

|2018 Report on

# Combined Transport in Europe

January 2019



**EBSL**

Transportation Consultants



INTERNATIONAL UNION  
OF RAILWAYS

## **2018 REPORT ON COMBINED TRANSPORT IN EUROPE**

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# Foreword by the UIC Combined Transport Group Chairman

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## **2018 – The Year of Multimodality – comes to its end**

In regards with this topic, a lot of events and workshops were organised, stressing the major role of combined transport as the most sustainable and environmental friendly transport mode.

This year's highlight is undoubtedly Noah's train, launched by the Rail Freight Forward initiative<sup>1</sup>, in the context of the COP24 with the objective to increase the rail freight volume to 30% by 2030.

This 7th edition of the Report on Combined Transport contains a focus on the European CT-wagon fleet including actual figures but also the expected trend by the year 2025. These holistic figures, demonstrate the vitality of the sector through the high level of investments foreseen in this domain.

In the coming years, the business model will likely change to a more integrated and digitalized logistic chain in which the Combined Transport will become the commonly accepted mode of transport, adding up flexibility, sustainability and lower carbon footprint.

Many thanks to the members of the UIC Combined Transport Group, our partners and the CT-wagon fleet stakeholders and manufacturers for their input to this valuable biannual report.

A handwritten signature in black ink, appearing to read 'Eric Lambert'.

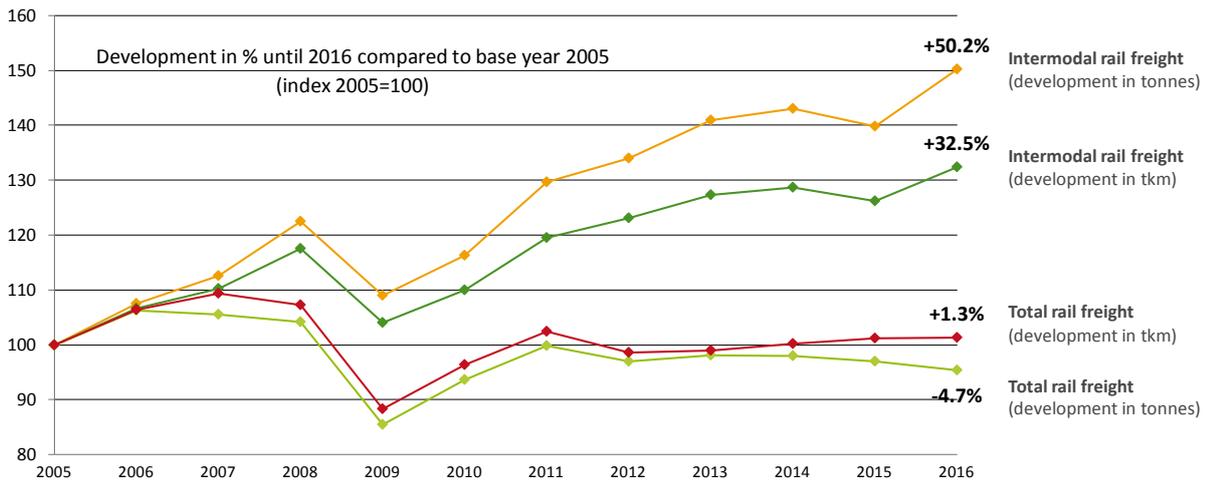
Eric Lambert

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1. Rail Freight Forward is a coalition of European rail freight companies which are committed to drastically reducing the negative impact of freight transport on the planet and mobility through innovation and a more intelligent transport mix. The coalition has the ambition to increase the modal share of rail freight to 30% by 2030 as the macro-economically bet-ter solution for European growth. It strives to engage railway undertakings, infrastructure managers and policymakers across Europe in acting to realize this modal shift. <https://railfreightforward.eu/>

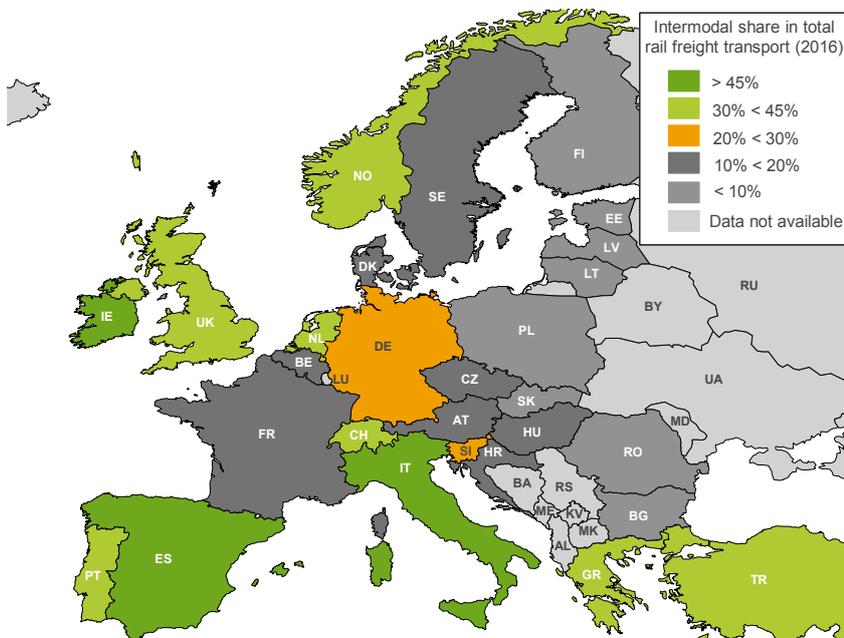
# 1. Rail/road combined transport in Europe at a glance

## Development of total rail freight performance vs. rail transport of goods in intermodal transport units in Europe (Index 2005 = 100)<sup>2</sup>



Source: Eurostat (2018) with last database update by Eurostat November 14, 2018, BSL Transportation analysis.

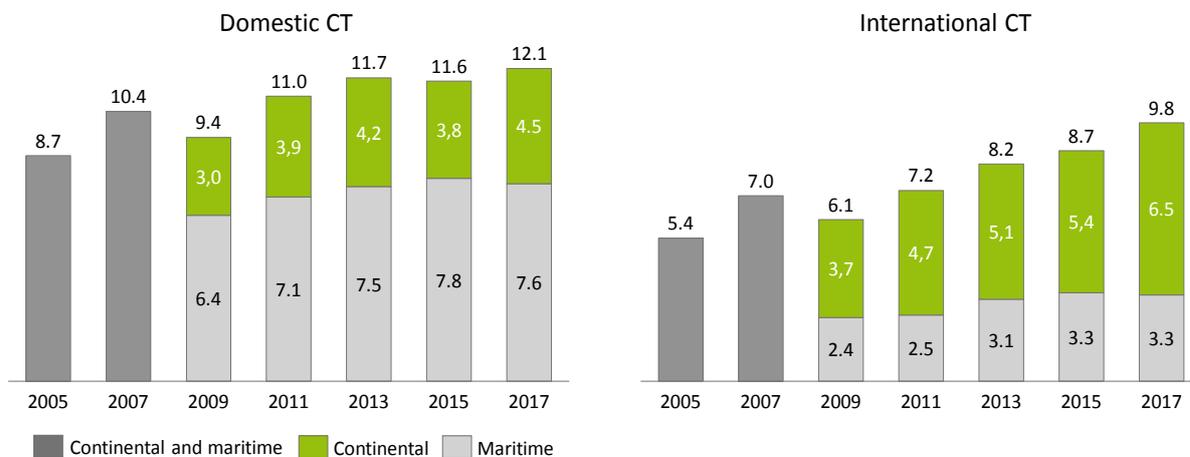
## Map of intermodal share of rail freight transport in Europe by country (% in total rail freight tkm) in 2016



Source: Eurostat (2018), last database update by Eurostat: November 14, 2018, BSL Transportation analysis.

2. Please note that the Eurostat dataset for Italy has undergone a change between 2015 to 2016, as the new Regulation n. 2032/2016 has changed the target population from 2016 onwards, so that data are not fully comparable with data of previous years. Nevertheless, the key message of the figure presented remains unaffected.

## Development of domestic and international unaccompanied CT 2005 to 2017 [in million TEU]



Source: BSL Transportation analysis, UIRR.

## Development of total CT volumes 2005 to 2017 [in million tonnes]

Segment	2005	2007	2009	2011	2013	2015	2017
CT volume unaccompanied	145.5	181.5	164.6	191.8	203.0	218.0	241.8
CT volume accompanied	10.2	13.6	15.1	14.9	10.8	13.0	11.5
<b>Total</b>	<b>155.7</b>	<b>195.1</b>	<b>179.7</b>	<b>206.7</b>	<b>213.8</b>	<b>231.0</b>	<b>253.4</b>

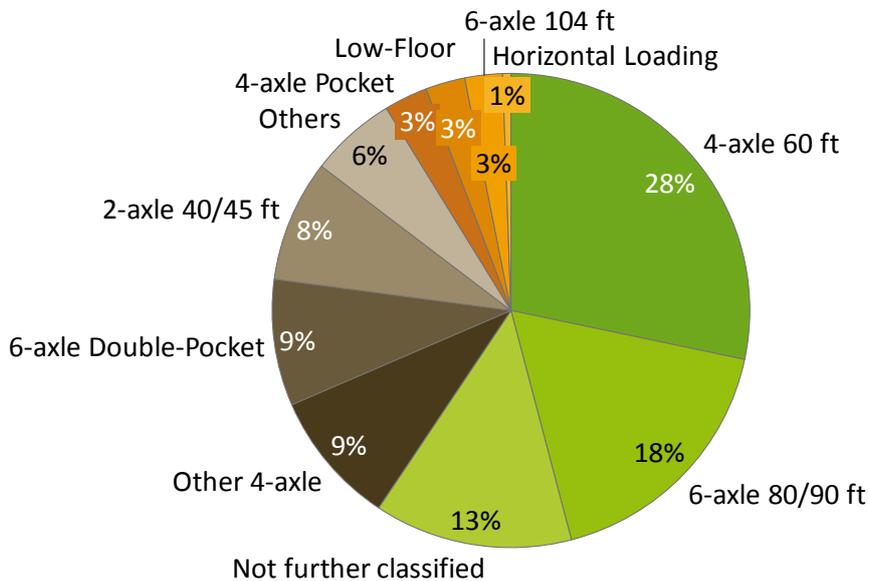
Source: BSL Transportation analysis, UIRR.

## Trade relations and volumes of accompanied CT in 2017 [based on number of shipments/trucks]

Country A	Volume	Country B
UK 	 1,64m	France 
Germany 	 0,51m	Italy 
Austria 	 0,50m	Slovenia 
Austria 	 0,02m	Italy 
France 	 <0,01m	Italy 

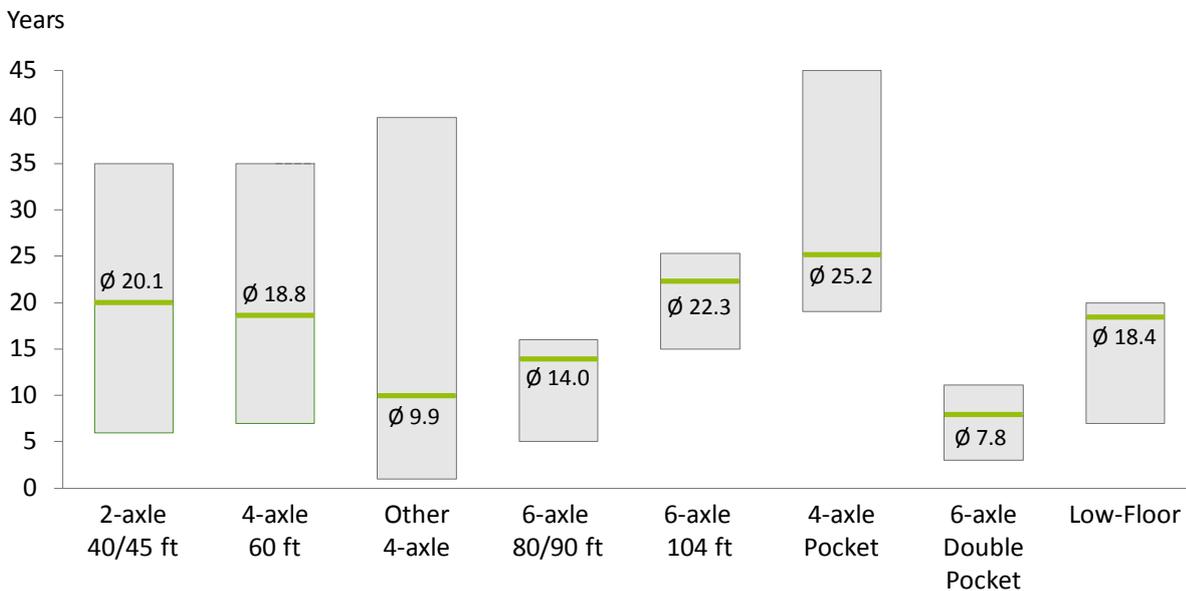
Source: BSL Transportation analysis, UIRR.

### Intermodal wagon fleet in Europe 2017 – composition by wagon type<sup>3</sup>



Source: BSL Transportation analysis.

### Age structure of current CT wagon fleet by wagon type<sup>4</sup>

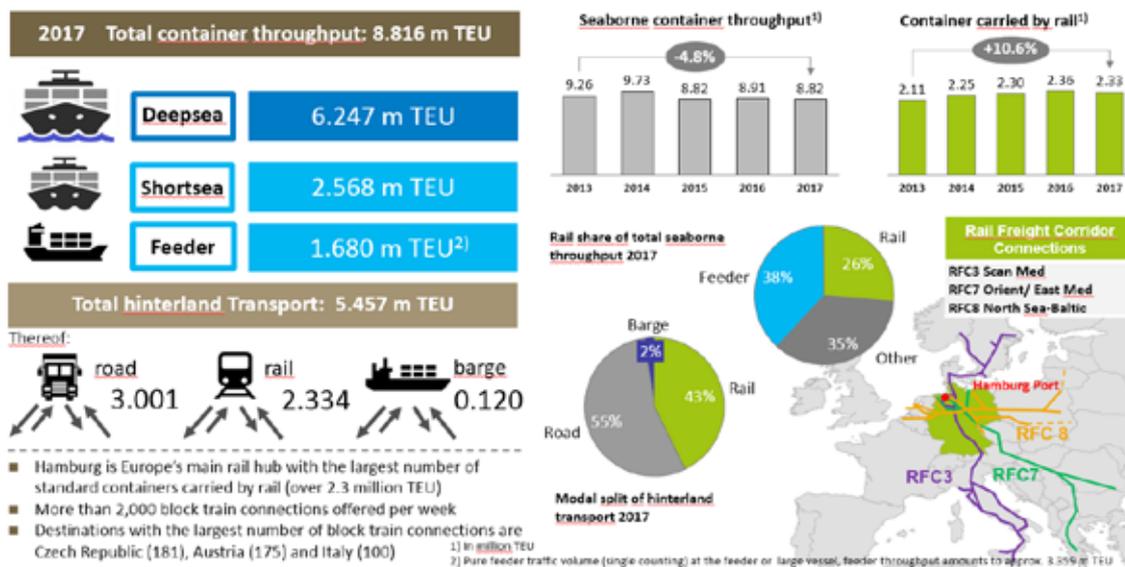


Source: BSL Transportation analysis, sample includes about 2/3 of the total intermodal fleet in 2017.

3. Please note that the category “Others” encompasses other standard intermodal wagons and special intermodal wagons, including non-standard gauge wagons, the category “Not further classified” refers to company feedback, where only a total number of wagons was provided without further breakdown by wagon type.  
 4. Without categories “Wagons for horizontal technology” and “Other” as sample too small.

## Port fact sheet – Hamburg

### Hamburg (DE)



Source: BSL Transportation, Hafen Hamburg Marketing e.V., www.hafen-hamburg.de

## Analysis of existing national CT funding programmes by funding sector

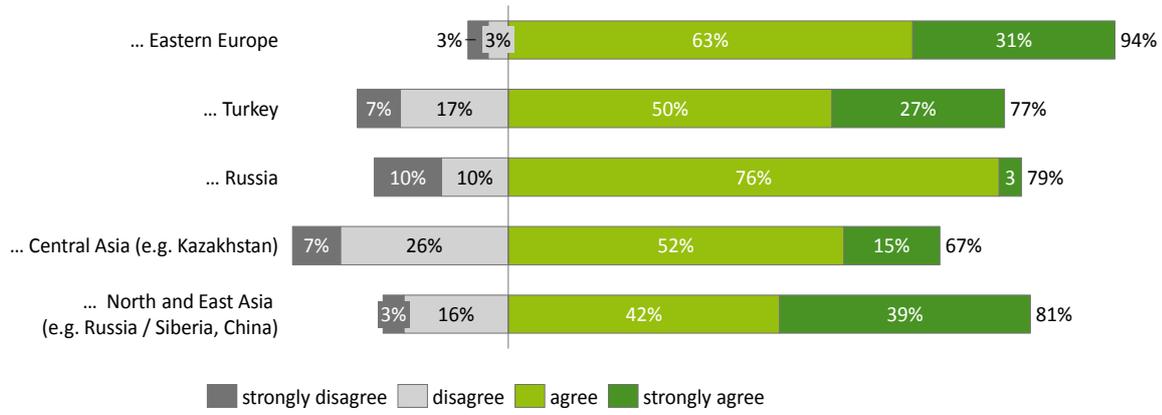
	National Funding measures or programmes for Combined Transport										
	No. of funding measures	Operational (Funding per km)	Operational (Processes)	Operational (Technology)	Infra-structure (Rail)	Infra-structure (Terminal)	Wagons	Intermodal loading units	Research	RoLa / Rolling motorway <sup>2)</sup>	Fiscal support <sup>1)</sup>
Austria	5	x	x	x	x	x	x	x	x	x	x
Belgium	1	x					x	x			x
Bosnia and Herzegovina	2 in 1	x			x	x					
Bulgaria	2	x			x	x					
Croatia	3 in 1	x									x
Czech Republic	2			x		x		x			
Denmark	1	x									
Finland	1	x								x	x
France	6 in 3	x	x	x	x	x		x	x	x	
Germany	3		x	x	x	x		x	x		
Italy	2	x								x	
Luxembourg	1	x									
Poland	1				x		x	x			
Serbia	2			x		x	x	x			
Sweden	1	x									
Switzerland	5	x	x		x	x				x	x
Turkey	2 in 1		x		x	x					x
United Kingdom	1	x								x	

Currently no CT funding: Estonia, Latvia, Norway, Slovakia, Slovenia, Spain

Source: BSL Transportation analysis, national authorities.

### Expected further geographical market potential for combined transport

“We expect attractive market opportunities / volume potential for combined transport on the rail corridor towards...”



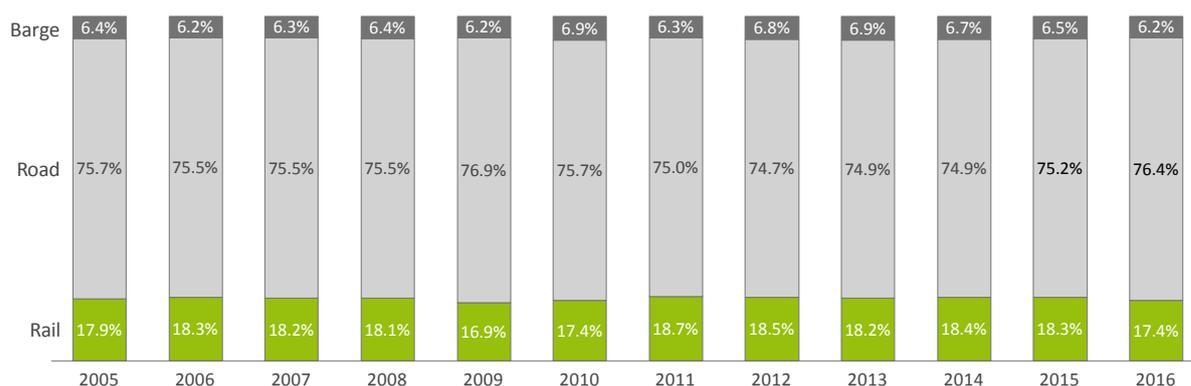
Source: BSL Transportation analysis.

## 2. General framework and key elements of combined transport in Europe

### 2.1. Rail and intermodal transport in the European freight market

In the modal split of total European freight transport based on tonne-kilometres, rail transport has an overall share of more than 17% (see Figure 1). Within the last five years (2011 to 2016) rail's modal share decreased by more than one percentage point. With regard to the long-term development since 2005, however, rail transport has been more or less stable with a percentage ranging between approx. 17% and 19% of total freight traffic in Europe.

**Figure 1: Development of rail share in modal split of European freight transport (in tonne-km, EU-28)<sup>5</sup>**

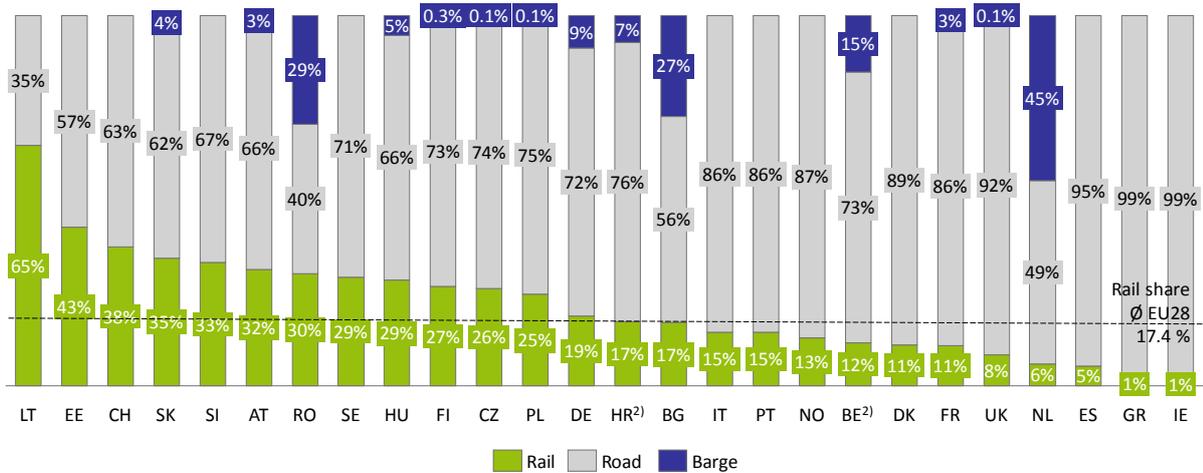


Source: Eurostat (2018) with last database update by Eurostat on August 28, 2018, BSL Transportation analysis.

The modal split per country<sup>6</sup> shows that there are significant differences between the shares of each mode in tonne-km. Across different European countries, rail's share in modal split ranges between 1% in Ireland and Greece and 65% in Lithuania.

5. Based on the Eurostat data series modal split of freight transport [tran\_hv\_frmod]: This indicator is defined as the percentage of each inland mode in total freight transport performance measured in tonne-kilometres. Inland freight transport modes include road, rail and inland waterways.

6. Sample of selected countries based in line with previous report editions on relevance for European CT market and Eurostat data availability

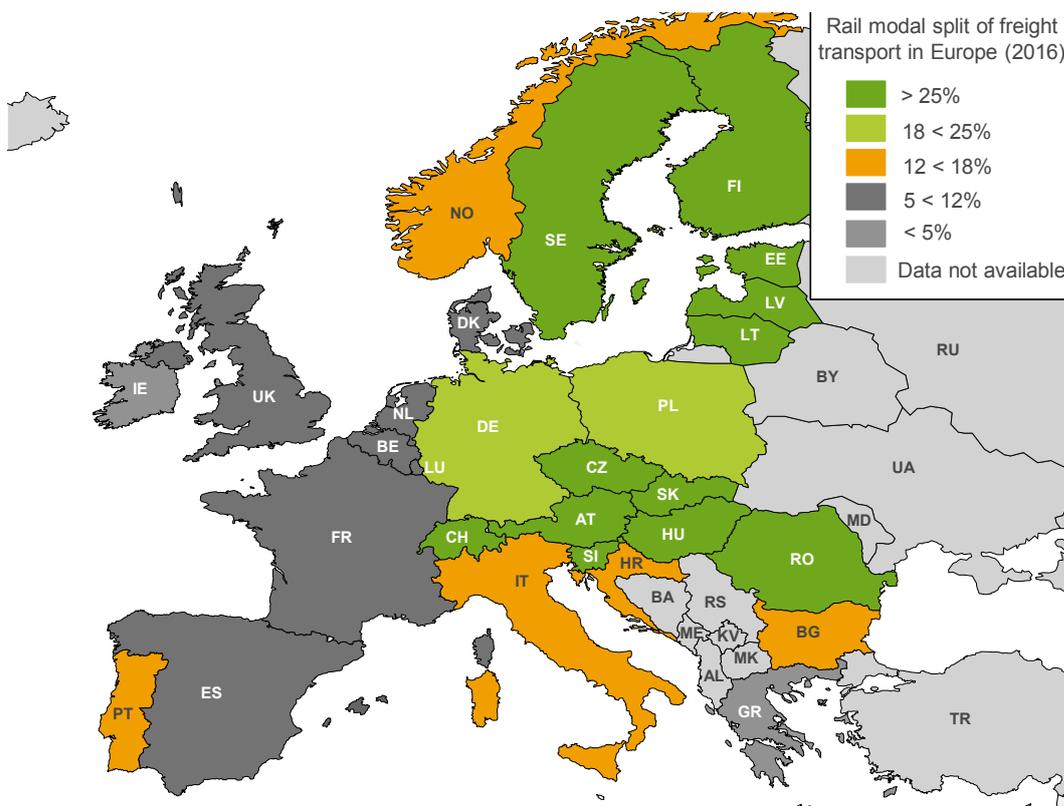
Figure 2: Modal split 2016 for selected European countries (based on tonne-km)<sup>7</sup>

Source: Eurostat (2018) with last database update by Eurostat on August 28, 2018, BSL Transportation analysis. Note: Rounding differences may occur.

Displaying the data on a map shows that particularly in Central European countries and North-Eastern Europe rail has a larger share in modal split. One reason, e.g. for Switzerland, Slovakia, Slovenia or Austria, is their status as classic transit countries. Furthermore, based on the measurement in tonne-kilometres, the nature of cargo transported also affects the statistics. Countries, where usually larger volumes of heavy bulk cargo are transported by rail, as in Scandinavia or Eastern European countries, for example, naturally also have a higher rail share.

7. Data for HR and BE estimated by Eurostat

Figure 3: Map of rail modal split of freight transport in Europe by country (% in total inland freight tkm) in 2016<sup>8</sup>



Source: Eurostat (2018), with last database update by Eurostat on August 28, 2018, BSL Transportation analysis.

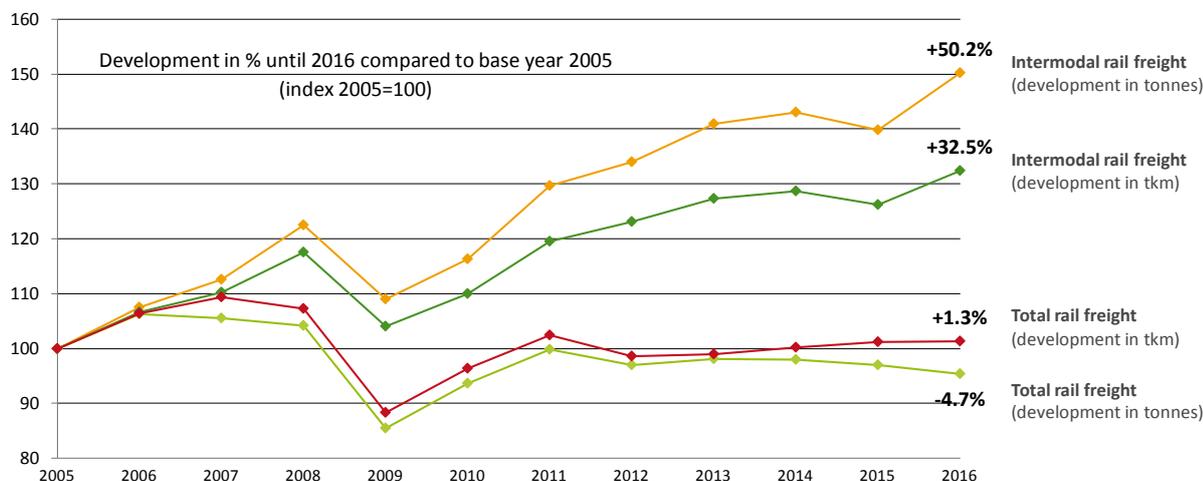
The total amount of goods transported by rail in Europe, based on million tkm and including all rail market segments, has been practically more or less stable since 2005, as the following Figure 4 shows, aside from some fluctuations due to effects of the global financial crisis in 2009. The total rail tonnage in Europe even declined slightly in recent years, not reaching the pre-crisis volumes.

