
DIOMIS

Developing Infrastructure and Operating Models for Intermodal Shift

Final Report

Work package A11: Report on Combined Transport In Europe 2005

November 2006

List of contents

Preface.....	5
Part A: Combined rail/road transport in Europe 2005.....	7
 1 Introduction.....	7
 2 Unaccompanied combined rail/road transport 2005.....	8
 3 Accompanied combined rail/road transport 2005	14
 4 Total combined rail/road transport 2005	17
 5 Impact of combined transport on rail infrastructure.....	18
 6 Combined transport market structure 2005.....	21
6.1 Evolution of combined transport operator market	21
6.2 Size of combined transport operator market	23
6.3 Market positioning of combined transport operators	26
6.4 Scope of services of combined transport operators.....	27
6.5 Level of competition.....	31
6.6 Employment in combined rail/road transport 2005.....	33
6.7 Revenues from CT operations 2005	34
Part B: Outlook to combined transport 2006/2007	36
 1 Evolution of unaccompanied combined transport 2006.....	36
 2 Evolution of unaccompanied combined transport 2007.....	37
 3 Impact factors on combined transport evolution.....	39
 4 Forecast of unaccompanied combined transport to 2006 and 2007	42
Appendix: Methodological notes	44

List of figures

Figure 1:	Unaccompanied combined rail/road transport: goods moved 2005	8
Figure 2:	Unaccompanied combined rail/road transport: volume moved by domestic and international services 2005	9
Figure 3:	Unaccompanied combined rail/road transport: volume moved by container hinterland and continental services 2005	10
Figure 4:	Unaccompanied domestic combined rail/road transport: by country 2005 (volume > 100,000 TEU)	12
Figure 5:	Unaccompanied international combined rail/road transport: goods moved 1988/2005	13
Figure 6:	Accompanied combined rail/road transport: volume moved by domestic and international services 2005	14
Figure 7:	Accompanied combined rail/road transport: volume per service 2005	15
Figure 8:	Accompanied combined rail/road transport: goods moved 2002/2005	16
Figure 9:	Total combined rail/road transport: goods moved by mode 2005	17
Figure 10:	Total combined rail/road transport: goods moved by domestic and international services 2005	17
Figure 11:	Combined transport trains: by modes 2005	19
Figure 12:	Unaccompanied combined transport flows (in TEU): by corridors 2005	20
Figure 13:	Operators of unaccompanied combined transport services: 2005	24
Figure 14:	Operators of accompanied combined transport services: 2005	26
Figure 15:	Target customer groups: 2005	26
Figure 16:	Combined transport operators by market segments served: 2005	27
Figure 17:	Market segments served by combined transport operators: 2005	28
Figure 18:	Market segments served by combined transport operators weighted with TEU volume of each group of operators: 2005	29

Figure 19:	Scope of internationalization of combined transport operators weighted with operators' transport volume (in TEU)	30
Figure 20:	Scope of integration of logistic chain by combined transport operators.....	31
Figure 21:	Percentage of combined transport operators per class of total TEU transport volume (left); percentage of total TEU transport volume carried by class of operators (right): 2005	32
Figure 22:	Percentage of combined transport operators per class of total international transport volume (left); percentage of total international transport volume carried by class of operators (right): 2005	32
Figure 23:	Employment of intermodal logistics companies: 2005	33
Figure 24:	Revenues of combined transport operators: 2005	35
Figure 25:	Expected 2006/2005 growth rates of combined transport operators by percentage of operators.....	36
Figure 26:	Expected 2006/2005 growth rates of combined transport operators weighted with individual volume of operator	37
Figure 27:	Expected 2007/2006 growth rates of combined transport operators by percentage of operators.....	38
Figure 28:	Expected 2007/2006 growth rates of combined transport operators weighted with individual volume of operator	39
Figure 29:	Outlook to 2006/2007: expected positive impacts.....	40
Figure 30:	Outlook to 2006/2007: expected negative impacts	41
Figure 31:	Forecast of unaccompanied combined transport by 2006/2007: volume in gross tonnes	42
Figure 32:	Forecast of unaccompanied combined transport by 2006/2007: volume in TEU	43

Preface

In June 2004, the Combined Transport Group of the UIC published the final report of the "Study on Capacity Reserves for Combined Transport by 2015", carried out by Kombi-Consult, Kessel & Partner and MVA.

This report is now expanded by a follow up project: DIOMIS (Developing Infrastructure and Operating Models for Intermodal Shift). This project aims at deepening the findings, conclusions and proposals of the previous Study and to draft by December 2007 a CT Master Plan 2015 proposing a strategy for:

- an adapted infrastructure able to cope with the anticipated modal shift
- CT terminals with an adapted infrastructure
- improved operational procedures
- improved business models between Railway Undertakings and CT Operators, matching the conditions of projected infrastructure and demand
- an international vision and coordination in terms of infrastructure and development of CT terminals
- a clear formulation addressed by the RUs to the IMs about their qualitative and quantitative needs in terms of Railway Infrastructure for their freight trains

During the definition of the DIOMIS project, we found that between the AT Kearney Study and the recent UIC "Capacity Study" 15 years had passed during which there was no overview of combined transport in Europe as concerns the actual volume of overall CT shipments, the development of market structures and the assessment of future developments. The preliminary Study showed an important need for such material to steer political, infrastructure and strategic decisions, and to facilitate further growth of combined transport in Europe.

So we included in the DIOMIS project a work package to fill this gap.

We are now pleased to present, as a part of the DIOMIS project, the Report on Combined Transport in Europe 2005. This report represents an endeavour to give an overall view of Combined Transport in Europe, in terms of market structure, actors, critical factors, volumes and perspectives.

It contains also a first attempt to evaluate the importance of Combined Transport in terms of employment and revenues.

The intent is to update this report every two years.

We hope this work will be of interest for the CT community and, in general, for the reader interested in the evolution of rail freight.

Eric Peetermans

Chairman of the UIC Combined Transport Group

November 2006

Part A: Combined rail/road transport in Europe 2005

1 Introduction

The following survey on combined rail/road transport in 2005 is primarily based on data sets, supplied by European combined transport operators completing our questionnaire. Likewise, the data pool of *Union Internationale des sociétés de transport combiné Rail-Route (UIRR)* contributed significantly to establish a comprehensive statistical record of combined transport in Europe. It was complemented by inputs drawn from publicly available annual reports of operators, and transport statistics of a few railway undertakings that have been taking on operator functions. This data also enabled to cross-check some of the other data sets. Thus we could accomplish a valid data pool on 68 intermodal logistics companies.

Further we collected information on intermodal transport volumes of another 11 operators from sources such as websites or press releases. Again we were able to assess the validity of this data to a large extent by cross-checking it with public records such as the report of the *Bundesamt für Verkehr*, Bern, on the traffic shift policy of Switzerland.

Combined transport comprises of two distinctive modes, unaccompanied and accompanied traffic, often better known as rolling motorway service. This report covers both modes and thus gives an overview of the entire combined transport market in Europe. It includes data and information on **77 operators of unaccompanied combined transport** services across Europe including the EU Member States as well as Bulgaria, Romania, Norway and Switzerland, and **nine operators of accompanied combined transport**.

2 Unaccompanied combined rail/road transport 2005

European unaccompanied combined rail/road transport serves two distinctive markets, which somewhat overlap:

- container hinterland transport: the transport of maritime or ISO freight containers, with a few exceptions, containing overseas cargo between European sea ports and inland terminals;
- continental transport: the intra-European carriage, including short-sea transport, of European-sourced cargo between „dry“ inland terminals in domestic freight containers, swap bodies and liftable semi-trailers.

Considering that intermodal services are performed both on purely domestic and on international routes, combined transport is composed of four market segments.

Based on the statistical records taken into account for this report, in 2005, a total freight volume of 125.35 million gross tonnes was conveyed on unaccompanied combined rail/road services in Europe (cf **Figure 1**). Following conventions on statistical data collection this tonnage includes both the weight of the goods carried and the tare weight of the intermodal loading units employed. It, however, disregards the weight of rail wagons, locomotives or similar means of transport.

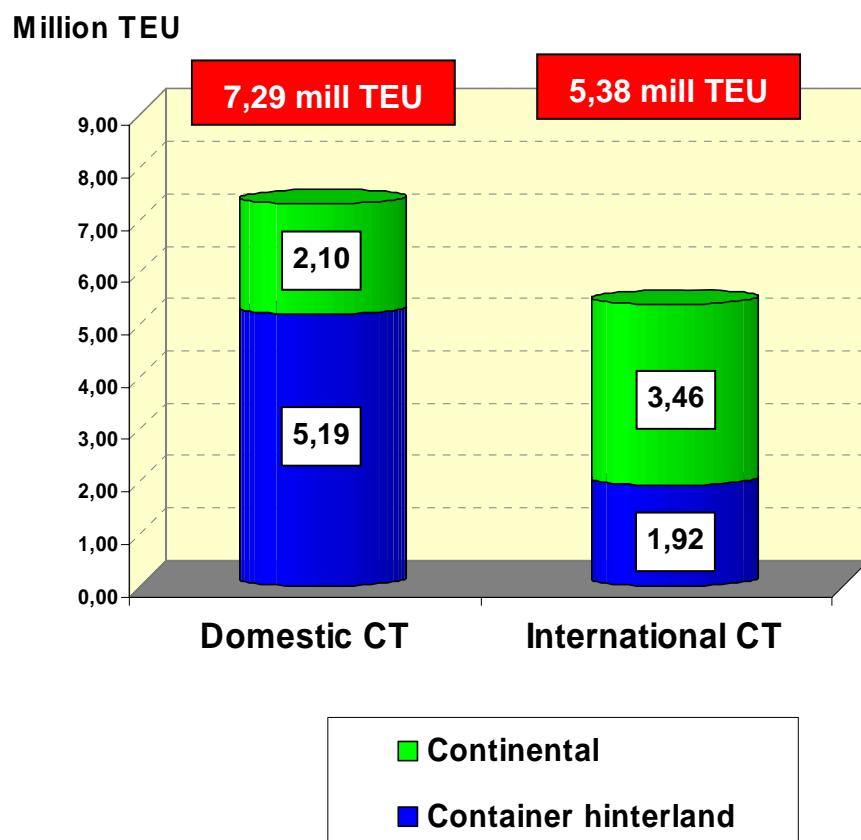
Figure 1: Unaccompanied combined rail/road transport: goods moved 2005

Unaccompanied CT market segment	Gross tonnes	Percentage	TEU	Percentage
Domestic	71.735.000	57,2%	7.290.057	57,5%
International	53.614.000	42,8%	5.378.875	42,5%
Total	125.349.000	100,0%	12.668.932	100,0%

In terms of TEU (Twenty Foot Equivalent Unit), which, in global transport, is the most common and the best commensurable dimension to count intermodal carryings, the volumes of combined transport amounted to almost 12.7 million TEU in the year 2005. Considering that a couple of combined transport operators didn't participate in the survey we estimate that, in fact, combined transport totalled to about 13.5 million TEU.

