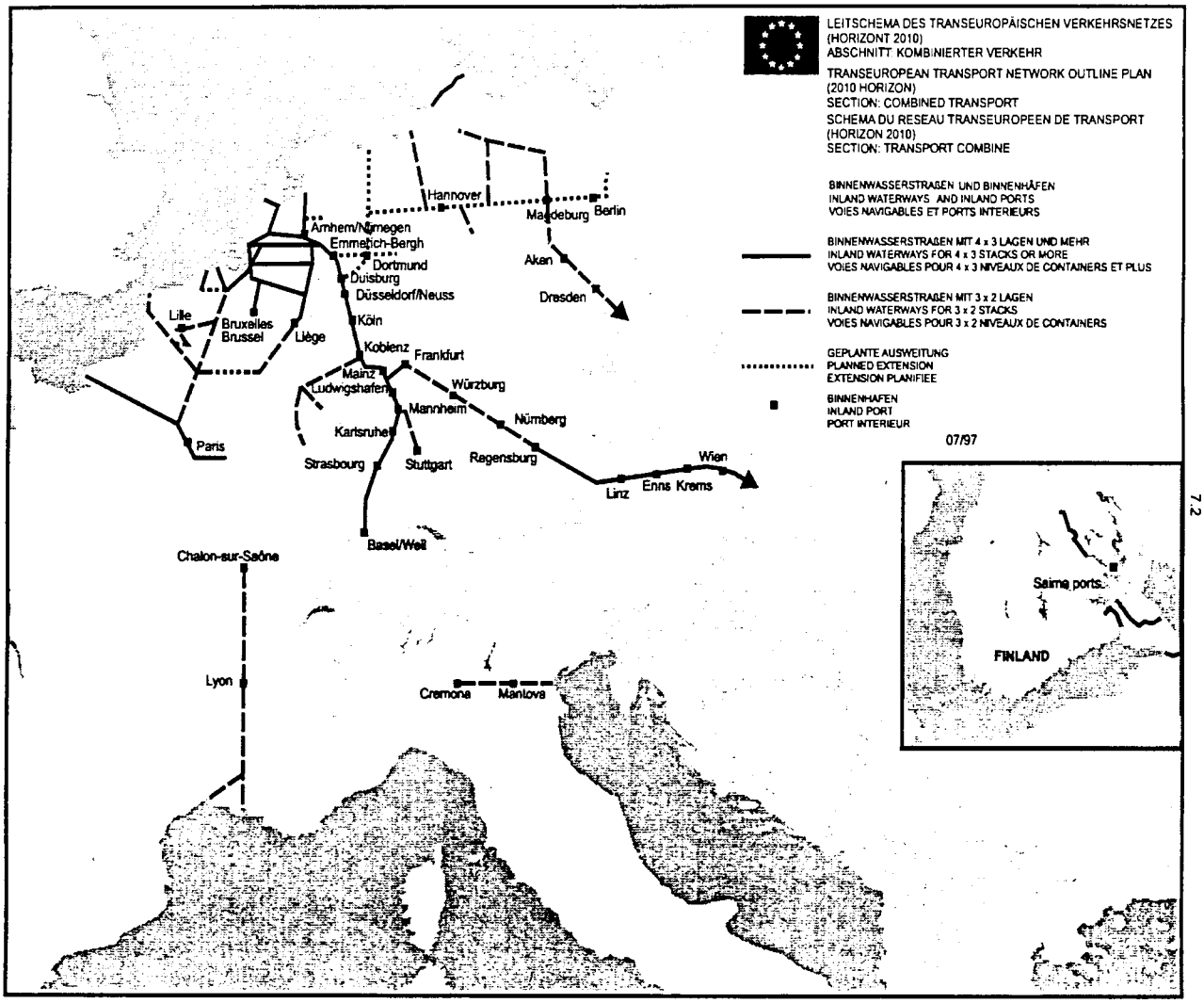
The map below illustrates the combined transport railway corridors and terminals in Greece and Italy. The existing connections are illustrated by a solid line. Extensions are planned in Greece.



Source: DGVII

Map 2.7.f **Trans-European combined transport plan for inland waterways**
Time horizon: year 2010

The map below illustrates the European inland waterways and inland ports. Extensions are planned in Germany as well as in Belgium between Liège and Lille in France.



Transport chains

Table 3.1 **Continental and intercontinental transport chains by type**
1992
Unit: Mio tonnes

Continental transport chains

	Agriculture & Food	Solid fuel, Ores & Minerals	Petrol products	Metal	Chemical	Manufactured good	Total	%
Sea-Sea	**0,5**	**0,3**	**0,05**	**0,1**	**0,2**	**0,5**	**1,65**	**0,02**
Sea-Land	**82,2**	**126,8**	**123,1**	**37,1**	**61,3**	**74,3**	504,8	**6,2**
Sea-Road	36,9	22,8	30,4	9,7	25,7	22,1	147,6	1,8
Sea-Rail	3,9	8,7	5,6	3,8	4,6	2	28,6	0,3
Sea-Inland waterway	4,1	12	13,4	4	4,9	0,4	38,8	0,4
Unknown	37,2	83,3	73,7	19,6	26,1	49,8	289,7	3,5
Land-Land	**1.533,50**	**3.423,10**	**417,1**	**372,8**	**109,5**	**1521,2**	**7.677,30**	**93,8**
Unimodal Road	1.467,80	3.031,50	314,6	275,9	346,1	1446	6.881,90	84,1
Unimodal Rail	44,6	236,5	56,2	88,6	42,5	72	540,4	6,6
Unimodal Inland waterway	18,6	150,4	45,7	6,7	18,4	2	241,8	3
Multimodal	2,5	4,7	0,6	1,6	2,5	1,2	13,1	0,2
Total	**1.616,20**	**3.550,20**	**540,2**	**410**	**471**	**1596**	**8.183,60**	**100,00**
%	**19,7**	**43,4**	**6,6**	**5**	**5,8**	**19,5**	**100,00**	

Intercontinental transport chains

	Agriculture & Food	Solid fuel, Ores & Minerals	Petrol products	Metal	Chemical	Manufactured good	Total	%
Sea-Sea	**6**	**0,8**	**0,8**	**1,5**	**2,4**	**3,9**	**15,4**	**2,4**
Sea-Land	**119,4**	**241,5**	**92,7**	**21,9**	**54,1**	**33**	**562,6**	**88**
Sea-Road	53,1	24,3	21,9	5,1	20,7	14,8	139,9	22
Sea-Rail	3,9	28,8	3,2	1,9	4,6	2,4	44,8	7
Sea-Inland waterway	14,1	53,1	5,5	4,2	7,6	2,2	86,7	13,6
Unknown	48,3	135,3	62,1	10,7	21,2	13,6	291,2	45,5
Land-Land	**15,1**	**16,1**	**9,6**	**3,7**	**9,5**	**7,4**	**61,4**	**9,6**
Total	**140,5**	**258,4**	**103,1**	**27,1**	**66**	**44,3**	**639,4**	**100**
%	**22**	**40,4**	**16,1**	**4,2**	**10,4**	**6,9**	**100**	

Source: NEA Transport Research and Training

According to the estimate of NEA, land-land transport (in 1992) represented 94% of total continental freight traffic in Europe, with a strong predominance of unimodal road transport, around 90% of all land - land transport.

As far as intercontinental freight traffic is concerned, sea-land transport chains account for 88% of the total intercontinental freight traffic.

The tables above illustrate the situation concerning the continental and intercontinental freight flows in 1992, broken down by group of products and by type of transport chain.

These tables reflect the situation which was prevailing in 1992 at the beginning of the Single Market. The implementation of the Single Market within the European Union had major consequences on the transport statistical system. Concerning intra-community trade, the disappearance of the single administrative document led to losses of information. The introduction of the INTRASTAT system has led to the disappearance of the domestic mode of transport, of the nationality of the border-crossing mode and the mode of appearance at border, as well as the country of first origin destination or last origin destination.

Table 3.2 Inland traffic of maritime containers, by country and by inland transport mode
1992 – 1996
Unit: 1000 TEU

Ports in:	1992				1996			
	Road	Rail	Inland Waterways	Total	Road	Rail	Inland Waterways	Total
B + L	1.115	292	292	1.699	1.500	513	526	2.539
DK	273	88	0	361	359	42	0	401
D	1.609	681	40	2.330	1.749	942	64	2.755
EL*	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
E	952	152	0	1.104	1.544	129	0	1.673
F	768	331	0	1.099	1.063	323	18	1.404
IRL	483	84	0	567	665	81	0	746
I	1.433	307	0	1.740	2.694	333	0	3.027
NL	1.672	322	735	2.729	1.807	534	1.342	3.683
P	351	23	0	374	420	32	0	452
UK	3.607	590	0	4.197	3.829	720	0	4.549
TOTAL	**12.263**	**2.870**	**1.067**	**16.200**	**15.630**	**3.649**	**1.950**	**21.229**

** Data not available because of change in definitions*
n.a. : not available
Source: MDS Transmodal

The above table highlights the inland modes used for transport chains having a maritime link. Between 1992 and 1996, the total inland traffic of maritime containers has increased by 31%, from 16.20 million TEU to 21.23 million TEU.

In 1996, road traffic accounted for 73.6% of the total inland traffic of maritime containers. Between the years 1992 and 1996 the transport of maritime containers by road and rail increased roughly 27% and by inland waterways 83%.

The share of rail transport of maritime containers of the total is 34% in Germany. The share of inland waterway transport of the total is 21% in Belgium and 36% in The Netherlands.

The publication "European Container Freight Market: container inland" has been published in 1983, 1988, 1994 and 1998 and contains data for 1982, 1986, 1992 and 1996. MDS provides data relating to the chain of transport by using an in-house econometric model.

Table 3.3 Traffic of manufactured products by transport chain between Cataluna/Ruhrgebiet
1992
Unit: 1000 tonnes

Corridor	Road / Road	Road / Sea	Rail / Road	Rail / Rail	Rail / Sea	Inland nav. / Road	Inland nav. / Sea	Sea / Road	Road	Sea / Inland. nav.	Total
RUHRGEBIET TO CATALUNA											
Transhipment in the Netherlands	-	-	-	-	-	-	-	-	-	-	-
Transhipment in Germany	-	-	-	-	-	-	-	-	-	-	-
Direct	14	-	-	12	-	-	-	-	-	-	26
Unknown	-	-	4	-	-	-	-	-	-	-	4
Total	**14**	**-**	**4**	**12**	**-**	**-**	**-**	**-**	**-**	**-**	**30**
CATALUNA TO RUHRGEBIET											
Transhipment in the Netherlands	-	-	-	-	-	-	-	-	-	-	-
Transhipment in Belgium	-	-	-	-	-	-	-	-	-	-	-
Transhipment in Germany	-	-	-	-	-	-	-	-	-	-	-
Direct	3	-	-	1	-	-	-	-	-	-	4
Unknown	-	-	-	-	-	-	-	-	-	-	-
Total	**3**	**-**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**4**