The intermodal rail freight segment, on the contrary, shows an outstanding performance during the same time period.<sup>9</sup> It did not only perform particularly well in terms of tonnage (+50%) but also with regard to tkm (+32%), developing significantly more positively than rail freight transport in general. In view of the development of conventional rail freight and in particular, single wagonload traffic, this makes intermodal rail freight the only market segment in European total rail freight that is growing at the moment.

8. Please note that Eurostat has changed its methodology for calculating the modal split figures in 2018, also recalculated the figures of previous years. For this reason, the modal split figures presented here are not comparable to the last report editions of 2014 and 2011. For more information on the Eurostat methodology, please see [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Freight\\_transport\\_statistics\\_-\\_modal\\_split](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Freight_transport_statistics_-_modal_split)

9. Methodology: The development of total rail freight transport performance of selected major European countries has been compared to the development of the annual railway transport of goods in intermodal transport units (thereof containers and swap bodies). This basically corresponds to a large share of the market segment of unaccompanied combined transport. Data for semitrailers and accompanied CT cannot be incorporated here due to data limitations (country sample and time series). Selection has been based on availability of time series in Eurostat, single years interpolated or estimated. Country sample includes AT, CZ, DK, DE, EE, EI, EL, ES, FI, FR, HR, IT, LT, HU, NL, NO, PL, PT, RO, SE, SI, SL, TR and UK.

**Figure 4: Development of total rail freight performance vs. rail transport of goods in intermodal transport units in Europe (Index 2005 = 100)<sup>10</sup>**



Source: Eurostat (2018) with last database update by Eurostat November 14, 2018, BSL Transportation analysis.

Intermodal rail freight data is displayed as part of total rail freight. For data availability reasons, intermodal transport has to be limited to the transport of containers and swap bodies here (which represent the largest part of the market, however). Unfortunately, for semitrailers and road vehicles (accompanied) continuous time series data are only available for a very limited number of countries. The available dataset based on a different sample of countries (including only those with Eurostat figures) for the development of semitrailers, indicates that the market dynamics for this particular market segment are even higher than the above-mentioned development. On the contrary, the available Eurostat data for the accompanied transport of road vehicles reveals a decline during the last years.

In the past, intermodal rail freight could particularly benefit from more cross-border traffic and volume increases in maritime intermodal transportation hinterland to and from European seaports.

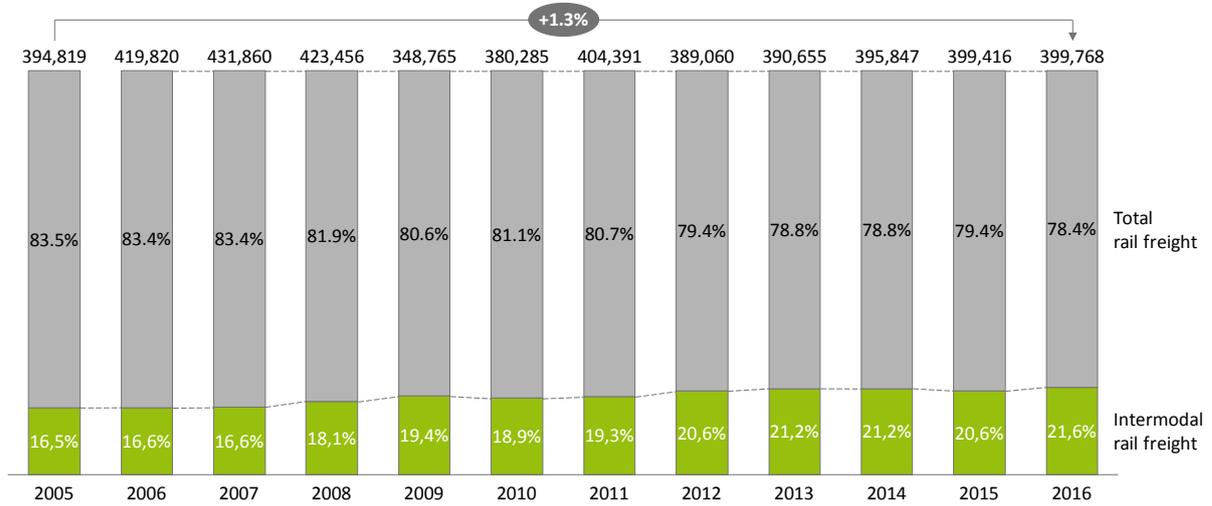
Due to the market dynamics of the intermodal market segment and in view of the objective of the present study, the percentage of combined transport in overall rail transport is of particular interest. For this purpose, the Eurostat data available is used to ensure the comparability and congruency of the data set.<sup>11</sup> Since rail data in tonne-km is more reliable than in tonnes due to the lower risk of double-counting, particularly in international transport, we focus on the share of intermodal rail freight measured on tonne-km in the following analysis of intermodal rail freight.

10. Please note that the Eurostat dataset for Italy has undergone a change between 2015 to 2016, as the new Regulation n. 2032/2016 has changed the target population from 2016 onwards, so that data are not fully comparable with data of previous years. Nevertheless, the key message of the figure presented remains unaffected.

11. Please note that the combined transport dataset presented in chapter 3 cannot be employed here for estimation due to the different methodology of total rail traffic data/ for comparability reasons

Based on a sample of 24 selected European countries, the share of intermodal rail freight in total rail freight amounts to approximately 21.6 % across Europe. This percentage has continuously increased since 2005 (16.5%).

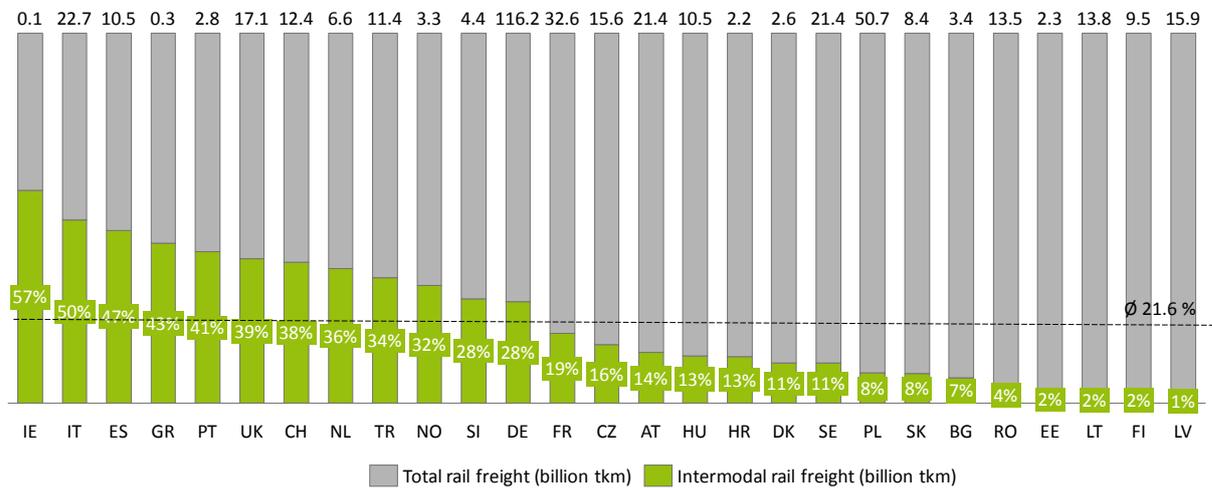
**Figure 5: Share of intermodal rail freight in total rail freight for 24 selected European countries in 2016 (based on tonne-km)<sup>12</sup>**



Source: Eurostat (2018) with last database update by Eurostat on November 14, 2018, BSL Transportation analysis.

The share of intermodal rail freight (in tonne-km) of total rail freight transport varies between 1% and 57% across Europe, as the following Figure depicts.

**Figure 6: Share of intermodal rail freight in total rail freight (based on tonne-km) by country (2016)<sup>13</sup>**



Source: Eurostat (2018), with last database update by Eurostat on November 14, 2018, BSL Transportation analysis.

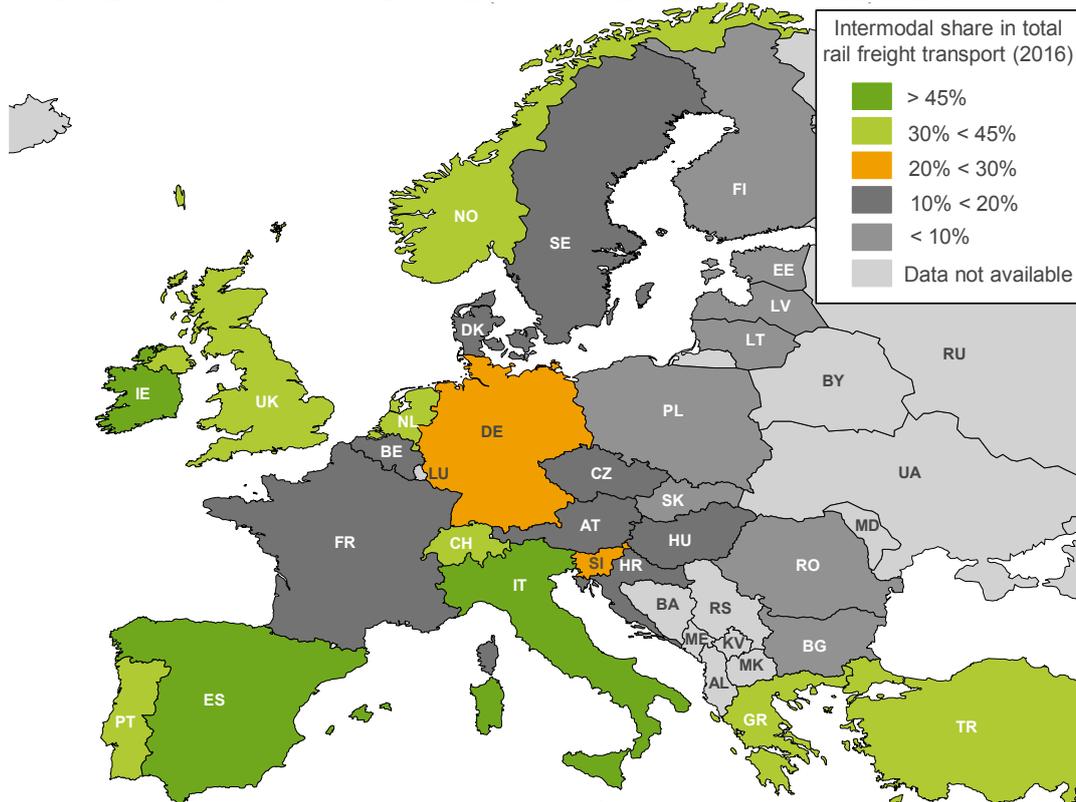
12. Selection based on data availability and in line with previous figures, including 24 countries: AT, CZ, DK, DE, EE, ES, FI, FR, GR, HR, HU, IE, IT, LT, NL, NO, PL, PT, RO, SL, SK, SE, TR and UK.

13. Sum per column equals the total rail freight volume (in billion tonne-km) per country in 2016.

The total rail freight volume also needs to be taken into account, however. It becomes obvious that some countries such as Ireland or Greece have a comparable small rail volume in total but a high relevance of intermodal transport. In the largest European rail market, Germany, intermodal transport accounts for approximately 28% of the total rail freight volume.

Displaying the data on a map, reveals that the relevance of intermodal transport in total rail freight transport is particularly high in Western Europe (excl. France and Belgium) and Southern Europe.

**Figure 7: Map of intermodal share of rail freight transport in Europe by country (% in total rail freight tkm) in 2016**



Source: Eurostat (2018), last database update by Eurostat: November 14, 2018, BSL Transportation analysis.

## 2.2. Definition, market structure and key elements of combined transport

Without doubt, combined transport is an important element of the European freight market with an increasing share in the total European rail and freight market. The European **Council Directive 92/106/EEC**<sup>14</sup> presents the following generally-accepted definition of combined transport (CT):

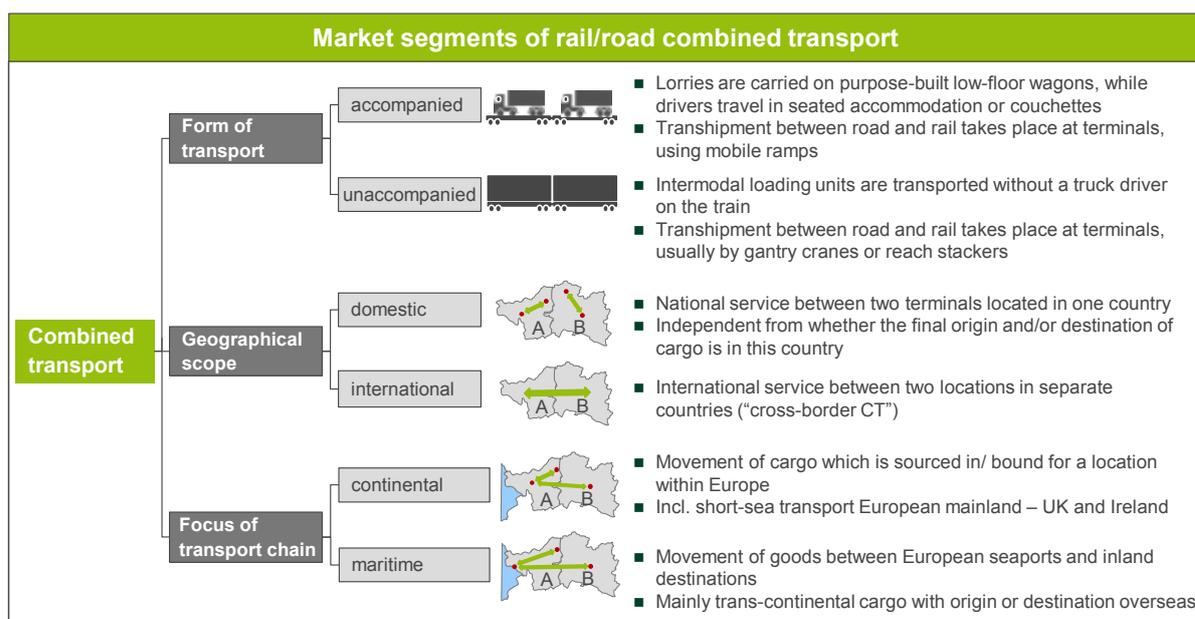
**Combined transport** means the transport of goods

- between member states where the lorry, trailer, semi-trailer, with or without tractor unit, swap body or container of 20 feet or more uses the road on the initial or final leg of the journey and, on the other leg, rail or inland waterway or maritime services where this section exceeds 100 km as the crow flies and make the initial or final road transport leg of the journey;
- between the point where the goods are loaded and the nearest suitable rail loading station for the initial leg, and between the nearest suitable rail unloading station and the point where the goods are unloaded for the final leg, or
- within a radius not exceeding 150 km as the crow flies from the inland waterway port or seaport of loading or unloading.

The present study has its focus on rail/ road combined transport activities in Europe. The geographical coverage of the report with the countries considered in the analysis is provided in chapter 3.

Basically, combined transport can be differentiated by the form of transport offered, the geographical scope, and the focus of the transport chain. The above mentioned differentiations result in six market segments of combined transport (see Figure 8) which are further examined in this report.

**Figure 8: Overview of market segments in rail/road combined transport**



Source: BSL Transportation.

14. However, the plans to revise the Directive are still ongoing and continue to be subject to intensive discussions.

The segmentation by **the form of transport offered** focuses on whether the combined rail/road transport is carried out accompanied (with a truck driver) or unaccompanied (without a truck driver) during the rail transport of the loading unit.

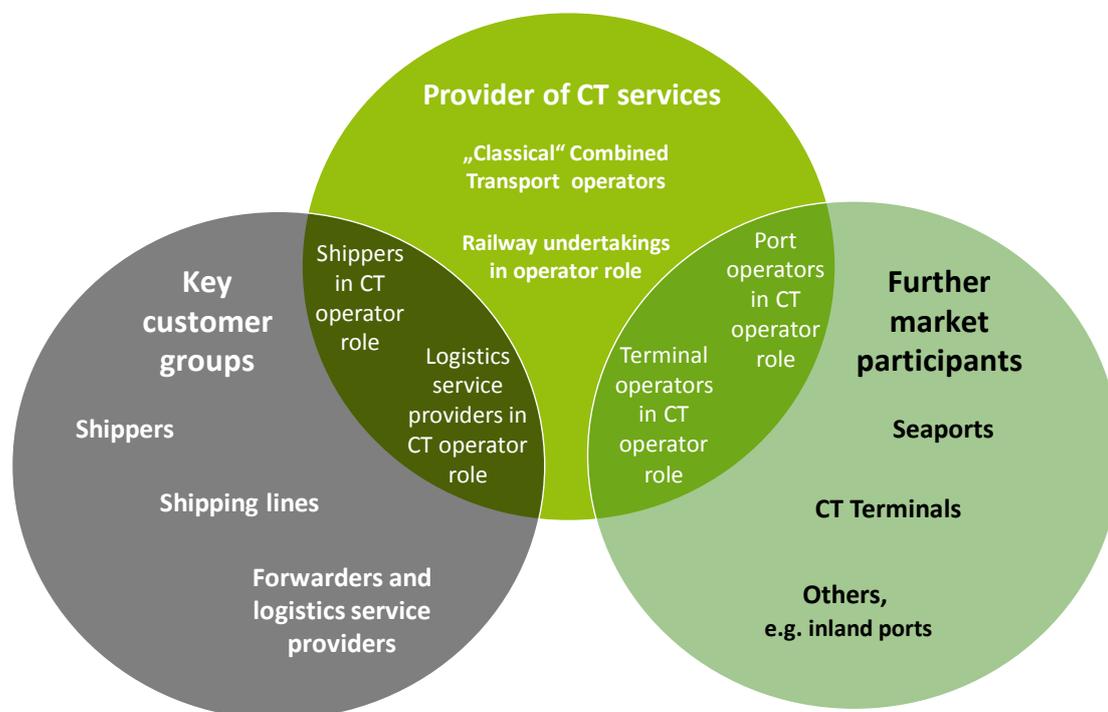
Both unaccompanied and accompanied combined transport can be distinguished by applying a strictly territorial principle related to the **geographical scope** of the transport of a CT loading unit. This market segmentation differentiates whether CT concerns domestic or international (“cross-border”) services. It has to be considered, that in specific cases there may be an inaccuracy, if the primary origin or final destination of the goods are not necessarily the specific countries taken into account. For example, “domestic” goods may arrive from or be forwarded to another country, by road pre- or post-carriage or in case of gateway services, without knowledge of the CT provider. In international transport the goods transported could also originate from or go to a third country with the pre- or on-carriage.

The third differentiation is based on the **focus of the transport chain**, including the segments continental or maritime: Continental CT concerns both cargo originating from or being destined for locations within Europe. Maritime CT involves trans-continental cargo routed over a seaport to or from an inland destination. Whereas Continental CT uses particularly domestic freight containers, 45’ non-ISO containers, swap bodies and semi-trailers, equipment used in Maritime CT are almost exclusively standard ISO containers (8’ wide, 8’6” high, 20’, 40’ or 45’ long). In addition, there are differences in the scope of logistical services: Continental CT are often terminal-to-terminal based services including road leg. Maritime CT is usually related to port-to-door services with supplementary logistics services such as pre- or on-carriage by road, customs clearance or empty depot services.

Combined transport services are often provided by CT operators who act as independent intermediaries or brokers between potential customer groups and railway undertakings. The CT operator usually purchase transport capacities from railway companies with volumes ranging from a wagon-by-wagon basis up to block trains for a single or multiple customer(s). Increasingly, other stakeholder groups such as railway undertakings, logistics service providers, shippers, terminal or port operators directly offer CT services to the customers. The main reasons for this trend towards more vertical integration of the CT supply chain are that market players want to extend their value chain/ creation and secure and stimulate their core business, establish a direct connection to the customer, exert more control on the services offered, and, after all, participate from CT market growth by this means. Key target customer groups of CT services are shippers, shipping lines, logistics service providers and truck companies. Other relevant players in the CT market are seaports or CT terminals among others (e.g. inland ports).

The following figure provides an overview of the current market players in Combined Transport in Europe. In view of the growing digitalisation of services, it can be expected that the market business system will change continuously in the future as the barriers between the different market players will continue to get smaller and the market becomes more open.

**Figure 9: Overview of major market players in Combined Transport in Europe**



Source: BSL Transportation, UIC.

In order to gather a comprehensive overview of the current situation of combined transport in Europe present figures and information on rail/road combined transport volumes has been collected by means of a survey. The methodology and key results of the survey are presented in detail in the next chapter.

## 3. The European rail/road combined transport market – facts and figures

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### 3.1. Methodology and approach

The objective of this report is to outline the current situation of combined transport in Europe, providing data and information on

- the actual volume of overall combined transport and its market segments,
- the development of overall CT, including market segments, and
- the assessment of future developments.

The market data collection was carried out by means of a survey among the relevant market players for CT in Europe. Companies throughout Europe were asked for their individual data on CT activities in terms of volumes and geographical scope, but also for their market assessment in terms of regional and overall CT market development. The survey participants offer Combined Transport-activities in more than 30 European countries, covering a geographic country sample from Portugal to Russia and from Norway to Turkey.

All figures presented focus on the reference year 2017 and are displayed and evaluated anonymously and solely as aggregated volumes. All data for combined transport provided relate to the above mentioned CT definition with concentration on rail/road-services.

Data collection for CT remains challenging in view of the lack of a comprehensive and comparable database of the European combined transport market and different individual methodologies regarding definitions, data compilation and counting standards but also and the degree of data availability among the stakeholder.

For this reason and to provide a solid methodical basis, the present report relies on different complementary sources, which taken into account for a plausibility check:

- a comprehensive data base resulting from the market survey by means of a questionnaire for all relevant market players, incl. personal talks in terms of specific requests and clarifying any unanswered questions,
- a matching with the UIRR-database,
- desk research involving the most relevant data sets and statistics for the different market segments,
- additional checks, bilateral discussions and adjustments in case of data inconsistencies

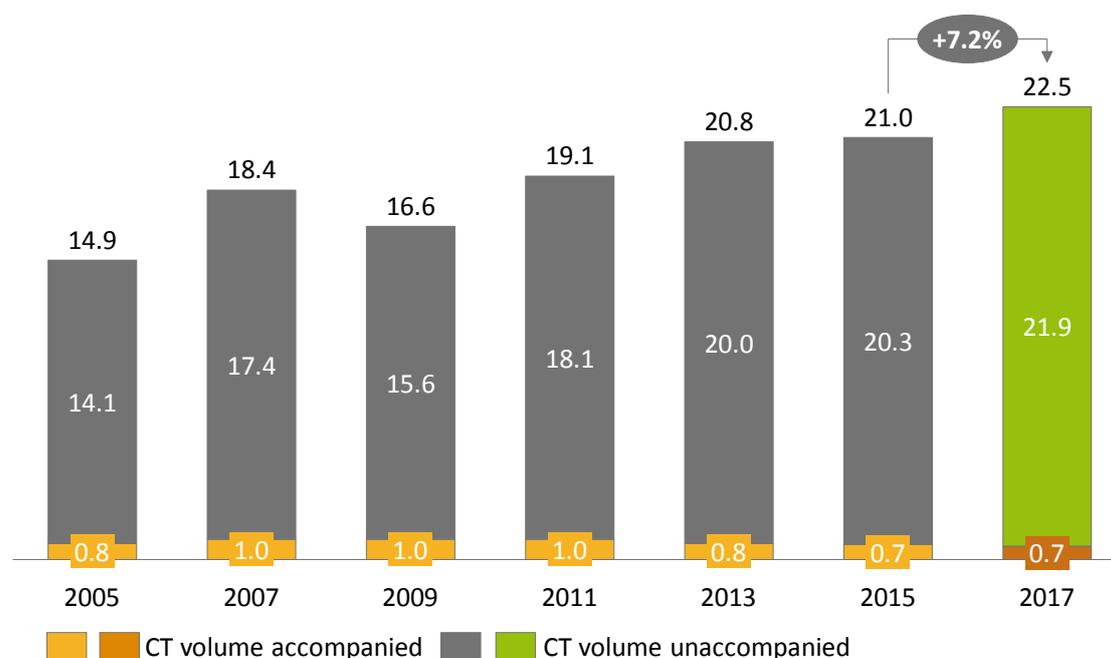
The figures presented in this report refer to the total data and volumes of more than 100 operators/ stakeholders with combined transport activities.

This approach pursued here is following the methodology of previous reports, and ensuring by this means, continuity and comparability in terms of market volumes and market development. The continuously changing market environment and structure due to new market entrants, mergers and acquisitions, changes in company names or the withdrawal of market participants has been considered in the report.

## 3.2. Combined rail/road transport volumes

The total volume of combined transport in Europe, that encompasses unaccompanied and accompanied CT, amounts to 22.5 million TEU in 2017. This means a positive development of +7.2% compared to the total CT volume in 2015 (see Figure 10).

Figure 10: Development of total CT volumes 2005 to 2017 [in million TEU]



Source: BSL Transportation analysis, UIRR.

Regarding the total CT tonnage carried in CT, this increase turns out to be even higher than the development in TEU, adding up to approx. +9.7% between 2015 and 2017. Overall, the market dynamics of transport in intermodal units carry on, both for TEU and tonnes. The recent trend towards the transport of heavier shipments reflected by a stronger growth of tonnes compared to TEU has obviously continued also in the last years.

The following table provides an overview of the total CT market development in terms of tonnage from 2005 to 2017.

Table 1: Development of total CT volumes 2005 to 2017 [in million tonnes]

Segment	2005	2007	2009	2011	2013	2015	2017
CT volume unaccompanied	145.5	181.5	164.6	191.8	203.0	218.0	241.8
CT volume accompanied	10.2	13.6	15.1	14.9	10.8	13.0	11.5
<b>Total</b>	<b>155.7</b>	<b>195.1</b>	<b>179.7</b>	<b>206.7</b>	<b>213.8</b>	<b>231.0</b>	<b>253.4</b>

Source: BSL Transportation analysis, UIRR.

Unaccompanied CT makes up the largest part of the total CT with a market share of more than 95%. Whereas the unaccompanied transport market segment could witness increasing volumes, the trend in accompanied CT tonnage was regressive compared to 2015, but still exceeding the 2013 volume.

The relevance of unaccompanied transport is reflected in the market supply structure as there is only a very small number of specialised CT operators (about 1% of all CT providers) that solely provide accompanied transport services. Less than 5% offer both unaccompanied and accompanied CT services whereas the vast majority of more than 90% of all CT providers are focused on unaccompanied CT services.