More than 57 percent of all unaccompanied shipments were carried on domestic intermodal services. Considering the perennial discussion on global purchasing and production of commodities it seems that international combined transport services are falling short of what the market is requiring. A closer examination, however, shows that this would be a premature assessment. On the one side, domestic long-distance freight transport continues to exceed international haulages considerably in all countries of large territory and over all modes. On the other side, 71 percent of domestic combined transport totalling 7.29 million TEU, were shipments of maritime containers in hinterland services between sea ports and inland terminals. Essentially, they are nothing but international goods traffic (cf **Figure 2**).

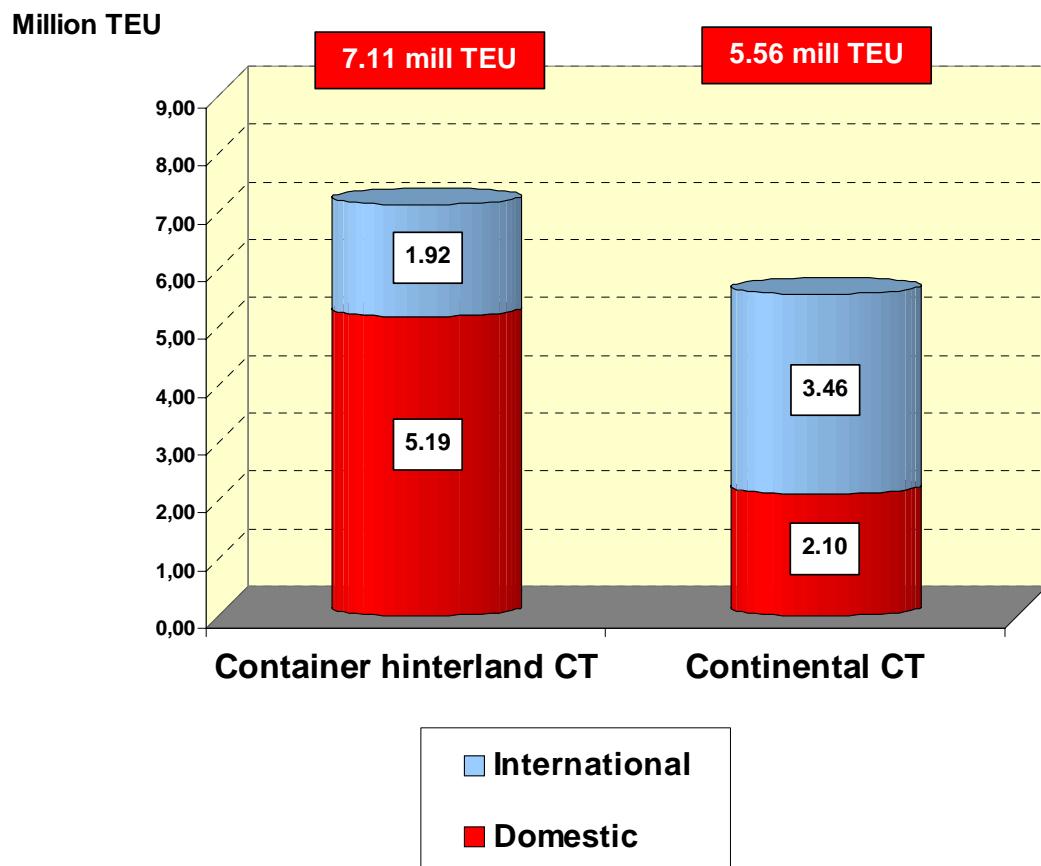
Figure 2: Unaccompanied combined rail/road transport: volume moved by domestic and international services 2005



The largest container hinterland markets are Germany (1.25 mill TEU), Italy (0.95 mill TEU) and Belgium (0.43 mill TEU). We, however, assume that the UK volume may even exceed that of Germany. Since we didn't receive statistics of all UK intermodal operators the final ranking must be left open. Based on the data collected, a volume of almost 5.2 million TEU of containers have been conveyed on domestic hinterland services. Hence it is about 2.5 times larger than the amount of international hinterland shipments, which remained just below 2 million TEU last year. By far the lion's share was carried on intermodal services from and to the ports of Hamburg and Rotterdam.

Both segments of hinterland combined transport reached a volume of 7.1 million TEU, in 2005 (cf **Figure 3**). This result highlights the importance of effective and competitive intermodal hinterland services both for sea ports and the European economy.

Figure 3: Unaccompanied combined rail/road transport: volume moved by container hinterland and continental services 2005



In 2005, operators achieved 5.56 million TEU in continental combined transport (cf **Fig. 3**) corresponding to 43 percent of the total intermodal volume in that year. Within the continental market segment, international services clearly have dominated with a share of 3.46 million TEU or 62 percent. The volume of cross-border continental combined transport was also some 60 percent larger than hinterland services across Europe (cf **Fig. 2**).

The smaller amount of domestic shipments in continental combined transport (2.1 million TEU) can mainly be attributed to the following influences:

- The transport distance of key international continental services range from 600 to 1,300 kilometres. In countries with a rather small territory such as Denmark, Hungary or the Netherlands domestic transport distances are usually too short for combined transport to compete with road. This fact, however, doesn't apply to domestic container hinterland services since the operational characteristics of this market - pre-consolidated volumes, no extra expenses for terminal handling and road haulage at the ports' end of the intermodal service - are fostering their economics and competitiveness towards road.
- Combined transport operators that have set up domestic networks in countries such as Austria, France, Germany or Italy, are fighting a fierce price competition with road operators on typical high-volume domestic routes over 450 to 700 km.
- This may also explain why, in some European countries, neither operators nor railway undertakings, for the time being, have successfully established a system of sustainable domestic continental services.

About 75 percent of the 2005 domestic continental volumes come from four countries: Germany (650,000 TEU), Italy (450,000 TEU), France (350,000 TEU) and Norway (> 300,000 TEU). **Figure 4** presents the ranking of countries concerning the total domestic intermodal volumes including hinterland and continental traffic.

Figure 4: Unaccompanied domestic combined rail/road transport: by country 2005 (volume > 100,000 TEU)

Country	TEU	Percentage
Germany	1.903.000	26%
Italy	1.432.000	20%
France	560.000	8%
Belgium	430.000	6%
Norway	370.000	5%
Austria	360.000	5%
Sweden	255.000	3%
Finland	247.000	3%
Romania	217.000	3%
Poland	153.000	2%
Switzerland	135.000	2%
Spain	106.000	1%
Other	1.122.050	15%
Total	7.290.050	100%

With the exception of the *UIRR* operators regular statistical records on European combined transport regrettably have not been compiled in the past. This lack of a consistent time series impedes a profound assessment of the evolution of this industry both in an intra-modal and inter-modal perspective, particularly concerning road transport. Only one rather extensive survey was elaborated on international combined transport for the year 1988 in the context of the *AT Kearney Study* (1989).

Commissioned by *UIC*, an evaluation of the 2002 situation was carried out by *Kessel+Partner*, *KombiConsult* and *MVA* (2004). Now the present report offers the first industry-wide survey enabling a comparison of international unaccompanied combined transport (cf **Figure 5**). This market has increased by 283 percent from 14 mill tonnes (1988) to 53.6 mill tonnes (2005). This means that volumes almost quadrupled in 17 years corresponding to a linear growth rate of 16.6 percent per annum.

Figure 5: Unaccompanied international combined rail/road transport: goods moved 1988/2005

Year	Unaccompanied international CT (mill gross tonnes)
1988	14.0
2002	44.1
2005	53.6
Percentage change 2005/1988	+ 283%

3 Accompanied combined rail/road transport 2005

Accompanied combined transport services, that is the rail carriage of entire road vehicles both articulated and drawbar combinations and, eventually, semi-trailers with the opportunity for truck-drivers to accompany their trucks in separate coaches. These services are used to be operated by dedicated block trains independent from unaccompanied traffic. In 2005, accompanied or rolling motorway services were supplied by nine intermodal operators. Together they shipped more than 323,000 road vehicles with a gross weight of 10.2 million tonnes (cf **Figure 6**).

Figure 6: Accompanied combined rail/road transport: volume moved by domestic and international services 2005

Accompanied CT market segment	Gross tonnes	Percentage	Shipments (n° of trucks)	Percentage
Domestic	1.543.700	15%	44.553	14%
International	8.662.800	85%	278.505	86%
Total	10.206.500	100%	323.058	100%

The rolling motorway clearly stands in a context of national or regional transport and environmental policy. If a specific area or corridor is considered to be particularly sensitive or road congestion is acute this intermodal technology is suitable to bring about an immediate shift of road traffic to rail, provided that restrictions are imposed on road hauliers and/or incentives given to them.

In Europe, it is the alpine states of Austria and Switzerland that continue to pursue such a strategy of modal shift aiming at reducing the negative impacts of road transport especially cross-border and transit road journeys. As a result, all current accompanied services except for one are offered on corridors across these countries,. This supply has been complemented by a service between France and Italy on the Modane corridor employing the new Modalohr technology (cf **Figure 7**). Against this background there are good reasons to assume that practically all vehicles, which were handled by accompanied trans-

port last year, had been on international freight journeys even if they were carried on one of the three domestic services.