Source: NEA Transport Research and Trainning
- : no tonnage

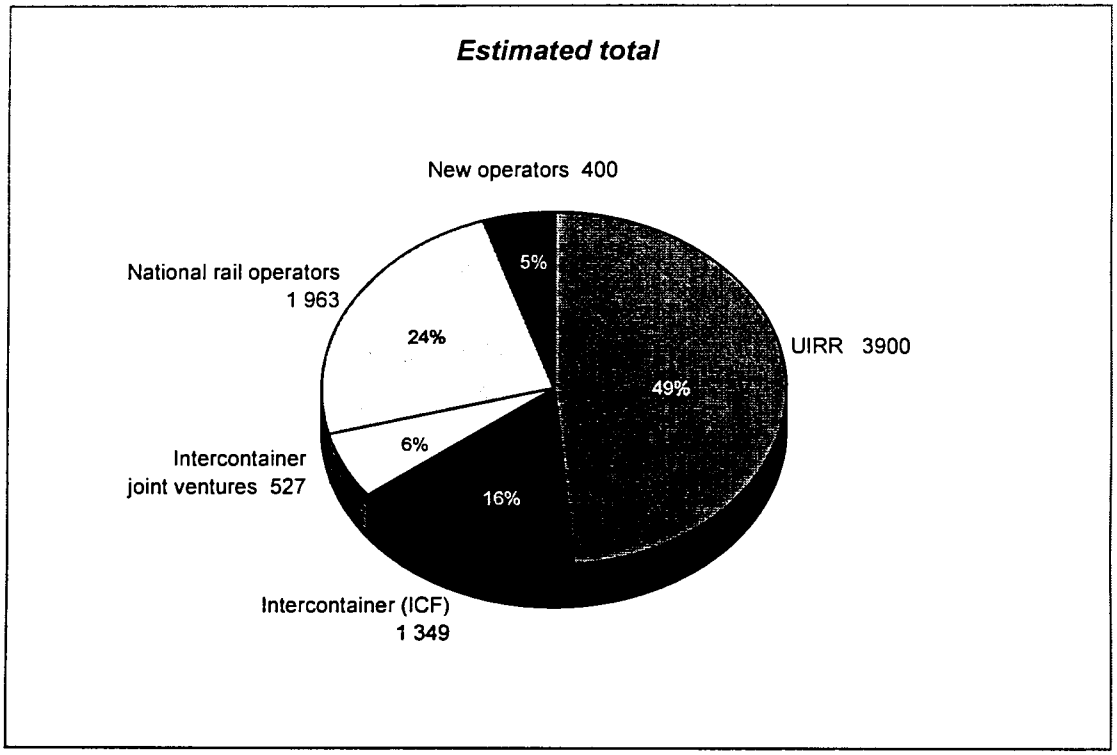
This table is an example of transport chain data, which are included in the NEAC database. The example shows the tonnes transported by type of transport chain between two regions, Cataluna in Spain and Ruhr in Germany.

Each chain is defined by the two main modes of transport used.

The NEAC database contains selected origins and destinations of freight transport by commodity group. Data are the results of compilations, harmonisation, estimates of raw data and modelling.

Unitised transport by country

Chart 4.1 **Unitised transport of the European railway companies**
1996
Unit: 1000 TEU (except specifically indicated)



Sources: UIRR, UIC, ICF

8 million TEUs were transported by rail in EU-15 in the year 1996.

Based on the total tonnage published by the UIC (which covers around 90-95% of the total EU unitised market) the total unitised rail traffic can be estimated to 140-145 million tonnes (eg approximately 17 tonnes/TEU).

The railway companies and their subsidiaries originally concentrated their efforts on the maritime container business. In addition to mainly domestic marketing companies such as Compagnie Nouvelle de Conteneurs (France) and Transfracht (Germany), the European railway companies jointly formed the company called Intercontainer. This company merged in 1993 with the railway subsidiary for temperature-controlled freight transport and formed Intercontainer-Interfrigo (ICF). Operating in competition with hauliers and freight forwarders in the European inland transport, the container companies offer shippers the entire combined transport chain for land containers.

As a result of the liberalisation of European transport markets and the internationalisation of transport demand patterns more and more railway companies are directly getting involved in international container transport, thus diminishing the role of ICF.

Moreover, some combined transport companies structured on cooperative lines, freight forwarders and road hauliers and their organisations formed the International Union of Combined Road-Rail Transport Companies, UIRR (Union Internationale des sociétés de transport combiné Rail-Route). The UIRR companies organise and market terminal-to-terminal services by rail.

There are also a number of other private hauliers who, in parallel with the groups mentioned above, operate combined-transport services on their own account either on certain routes or for specific categories of goods, for example chemicals and liquid products requiring tanker transport. Such operators also offer combined rail transport equipment to third parties on the market.

Table 4.2.a

Intermodal transport including railway transport
1995 – 1996
1000 transport units

Number of intermodal transport units forwarded

Country	BE		DK		D		EL		E		F		IRL		I	
	1995	1996	1995	1996	1995	1996	1995	1996	1995	1996	1995	1996	1995	1996	1995	1996
Goods Road Vehicles	n.a.	n.a.	n.a.	n.a.	n.a.	313	n.a.	n.a.	n.a.	n.a.	42	46	-	-	n.a.	n.a.
Accompanied	n.a.	n.a.	n.a.	n.a.	200	n.a.	n.a.	n.a.	n.a.	n.a.	-	-	-	-	n.a.	n.a.
Unaccompanied	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	42	46	-	-	n.a.	n.a.
Swap bodies	**575**	**601**	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	**495**	**545**	-	-	n.a.	n.a.
Loaded	450	475	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	-	-	n.a.	n.a.
Unloaded	125	125	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	-	-	n.a.	n.a.
Containers	n.a.	n.a.	n.a.	n.a.	2659	2173	n.a.	n.a.	n.a.	n.a.	665	716	**78**	**83**	n.a.	n.a.
Twenty-foot	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	31	34	n.a.	n.a.
Thirty-foot	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0	0	n.a.	n.a.
Forty-foot	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	44	45	n.a.	n.a.
Total (1000 tonnes)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	17556	19062	**962**	**951**	n.a.	n.a.
In goods road vehicules	n.a.	n.a.	n.a.	n.a.	3469	6173	n.a.	n.a.	n.a.	n.a.	1075	1038	n.a.	n.a.	n.a.	n.a.
In swap bodies	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	8637	9026	n.a.	n.a.	n.a.	n.a.
In containers	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	7844	8998	962	951	n.a.	n.a.

Number of intermodal transport units forwarded

Country	L		NL		A		P		FIN		S.		UK		CH	
	1995	1996	1995	1996	1995	1996	1995	1996	1995	1996	1995	1996	1995	1996	1995	1996
Goods Road Vehicles	n.a.	n.a.	n.a.	n.a.	**188**	**210**	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	**390**	n.a.	**219**	**208**
Accompanied	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	390	n.a.	86	89
Unaccompanied	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	134	119
Swap bodies	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	**481**	**471**
Loaded	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	429	423
Unloaded	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	52	48
Containers	n.a.	n.a.	n.a.	n.a.	616	646	**34**	**40**	**26**	n.a.	n.a.	n.a.	n.a.	n.a.	**409**	**380**
Twenty-foot	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	34	40	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Thirty-foot	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	-	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Forty-foot	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	-	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total (1000 tonnes)	n.a.	n.a.	n.a.	n.a.	14799	16528	n.a.	n.a.	n.a.	n.a.	4.870	n.a.	n.a.	n.a.	**8881**	**8417**
In goods road vehicules	n.a.	n.a.	n.a.	n.a.	6081	7319	n.a.	n.a.	n.a.	n.a.	1.481	n.a.	n.a.	n.a.	2441	2258
In swap bodies	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1.191	n.a.	n.a.	n.a.	3429	3430
In containers	n.a.	n.a.	n.a.	n.a.	8718	9209	332	439	481	n.a.	2.198	n.a.	n.a.	n.a.	3011	2729

n.a. : not available

- = magnitude zero

0 = magnitude less than half of the unit employed

Source: UN/ECE

Table 4.2.b

Intermodal transport including railway transport
1995 – 1996
1000 transport units

Number of intermodal transport units forwarded

Country	MD		RO		RU		SK		SI		TR		AM	
	1995	1996	1995	1996	1995	1996	1995	1996	1995	1996	1995	1996	1995	1996
Goods Road Vehicles	n.a.	n.a.	1	-	n.a.	n.a.	-	-	15	20	n.a.	n.a.	-	-
Accompanied	n.a.	n.a.	1	-	n.a.	n.a.	-	-	15	20	n.a.	n.a.	-	-
Unaccompanied	n.a.	n.a.	-	-	n.a.	n.a.	-	-	0	0	n.a.	n.a.	-	-
Swap bodies	n.a.	n.a.	2	7	n.a.	n.a.	-	-	3	3	-	-	-	-
Loaded	n.a.	n.a.	2	7	n.a.	n.a.	-	-	2	2	-	-	-	-
Unloaded	n.a.	n.a.	-	-	n.a.	n.a.	-	-	1	1	-	-	-	-
Containers	6	5	96	141	1.410	n.a.	106	24	53	49	10	10	1	2
Twenty-foot	2	2	82	132	237	n.a.	n.a.	n.a.	40	38	7	8	1	2
Thirty-foot	n.a.	n.a.	0	1	-	n.a.	n.a.	n.a.	2	2	2	1	-	-
Forty-foot	n.a.	n.a.	14	8	1.173	n.a.	n.a.	n.a.	11	10	0	1	0	0
Total (1000 tonnes)	n.a.	n.a.	1403	1726	n.a.	n.a.	578	381	1052	1068	n.a.	n.a.	19	35
In goods road vehicules	n.a.	n.a.	24	-	n.a.	n.a.	-	-	338	451	1	5	-	-
In swap bodies	n.a.	n.a.	35	104	n.a.	n.a.	-	-	28	31	-	-	-	-
In containers	44	45	1344	1622	8170	n.a.	578	381	686	586	n.a.	n.a.	19	35

n.a. : not available
- = magnitude zero
0 = magnitude less than half of the unit employed
Source: UN/ECE

Number of intermodal transport units forwarded

Country	BG		PL		HR		CZ		HU		US		CA	
	1995	1996	1995	1996	1995	1996	1995	1996	1995	1996	1995	1996	1995	1996
Goods Road Vehicles	n.a.	n.a.	3	6	-	-	85	95	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Accompanied	n.a.	n.a.	-	-	-	-	85	95	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Unaccompanied	n.a.	n.a.	3	6	-	-	-	-	n.a.	n.a.	3	3		
Swap bodies	n.a.	n.a.	0	0	-	-	6	3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Loaded	n.a.	n.a.	0	0	-	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Unloaded	n.a.	n.a.	0	0	-	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Containers	31	21	76	96	59	56	140	172	137	133	4443	4834	n.a.	n.a.
Twenty-foot	30	19	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	3	3	n.a.	n.a.	n.a.	n.a.
Thirty-foot	-	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	32	32	n.a.	n.a.	n.a.	n.a.
Forty-foot	-	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	101	98	n.a.	n.a.	n.a.	n.a.
Total (1000 tonnes)	n.a.	n.a.	929	1229	805	763	n.a.	4326	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
In goods road vehicules	n.a.	n.a.	58	140	-	-	2557	2686	n.a.	n.a.	n.a.	n.a.	2593	n.a.
In swap bodies	n.a.	n.a.	1	2	-	-	n.a.	36	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
In containers	305	160	870	1087	805	763	1366	1604	1012	1018	n.a.	n.a.	15071	n.a.

n.a. : not available
- = magnitude zero
0 = magnitude less than half of the unit employed
. Not applicable
Source: UN/ECE

Table 4.3 **International rail traffic of large containers**
1992 – 1996
Unit: Million gross tonnes by country

Country		D	F	I	NL	B	L	UK	IRL	DK	EL	E	P	FIN	A	S
1992	*Loading*	2.004	880	4.349	1.003	741	59	n.a.	n.a.	600	34	362	84	n.a.	n.a.	n.a.
	Unloading	1.876	804	5.604	1.036	866	2	n.a.	n.a.	397	85	225	63	n.a.	n.a.	n.a.
1994	*Loading*	1.721	n.a.	n.a.	1.176	205	n.a.	n.a.	n.a.	n.a.	21	n.a.	177	n.a.	766	n.a.
	Unloading	1.793	n.a.	n.a.	1.232	186	n.a.	n.a.	n.a.	n.a.	25	n.a.	117	n.a.	964	n.a.
1996	*Loading*	n.a.	1.352	5901	n.a.	3.637	n.a.	n.a.	n.a.	n.a.	32	1016	109	n.a.	1.040	n.a.
	Unloading	n.a.	1.131	7398	n.a.	2.439	n.a.	n.a.	n.a.	n.a.	26	973	135	n.a.	1.295	n.a.