### **Unaccompanied combined transport**

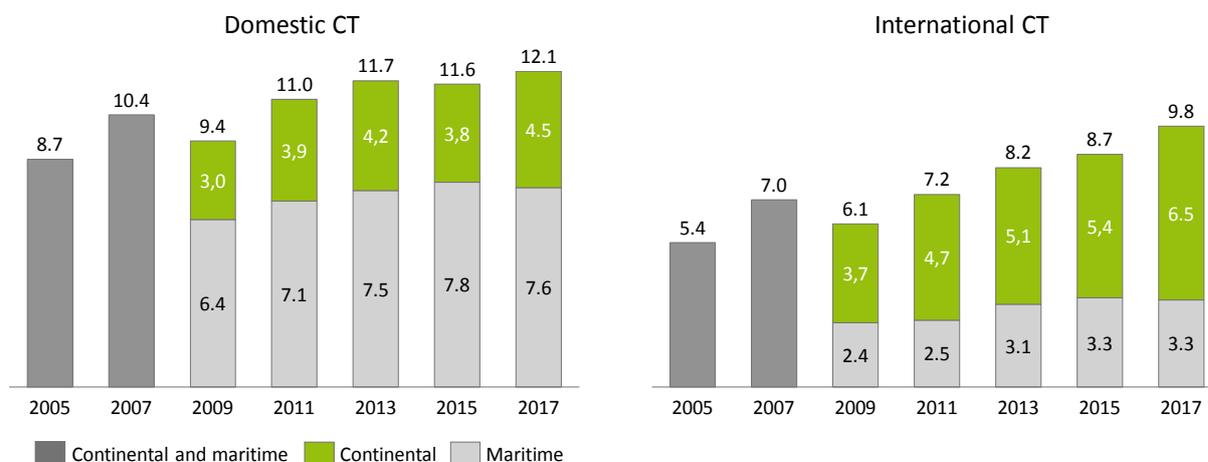
The market dynamics of unaccompanied combined transport carry on, making it the only growing market segment in total rail freight transport (see also chapter 2.1). Since the decline in the context of the global economic crisis in 2009 there was an continuously upward trend, also in the last two years. Compared to the previous years, the positive development picked up speed, with a volume increase in the unaccompanied CT market stronger than some years ago.

Even market disturbances like the 2017 Rastatt incident could not stop and reverse this trend. Nevertheless, this event resulted in significant volume loss along the Rhine Valley railway as Europe's main rail freight line was disrupted for several weeks. Combined Transport on this trade axis was particularly harmed, also in terms of its perceived image, reliability and the speed of services. There is an inherent danger that once intermodal cargo has been lost (back) to road, these transport flows are not routed back to rail at short notice or at all.

The key driver for the positive market development remains the cross-border CT traffic with an increase of +12% (see Figure 11). The unaccompanied domestic CT could recover after a slight decrease in 2015, still representing the largest market segment in total CT with more than 12 m TEU carried in 2017.

Notable is that growth now was mainly due to the segment of continental CT (with +20% in domestic and +21% in international CT) while in previous years the positive market development mainly resulted from the dynamics of maritime CT in hinterland transportation. This trend reversal may possibly indicate that the maritime CT market could have reached some kind of steady state level. This outcome has to be handled with care, though, as for some large market players, the differentiation of services in continental and maritime turned out difficult and not always completely clear in some cases. This may have caused possible data inconsistencies for methodical reasons.

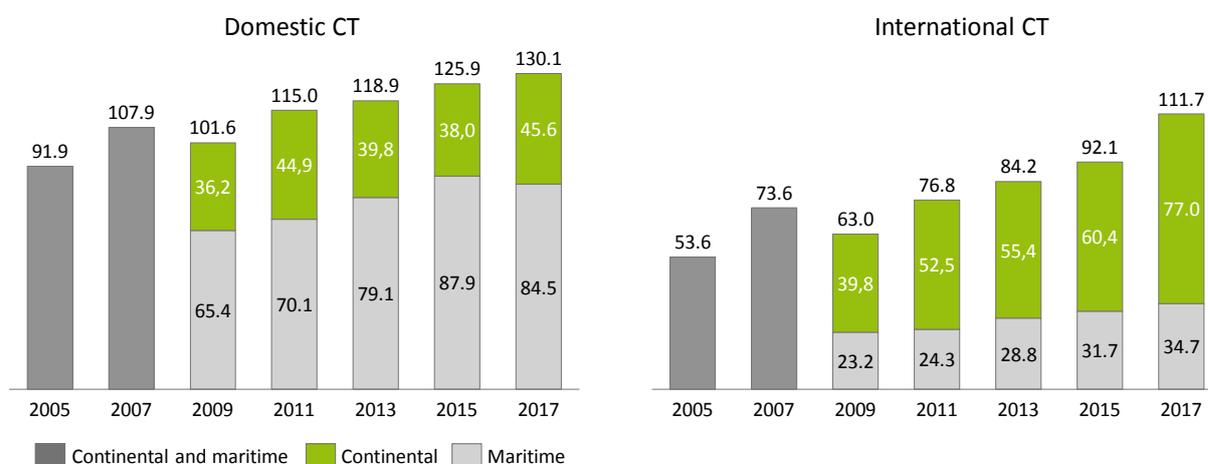
**Figure 11: Development of domestic and international unaccompanied CT 2005 to 2017 [in million TEU]**



Source: BSL Transportation analysis, UIRR.

The above mentioned trend of higher volume gains in tonnes from 2015 to 2017 is largely based on the unaccompanied CT market segment, in particular for international unaccompanied CT (see Figure 12). Accordingly, the average weight of loading units has further increased.

**Figure 12: Development of domestic and international unaccompanied CT 2005 to 2017 [in million tonnes]**



Source: BSL Transportation analysis, UIRR.

Table 2 depicts the development in domestic unaccompanied CT per country for the years 2017 and 2015. The ten largest European unaccompanied domestic CT markets represent more than 85% of the total European domestic market.

**Table 2: Development of domestic unaccompanied CT per country [in TEU and tonnes]**

Unaccompanied domestic CT by country						
Country	TEU			Tonnes		
	2015	2017	Development (2015-2017)	2015	2017	Development (2015-2017)
Austria	400,993	455,234	13.5%	4,409,791	6,220,536	41.1%
Belgium	202,718	282,437	39.3%	1,273,904	2,668,353	>100%
Bosnia and Herzegovina	1,401	1,401	0.0%	14,015	14,015	0.0%
Bulgaria	32,834	5,224	-84.1%	330,059	52,501	-84.1%
Croatia	40,231	29,223	-27.4%	269,633	287,332	6.6%
Czech Republic	499,843	150,634	-69.9%	5,379,001	2,913,465	-45.8%
Denmark	287	12	-95.8%	2,837	182	-93.6%
Finland	10,717	10,717	0.0%	128,813	128,813	0.0%
France	663,419	710,053	7.0%	6,245,535	5,912,067	-5.3%
Germany	3,334,870	4,141,373	24.2%	35,629,640	41,377,684	16.1%
Greece	4,122	-		51,525	-	
Hungary	3,109	2,235	-28.1%	41,362	41,939	1.4%
Ireland	25,982	25,982	0.0%	311,790	311,790	0.0%
Italy	1,554,882	1,074,009	-30.9%	12,318,072	11,251,200	-8.7%
Latvia	589	407	-30.9%	1,300	2,290	76.2%
Luxemburg	-	2		-	24	
Netherlands	326,639	325,420	-0.4%	3,958,563	3,326,335	-16.0%
Norway	322,815	339,672	5.2%	3,172,657	3,338,976	5.2%
Poland	719,079	1,001,615	39.3%	5,913,613	8,059,205	36.3%
Portugal	290,731	351,031	20.7%	2,896,420	3,648,915	26.0%
Romania	262,407	266,521	1.6%	3,163,094	3,154,527	-0.3%
Russia	32	1,024	>100%	136	8,032	>100%
Serbia	13,892	13,892	0.0%	138,922	138,922	0.0%
Slovakia	54,112	18,930	-65.0%	482,377	183,828	-61.9%
Slovenia	66,836	95,637	43.1%	508,756	1,028,293	>100%
Spain	503,697	492,502	-2.2%	5,194,814	4,752,335	-8.5%
Sweden	438,906	438,890	0.0%	4,635,490	4,635,338	0.0%
Switzerland	351,000	399,465	13.8%	4,430,744	4,340,684	-2.0%
United Kingdom	1,446,514	1,422,974	-1.6%	24,955,867	21,709,181	-13.0%

Source: BSL Transportation analysis, UIRR.

The TOP3 domestic markets for CT in Europe remain the same: Germany, Italy and the United Kingdom. Despite of the disturbances on the major North-South axis due to the Rastatt incident, Germany could increase its domestic CT market volume recently, whereas Italy faced a downturn, resulting - amongst others - from infrastructure bottlenecks. For the United Kingdom, the Brexit decision will presumably have an impact also on CT, but which cannot further be specified at the moment due to the unclear framework conditions.

In single cases, significant changes can be observed in the data, which make the volumes of previous years not fully comparable to the current 2017 figures. These variations are due to several reasons, mainly resulting from a revised methodology, changed approaches, and classifications of single market players' volume measurement. An overview of the most relevant explanations for these changes is provided in the following:

**Some methodological remarks – key reasons of data variation**

- **Composition of CT services:** *In some cases, there has been only a slight variation of total CT volume, but a considerable change in its composition in domestic and international volume. This is, for example, the case for Italy, where a shift between domestic and international volumes could be observed (less domestic, but more international traffic). For others, it concerned the split in continental and maritime CT services (please see comment further above)*
- **New modi operandi in the train system:** *For some rail connections, the modus operandi has been changed recently, e.g. routing all trains over a different route with impact on the statistics. This is the case for Belgium, where the re-opening of train services and a change in Antwerp port operations influenced rail and CT volumes*
- **Methodology of data collection/ counting:** *Furthermore, in Belgium, for example, a new national system was introduced regarding railway statistics with influence on the total CT volumes collected. As all trains leaving the country are now routed via Antwerp first (as domestic services), then heading further to their final destination abroad (as international services), there is a “double counting” of rail volumes, resulting in higher TEU and tonnage numbers*
- **Data structure of single market participants:** *Some companies introduced new or different controlling tools and methodologies, which lead to changes in the data structure on CT for these particular market players*

The segment of cross-border CT witnessed a considerable increase between 2015 and 2017. The major trade lanes concern the North-South connections, in particular to and from relevant seaports in the North Sea and Mediterranean.

Table 3 depicts the major trade relations in international unaccompanied CT and their development volume in TEU and tonnes. The volumes provided for each trade relation refer to the total volume transported both ways.

**Table 3: Major European trade lanes in international unaccompanied CT [in million TEU and tonnes]<sup>15</sup>**

Trade lane		TEU			Tonnes		
		2015	2017	Development	2015	2017	Development
Germany	Italy	1,488,080	1,553,328	4.4%	19,501,043	19,915,267	2.1%
Czech Republic	Germany	659,792	756,729	14.7%	6,000,182	7,649,439	27.5%
Belgium	Italy	580,173	714,694	23.2%	7,401,498	9,156,448	23.7%
Germany	Netherlands	667,378	581,379	-12.9%	6,215,813	6,686,219	7.6%
Italy	Netherlands	288,632	458,025	58.7%	3,394,024	6,118,486	80.3%
Austria	Germany	268,860	358,729	33.4%	3,603,502	3,896,851	8.1%
Slovakia	Slovenia	258,921	319,922	23.6%	1,887,370	2,552,178	35.2%
Germany	Sweden	193,878	256,745	32.4%	2,067,542	2,813,600	36.1%
France	Italy	194,123	247,682	27.6%	2,371,238	3,259,281	37.5%
Hungary	Slovenia	179,215	217,777	21.5%	1,597,440	2,122,831	32.9%
Germany	Spain	174,381	214,299	22.9%	2,312,509	2,567,637	11.0%
Germany	Hungary	241,296	209,436	-13.2%	2,322,884	2,321,643	-0.1%
France	Luxemburg	178,766	205,037	14.7%	2,281,597	3,127,385	37.1%
Germany	Switzerland	148,188	168,742	13.9%	1,871,791	1,662,626	-11.2%
Germany	Poland	160,475	161,026	0.3%	1,274,739	1,284,398	0.8%
Belgium	France	131,878	152,626	15.7%	1,128,225	1,299,600	15.2%
Belgium	Spain	104,198	143,817	38.0%	1,432,094	1,891,514	32.1%
Austria	Italy	31,088	136,509	>100%	327,574	1,568,315	>100%
Czech Republic	Netherlands	80,865	116,105	43.6%	481,528	802,261	66.6%
Russia	Slovakia	58,984	102,090	73.1%	210,543	689,465	>100%

Source: BSL Transportation analysis, UIRR.<sup>16</sup>

Some top European trade lanes particularly benefited from the positive overall development of the international unaccompanied CT market but we can also observe some relevant specific shifts, particularly in traffic connected to Central and Eastern European countries as the Czech Republic, Slovakia or Slovenia.

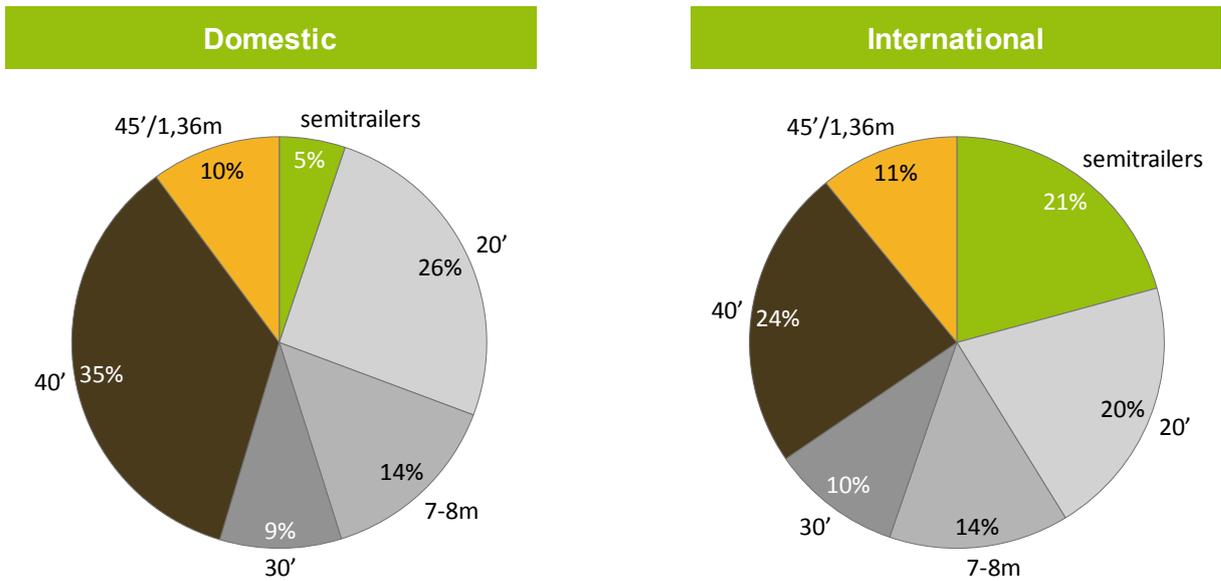
The full O-D-matrix with all trade lanes in international unaccompanied CT in Europe (in TEU and tonnes) is provided in the Annex.

In view of the structure of loading units (see Figure 13), we see that for domestic and international CT twenty- and forty-foot equivalent units are the most relevant types of loading units, representing about 61% in domestic and 44% in international CT. As in previous years, the percentage of semitrailers carried is considerably larger in cross-border combined transport.

15. Regarding significant data changes, please see the textbox with methodological remarks above, which is in particular relevant for the trade relations Austria-Italy and Russia-Slovakia.

16. Complete Origin-Destination-Matrix TEU/ Tonnes can be found in the Annexes (Table A5)

Figure 13: Loading unit structure in combined transport

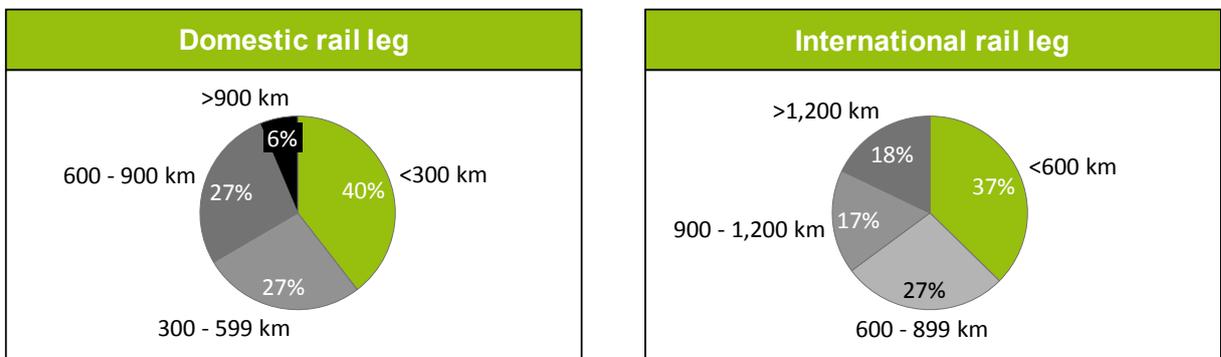


Source: BSL Transportation analysis. Note: Rounding differences may occur.

The average rail distance travelled varies considerably between domestic and international CT (see Figure 14).

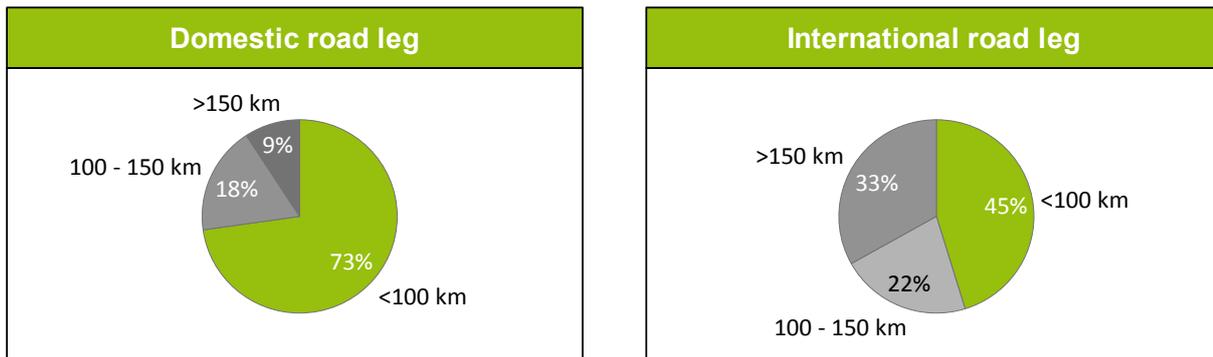
The average distance of the rail leg in domestic combined transport amounts to less than 400 km, while the average rail distance in international CT services is approximately twice the size.

Figure 14: Average distance segments of combined transport (rail leg)



Source: BSL Transportation analysis. Note: Rounding differences may occur.

The average distance structure for the road leg in CT is presented in the following Figure 15. The typical road distance of combined transport adds up to about 50 km in domestic CT and over 100 km in international CT respectively.

**Figure 15: Average distance segments of combined transport (road leg)**

Source: BSL Transportation analysis. Note: Rounding differences may occur.

It has to be noted that road data has to be handled carefully as the sample is smaller than for rail transport as CT provider and rail companies often have no detailed knowledge of the actual road leg length. This is also the case for the percentage of volumes concerning Less-than-Truck-Load (LTL) compared to Full-Truck-Load (FTL) shipments in European CT.

According to the survey participants the percentage of LTL in the CT traffic compositions adds up to approx. 6%, compared to 94% FTL shipments.

## Accompanied combined transport

Accompanied combined transport makes up the smaller share of the total CT market, representing rather a niche market, encompassing a volume of approximately 0.67m TEU transported across Europe in 2017. This implies 10% decline compared to two years ago.

Five companies have operated accompanied transport services in Europe with a focus on three major international trade relations across the Alps between

- Germany and Italy,
- Austria and Slovenia and
- Austria and Italy.

Additionally, a volume of 1.637 million trucks related to Cross-Channel transport activities was transported between UK and France in 2017

Relevant accompanied combined transport activities are also carried out between from France to Italy. Some further smaller international accompanied CT services which were reported in 2015 were not reported by the survey participants this time. Figure 16 provides an overview of international trade relations and volume structure of accompanied Combined Transport in 2017.

**Figure 16: Trade relations and volumes of accompanied CT in 2017 [based on number of shipments/trucks]**

Country A		Volume	Country B	
UK		 1,64m		France
Germany		 0,51m		Italy
Austria		 0,50m		Slovenia
Austria		 0,02m		Italy
France		<0,01m		Italy

Source: BSL Transportation analysis, UIRR.

Specific accompanied freight traffic services are operated on the above-mentioned Cross-Channel relation between the United Kingdom (Folkestone) and France (Calais) with a total volume of over 1.6m trucks running through the Eurotunnel in 2017 (see Table 4).<sup>17</sup> Compared to 2015, the Eurotunnel freight activities increased by +10.3% in 2017.

The current unclear situation regarding the nature of a Brexit deal makes the future of Cross-Channel transport uncertain. If in case of a Brexit additional checks at the border will be required, a reduced speed and frequency of services, longer transit times and more delays have to be expected, resulting in additional costs for market players. Such disruption of business and higher costs pose a potential threat for the current boom of Cross Channel CT services.

<sup>17</sup>. In order to keep the total volume of accompanied CT comparable to former UIC reports, where Channel Tunnel data was not considered, the Cross-Channel Tunnel accompanied CT volumes are displayed separately.

**Table 4: Accompanied Cross-Channel transport between UK and France [number of trucks]**

Eurotunnel	Trucks			
	2011	2013	2015	2017
Cross-Channel UK - France	1,263,327	1,362,849	1,483,741	1,637,280

Source: Eurotunnel Group.

The domestic accompanied CT activities operated in 2017 mainly focus on services in Austria (about 290 thousand TEU) and Switzerland (approx. 18 thousand TEU).

Table 5 depicts the total accompanied CT market developments. The international market segment in particular lost volumes in TEU compared to the years before, while the domestic market remained more or less stable. The tonnage in accompanied cross-border traffic went down since 2015, but also compared to the 2013 figures.

**Table 5: Development of domestic and international accompanied CT market [in TEU and tonnes]**

Segment	TEU				Tonnes			
	2013	2015	2017	Development (2015-2017)	2013	2015	2017	Development (2015-2017)
Domestic CT	303,668	303,642	307,510	1%	4,873,801	6,044,886	5,561,611	-8%
International CT	498,883	438,591	347,348	-21%	5,933,825	6,920,760	5,817,787	-16%
<b>TOTAL</b>	802,551	742,233	654,858	-12%	10,807,626	12,965,646	11,379,398	-12%

Source: BSL Transportation analysis, UIRR.

## 4. Spotlight analyses

### 4.1. Analysis of the European Combined Transport wagon fleet

#### Background and methodology

A special focus of this report lies on the analysis of the current European combined transport wagon fleet and its expected future development. The objective is to get a comprehensive picture of the current number and types of intermodal wagons which are used for combined transport in Europe and an outlook on fleet composition and wagon structure in 2025. Table 6 summarises the approach and the methodology used.

**Table 6: Key elements of the European CT wagon fleet analysis**

	Overview of wagon types used for CT in Europe	Assessment of investment plans per wagon type
<b>Objective</b>	Current status of wagon fleet <ul style="list-style-type: none"> <li>■ Types of wagons used</li> <li>■ Quantity (Total volume)</li> <li>■ Average wagon age (in years)</li> </ul>	Investment trend wagon fleet <ul style="list-style-type: none"> <li>■ Expected development of wagon fleet in CT</li> <li>■ Qualitative trend in wagon evolution in CT (Increasing/ decreasing trend per wagon type)</li> </ul>
<b>Focus Year</b>	2017	2025
<b>Methodology/ data generation</b>	<ul style="list-style-type: none"> <li>■ Market survey (wagon fleet questionnaire)</li> <li>■ Group discussion/ workshop</li> </ul>	<ul style="list-style-type: none"> <li>■ Market survey (wagon fleet questionnaire)</li> <li>■ Group discussion/ workshop</li> </ul>
<b>Stakeholder groups to be involved</b>	<ul style="list-style-type: none"> <li>■ CT providers and railway undertakings</li> <li>■ Wagon fleet owners and managers (incl. lessors)</li> <li>■ (Wagon manufacturers, only if also wagon owner or manager/ lessor)</li> </ul>	<ul style="list-style-type: none"> <li>■ CT providers and railway undertakings</li> <li>■ Wagon fleet owners and managers (incl. lessors)</li> <li>■ Wagon manufacturers</li> </ul>

Source: BSL Transportation.

So far, the number of studies available on the intermodal wagon fleet is very limited. Studies with modules on the intermodal wagon fleet date back to 2009 (DIOMIS study on Intermodal Rolling Stock in Europe carried out for UIC or 2013 (COSMOS – Efficient intermodal wagons) and there is no up-to-date data. Therefore information on the European CT wagon fleet for this report is collected by direct contact to the stakeholders, including a market survey in form of a questionnaire and by means of a group discussion with selected representatives from different stakeholder groups dealing with this issue.

The group discussion on the status quo and development of the CT wagon fleet with selected representatives from relevant stakeholder groups in form of a workshop held at the InnoTrans in Berlin in September 2018 with participants representing leasing companies, CT operators/ railway undertakings, railway/ wagon keeper associations and wagon manufacturers. Similar to the wagon fleet survey, participants were determined together with UIC in order to ensure the representativeness of results, including views of the most relevant market players.

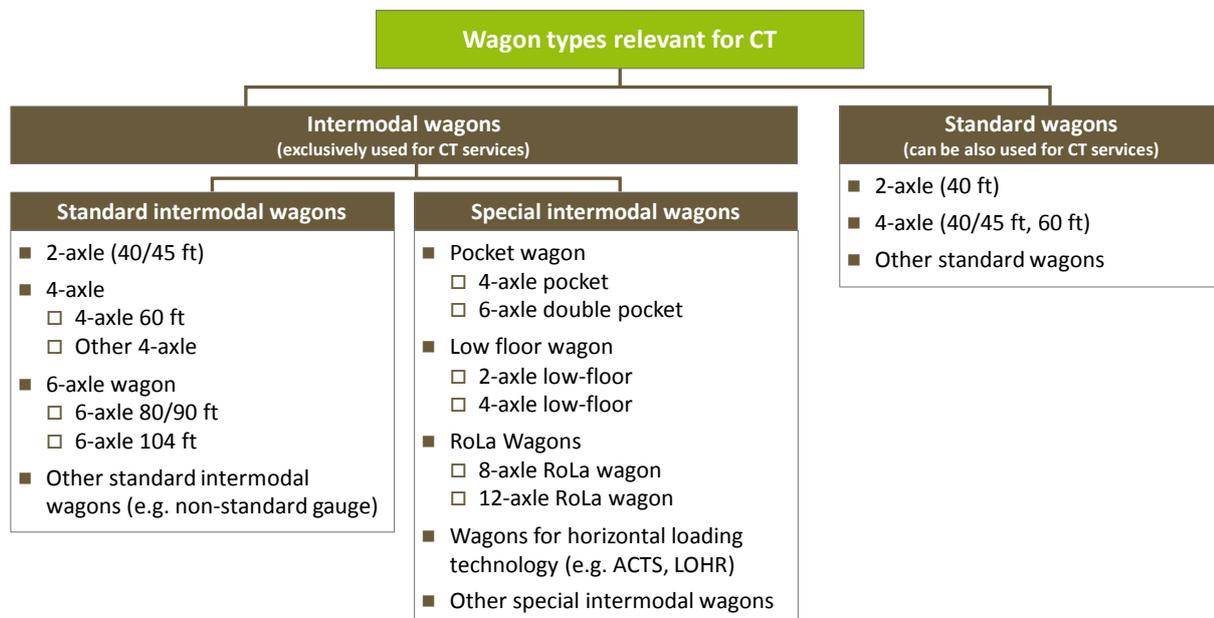
For rail/road CT various wagon types exist, suitable for different types of cargo and purposes, which we take into account here. Basically, the wagon fleet can be differentiated according to

- **Intermodal wagons specially designed for CT** which are exclusively used for CT services, and
- **Standard rail freight wagons** (flat wagons) that can also be used for CT services, but also for other purposes

While in the early days of CT, a large number of intermodal services were operated in these standard flat wagons, specially designed wagons for CT have gained importance considerably. Their use for CT has several advantages, such as a lower tare weight and easier loading and unloading procedures, so that today most services are operated in intermodal wagons.

For this reason, the present study will primarily focus on intermodal wagons specially designed for CT. The following Figure provides an overview of wagon types used in CT that have been taken into account in the wagon fleet market survey.

**Figure 17: Overview of wagon types used in CT**



Source: BSL Transportation.

