INLAND NAVIGATION IN EUROPE

Market observation 2014

Central Commission for the navigation of the Rhine

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The Inland Navigation Market in 2013 and perspective for 2014/2015

Liability disclaimer

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Foreword

The difficult economic environment in which inland navigation has found itself for a number of years remains virtually unchanged. The existing overcapacity, both in dry shipping and now also in tanker shipping, renders companies almost incapable of benefiting from the modestly improved economic situation in the EU-28 and from the comparatively strong economy along the Rhine.
A gradual recovery in dry shipping demand is therefore to be observed, but with freight rates failing to keep pace with this development. Tanker shipping has to contend with the ongoing expansion of the fleet and weak development in demand.

The situation in Central Europe is equally unpromising. Transportation on the waterways in the countries in question is less integrated with large industrial locations and conquering new markets here requires a particular effort. An additional critical factor for the development of inland navigation in this part of Europe is that, with its fluctuating water levels, the Danube is not reliably navigable.

This new publication presents the problem. For such a complex industry as inland navigation, spread as it is across numerous regions, it is especially important to possess appropriate market information. In addition to key information about the industry, we are also talking about detailed market segmentation data and the relevant economic data about the various (commercial and industrial) customers of the services provided by the inland navigation sector. The development of the fleet, capacity utilisation and cost and earnings developments play an important role. Against the backdrop of a situation in which the relationship between supply and demand in the most important inland navigation sectors will continue to require particular attention, it is also important to portray the overall structure of inland navigation. This is of major importance in opening up new market niches and developing new transport services. This edition is intended to contribute to this end.

This publication also considers other important inland navigation issues: the labour market, river-sea shipping and statistical information on waterway transport accidents.

The Inland Navigation Market in 2013 and perspective 2014/2015

Part 1:

Macro economic framework

Following a 2012 in which real GDP in the European Union suffered an overall contraction of 0.4%, 2013 was a year of stagnation for Europe. Economic activity in the Netherlands in real terms even fell.

*Table 1: Change in Real Gross Domestic Product in EU countries **

	Year / period							
Country	2004-2008	2009	2010	2011	2012	2013	2014	2015
EU totam	2,3	-4,5	2,0	1,7	-0,4	0,1	1,5	2,0
Rhine region								
Belgium	2,3	-2,8	2,3	1,8	-0,1	0,2	1,4	1,7
Germany	2,0	-5,1	4,0	3,3	0,7	0,4	1,8	2,0
France	1,8	-3,1	1,7	2,0	0,0	0,3	1,0	1,7
Netherlands	2,7	-3,7	1,5	0,9	-1,2	-0,8	1,0	1,3
Danube region								
Austria	2,8	-3,8	1,8	2,8	0,9	0,3	1,5	1,8
Slovakia	7,2	-4,9	4,4	3,0	1,8	0,8	2,3	3,2
Hungary	2,7	-6,8	1,1	1,6	-1,7	1,1	2,1	2,1
Roumania	6,8	-6,6	-1,1	2,2	0,7	3,5	2,3	2,5

Source: European Commission (2014).

** Figures for 2014 and 2015 are forecasts*

Since 2010 a fragile recovery has been underway, characterised by recurring relapses (see 2011/2012). The fresh relapse in 2011/2012 was attributable to the exacerbation of the euro debt crisis.

Even so, a number of forces combined in the course of 2013 to create upward momentum and economic growth in Europe is expected to rally in 2014 and 2015[1].

- In it, Germany is attributed the role of a European growth locomotive. The key driver of this growth in Germany is private consumption, supported by a low unemployment rate.

- Notwithstanding numerous downbeat expectations, France weathered the crisis relatively well in 2013. This was aided primarily by strong state fiscal stimuli. In 2013 the government took action to boost corporate confidence.

- While Dutch GDP growth in 2013 was still negative, the quarterly growth trajectory in the second half of the year had been reversed and was heading back into the black. This was achieved by increasing net exports.

- In Belgium, increasing net exports and private consumption nudged the GDP rate into a modest positive.

- In the Danube countries Austria, Hungary and Slovakia it is again private consumption that will be driving rising GDP rates in the next two years.

Subject to the caveat of certain risks, increased economic growth is to be anticipated for 2014 and 2015 (see table above). Transport demand in the transport sector stands to benefit in consequence. The starting situation – taking account of goods segment-specific differences – of inland navigation transport for 2014 is thus very positive overall.

1 The principal source of this growth analysis: European Commission (2014) – European Economic Forecast – Winter 2014, appeared in February 2014

Part 2:

Transport demand in Europe

2.1 Freight transport by European region

2.1.1 EU-28

The transport volume of freight transported on inland waterways in the EU is around 526 million t (2012 figure)[1]. In Europe, far and away the largest volumes are accounted for by the Western European countries the Netherlands (332 mio. t), Germany (227 mio. t) and France (58 mio. t). These figures cannot however be aggregated, because this would result in double counting given the major importance of cross-border traffic.

Cross-border traffic is a fundamental characteristic of inland navigation. Of major European importance here is traffic in the hinterland of the North Sea maritime ports (Rotterdam, Antwerp, Amsterdam, Ghent) bound for Germany and Switzerland, largely generated by the Rhine axis. In 2013, around 332 mio. t, or approximately two thirds of the total transport on Europe's inland waterways, was carried on the entire length of the Rhine between Switzerland and where it flows into the North Sea. Of this, 193.5 mio. t was accounted for by the stretch known as the traditional Rhine between Switzerland and the German/Dutch border.

In addition to the Rhine the north-south axis from the Netherlands to Northern France via Belgium is also important, with an approximately 15% share of European freight transport. In Central and Eastern Europe the Danube, flowing from west to east through eight countries, accounts for around 14% of European transport volume.

1 The figure for 2013 to be published by Eurostat was not yet available at the time the report was being written.

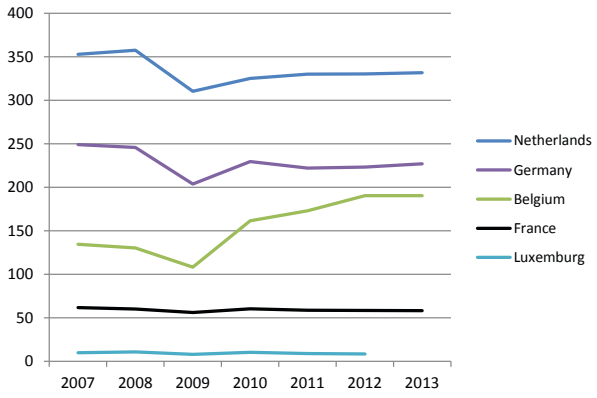
Inland navigation's transport performance is above average owing to the long distances typically covered by this mode of transport. In 2012 the EU 28's transport performance was 149 billion tonne kilometres.

2.1.2 Rhine region

The countries of the Rhine region account for far and away the largest proportion of inland navigation transport volume in Europe.