(*) Prior 1993, EU 12, after EU 15 (Sweden, Finland and Austria joined the European Union in the beginning of 1995).

tonnes = gross tonnes (weight of container or vehicle included)

Source: EUROSTAT

n.a. : not available

- = magnitude zero

0 = magnitude less than half of the unit employed

. Not applicable

Table 4.2.includes data on the tonnes transported by rail using large containers (20 feet or more) including the weight of the container or road vehicle.

This table shows the international rail traffic of loaded and empty large containers during the three years. As less and less countries are providing data for recent years, it is becoming more difficult to analyse the evolution of the number or tonnage of large containers loaded or unloaded in the EU. For the year 1992 data for ten countries were available. For these countries the total number of loaded large containers amounted to 483,291 corresponding to 10.1 million gross tonnes. Between the years 1992 and 1996, the percentage increase of tonnes loaded and unloaded was 34% for Italy, 48% for France, 66% for Portugal, 239 for Spain and 278% for Belgium. During the same period international transport of large containers decreased by 51% in Greece.

Table 4.4 **National and transit rail traffic of large containers**
1992 – 1996
Unit: Million gross tonnes by country

Country		D	F	I	NL	B	L	UK	IRL	DK	EL	E	P	FIN	A	S
1992	*Loading*	6.742	4.115	5.485	1.404	1.214	19	5.146	1.490	586	n.a.	2.073	15	n.a.	n.a.	n.a.
	Transit	1.458	2.513	0,03	n.a.	726	1.527	-	-	n.a.	n.a.	5	-	n.a.	n.a.	n.a.
1994	*Loading*	7.508	n.a.	n.a.	1.478	n.a.	n.a.	n.a.	1.240	n.a.	n.a.	n.a.	n.a.	n.a.	536	n.a.
	Transit	1.161	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	-	n.a.	n.a.	n.a.	-	n.a.	936	n.a.
1996	*Loading*	n.a.	4.919	9.883	n.a.	1.329	n.a.	n.a.	n.a.	n.a.	n.a.	3.695	182	n.a.	809	n.a.
	Transit	n.a.	4.522	0	n.a.	726	n.a.	n.a.	n.a.	n.a.	n.a.	0	-	n.a.	924	n.a.

(*) Prior 1995, EU 12, after EU 15

tonnes = gross tonnes (weight of container or vehicle included)

Source: EUROSTAT

n.a. : not available

- = magnitude zero

0 = magnitude less than half of the unit employed

. Not applicable

For the countries which provided data for the years 1992 and 1996, the increase of national and transit rail traffic of large containers was 80% in Italy, 78% in Spain, 42% in France and 5,9% in Belgium. The increase of loadings of large containers in national transport was 19,5 % in France and 9,4 % in Belgium. Starting from a very low level, Portuguese national rail traffic of large containers increased during the same period strongly, from 15 tonnes to 182 tonnes.

Table 4.5

Road-rail traffic
1992 – 1996
Unit: Million gross tonnes by country

Railway international traffic

Country		D	F	I	NL	B	L	UK	IRL	DK	EL	E	P	FIN	A	S
1992	Loading	4.678	468	1.520	299	1.197	7	-	-	n.a.	0	n.a.	n.a.	n.a.	n.a.	n.a.
	Unloading	4.048	576	1.806	190	813	2	-	-	2	0	n.a.	n.a.	n.a.	n.a.	n.a.
1994	Loading	6.105	-	-	387	3.384	n.a.	n.a.	-	-	0	n.a.	0	n.a.	n.a.	n.a.
	Unloading	5.264	-	-	288	3.279	n.a.	n.a.	-	-	0	n.a.	0	n.a.	n.a.	n.a.
1996	Loading	-	541	n.a.	n.a.	364	n.a.	n.a.	-	n.a.	0	n.a.	0	n.a.	n.a.	n.a.
	Unloading	-	458	n.a.	n.a.	781	n.a.	n.a.	-	n.a.	0	n.a.	0	n.a.	n.a.	n.a.

Railway national and transit traffic

Country		D	F	I	NL	B	L	UK	IRL	DK	EL	E	P	FIN	A	S
1992	Loading	3.935	3.080	259	-	18	-	n.a.	n.a.	-	-	-	4	n.a.	-	n.a.
	Transit	697	1.606	0	-	12	194	n.a.	n.a.	4	-	-	-	n.a.	-	n.a.
1994	Loading	5.930	-	-	n.a.	1.286	-	n.a.	n.a.	-	-	-	-	n.a.	n.a.	n.a.
	Transit	1.924	-	-	-	1.010	-	n.a.	n.a.	-	-	-	-	n.a.	n.a.	n.a.
1996	Loading	-	2.408	-	-	1	-	n.a.	n.a.	-	-	-	n.a.	n.a.	n.a.	n.a.
	Transit	-	2.699	-	-	3	-	n.a.	n.a.	-	-	-	-	n.a.	n.a.	n.a.

(*) Prior to the year 1993, EU-12, after EU-15 (Sweden, Finland and Austria joined the EU in the beginning of 1995).
tonnes = gross tonnes (weight of container or vehicle included)

Source: Eurostat
n.a.: not available
0 = magnitude less than half of the unit employed
- = magnitude zero

The statistics above on road-rail transport refer to a limited number of countries and do not reflect the overall situation in EU-15.

Table 4.6.a

Intermodal transport including maritime transport
1995 – 1996
1000 intermodal transport units forwarded

Country			DK		D		EL		E		F		IRL	
		1996	1995	1996	1995	1996	1995	1996	1995	1996	1995	1996	1995	1996
Goods road vehicles		n.a.	n.a.	n.a.	**1216**	**1328**	**1243**	n.a.	n.a.	n.a.	n.a.	n.a.	**326**	**432**
	Accompanied	n.a.	n.a.	n.a.	839	918	**1243**	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Loaded on ships	n.a.	n.a.	n.a.	438	474	612	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Unloaded from ships	n.a.	n.a.	n.a.	401	444	631	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Unaccompanied	n.a.	n.a.	n.a.	377	409	-	n.a.	1	1	n.a.	n.a.	n.a.	n.a.
	Loaded on ships	n.a.	n.a.	n.a.	189	204	-	n.a.	0	0	n.a.	n.a.	n.a.	n.a.
	Unloaded from ships	n.a.	n.a.	n.a.	188	205	-	n.a.	0	0	n.a.	n.a.	n.a.	n.a.
	Containers with goods	132	n.a.	n.a.	4018	4.234	615	600	2116	2239	n.a.	n.a.	269	273
	Loaded on ships	56	n.a.	n.a.	2020	2.116	258	250	1121	1208	n.a.	n.a.	126	121
	Unloaded from ships	76	n.a.	n.a.	1.998	2.118	357	351	996	1030	n.a.	n.a.	144	152
	Empty containers	37	n.a.	n.a.	607	610	197	214	763	797	n.a.	n.a.	41	51
	Loaded on ships	14	n.a.	n.a.	258	281	151	162	343	329	n.a.	n.a.	23	35
	Unloaded from ships	23	n.a.	n.a.	349,43	349	45	52	419	468	n.a.	n.a.	18	16
Goods carried in intermodal transport unit (1000 tonnes)		n.a.	n.a.	n.a.	**54979**	**57875**	**17639**	**7125**	**45935**	**51182**	**61719**	**61486**	**7917**	**10052**
In goods road vehicules		**2545**	n.a.	n.a.	**14131**	**16456**	**10182**	n.a.	**6574**	**8770**	**44558**	**43418**	**3742**	**5648**
	Loaded on ships	1043	n.a.	n.a.	7198	8417	5153	n.a.	3535	4152	23713	23249	29447	46106
	Unloaded from ships	1502	n.a.	n.a.	6933	8039	5029	n.a.	3039	4618	20845	20169	8226	11870
In containers		n.a.	n.a.	n.a.	**40848**	**41419**	**7457**	**7125**	**39361**	**42412**	**17161**	**18068**	**4175**	**4404**
	Loaded on ships	n.a.	n.a.	n.a.	21624	21707	3365	3161	2116	23034	10150	11033	1999	1989
	Unloaded from ships	n.a.	n.a.	n.a.	19224	19713	4092	3964	18245	19378	7011	7035	2176	2415

Country			P		FIN		S		UK
		1996	**1995**	**1996**	**1995**	**1996**	**1995**	**1996**	**1995**
Goods road vehicles		**663**	n.a.	n.a.	**423**	**458**	**1223**	**1432**	**4117**
	Accompanied	n.a.	n.a.	n.a.	203	212	n.a.	1432	2244
	Loaded on ships	n.a.	n.a.	n.a.	98	105	n.a.	715	1104
	Unloaded from ships	n.a.	n.a.	n.a.	105	107	n.a.	717	1140
	Unaccompanied	n.a.	n.a.	n.a.	220	246	n.a.	-	1873
	Loaded on ships	n.a.	n.a.	n.a.	112	123	n.a.	-	927
	Unloaded from ships	n.a.	n.a.	n.a.	108	123	n.a.	-	946
Containers		**3310**	**335**	**365**	**388**	**427**	**786**	**752**	**3586**
	Containers with goods	2888	256	270	388	427	598	548	3587
	Loaded on ships	1460	150	165	190	209	356	326	1777
	Unloaded from ships	1428	105	105	198	218	241	221	1810
	Empty containers	422	80	95	69	102	189	195	532
	Loaded on ships	160	16	16	26	56	43	44	373
	Unloaded from ships	262	63	79	43	46	146	151	159
Goods carried in intermodal transport unit (1000 tonnes)		**n.a.**	**n.a.**	**n.a.**	**11562**	**12587**	**24982**	**25947**	**101**
In goods road vehicules		n.a.	n.a.	n.a.	**6430**	**6934**	**18382**	**19420**	**54142**
	Loaded on ships	n.a.	n.a.	n.a.	3353	3600	9739	10023	24382
	Unloaded from ships	n.a.	n.a.	n.a.	3077	3334	8643	9397	29760
In containers		**42642**	**3807**	**4039**	**5132**	**5653**	**6600**	**6527**	**47094**
	Loaded on ships	23651	2253	2473	2827	2926	4193	4046	21857
	Unloaded from ships	18991	1554	1566	2305	2727	2407	2481	25237

n.a. : not available

0 = magnitude less than half of the unit employed

- = magnitude zero

Source: UN/ECE

Table 4.6.b

Intermodal transport including maritime transport
1995 – 1996
1000 intermodal transport units forwarded