The wagon type selection was carried out in coordination with the UIC and in line with wagon fleet studies carried out so far. In addition to previous studies it also considers special gauge wagons for services in Spain, Portugal and UK (in category “Other”).

Figure 18 gives an outline of the key characteristics of the most relevant intermodal wagon types, including the focus regarding transport units and use but also the loading capacity per wagon.

Figure 18: Selected key characteristics of most relevant intermodal wagon types

Wagon types		Focus				Loading capacity per wagon	Comment
		Con-tainers	Swap bodies	Semi trailers	RoLa		
2-axle	2-axle 40/45 ft	x				2 TEU	Often rebuilt flat wagons or other wagons
4-axle	4-axle 60 ft	x	x			3 TEU	Most common, „standard“ wagon type for CT
	Other 4-axle	x	x			2 to 4 TEU	Various types, e.g. 40' , 45' , 52' , 73' , 80' wagons
6-axle	6-axle 80/90 ft	x	x			4 TEU	80ft wagons with focus only on maritime containers, 90ft wagons also for swap bodies
	6-axle 104ft	(x)	x			4 TEU	Focus on transport of swap bodies
Pocket wagon	4-axle Pocket	(x)	(x)	x		2 TEU	Focus on transport of 1 semi-trailer
	6-axle Double-Pocket	(x)	(x)	x		4 TEU	Focus on transport of 2 semi-trailers
Other	Low-floor (Multifret / Megafret)	x	x			2 TEU	For high-cube containers and swap bodies on routes with lower loading profiles (e.g. Channel Tunnel), often 2 wagons with permanent coupling
	Wagons for horizontal loading (e.g. ACTS, LOHR, CargoBeamer)	x	x	x	x	dependent on system	Specialised wagons for particular loading technique, usually use restricted to certain routes
	RoLa wagons				x	2 TEU	For accompanied transport (one shipment)

Source: BSL Transportation analysis, DIOMIS.

Due to their specific character, and their relevance restricted to a niche market, RoLa wagons specifically designed for Accompanied CT are not further taken into account here. In consequence, the following quantitative analysis, based on the survey results, focuses on unaccompanied CT only.

There are basically three major stakeholder groups relevant for the CT wagon fleet in Europe, who act as “wagon keepers” being owner or long-term user of the wagons according to GCU (General Contract for the Use of wagons):

- **Railway undertakings** that own and or lease wagons
- **CT operators** that own and or lease wagons
- **Fleet owners and asset managers**, that lease wagons to the above-mentioned stakeholder groups

In addition, a further important stakeholder group are **wagon manufacturers**. In Europe, the market for manufacturers of intermodal wagons has significantly consolidated in the past. Apart from some smaller and very specialised manufacturers for certain, there are basically only two larger manufacturing companies of intermodal wagons left (Greenbrier and Tatravagónka).

Due to the above-mentioned ownership structure, we differentiate in the market survey between own and leased wagons in order to avoid overlapping wagon data between different market players, making sure that there are no double counts of wagons across the different stakeholder groups.

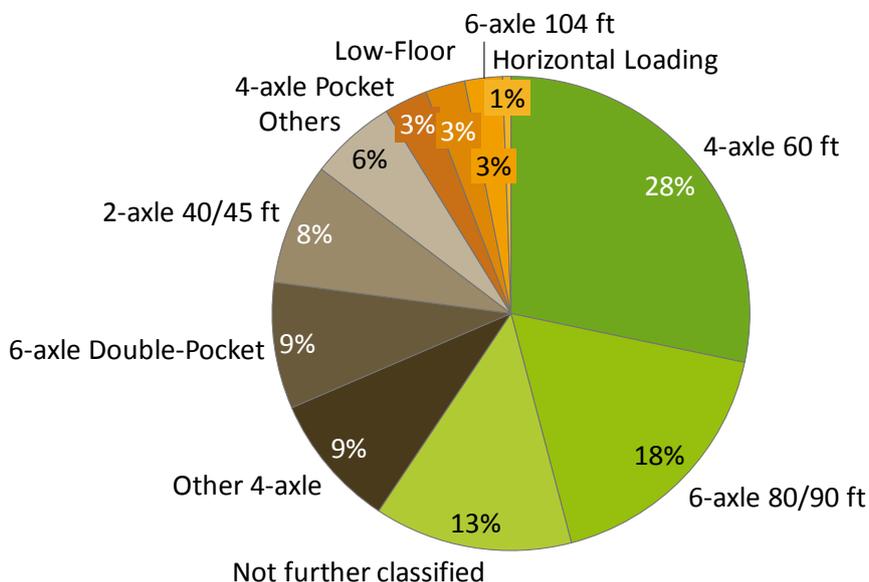
## Current situation of CT wagon fleet in Europe

The objective is to get an overview of the current CT wagon fleet for the year 2017 regarding the types of wagons used for combined transport, their quantity and average fleet age of the fleet. Practically all relevant wagon fleet managers and owners, railway undertakings and CT operators with an own wagon fleet have participated in the survey. The following figures presented are thus based on the feedback from more than 30 companies with own CT wagon fleet.

In Europe, there were about **64,120 intermodal wagons specially designed for CT** in use in 2017. Compared to the DIOMIS-study based on the year 2007, the CT-wagon fleet has increased by approx. 15% within the last ten years.

The following Figure 19 depicts the **current intermodal fleet composition by wagon type**.

Figure 19: Intermodal wagon fleet in Europe 2017 – composition by wagon type<sup>18</sup>



Source: BSL Transportation analysis.

The 4-axle 60 ft wagons continue being the most relevant wagon type for CT in Europe, making up nearly 30% of the total intermodal fleet. Nevertheless, this share decreased during the last ten years when it represented nearly half of the fleet according the 2009 DIOMIS study. Other wagon types, such as 6-axle 80/90 ft or 6-axle double pocket wagons have gained importance. They allow a better utilization of train length, more loading capacity and, in case of the 6-axle 80/90 ft wagons are optimal for the transport of maritime containers in hinterland CT services. Along with the increase of maritime CT services the corresponding fleet increased.

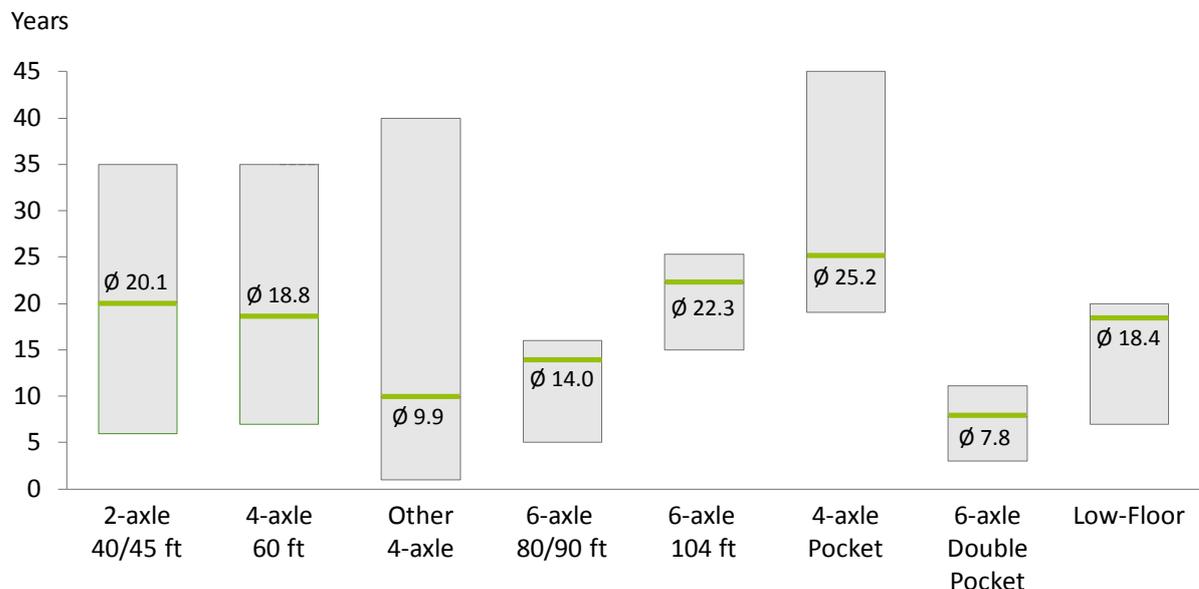
18. Please note that the category "Others" encompasses other standard intermodal wagons and special intermodal wagons, including non-standard gauge wagons, the category "Not further classified" refers to company feedback, where only a total number of wagons was provided without further breakdown by wagon type.

It became clear from the workshop discussion results that the current wagon use basically corresponds to current wagon demand for CT and the participants do not see relevant bottlenecks or shortages for certain wagon types. Nevertheless, due to the long lifetime of the wagons, the type structure moves more slowly than the changing demand. In addition, the consolidation on the market for wagon manufacturers in Europe is seen critically, as it restricts production capacity and potentially favours higher wagon prices.

In addition to the intermodal wagon fleet exclusively used for CT services, there are presumably not more than 50,000 standard rail freight wagon that can also be used for CT services. The relevance of standard rail freight wagons has decreased significantly in the last ten years, however. The advantages of specific intermodal wagon equipment, in particular the lower tare weight and more loading capacity, make the use of standard rail freight wagons for CT less attractive. The workshop discussion confirmed that the current total wagon fleet used for CT services consists of more intermodal wagons (exclusively used for CT) than standard rail freight wagons (possible use also for CT services).

The average lifetime of an intermodal wagon is approximately 35 years. In view of future investments and the question, where there will be replacement need, the age structure of the current intermodal fleet is of major relevance. The following Figure 20 gives an overview on the current age structure of the current intermodal fleet by wagon type, including information on the average wagon age and the age span per wagon type.

**Figure 20: Age structure of current CT wagon fleet by wagon type<sup>19</sup>**



Source: BSL Transportation analysis, sample includes about 2/3 of the total intermodal fleet in 2017.

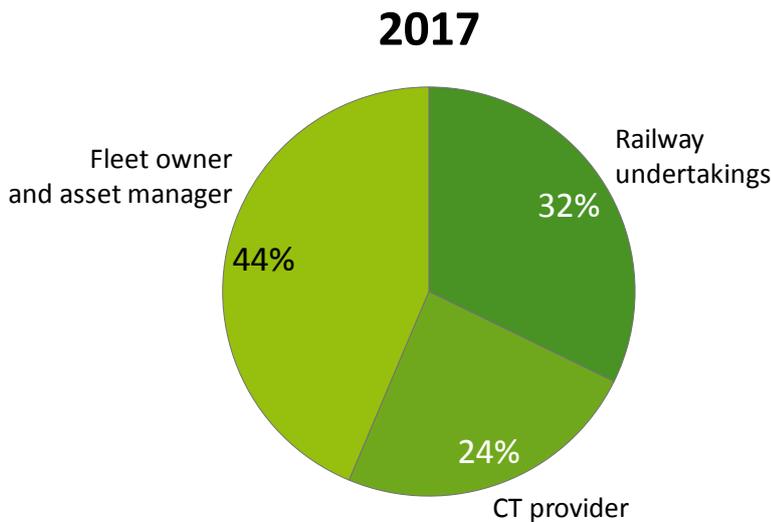
Based on the feedback of the survey participants, it turns out that most wagons are already around 20 years old on average. While 4-axle pocket wagons are particularly old, 6-axle double pocket wagons, but also other 4-axle wagons are considerably younger with less than 10 years on average.

19. Without categories "Wagons for horizontal technology" and "Other" as sample too small.

The age span shows that the oldest wagons in use are nearly 45 years old. Particularly in the segments of 6-axle 104 ft and 4-axle pocket wagons all gathered wagons are 15 years and older while in the segment of other 4-axle wagons the age span is particularly high which is also due to greater variety of wagons subsumed under this category.

The majority of the current intermodal wagon fleet (specially designed and exclusively used for CT services) is held by fleet owners and managers who lease it to national railway companies and other CT providers (see Figure 21).

**Figure 21: Intermodal wagon fleet in Europe 2017 – ownership by stakeholder group**



Source: BSL Transportation analysis.

Furthermore, we asked where the workshop participants see the biggest challenge of today’s combined transport wagon fleet market. The results are summarised in the following table.

**Table 7: Selected current challenges for CT wagon fleet market in Europe**

Selected current challenges for CT wagon fleet market in Europe	
<ul style="list-style-type: none"> <li>■ Increasing <b>wagon prices and maintenance costs</b> (low noise requirement)</li> <li>■ Difficulties and increasing costs in organising <b>transport to/from workshops</b></li> <li>■ <b>Congestion and reduced space in certain intermodal terminals</b> due to the increased volume in trailer traffic</li> <li>■ Still not one European body for <b>approvals of wagons</b></li> <li>■ The <b>quality and speed of the technical development and cost efficiency of our intermodal partners (road)</b> "leads the way"</li> <li>■ <b>Rebuild, scrap or replace inefficient or obsolete wagons</b> to cover the needs for efficient handling (loading / unloading) transportation on rail for longer and heavier ILUs</li> </ul>	<ul style="list-style-type: none"> <li>■ <b>Technical challenges:</b> Harmonisation of codification in combined transport &amp; corrective factor, calculation methods for compatibility checks (wagon + load against line) not harmonised</li> <li>■ <b>Operational challenge:</b> Define and harmonise roles and functions of the various actors for codifying the ILUs, lines and wagons in combined transport</li> <li>■ <b>Environmental challenge:</b> noise and retrofitting</li> <li>■ <b>Competition challenge:</b> <ul style="list-style-type: none"> <li>□ almost no differentiation between wagon types</li> <li>□ limited numbers of suppliers/manufacturers</li> </ul> </li> </ul>

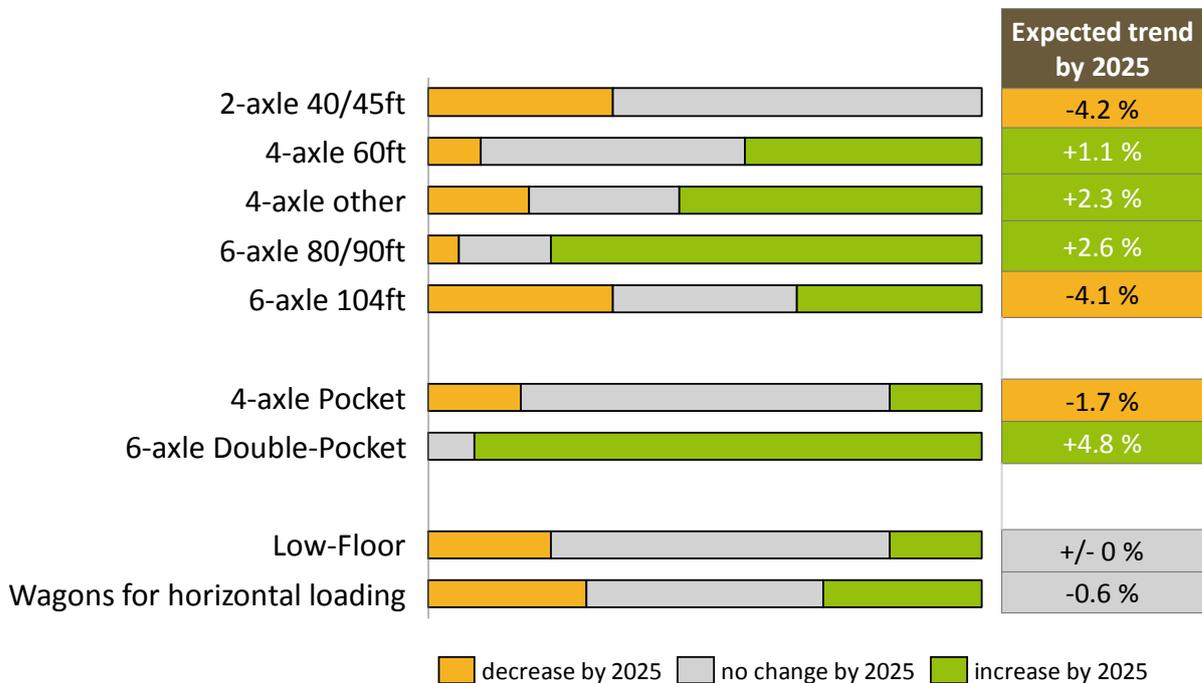
Source: BSL Transportation analysis, workshop results.

## Future development of CT wagon fleet and investment plans

To get insight into the future development of the CT wagon fleet in Europe, we pursued a lean market-based approach with focus on the survey participants and their investment plans. In order to indicate a qualitative trend regarding the evolution in the CT wagon fleet, all stakeholder groups were asked regarding their expected future development of the wagon fleet until 2025.

The results, summarised in Figure 22 show that future fleet development will focus on the segment of larger and longer wagons. Future investments in the CT wagon fleet will primarily concern 6-axle pocket and 60-axle 80/90 ft wagons. On the contrary, 2-axle 40/45 ft wagons will lose importance. Overall the stakeholders anticipate a slight increase in the CT wagon fleet.

Figure 22: Assessment of CT fleet development until 2025 by wagon type



Source: BSL Transportation analysis, results of market survey and workshop results.

The above mentioned results from the wagon fleet survey were confirmed by the workshop discussion. In the group discussion, the expected trend per wagon type was quantified by the participants as depicted above.<sup>20</sup>

According to the workshop results, future investments in the CT wagon fleet will primarily concern 6-axle 80/90 ft and double pocket wagons while the number of 2-axle 40/45 ft wagons and 4-axle pocket wagons will decrease.

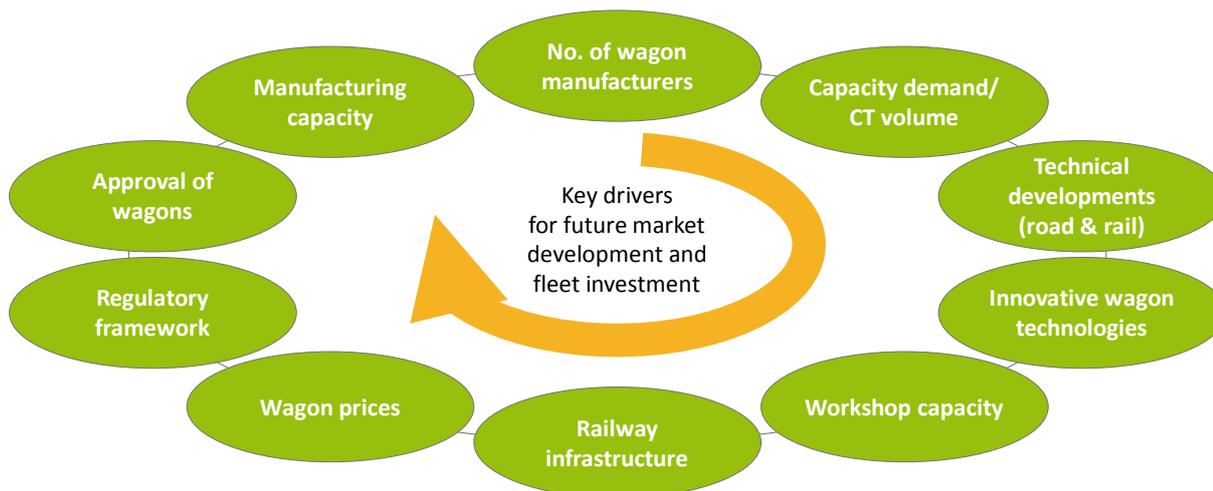
In sum, the intermodal CT wagon fleet is expected to grow only marginally by approximately 1% until 2025. In view of the **expected number of future new-buildings** of up to 3,500 wagons p.a. this would imply that a similar number of wagons had to be scrapped every year so that the total intermodal fleet size will more or less remain stable until 2025.

20. Please note that the trend quantification in the workshop is more "continental-oriented" than the survey data as in the workshop more participants were related to continental CT business than to maritime CT business. Nevertheless, the basic trend is similar in both the survey and workshop results.

These results, however, do not fit well to the market development as the expectations are very conservative in view of the dynamic market development. Furthermore this would automatically imply a higher degree of capacity utilization.

As key drivers for future market development and fleet investment decisions the following aspects could be identified based on the feedback from the market survey and workshop participants:

**Figure 23: Selected key drivers for future market development and fleet investment decisions**



Source: BSL Transportation analysis.

Finally, we asked the workshop participants which will be the major future challenges for the CT wagon fleet market by 2025 in their opinion. The results are summarised in the following table.

**Table 8: Selected future challenges for the CT wagon fleet market in Europe**

Selected future challenges for CT wagon fleet market in Europe	
<ul style="list-style-type: none"> <li>■ Sufficient <b>competition</b> between wagon manufacturers?</li> <li>■ <b>New length/height dimensions for the road transport</b>, which can make (certain) wagons obsolete</li> <li>■ Availability of <b>sufficient „train paths/terminal“ capacity</b></li> <li>■ Innovative <b>wagon types</b></li> <li>■ Availability of <b>sufficient workshop capacity</b></li> <li>■ Improvement/ Building up of <b>partnership</b> with all manufacturers and developers of intermodal equipment, terminals, railway undertakings etc.</li> <li>■ <b>Streamline the rules</b> and define necessary demands for design, organisation, etc.</li> <li>■ <b>Stagnation of transport demand and low political support</b> to make progress towards environmental objectives (CO2 emissions)</li> </ul>	<ul style="list-style-type: none"> <li>■ Appropriate <b>responses to the actual technical and operational challenges</b></li> <li>■ Investments and development of <b>intermodal-specific transport infrastructure and transshipment terminals</b></li> <li>■ <b>Intramodal competition</b> with passenger railway services and performance of state owned rail infrastructure</li> <li>■ <b>Harmonised legal framework</b> for both CT operations and rail infrastructure management</li> <li>■ Further initiatives to <b>restore the balance biased towards road</b> (level-playing field, internalisation of external costs)</li> <li>■ Establishing an <b>intermodal marketing group</b>, becoming active i.e. visible and hearable to inform/guide and interest new intermodal partners</li> </ul>

Source: BSL Transportation analysis.

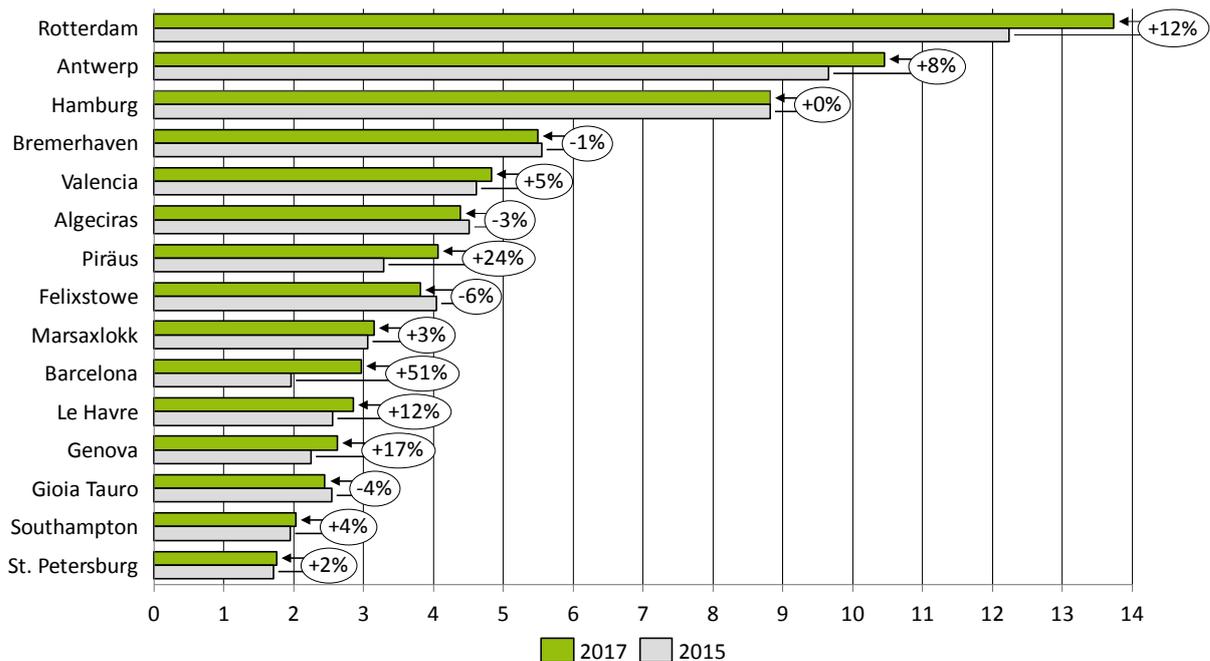
Many of the challenges discussed in the framework of the wagon fleet refer to key critical issues for combined transport and its competitiveness in general, in particular in view of the level playing field in intermodal and intramodal competition.

## 4.2. Seaport activities and hinterland transportation

As an important segment of the European CT market, maritime or hinterland CT is closely related to the dynamics of seaborne container handling at European seaports. Therefore the development of port traffic volumes in major European seaports gives relevant insight in the growth prospects and expected future development of the CT market.

The recent development of container throughput (in m TEU) in major European container ports, displayed below, shows a mixed picture. While ports like Barcelona, Piraeus or Genova could gain notable volumes, major European transshipment hubs like Algeciras, Felixstowe or Gioia Tauro slightly lost container traffic. Barcelona benefited from five new liner services, launched by the world's second largest container carrier, MSC (Mediterranean Shipping Company), Maersk's partner in the 2M Alliance. The strong throughput volumes in Piraeus are due to the port's acquisition by the Chinese shipping company Cosco that result in terminal expansion and investments, allowing calls of vessels of more than 20,000 TEU and routing more traffic volumes over the port. Also Genova benefited from the trend towards large container "mega vessels" and increasing activities of MSC.

**Figure 24: Development of container throughput 2017 vs. 2015 in major European container ports [in million TEU]**



Source: BSL Transportation analysis, various port authorities.

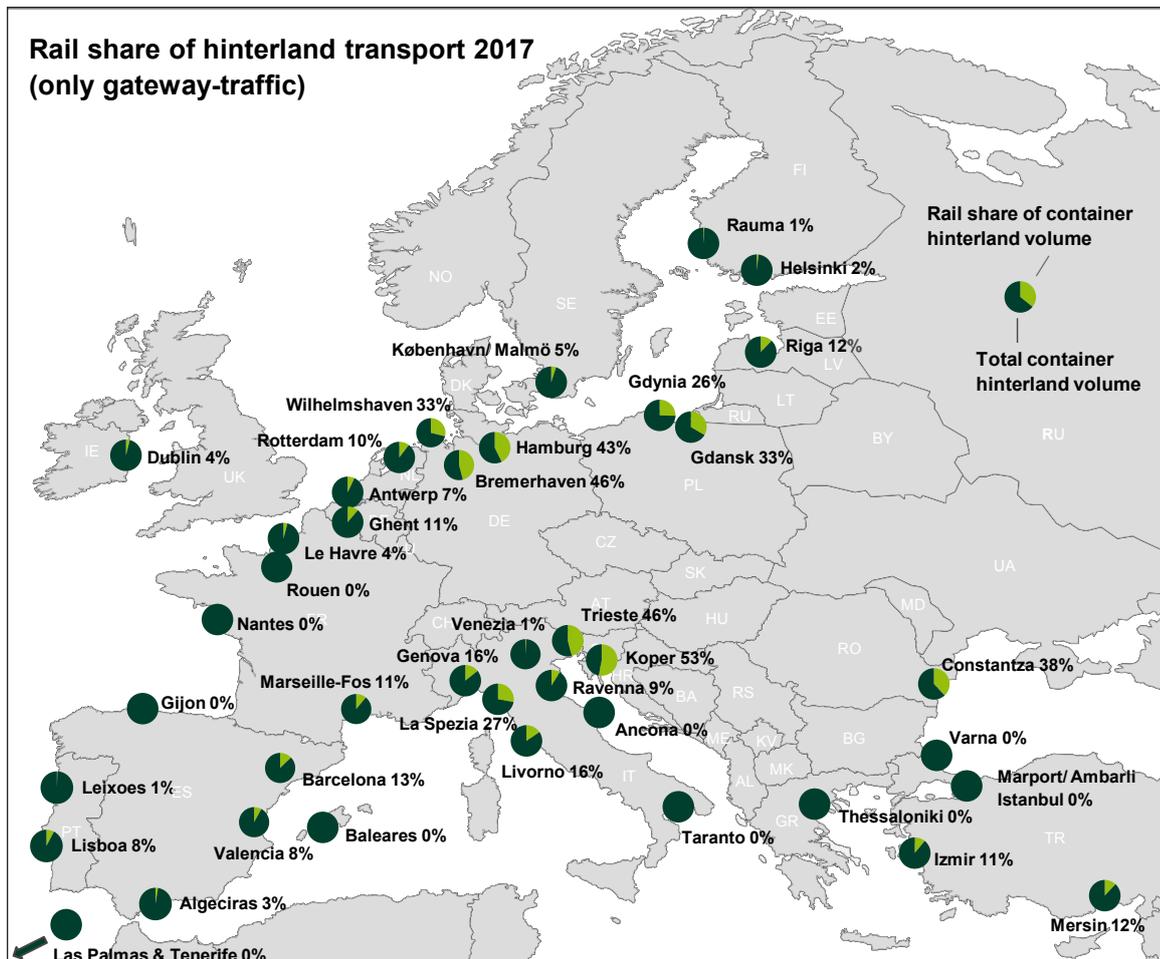
Among the four North Range ports, the development of container handling volumes continues to diverge. While Rotterdam and Antwerp could further gain volumes, Hamburg and Bremerhaven lost container traffic, in particular related to feeder services.