- Of these countries, the Netherlands exhibit the highest volume. In 2013 it was 0.5 % above the previous year's level at around 332 mio. t. This still leaves a 7 % shortfall compared to 2008 volumes.
- 226.9 mio. t were transported in Germany in 2013 (+1.7 % compared with 2012). This still leaves a shortfall relative to the 2008 pre-crisis level of around 10 %.
- Inland navigation in Belgium has made considerable gains in recent years. 190 million t were transported in 2013. The growth in the major seaports' (Antwerp, Ghent) hinterland traffic plays an important role in this.
- There has been a moderate downward trend in France in recent years. The 2013 level was 58.4 mio.t, still 6 % below the 2008 level.

Figure 1: Inland navigation transport volume in the countries of the Rhine region (mio. t)



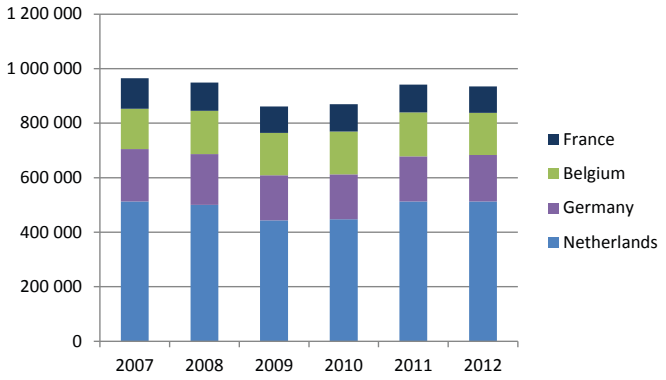
Source: Eurostat, excluding the Netherlands[1] and France

1 The figures for the Netherlands were estimated by PANTEIA based on the PANTEIA freight transport forecast model. The reason is that the Eurostat figures published for the Netherlands, based on calculations by the Centraal Bureau voor de Statistiek (CBS) appear to be too high.

2 For France as well the Eurostat figures are higher than those published by Voies Navigables de France and the French Ministry of Transport. The figures appearing in the graph are those published by the national authorities (which tally with one another).

The following figure shows the number of ship movements in the Western European countries Netherlands, Germany, Belgium and France. The total number of ship movements in 2012 was around 950,000, with approximately 55 %, or around 512,000 movements, being accounted for by the Netherlands.

Figure 2: Number of ship movements in the countries of the Rhine region



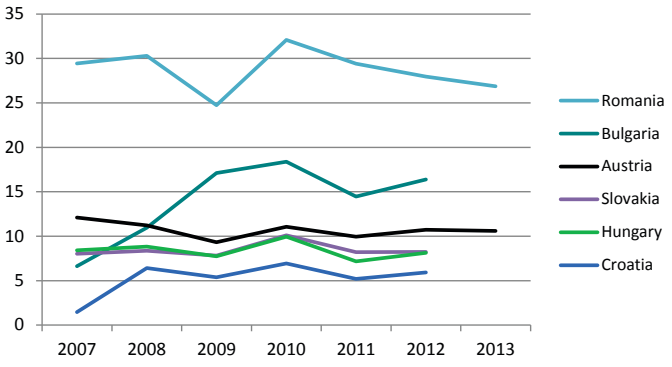
Source of the figures: Statistisches Bundesamt (Germany), Ministere du Developpement Durable, de l'ecologie, (France), Eurostat (Netherlands), De Scheepvaart and SPF Wallonie (Belgium)

2.1.3 Danube region

Within the Danube region it is the countries of the lower Danube region (Romania, Bulgaria) that boast the highest transport volumes.

- Romania is in first place ahead of Bulgaria, but has posted a modest decline since 2010, from an initial level of more than 30 mio. t to around 27 mio. t in 2012. The principal reason for this is the crisis in the steel industry (see section 2.2.2).
- The central Danube region (Hungary, Slovakia, Croatia) exhibits relatively stable volumes of between 5 and 10 mio. t per year. Hungary's and Croatia's agricultural wealth generates transport movements in this region that are frequently integrated with global logistics chains (e.g. the transportation of foodstuffs and fodder from the Danube in Hungary via the Rhine and ARA seaports bound for overseas).
- Transportation in the upper Danube region as well (Austria, Slovakia) is broadly constant over time and is around 10 mio. t.

Figure 3: Inland navigation transport volume in the countries of the Danube region (mio. t)



Source: Eurostat

2.1.4 Other European countries

Great Britain, Poland, the Czech Republic and Italy can be seen as a third group of countries[1].

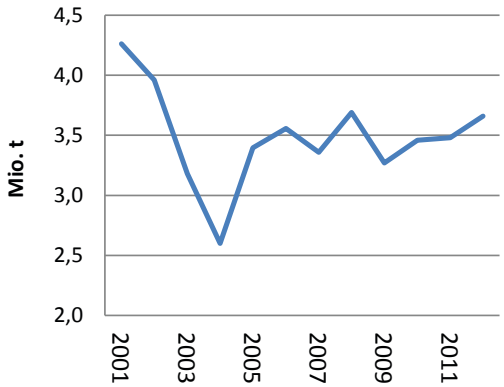
In Great Britain in 2012 there was around 3.7 mio. t of "pure inland navigation traffic" namely ship traffic occurring exclusively on inland waterways and which has not overstepped the boundary into maritime waters[2]. In addition to this "internal inland waterway traffic" there is river-sea traffic extending into the Thames and Humber estuaries and mouth of the Manchester Ship Canals. Transport movements bound for the Humber River principally originate from Duisburg, where a trade with England has grown up over the past 50 years[3].

The river-sea traffic exceeds the purely internal traffic volumes approximately eleven fold (40 mio. t in 2012).

A multi-year time series for purely inland navigation traffic in Great Britain shows a small upward trend since 2004. In the past three years this growth has clearly been driven by the Manchester Ship Canal, linking the sea port of Liverpool with Greater Manchester, and which is currently being developed to accommodate an increase in container traffic.

In 2012, 1.6 mio. t of the above-mentioned 3.7 mio. t were transported on the Thames. (A further 16 mio. t of river-sea traffic were transported on this river).

Figure 4: Pure inland navigation traffic in Great Britain (2001-2011)



Source: UK Department of Transport

Poland possesses a large inland waterway network in the heart of Central Europe connected with its neighbour Germany and the Baltic ports of Szczecin and Gdansk via the Oder and Weichsel rivers. Unfortunately freight transport in recent years has suffered a significant decline. The most important reason is the substandard waterway infrastructure. Inadequate bridge heights, protracted periods of low water and non-operational locks translate into poor profitability of this mode of transport.

A current report by the Polish government audit institute Supreme Audit Office dated April 2014 confirms these problems, citing the serious underfunding of the Polish waterway system as the reason.

1 In addition to the countries of the Rhine and Danube regions and the above-mentioned European countries, inland navigation also figures in Scandinavia. However, traffic movements here are essentially river-sea movements. See: EU/CCNR/Panteia (2013) Market observation of European inland navigation 2013.