Country	BG		HR		CY		EE		LV		LT	
	1995	1996	1995	1996	1995	1996	1995	1996	1995	1996	1995	1996
Goods road vehicles	**n.a.**	**n.a.**	**-**	**-**	**3**	**3**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**60**	**84**
Accompanied	n.a.	n.a.	-	-	3	3	n.a.	n.a.	n.a.	n.a.	26	29
Loaded on ships	n.a.	n.a.	-	-	2	1	n.a.	n.a.	n.a.	n.a.	12	13
Unloaded from ships	n.a.	n.a.	-	-	2	1	n.a.	n.a.	n.a.	n.a.	14	16
Unaccompanied	n.a.	n.a.	-	-	-	-	n.a.	n.a.	n.a.	n.a.	34	55
Loaded on ships	n.a.	n.a.	-	-	-	-	n.a.	n.a.	n.a.	n.a.	17	27
Unloaded from ships	n.a.	n.a.	-	-	-	-	n.a.	n.a.	n.a.	n.a.	17	27
							n.a.	n.a.	n.a.		**17805**	**23.859**
Containers with goods	15	11	n.a.	12	243	351	n.a.	n.a.	n.a.	104	12	16
Loaded on ships	9	7	n.a.	6	97	151	n.a.	n.a.	n.a.	37	3	4
Unloaded from ships	6	4	n.a.	7	146	201	n.a.	n.a.	n.a.	67	9	12
Empty containers	**4**	**8**	n.a.	**6**	**131**	**211**	n.a.	n.a.	n.a.	**39**	**6**	**7**
Loaded on ships	1	3	n.a.	3	89	130	n.a.	n.a.	n.a.	34	6	7
Unloaded from ships	3	4	n.a.	3	43	81	n.a.	n.a.	n.a.	5	0	0
Goods carried in intermodal transport units (1000 tonnes)	**n.a.**	**n.a.**	**148**	**138**	**2073**	**3440**	**723**	**1158**	**n.a.**	**n.a.**	**1283**	**1315**
In goods road vehicules	**n.a.**	**n.a.**	-	-	**32**	**26**	**586**	**662**	**n.a.**	**n.a.**	**1071**	**1011**
Loaded on ships	n.a.	n.a.	-	-	29	21	253	257	n.a.	n.a.	387	387
Unloaded from ships	n.a.	n.a.	-	-	3	5	333	405	n.a.	n.a.	684	624
In containers	**n.a.**	**n.a.**	**148**	**138**	**2041**	**3414**	**137**	**496**	**n.a.**	**1355**	**212**	**304**
Loaded on ships	n.a.	n.a.	n.a.	72	981	1460	38	140	n.a.	511	39	74
Unloaded from ships	n.a.	n.a.	n.a.	66	1460	1953	99	243	n.a.	844	173	230

Country	ML		PL		RO		RU		SI		CA	
	1995	1996	1995	1996	1995	1996	1995	1996	1995	1996	1995	1996
Goods road vehicles	**n.a.**	**n.a.**	**-**	**-**	**6**	**5**	**n.a.**	**n.a.**	**55**	**118**	**n.a.**	**n.a.**
Accompanied	n.a.	n.a.	-	-	6	5	n.a.	n.a.	11	7	n.a.	n.a.
Loaded on ships	n.a.	n.a.	-	-	3	2	n.a.	n.a.	7	5	n.a.	n.a.
Unloaded from ships	n.a.	n.a.	-	-	3	3	n.a.	n.a.	4	2	n.a.	n.a.
Unaccompanied	n.a.	n.a.	-	-	-	-	n.a.	n.a.	43	111	n.a.	n.a.
Loaded on ships	n.a.	n.a.	-	-	-	-	n.a.	n.a.	1	13	n.a.	n.a.
Unloaded from ships	n.a.	n.a.	-	-	-	-	n.a.	n.a.	42	98	n.a.	n.a.
Containers	**16**	**16**	**104**	**116**	**69**	**86**	n.a.	n.a.	**58**	**65**	**1533**	**1715**
Containers with goods	**11**	**10**	**75**	**84**	**55**	**65**	n.a.	n.a.	**43**	**46**	1385	1509
Loaded on ships	8	8	37	38	25	24	n.a.	n.a.	25	27	797	898
Unloaded from ships	2	1	38	46	30	41	n.a.	n.a.	18	20	587	611
Empty containers	5	6	29	31	13	21	n.a.	n.a.	16	18	149	206
Loaded on ships	1	1	18	23	8	19	n.a.	n.a.	6	7	25	24
Unloaded from ships	5	6	10	8	5	3	n.a.	n.a.	10	11	124	182
Goods carried in intermodal transport units (1000 tonnes)	**n.a.**	**n.a.**	**1388**	**1613**	**862**	**805**	**n.a.**	**n.a.**	**891**	**908**	**n.a.**	**n.a.**
In goods road vehicules	**n.a.**	**n.a.**	**-**	**-**	**180**	**150**	**n.a.**	**n.a.**	**255**	**209**	**n.a.**	**n.a.**
Loaded on ships	n.a.	n.a.	-	-	88	66	n.a.	n.a.	120	84	n.a.	n.a.
Unloaded from ships	n.a.	n.a.	-	-	92	84	n.a.	n.a.	135	125	n.a.	n.a.
In containers	**n.a.**	**n.a.**	**1388**	**1613**	**682**	**655**	**5121**	**n.a.**	**636**	**699**	**15507**	**16864**
Loaded on ships	n.a.	n.a.	692	757	389	338	n.a.	n.a.	357	396	9183	10152
Unloaded from ships	n.a.	n.a.	696	856	293	317	n.a.	n.a.	279	303	6324	6712

n.a. : not available

0 = magnitude less than half of the unit employe

- = magnitude zero

Source: UN/ECE

Table 4.7

Rail-sea and road-sea traffic*
1992 – 1996
Unit: 1000 tonnes / year

Countries of unloading		1992	1996
D	W	4.279	5238
	RV	3.848	n.a.
NL	W	n.a.	n.a.
	RV	6055	n.a.
B	W	545	451
	RV	n.a.	n.a.
UK	W	578	n.a.
	RV	18.743	n.a.
EL	W	77	143
	RV	n.a.	n.a.
FIN	W	431	426
	RV	1.826	3.333
S	W	2.352	2.566
	RV	5.705	8.921

W: Wagons
RV : Road vehicles
(*) International transport of wagons and road vehicles by maritime vessels-Goods unloaded

Source: European Conference of Ministers of Transport (ECMT)
Gross tonnes
n.a. : not available

Table 4.8

Container traffic of maritime ports by country
1996
Unit: Mio TEU
unloaded

Traffic by country		1992	1996
Belgium	**B**	2,3	3,2
Denmark	**DK**	0,43	0,48
Germany	**D**	3,6	4,7
Greece	**EL**	0,65	0,81
Spain	**E**	1,8	3,5
France	**F**	1,1	1,8
Ireland	**IRL**	0,34	0,52
Italy	**I**	1,2	3,8
Netherlands	**NL**	4,2	5,1
Portugal	**P**	0,47	0,49
Finland	**FIN**	0,34	0,66
Sweden	**S**	0,52	0,77
United Kingdom	**UK**	4,4	5,1
Norway	**NO**	0,14	0,25
	TOTAL	18,76	27,5

Source: Containerisation Yearbook

The total EU container traffic in the maritime ports was 31.2 million TEUs loaded and unloaded in the year 1996. The share of container traffic was 1/7 of the total cargo handled in the EU ports (a TEU corresponds to 10-12 tonnes). The traffic of the UK, Dutch and German ports accounted for 48% of the total EU TEUs transported in 1996.

The total container traffic in the seaports of the EU increased by 45% from the year 1992 to the year 1996. It increased by 94% in Spain, 216% in Italy and 94% in Finland. The share of the UK, German, Dutch and Belgian maritime container transport decreased by 9% between these years and accounted for 58% of the total in 1996.

Table 4.9.a

Intermodal unitised traffic of the UIRR members
Main origins and destinations
1992 – 1996
Unit: 1000 gross tonnes

Origin / destination	1992	1994	1996
Germany - Italy	2,674	3,333	3,659
Italy - Germany	2,593	3,140	3,272
Germany - Austria	2,586	2,821	2,530
Austria - Germany	2,717	1,742	2,314
Greece - Austria	-	-	1,265
Austria - Greece	-	-	1,249
Belgium - Italy	622	1,083	1,139
Italy - Belgium	546	695	891
Italy - Netherlands	160	257	551
Netherlands - Italy	165	327	471
France - Italy	280	435	428
Italy - France	241	383	411
Italy - United kingdom	-	42	346
United Kingdom - Italy	71	-	328
Other O/D	3,846	1,664	2,132
TOTAL*	**16,501**	**16,069**	**20,986**

** including traffic with extra E.U. countries*

Source: UIRR
- = missing data

Notes:
The O/D selected are those with more than 300 thousand tonnes of freight transport in 1996.
These statistics concern the main journeys between two terminals.
According to UIRR, unitised traffic include the transport by rail of road vehicles, swap bodies, containers and trailers.

Table 4.7.a includes data on the gross freight tons transported by the UIRR members for the main international origin and destination countries within the EU. It covers the transport by rail of complete trucks, trailers, containers and swap-bodies.

The total unitised transport of the members of the UIRR remained roughly the same between the years 1992 and 1994. When comparing the same origin and destination countries the increase of unitised transport was 13% between the years 1994 and 1996. Unitised traffic increased clearly in most of the origin-destination countries considered between the years 1992 and 1996. The only main origins and destinations were unitised traffic decreased during this period were the ones between Germany and Austria.

Table 4.9.b

Intermodal unitised traffic of the UIRR members
Main origins and destinations
1992 – 1996
Unit: Mio tkm

Origin / Destination	1992	1994	1996
Italy - Germany	2,140	2,534	2,708
Germany - Italy	1,939	2,483	2,669
Italy - Belgium	546	1,152	1,444
Germany - Austria	1,312	1,452	1,370
Austria - Germany	1,401	1,418	1,178
Belgium - Italy	622	1,116	1,076
Netherlands - Italy	189	292	695
Italy - Netherlands	213	442	630
Greece - Austria	-	-	569
Austria - Greece	-	-	560
United Kingdom - Italy	89	26	519
Italy - United Kingdom	-	53	476
France - Italy	281	407	397
Italy - France	244	364	362
Germany - Spain	56	108	309
Other	4,174	2,065	2,247
TOTAL*	**13,206**	**13,912**	**17,201**

** including traffic with extra EU countries*

Source: UIRR
- = missing data

Notes:
The O/D selected are those of 300 thousand tonnes or more in 1996.
These statistics concern the main journeys between two terminals.
According to UIRR, unitised traffic includes the transport by rail of road vehicles, swap bodies, containers and trailers.

The above table includes the tonne-kilometres between the countries. In 1996 the total international unitised traffic of the UIRR members increased by 23% compared to 1994. Seven origins - destinations account for 64% of this total, involving principally Germany, Italy, Austria, Greece and to a smaller extent Belgium.

By country of origin, Italy represented 35% of the total tonne-kilometres, Germany 29.8%, Austria 11.6% and Belgium 10.6%. The share of the other countries is less than 2.5%.

UIRR members in the year 1999 are Adria Kombi (SLO), Bohemiakombi (ZS), Cemat (I), Combiberia (E), CS Eurotrans (SK), C.T.L (UK), Hungarokombi (H), Hupac (CH), Kombiverkehr (D), Novatrans (F), Skan Kombi (DK), T.R.W (B), Trailstar (NL), Polkombi (PL), Ökombi (A).