In 2005, the most frequented rolling motorway was the Freiburg-Novara service with almost 80,000 trucks. About 50,000 road vehicle trips each have been shifted by the two services Wels-Szeged/Budapest and Wels-Maribor. 200,000 shipments or 62 percent of the total volume of accompanied transport affected Austria, 102,750 shipments (32%) Switzerland.

Figure 7: Accompanied combined rail/road transport: volume per service 2005

	Corridor	Accompanied service		Shipments (n° of trucks)
Domestic	AT	Wels	- Villach	7.822
	AT	Wörgl	- Brennersee	24.531
	CH	Basel	- Lugano	12.200
<i>Subtotal</i>				44.553
International	AT - DE	Graz	- Regensburg	519
	AT - HU	Wels	- Szeged/Budapest	51.008
	AT - IT	Salzburg	- Trieste	25.422
	AT - IT	Wörgl	- Trento	28.559
	AT - RO	Wels	- Arad/Oradea	11.549
	AT - SI	Wels	- Maribor	49.811
	DE - CH	Freiburg	- Lugano	2.575
	DE - IT	Freiburg	- Novara	79.248
	DE - IT	Singen	- Milano	8.726
	FR - IT	Aiton	- Orbassano	17.300
	HU - SI	Szeged	- Ljubljana	3.788
<i>Subtotal</i>				278.505
Grand total				323.058

In recent years, accompanied transport services suffered from a liberalization of road transport. After the enlargement of the European Union in May 2004 road operators established in the new EC Member States no longer had to use rolling highway services in order to bypass quota regulations of international road transport. As a consequence *Bohemiankombi* and *Kombiverkehr* were forced to stop the Dresden-Lovosice service. The new political environment also led to a decline of accompanied transport on services with or through Austria that, in addition, suffered from the elimination of the eco-point system, which had been connecting road transit permits with the level of the air pollution caused by road vehicles employed.

All the more it was surprising to observe that, in 2005, new services were inaugurated and suspended services restored. In spite of that, traffic volumes declined considerably the 2002 survey (cf **Figure 8**). Approximately 30 percent less freight has been shipped in 2005, compared to 2002. The amount of road vehicles carried on rolling motorway trains even dropped by 41 percent.

Figure 8: Accompanied combined rail/road transport: goods moved 2002/2005

Year	Gross tonnes	Shipments (n° of trucks)
2002	14.600.000	546.850
2005	10.206.500	323.050
Percentage change	-30,1%	-40,9%

4 Total combined rail/road transport 2005

Based on the records of combined transport operators and railway undertakings that participated in our survey, in 2005, combined rail/road transport achieved a total volume of 135.56 million gross tonnes. These goods were shipped by rail in intermodal loading units representing 13.42 million TEU (cf **Figure 9**). Thereof 93 percent come to unaccompanied rail/road services

In 2005, the domestic business held a share of more than 54 percent of the total combined transport volume in Europe. About 20 percent more goods were shipped on domestic than on international services, particularly owing to the tremendous number of maritime containers in hinterland transport (cf **Figure 10**).

Figure 9: Total combined rail/road transport: goods moved by mode 2005

CT market segment	Gross tonnes	Percentage	TEU	Percentage
Unaccompanied CT	125.349.000	92,5%	12.668.932	94,4%
Accompanied CT	10.206.500	7,5%	752.700	5,6%
Total CT	135.555.500	100,0%	13.421.632	100,0%

Figure 10: Total combined rail/road transport: goods moved by domestic and international services 2005

CT market segment	Gross tonnes	Percentage	TEU	Percentage
Domestic	73.278.700	54,1%	7.393.857	55,1%
International	62.276.800	45,9%	6.027.775	44,9%
Total	135.555.500	100,0%	13.421.632	100,0%

5 Impact of combined transport on rail infrastructure

The existing European rail network is getting increasingly congested. The capacity particularly of main rail arteries between major economic centres in Europe, many sections of the network and nodes are close to saturation or even over-employed leading to increased quality deficits and train path conflicts amongst users of rail infrastructure. The core rail network is expected to become the Achilles heel for the growth of rail services.

In view of this problem the combined transport industry as a whole has to voice its needs for future capacity requirements. But such a demand would be better listened to if the current position in railway and freight services in particular were significant. With an aim to reveal the existing situation of combined rail/road transport concerning the infrastructure capacity employment we have investigated the size of combined trains operated on the European rail network as follows.

First of all, we analyzed the reports of the intermodal operators and railway undertakings that participated in our survey. Then we cross-checked and supplemented this data with statistics of other railways, sea ports and governmental bodies such as the Swiss *Bundesamt für Verkehr (BAV)*. Based on that we concluded that, in 2005, about 205,000 dedicated intermodal trains had been operated, from which 40 percent were international trains.

In a second step we estimated the amount of annual train journeys operated by those companies that haven't indicated the exact volume of their trains. For this purpose we examined the routes these operators served and applied typical average capacity load factors taking account of infrastructure restrictions such as maximum train length and weight. This action resulted in an additional estimated volume of 33,000 trains totalling to 238,000 intermodal trains on unaccompanied services, in 2005. This appears to be a reasonable result since it leads to an overall average load factor of 53 TEU per train journey.

Further we took into account a volume of more than 26,000 trains dedicated to accompanied combined transport services, of which we estimated 1,200 trains been operated on the Modane corridor.

In total, at least 265,000 combined transport train journeys ran in the year 2005. This means that every working day more than 1,000 long-distance freight trains laden with intermodal equipment run on domestic services or international corridors across Europe.

Figure 11: Combined transport trains: by modes 2005

Combined transport mode	N° of combined transport trains		
	Reported	Additional estimated	Total
Unaccompanied CT: domestic services	123.630	21.000	144.630
	international services	81.680	12.000
	Subtotal	205.310	33.000
Accompanied CT services	25.081	1.200	26.281
Total CT services	230.391	34.200	264.591

Figure 12 is intended to give an impression on the matrix of flows in international unaccompanied combined transport in the year 2005. It is not produced to scale. The picture aims to illustrate, on which corridors intermodal volumes have been moved, and which of them are particularly important or even crucial for the entire industry, rather than deliver exact figures. Though the exhibit clearly gives proof of two important issues:

- the largest flow of intermodal shipments are from/to and through Switzerland;
- Germany currently is the turntable of European combined traffic.

Figure 12: Unaccompanied combined transport flows (in TEU): by corridors 2005



6 Combined transport market structure 2005

6.1 Evolution of combined transport operator market

The successful development of unaccompanied combined rail/road transport in Europe has been closely connected with the establishment of specialized intermodal service providers designed to bridge the “gap” between railway undertakings, on one side, and forwarding and road operators, on the other, by conceiving and commercializing competitive rail-based intermodal services. Over the past forty years of organized intermodal traffic combined transport operators seem to have organised themselves in 3 main categories.

“Classic operator”

The classic combined transport operators are used to neither perform rail/road services for their own cargo nor deploy proprietary intermodal loading units. Instead, overwhelmingly, they are organizing the services on account of other parties such as forwarders or shipping lines that in most cases are also deploying their own equipment. So the operators are fulfilling the following key tasks:

- designing and determining the key components of combined transport services such as quality and price features;
- organizing the entire intermodal chain of transport as terminal-to-terminal or door-to-door service depending on market positioning;
- purchasing supply services, which they do not wish to produce themselves, e.g. terminal handling, supply of wagons or road trucking service;
- defining the rail production scheme;
- (wholesale) purchasing of train capacities and rail traction from railway undertakings;
- (retail) selling of intermodal services including rail transport capacity.

This type of operator, in particular, is being represented by combi-companies that, as of 1970, joined forces in the *Union Internationale des sociétés de transport combiné Rail-Route (UIRR)*, and by companies such as *Intercontainer-Interfrigo (ICF)* and its partners on national level.

“Railway in operator role”

Over forty years of European combined transport practically all incumbent railway undertakings, beyond supplying rail traction services, have also taken on intermodal operator's functions such as those described above, at least once. Reasons for supplying intermodal services, scope of services, size of business and periods of activity varied from railway to railway. Decisions for entering or leaving the operator business often were connected with the strategic re-engineering of the railway undertakings in question. Looking back there remains an impression of discontinuity. For the time being, most of the incumbent railways have completely or almost completely withdrawn from the operator role and geared their business towards a commercial and operational partnership with specialized intermodal service providers.

Despite of that, railway undertakings such as the Austrian *Rail Cargo Austria* and the Spanish *RENFE* have maintained the operator function and continue supplying combined transport services in their own name, particularly domestically. A couple of new entrants like *TX Logistik* or *PCC Rail* also are not averse to providing operator services if required.

“Logistics companies”

A rather new category of intermodal operator business model emerged and increasingly gained momentum over the last decade. Logistic service providers such as forwarders or shipping lines inaugurated proprietary intermodal services. To name but a few there is: *Ambrogio*, *DHL*, *European Rail Shuttle*, *Hangartner*, *Hellmann*, and *Rail Link* to this group of operators. Even if it is likely that the start-up of combined transport services, in the first place, was aimed at conveying shipments arising from within their own logistic systems various other motivations may have prompted them to enter this business:

- Reduction of transport and logistic costs.
- Own services enable to catch third party shipments to enhance the capacity load factor, even if it's on a stand-by or spot market base.
- Reinforcing the control on intermodal equipment such as containers and on rail transport with the aim to improve the quality of service.
- Opening up rail as an alternative mode for routing own cargo against the background of increasingly congested motorways.
- Strategic extension of the portfolio of logistic services.

The wider the business approach of new entrants the more they do not only offer spare transport capacity to somebody else in order to improve the capacity employment rate, but specifically plan intermodal services with regard to volumes of third parties.

6.2 Size of combined transport operator market

Against this background, we have investigated European combined transport operators in all EU Member States, Norway, Switzerland as well as Bulgaria and Romania. We have identified a total of **84 operators** that supplied **unaccompanied combined transport services** in the reporting year 2005. They are listed in **Figure 13, p. 22**.

This very result is giving evidence of the tremendous dynamics of the intermodal industry and reflects the fact that, since 1992, the liberalization of combined transport has been actively taken up. Disregarding national railway undertakings that were only discontinuously acting on the operator's market, about fifteen years ago this industry included hardly more than 20 to 25 independent combined transport operators. About half of them were members of the *UIRR* and the other half belonged to the "group" of national operators affiliated with *Intercontainer*.