The assessment of rail's market share of hinterland transportation of a certain port is particularly relevant for the CT market. Its development (and thus the rail volume to and from the port) does not necessarily coincide with the development of total container throughput. This is particularly the case, if changes in volume primarily affect only transshipment/ feeder traffic.

For collecting throughput and hinterland data, more than 90 European container ports have been contacted asked for their container throughput and hinterland data.

The following Figure gives an overview of rail's share<sup>21</sup> in the modal split for hinterland container transport (only gateway traffic) in selected European ports for the year 2017.

**Figure 25: Rail share of container hinterland transport (only gateway traffic) in selected European ports 2017**



Source: BSL Transportation analysis, various port authorities, in single cases estimates and calculations.<sup>22</sup>

Solely in northern Europe (Bremerhaven, Gdansk or Hamburg) and in the Mediterranean (Koper or Trieste) there are ports with a rail modal split-shares of more than 30% for container gateway traffic. Ports with a rail volume of (practically) zero often have no adequate connection to the rail hinterland network or have no rail connection at all. This is particularly the case for container ports situated on islands with no rail network, e.g. on the Canary or Balearic Islands.

For maritime CT, the development of rail's share over time is significant as well, since it may indicate an overall trend for a particular seaport. Table 9 shows the development of the rail shares of seaborne throughput and of hinterland transportation for selected European ports between 2014 and 2017 (in TEU). The full table is provided in the Annex.

21. The rail share can either be calculated as a share of total seaborne container throughput or as a share of hinterland transportation, only taking into account the port's gateway traffic (total seaborne container throughput less sea-sea-shipment container volume).

22. Note: In single cases, rail shares and volumes projected from terminal operator data or estimated based on port container throughput in tonnes.

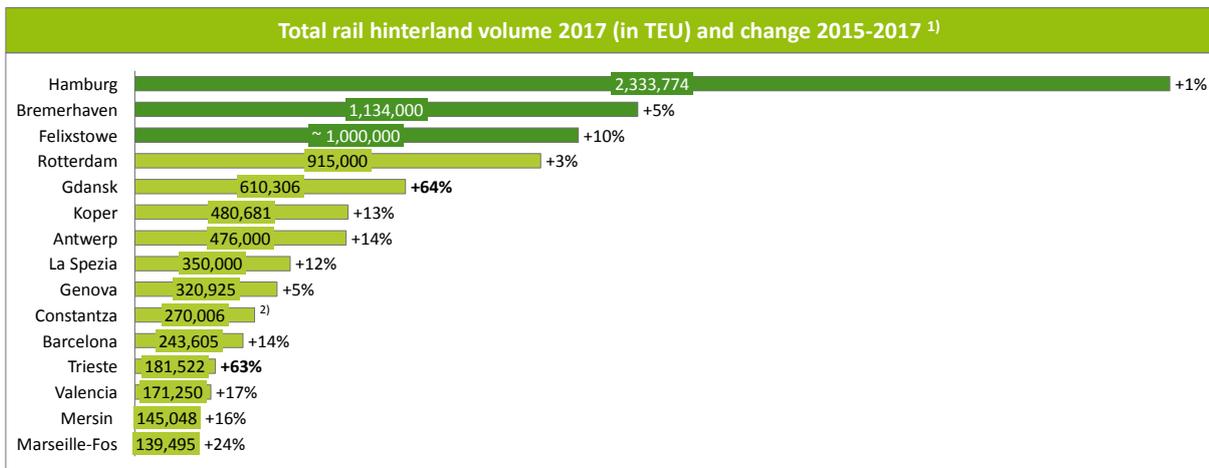
Table 9: Development of rail share of seaborne throughput and hinterland transport for selected ports 2014-2017

Seaport / Country		Rail share of seaborne container throughput				Rail share of hinterland transport			
		2014	2015	2016	2017	2014	2015	2016	2017
Algeciras	ES	0,4%	0,2%	0,3%	0,2%	4,8%	3,0%	3,2%	2,6%
Alicante	ES			1,4%	1,1%				
Ancona	IT	0,2%	0,0%	0,0%	0,0%	2,1%	0,0%	0,0%	0,0%
Antwerp	BE	4,3%	4,3%	4,2%	4,6%	7,0%	7,0%	6,5%	6,9%
Baleares	ES	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
Barcelona	ES	10,0%	10,9%	10,1%	8,2%	12,0%	12,7%	12,6%	12,8%
Bordeaux	FR	0,0%	0,0%			0,0%	0,0%		
Bremerhaven	DE	19,0%	19,4%	19,8%	20,6%	46,8%	46,4%	46,6%	46,0%
Constantza	RO	n/a	n/a	38,7%	38,8%	n/a	n/a	38,7%	38,8%
Dublin	IE			4,3%	4,1%			4,3%	4,1%
Felixstowe	UK	21,9%	22,5%		26,2%	30,0%			
Gdansk	PL	10,6%	34,0%	35,9%	38,6%	32,6%	33,3%	30,9%	33,4%
Gdynia	PL	31,3%	33,2%	32,9%	27,8%	31,4%	33,2%	27,1%	25,5%
Genova	IT	14,0%	13,6%	11,8%	12,2%	17,3%	16,8%	15,9%	16,2%
Ghent	BE	10,9%	12,3%	11,3%	11,3%	10,9%	12,3%	11,3%	11,3%
Gijón	ES	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
Hamburg	DE	23,1%	26,1%	26,5%	26,5%	38,6%	41,0%	42,2%	42,8%
Helsingborg	SE	13,0%	10,9%			13,0%	10,9%		
Helsinki	FI	1,4%	1,2%	0,9%	1,9%	1,4%	1,2%	0,9%	1,9%
Izmir	TR	12,2%	13,1%	14,1%	15,9%	9,2%	9,6%	12,0%	10,9%
Klaipeda	LT	12,8%	10,7%			12,8%	10,7%		
København/Malmö	DK			5,0%	5,0%			5,0%	5,0%
Koper	SI	54,5%	53,8%	52,7%	52,7%	55,0%	55,0%	53,0%	53,0%
La Spezia	IT	24,8%	23,4%	25,5%	23,8%	26,7%	25,5%		
Las Palmas	ES	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
Le Havre	FR	3,4%	3,4%	3,1%	3,0%	4,7%	4,5%	4,0%	4,1%
Leixões	PT	1,6%	0,9%	2,2%	0,5%	1,8%	1,0%	2,4%	0,5%
Lisboa	PT			4,8%	7,4%			5,0%	7,7%
Livorno	IT	11,5%	9,7%	10,4%	11,9%	12,8%	13,0%	14,9%	15,5%
London/Tilbury	UK	no data published				no data published			
Lübeck	DE	37,4%	43,7%			48,0%	56,0%		
Marport/Istanbul	TR			0,0%	0,0%			0,0%	0,0%
Marsaxlokk	MT	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
Marseille-Fos	FR	8,4%	9,2%	9,7%	10,2%			10,0%	11,0%
Mersin	TR	9,3%	8,5%	8,9%	9,1%	13,0%	12,0%	12,0%	12,0%
Nantes St-Nazaire	FR	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
Odessa	UA	16,2%	17,8%			21,5%	22,4%		
Oslo	NO			n/a	n/a			n/a	n/a
Rauma	FI		1,2%	0,5%	0,6%	<1%	<1%	0,5%	0,6%
Ravenna	IT	9,9%	8,2%	9,5%	8,8%			9,6%	8,9%
Riga	LV	n/a	18,0%	13,6%	12,4%	n/a	18,0%	14,0%	12,0%
Rotterdam	NL	7,1%	7,3%	6,8%	6,7%	10,9%	10,5%	10,2%	10,4%
Rouen	FR	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
Santa Cruz de Tenerife	ES	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
Sines	PT	15,5%	15,7%			71,5%	73,6%		
Southampton	UK	no data published				35,0%	35,0%		
Tallinn	EE	27,2%	19,3%			27,2%	19,3%		
Taranto	IT	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
Thessaloniki	GR	0,5%	0,4%	0,1%	0,1%	0,5%	0,4%	0,1%	0,1%
Trieste	IT	18,2%	22,2%	26,8%	29,5%	32,3%	37,3%	39,0%	46,0%
Valencia	ES	3,1%	3,2%	3,2%	3,5%	6,9%	7,0%	6,8%	7,8%
Varna	BG	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
Venezia	IT			0,6%	0,5%			0,6%	0,5%
Wilhelmshaven	DE	10,0%	10,0%	10,0%	10,0%	33,3%	33,6%	33,3%	33,3%
Zeebrugge	BE	23,1%	24,7%	21,2%	33,0%	29,1%	26,3%	22,6%	38,6%

Source: BSL Transportation analysis, various port authorities, partly estimates.

It has to be taken into account, however, that for drawing conclusions on CT, ports' rail shares should always be interpreted in connection with the development of total throughput volumes, and in particular feeder traffic. If a port witnesses increasing total container throughput volumes but which mainly concern transshipment traffic, the rail share may remain stable although the total rail transport volume actually increases. Therefore the rail percentage of hinterland transportation will typically be higher in ports with a transshipment hub function than the rail share of total throughput. As a consequence, the absolute rail volumes should also be taken into account. Figure 26 depicts the most relevant European seaports in terms of hinterland rail volumes.

**Figure 26: TOP 15 European ports in terms of container carried by rail (in TEU) and change 2015-2017**



Source: BSL Transportation analysis, various port authorities. 1) Based on data availability; ports with estimated rail volumes (e.g. Zeebrugge) are disregarded here 2) 2015 data not available.

Hamburg defends its position as major European rail hub with the largest rail volume in TEU. But the rail hinterland volume in Hamburg remains stable, while all other ports and especially Gdansk and Trieste could gain rail volumes.

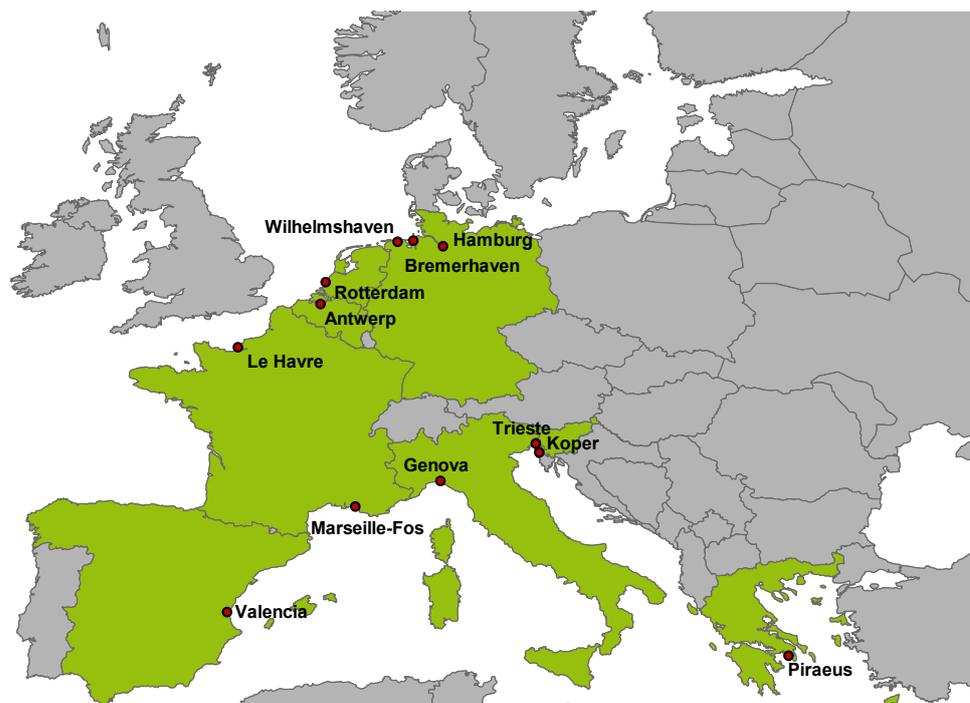
In Trieste, the strong development can be traced back to volume growth since the acquisition of a container terminal stake by MSC in 2015 that attracted new liner services with notable volumes. The rail volume growth was supported by the implementation of new services and a higher frequency of rail services towards Central and Eastern European countries. In addition, a new port information system was put into service, leading to more accurate and up-to-date rail data. Gdansk particularly benefited from its status as the only Baltic deep-water port that can handle ultra-large container vessels of more than 20,000 TEU. For this reason, it could attract more and more direct calls of vessels on the Asia-Europe trade by the 2M and Ocean Alliance. This has put Gdansk in the position as last European port of call for trades from Asia, challenging Hamburg not only in terms of feeder volumes but also for cargo to and from the Polish hinterland. Both ports, Trieste and Gdansk are also relevant automotive hubs which offers further relevant potential for combined transport.

Even though the growth perspectives in seaborne container throughput are currently in view of the unstable economic environment (trade tariffs, political disturbances, etc.) more moderate than in the past, maritime/hinterland transport will most probably continue to be the backbone of European CT.

### 4.3. Finer traffic segmentation for a selection of ports

In addition to the seaport and hinterland analyses provided in the previous chapter, a finer traffic segmentation is carried out for a selection of European ports this time. The port sample under study encompasses the following 12 ports, displayed in Figure 27.

Figure 27: Port sample with selected ports for finer traffic segmentation



Source: BSL Transportation analysis.

The port sample was chosen by the members of the UIC Combined transport working group based on their current and potential future relevance for European rail/road Combined Transport

The port sample was chosen by the members of the UIC Combined transport working group based on their current and potential future relevance for European rail/road Combined Transport.

For these selected ports, a detailed breakdown of port traffic volumes is provided for the year 2017 (in TEU) with finer segmented traffic data (based on data availability) on

- Feeder volumes
- Short sea volumes
- Deep sea volumes
- Modal split

All 12 ports have been contacted directly for data provision and provided feedback. Nevertheless, the data availability and provision of information varies significantly between the ports (see Table 10).

Table 10: Data availability and provision of the contents examined for the ports under study

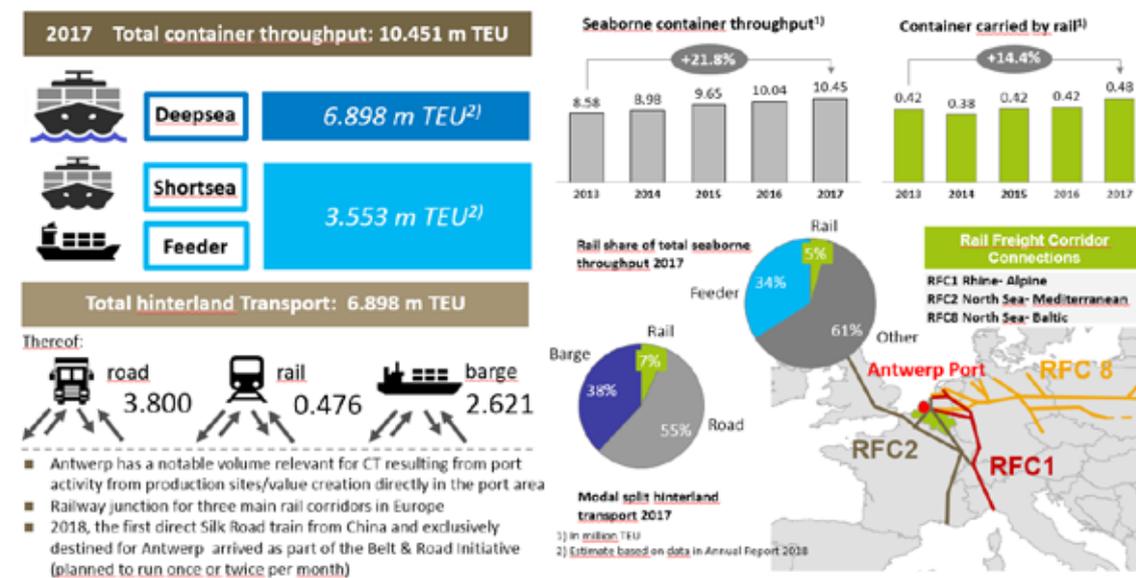
Seaport	Deep sea volume	Short sea volume	Feeder volume	Modal split	Rail hinterland volume
Antwerp	Not available (estimate possible)	Not available (estimate possible)	Provided	Provided	Provided
Bremerhaven	Provided	Provided	Provided	Provided	Provided
Genova	Provided	Provided	Provided	Provided	Provided
Hamburg	Provided	Provided	Provided	Provided	Provided
Koper	Not available	Not available	Provided	Provided	Provided
Le Havre	Not published	Not published	Provided	Not published	Provided
Marseille-Fos	Not available	Not available	Provided	Provided	Provided
Piraeus/Athens	Not available	Not available	Not available	Not available	Not available
Rotterdam	Not published	Not published	Provided	Provided	Provided
Trieste	Not available	Not available	Provided	Provided	Provided
Valencia	Provided	Provided	Provided	Provided	Provided
Wilhelmshaven	Provided	Provided	Provided	Provided	Provided

Source: BSL Transportation analysis, various port authorities.

The detailed port study presented includes an analysis of the above mentioned criteria for each of the ports. For this purpose, for each port under study, a specific profile with the finer port traffic data collected is provided in form of factsheets for the selected contents („at a glance“). Owing to the limitations in data availability presented above, not all criteria can be displayed for each port similarly.

Figure 28: Port fact sheet - Antwerp

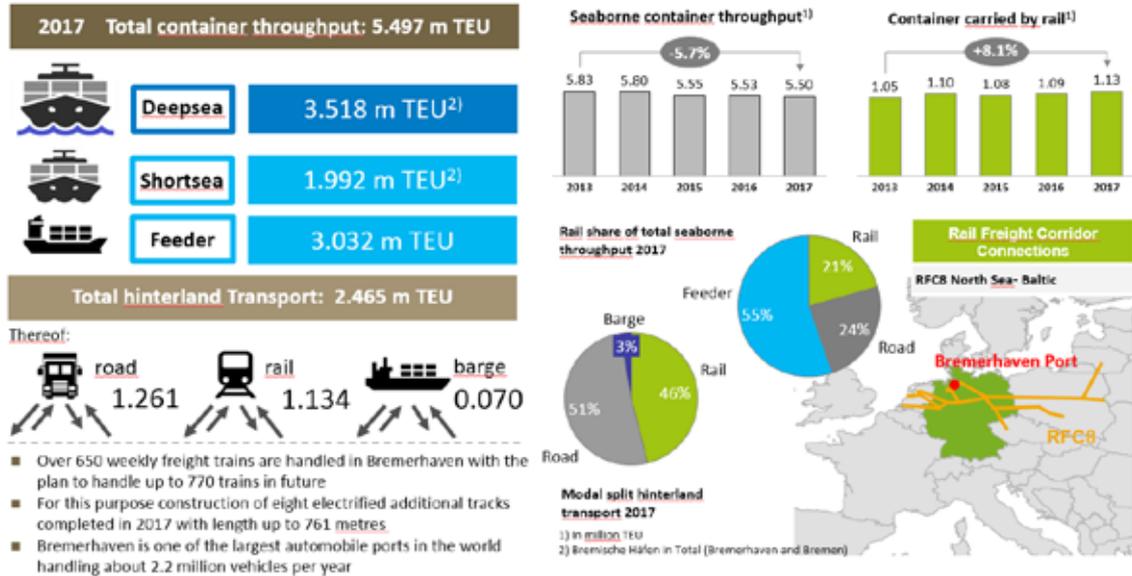
## Antwerp (BE)



Source: BSL Transportation, Antwerp Port Authority, 2018 Facts & Figures, Port of Antwerp Annual Report 2018 und Statistisch-Jaarboek\_2017, www.portofantwerp.com.

Figure 29: Port fact sheet – Bremerhaven

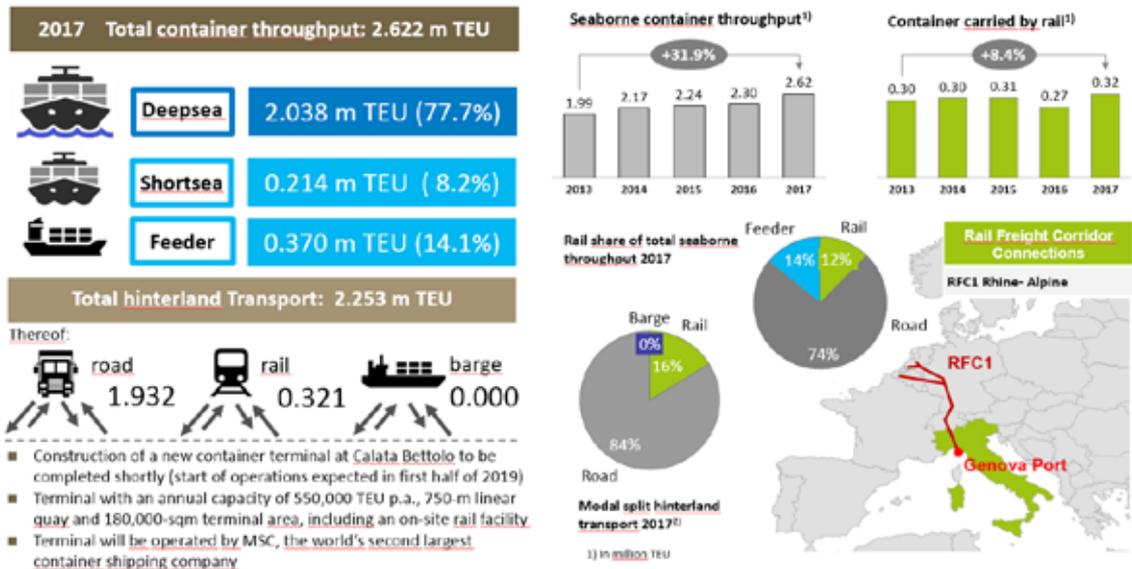
### Bremerhaven (DE)



Source: BSL Transportation, Der Senator für Wirtschaft, Arbeit und Häfen Bremen, <https://bremenports.de/>.

Figure 30: Port fact sheet – Genova

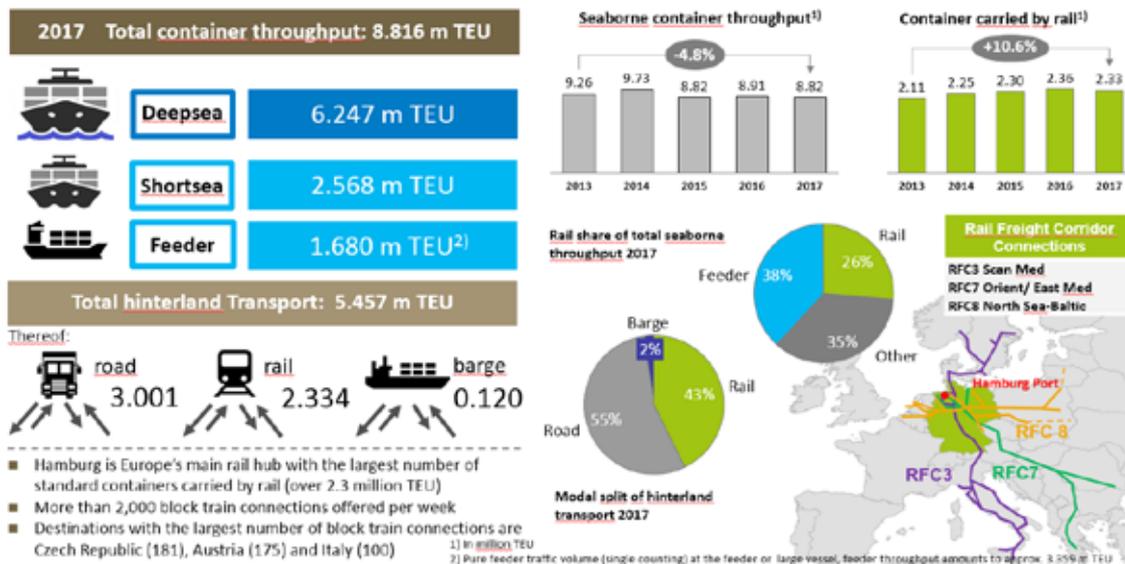
### Genova (IT)



Source: BSL Transportation, Ports of Genoa - Port System Authority of Western Ligurian Sea, [www.portsofgenoa.com](http://www.portsofgenoa.com).

Figure 31: Port fact sheet - Hamburg

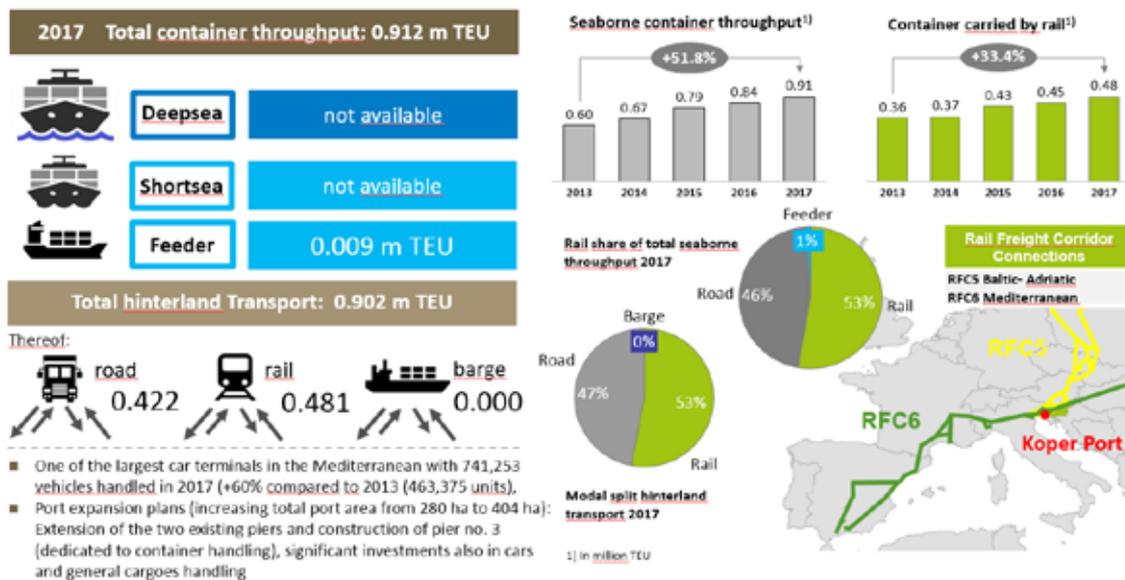
### Hamburg (DE)



Source: BSL Transportation, Hafen Hamburg Marketing e.V., www.hafen-hamburg.de.