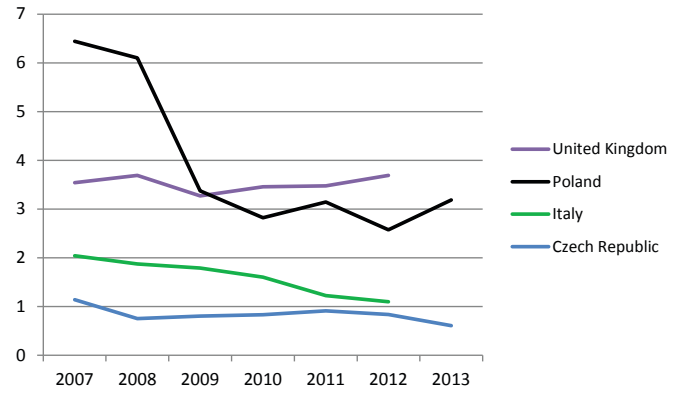
2 Source: UK Department of Transport / Department for Transport Statistics

3 See: Short Sea Shipping Inland Waterway Promotion Centre (SPC)

According to this report, around €3.4 billion would be required to maintain the waterways to the standard consistent with their international classification[1].

The Czech Republic exhibits a consistent transport volume on a multi-year comparison of around 1 mio. t annually. This Central European country is located within the Elbe river area and thus in the hinterland of Europe's third largest seaport, Hamburg.

Figure 5: Transportation on inland waterways in Great Britain, Poland, the Czech Republic and Italy (mio. t)



Source: Eurostat, excluding Italy (AiPo) and Great Britain (UK Department of Transport)

The Elbe, a hundred years ago Europe's busiest river, affords adequately reliable conditions for inland waterway transport only on its middle and lower reaches, between Magdeburg and Hamburg. A consistent minimum fairway depth of 1.60 metres cannot be guaranteed on enough days a year on the Elbe's upper reaches. Even so, the Elbe offers major potential for freight transport from Hamburg to the Czech Republic. Improving the navigability of the Elbe is therefore one of the EU Commission's priority TEN-T projects[2].

Italy'swaterway network is located exclusively in the north of the country, and comprises the Po river and various canals located around the Po. The Po is navigable from Pavia in Lombardy, flowing 400 km eastward from that point before joining the Adriatic south of Venice in the form of a delta. Currently the bulk of what is transported on the Po is sand, soil & building materials dredged from the river. These transport movements are in pushed convoys. The annual volume is currently below 1 mio. t, compared with 2 mio. t in 2007.

2.2 Transport volumes by goods category

2.2.1 Rhine area

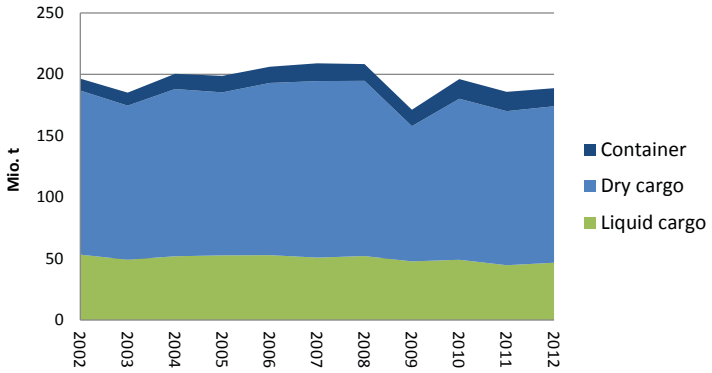
The Rhine is far and away Europe's most important inland waterway with around a two thirds share of total freight transport on European inland waterways. Approximately 332 mio. metric tons were transported on the Rhine as a whole in 2013, including the Dutch stretch. 193.5 mio. t were transported on the traditional Rhine, a transport performance of 41.4 billion tkm.

1 See: www.nik.gov.pl/. According to this report, however, only €14 million were actually spent on the Polish waterways in 2012.

2 Source: Hamburgisches Weltwirtschaftsinstitut (2013), Economic Development Perspectives of the Elbe/ Oder Chamber Union (KEO)

There follows a detailed description of the development in freight transport for the traditional Rhine, given the lack of detailed freight statistics for the Dutch section.

Figure 6: Freight transport on the traditional Rhine in mio. t (2002-2012)



Source: destatis

The split in freight transport between the three main categories of dry bulk goods, liquid bulk goods and containers, has remained broadly constant in the past 10 years. Increases in the share of container traffic were observed (+ 3 percentage points).

Table 2: Individual market segment shares of transport volume on the Rhine

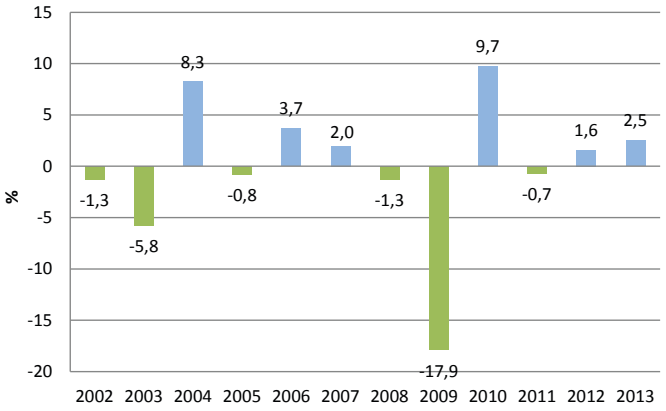
Share in %	2002	2013
Dry bulk goods	68	67
Liquid bulk goods	27	25
Containers	5	8

Source: destatis

It should be emphasised as a positive trend of the past three years that a small decline (in 2011) has been transformed into a small increase (in 2013).

Moreover, a moderate boost to upward momentum is to be noted for 2013: consequently the growth rate has risen from 1.6 % in 2012 to 2.5 % in 2013. Rhine transport experienced an average rate of change of +0.7 % in the period 2004 to 2013. This average value is, however, strongly influenced by the one-off effect of the 2009 economic crisis.

Figure 7: Annual rate of change of freight transport on the traditional Rhine (in % compared with the year before) for the period 2012-13

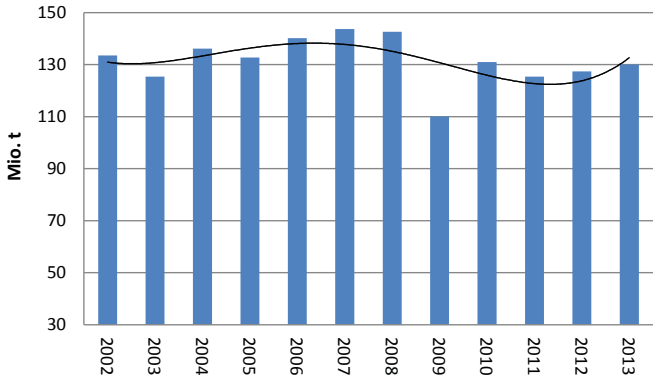


Source: CCNR calculation

Dry cargo:

- The transportation of dry bulk goods in 2013 increased by 2 % year on year to 130 mio. t.
- In the two years 2012 and 2013 a slight upward trend in the transport of dry bulk goods was discernible, this trend however, with an average increase of +1.8 %, being weaker that for tanker shipping.
- The pre-crisis level had still not been reached in 2013 (there is a 9 % differential between 2013 and 2008).