In 2006, at least four new operators have entered this business whilst two existing companies abandoned it now focusing on accompanied combined transport. The latter market was served by nine intermodal operators, in 2005, among them seven that supplied rolling motorway transport in addition to non-accompanied services (cf **Figure 14, p. 24**).

The following analysis is focusing on the key and also largest combined transport market, unaccompanied traffic. The results are based either on completed questionnaires (cf appendix) or on other valid sources such as annual reports. Information was only included in the analysis if sufficiently reliable and not inducing distortion towards the results. Since some operators had not all information available or didn't enter them owing to strict confidentiality, the underlying data pool, i.e. the number of entries, may vary per item analyzed. They are indicated for every item.

Figure 13: Operators of unaccompanied combined transport services: 2005

Combined transport operator	Headquartered in
ACOS	DE
Adria Kombi	SI
Alpe Adria	IT
Ambrogio	IT
Bohemiakombi	CZ
boxXpress	DE
BTT BahnTank Transport GmbH	DE
Bucci	IT
CargoNet AS	NO
CargoNet AB	SE
Cemat S.p.A.	IT
CFR Marfa SA	RO
Combiberia	ES
Conliner	NL
Conteba, Basel	CH
Crokombi	HR
Crossrail	CH
CSKD Intrans	CZ
CTS Container-Terminal GmbH	DE
DHL Freight GmbH	DE
Direct Rail Services (DRS)	UK
European Rail Shuttle BV (ERS)	NL
EuroShuttle AS	DK
Ewals	NL
EWS	UK
Fastline	UK
Freightliner Ltd.	UK
GB Railfreight	UK
GTS S.p.A.	IT
Hangartner AG - Internationale Spedition	CH
Hannibal	IT
Hellmann Worldwide Logistics GmbH	DE
Hungarokombi	HU
Hupac Intermodal SA	CH
Hupac Intermodal BV	NL
Intercontainer-Interfrigo S.A.	CH
Intercontainer Austria	AT
Inter Ferry Boats (IFB)	BE
Intermove Systems (IMS)	AT
Italcontainer SPA	IT
JSC Lithuanian Railways	LT

Kali-Transport Gesellschaft mbH	DE
Kühne + Nagel AG	CH
Kombi Dan	DK
Kombiverkehr KG	DE
Liscont/Decoexa	PT
Logtainer	IT
LSI	IT
LTE	AT
Messina	IT
Metrans	CZ
Multi-Terminal AG	CH
Naviland Cargo (ex-CNC)	FR
Norfolk Line	UK
Novatrans	FR
Ökombi GmbH	AT
Petersen	DE
PCC Rail Containers	PL
PKP/Cargosped	PL
Polzug Intermodal GmbH	PL
Rail Link	FR
RaiLogistics	CH
Railog	DE
RCA	AT
RENFE	ES
Rocombi	RO
SBB Cargo	CH
SLB Salzburger Lokalbahn (Salzburg AG)	AT
Sogemar	IT
Spedcont	PL
Spinelli	IT
Transfesa Transportes Ferroviarios Especiales S.A.	DE
Transfracht GmbH (TFG)	DE
T.R.W.	BE
T3M	FR
TX Logistik	DE
Unilog	BE
Van Dieren	NL
Vanerexpressen	SE
VR Cargo	FI
WLB Wiener Lokalbahn AG	AT
Westfälische Landes-Eisenbahn	DE
Z-Rail	DE
ZSSK Cargo	SK

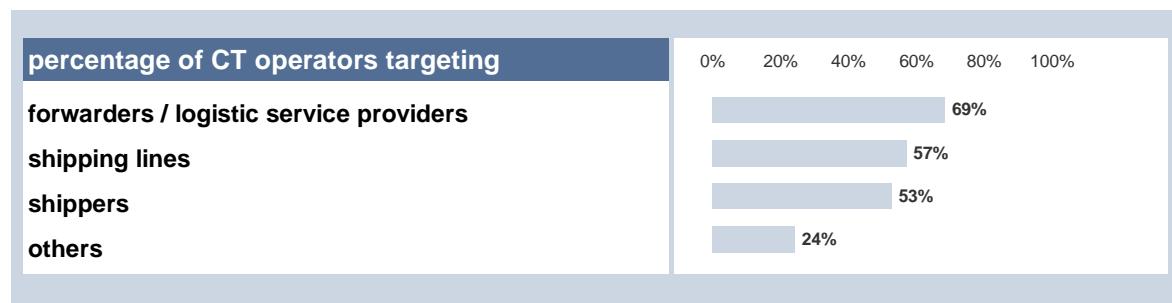
Figure 14: Operators of accompanied combined transport services: 2005

Combined transport operator	Headquartered in
Autoroute Ferroviaire Alpine	FR/IT
Adria Kombi	SI
Alpe Adria	IT
Hungarokombi	HU
Hupac Intermodal SA	CH
Intercontainer Austria GesmbH	AT
Ökombi GesmbH	AT
Ralpin	CH

6.3 Market positioning of combined transport operators

Since the pioneering years of combined transport in Europe forwarding agents have constituted the most important customer group for intermodal operators. Our survey on the state of combined transport in 2005 confirms this significance (cf **Figure 15**). 69 percent of all combined transport operators are targeting their services –to forwarding and logistic service providers. What may come as a surprise is the high share of 57 percent of operators that say they cater for shipping lines. One explanation to this finding is that most operators that entered this business in recent years have positioned themselves on the container hinterland market. Too, it may reflect a trend in container hinterland transport from merchant to carrier haulage.

Figure 15: Target customer groups: 2005



Sources/data pool: 70 combined transport operators

53 percent of the combined transport operators supply intermodal services to shippers and about 20 percent to road operators; the latter were particularly mentioned under item "others". The survey, however, couldn't clarify if the ranking of customer groups according to their actual post-sale importance, e.g. related to revenues or shipments, were equivalent to the pre-sale marketing statement.

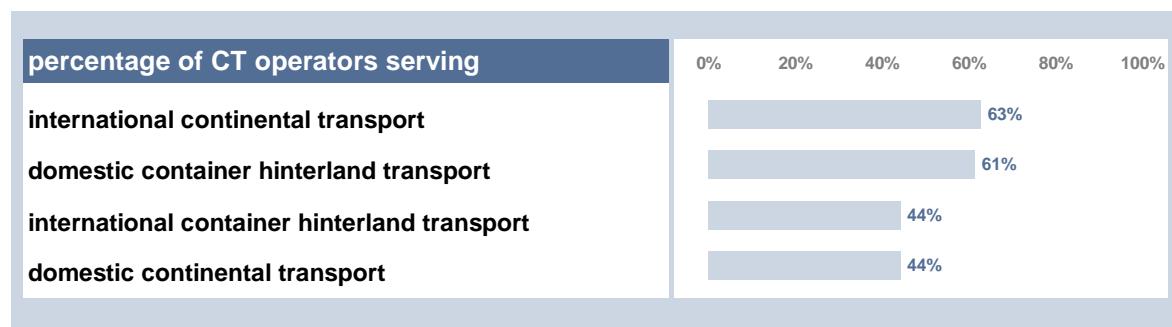
6.4 Scope of services of combined transport operators

The survey on what scope of services combined transport operators are providing covered the following issues:

- Scope of market segments served by operators
- Extent of internationalization of services
- Scope of integration of logistic chain

In 2005, more than 60 percent of all intermodal operators covered by the survey have supplied continental combined transport services on international links whereas only 44 percent served domestic markets. Exactly the opposite ratio turned out for container hinterland transport: much more intermodal companies are operating domestic than international services (cf **Figure 16**). Both results also correspond to the fact that, related to the volume (in TEU), hinterland transport is predominating domestic combined transport with a share of about 70 percent but remains below 40 percent in the international market.

Figure 16: Combined transport operators by market segments served: 2005

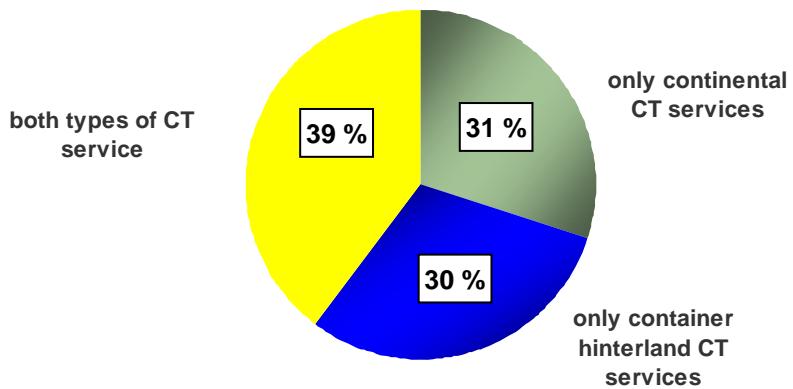


Sources/data pool: 70 combined transport operators

Figure 17 shows that about 30 percent of all intermodal operators positioned themselves only on the continental or the container hinterland market. 39 percent or 28 companies provided both types of service. If these three groups are evaluated with their percentage share of total combined transport volume in Europe, in 2005, the significance of the maritime container business is revealed (cf **Figure 18**).