Figure 32: Port fact sheet - Koper

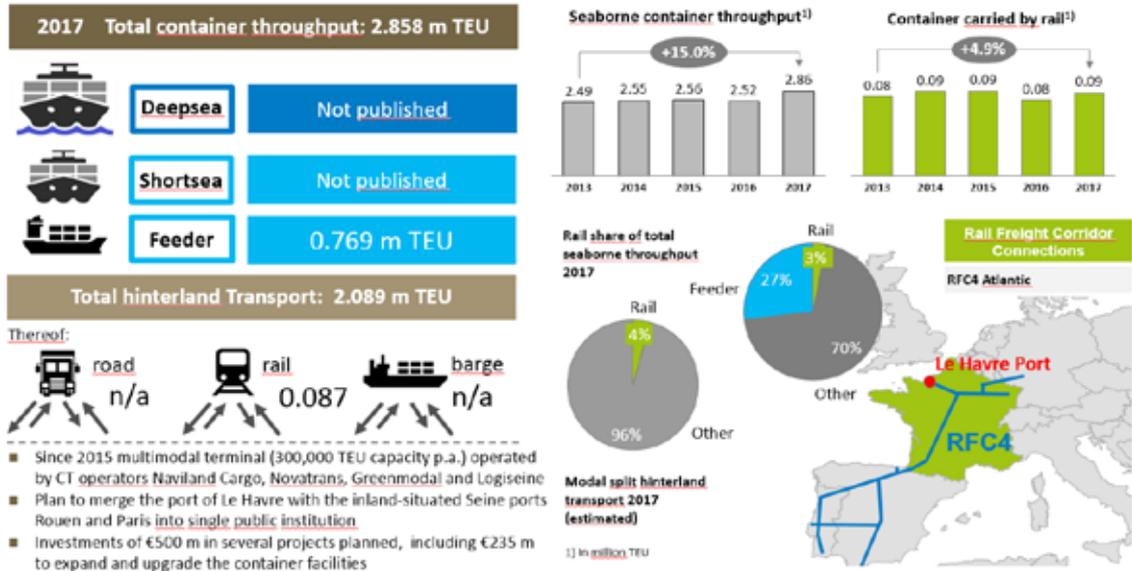
### Koper (SI)



Source: BSL Transportation, Luka Koper - Port of Koper, www.luka-kp.si.

Figure 33: Port fact sheet – Le Havre

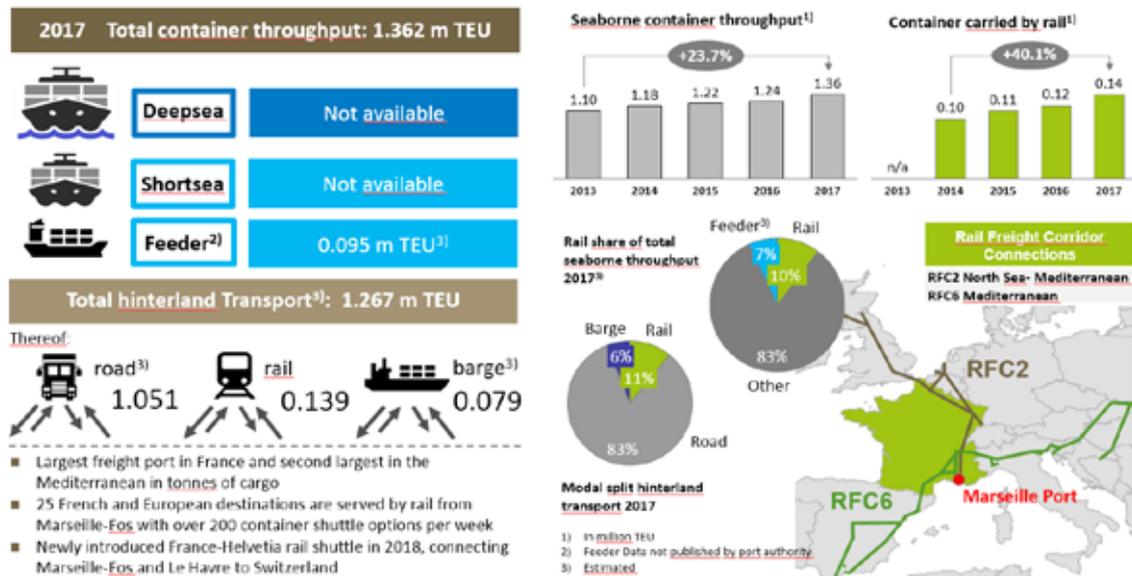
### Le Havre (FR)



Source: BSL Transportation, Grand Port Maritime du Havre, www.haropa-solutions.com, www.haropaports.com.

Figure 34: Port fact sheet – Marseille-Fos

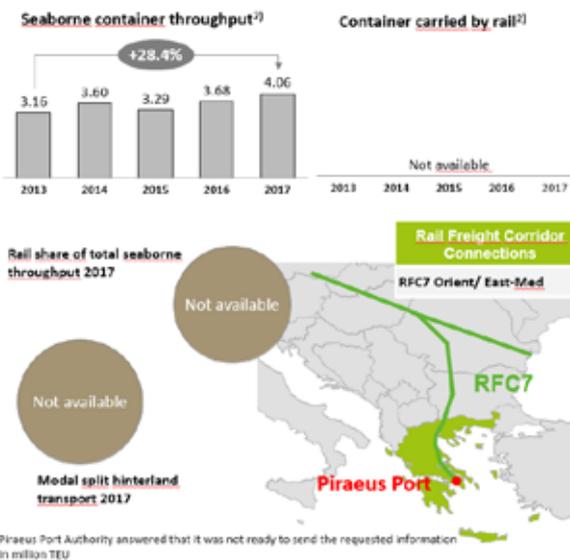
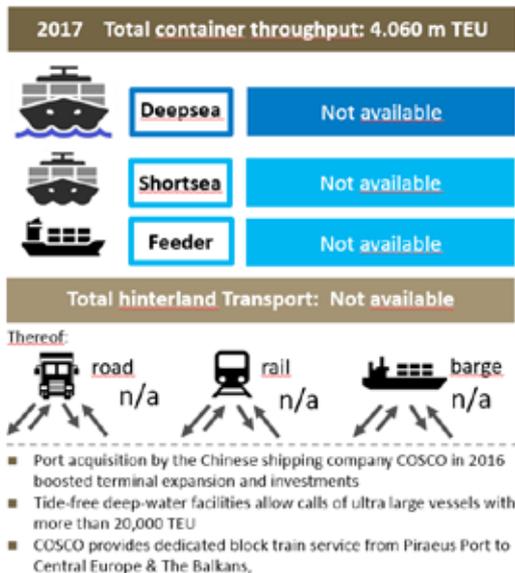
### Marseille-Fos (FR)



Source: BSL Transportation, Marseille Fos Port Authority, www.marseille-port.fr.

Figure 35: Port fact sheet – Piraeus

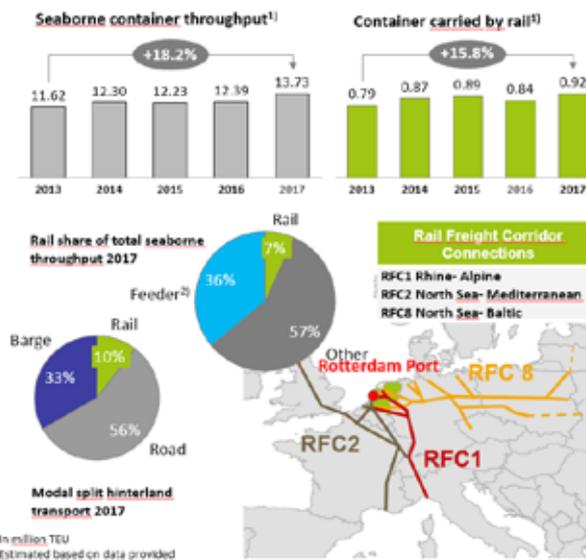
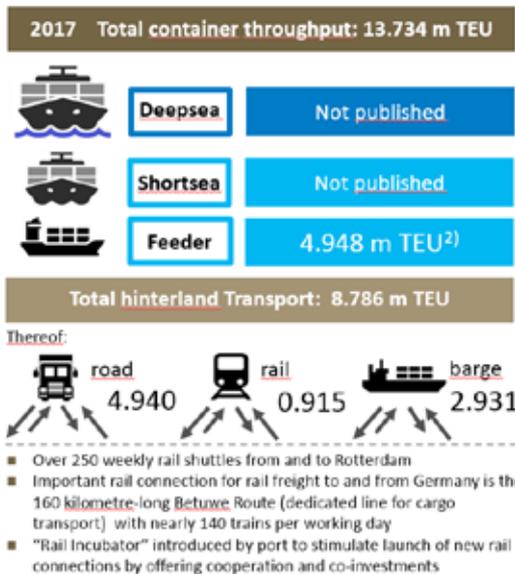
### Piraeus (GR)<sup>1)</sup>



Source: BSL Transportation, Piraeus Port Authority, www.olp.gr.

Figure 36: Port fact sheet – Rotterdam

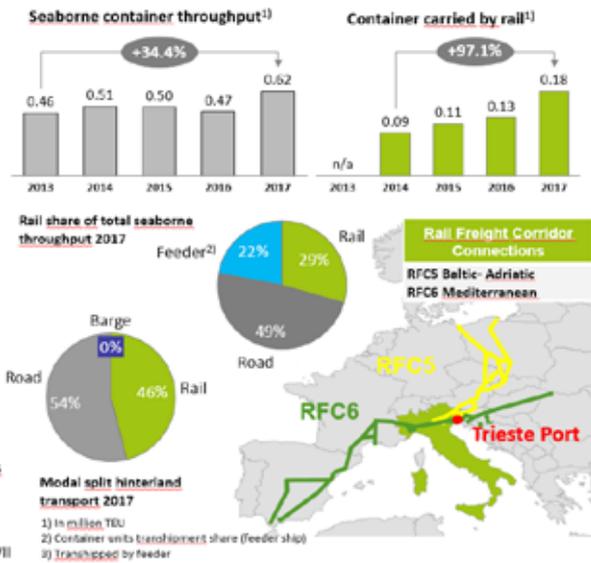
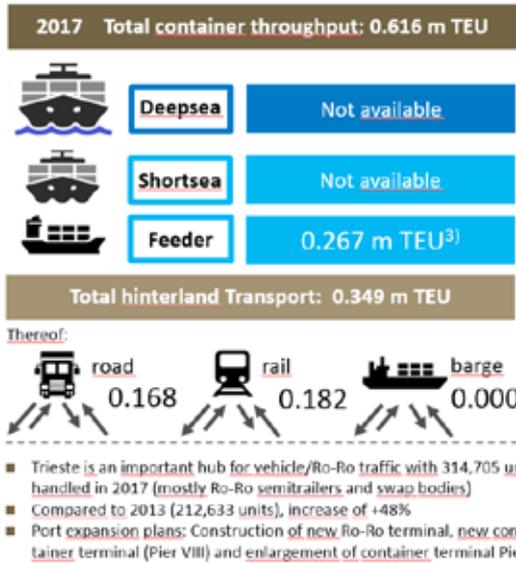
### Rotterdam (NL)



Source: BSL Transportation, Havenbedrijf Rotterdam N.V., www.portofrotterdam.com.

Figure 37: Port fact sheet – Trieste

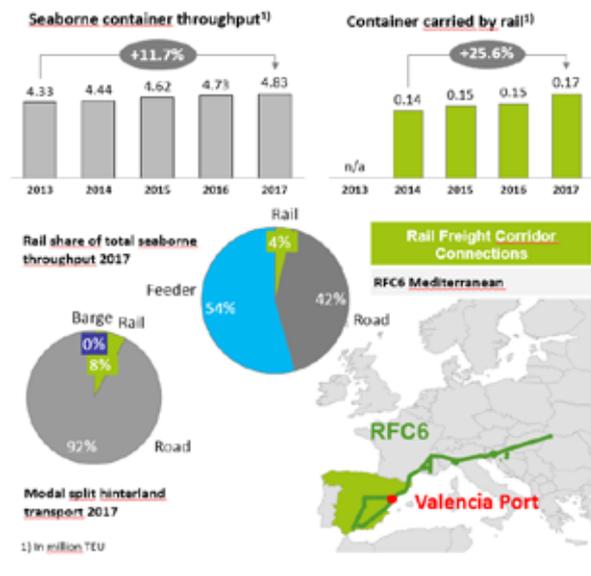
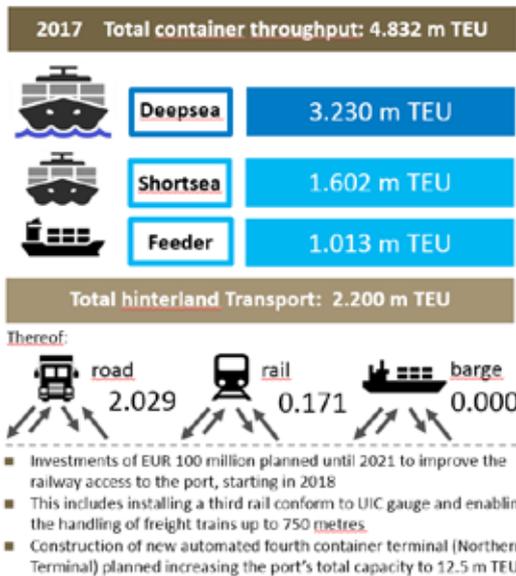
### Trieste (IT)



Source: BSL Transportation, Autorità di Sistema Portuale del Mare Adriatico Orientale – Porto di Trieste [www.porto.trieste.it](http://www.porto.trieste.it), <http://www.portsofnapa.com/port-of-trieste/development>.

Figure 38: Port fact sheet - Valencia

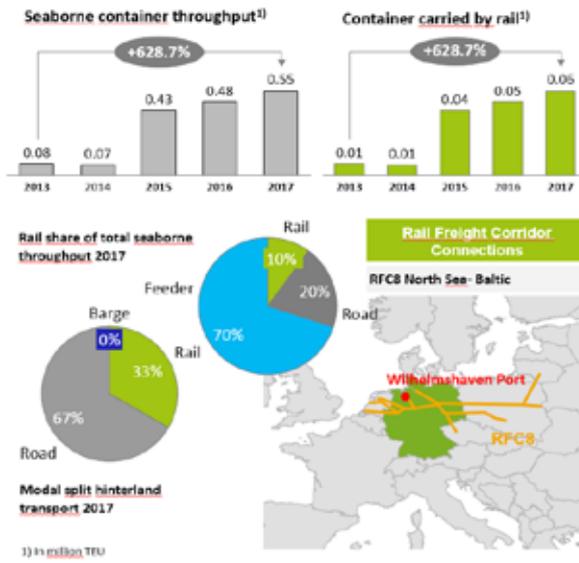
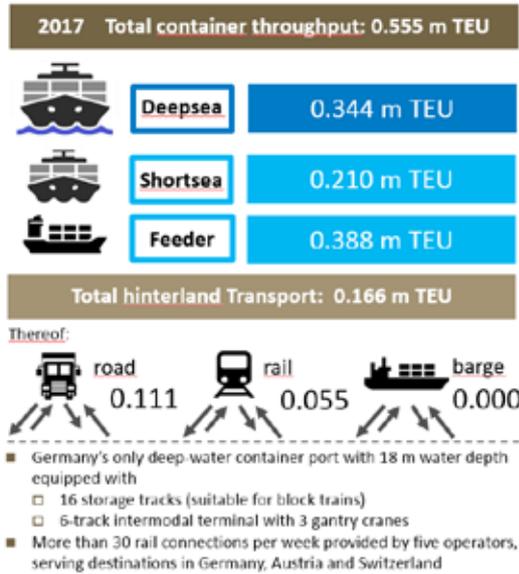
### Valencia (ES)



Source: BSL Transportation, Valencia Port Authority/ OmnicomPublicRelationsGroup, [www.valenciaport.com](http://www.valenciaport.com).

Figure 39: Port fact sheet - Wilhelmshaven

### Wilhelmshaven (DE)



Source: BSL Transportation, JadeWeserPort-Marketing, www.jadeweserport.de.

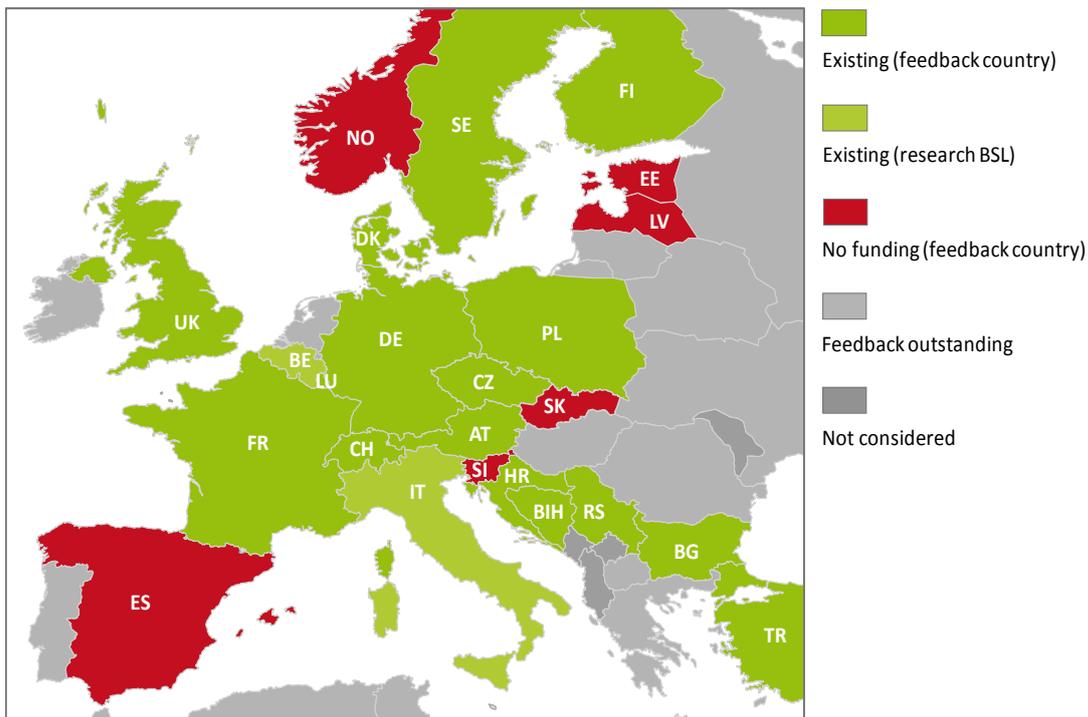
## 4.4. National plans to help combined transport

Combined transport is an important pillar for reaching the EU policy goals towards more eco-friendly, sustainable and efficient freight transport in Europe. In addition to cross-border initiatives at EU level, different national measures have been created in the past. This report provides an overview of existing national plans to help combined transport, providing an update of the analysis of national measures in favour of CT provided in the 2014 report edition.

To get the complete picture of national CT measures in Europe is challenging, since the current status of combined transport, types of measures, political objectives, funding volumes, responsible bodies and authorities as well as requirements and periods of validity, but also the publication and marketing of the different initiatives differ significantly. As there is no common up-to-date database on national CT measures in Europe available, the responsible national ministries, authorities and institutions in 35 countries were contacted individually. This analysis is based on the feedback of 24 countries of which 22 were able to provide further information on CT funding in their country. In addition, two further countries with national measures to support CT could be identified.

On this basis, 18 countries with current national programmes (in 2018 in force) to support combined transport activities could be identified, while six countries reported that there is currently no national funding. This is illustrated in the figure below:

**Figure 40: Overview of countries with current national CT funding measures**



Source: BSL Transportation analysis, based on feedback of national authorities and BSL market research.<sup>23</sup>

23. Countries without relevance for the analysis and therefore not considered here: AL, MD, ME, KV

A detailed overview with a list of relevant national funding programmes on CT is provided in the annex. It includes information regarding:

- Country
- Name of existing national programmes
- Contact person and contact details
- Term / duration of the programme
- Scope of funding
- Classification/ Funding sector
- Type of measure (e.g. direct grant, tax allowance, regulatory measure, soft loan)

For a differentiation of the combined transport market segments supported by the national measures, we follow the 2014 classification based on the scope of funding:

- **Rail Combined transport:** All programmes, which support only combined transport in connection with rail
- **Combined transport: (in general)** All programmes, which promote combined transport in general, but without further specification regarding the mode of transport (rail and/or inland waterways)
- **Other Combined transport:** All programmes which support combined transport in connection with other modes than rail (like inland waterways)

In addition, we split up the national funding programmes identified according to the funding sector:

- **Operational measures** (support of operation and traction) with focus on
  - Funding per km
  - Support of Processes
  - Technology support
- **Infrastructure measures** with focus on support of
  - rail track infrastructure
  - terminal infrastructure
- Support regarding **rolling stock** (intermodal wagons)
- Support regarding **intermodal loading units (ILUs)**
- **Research** on combined transport (support of studies and development activities)
- **Fiscal support** (Tax exemptions, reduced charges for CT etc.)

The following table provides an overview of the focus of the existing national programmes in Europe regarding funding sector. In most cases, national funding programmes are not only restricted to only one funding sector but can be attributed to more of the above-mentioned categories at the same time. Nevertheless, it becomes obvious that in 17 European countries (except of Poland), that offer national plans to help CT, funding measures include the support of operational activities.

**Table 11: Analysis of existing national CT funding programmes by funding sector**

	National Funding measures or programmes for Combined Transport										
	No. of funding measures	Operational (Funding per km)	Operational (Processes)	Operational (Technology)	Infra-structure (Rail)	Infra-structure (Terminal)	Wagons	Intermodal loading units	Research	RoLa / Rolling motorway <sup>2)</sup>	Fiscal support <sup>1)</sup>
Austria	5	x	x	x	x	x	x	x	x	x	x
Belgium	1	x					x	x			x
Bosnia and Herzegovina	2 in 1	x			x	x					
Bulgaria	2	x			x	x					
Croatia	3 in 1	x									x
Czech Republic	2			x		x		x			
Denmark	1	x									
Finland	1	x								x	x
France	6 in 3	x	x	x	x	x		x	x	x	
Germany	3		x	x	x	x		x	x		
Italy	2	x								x	
Luxembourg	1	x									
Poland	1				x		x	x			
Serbia	2			x		x	x	x			
Sweden	1	x									
Switzerland	5	x	x		x	x				x	x
Turkey	2 in 1		x		x	x					x
United Kingdom	1	x								x	

Currently no CT funding: Estonia, Latvia, Norway, Slovakia, Slovenia, Spain

Source: BSL Transportation analysis, national authorities.

As mentioned above, further information on the individual programmes is provided in the Annex. Compared to the analysis of national support measures of 2014, Many funding programmes have been continued, e.g. initiatives in Germany, Austria, Switzerland or the United Kingdom. Nevertheless, there have been some positive changes in the funding landscape. Countries like Bosnia and Herzegovina, Bulgaria, Croatia or Finland, who answered in 2014 that there was no CT funding, have newly-established funding measures and now offer support for combined transport activities in various ways.

The framework conditions of national CT funding on EU level are also about to change, having implications on national initiatives. The need for national support measures for combined transport is underlined in the proposal for an amendment of Directive 92/106/EEC on the establishment of common rules for certain types of combined transport of goods between Member States. It expands the current limited scope of current economic support measures.

It says that “member states should implement additional economic support measures in addition to the existing ones, targeting the various legs of a combined transport operation, [...]. Such measures may include the reduction of certain taxes or transport fees, grants for intermodal load units effectively transport in combined transport operations, or the partial reimbursement of transhipments cost.” Furthermore it specifies that support measures should be implemented in compliance with the European State aid rules, coordinated between Member States and the Commission (as needed) and reviewed on a regular basis by the Member States to guarantee their effectiveness and efficiency.

Further emphasis also lies on the support of investments in multimodal terminals, Member States may introduce by tax incentives, or other financial incentives. On the same time, they have to ensure adequate terminal infrastructure and capacity.

After all, the implementation of the revised Directive, would therefore also have a further stimulating effect on the national funding landscape for CT.

## 5. Combined transport market assessment and outlook

In the last report two years ago, the survey participants expected an average growth rate for the CT market in 2016 and 2017 of approx. +4% p.a.

Based on TEU, the growth expectations based on the feedback of CT providers who had participated in the 2016 survey proved fairly accurate for the entire European CT-market, in terms of both TEU and tonne-volume (see Table 12).

**Table 12: Expected vs. real market development in combined transport 2015 to 2017<sup>24</sup>**

Market development	2015 to 2017	
	TEU-based	Tonne-based
Forecast of stakeholders	+ 7.9% p.a.	
Actual figures	+ 7.2%	+ 9.4%

Source: BSL Transportation analysis.

Nevertheless, it has to be taken into account that the past development, but also the outlook differs among CT operators and countries.

The forecast for the present year and the upcoming years, provided by the market participants in 2018, remains very positive on average (see Figure 41). The average expected growth rate for the market was calculated as a weighted average, based on the company-specific outlook weighted with the individual CT volumes. The range of companies' individual growth expectations is very broad and varies significantly between different market participants from -20% to more than 50% p.a.

**Figure 41: Average expected volume growth of the total combined transport market for the next years**

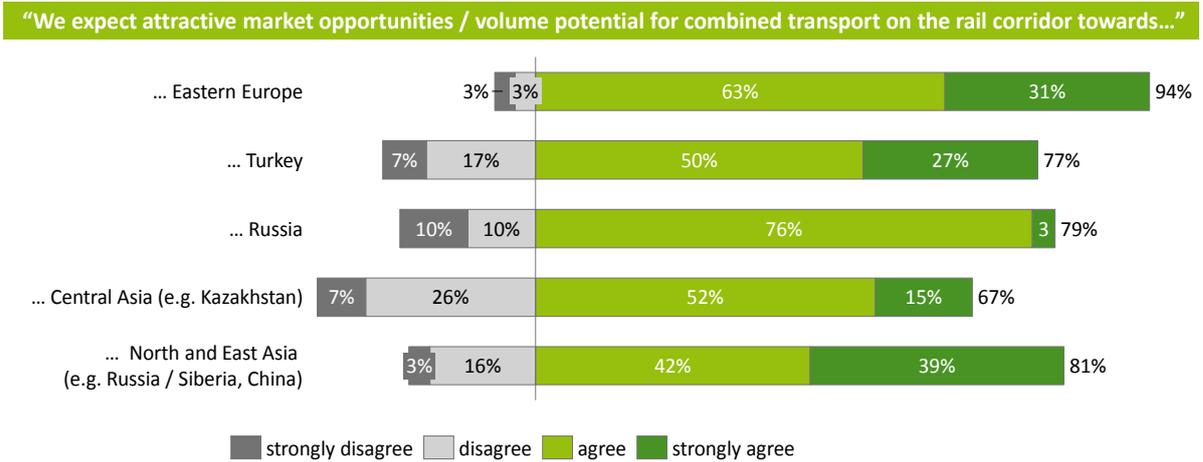


Source: BSL Transportation analysis.

<sup>24</sup>. The 2015 volumes refer to the total CT market (incl. the accompanied CT market segment with a share below 5%).

In view of the geographical focus of future CT development towards the east, the estimated prospects are very positive. The 2018 survey participants expect attractive market opportunities and volume potential for CT particularly on the corridor towards Eastern Europe and North and East Asia. But also the future perspectives for CT activities to Turkey, Russia and Central Asia are optimistic (see Figure 42).