Figure 8: Volumes of dry bulk goods transported on the Rhine 2002-2013

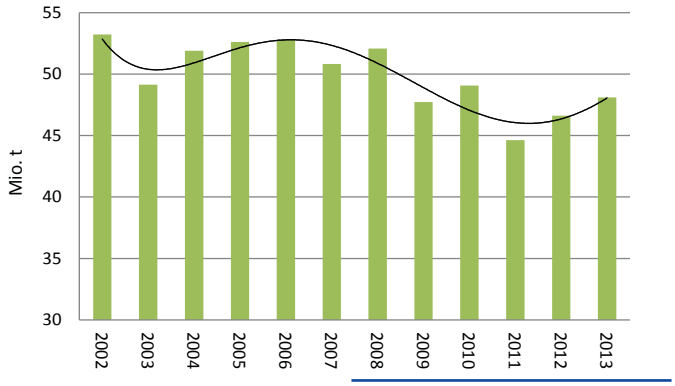


Source: destatis

Liquid cargo:

- The transportation of liquid goods in 2013 increased by 3 % year on year to 48.1 mio. t.
- In the two years 2012 and 2013 there was a noticeably positive trend in the transportation of liquid goods. Transport midway between these years increased by 3.8 % per annum.
- The pre-crisis level had still not been reached in 2013 (there is an 8 % differential between 2013 and 2008).

Figure 9: Volumes of liquid goods transported on the Rhine 2002-2013

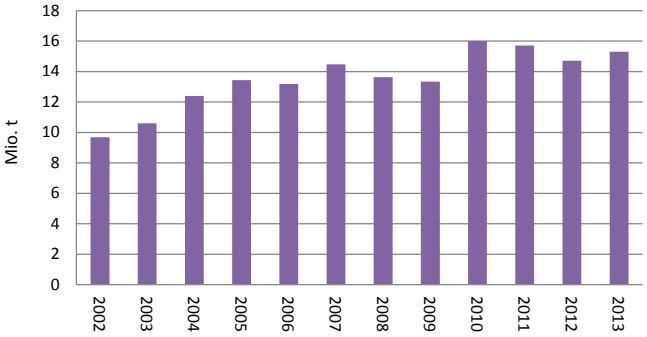


Source: destatis

Containers:

- Containerised transport volume in 2013 increased by 3.7 % year on year to 15.5 mio. t after having dipped slightly between 2010 and 2012.
- The transported weight of containerised goods increased by almost 60 % between 2000 and 2013[1]
- Accordingly, the proportion of goods weight transported in containers relative to total goods transport on the traditional Rhine increased from 5 % to 8 % between 2002 and 2013.[2]

Figure 10: Container transport volume on the traditional Rhine 2002-2013



Source: destatis

1 By way of comparison: in the same period, the goods weight transshipped in containers in the case of seaport container transport (port of Rotterdam) increased by 84 %.

2 This is based on the net transported weight of containerised goods (excluding the weight of the containers themselves).

Agriculture and forestry

Approximately 1 mio. tonnes of agricultural and forestry products are transported on the traditional Rhine each month, about 60 % of this being grain. During the year, the peak transport volume is reached in August. 2013 delivered a small improvement on the previous year's performance with around 12.6 mio. t and a transport performance of 3.2 billion tkm.

The importance of the grain harvest also makes itself felt in a pronounced seasonal effect. August sees a 20 % higher transport performance and a 10 % higher transport volume than the average for the year. Because grain is transported over very long distances, the transport performance in this case is very high compared with the quantity carried. The relative value of 255 (transport performance relative to transport volume) is higher for agricultural products than for any other goods segment on the Rhine.
The long transport distances can be explained by the fact that the Rhine also transports agricultural product from the Danube region bound for the ARA seaports.

Foodstuffs and fodder

Inland navigation constitutes an important link in the logistics chain of companies engaged in processing food raw materials. This entails maize, oil seeds and cocoa being processed into foodstuffs, animal fodder and renewable energy products. Because of its numerous advantages (high transport capacity, safety, environmental friendliness, ease of scheduling), the waterway is a very popular mode of transport.[1]

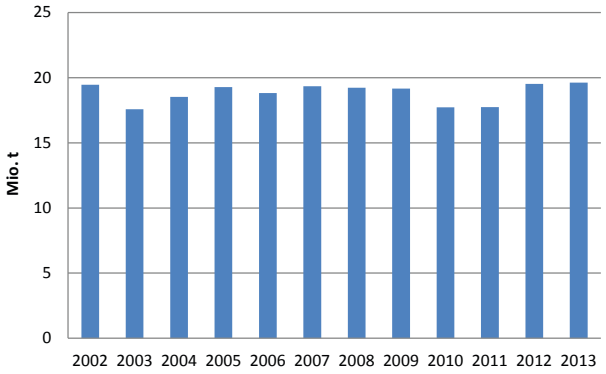
Around 7 mio. t of foodstuffs and fodder were transported in 2013, equalling the previous year's performance. The transport performance was 1.5 billion tkm.

Outlook

The entire trend for the sum of the "agricultural and forestry products" and "foodstuffs and fodder" sectors was relatively constant for the period 2002-2013. Just under 20 mio. t were transported in each sector in the past two years 2012 and 2012.

Approximately 60 % of the foodstuffs and fodder transported on the Rhine is accounted for by plant oils and fats, which also go on to be used in the production of biodiesel and ethanol. Agricultural raw materials are also employed to generate renewable energy sources. Because of their high cargo capacities, the waterways offer these alternative energy sources major logistic advantages.

Figure 11: Transport volume for agricultural and forestry products and foodstuffs and fodder on the traditional Rhine (2002-2013)



Source: CCNR calculation based on destatis data

1 Cf: Binnenvaart magazine, issue 47/2010; article "De nieuwe supply chain van Cargill"

This is apparent from the example of bio-refineries in the vicinity of the ARA ports, on the Rhine and on the Danube. The long-term transport volume outlook can therefore be assessed as positive.

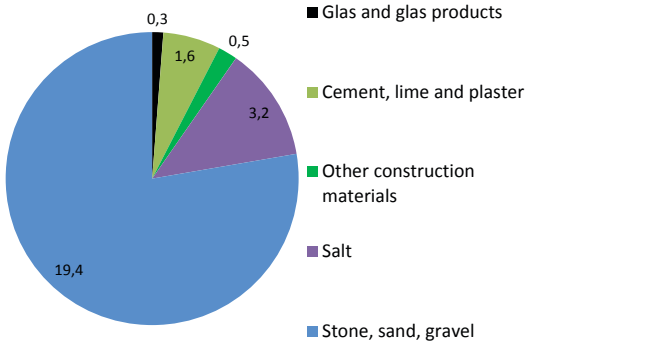
Sand, soil and building material

A total of around 25 mio. t were transported in this segment (+ 3 % year on year), giving a transport performance of 4.8 bn. tkm.