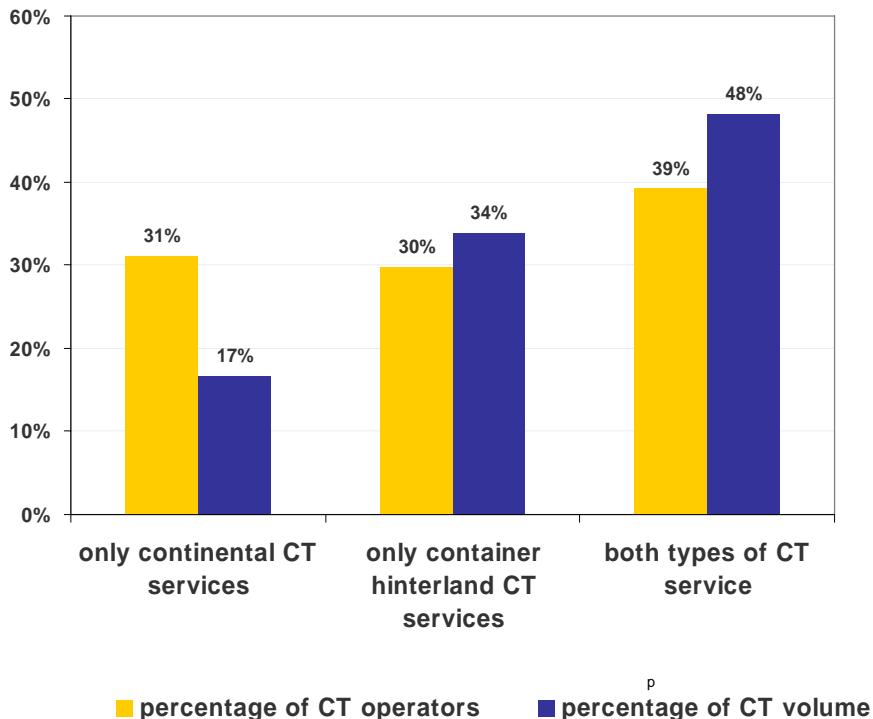
The operators that completely focused on container hinterland services achieved a market share of 34 percent whereas the same number of continental service operators just reached 17 percent. The group of intermodal operators that pursue a broad business approach serving both markets comes off best. They were able to capture approximately 50 percent of the total volume.

Figure 17: Market segments served by combined transport operators: 2005



Sources/data pool: 70 combined transport operators

Figure 18: Market segments served by combined transport operators weighted with TEU volume of each group of operators: 2005



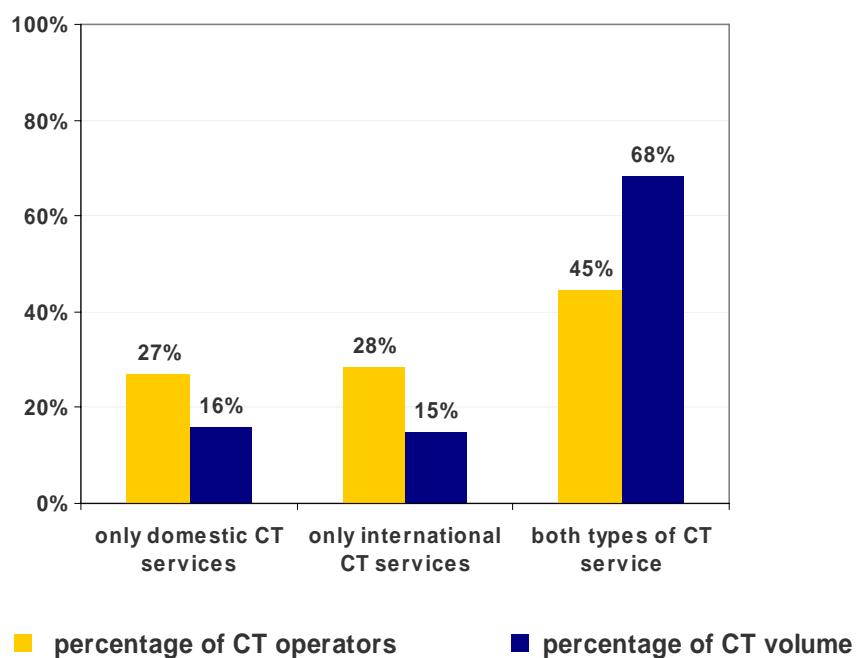
Sources/data pool: 70 combined transport operators

The investigation into the scope of internationalization of services provided by combined transport operators brought about even more remarkable results. 27 percent of all operators only served domestic and 28 percent international markets. Weighted with their 2005 amount of shipments they didn't contribute more than 16 and 15 percent respectively to the overall combined transport volume. In contrast to that, 31 intermodal operators (45%) that operated both domestic and international services gained a market share of 68 percent (cf. **Figure 19**).

This result suggests that a business strategy, which is directed at creating a European network of services, is capable of catching more volumes and especially big customers. So we would observe an evolution in the intermodal industry, which is comparative and

also compatible with developments in the forwarding, contract, parcel and express logistics business. All major logistic companies have accelerated their efforts to establishing a European-wide network either on their own or in strategic alliances hereby responding to the needs of globally acting manufacturers and trading companies. These logistics service suppliers obviously call for supplier of intermodal services that are operating on a comparative level. As a result those operators can capture a more than proportionate share of the volume. Except for certain niche markets a concentration only on domestic services, on the other hand, might be perilous for operators in the long run.

Figure 19: Scope of internationalization of combined transport operators weighted with operators' transport volume (in TEU)



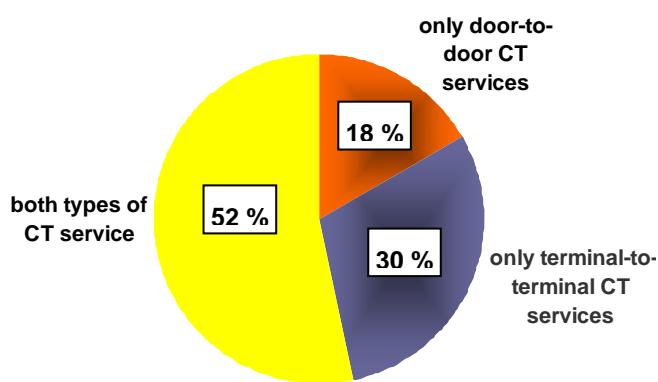
Sources/data pool: 70 combined transport operators

As regards the scope of supply chain integration, in 2005, 70 percent of 60 operators who replied to the question, have supplied door-to-door services out of which 18 percent only supplied this type of service. Just 30 percent of the intermodal companies strictly concen-

trated on terminal-to-terminal services (cf **Figure 20**).

Compared to earlier years this is a remarkable increase of operators offering an integrated service. It is certainly a result of the growing number of operators focusing on container hinterland traffic. But we also assume that more and more operators consider that they are capable of improving their competitiveness towards through-road operation if they control the entire process.

Figure 20: Scope of integration of logistic chain by combined transport operators



Sources/data pool: 61 combined transport operators

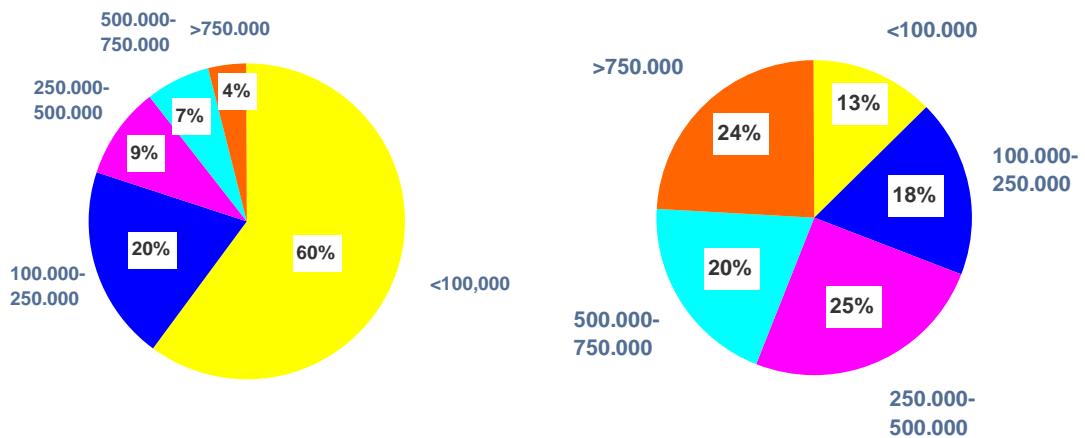
6.5 Level of competition

The combined transport industry is likely to have become one of the most competitive, if not the most competitive, market for rail freight in Europe. At least 84 intermodal operators are supplying long-distance rail freight services out of which more than 70 percent compete on cross-border traffic. Also the ratio of the size of the total market to the number of unaccompanied combined transport operators, that is a mean volume of 1.5 million tonnes per company, suggests that combined transport is a rather specific market.

In order to evaluate if such numbers reflect the actual state of competition we have divided all intermodal operators in five classes according to their total transport volumes (cf. **Figure 21, left exhibit**). It turned out that, in 2005, three operators (4%) shipped more than 750,000 TEU and five (7%) 500,000 to 750,000 TEU. The majority of 60 percent of the intermodal companies achieved less than 100,000 TEU. Their consolidated market

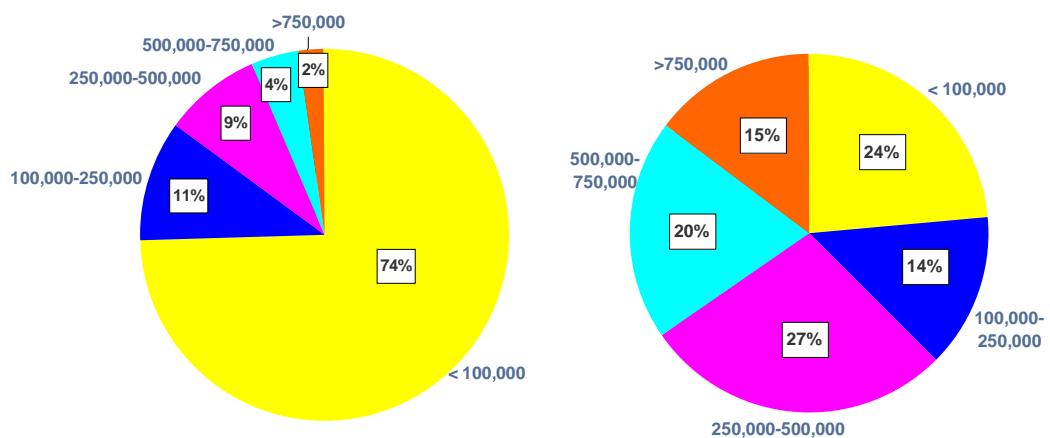
share of total unaccompanied combined traffic, however, only amounted to 13 percent (cf. **Figure 21, right exhibit**). In contrast to that the top three operators carried almost 25 percent of all TEU. The consolidated volume of the eight operators in the first two classes accounted for 44 percent.