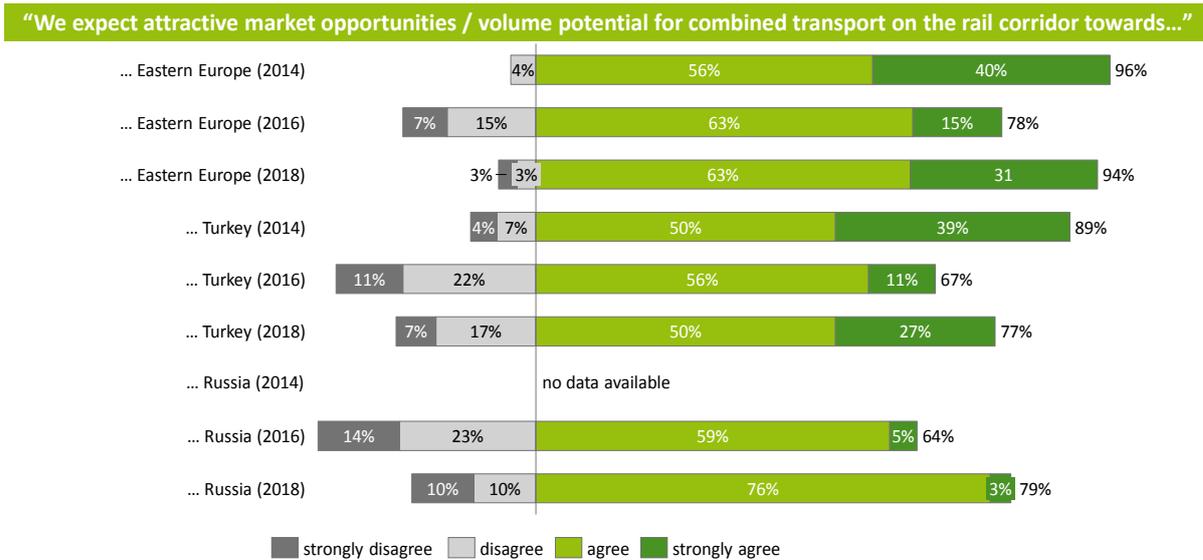
**Figure 42: Expected further geographical market potential for combined transport**



Source: BSL Transportation analysis.

Comparing the results of the two last report editions published in 2014 and 2016, it becomes obvious that the future potential for CT attributed to Turkey and Russia by the survey participants which was slightly damped in 2016 in view of the uncertain economic and political framework, somewhat recovered. The expected market potential in Eastern Europe remains positive, implying that there are obviously still unexploited opportunities for CT left.

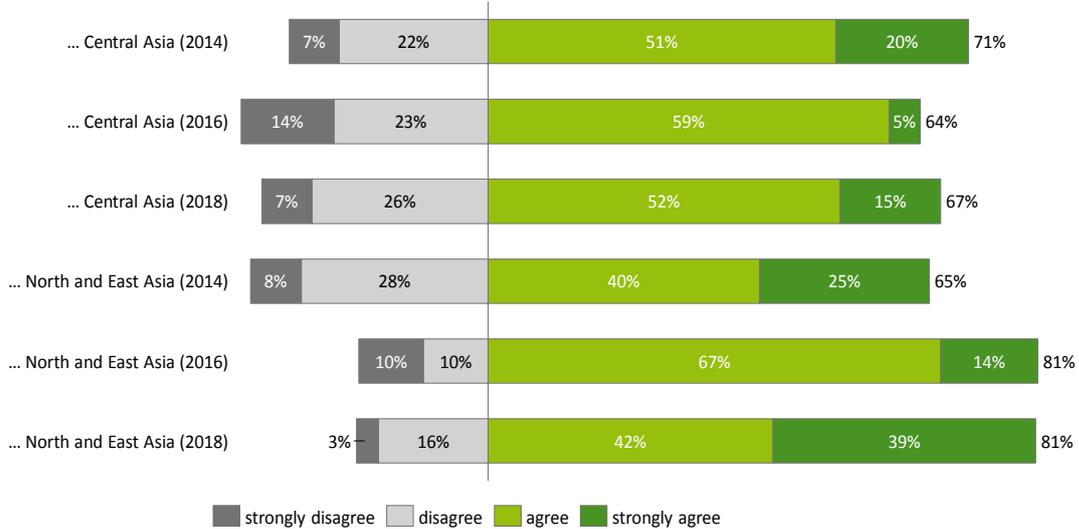
**Figure 43: Expected further geographical market potential for CT towards Eastern Europe, Turkey and Russia 2014-2016**



Source: BSL Transportation analysis.

**Figure 44: Expected further geographical market potential for CT towards Central, North and East Asia 2014-2016**

**"We expect attractive market opportunities / volume potential for combined transport on the rail corridor towards..."**



Source: BSL Transportation analysis.

The market stakeholders' outlook for both development towards Central and North/East Asia remains positive over the years. In particular the expectations of further market potential towards North and East Asia have become even more optimistic, most probably in connection with the establishment of "New Silk road". In this context China aims at developing and enhancing the overland rail freight corridor between Asia, and in particular China, and Europe by infrastructure investments with its "Belt and Road Initiative".

# 6. Annexes

**Table A1: Seaborne container throughput at major European container seaports 2007-2017 [in TEU]**

Port / Country	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	
1 Aarhus	DK	921,000	841,000	683,000	446,328	431,359	404,287	405,837	424,050	444,821	455,000	511,424
2 Algeciras	ES	3,420,533	3,327,616	3,042,759	2,806,884	3,602,631	4,070,791	4,342,998	4,556,465	4,515,768	4,761,444	4,389,851
3 Alicante	ES	179,259	150,827	132,059	147,308	154,257	158,274	148,135	139,273	133,880	159,864	164,412
4 Ambarli	TR	1,940,000	2,262,000	1,836,000	2,540,000	2,686,000	3,097,000	3,378,000	3,380,000	3,090,000	2,803,133	
5 Amsterdam	NL	386,236	436,074	203,084	60,043	48,515	68,933	65,088	57,399	51,634	56,191	56,191
6 Ancona	IT	87,193	119,104	105,503	110,395	120,674	142,213	152,394	164,882	178,476	185,846	168,578
7 Antwerp	NL	8,176,614	8,663,736	7,309,639	8,468,475	8,664,234	8,635,169	8,578,269	8,977,738	9,653,511	10,037,341	10,450,897
8 Baleares	ES	194,277	176,186	127,935	78,425	67,210	58,415	61,385	69,593	89,406	130,268	120,762
9 Barcelona	ES	2,610,099	2,570,000	1,800,213	1,945,733	2,034,693	1,758,647	1,720,383	1,893,836	1,965,240	2,243,584	2,968,757
10 Bilbao	ES	554,557	557,345	443,464	531,457	572,784	610,132	606,827	630,888	627,302	598,077	604,870
11 Bordeaux	FR	65,749	55,397	80,018	54,600	60,511	63,285	56,383	56,065	62,718	56,219	
12 Bremerhaven	DE	4,892,087	5,448,189	4,578,642	4,888,655	5,915,487	6,115,211	5,830,711	5,795,624	5,546,657	5,530,000	5,497,000
13 Cádiz	ES	145,229	126,408	106,399	109,187	92,217	96,215	92,332	85,462	67,311	74,321	82,188
14 Cagliari	IT	547,336	307,527	736,984	629,340	613,933	627,609	702,143	717,016	747,693	723,037	463,940
15 Cartagena	ES	47,036	46,755	58,680	64,489	72,320	66,438	80,955	88,784	92,052	96,129	90,309
16 Castellón	ES	101,929	88,208	67,075	103,956	130,963	160,934	193,969	206,551	214,663	226,903	240,895
17 Civitavecchia-Rome	IT	31,143	25,213	28,338	41,536	38,165	50,965	54,019	64,386	66,731	74,208	94,401
18 Constantza	RO	1,411,387	1,380,935	595,303	556,694	662,796	684,059	661,124	668,349	689,012	711,339	698,438
19 Dublin	IE	743,937	676,870	548,123	554,054	525,741	527,984	517,086	565,703	614,226	663,732	698,434
20 Dunkerque	FR	197,811	214,487	212,424	200,858	273,055	260,278	292,000	312,000	316,000	341,041	374,000
21 Felixstowe	UK	3,300,000	3,132,000	3,020,942	3,415,134	3,400,000	3,700,000	3,700,000	4,072,192	4,042,989	4,004,310	3,810,000
22 Fredericia	DK	25,174	33,542	36,560	26,181	63,195	70,774	67,869	84,700	77,350	72,840	71,367
23 Gdansk	PL	96,873	185,661	240,623	511,876	685,643	928,905	1,177,623	1,212,054	1,091,202	1,299,373	1,580,508
24 Gdynia	PL	614,373	610,767	378,340	485,255	616,441	676,349	729,607	849,123	684,796	642,195	710,698
25 Genova	IT	1,855,026	1,766,605	1,533,627	1,758,858	1,847,102	2,064,806	1,988,013	2,172,944	2,242,902	2,297,917	2,622,187
26 Ghent	BE	2,570	61,380	63,657	83,065	80,093	88,159	70,228	36,800	20,195	12,210	13,205
27 Gijón	ES	13,849	26,095	27,465	41,943	35,860	48,607	62,546	53,547	61,006	65,811	76,345
28 Gioia Tauro	IT	3,445,337	3,467,824	2,857,440	2,851,261	2,338,000	2,721,104	3,087,395	2,969,802	2,546,805	2,797,070	2,448,569
29 Göteborg	SE	840,550	863,000	817,615	879,611	886,782	899,628	858,497	836,631	820,000	798,000	644,000
30 Hamburg	DE	9,889,792	9,737,110	7,007,704	7,895,736	9,014,165	8,863,896	9,257,358	9,728,666	8,821,481	8,906,817	8,815,469
31 Haydarpaşa	TR	396,637	360,000	187,365	176,468	210,000			127,791	121,641	110,000	
32 Helsingborg	SE	226,733		260,000		350,000			204,476	197,412	241,100	280,000
33 Helsinki	FI	431,000	428,000	357,000	392,000	393,000	405,000	406,246	400,513	430,131	451,268	491,164
34 Hull	UK	303,153	262,000	181,957	202,119	233,009	239,641	254,606	226,869	238,883	238,883	237,140
35 Izmir	TR	892,217	895,000	826,645	726,675	672,486	705,097	697,020	680,975	656,410	682,000	639,306
36 Kaliningrad	RU								325,189	179,378	189,180	243,523
37 Klaipėda	LT	321,432	373,263	247,977	295,221	382,185	381,278	402,211	450,428	392,674	443,000	472,000
38 København/Malmö	SE	192,000	194,000	151,000	153,000	153,000	148,000	141,000	149,000	164,000	160,000	165,960
39 Koper	SI	305,648	353,880	343,165	476,731	589,314	570,744	600,441	674,033	790,736	844,776	911,528
40 Kotka/Hamina	FI	766,292	627,149	345,939	512,676	609,823	631,042	626,924	574,982	555,377	631,332	690,326
41 Las Palmas	ES	1,449,928	1,429,457	1,073,033	1,187,109	1,349,968	1,253,216	1,055,752	1,009,284	901,129	945,518	1,174,187
42 La Spezia	IT	1,187,040	1,246,139	1,046,063	1,285,155	1,307,274	1,247,218	1,300,432	1,303,017	1,330,442	1,272,425	1,473,571
43 Le Havre	FR	2,638,000	2,488,654	2,240,714	2,358,077	2,215,262	2,303,750	2,485,660	2,550,199	2,559,410	2,518,287	2,857,585
44 Leixões	PT	493,437	450,026	454,503	483,319	514,088	632,673	626,193	666,689	624,008	658,352	633,625
45 Lemesos	CY	376,662	413,756	356,681	348,667	344,992	307,396	277,215	307,660			
46 Lisboa	PT	554,774	556,062	500,769	512,789	541,906	485,761	549,302	502,186	481,289	391,283	495,525
47 Liverpool	UK	675,678	672,000	588,000	662,000	664,000	635,000	623,000	665,795	680,451	726,925	760,019
48 Livorno	IT	745,557	778,864	592,050	628,489	637,798	549,047	559,180	577,471	780,874	800,475	734,065
49 London/Tilbury	UK	843,808	1,166,814	845,720	496,409	890,755	920,137	945,193	1,064,942	1,184,594	1,497,483	1,380,357
50 Lübeck	DE	205,338		167,459	157,176	140,894	141,356	132,739	147,248	143,788	134,747	139,441
51 Malaga	ES	542,405	428,623	289,871	298,401	476,997	336,265	296,350	87,989	43,281	119,847	86,233
52 Marport/Istanbul	TR	798,059	1,252,939	1,159,249	1,863,551	1,548,480	1,583,887	1,705,962	1,757,901	1,585,450	1,846,995	
53 Marsaxlokk	MT	1,900,000	2,330,000	2,260,000	2,370,729	2,360,000	2,540,000	2,750,000	2,869,131	3,064,005	3,077,555	3,150,000
54 Marseille-Fos	FR	1,002,879	851,000	878,000	953,435	944,047	1,061,000	1,099,000	1,179,910	1,223,071	1,251,744	1,362,204
55 Mersin	TR	782,028	844,632	843,917	1,030,391	1,113,850	1,260,000	1,380,000	1,498,850	1,466,199	1,453,042	1,591,983
56 Nantes St-Nazaire	FR	147,127	149,281	145,662	166,296	178,185	184,838	183,029	177,811	184,799	189,139	195,279
57 Napoli	IT	460,812	481,521	515,868	532,432	526,768	546,818	477,020	431,682	438,280	483,280	509,876
58 Novorossiysk	RU	261,000	381,300	234,800	471,400	598,000			639,700	476,000	483,600	598,000
59 Odessa	UA	523,610	572,142	255,461	351,600	453,700	463,090	504,083	414,535	372,297	464,284	420,510
60 Oslo	NO	196,252	190,308	178,944	201,892	208,799	202,790	202,497	212,579	195,460	206,533	208,378
61 Piräus	GR	1,373,138	433,582	664,895	680,000	1,118,000	2,108,000	3,163,000	3,600,000	3,287,000	3,675,000	4,060,000
62 Rauma	FI	174,531	172,155	143,269	164,904	223,005	238,953	258,810	277,935	262,567	256,000	278,370
63 Ravenna	IT	206,786	214,324	185,022	183,041	215,336	208,152	226,879	222,548	244,813	234,511	223,369
64 Riga	LV	211,840	207,122	182,980	254,475	302,973	362,297	381,099	387,603	355,241	385,937	445,984
65 Rijeka	HR	145,040	168,761	130,740	137,048	150,677	129,680	131,310	192,004	161,883	214,348	244,348
66 Rotterdam	NL	10,790,604	10,783,825	9,743,290	11,145,804	11,876,921	11,865,916	11,621,249	12,297,570	12,234,535	12,385,168	13,734,334
67 Rouen	FR	158,572	142,036	121,940	129,585	130,598	127,527	102,122	96,985	111,731	88,478	87,760
68 Salerno	IT	385,306	330,373	269,300	234,809	235,209	208,591	263,405	320,044	359,328	388,572	454,686
69 Santa Cruz de Tenerife	ES	475,635	397,788	346,254	357,472	348,965	322,100	309,611	325,708	345,457	370,645	467,144
70 Savona	IT	242,720	252,837	196,317	196,434	170,427	75,282	77,859	90,823	98,033	54,594	44,057
71 Setúbal	PT	12,425	19,952	25,506	47,551	77,127	49,350	70,564	103,563	121,179	156,567	152,483
72 Sevilla	ES	135,040	130,452	129,736	152,612	164,842	156,193	140,404	161,595	161,671	229,665	422,753
73 Sines	PT	150,038	233,118	253,495	382,089	447,495	553,063	931,037	1,227,694	1,332,200	1,513,089	1,669,000
74 Southampton	UK	1,900,000	1,710,000	1,355,000	1,540,000	1,563,040	1,475,510	1,488,253	1,895,303	1,954,660	2,037,025	2,035,000
75 St. Petersburg	RU	959,032	1,072,346	938,931	1,159,989	2,365,174	2,524,680	2,514,440	2,374,876	1,715,139	1,745,182	1,752,854
76 Szczecin/Sw.	PL	56,321	62,913	52,809	56,503	55,098	52,163		78,439	87,784	90,869	93,579
77 Tallinn	EE	180,911	180,927	131,059	151,969	197,717	227,809	253,627	260,293	208,794	202,000	199,000
78 Tanger	MA	600,000	920,708	1,222,000	2,058,430	2,093,408	1,826,313	2,558,423	3,077,750	2,964,324	2,961,837	1,384,714
79 Taranto	IT	755,934	786,655									

Table A2: Seaborne container throughput and rail transport volume of selected European ports 2014-2017 (in TEU)

Seaport / Country		Seaborne container throughput (TEU)				Container carried by rail (TEU)			
		2014	2015	2016	2017	2014	2015	2016	2017
Algeciras	ES	4.556.465	4.515.768	4.761.444	4.389.851	18.607	11.069	12.163	9.915
Alicante	ES	139.273	133.880	159.664	164.412			2.214	1.887
Ancona	IT	164.882	178.476	185.846	168.578	350	0	0	0
Antwerp	NL	8.977.738	9.653.511	10.037.341	10.450.897	383.349	418.962	424.000	476.000
Baleares	ES	69.593	89.406	130.268	120.762	0	0	0	0
Barcelona	ES	1.893.836	1.965.240	2.243.584	2.968.757	189.553	213.229	225.996	243.605
Bordeaux	FR	56.065	62.718	56.219		0	0		
Bremerhaven	DE	5.795.624	5.546.657	5.530.000	5.497.000	1.101.000	1.078.000	1.093.000	1.134.000
Constantza	RO	668.349	689.012	711.339	696.438	n/a	n/a	275.084	270.006
Dublin	IE	565.703	614.226	663.732	698.434			28.500	28.500
Felixstowe	UK	4.072.192	4.042.989	4.004.310	3.810.000	890.000	910.000	n/a	1.000.000
Fredericia	LT	84.700	77.350	72.840	71.367				
Gdansk	PL	1.212.054	1.091.202	1.299.373	1.580.508	128.390	371.213	466.579	610.306
Gdynia	PL	849.123	684.796	642.195	710.698	265.697	227.436	210.970	197.556
Genova	FR	2.172.944	2.242.902	2.297.917	2.622.187	304.955	305.350	270.718	320.925
Ghent	BE	36.800	20.195	12.210	13.205	4.004	2.484	1.380	1.491
Gijón	ES	53.547	61.006	65.811	76.345	0	0	0	0
Hamburg	DE	9.728.666	8.821.481	8.906.817	8.815.469	2.249.865	2.300.289	2.360.229	2.333.774
Helsingborg	UA	204.476	197.412	241.100	280.000	26.517	21.456		
Helsinki	FI	400.513	430.131	451.268	491.164	5.800	5.000	4.100	9.500
Izmir	TR	680.975	656.410	682.000	639.306	83.298	86.290	96.311	101.435
Klaipeda	LT	450.428	392.674	443.000	472.000	57.809	42.068		
København/Malmö	SE	149.000	164.000	160.000	165.960	n/a	n/a	n/a	n/a
Koper	SI	674.033	790.736	844.776	911.528	367.337	425.050	445.189	480.681
Kotka/Hamina	FI	574.982	555.377	631.332	690.326			n/a	n/a
La Spezia	IT	1.303.017	1.330.442	1.272.425	1.473.571	322.569	311.443	324.083	350.000
Las Palmas	ES	1.009.284	901.129	945.518	1.174.187	n/a	n/a	0	0
Le Havre	FR	2.550.199	2.559.410	2.518.287	2.857.585	87.734	88.265	78.917	86.588
Leixões	PT	666.689	624.008	658.352	633.625	10.891	5.426	14.798	3.197
Lisboa	PT	502.186	481.289	391.283	495.525			18.748	36.457
Livorno	IT	577.471	780.874	800.475	734.085	66.497	75.972	83.194	87.110
London/Tilbury	UK	1.064.942	1.184.594	1.497.483	1.380.357	no data published by port			
Lübeck	DE	147.248	143.788	134.747	139.441	55.130	62.807		
Malaga	ES	87.989	43.281	119.847	86.233				
Marport/Istanbul	TR	1.757.901	1.585.450	1.846.995					
Marsaxlokk	MT	2.869.131	3.064.005	3.077.555	3.150.000	0	0		
Marseille-Fos	FR	1.179.910	1.223.071	1.251.744	1.362.204	99.581	112.742	121.595	139.495
Mersin	TR	1.498.850	1.466.199	1.453.042	1.591.983	139.146	124.822	129.301	145.048
Nantes St-Nazaire	FR	177.811	184.799	189.139	195.279	0	0	0	0
Odessa	UA	414.535	372.297	464.284	420.510	67.360	66.158		
Oslo	NO	212.579	195.460	206.533	208.378			n/a	n/a
Rauma	FI	277.935	262.567	256.000	278.370		3.051	1.342	1.655
Ravenna	IT	222.548	244.813	234.511	223.369	22.095	19.966	22.174	19.730
Riga	LV	387.603	355.241	385.937	445.984	n/a	63.950	52.500	55.500
Rotterdam	NL	12.297.570	12.234.535	12.385.168	13.734.334	869.493	889.000	843.000	915.000
Rouen	FR	96.985	111.731	88.478	87.760	0	0	0	0
Santa Cruz de Tenerife	ES	306.652	327.780	350.337	448.277	0	0	0	0
Sines	PT	1.227.694	1.332.200	1.513.089	1.669.000	189.683	208.950		
Southampton	UK	1.895.303	1.954.060	2.037.025	2.035.000	no data published by port			
Tallinn	EE	260.293	208.784	202.000	199.000	70.796	40.230	n/a	n/a
Taranto	IT	148.519	0	327	0	0	0	0	0
Thessaloniki	GR	349.513	351.407	344.277	401.473	1.683	1.242	473	250
Trieste	IT	506.011	501.444	468.462	616.155	92.104	111.415	125.361	181.522
Valencia	ES	4.441.949	4.615.196	4.732.136	4.832.156	136.386	146.688	151.346	171.250
Varna	BG	132.668	139.203	139.930	151.972	0	0	0	0
Venezia	IT	456.068	560.301	605.875	611.383			3.700	3.200
Wilhelmshaven	DE	67.125	426.017	480.382	554.811	6.713	42.725	48.038	55.481
Zeebrugge	BE	2.046.586	1.568.938	1.399.309	1.520.406	472.761	387.528	296.654	501.734

Source: BSL Transportation analysis, various port authorities.

Table A3: Overview of national measures in CT

Overview of funding programmes (only current programmes)							
Programme	Institution	Contact person	Email	Term	Sector	Classification	Type of measure
<b>Austria</b>							
Fördermaßnahmen für den kombinierten Verkehr (Steuerliche Maßnahmen)				2014 -	Rail + CT	Operational (Processes), RoLa / Rolling motorway, Fiscal support	Tax allowance
Innovationsförderprogramm für den kombinierten Güterverkehr				2015 - 2020	Combined Transport	Operational (Processes, Technology), Wagons, ILUs, Fiscal support	Direct grant/ Interest rate subsidy
Ordnungspolitische Maßnahmen zur Förderung des kombinierten Verkehrs				2017 -	Combined Transport	Research	Regulatory measure
Programm für die Unterstützung des Ausbaus von Anschlussbahnen sowie von Umschlagsanlagen des Intermodalen Verkehrs	BMV/IT-Bundesministerium für Verkehr, Innovation und Technologie (AT)	Abteilung I / K4 Kombiniertes Verkehr	k4@bmviti.gv.at	2013 - 2022	Rail + CT	Operational (Processes), RoLa / Rolling motorway	Direct grant
Förderung des Schienen Güterverkehrs im Rahmen bestimmter kombinierter Verkehrsleistungen (Sä. 48390 2017/N)				2018 - 2022	Rail + CT	Operational (Funding per km), RoLa / Rolling motorway	Direct grant
<b>Belgium</b>							
Prolongation du régime de promotion du transport combiné ferroviaire et du trafic diffus pour 2017-2020 (SA.47109)	FPS Mobility and Transport		info@mobiliti.gov.be	2017 - 2020	Combined Transport	Operational (Funding per km), ILUs, Wagons, Fiscal support	Direct grant
<b>Bosnia and Herzegovina</b>							
Law on Funding the Railway Infrastructure and Co-financing of Passenger and Combined Transport by Railways	Bosnia and Herzegovina Ministry of Communication and Transport - Department for Transport	Mustafa Kovačević	Mustafa.Kovacevic@mkt.gov.ba	2014 - 2018	Rail + CT	Operational (Funding per km) Infrastructure (Rail, Terminal)	Direct grant
<b>Bulgaria</b>							
Ordinance No 53/2003 for Performing of combined transport - Infrastructure charge reduction	Republic of Bulgaria Ministry of Transport, Information Technology and Communications		mail@mtic.government.bg	2014 - 2020	Combined Transport	Operational (Funding per km) Infrastructure (Rail, Terminal)	Direct grant
Operational Programme on Transport and Transport Infrastructure				2003 -	Combined Transport	Infrastructure (Rail, Terminal)	Direct grant
<b>Croatia</b>							
Ordinance on incentives in Combined Transport of Goods (OJ 5/18): Funding per multimodal unit for transport organizer	Republic of Croatia Ministry of the Sea, Transport and Infrastructure - Department for Intermodal Transport	Danijel Krakić	Peticija-kombitrani@mmpi.hr (for enquiries regarding funding measures)	2018 - 2023	Combined Transport	Operational (Funding per km)	Direct grant
Ordinance on incentives in Combined Transport of Goods (OJ 5/18): Funding on railway transport for railway undertaking				2018 - 2023	Rail + CT	Operational (Funding per km)	Direct grant
Ordinance on incentives in Combined Transport of Goods (OJ 5/18): Support of Croatian trucks and vehicles for first/final road leg (for owner of road vehicles)				2018 - 2023	Combined Transport	Operational (Funding per km), Fiscal support	Tax allowance
<b>Czech Republic</b>							
Funding Program of Modernisation and Construction of Combined Transport Terminals - SA. 39962 (2014/N)	Ministry of Transport - Unit of Development of Rail and Combined Transport, Department of Rail and Waterborne Transport	Ivan Novák	ivan.novak@mtdc.cz	2015 - 2020	Rail + CT	Infrastructure (Terminal)	Direct grant
State Aid/ Funding Program for Intermodal Transport Units - SA. 49153 2017/N				2018 - 2023	Rail + CT	Operational (Technology), ILUs	Direct grant
<b>Denmark</b>							
Environmental subsidy	Banedanmark		dtr-sek@bane.dk	2013 - 2020	Rail + CT	Operational (Funding per km)	Direct grant

Source: BSL Transportation analysis, national authorities.

Table A3: Overview of national measures in CT (continued)

Programme	Institution	Contact person	Email	Term	Sector	Classification	Type of measure
<b>Estonia</b>							
NO FUNDING	Ministry of Economic Affairs and Communications		<a href="mailto:info@mkm.ee">info@mkm.ee</a>				
<b>Finland</b>							
Finnish law on vehicle tax (ajoneuvoverolaki 1281/2003) - Tax support for combined transport that includes transporting the tractor unit in the train	Ministry of Transport and Communications		<a href="mailto:kruaamo@lvm.fi">kruaamo@lvm.fi</a>	2003 -	Rail + CT	Operational (Funding per km), RoLa / Rolling motorway, Fiscal support	Tax allowance
<b>France</b>							
Aides à l'exploitation des services réguliers de transport combiné Mesures en faveur du fret ferroviaire (annoncé)	Ministère de la Transition écologique et solidaire - Direction Générale des Infrastructures, des Transports et de la Mer, Direction des Services de Transport			2018 -	Rail + CT	Infrastructure (Rail, Terminal), ILUs	Direct grant
Aid scheme for studies and works to develop and implement "Rail Motorways"				2017 -	Rail + CT	Operational (Technology)	Direct grant
Aide forfaitaire par unité de transport intermodal				2013 -	Rail + CT	Research	Direct grant
<b>Germany</b>							
Richtlinie zur Förderung von Umschlaganlagen des Kombinierten Verkehrs (KV) nicht-bundesweiser Unternehmen - Focus on terminals rail/road and rail/rail (Anlagen des KV Schiene/Straße und Schiene/Schiene)	Eisenbahn-Bundesamt	Referat 44	<a href="mailto:ref44@eba.bund.de">ref44@eba.bund.de</a>	2017 - 2021	Rail + CT	Infrastructure (Rail, Terminal)	Direct grant
Richtlinie zur Förderung von Umschlaganlagen des Kombinierten Verkehrs (KV) nicht-bundesweiser Unternehmen - Focus on terminals waterway/rail and waterway/waterway (Anlagen des KV Wasserstraße/Straße und Wasserstraße/Wasserstraße)	Generaldirektion Wasserstraßen und Schifffahrt (GDWS)	Dezernat Wirtschaftsangelegenheiten der Binnenschifffahrt	<a href="mailto:adws@wsv.bund.de">adws@wsv.bund.de</a>	2017 - 2021	Other CT	Infrastructure (Terminal)	Direct grant
Digitalisierung intermodaler Lieferketten – KV4-0	Bundesministerium für Verkehr und digitale Infrastruktur (BMVI)		<a href="mailto:buerninfo@bmv.bund.de">buerninfo@bmv.bund.de</a>	2017 - 20	Combined Transport	Operation (Processes, Technology), Research	Direct grant
<b>Italy</b>							
Aid for combined transport in the Province of Trento (Aiuti a sostegno del trasporto combinato) - SA.46806 (2016/N)	Ministero delle Infrastrutture e dei Trasporti		<a href="mailto:ufficio.stampas@mit.gov.it">ufficio.stampas@mit.gov.it</a>	2016 - 2019	Rail + CT	Operational (Funding per km), RoLa / Rolling motorway	Direct grant
Aid scheme supporting combined transport in the Province of Bolzano - SA.46858 (2011/N)			<a href="mailto:aff.internazionali@mit.gov.it">aff.internazionali@mit.gov.it</a>	2017 - 2019	Rail + CT	Operational (Funding per km), RoLa / Rolling motorway	Direct grant
<b>Latvia</b>							
NO FUNDING	Ministry of Transport of the Republic of Latvia - Railway department		<a href="mailto:saliksmes.ministria@sam.gov.lv">saliksmes.ministria@sam.gov.lv</a>				
<b>Luxembourg</b>							
Promotion du transport combiné (Loi du 26 mai 2016 relatif à la promotion du transport combiné)	Ministère du Développement durable et des Infrastructures - Département des transports	Laurent Dahm	<a href="mailto:laurent.dahm@iretat.lu">laurent.dahm@iretat.lu</a>	2016 - 2018	Combined Transport	Operational (Funding per km)	Direct grant
<b>Norway</b>							
NO FUNDING	Royal Norwegian Ministry of Transport and Communications	Anders Angard; Eirik Vardal; Kvalheim	<a href="mailto:postmotak@sd.dep.no">postmotak@sd.dep.no</a>				
<b>Poland</b>							
Development of railway transport - Programme to finance the purchase of railway platforms	Ministry of Infrastructure		<a href="mailto:sekretariatDK@mi.gov.pl">sekretariatDK@mi.gov.pl</a>	2014 - 2020	Rail + CT	Wagons, ILUs Infrastructure (Rail)	Direct grant

Source: BSL Transportation analysis, national authorities.