Unitised transport by operator

Table 5.1

Intermodal transport main operators
1996
Unit: 1000 TEU

	COUNTRY	NATIONAL	INTERNATIONAL
UIRR MEMBERS **		**~ 1,631.6**	**1,953.8**
Combiberia	E	-	31
Cemat	I	510,6	296,7
C.T.L	UK	-	73,6
Kombiverkehr	D	614,1	798,1
Novatrans	F	372,6	202,4
Ökombi	A	117,3	294,4
Skan Kombi	DK	13,8	32,2
Trailstar	NL	-	52,9
T.R.W	B	3,2	172,5
ICF MEMBERS		**1349**	
ICF AFFILIATED MEMBERS		**527**	
Italcontainer	I	282	
Optimodal	NL	112	
Interferry	B	71	
ACI	UK	41	
Intercontainer Austria	A	16	
OTHER OPERATORS		**~ 500**	
CNC	F	~ 200	
ERS		100	
NDX *	NL	n.a.	
Transfesa	E	n.a.	
Transfracht - International	D	n.a.	

** The company ceased its activity in 1998*
*** on the basis of a ratio of 2.3 TEU / consignment*

Sources: UIRR, ICF, UIC
n.a. = not available

The European Rail Shuttle (ERS) is owned by three of the world's largest ocean carriers: Sea Land Service Inc., Maersk Lines and P&O Nedlloyd. It mainly runs services from Rotterdam through DB Cargo territory to the Rhine industrial region, northern Italy, the Czech Republic and Slovakia. ERS transported 117,000 boxes between its Rotterdam base and Germany and Italy in 1997. With 700,000 containers transported during the year 1997 Transfracht is the largest individual operator in Europe. NDX, a joint venture of CSX Corp. (25%), Deutsche Bahn (50%) and the Dutch operator NS (25%) is not active after September 1998. Its rail routes are taken over by Transfract (D), which is forming Rail Cargo Europe in partnership with NS Cargo (NL).

During the year 1997 the growth of the UIRR members national and international traffic growth was 9%. In international traffic the traffic growth was particularly positive on the routes to/from Great Britain, in trans-Alpine traffic and in the central European Countries.

On UIRR international traffic holds a dominant 61%. The average distance in national traffic is around 640 kilometres and 780 kilometres in international traffic. Altogether the UIRR operators shift 7500 lorries per day to rail.

Table 5.2

Intermodal rail traffic by operator
1994 – 1996
Units: UTI, 1000 t

NETWORK	COUNTRY	1994		1995		1996		
		1000 UTI	1000T	1000 UTI	1000T	1000 UTI	1000T	1 000 000 TK
CFF / SBB / FFS	CH	1.081	11.555	1.110	11.652	1.058	11.058	2.905
CFL	L	210	3.160	223	3.036	-	3.159	111 6
CH	EL	-	-	2	34	3	58	-
CIE	IRL	-	-	50	1.080	52	1.059	-
CP	P	29	307	34	408	-	-	-
DB AG	D	-	-	2.860	30.126	3.220	26.354	13.094
DSB	DK	-	-	-	-	-	-	-
FS	I	1567	25.591	1.589	27.699	1.682	29.115	8.224
NS	NL	-	-	-	-	380	6.215	943
ÖBB	A	754	14.315	804	14.744	856	15.835	3.333
RENFE	EL	-	-	668	5.334	753	6.017	3.262
SJ	S	-	-	-	4.833	-	4.511	2.463
SNCB / NMBS	B	585	9.060	575	9.049	601	9.632	1.606
SNCF	F	-	-	-	17.557	1.306	19.061	12.236
VR	FIN	22	561	26	481	-	-	-
RFD	UK	-	-	77	1.558	-	-	-

Statistics cover the traffic of the UIC members for their rail part (e.g. the rail part of ICF traffic is included)

Source: Union internationale des Chemins de Fer (UIC)

ITU: Unit of Intermodal transport: swap-body + containers + road vehicle on rail (empty or loaded)

- = missing data

As a whole, the total traffic declared by UIC reached 132 million tonnes in 1996 and 48.2 billion tonne-kilometres. D-Bahn, FS, SNCF, ÖBB and CFF/SBB represent 76% of the total (in tonnes) and 81% (in tkm).

Considering that UIC covers around 90 - 95% of the total rail freight activity in the EU15 the total unitized rail traffic including Switzerland is approximately 52.4 Bio tkm in 1996.

Data concerning loading units are indicative and not fully comparable because most of the reporting companies do not specify the kind of loading units used. Only the railway segment of the transport chain is known.

Table 5.3

Transit rail traffic by ICF members*
1992 – 1996
Unit: TEU – 1000 TEU . Km

Railway Network		1992		1994		1996	
NAME	COUNTRY	TEU	TEU. Km 1000	TEU	TEU. Km 1000	TEU	TEU. Km 1000
DB	D	166.781	132.345	196.539	166.521	228.189	191.043
SNCF	F	219.518	105.108	294.814	134.447	309.485	173.523
FS	I	19	9	9	6	18	10
SNCB	B	103.515	27.261	112.675	30.779	84.075	23.098
CFL	L	194.219	6.994	264.964	9.538	234.856	8.407
DSB	DK	77.622	18.338	104.823	24.884	97.289	22.971
CH	EL	n.a.	n.a.	40	9	n.a.	n.a.
RENFE	S	797	534	545	530	689	671
OBB	A	74.274	15.967	95.353	23.864	101.662	28.764
SJ	S	7.074	3.550	9.955	4.862	7.538	3535
CFF/SBB	CH	253.318	72.963	292.629	86.311	242.345	71.868

(*) ICF networks belonging to the EU + Switzerland

Source: Intercontainer Interfrigo ICF

n.a. = not available

The total transit traffic of ICF in the EU Member States was 1.31 million TEUs in the year 1996. The share of D - Bahn, SNCF, CFL, RENFE and CFF / SBB is 85% of the total ICF transit traffic.

Table 5.4 **Unitised rail transport: Import of large containers by kind of frontier point**
1993 – 1995
Unit: 1000 gross tonnes by railway company and country

Railway		1993		1994		1995	
NAME	COUNTRY	Via mainland frontier point	Via sea or river point	Via mainland frontier point	Via sea or river point	Via mainland frontier point	Via sea or river point
DB AG	D	1.121	1.570	931	1.557	7.435	-
SNCF	F	237	746	286	730	936	680
FS Spa	I	1.620	775	2.189	343	9.284	506
NS	NL	971	n.a.	1.266	n.a.	-	-
SNCB/NMBS	B	197	278	n.a.	n.a.	2.419	286
CFL	L	0	n.a.	6	n.a.	20	n.a.
RFD Ltd	UK	-	-	-	-	833	n.a.
BR	UK	n.a.	3.058	n.a.	3.435	-	-
CIE	IRL	n.a.	n.a.	n.a.	n.a.	-	-
DSB	DK	631	n.a.	807	n.a.	-	-
CH	EL	52	n.a.	25	n.a.	-	-
RENFE	E	-	-	-	-	1.387	641
CP	P	42	51	66	52	104	84
VR	FIN	44	73	n.a.	n.a.	-	-
OBB	A	952	n.a.	990	n.a.	4.340	n.a.
SJ	S	n.a.	n.a.	155	n.a.	556	n.a.
CFF/SBB/FFS	CH	438	n.a.	463	n.a.	1.398	n.a.

Source: UIC
n.a. = not available
The statistics cover the UIC members for their rail part (e.g. the rail part of ICF and UIRR traffic are included)
- = missing data
(*) Unitised transport includes the transport by rail of containers, swap bodies and road vehicles. The figures for 1993 and 1994 concern containerised transport only. From the year 1995 UIC uses Intermodal Transport Units (ITU).

(**) The following UIC members have not provided data during the period 1993-1995: BLS (D), Eurotunnel (F), ATOC (UK), Railtrack (UK), NIR (UK), CIE (IRL), JBV (N), NSB (N).

The statistics do not cover all UIC members. Moreover, some operators provide only partial data concerning the mainland frontier points but not the sea or river points (or conversely). However, the general trend is a strong increase of the import traffic via mainland frontier points for large containers: The tonnage imported has increased by 5.6 times between the years 1993 and 1995 for operators having provided data for both years.

Table 5.5 Unitised rail transport: Export of large containers by kind of frontier point

1993 – 1995

Unit: 1000 gross tonnes by railway company and country

Railway		1993		1994		1995	
NAME	COUNTRY	Via mainland frontier point	Via sea or river point	Via mainland frontier point	Via sea or river point	Via mainland frontier point	Via sea or river point
DB AG	D	1.471	3.265	1.292	3.812	8.135	-
SNCF	F	420	1.167	735	1.143	1.227	1.506
FS Spa	I	1.364	1.924	2.095	871	7.689	1.067
NS	NL	999	n.a.	1.216	n.a.	-	-
SNCB/NMBS	B	354	674	n.a.	n.a.	3.140	753
CFL	L	55	n.a.	27	n.a.	34	n.a.
RFD Ltd	UK	-	-	227.902	n.a.	725	n.a.
BR	UK	n.a.	2.802	n.a.	3.148	-	-
DSB	DK	852	n.a.	1.016	n.a.	-	-
CH	EL	26	n.a.	21	n.a.	-	-
RENFE	E	n.a.	-	-	-	795	657
CP	P	80	75	88	89	118	98
VR	FIN	167	222	n.a.	n.a.	-	-
OBB	A	1.132	n.a.	772	n.a.	4.254	n.a.
SJ	S	n.a.	n.a.	321	n.a.	683	n.a.
CFF/SBB/FFS	CH	453	n.a.	499	n.a.	1.232	n.a.

The statistics cover the UIC members for their rail part (e.g. the rail part of ICF and UIRR traffic are included) *Source: UIC*

ITU: Intermodal Transport Unit, including large containers (>=20), swap bodies, road vehicles
(*) Unitised transport includes the transport by rail of containers, swap bodies and road vehicles.
The figures for 1993 and 1994 concern containerised transport only. From 1995, UIC uses Intermodal Transport Units (UTI).
(**) The following UIC members have not provided data during the period 1993-1995: BLS (D), Eurotunnel (F), ATOC (UK), Railtrack (UK), NIR (UK), CIE (IRL), JBV (N), NSB (N).

n.a. : not available
- = missing data

The general trend is a steady increase of traffic for the export of large containers via mainland frontier points. The tonnage has multiplied by 4.8 between the years 1993 and 1995 for operators having provided data for both years.

Table 5.6

Unitised rail transport: Transit of large containers by kind of frontier point
1993 – 1995
Unit: 1000 gross tonnes

RAILWAY		1993				1994				1995			
NAME	COUNTRY	Between 2 mainland frontier points	Between mainland frontier & port	Between port & mainland frontier point	Between 2 sea or River points	Between 2 mainland frontier points	Between mainland frontier & port	Between port & mainland frontier point	Between 2 sea or River points	Between 2 mainland frontier points	Between mainland frontier & port	Between port & mainland frontier point	Between 2 sea or River points
DB AG	D	1.240	1.065	754	565	1.476	1.219	790	472	-	-	-	-
SNCF	F	2.786	-	-	-	3.312	-	-	-	-	-	-	-
FS Spa	I	0	494	247	209	0	422	210	140	0	297	162	81
NS	NL	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	-	-	-	-
SNCB/NMBS	B	837	414	83	15	n.a.	n.a.	n.a.	n.a.	810	624	615	12
CFL	L	2.134	n.a.	n.a.	n.a.	3.104	n.a.	n.a.	n.a.	2.959	n.a.	n.a.	n.a.
DSB	DK	531	-	-	n.a.	625	-	-	n.a.	-	-	-	-
CH	EL	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	-	-	-	-
VR	FIN	n.a.	0	18	0	n.a.	n.a.	n.a.	n.a.	-	-	-	-
OBB	A	835	n.a.	n.a.	n.a.	914	n.a.	n.a.	n.a.	4.774	n.a.	n.a.	n.a.
SJ	S	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	132	n.a.	n.a.	n.a.
CFF/SBB/FFS	CH	2.217	n.a.	n.a.	n.a.	2.428	n.a.	n.a.	n.a	8.683	n.a.	n.a.	n.a.