Figure 21: Percentage of combined transport operators per class of total TEU transport volume (left); percentage of total TEU transport volume carried by class of operators (right): 2005



Sources/data pool: 76 combined transport operators

Figure 22: Percentage of combined transport operators per class of total international transport volume (left); percentage of total international transport volume carried by class of operators (right): 2005



Sources/data pool: 51 combined transport operators

This analysis clearly shows that despite the fact that many companies are competing in the market, just about 10 to 15 intermodal operators, in terms of volume, currently dominate the entire industry.

At first sight the situation is similar if we analyze the international combined transport market. Six percent of 51 operators serving this market have caught 35 percent of the total volume. The large number of “small-scale” operators that comprise 75 percent of the total, carried 24 percent of all international TEU. However, it is apparent that the total amount of cross-border shipments is much more evenly distributed among the classes of operators than in the total combined transport market. To conclude: who operates here is already comparatively big (cf **Figure 22**).

6.6 Employment in combined rail/road transport 2005

As far as we know, for the first time in the history of combined transport, this survey aims at revealing the level of employment in this industry. First of all, we obtained data from 38 intermodal and one wagon operators. Additionally, three railway undertakings reported on their number of clerical staff in their intermodal business department, three others that are also acting as intermodal operator included the operational workforce.

Figure 23: Employment of intermodal logistics companies: 2005



Sources/data pool: 45 combined transport operators, railway undertakings, wagon operators

More than 8,600 persons have been employed by these companies, in 2005 (cf **Figure 23**). About 60 percent or 5,200 persons of the total staff have worked with combined transport operators. These companies carried roughly 70 percent of the total unaccompa-

nied intermodal volume recorded by this survey. If we assume the same employment to volume ratio for those operators that didn't report their number of staff this would result in a number of approximately 2,000 employees. This would give a total of 7,200 persons for all operators included in this survey. Most intermodal operators, however, are used to focus their business on marketing and organization of intermodal services. They are primarily employing clerical staff. For this reason the size of employment is comparatively small.

In contrast to that, railway undertakings are primarily charged with the operational side of combined transport such as rail traction (loco drivers, couplers) or wagon inspection. Hence, they are likely to employ the larger part of the workforce occupied with intermodal rail/road transport. Many employees like loco-drivers will, in most cases, not be "dedicated" to combined transport services but assigned to various tasks. So, even if we undertook a detailed investigation with railways they would have to calculate the percentage of the time this "general workforce" is dealing with intermodal transport.

For the purpose of this report therefore we carried out an estimation of the railway staff. Based on some sources we calculated a mean ratio of 800 TEU per employee. With respect to the total combined transport volume of 12.7 million TEU this would result in an employment of almost 16,000 persons somehow dealing with intermodal logistics with railway undertakings.

Altogether, we estimate that, in 2005, the combined transport industry employed at minimum 23,000 persons.

6.7 Revenues from CT operations 2005

To record the revenues from combined transport services we included only data from combined transport operators and deliberately didn't take into account revenues generated by railway undertakings. According to that, in the year 2005, 39 intermodal logistics companies generated revenues around 3.2 billion Euro revenues from their services (cf Figure 24). These operators achieved some 80 percent of all TEU conveyed that year.

Assuming a linear revenue-volume-ratio the revenues of all operators covered by the survey would have amounted to a total of 4.0 billion Euro.

Considering that according to a recent *Mercer Consulting* study the largest incumbent railway undertakings in Europe achieved from their total rail freight services a consolidated turnover of about 15 billion Euro, we can nevertheless estimate the revenues accrued by the railways from their freight services produced for intermodal trains at about 3.5 to 4 billion euro. The whole of the intermodal industry represented then a business of 7.5 to 8 billion Euro per year and can no more be considered as a “quantité négligeable”.

Figure 24: Revenues of combined transport operators: 2005



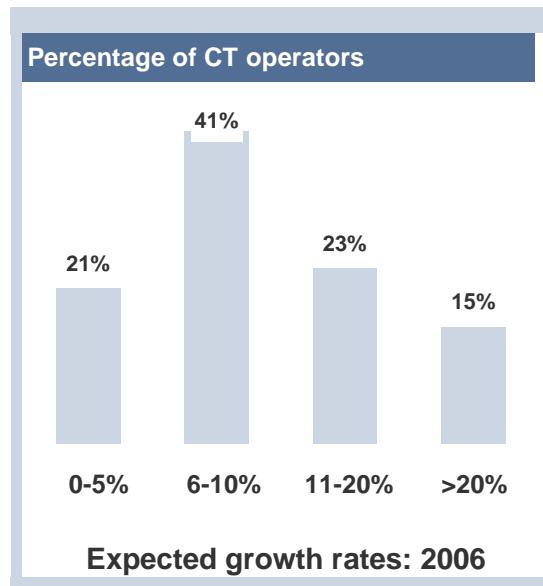
Sources/data pool: 39 combined transport operators

Part B: Outlook to combined transport 2006/2007

1 Evolution of unaccompanied combined transport 2006

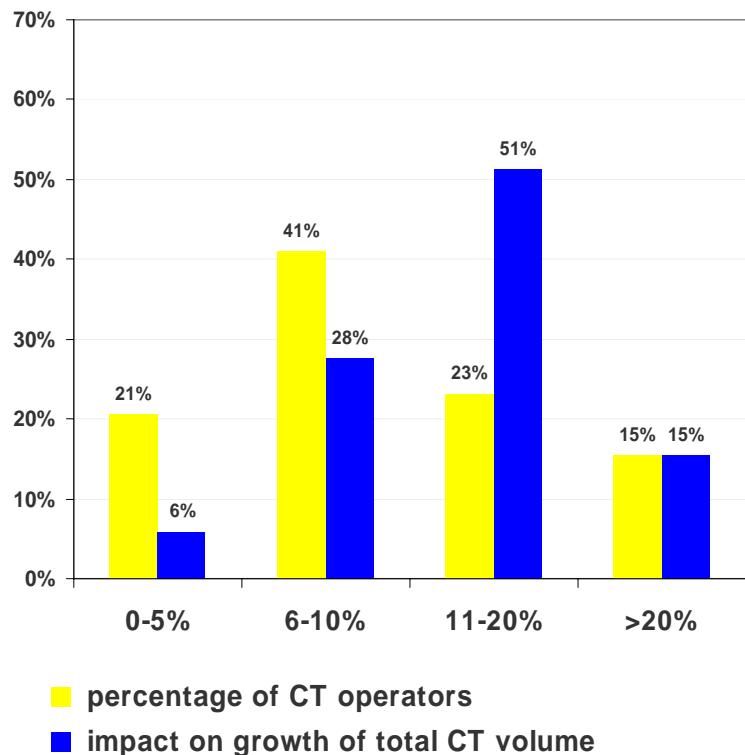
The majority of 39 operators of unaccompanied combined services (41%) that expressed views on the development of their business are expecting a growth of the volume between 6 to 10 percent from 2005 to 2006 (cf **Figure 25**). It may be a surprise that more operators (23%) are confident to reach an increase of 11 to 20 percent than companies (21%) that expect a moderate growth up to 5 percent. But even more striking is that amongst these optimistic operators are also many of the market leading companies. Together these operators would achieve 51 percent of the total increase of unaccompanied intermodal transport volume in 2006 provided that the expected growth rates are realized (cf **Figure 26**). Growth rates over 20 percent were primarily expressed by smaller companies and new entrants.

Figure 25: Expected 2006/2005 growth rates of combined transport operators by percentage of operators



Sources/data pool: 39 combined transport operators

Figure 26: Expected 2006/2005 growth rates of combined transport operators weighted with individual volume of operator



Sources/data pool: 39 combined transport operators

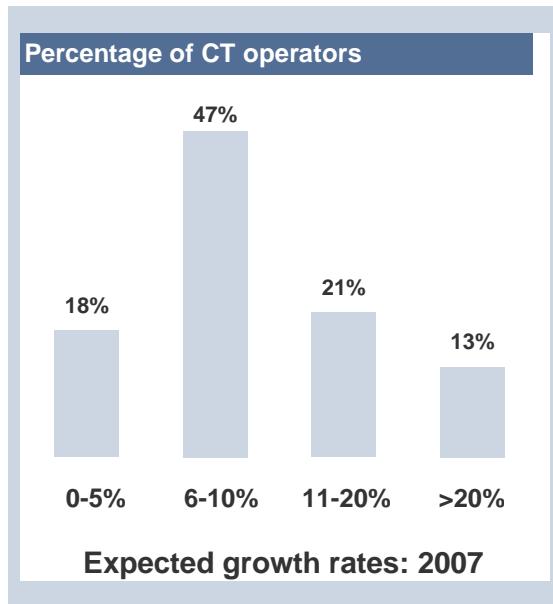
2 Evolution of unaccompanied combined transport 2007

While the confidence of operators for their business in 2006 could be explained, firstly, with the continuous boom of overseas container traffic particularly in trade with the Far East, and, secondly, with the fact that when we carried out the survey between April to October 2006, nearly all intermodal operators felt the recovery of the European economy and an acceleration of transport volumes, it is remarkable that comparatively optimistic forecasts govern the expectations of intermodal operators for the year 2007 (cf **Figures 27 - 28**).

47 percent of the operators envisage raising their number of shipments by 6 to 10 percent. If realized they would contribute 64 percent to the overall growth of combined transport volume, in 2007.