In 2013 somewhat more than three quarters of total transport demand was accounted for by natural stone, sand, gravel and soil. Building materials such as cement, limestone, gypsum and other building materials accounted for a relatively small share of total transport. The same goes for glass and glassware.

The transport volume is relatively constant on a multi-year comparison. No future increase is anticipated in this goods segment for various limiting factors.

Figure 12: Transport of sand, soil and building materials on the Rhine in 2013 (mio. t)



Source: CCNR calculation based on destatis data

Coal

2013 saw a significant increase in the transport of coal, the most important goods segment on the Rhine by transport volume. An annual volume of 33.7 mio. t and a transport performance of 6.1 bn. tkm set a new world record.

This was attributable to rising demand for solid fuels from the energy sector, which in turn was down to the very low overall price for coal. This overall price, also known as "clean dark spread"[1] comprises three components:

- Coal commodity price
- Transport costs (maritime freight rates + Rhine freight rates)
- Price of CO_2 certificates relating to coal-fired power generation.

These three price components are currently low owing to the following circumstances:

Commodity prices: The advent of shale gas extraction in the USA has resulted in high coal inventories there and thus to a high level of export pressure, resulting in downward pressure on coal prices.

1 Cf: VDKI (2013), Initial estimates of the total world market for hard coal in 2013 and hard coal imports to Europe and Germany. (19.12.2013)

Transport costs: As measured by the *Baltic Dry Exchange Index*[1] maritime freight rates have fallen yet further owing to the large global maritime transportation overcapacity. By the same token, Rhine freight rates are relatively low, also as a result of inland navigation overcapacity.

Price of CO_2 certificates: Owing to the weak economic situation in which European industry as a whole finds itself, the prices of CO2 certificates (licences to emit greenhouse gases) have fallen very significantly. This has made coal-fired power generation relatively cheap.

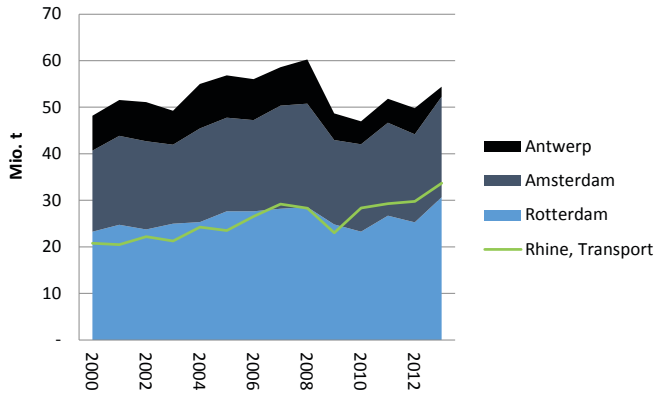
In aggregate, the above three price effects have significantly increased coal transportation on the Rhine. This increase was already apparent in the upstream logistic stages – in equal measure – (all data as a percentage annual change in 2013 compared with 2012):

- Coal imports by the sea port of Rotterdam: +22.3 %
- Coal transportation on Dutch inland waterways: +14 %
- Coal imports bound for Germany: +15.1 %
- Coal transportation on the traditional Rhine: + 13 %

The Dutch Central Agency for Statistics CBS reported that the significant rise in coal transports was also responsible for a marked increase in exports from the Netherlands to Germany carried on inland waterways. Exports increased by 4 %, primarily owing to the "coal effect", thereby contributing disproportionately to developments on Dutch waterways overall.

Coal transshipments in the ARA seaports in 2013 were 54 mio. t. The seaport of Amsterdam is the second biggest coal port after Rotterdam. Total coal transports in the three ARA seaports exhibit a very similar trend to coal transportation on the traditional Rhine.

Figure 13: Coal transshipments in the ARA seaports and coal transport movements on the Rhine (2000-2013)



Source: named seaports, destatis

Outlook:
Coal transport movements will continue to increase in the short to medium term. The primary argument for this is the low price. Indeed, coal prices have continued to fall in the early months of 2014.[2] In turn, coal imports in the Port of Rotterdam in the first quarter of 2014 increased by 15 %, although base effects played a critical role here. The very warm winter meant no top-up coal supply.[3]

1 The Baltic Dry Exchange Index is calculated from a number of freight rates for the maritime transport of dry bulk goods.

2 Source: VDKI and IMF

3 Source: Port of Rotterdam (2014): Transshipments in Port of Rotterdam virtually stable.

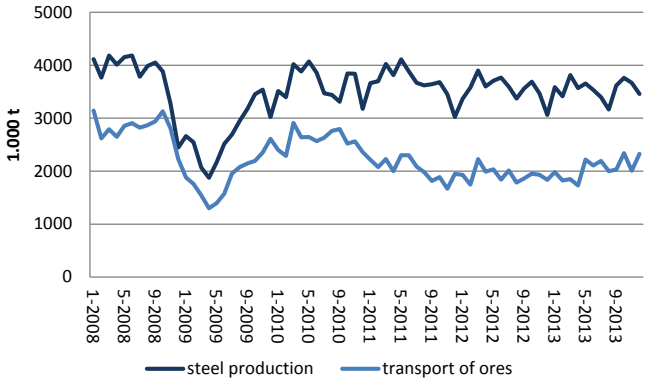
Various factors indicate however that the positive trend in coal transports will probably not be of lasting duration. The most important reason for this lies in the attempts to transform the energy system, with the attendant long term fall in the proportion of hard coal in energy generation in Western Europe.

Ores and steel products

97 % of ore traffic on the Rhine relates to iron ore, primarily from Brazil bound for Rotterdam, and which is then required by the steel industry on the Lower Rhine and – in significantly smaller quantities – on the Saar and Moselle.

The quantities consumed by the steel industry on the Lower Rhine account for a very high proportion of total traffic on the Rhine, as the transport performance indicates. For example, 92 % (2.3 billion tkm) of the total transport performance for ores (2.5 bn. tkm) is accounted for by the Lower Rhine. The quantity of ores carried on the entire length of the Rhine in 2013 was 6 % higher than the year before at 24.6 mio. t. The Port of Rotterdam also posted an increase (of 10 %).

Figure 14: Transport volume of ores carried on the Rhine and steel production in Germany



Source: World Steel Association; destatis.

Notwithstanding an average monthly volume of around 2 mio. t, ore transports are still one third below the level of approximately 3 mio. t typically encountered on the Rhine prior to the outbreak of the economic crisis.

The quantity of metals and metal products amounted to 10.6 mio. t, thus putting it broadly on a par with the previous year's level. The transport performance was 2.1 billion tkm.