The statistics cover the UIC members for their rail part (e.g. the rail part of ICF and UIRR traffic are included)

ITU: Intermodal Transport Unit, including large containers (>=20), swap bodies, road vehicles.

(*) Unitised transport includes the transport by rail of containers, swap bodies and road vehicles. The figures for 1993 and 1994 concern containerised transport only. From 1995, UIC uses Intermodal Transport Units (UTI).

(**) The following UIC members have not provided data during the penod 1993-1995: BLS (D), Eurotunnel (F), ATOC (UK), Railtrack (UK), RFD (UK), BR (UK), NIR (UK), CIE (IRL), RENFE (E), CP (P), NSB (N), JBV (N)

Source: UIC

n.a. = not available

- = missing data

Table 5.7.a

Traffic of ICF by origin and destination railway
1996
Unit: TEU

		Railway of destination													
Railway of origin	Country	BDZ	BR	CFF	CFL	CH	CP	CD	DB	DSB	FS	HZ	JZ	MAV	NS
BDZ	BG	0	0	0	0	137	0	6	579	0	14	0	0	300	14
BR	UK	0	0	538	510	0	0	0	42	0	6766	0	0	0	0
CFF	CH	3	580	935	96	26	0	246	10252	411	11969	0	0	470	10891
CFL	L	0	855	24	0	0	0	0	2	0	1251	0	0	0	53
CH	EL	30	0	92	0	0	0	34	1054	0	0	0	0	132	95
CP	P	0	0	4	0	0	0	0	119	0	225	0	0	0	12
CD	CZ	5	1	137	0	203	0	2	4861	0	1048	127	0	488	0
DB	D	360	26	9593	30	603	129	3398	57675	26633	18460	16	2	18252	3663
DSB	DK	0	0	3139	0	2	0	0	37177	25481	22863	0	0	40	673
FS	I	214	8625	7237	1271	3	16	537	17123	27430	6	2313	13	3799	15632
HZ	HR	0	0	0	0	0	0	14	71	16	771	3	0	2288	44
JZ	Serbia	0	0	0	0	0	0	0	0	0	5	0	0	88	2
MAV	H	627	0	617	3	407	0	846	13023	0	4132	2513	92	81	2791
NS	NL	26	2	12922	37	92	16	11	5588	689	13678	70	11	1426	2
NSB	N	0	0	33	0	0	0	16	737	56	1846	13	0	35	0
OBB	A	150	608	1187	0	288	7	1825	49635	539	20732	186	14	4770	2292
PKP	PL	1	0	5	0	3	0	785	18792	2	73	1	0	67	266
RENFE	EL	0	99	425	1	0	6015	37	41087	108	4766	0	0	2	1820
SJ	S	0	0	1659	0	0	8	12	18076	343	14839	0	0	64	66
SNCB	B	108	0	8307	118	209	31	141	12640	398	53443	128	35	133	29605
SNCF	F	28	297	2629	5	14	56	372	1511	1184	21214	6	0	205	8692
SNCFR	RO	17	1	0	0	8	0	100	2266	48	137	0	0	1660	675
SZ	SLO	0	0	4	0	5	0	42	669	0	3315	121	3	4803	645
TCDD	TR	7	28	123	12	0	0	10	4356	0	56	0	0	1567	157
VR	FIN	0	0	197	0	0	1	836	2018	2	615	0	0	3	2
ZSR	SK	2	0	10	0	0	4	269	2091	61	1849	95	0	361	10
Total traffic received		**1578**	**11122**	**49817**	**2083**	**2000**	**6283**	**9539**	**301444**	**83401**	**204073**	**5592**	**170**	**41034**	**78102**
%		0,0012	0,0083	0,0374	0,0016	0,0015	0,0047	0,0072	0,2260	0,0625	0,1530	0,0042	0,0001	0,0308	0,0586

Note: Small rounding-off differences (of less than 0,5% of total traffic) may occur

Source: Intercontainer Interfrigo ICF

This table is split into two parts: table 5.7.a and b.

Table 5.7.b

Traffic of ICF by origin and destination railway
1996
Unit: TEU

		Railway of destination													
Railway of origin	Country	NSB	OBB	PKP	RENFE	SJ	SNCB	SNCF	SNCFR	SZ	TCDD	VR	ZSR	Total traffic consigned	%
BDZ (BG)	BG	0	200	0	0	56	137	98	13	0	3	0	2	1.559	0,12%
BR (UK)	UK	0	605	0	35	0	0	325	1	0	126	0	0	8.948	0,67%
CFF (CH)	CH	90	1.750	20	405	4	10.321	3.844	3	2	36	82	0	52.436	3,93%
CFL (L)	L	0	0	0	0	0	105	43	0	0	33	0	0	2.366	0,18%
CH (EL)	EL	0	52	29	0	0	49	6	12	0	3	0	2	1.590	0,12%
CP (P)	P	0	0	0	3.999	0	9	49	0	0	0	0	0	4.417	0,33%
CD (CZ)	CZ	13	1737	819	47	13	323	385	63	280	10	106	143	10.811	0,81%
DB (D)	DB	1.979	36.364	18.475	39.615	13.805	9.976	1.918	1.656	283	5.083	1.845	632	270.471	20,28%
DSB (DK)	DK	64	225	0	25	553	421	704	0	0	0	12	0	91.379	6,9%
FS (I)	I	2.160	8.759	319	5.058	17.347	52.419	29.040	176	2.251	169	127	125	202.169	15,2%
HZ	HR	0	143	8	0	0	2	3	0	98	0	0	0	3.461	0,3%
JZ (Serbia)		0	7	0	0	0	29	0	0	1	0	0	0	132	0,0%
MAV (H)	H	0	3.503	417	0	13	974	207	2335	8.551	51	0	192	41.375	3,1%
NS (NL)	NL	0	26.128	7.055	1.878	25	28.675	13.227	248	342	170	0	9	112.327	8,4%
NSB (N)	N	0	27	16	0	4.004	19	4	0	0	0	.72	0	6.878	0,5%
OBB (A)	A	123	7	702	21	66	1.337	3.999	301	4.375	597	680	2.112	96.553	7,2%
PKP (PL)	PL	8	605	0	28	57	201	121	0	6	0	0	4	21.025	1,6%
RENFE (E)	E	28	26	64	65	236	5.403	2.560	0	0	0	16	0	62.758	4,7%
SJ (S)	S	6.541	8	48	249	0	23.916	365	2	0	1	108	12	66.317	5,0%
SNCB (B)	B	26	17.273	4.097	7.790	23.979	0	19.506	816	51	429	2	14	179.289	13,4%
SNCF (F)	F	38	4.002	557	1.513	139	13.770	2.323	57	4	226	744	20	59.606	4,5%
SNCFR (RO)	RO	1	486	0	0	36	650	71	0	18	12	0	0	6.186	0,5%
SZ (SLO)	SLO	20	2.786	8	0	0	26	0	11	1	50	0	167	12.676	1,0%
TCDD	TR	0	472	0	0	0	40	55	39	0	3	0	11	6.936	0,5%
VR (FIN)	FIN	54	617	0	2	87	6	541	0	0	0	0	62	5.043	0,4%
ZSR (SK)	SK	49	1.918	3	0	50	0	20	0	171	0	0	6	6.969	0,5%
Total traffic received		**11.194**	**107.700**	**32.637**	**60.730**	**60.470**	**148.808**	**79.414**	**5.733**	**16.444**	**7.002**	**3.794**	**3.513**	**1.333.677**	**100%**
%		0,8%	8,1%	2,4%	4,6%	4,5%	11,2%	6,0%	0,4%	1,2%	0,5%	0,3%	0,3%	100,0%	

Note: Small rounding-off differences (of less than 0,5% of total traffic) may occur

Source: Intercontainer Interfrigo ICF

The total traffic declared by ICF members of EU-15 and the Swiss railways reached 1.35 million TEUs in 1996. Total traffic increased by 3 % compared to 1994. Considering the railway of origin, D-Bahn, FS and SNCF performed almost 50% of the total ICF traffic (expressed in TEU). Apart from these three railways, the railway companies with annual traffic flows over 20,000 TEUs were in 1996: NS-ÖBB, NS-SNCB, DSB-D-Bahn, SNCF-FS (and FS-SNCF), SJ-SNCB (and SNCB-SJ), ÖBB-D-Bahn, ÖBB-FS, RENFE-D-Bahn, SNCF-FS.

Table 5.8

Share of combined transport technologies (UIRR members)
1992 - 1997
%

Year	Semi-trailer	Accompanied transport (RoMo)	Containers and swap bodies
1992	18%	17%	65%
1993	16%	16%	68%
1994	14%	17%	69%
1995	14%	19%	67%
1996	12%	20%	68%
1997	10%	19%	71%

Source: UIRR

In 1997, the share of swap-bodies and containers reached 71% of all consignments carried by UIRR members. Conversely, the share of semi-trailers decreased from 18% in the year 1992 to 10% in 1997. The accompanied transport maintained its position, with two leading roads: Dresden-Lovosice and Brenner-Manching (one departure every two hours for each way).

Table 5.9 **Top 20 container service maritime operators**
Year *1997*

Carrier	Country	TEU in service	TEU in order*
Maersk Line	Denmark	232,257	76,686
Evergreen Line / Uniglory Marine Corp,	Taïwan	228,248	91,287
P&O / Nedlloyd	United Kingdom / the Netherlands	221,531	53,458
Sea-Land Service	USA	215,114	n.a.
Cosco	China	201,593	30,756
Hanjin Shipping Co	Korea	174,526	37,125
Neptune Orient Lines / APL	Singapore / USA	165,582	21,868
Mediterranean Shipping Co	Switzerland - Italy	154,185	17,000
NYK Line / TSK	Japan	128,154	37,150
Mitsui-OSK Lines	Japan	115,763	11,700
Hyundai Merchant Marine	Korea	112,958	6,522
Zim Israël Navigation Co	Israel	98,086	3,400
Yang Ming Marine Transport Corp	Taïwan	96,145	n.a.
CMA-CGM	France	89,658	15,850
OOCL	Hong Kong	85,940	9,320
CP Ships	Canada	85,016	5,300
K-Line	USA	84,198	19,450
Hapag-Lloyd Container line	Germany	73,372	13,848
Cho Yang Shipping	Korea	55,882	9,000
SCL	South Africa	51,002	n.a.
Total (these operators)		**2,669,210**	**459,720**
Total fleet (world)		5,265,745	996,710
% of top 20 (in total world)		50,70%	46%

** Capacity of the ships ordered*

Source: Containerisation Yearbook 1998

n.a. : not available

The five largest container service maritime operators had 1,1 Mio TEUs in service in 1997. The share of the five largest operators is 21% of the total world fleet and 25% of the TEUs in order. Among the 20 largest operators in the world are five from the EU member states. The largest one in the world is the Danish Maersk Line with 232 thousand TEUs in service. P&O/Nedloyds of the UK/NL is the 3rd largest with 221 thousand TEUs in service. Other European operators are the Mediterranean Shipping Co, CMA-CGM and Hapag-lloyd Container line.