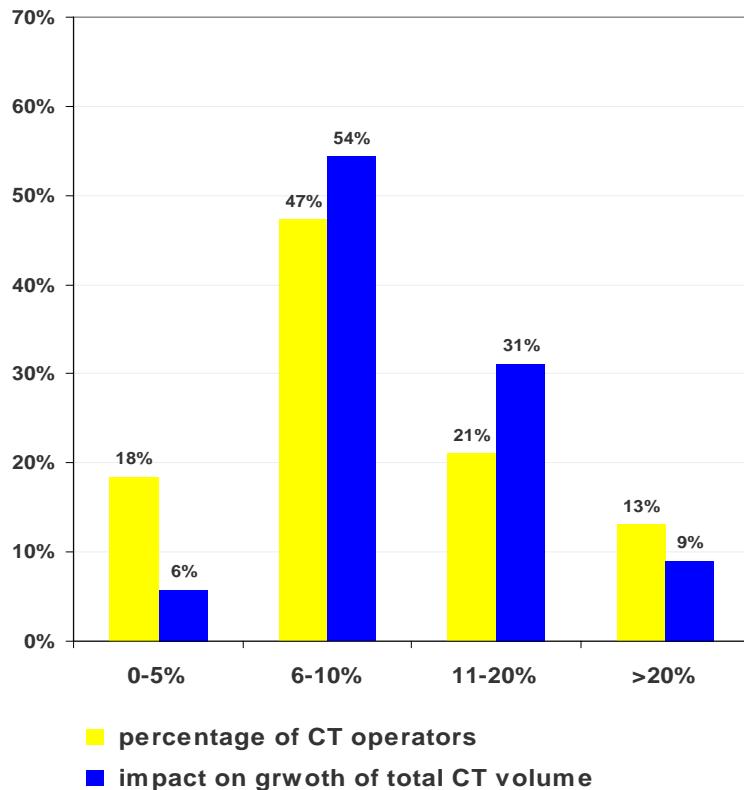
As for 2006, 21 percent of the companies that replied to this question are expecting an increase of their intermodal volumes of up to 20 percent. Their impact on the total growth of the industry would amount to 31 percent. In contrast to that, the percentage of "pessimists" has decreased to 18 percent.

Figure 27: Expected 2007/2006 growth rates of combined transport operators by percentage of operators



Sources/data pool: 38 combined transport operators

Figure 28: Expected 2007/2006 growth rates of combined transport operators weighted with individual volume of operator



Sources/data pool: 37 combined transport operators

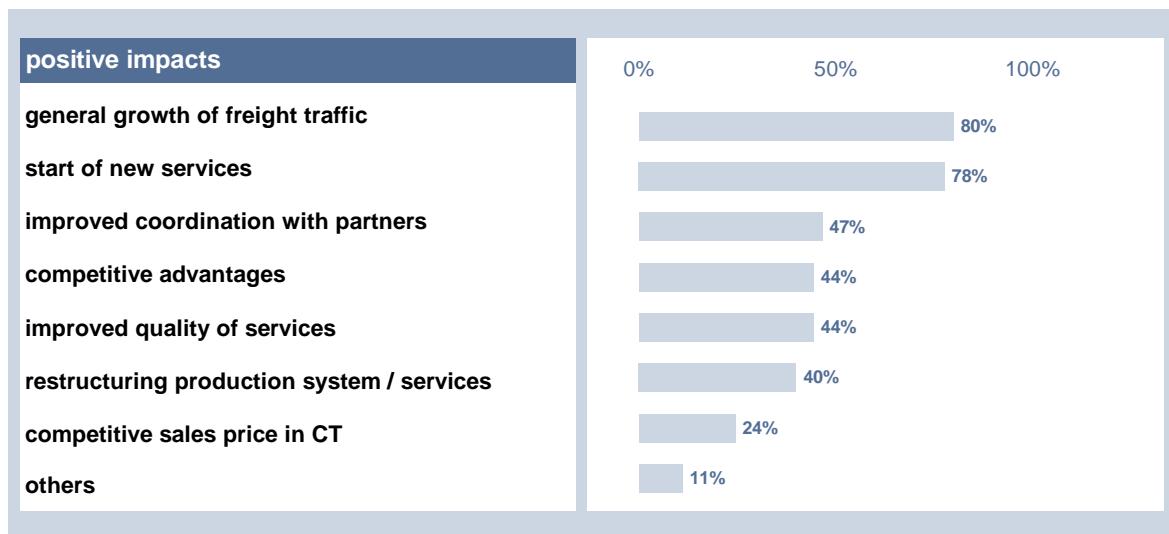
3 Impact factors on combined transport evolution

The reason why the majority of combined transport operators are looking optimistic at the near future becomes evident if we analyze the influences which are considered to impact positively on their business (cf **Figure 29**). About 80 percent of the operators are convinced that economy and freight traffic will continue to expand. Consequently, nearly the same percentage is planning to launch new intermodal services. And, even if they don't declare it explicitly the operators appear to be confident that the new capacities will be

well employed. All other factors of influence are less important than these two. But obviously, many operators are scheduled to improve or innovate their operational processes and enhance the co-ordination with partners. This also results from positive influences various operators indicated under "other impacts":

- Increasing globalization of trade also enlarges the rail freight potential
- Increased frequency of departures raising attractiveness to potential customers
- New operational hub concept
- Employment of own wagons to improve control and ensure on-time availability of wagon capacities
- Opening of domestic freight rail markets (cabotage) for new entrants
- Increased restrictions on road haulage such as the new regime on truck drivers' working and resting time
- Increased costs for road transport (truck drivers, fuel)

Figure 29: Outlook to 2006/2007: expected positive impacts



Sources/data pool: 45 combined transport operators

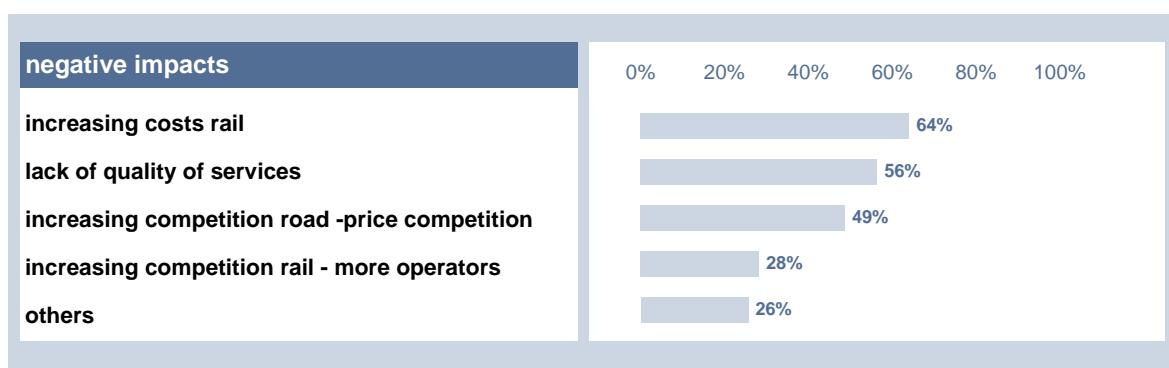
44 percent believe that an enhancement of the quality of their service would impact positively on volumes while only 21 percent attribute such an effect to prices.

Given that, it's no surprise that some 60 percent of intermodal operators are worried that

quality deficits and increased purchasing costs in particular for rail traction might hamper or at least slow down the path of growth (cf. **Figure 30**). Apart from the more common expectations as regards a fierce price competition by road hauliers, many operators also expressed their concern about increasing infrastructure capacity bottlenecks:

- Infrastructure bottlenecks at ports, intermodal terminals and on rail network
- Congestion of port terminals (sea-side handling)
- Change of government policy to the detriment of rail
- Operational deficits in sea ports
- Lack of locomotives and loco-drivers
- Competition by feeder vessels in the Baltic Sea
- Lack of equipment of forwarders in CEE countries
- Lack of intermodal wagons
- High infrastructure access fee
- Insufficient state support
- Increased competition from operators or railway undertakings becoming intermodal operators themselves or using specific operators

Figure 30: Outlook to 2006/2007: expected negative impacts

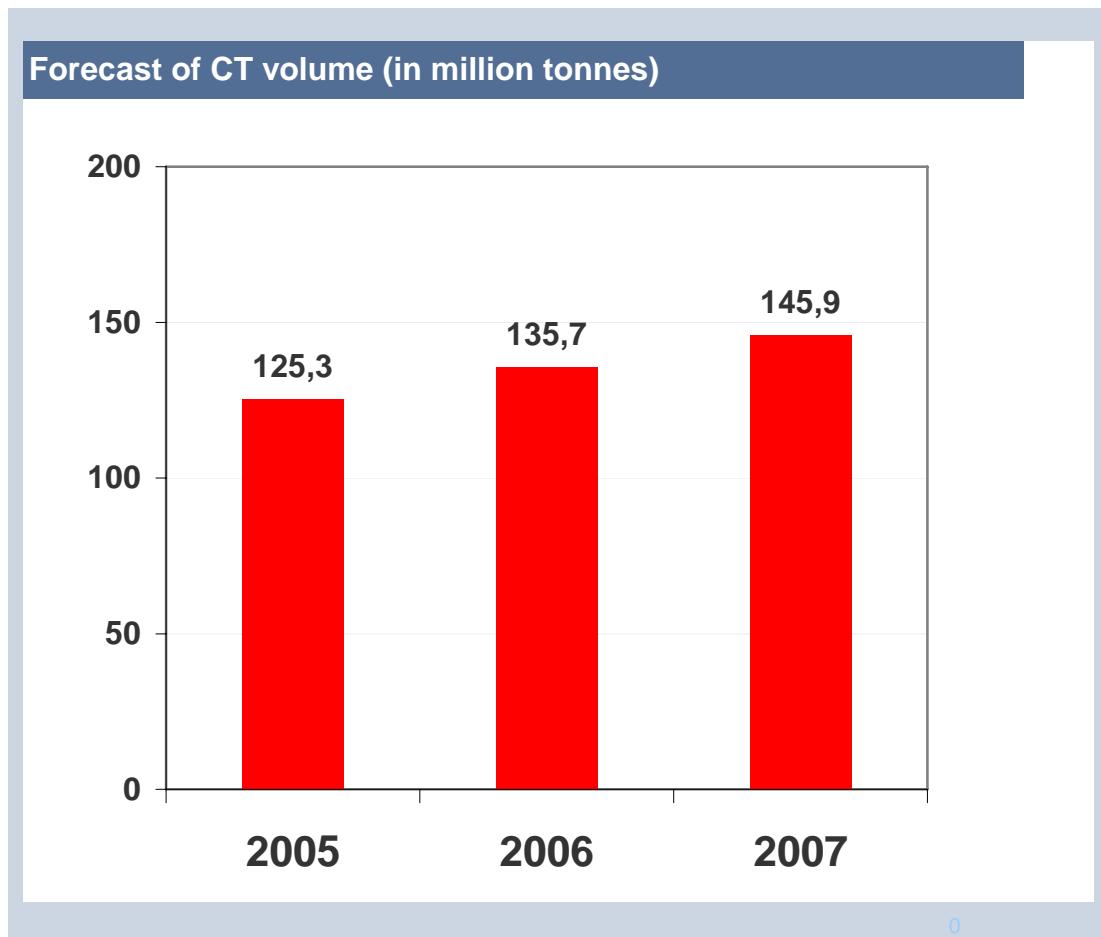


Sources/data pool: 45 combined transport operators

4 Forecast of unaccompanied combined transport to 2006 and 2007

Based on the expectations of the combined transport operators we have derived a forecast of the evolution of unaccompanied combined traffic for the years 2006 and 2007 (cf. **Figures 31 & 32**). To this purpose we have applied the expressed growth rates to the individual transport volume of each operator in 2005. We, however, kept the volumes of those companies that didn't express their future assessments at the 2005 level.