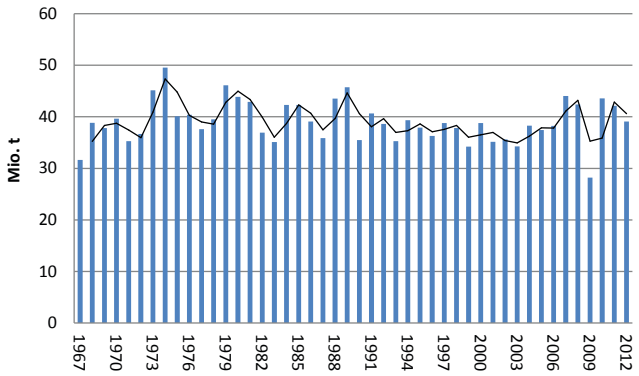
When looking at a time series spanning several decades it becomes clear that the total inland navigation transport volume generated by demand on the part of the German steel industry (ores, coal, scrap and metals) is of the order of around 40 mio, t annually. A downward trend is discernible between the beginning of the first oil crisis in 1973 and the beginning of the last decade.

With the advent of greater globalisation at the beginning of the last decade and the concomitant expansion in world trade there was a renewed upswing in the trend for ore and steel traffic in inland navigation. Superimposed on this renewed upswing was the severe economic slump in 2009.

Outlook:

The short term outlook is not particularly optimistic owing to the subdued economic situation in the European and global steel industry. The European steel industry is primarily affected by the steep decline in steel demand in Southern Europe.[1] Global steel demand as well at the beginning of 2014 remained very sluggish.[2] At best therefore the monthly transport volume on the Rhine in 2014 should stabilise at just over the 2 mio. t mark. Getting back to the pre-crisis level of 2007 and 2008 (of 3 mio. t per month) in 2014 is therefore to be seen as unrealistic.

Figure 15: Quantities generated by the German steel industry carried by inland waterway vessels since 1967

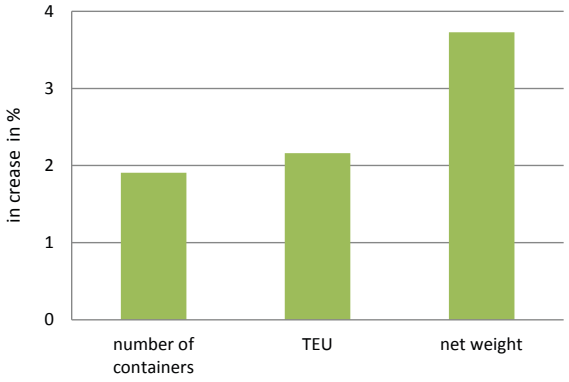


Source: Wirtschaftsvereinigung Stahl und Stahlinstitut VDEh (German steel trade association)

Containers

In 2013 container traffic exceeded the significant 2 million TEU mark – marking year on year growth of 2.2 %. The number of containers carried increased by 1.9 % to 1.32 million. The weight of freight transported increased even more steeply, by 3.7 %. There was a small decline in container transshipments in Rotterdam, of 3.3 % by freight weight, 2.1 % by TEUs and 2.5 % by units.[3] With 15.3 mio. t of freight carried, container transport volume on the traditional Rhine in 2013 represented around an 8 % share of total Rhine navigation transport volume. This proportion has increased from 5 % to 8 % between 2002 and 2013.

Figure 16: Increase in container traffic on the traditional Rhine 2013 compared with 2012



Source: CCNR calculation based on destatis data

Container traffic on the traditional Rhine has doubled overall between 2000 and 2013. There was a trebling between 1997 and 2013. The economic crisis has not halted the positive growth trajectory in container transport although growth has slowed in recent years, a phenomenon also to be observed in container transshipments in the seaports.

1 Source: Wirtschaftsvereinigung Stahl (2013), Economic outlook of the World Steel Association dated 8 October 2013

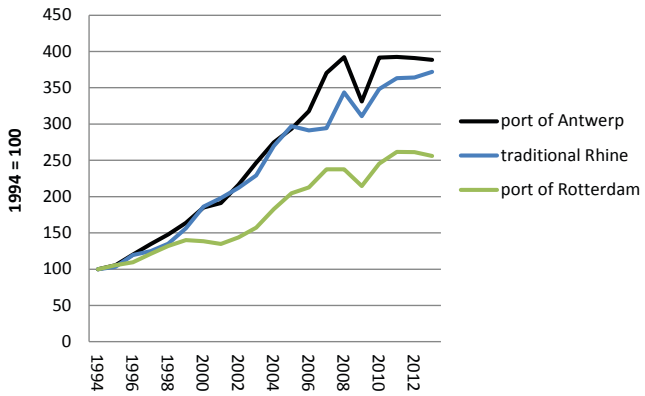
2 Source: International Monetary Fund (IMF) – Commodity Market Monthly, 9 April 2014

3 Source: Port of Rotterdam.

A comparison between developments in the seaports and container traffic on the Rhine shows that the percentage growth rates on the Rhine in the period 1994 to 2013 are very much comparable with those in the seaports. Between 1994 and 2013 container transshipments in Antwerp expressed in TEU increased by a factor of 3.9, in Rotterdam by a factor of 2.6 and on the Rhine by a factor of 3.7 (see figure below).

Container traffic is structurally influenced by the trade imbalance between Asia and Europe. There is no equal and opposite export flow in world maritime traffic to counter the import flow of containers from Asia. Because of this trade imbalance, the container transport volume transported north to south on the Rhine exceeds that in the opposite direction. The north-south component is about two thirds of the traffic and the south-north component one third. Accompanying this imbalance is also a certain proportion of empty containers, which in the midpoint of recent years was around 30 to 33 %[1]

Figure 17: Container traffic on the traditional Rhine and container transshipments in the seaports of Antwerp and Rotterdam 1994-2013 (index 1994 = 100)



Source: named ports, destatis, CCNR calculation

The Lower Rhine region's share of total traffic is very high. The following table illustrates this by reference to figures on the level of traffic by stretch of the Rhine.

*Table 3: Container traffic on the traditional Rhine and by stretch of the Rhine 2013 **

	Number of containers	TEU	Freight weight (t)
Total	1.317.168	2.022.963	15.257.433
Lower Rhine	1.296.102	1.988.660	15.062.749
Middle Rhine	724.304	1.128.301	8.114.575
Upper Rhine	510.836	793.363	5.634.738

Source: CCNR calculation based on destatis data..

** The figures per stretch of the Rhine cannot be aggregated because this would result in double counting.*

1.98 mio. TEU were transported on the Lower Rhine, or 98 % of total traffic. A considerable proportion of that, namely around 40 %, was transported solely on the Lower Rhine. The remaining 60 % also entered one of the other two stretches of the Rhine, or both[2].

1 On the subject of the trade imbalance: Port of Switzerland (2014), Freight transshipments in Swiss Rhine ports 2013: record transshipments in container traffic.

2 These figures do not emerge from the table but were ascertained by means of additional data analysis.

Only 2 % of TEU volumes were not carried on the Lower Rhine, namely were inter or intra-regional transport movements on the Middle and/or Upper Rhine.

Outlook:
With the anticipated revival of the global economy in 2014 and 2015, the growth in container traffic on the Rhine will resume. Additional new stimuli have been forthcoming from the compaction of travel timetables on the Rhine as well as from efficiency initiatives and numerous inland port trimodal projects.