Unitised transport by nodes and links

Table 6.1 Port traffic of the major European sea ports (loaded and unloaded)
1992- 1997
Unit: Mio tonnes

Ports	Country	1992	1995	1996	1997	Change 96/95 %	Change 97/96 %
Rotterdam	NL	293	291	284	303	-2,4	+6,7
Antwerpen	B	104	108	107	112	-1,4	+5,0
Marseille	F	90	87	91	94	+4,7	+3,9
Hamburg	D	65	72	71	77	-1,7	+7,9
Le Havre	F	53	54	56	60	+3,4	+6,3
Amsterdam	NL	49	-	55	57	-	+3,2
London	UK	42	51	53	56	+2,9	+5,4
Genoa	I	41	46	46	43	+0,3	-7,4
Forth Ports	UK	-	47	46	43	-2,5	-5,4
Tees & Hartlepool	UK	-	45	45	51	+0,2	+14,8
Trieste	I	-	38	42	46	+9,7	+11,9
Wilhelmshaven	D	-	34	37	36	+9,3	-2,2
Algeciras	E	-	34	37	40	+8,3	+8,7
Milford Haven	UK	-	32	37	35	+14,1	-5,5
Dunkerque	F	40	39	35	37	-10,4	+4,6
Southampton	UK	-	32	34	33	+6,9	-3,3
Bremen/B'haven	D	30	31	32	34	+1,6	+8,0
Tarragona	E	-	28	31	31	+8,1	+0,0
Liverpool	UK	-	30	31	31	+2,4	+0,1
Bilbao	E	-	25	29	-	+14,3	-
Zeebrugge	B	33	31	28	32	-8,1	+13,7
Gothenburg	S	-	27	28	30	+3,7	+8,4
Lisbon	P	-	14	13	-	-8,9	-
Saloniki	EL	-	13	13	-	+1,5	-
Dublin	IRL	-	10	11	-	+11,7	-
København	DK	-	11	10	-	-4,6	-
Helsinki	FIN	-	10	10	-	+4,0	-
Total		-	1272	1288	-	+1,3	-

- = missing data

Source: Institute of Shipping Economics and Logistics, Bremen, 1997.

Table 6.2 **Container traffic (loaded and unloaded) in major European ports**
1992 - 1997
Unit: 1000 Gross tonnes
(loaded and unloaded)

Ports	Country	1992	1994	1997
ALGECIRAS	E	6.869	9.403	15.830
ANTWERP	B	19.599	24.336	33.427
BARCELONA	E	5.489	6.097	9.072
BILBAO	E	2.134	2.779	3.406
BREMEN	D	12.562	14.867	17.431
DUBLIN	IRL	1.080	2.648	3.846
GENOVA	I	3.210	4.244	10.708
GIOIA TAURO	I	-	-	13000*
HAMBURG	D	22.497	27.980	34.264
LE HAVRE	F	6.863	8.262	11.210
LISBOA	P	2.944	2.821	3.431
LONDON	UK	3.344	3.459	4.022
MARSEILLE	F	3.919	4.698	6.308
PIRAEUS	EL	n.a.	4.620	-
ROTTERDAM	NL	44.283	50.034	58.282
VALENCIA	E	3.582	4.592	9.324
ZEEBRUGGE	B	3.790	7.397	7.636
TOTAL		**142.165**	**178.237**	**228.197**

** Estimated data*

Source: Direction des Ports et de la Navigation Maritime, ISL, 1998.
n.a. : not available
- = missing data

The share of the three biggest ports, Rotterdam, Hamburg and Antwerp, is one third of the total container traffic in the major European ports in the year 1997. The traffic of these ports has grown steadily during the recent years. Also some Mediterranean container ports traffic has increased rapidly, among these are Barcelona, Genova, Algeciras and the new container port of Gioia Tauro (since 1997 the biggest container port of Italy).

The DPNM publishes annually the statistics of European ports, used as reference by the European Sea Port Organisation (ESPO).

Table 6.3

Inland origins and destinations for the port of Rotterdam

Grouping of products: "vehicles, machinery and other products"

1994

Unit: 1000 Gross tonnes

Country of Inland	O/D	Road	Rail	Inland waterways	Total transit
GERMANY	O	1.270	16	394	1.680
	D	543	24	237	804
FRANCE	O	520	3	45	568
	D	179	5	45	229
ITALY	O	100	198	6	304
	D	9	37	n.a.	46
BELGIUM	O	646	4	245	895
	D	247	89	725	1.061
LUXEMBOURG	O	n.a.	n.a.	n.a.	n.a.
	D	0	n.a.	n.a.	n.a.
DENMARK	O	2	0	0	2
	D	9	1	0	10
GREECE	O	0	0	n.a.	n.a.
	D	2	0	n.a.	2
SPAIN	O	15	2	1	18
	D	10	13	0	23
PORTUGAL	O	21	0	0	21
	D	4	0	0	4
FINLAND	O	30	n.a.	0	30
	D	1	1	n.a.	2
AUSTRIA	O	48	73	28	149
	D	11	43	1	55
SWEDEN	O	15	4	1	20
	D	4	0	0	4
TOTAL	O	**2.667**	**300**	**720**	**3.687**
	D	**1.019**	**213**	**1.008**	**2.240**

Note: Same statistics are available for other grouping of products NST1

Source: Port of Rotterdam
n.a. : not available
- = missing data

Ports are essential nodal points of intermodal transport. Information exists on the maritime segment of the chain of transport. However there are no statistical links between the maritime and the terrestrial information systems concerning the chain of transport.

The estimated modal split - internationally - of maritime containers in Rotterdam is 60% by road, 25% by inland shipping and 15% by rail. The port of Rotterdam estimates that they will handle six million boxes or more in 2005, twice the 1995 figure.

From the Rotterdam rail container terminals at least 150 international shuttle trains are despatched each week.

Table 6.4

Inland ports: fluvial and fluvio-maritime traffic*

1992 - 1997

Unit: Mio tons

PORTS	COUNTRY	1992	1995	1996	1997	Change 96/95 %	Change 97/96 %
Duisburg	D	45,1	48,4	44,4	49,3	-8,3	11,1
Liège	B	n.a.	14,9	15,8	17,5	5,8	11,2
Paris	F	n.a	20,3	18,5	17,0	-8,9	-8,1
Strasbourg	F	n.a.	9,7	9,3	9,3	-4,3	-0,3
NV Zeekanaal, Brabant	B	n.a.	8,5	8,6	8,7	1,2	1,2
Karlsruhe	D	11,1	10,3	10,3	8,4	-0,2	-18,6
Ludwigshafen	D	8,3	8,2	7,7	8,0	-5,9	3,7
Mannheim	D	7,5	7,7	7,9	7,8	3,1	-1,7
Köln	D	6,9	6,8	7,6	7,9	11,1	4,4
Mannheim	D		7,7	7,9	7,8	2,6	-1,2
Dortmund	D	4,6	5,4	4,8	5,4	-11,0	12,6
Heilbronn	D	5,8	4,9	5,2	4,9	6,5	-5,3
Bruxelles / Brussel	B	n.a.	5,1	4,8	4,9	-5,8	1,0
Ports Rhénans Alsace	F	n.a.	0,4	4,5	4,8	1025,0	5,4
Neuss	D	4,5	4,9	4,7	4,4	-4,5	-8,5
Frankfurt am Main	D	4,0	3,6	3,8	3,7	6,1	-1,6
Mulhouse	F	n.a.	3,9	4,0	n.a.	3,9	
Saarlouis / Dillingen	D	3,9	2,5	3,6	3,3	42,7	-9,0
Düsseldorf	D	2,5	3,0	3,0	3,2	0,7	7,6
Krefeld	D	3,6	3,4	3,3	3,1	-5,1	-6,3
Kehl	D	2,7	3,1	2,9	2,9	-6,0	-0,8
Magdebourg	D	n.a.	2,5	2,2	2,8	-12,0	28,7
Berlin	D	2,8	3,4	2,4	2,3	-30,4	-2,0
Västerås	S	n.a.	2,4	2,7	2,1	9,2	-21,4
Hanau	D	1,7	2,2	2,7		23,6	
Wien	A	n.a.	1,4	1,7	1,7	22,1	-5,3
Arnhem	NL	n.a.	1,3	1,7	1,7	27,4	0,0
Köping	S	n.a.	1,6	1,5	1,5	-6,6	3,6
Mertert	L	n.a.	1,6	1,4	1,4	-14,8	4,8
Linz	A	n.a.	1,1	1,2	1,0	6,8	-11,3
Mantova	I	n.a.	0,5	0,7	0,5	33,4	-20,4
Varkaus	FIN	n.a.	0,3	0,4	0,4	26,0	-7,7
Basel	CH	n.a.	8,0	7,2	7,8	-10,8	9,5

** Freight loaded and unloaded*

Source: European Federation of Inland Ports (EFIP)

n.a = not available

Table 6.5.a

Inland containers shipping
Unit: TEU

Liaison	Year	TEU
Rhine	*1975*	10.000
	1980	80.000
	1985	200.000
	1990	430.000
	1996	650.000
Rotterdam-Antwerp	*1996*	400.000
Lille-Antwep	*1996*	14.200
Seine	*(1997)*	6600
Rhône	*(1997)*	4700
Danube	*1996*	19.300
Elbe	*1996*	3000
North Germany	*1996*	64.000

Source: DG VII / Containerisation yearbook

Nearly 2 million TEUs in 1996 were transported on inland waterways.

The hinterland traffic of the ports of Rotterdam (Rhine corridor) and Antwerp and the feeder traffic between these ports account for more than 90% of the total inland waterways fluvial traffic in the European Union. Container traffic on the Rhine increased annually by 20 % in the 1980s and by 7 % in the 1990s.

Table 6.5.b

Journey times on the Rhine
Year 1997

From/to	ARA	ROTTERDAM	ANTWERP
Emmerich		10 h	16 h
Duisburg	10-12 h		
Düsseldorf	12-14 h		
Koblenz	20-22 h		
Mainz	23-28 h	26 h	32 h
Ginsheim		26 h	32 h
Frankfurt		28 h	34 h
Ludwigshafen		30 h	36 h
Mannheim		30 h	36 h
Wörth		34 h	40 h
Strasbourg	40-50 h	38 h	44 h
Basel	55-65 h		

ARA: Amsterdam, Rotterdam, Antwerp *Source: IMPULSE Project (FP4)*

For upriver way , double journey times are necessary.