**Figure 31: Forecast of unaccompanied combined transport by 2006/2007:
volume in gross tonnes**

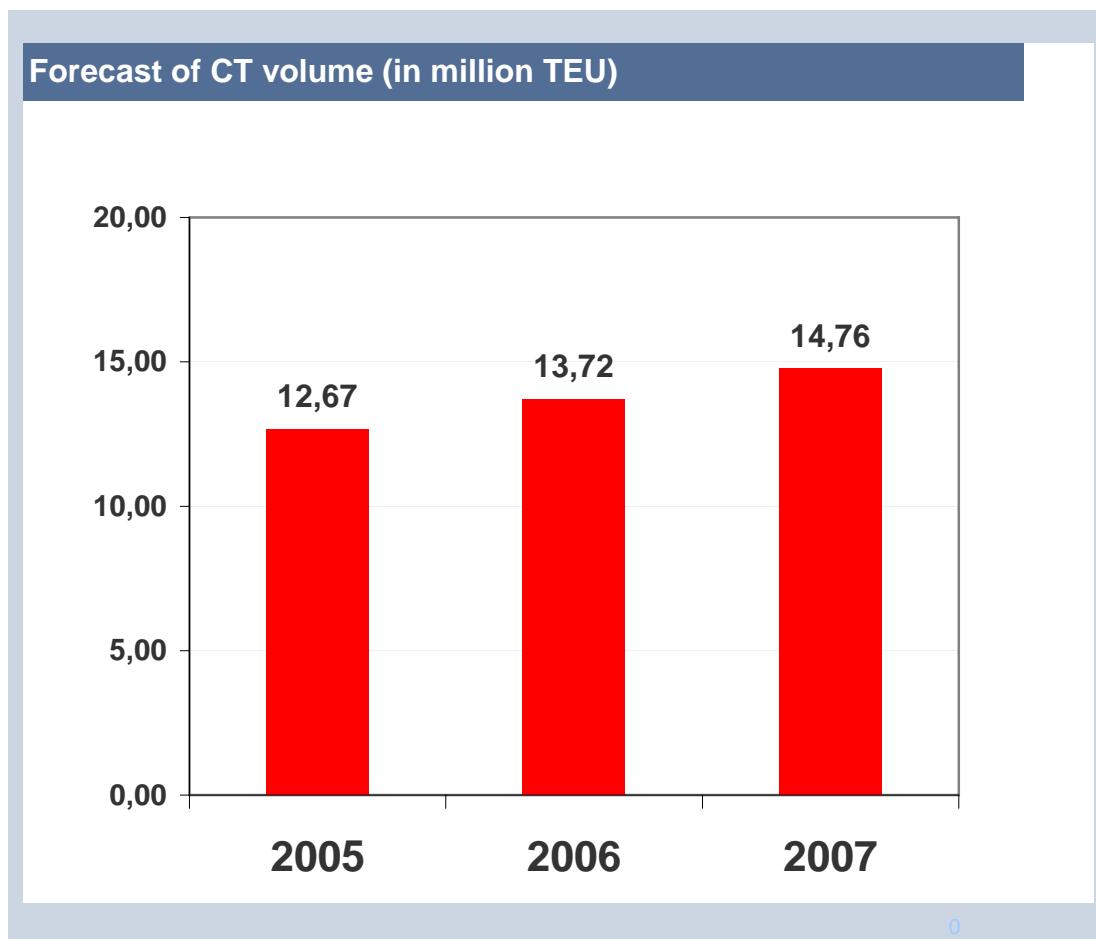


Based on that unaccompanied combined transport would achieve the following overall growth rates:

- From 2005 to 2006: + 8.2 %
- From 2006 to 2007: + 7.5 %

Hence the intermodal volume would increase from 125 million tonnes (2005) to 146 million tonnes (2007) or, respectively, from 12.7 million TEU (2005) to 14.8 million TEU (2007).

**Figure 32: Forecast of unaccompanied combined transport by 2006/2007:
volume in TEU**



Appendix: Methodological notes

The base data for this report were collected by a questionnaire attached to this appendix. Prior to the distribution of the questionnaire a pre-test, which involved various intermodal operators, has been carried out. Besides the overall comprehensibility of the questionnaire and the general availability of the data, specific attention was paid to the question whether the intermodal operators were prepared to reply to each question especially as concerns potential confidential data.

In fact, some operators stated that the scope of services is too large to be able to give exact figures per service or they would need to keep the volumes per individual service confidential. But generally, the operators were willing to give at least total figures of volumes and the total number of services, if not the combination of both.

After having identified more than 80 intermodal operators the survey was performed as follows:

- phone contact with the operators to check the willingness to respond to the questionnaire and obtain contact data of responsible person
- emailing of questionnaire including a cover letter explaining the background of the survey and the potential benefits of the operator
- after 3-4 weeks, first reminder calls and –if necessary- re-expedition of the questionnaire
- additional reminders, if required.

More than 60 out of 84 intermodal operators completed the questionnaire. This should be considered as a comparatively high response rate.

If information lacked or incoherencies were recognized, in the first place, it was attempted to clarify the items individually. In some cases information gaps could be filled by cross-checks with publicly available information (i.e. internet, business reports, publications) or through the consultants' market knowledge.

What was dealt with specific attention was the avoidance of double counts. This issue has become rather significant since more and more intermodal operators purchase services from another operator. Double counts had also to be eliminated in those cases when combined transport operators shared the same service and each of them recorded the total amount of shipments. It turned out that some reported volumes had to be adapted or re-distributed. This was achieved by a direct feedback with the operators involved.

After all this proceedings, one can conclude that the database given in the present report reflects the “reality” of the intermodal industry to a very large extent.

Specimen of questionnaire

Periodic report on combined transport in Europe Questionnaire Operators

The first objective of this study is to periodically report on combined transport (CT) in Europe. Thus, with this questionnaire, we wish to collect all relevant CT-related data on the basis of the year 2005. Further objective is to forecast the volume of combined transport on European corridors by 2015, on the basis of the year 2005, in order to assess the impact on rail infrastructure and terminal capacities.

We kindly ask you to complete this questionnaire. The data and information, which you will supply, will be neutralized and used in an aggregated form. If you have any question please do not hesitate to contact us (see below). We like to thank you very much for supporting this study.

Please return the completed form to:

KombiConsult GmbH
Mr.
Ludwig-Landmann-Str. 405
60486 Frankfurt am Main

Tel.: +49 (0) 69 / 79 505 1xx
Fax: +49 (0) 69 / 79 505 179
E-Mail: xxx@kombiconsult.com

Company information

		company name:	
		location of headquarter (adress):	
		shareholders (with %):	
market positioning	type of intermodal services supplied:		
	<input type="checkbox"/> domestic hinterland transport (overseas containers) <input type="checkbox"/> international hinterland transport (overseas containers) <input type="checkbox"/> domestic (continental) transport <input type="checkbox"/> international (continental) transport <input type="checkbox"/> door-to-door service <input type="checkbox"/> terminal-to-terminal service <input type="checkbox"/> forwarders / Logistic Service Provider (LSP) <input type="checkbox"/> shippers <input type="checkbox"/> shipping lines <input type="checkbox"/> others		
		target customer:	
		n° of employees in intermodal services (31 Dec 2005):	
		revenues from intermodal services in 2005:	Mill. Euro

Total volume of combined rail-road transport in 2005

Please provide at least one of the following dimensions:

in TEU:	TEU
in loading units:	loading units
in consignments (UIRR definition):	consignments
in tonnes:	tonnes
do tonnes include tare weight of loading unit?	yes <input type="checkbox"/> no <input type="checkbox"/>

Break-down by type of loading unit in % (total over all types = 100%)

container/swap bodies					semi-trailer
20'	7 - 8 m	30'	40'	13,60 m / 45'	
%	%	%	%	%	%

Transport volume per intermodal service in 2005

Please complete the following list or send a separate data file if it is more convenient for you.

Please be assured that this data will only be used in an aggregated form, which will not disclose your company-related volume.

Please be assured that this data will only be used in an aggregated form, which will not disclose your company's related volume.					
	origin terminal	destination terminal	number of trains p. a.	volume in tonnes p.a.	volume in TEU loading units consignments p.a.
domestic services					
international services					
total					

Expectations?

What growth of volume do you expect for 2006?		%
What growth of volume do you expect for 2007?		%
What are the likely reasons?		
	positive impacts	<input type="checkbox"/> start of new services <input type="checkbox"/> restructuring production system / services <input type="checkbox"/> improved quality of services <input type="checkbox"/> improved coordination with partners <input type="checkbox"/> general growth of freight traffic <input type="checkbox"/> competitive advantages <input type="checkbox"/> competitive sales price in CT <input type="checkbox"/> others; please specify:
	negative impacts	<input type="checkbox"/> increasing competition road - price competition <input type="checkbox"/> increasing competition rail - more operators <input type="checkbox"/> increasing costs rail <input type="checkbox"/> lack of quality of services <input type="checkbox"/> others; please specify:

Contact information

name:	<input type="text"/>
function:	<input type="text"/>
phone:	<input type="text"/>
e-mail:	<input type="text"/>

We'd like to thank you very much for completing this questionnaire.