The direction the ARA seaports are taking in their hinterland traffic policy is critical in this. For example, the inland waterway already accounts for a modal split share of around 33 % (Antwerp) or 35 % (Rotterdam) in the hinterland traffic of the seaports of Antwerp and Rotterdam. This modal split share has risen in recent years. These two largest European seaports have been aiming to increase the model split share of inland navigation in hinterland traffic yet further to more than 40 % by 2020.

Chemical products including fertilisers

An average monthly volume of around 1.7 mio. t yielded an annual figure of 20.8 mio. t, a sharp rise. The transport performance totalled approximately 5 bn. tkm, representing one of the highest figures of any goods segment.
The trend in the chemical industry in 2014 was up. Chemical production in Europe in the first half of 2014 grew by around 3 % year on year.[1] Business expectations are characterised by cautious optimism. Consequently we can assume continued growth for 2014.

Mineral oil products

Mineral oil products are the goods segment with the highest transport performance on the Rhine. From an economic perspective, there are a number of important influencing factors when transporting liquid mineral oil products. The most important factors are:

1) The crude oil spot market and the (closely related to it) product prices on the spot market ,
2) The crude oil futures market and the (closely related to it) prices for mineral oil product futures contracts,
3) Seasonal fluctuations and demand effects,
4) Structural changes in consumer behaviour.

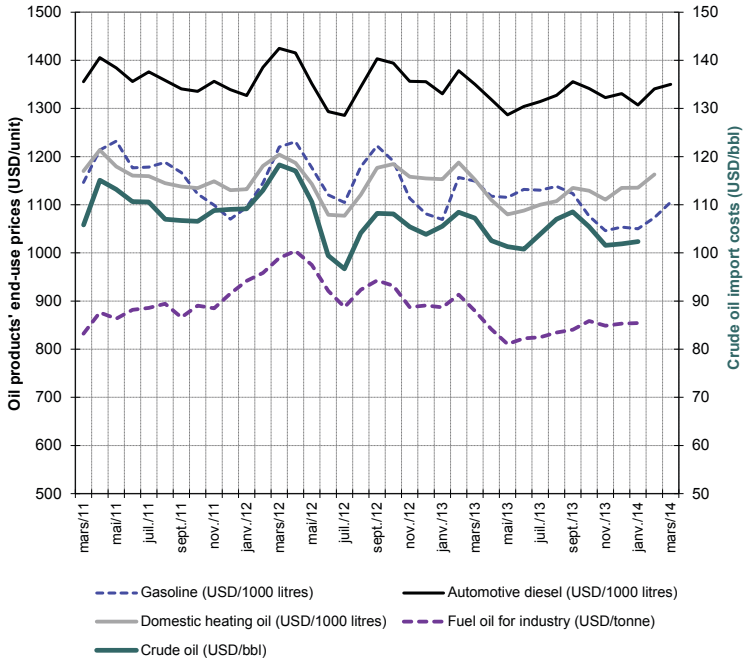
We will now go over what happened on the Rhine in 2013 by reference to the above influencing factors and offer an outlook for 2014.

1 Source: CEFIC

Re. 1) Crude oil spot market

Both the oil price on the spot market and the prices of the most important mineral oil products flatlined in 2013, with a slight downward trend (see graph below). Price conditions overall were conducive to stronger transport demand but were frustrated by other influencing factors, as explained below.

*Figure 18: Final consumer prices for selected mineral oil products and crude oil import costs **



Source: International Energy Agency

** weighted average value of prices incl. taxes, converted into US dollars at the prevailing exchange rates for France, Germany, Italy, Spain, UK, Japan, Canada and the USA.*

Re. 2) Crude oil futures market.

Developments on the futures markets are primarily important for that part of transport demand to do with stockpiling. The expectation of future rises in oil and oil product prices makes it possible to hedge against stockpiling costs and the stockpiling risk via the futures market.

The prices for the delivery of oil in the near future are lower for this market situation (contango) than the prices of oil to be delivered at a later date. That is why, when the futures markets are pointing this way, stockpiles of mineral oil products increase. This results in higher transport movements to tank farms in the vicinity of the ARA.

January and February 2011, however, saw the advent of a sustained backwardation phase for the European crude oil variety Brent Crude, which essentially has persisted to this day (as at: spring 2014[1]).

1 Cf: Financial Times (2014), Brent futures flip rolls up big profits, article dated 27 February 2014

As such, there has been no stimulus to stockpiling and the associated transportation to the tank farms. This also reduced stockpiling incentives in 2013, resulting in lower tank farm utilisation in Rotterdam[1].

Re. 3) Seasonal fluctuations and demand effects

A sizeable proportion of mineral oil product transport movements are light heating oils that are delivered seasonally in the autumn. However, owing to the very mild weather and the full stockpiles there was relatively low demand for light heating oil.

Structural changes in consumer demand affect the increasing use of renewable energies in the heating market and the purchase of more economical cars, causing a slight downward trend in the demand for liquid mineral oil products. The proportion of petrol driven vehicles has also been falling for years, resulting in a surplus of petrol in Europe.

In weighing up the developments and influencing factors described above it is apparent that transport demand in 2013 was restricted by full inventories, very mild weather and a backwardation structure on the futures markets. Against this background Rhine volumes have suffered a moderate decline. The total quantity transported in the year reached 30.9 mio. t, down 2 % compared with the year before. The transport performance totalled 8.3 bn. tkm.

Outlook:
A number of important trends affecting future developments can currently be observed, with not very positive indicators for transport demand for mineral oil products in the year ahead.

Spot market:

The price of the Brent crude oil variety should increase slightly in 2014. The risk of upward pressure emanates primarily from the crisis in Ukraine. The price increase should act as a brake on heating oil demand in the coming year as well, acting as a countervailing influence on improved volumes on the Rhine.

Futures market:

A reversal from backwardation to contango does not seem on the cards for 2014. This is mainly to do with the ongoing tense supply situation, primarily as a result of the loss of Libyan oil. Since the beginning of the blockade of Libyan oil ports in 2011, the oil market has been denied approximately 1.6 mio. barrels per day[2]. This is largely to blame for the ongoing backwardation phase. In this situation, activity to maintain tank farm levels in the ARA area is reduced and rendered economically much more difficult (lower margins). In a backwardation phase, terminals must accept shorter transshipment times and lower prices.

1 Source: Port of Rotterdam (2014). Transshipments in Port of Rotterdam virtually stable. Report dated 17.4.2014.

2 Libyan autonomist rebel groups have been blockading important oil ports in the east of the country since 2011. Cf: Commerzbank Corp. & Markets; oil market: Libyan rebels jeopardising opening of oil ports (8.5.2014). Bloomberg – Libyan Rebels Holding Key to Brent Crude Curve; 9 April 2014.

Consumer and refinery trends

European petrol consumption continues to fall. This is putting European refineries under continuing pressure. The most recent closures resulted in logistical changes whereby inland navigation might under certain circumstances post higher transport volumes. When a refinery in the hinterland is closed, more mineral oil products have to be imported via the seaports and then be transported into the hinterland via the Rhine or other modes of transport. During the temporary closure of the Swiss refineries in 2012 it became apparent that Rhine shipping was able to transport the additional import requirement, profiting in the process.