Table 6.6

Freight traffic of major airports
1992 – 1996
Unit: 1000 tons

Airport	Country	1992	1994	1995	1996	1997	Change 1996/1992 %
Frankfurt Rhein/Main	D	1.081	1 246	1 297	1 338	1 373	23,8
London Heathrow	UK	758	967	1 043	1 053	1 170	38,9
Amsterdam Schiphol	NL	695	838	978	1 083	1 161	55,8
Paris Charles de Gaulle	F	612	787	824	866	951	41,5
Bruxelles	B	314	380	427	451	518	43,5
Köln/Bonn	D	181	236	276	316	374	74,4
Luxembourg	L	151	242	286	281	339	85,8
London Gatwick	UK	190	224	232	277	270	45,9
Madrid Barajas	E	188	213	230	243	266	29,0
Roma Fiumicino	I	233	256	257	259	243	11,3
Paris Orly	F	275	295	276	246	223	-10,4
London Stansted	UK	54	88	93	107	131	98,5
East Midlands	UK	11	56	83	105	127	851,8
Milano Malpensa	I	90	111	126	98	123	8,9
Athens Hellenikon	EL	91	95	98	111	120	22,0
Stockholm Arlanda	S	n.a.	93	104	113	114	n.a.
Wien Schwechat	A	68	83	93	95	107	39,1
Oostende	B	43	60	82	92	106	113,5
Lisbon	P	79	81	89	90	100	13,9
Munich	D	54	64	65	76	96	40,6
Manchester	UK	81	56	51	81	95	-0,1
Barcelona	E	72	59	68	80	81	11,3
Helsinki	FIN	52	74	78	84	85	60,6
Dublin	IRL	51	54	60	67	85	32,0
Dusseldorf	D	n.a.	n.a.	56	57	69	n.a.
Milano Linate	I	63	67	68	66	61	4,8
Total of these airports		**5 487**	**6 725**	**7 340**	**7 733**	**8 388**	37,8

Source: ACI
n.a. : not available

The share of the four main airport-platforms, Frankfurt, Schiphol, Heathrow and Charles de Gaulle, of the total freight transport in 1996 was 35%. The freight transport of the UK airports of Gatwick and Manchester increased clearly from the year 1995 to the year 1996.

As a whole, the freight traffic of the major freight airports increased by 14% between the years 1994 and 1996 and by 37% from the year 1992 (excluding Arlanda and Dusseldorf).

Freight traffic through the Alps

Table 7.1

Traffic through the Mont-Cenis / Brenner segment by crossing point and by transport mode
1994
Unit: 1000 tonnes (except specifically indicated)

Country	Tunnel	Accompanied transport	Combined transport	Rail	Road	Total	
						Million tonnes	%
France	*Mont-Cenis*	-	3,000	4,600	12,200	19,800	23,3
	Mont-Blanc	-	-	-	14,400	14,400	16,7
Switzerland	*Grand St Bernard*	-	-	-	400	400	0,5
	Simplon	-	800	3,900	-	4,700	5,5
	St Gotthard	1,000	5,500	6,700	5,100	18,300	21,6
	S. Bernardino	-	-	600	-	600	0,7
Austria	*Reschen*	-	-	-	800	800	0,9
	Brenner	2,000	2,700	3,600	17,600	25,900	30,5
Total		**3,000**	**12,000**	**19,400**	**50,500**	**84,900**	**100**
%		3,4	14,1	22,9	59,6	100	-

Source: Département fédéral des transports, des communications et de l'énergie (DFTCE). Service d'étude des transports - Berne.

The figures are rounded up to the nearest hundred.

Table 7.2

Traffic between Germany/Benelux and Italy (Mont-Cenis / Brenner segment)
1994
Unit: Mio tonnes (except specifically indicated)

Transit country		Rail	Road	Total	
				Million tonnes	%
France		1,900 (1)	8,100 (2)	10,000	22,3
Switzerland		11,500 (3)	2,300 (3)	13,800	30,7
Austria **- Brenner** **- Brenner, Reschen**		6,300 (4)	14,800 (5)	21,100	47
Total	**Million tons**	19,700	25,200	44,900	100
	%	43,9	56,1	100	

Source: Département fédéral des transports, des communications et de l'énergie (DFTCE). Service d'étude des transports - Berne.

(1): Mont-Cenis, St. Gotthard
(2): Mont-Cenis / Fréjus, Mont-Blanc
(3): Simplon, St. Gotthard, etc ...
(4): Brenner
(5): Brenner, Reschen

In 1994, the traffic from Benelux and Germany to Italy through the Mont-Cenis - Brenner segment of the Alps accounted for 82% of the total transit traffic through this segment.

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APPENDIX

Abbreviations (countries)

B	Belgium
DK	Denmark
D	Germany
D-W	Germany-West
D-E	Germany-East
EL	Greece
E	Spain
F	France
IRL	Ireland
I	Italy
L	Luxembourg
NL	the Netherlands
A	Austria
P	Portugal
FIN	Finland
S	Sweden
UK	United Kingdom
IS	Iceland
NO	Norway
CH	Switzerland
AM	Armenia
BG	Bulgaria
HR	Croatia
CA	Canada
CY	Cyprus
CS	Czechoslovakia
CZ	Czech Republic
EE	Estonia
HU	Hungary
LT	Lithuania
LV	Latvia
MT	Malta
MD	Moldova, Republic of
PL	Poland
RU	Russian Federation
RO	Romania
SI	Slovenia
SK	Slovak Republic
US	United States
TR	Turkey

ACRONYMS OF ORGANISATIONS

DG VII	Directorate General Transport
ECMT	European Conference of Ministers of Transport
ESPO	European Sea Ports Organisation
EU	European Union
ICF	Intercontainer - Interfrigo
UIC	International Union of Railways (Union Internationale des Chemins de fer).
UIRR	International Union of Combined Road-Rail Transport Companies (Union Internationale du Transport Combiné Rail-Route).
UNO	United Nations Organisation

ABBREVIATIONS OF VARIABLES

EDI	Electronic Data Interchange (transfer of structured data from one computer system to another)
ETIS	European Transport Policy Information System
FCL	Full container load (arrangement whereby a shipper utilises the whole space in a container)
FP 4	Fourth Framework Programme
GDP	Gross Domestic Product
ITU	Intermodal Transport Unit
tkm	Tonne-Kilometre
IMEG	Intermodal Transport Statistics Expert Group
NST/R	Standard Goods Nomenclature for Transport Statistics
NUTS	Nomenclature of territorial units for statistics (NUTS 2 = 206 Regions in Europe)
O/D	Origin and destination
RoMo	Rolling Motorway Train
TEN	Trans-European Transport Network
TEU	Twenty feet Equivalent Unit. Standard unit of measure for containers. Equivalent to a 20 feet container, that is to say 20x8x8 feet or 33.3m3. A 40ft container is equivalent to 2 TEU.

GLOSSARY

Accompanied transport	Transport of a complete goods road motor vehicle, accompanied by the driver, by another mode of transport (for example by ferry or train).
Bill of lading (maritime), consignment note (road and rail)	Acts as a receipt for goods. Contains the terms of the contract of carriage.
Bulk	Good shipped loose (not in container or other packaging).
Combined transport	*According to the rules of application of the ECE/FAL Recommendation No.19 "Code for Modes of Transport" the definition is : « Combination of means of transport where one (passive) transport means is carried by another (active) means which provides traction and consumes energy ».* *The ECMT restricts the term combined transport to: "Intermodal transport where the major part of the European journey is by rail, inland waterway or sea and any initial and/or final leg carried out by road are as short as possible".*
Consignment	Collection of goods transported under cover of the same transport document in accordance with regulations or tariffs in force where they exist.
Consignee	The person or the company which is the final destination of a consignment.
Container	Special box to carry freight, strengthened and stackable and allowing horizontal or vertical transfers. Large container : 20', 40' or more.
Corridor	Sequence of strongly interconnected regions. Determined by geography, economy or transport. Transport corridors are chosen on the basis of providing the best route from origin to destination in terms of costs, quality and strategies.
Forwarder	Agent who organises the transport from origin to destination on behalf of the shipper.
Freight	The amount payable for the carriage of goods. Also used to describe the goods themselves.
Gantry crane	Overhead crane comprising a horizontal gantry mounted on legs which are either fixed, run in fixed tracks or on rubber tyres with relatively limited manœuvre in one plane.
General cargo	Goods shipped in packaging, except containers.
Gross weight	Total weight of the goods, including all packaging, and tare-weight of the container, swap-body and pallets containing goods as well as road goods vehicles carried by rail.
Handling	Loading / unloading of goods or containers.
High cube container	Container of standard ISO length and width but with extra height - 9'6" (2.9m) instead of 8' (2.44M). This applies only for the time being to 40' containers.
Hub	Central point for the collection, sorting and distribution for a particular region or area.
Incoterms	International rules for the interpretation of trade terms : list of standard terms for foreign trade contracts.

Intermodal transport	Movement of goods (in one and the same loading unit or a vehicle) by successive modes of transport without handling of the goods themselves when changing modes (Glossary for Transport Statistics). Intermodality is a characteristic of a transport system, that allows different modes to be used in an integrated manner in a door to door transport chain (European Commission, COM(97) 243 final dated 29th of May 1997).
Intermodal unit (ITU)	Container, swap body or semi-trailer/goods road motor vehicle suitable for intermodal transport.
Land container	Standardized container according to the International Railways Unions norms (UIC), for an optimal use mainly in rail road combined transport.
Loading unit	Special box to carry freight in pallets or prepacked units (container, swap body, land container).
Manifest	List of goods (or passengers) on a vessel.
Maritime container	A container conforming to standards that enable it to be used in a cellular ship. Most maritime containers conform to International Standards Organisation (ISO).
Maritime terminal	Port at which containers are loaded/unloaded onto/from container vessels.
Modal data	Data related to one mode only. Traditional transport data are modal data.
Mode (of transport)	The different modes of transport are road, rail, air, maritime, inland waterway. Combined transport is usually treated like an additional mode of transport.
Multimodal transport	Carriage by more than one mode of transport against one contract of carriage. *European Conference of Ministers of Transport (ECMT) defines multimodal transport as the "carriage of goods by at least two different modes of transport". Intermodal transport is therefore a particular type of multimodal transport.* *United Nations Convention on International Multimodal Transport of Goods defines international multimodal transport as "the carriage of goods by at least two different modes of transport on the basis of a multimodal transport contract from a place in one country at which the goods are taken in charge by the multimodal transport operator to a place designated for delivery in a different country".*
Nodal point, node	Point of transhipment of goods (from one mode to another or on the same mode).
Piggyback transport	Combined transport by rail and road.
Rolling road	Transport of complete road vehicles on low-floor throughout wagons.
Stuffing/Stripping	Loading and unloading of cargo into or from an ITU.
Shipment	Set of goods sent using the same consignment note.
Shipper	The person or the company tendering goods for carriage.
Straddle- carrier	Fully mobile overhead lifting vehicle for moving containers.
Super high cube container	Container of extra standard ISO length, width and height. These dimensions may fluctuate, reaching lengths of 45' (13.72m), 48' (14.64m) or 53' (16.10m).
Swap body	Carrying unit strong enough for repeated use, but not enough to be top-lifted or stackable when loaded, designed for intermodal transport of which one leg is road.
Tare	Weight of ITU of vehicle without cargo.
Tariff	Terms, conditions and scale of charges.

Terminal (inland or maritime)	Place at which containers are loaded/unloaded onto/from one mode of transport. Terminals can be stations or depots (rail transport), ports, combined transport platforms or logistic centres.
TEU	Twenty feet equivalent unit. Standard unit for counting containers of various capacities and for describing the capacities of container ships or terminals. One 20 Foot ISO container equals 1 TEU (one 40 foot ISO container equals two TEU).
Tonne-kilometre	Unit of measure of goods transport which represents the transport of one tonne over one kilometre.
Transit	Transport in the same vehicle through a country between two places (a place of loading and a place of unloading) both located in another country or in other countries.
Transport chain	Sequence of transport modes used to carry a certain good from its origin to its destination. Along the chain, one or several transhipments take place.
Unaccompanied transport	Transport of goods road motor vehicles or trailers, not accompanied by the driver, by another mode of transport (for example by sea or rail).
Unitised transport	Transport by loading unit (container, swap body) or trailer.

Sources: Glossary of the Common questionnaire Eurostat / UNO / ECMT, P&O Merchant guide Atlas of freight transport in Europe (NEA).

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Luxembourg: Office for Official Publications of the European Communities, 1999

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ISBN 92-828-7307-2