Table A3: Overview of national measures in CT (continued)

Programme	Institution	Contact person	Email	Term	Sector	Classification	Type of measure
<b>Serbia</b>							
Regulation on stimulus measures for the purpose of improving combined transport (Official Gazette of the Republic of Serbia, no. 677/2015)	Ministry of Construction, Transportation and Infrastructure	Uros Stanimirovic	<a href="mailto:uros.stanimirovic@mopsi.gov.rs">uros.stanimirovic@mopsi.gov.rs</a>	2018 -	Combined Transport	Infrastructure (Terminal) Operational (Technology), Wagons, LLUs	Direct grant
Support for the construction of an intermodal terminal in Batanica, Belgrade (Regulation on combined transport to and from combined transport terminals located at the rail network)				2016 - 2019	Combined Transport	Infrastructure (Terminal)	Direct grant
<b>Slovakia</b>							
NO FUNDING	Ministry of Transport and Construction of the Slovak Republic - Section of rail transport and railways, Unit of rail and combined transport	Pavol Marušinec	<a href="mailto:pavol.marusinec@mindop.sk">pavol.marusinec@mindop.sk</a>				
<b>Slovenia</b>							
NO FUNDING	Republic of Slovenia - Ministry of Infrastructure		<a href="mailto:sol.mzi@gov.si">sol.mzi@gov.si</a>				
<b>Spain</b>							
NO FUNDING	Ministerio de Fomento		<a href="mailto:fomento@fomento.es">fomento@fomento.es</a>				
<b>Sweden</b>							
Environmental compensation for rail freight transport - SA. 49749 (2017/N)	Trafikverket	Pär-Erik Westin	<a href="mailto:par-erik.westin@trafikverket.se">par-erik.westin@trafikverket.se</a>	2018 - 2019	Rail + CT	Operational (Funding per km)	Direct grant
<b>Switzerland</b>							
NEAT (Neue Eisenbahn-Alpentransversale)				1993 - 2020	Rail + CT	Infrastructure (Rail)	Direct grant
Güterverlagerungsgesetz (GVVG)				2010 -	Rail + CT	Operational (Funding per km), RoLa / Rolling motorway, Fiscal support	Tax allowance/ Regulatory measure
LSVA (Leistungsabhängige Schwenverkehrsabgabe)	Eidgenössisches Department für Umwelt, Verkehr, Energie und Kommunikation (UVEK)	Reto Schietti	<a href="mailto:Reto.Schietti@bav.admin.ch">Reto.Schietti@bav.admin.ch</a>	2001 -	Combined Transport	Operational (Processes), Infrastructure (Rail)	Regulatory measure
Bestellung und Abgeltung alpenquerender kombinierter Verkehr: UKV und RoLa				2006 - 2023	Rail + CT	Operational (Funding per km), RoLa / Rolling motorway, Fiscal support	Direct grant
Investitionsbeiträge an den Bau, die Erweiterung und Erneuerung von Umschlaganlagen für den Kombinierten Verkehr und Anschlussgleisen (gem. Gütertransportverordnung)				2016 - 2019	Rail + CT	Infrastructure (Rail, Terminal)	Direct grant
<b>Turkey</b>							
Draft Regulation on Combined Freight Transport - Investment incentive program (supposed to be enacted in 2019)	Ministry of Transport, Maritime Affairs and Communications - DG for Dangerous Goods and Combined Transport, Department of Combined Transport	Bulent Suloglu	<a href="mailto:bulent.suloglu@udhb.gov.tr">bulent.suloglu@udhb.gov.tr</a>	2019 -	Combined Transport	Operational (Processes), Infrastructure (Rail, Terminal), Fiscal support	Direct grant
<b>United Kingdom</b>							
Mode Shift Revenue Support MSRS - SA.39354 (2014/N)	Department for Transport	Catherine Parton	<a href="mailto:Catherine.Parton@dfp.gov.uk">Catherine.Parton@dfp.gov.uk</a>	2015 - 2020	Combined Transport	Operational (Funding per km), RoLa / Rolling Motorway	Direct grant

Source: BSL Transportation analysis, national authorities.

**Table A4: Overview of national measures in CT – Links to programmes**

Overview of funding programmes (only current programmes)	
Programme	Link
<b>Austria</b>	
Fördermaßnahmen für den kombinierten Verkehr (Steuerliche Maßnahmen)	<a href="https://www.bmvit.gv.at/verkehr/gesamtverkehr/kombiverkehr/downloads/foerd_steuer2017.pdf">https://www.bmvit.gv.at/verkehr/gesamtverkehr/kombiverkehr/downloads/foerd_steuer2017.pdf</a>
Innovationsförderprogramm für den kombinierten Güterverkehr	<a href="https://www.bmvit.gv.at/innovation/publikationen/verkehrstechnologie/ikv.html">https://www.bmvit.gv.at/innovation/publikationen/verkehrstechnologie/ikv.html</a>
Ordnungspolitische Maßnahmen zur Förderung des kombinierten Verkehrs	<a href="https://www.bmvit.gv.at/verkehr/gesamtverkehr/kombiverkehr/downloads/foerd_ordnung2018.pdf">https://www.bmvit.gv.at/verkehr/gesamtverkehr/kombiverkehr/downloads/foerd_ordnung2018.pdf</a>
Programm für die Unterstützung des Ausbaus von Anschlussbahnen sowie von Umschlagsanlagen des Intermodalen Verkehrs	<a href="https://www.bmvit.gv.at/verkehr/eisenbahn/foerderung/anschlussbahnen.html">https://www.bmvit.gv.at/verkehr/eisenbahn/foerderung/anschlussbahnen.html</a>
Förderung des Schienengüterverkehrs im Rahmen bestimmter kombinierter Verkehrsdienste (Sa. 48390 2017/N)	<a href="http://ec.europa.eu/competition/state_aid/cases/269839/269839_1971628_105_5.pdf">http://ec.europa.eu/competition/state_aid/cases/269839/269839_1971628_105_5.pdf</a>
<b>Belgium</b>	
Prolongation du régime de promotion du transport combiné ferroviaire et du trafic diffus pour 2017-2020 (SA.47109)	<a href="http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=3_SA_47109">http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=3_SA_47109</a>
<b>Bosnia and Herzegovina</b>	
Law on Funding the Railway Infrastructure and Co-financing of Passenger and Combined Transport by Railways	<a href="http://www.mkt.gov.ba/aktivnosti/Framework%20Transport%20Strategy%20BiH_Eng_2016-07-13x_without%20logo.pdf">http://www.mkt.gov.ba/aktivnosti/Framework%20Transport%20Strategy%20BiH_Eng_2016-07-13x_without%20logo.pdf</a>
<b>Bulgaria</b>	
Ordinance No 53/2003 for Performing of combined transport - Infrastructure charge reduction	<a href="https://www.mtitc.government.bg/sites/default/files/integrated_transport_strategy_2030_eng.pdf">https://www.mtitc.government.bg/sites/default/files/integrated_transport_strategy_2030_eng.pdf</a>
Operational Programme on Transport and Transport Infrastructure	<a href="http://www.optransport.bg/upload/docs/OPTTI_ENG_17112014_verision_1.pdf">http://www.optransport.bg/upload/docs/OPTTI_ENG_17112014_verision_1.pdf</a>
<b>Croatia</b>	
Ordinance on incentives in Combined Transport of Goods (OJ 5/18)	<a href="http://ec.europa.eu/competition/state_aid/cases/267973/267973_1945583_56_2.pdf">http://ec.europa.eu/competition/state_aid/cases/267973/267973_1945583_56_2.pdf</a>
<b>Czech Republic</b>	
Funding Program of Modernisation and Construction of Combined Transport Terminals - SA. 39962 (2014/N)	<a href="http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=3_SA_39962">http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=3_SA_39962</a> <a href="http://web.opd.cz/vyzva-10/">http://web.opd.cz/vyzva-10/</a>
State Aid/ Funding Program for Intermodal Transport Units - SA. 49153 2017/N	<a href="http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=3_SA_49153">http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=3_SA_49153</a>
<b>Denmark</b>	
Environmental subsidy	<a href="https://www.retsinformation.dk/eli/Ita/2015/1379">https://www.retsinformation.dk/eli/Ita/2015/1379</a>
<b>Finland</b>	
Finnish law on vehicle tax (Tax support for combined transport that includes transporting the tractor unit in the train)	<a href="https://www.finlex.fi/fi/laki/ajantasa/2003/20031281">https://www.finlex.fi/fi/laki/ajantasa/2003/20031281</a>

<b>France</b>	
Aides à l'exploitation des services réguliers de transport combiné Mesures en faveur du fret ferroviaire (annoncé)	<a href="https://www.ecologique-solidaire.gouv.fr/elisabeth-borne-presente-ambition-developpement-dune-logistique-urbaine-efficace-et-integree-appuyee">https://www.ecologique-solidaire.gouv.fr/elisabeth-borne-presente-ambition-developpement-dune-logistique-urbaine-efficace-et-integree-appuyee</a> <a href="https://www.ecologique-solidaire.gouv.fr/transport-combine">https://www.ecologique-solidaire.gouv.fr/transport-combine</a>
Aid scheme for studies and works to develop and implement "Rail Motorways"	<a href="https://www.ecologique-solidaire.gouv.fr/autoroutes-ferroviaires">https://www.ecologique-solidaire.gouv.fr/autoroutes-ferroviaires</a>
Aide forfaitaire par unité de transport intermodal	<a href="https://www.ecologique-solidaire.gouv.fr/transport-combine">https://www.ecologique-solidaire.gouv.fr/transport-combine</a>
<b>Germany</b>	
Richtlinie zur Förderung von Umschlaganlagen des Kombinierten Verkehrs (KV) nicht-bundeseigener Unternehmen - Focus on terminals rail/road and rail/rail	<a href="https://www.bmvi.de/SharedDocs/DE/Anlage/VerkehrUndMobilitaet/Schiene/foerderrichtlinie-von-umschlaganlagen-des-kombinierten-verkehrs.pdf?__blob=publicationFile">https://www.bmvi.de/SharedDocs/DE/Anlage/VerkehrUndMobilitaet/Schiene/foerderrichtlinie-von-umschlaganlagen-des-kombinierten-verkehrs.pdf?__blob=publicationFile</a>
Richtlinie zur Förderung von Umschlaganlagen des Kombinierten Verkehrs (KV) nicht-bundeseigener Unternehmen - Focus on terminals waterway/rail and waterway/waterway	<a href="https://www.bmvi.de/SharedDocs/DE/Artikel/G/umschlaganlagen-foerderrichtlinie.html">https://www.bmvi.de/SharedDocs/DE/Artikel/G/umschlaganlagen-foerderrichtlinie.html</a>
Digitalisierung intermodaler Lieferketten – KV4-0	<a href="https://www.bmvi.de/SharedDocs/DE/Artikel/DG/mfund-projekte/digitalisierung-intermodaler-lieferketten-kv40.html">https://www.bmvi.de/SharedDocs/DE/Artikel/DG/mfund-projekte/digitalisierung-intermodaler-lieferketten-kv40.html</a>
<b>Italy</b>	
Aid for combined transport in the Province of Trento (Aiuti a sostegno del trasporto combinato) - SA.46806 (2016/N)	<a href="http://ec.europa.eu/competition/state_aid/cases/266882/266882_1931637_96_2.pdf">http://ec.europa.eu/competition/state_aid/cases/266882/266882_1931637_96_2.pdf</a>
Aid scheme supporting combined transport in the Province of Bolzano - SA.48858 (201//N)	<a href="http://ec.europa.eu/competition/state_aid/cases/270658/270658_1957380_68_2.pdf">http://ec.europa.eu/competition/state_aid/cases/270658/270658_1957380_68_2.pdf</a>
<b>Luxembourg</b>	
Promotion du transport combiné (Loi du 26 mai 2016 relatif à la promotion du transport combiné)	<a href="http://data.legilux.public.lu/file/eli-etat-leg-memorial-2016-98-fr-pdf.pdf">http://data.legilux.public.lu/file/eli-etat-leg-memorial-2016-98-fr-pdf.pdf</a>
<b>Poland</b>	
Development of railway transport - Programme to finance the purchase of railway platforms	<a href="https://www.cupt.gov.pl/en/european-funds/the-ceutp-as-an-intermediate-body-in-the-infrastructure-and-environment-programme#priority-v-development-of-rail-transport-in-poland">https://www.cupt.gov.pl/en/european-funds/the-ceutp-as-an-intermediate-body-in-the-infrastructure-and-environment-programme#priority-v-development-of-rail-transport-in-poland</a>
<b>Serbia</b>	
Regulation on stimulus measures for the purpose of improving combined transport ("Official Gazette of the Republic of Serbia", no. 67/2015)	<a href="https://www.unece.org/fileadmin/DAM/trans/doc/2017/wp24/Bozic_Geneva_23_11_2017_final.ppt">https://www.unece.org/fileadmin/DAM/trans/doc/2017/wp24/Bozic_Geneva_23_11_2017_final.ppt</a>
Support for the construction of an intermodal terminal in Batajnica, Belgrade (Regulation on combined transport to and from combined transport terminals located at the rail network)	<a href="https://ec.europa.eu/neighbourhood-enlargement/sites/near/files/pdf/publication/2015/20150820_national_ipa_ser_intermodal_terminal.pdf">https://ec.europa.eu/neighbourhood-enlargement/sites/near/files/pdf/publication/2015/20150820_national_ipa_ser_intermodal_terminal.pdf</a>
<b>Sweden</b>	
Environmental compensation for rail freight transport - SA. 49749 (2017/N)	<a href="http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=3_SA_49749">http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=3_SA_49749</a>

Switzerland	
NEAT (Neue Eisenbahn-Alpentransversale)	<a href="https://www.bav.admin.ch/bav/de/home/verkehrstraeger/eisenbahn/ausbauprogramme_bahninfrastruktur/neat.html">https://www.bav.admin.ch/bav/de/home/verkehrstraeger/eisenbahn/ausbauprogramme_bahninfrastruktur/neat.html</a>
Güterverlagerungsgesetz (GVVG)	<a href="https://www.admin.ch/opc/de/classified-compilation/20070628/index.html">https://www.admin.ch/opc/de/classified-compilation/20070628/index.html</a>
LSVA (Leistungsabhängige Schwerverkehrsabgabe)	<a href="https://www.bav.admin.ch/bav/de/home/themen-a-z/lsva.html">https://www.bav.admin.ch/bav/de/home/themen-a-z/lsva.html</a>
Bestellung und Abgeltung alpenquerender kombinierter Verkehr: UKV und RoLa	<a href="https://www.bav.admin.ch/bav/de/home/themen-a-z/verlagerung/betriebsbeitraege-und-offertverfahren.html">https://www.bav.admin.ch/bav/de/home/themen-a-z/verlagerung/betriebsbeitraege-und-offertverfahren.html</a>
Investitionsbeiträge an den Bau, die Erweiterung und Erneuerung von Umschlagsanlagen für den Kombinierten Verkehr und Anschlussgleisen (gem. Gütertransportverordnung)	<a href="https://www.bav.admin.ch/bav/de/home/themen-a-z/gueterverkehr-auf-der-schiene/investitionsbeitraege-fuer-private-gueterverkehrsanlagen-der-sch.html">https://www.bav.admin.ch/bav/de/home/themen-a-z/gueterverkehr-auf-der-schiene/investitionsbeitraege-fuer-private-gueterverkehrsanlagen-der-sch.html</a>
Turkey	
Draft Regulation on Combined Freight Transport - Investment incentive program	<a href="https://www.unece.org/fileadmin/DAM/trans/doc/2013/wp24/ECE-TRANS-WP24-2013-Pres04e.pdf">https://www.unece.org/fileadmin/DAM/trans/doc/2013/wp24/ECE-TRANS-WP24-2013-Pres04e.pdf</a>
United Kingdom	
Mode Shift Revenue Support MSRS - SA.39354 (2014/N)	<a href="https://www.gov.uk/government/publications/mode-shift-revenue-support-msrs-scheme-2015-to-2020">https://www.gov.uk/government/publications/mode-shift-revenue-support-msrs-scheme-2015-to-2020</a> <a href="https://www.gov.uk/government/publications/department-for-transport-delivers-more-grant-funding-to-transport-freight-by-rail">https://www.gov.uk/government/publications/department-for-transport-delivers-more-grant-funding-to-transport-freight-by-rail</a>

Source: BSL Transportation analysis, national authorities.

Table A5: Origin-Destination-Matrix TEU

Country	Austria	Belarus	Belgium	Bosnia and Herzegovina	Bulgaria	CIS	Croatia	Czech Republic	Denmark	Estonia	Finland	France	Germany	Greece	Hungary	Ireland	Italy via AT	Italy via CH	Italy	Italy (Total)	Latvia
Austria	23	0	12.671	0	0	0	0	7.955	0	0	7.368	2.915	234.417	13.861	3.260	0	0	75.303	75.303	0	
Belarus	-	0	0	0	0	0	0	0	0	0	0	0	7.612	0	0	0	0	0	0	0	0
Belgium	4.322	0	0	0	236	56	858	5.949	314	0	952	95.260	25.428	0	4.994	0	0	88.732	324.124	412.856	0
Bosnia and Herzegovina	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bulgaria	-	0	443	0	0	0	0	0	0	0	0	2	71	0	0	0	0	0	0	0	0
CIS	-	0	128	0	0	0	0	0	0	0	0	0	178	0	0	0	0	0	0	0	54.329
Croatia	-	0	0	13.994	0	0	0	0	0	0	0	0	0	0	20.768	0	0	0	0	0	0
Czech Republic	84.861	0	528	0	0	0	0	0	0	0	226	40	655.713	13.902	803	0	0	0	22.027	22.027	0
Denmark	1.852	0	0	0	0	0	0	0	0	0	0	0	3.201	6	6	0	0	9.040	35.229	0	0
Estonia	-	0	0	0	0	1.590	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Finland	-	0	0	0	0	0	0	0	0	0	0	4.224	11.284	132	332	0	0	0	0	0	0
France	1.771	0	57.866	0	0	0	0	49	102	0	0	0	26.995	26	1.540	0	0	0	150.875	150.875	0
Germany	14.122	6.426	28.695	0	386	87	706	103.016	5.369	0	0	57.926	2.681	1.827	165.796	0	179.037	62.179	714.060	953.276	0
Greece	4.540	0	890	0	0	0	0	4.754	0	0	0	0	0	0	0	0	0	0	0	0	0
Hungary	7.574	0	0	0	0	0	14.792	301	0	0	0	0	46.641	3.845	6	0	0	0	26.799	26.799	0
Italy	-	0	0	0	0	0	0	2	0	0	0	0	0	0	70	0	0	0	0	0	0
Latvia	-	0	0	0	0	0	0	0	0	1.082	0	0	0	0	0	0	0	0	0	0	0
Liubiana	-	0	10	0	0	0	20	0	0	0	0	0	0	0	0	0	0	112	112	0	0
Luxembourg	-	0	43.521	0	0	0	6	0	0	0	90	72.369	0	0	0	0	34.234	0	1.229	35.463	0
Netherlands	13.129	0	14	0	0	0	664	3.390	0	0	0	4.866	154.601	554	3.146	0	2.362	199.003	201.365	0	0
Norway	5.54	0	0	0	0	0	0	0	0	0	0	0	3.462	0	0	0	0	12	12	0	0
Poland	25.111	1.520	6.453	0	0	22	0	15.668	0	0	362	61	96.232	0	0	0	0	10.620	10.620	0	0
Portugal	-	0	0	0	0	0	0	0	0	0	0	0	177	0	0	0	0	0	0	0	0
Romania	-	0	24.422	0	284	0	0	0	0	0	0	3.734	10.304	0	3.670	0	0	0	5.954	5.954	0
Russia	-	0	638	0	0	0	0	309	309	17.940	0	0	8.135	0	318	0	0	64	64	0	0
Serbia	-	0	0	0	0	0	1.438	0	0	0	0	0	520	0	299	0	0	0	0	0	0
Slovakia	45.537	640	2.155	0	0	237	12	17.005	0	0	454	211	58.639	5.309	2.275	0	122	0	508	630	0
Slovenia	20.248	0	1.080	0	0	0	440	53.852	0	0	48	0	27.898	0	170.945	0	0	1.449	1.449	0	0
Spain	-	0	86.451	0	0	0	0	0	0	0	0	0	117.737	0	0	22	0	0	15.003	15.003	0
Sweden	-	0	4.660	0	0	0	20	0	10	0	0	0	71.088	0	5.824	0	0	0	14.442	14.442	0
Switzerland	11.406	0	32.201	0	0	185	0	834	13	0	1.670	22	101.135	0	6	0	4.539	0	5.259	9.798	0
Turkey	16.260	0	0	0	0	0	0	0	0	0	0	40	6.024	0	15.472	0	0	0	3.882	3.882	0
Ukraine	90	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
United Kingdom	-	0	0	0	14	0	0	8	0	0	6	4	2	0	0	0	0	0	0	0	0
Other Asian countries	-	0	0	0	0	0	0	0	0	0	0	0	61.390	0	0	0	0	0	0	0	0
Other World	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Italy (Total)	61.206	2.58	301.838	0	0	21	0	21.751	17.872	0	44	96.807	598.052	0	27.677	1.158	0	0	0	0	0
Italy via AT	-	0	0	0	0	21	0	0	0	0	0	0	21.109	0	0	0	0	0	0	0	0
Italy via CH	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Italy	61.206	2.58	301.838	0	0	0	0	21.751	17.872	0	17.962	96.807	576.942	0	27.677	1.158	0	0	0	0	0

Table A5: Origin-Destination-Matrix TEU (continued)

Country	Lithuania	Luxemburg	Netherlands	Norway	Poland	Portugal	Romania	Russia	Serbia	Slovakia	Slovenia	Spain	Sweden	Switzerland	Turkey	Ukraine	United Kingdom	China	Other Asian countries	Other World
Austria	0	22	27.336	0	25.127	0	13.942	0	0	4.138	47.661	24	7.800	11.282	11.386	429	3.336	0	0	0
Belarus	0	0	0	0	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Belgium	20	51	113	8	8.870	0	24.219	702	0	628	0	57.366	64.656	32.951	34	0	0	0	0	368
Bosnia and Herzegovina	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bulgaria	0	2	372	0	0	0	2.245	0	1.469	0	0	0	0	0	12.520	0	0	0	0	0
CIS	0	0	0	2	28	0	0	0	14.676	0	1.985	0	0	0	0	0	102	0	0	0
Croatia	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Czech Republic	0	2	112.715	0	9.230	0	1.620	0	0	51.760	31.567	0	66	687	0	24	0	0	0	0
Denmark	0	0	0	0	0	0	12	0	0	0	0	4	0	56	0	0	0	0	0	16
Estonia	0	0	0	0	0	0	0	221.82	0	0	0	0	0	0	0	0	0	0	0	0
Finland	0	0	1.594	0	0	0	10	0	0	0	0	1.886	0	0	0	0	0	0	0	10
France	0	132.668	8.884	91	132	0	0	31.052	0	12	26	600	3.452	0	0	0	0	0	0	12
Germany	8	426.778	1.334	64.794	64.794	297	18.299	7.600	178	966	3.544	96.362	185.657	67.607	12.203	0	8	39.774	0	11.324
Greece	0	12	0	0	0	0	0	0	0	798	0	0	120	0	0	0	0	0	0	0
Hungary	0	6	6.970	600	82	0	7.359	204	1.020	0	46.632	0	0	6	15.878	360	2.124	0	0	0
Ireland	0	0	0	0	0	0	84	0	0	0	0	0	0	0	0	0	0	0	0	0
Latvia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lithuania	0	0	0	0	60	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0
Luxembourg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Netherlands	0	0	0	0	909	0	7.439	258	342	3.880	1.676	819	35.657	15.604	0	0	0	0	0	0
Norway	0	2	7.376	0	0	0	0	0	0	0	0	0	7.210	66	0	0	0	0	0	0
Poland	662	0	42.555	0	0	0	0	40	0	0	7.687	319	24	0	0	0	0	0	0	0
Portugal	0	0	0	0	0	0	0	0	0	0	0	15.629	0	0	0	0	0	0	0	0
Romania	0	212	264	262	6	0	0	9.295	0	0	0	0	3.628	0	0	40	3.076	0	0	0
Russia	0	0	412	0	198	0	0	0	0	32.890	318	4	0	206	0	0	0	0	0	0
Slovakia	0	0	22	0	0	0	0	0	0	0	162.888	0	0	0	0	0	0	0	0	0
Slovenia	0	0	1.574	0	916	0	6	62.200	0	0	0	0	0	218	48.400	1.555	0	2.366	0	0
Slovenia	0	22	0	0	0	0	0	0	0	157.034	0	0	0	0	0	0	0	0	0	0
Slovenia	0	62	5.446	54	11.819	0	0	100	0	0	0	0	0	0	0	0	478	0	0	0
Spain	0	62	5.446	54	11.819	0	0	100	0	0	0	0	2	0	0	0	40.095	0	0	0
Sweden	0	184	5.189	8.194	188	35.528	108	10	0	1.852	2.236	1.760	0	2.716	16	0	0	0	0	182
Switzerland	0	0	13.916	316	56	0	0	0	0	0	0	214	6	0	0	0	0	0	0	0
Turkey	0	0	0	0	0	0	0	0	0	4.880	0	0	0	10	0	0	10	0	0	0
Ukraine	0	0	32	0	0	0	56	0	0	0	0	0	0	0	0	0	0	0	0	0
United Kingdom	0	0	0	0	0	0	0	0	0	0	0	13.474	0	0	0	0	0	0	0	30
China	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Asian	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other World	0	0	122	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	165.830
China Total	63	613	2.565.660	3.824	9.591	0	8.067	2	0	947	0	7.030	42.516	8.286	3.796	0	40.510	0	0	0
EU Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EU + Asia	0	0	84.496	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EU + Asia + CH	63	613	172.134	3.824	9.591	0	8.067	2	0	947	0	7.030	42.516	8.286	3.796	0	40.510	0	0	0





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