Trends in the trade in mineral oil products

Since the USA embarked on exploiting its oil shale resources, there have been far fewer export opportunities for Europe's surplus petrol production which is not matched by any European demand. This is attributable to the USA's reduced petrol imports. This begs the question of alternative export markets for European petrol.[1] However, Europe still needs to import diesel from the USA and Russia.

Summary Navigation of the Rhine

The following table contains the quantities transported and their rate of change compared with 2012, their respective share of total transportation and the transport performance for 2013.

Table 4: Freight transport on the traditional Rhine in 2013

Goods segment	Transport volume (mio. t) in 2013	Share of total in %	Rate of change 2013 / 2012	transport performance
Agriculture and forestry	12,7	6,6	+ 2 %	3,2 Mrd. tkm
Foodstuffs and fodder	7,0	3,6	+/- 0 %	1,5 Mrd. tkm
Sand, soil & building material	25,3	13,1	+ 3 %	4,6 Mrd. tkm
Coal	33,7	17,4	+ 13 %	6,1 Mrd. tkm
Ores	24,4	12,7	+ 2 %	2,5 Mrd. tkm
Metals	10,6	5,5	+/- 0 %	2,1 Mrd. tkm
Containers	15,3	7,9	+ 3,7 %	4,6 Mrd. tkm *
Chemical products**	20,8	10,8	+ 11 %	5,0 Mrd. tkm
Mineral oil products	30,9	16,0	- 2 %	8,3 Mrd. tkm
Other goods	12,5	6,5		3,5 Mrd. tkm
Total	193,4	100,0	+2,5 %	41,4 Mrd. tkm

Source: CCNR calculation

** there was a conversion here from TEU km to tkm for containers, based on the average net freight weight per TEU..*

*** including fertilisers*

1 Source: Flowcom Consultancy bv. (Lecture by Mr. Niels of Hombracht at the FETSA annual meeting in Venice 2014).

The following goods segments have thus clearly enjoyed a positive development (more than a 3 % increase):

- Coal
- Containers
- Chemical products

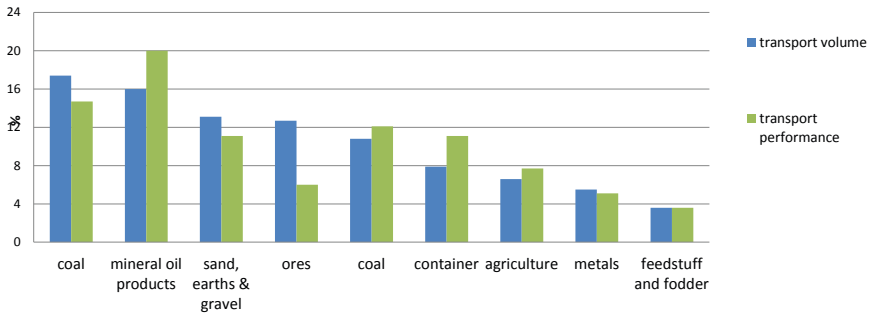
There was stagnation for the following foods segments (maximum 3 % increase or decrease):

- Agricultural and forestry products
- Foodstuffs and fodder
- Ores
- Sand, soil & building material
- Metals
- Mineral oil products

A clear decrease (= decrease exceeding 3 %) was not in evidence for any goods segment.

The following figure shows each goods segment's share of the transport volume and transport performance for 2013. Owing to very different routes, the transport performance may vary in magnitude relative to the transport volume.

Figure 19: Shares of goods segments carried in navigation of the Rhine of total transport volume and transport performance in 2013 (%)



Source: CCNR calculation based on destatis data

2013 saw the existing trends in the shares of individual goods segments in dry goods and tanker shipping continue essentially unchanged.

Dry shipping:

A structural, multi-year trend that can be noted is the increasing proportion of solid fuels (coal).
The share of ores in the total volume carried by the dry shipping sector has fallen.
There has been a slight increase in the agro sector since around 2007[1].

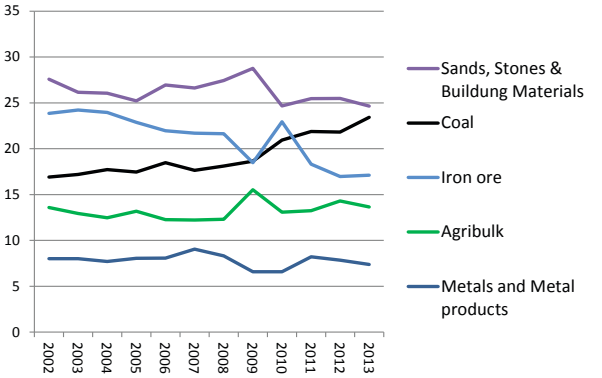
Tanker shipping:

A structural, multi-year trend that can be noted is the increasing proportion of chemical products.

1 Agro sector = agricultural and forestry products and foodstuffs and fodder together

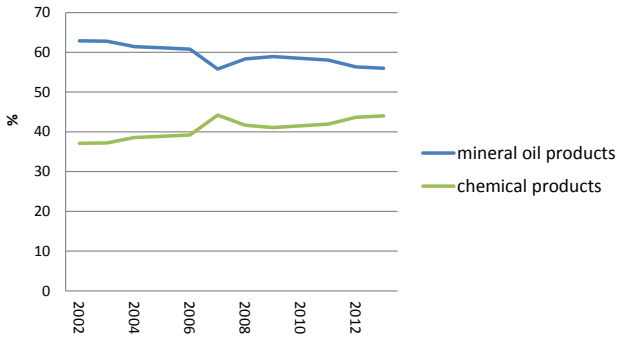
At the same time, the share of mineral oil products in the quantity carried by tanker shipping has fallen.

Figure 20: Shares of individual goods segments in total dry shipping sector transport volume (2002-2013)



Source: CCNR calculation

Figure 21: Shares of chemical products and mineral oil products in total tanker shipping sector transport volume (2002-2013)



Source: CCNR calculation

It is anticipated that the development trends for each goods segment will essentially continue in 2013 and 2014.

Freight traffic on Dutch waterways

The transport volume in the Netherlands in 2013 increased by 0.5 % year on year to 331.7 mio. t. The transport performance also increased by 0.5 % to 44.9 bn. tkm.[1] The following developments were identified in the individual goods segments:

Table 5: Development in freight transport by goods segment in the Netherlands 2013

Goods segment	Development in 2013	Numerical development 2013 / 2012
Agribulk	Stable development	+ 0.4%
Coal and ores	Strong increase	+7,1 %
Metals and metal products	Stable development	+0,5 %
Building materials, sand and soil	Further decline	-4,6 %
Liquid cargo	Increase	+1,5 %
Other cargo types and containers	Decline	-2,5 %

Source: CCNR calculation

1 Source: PANTEIA

Freight traffic on German waterways

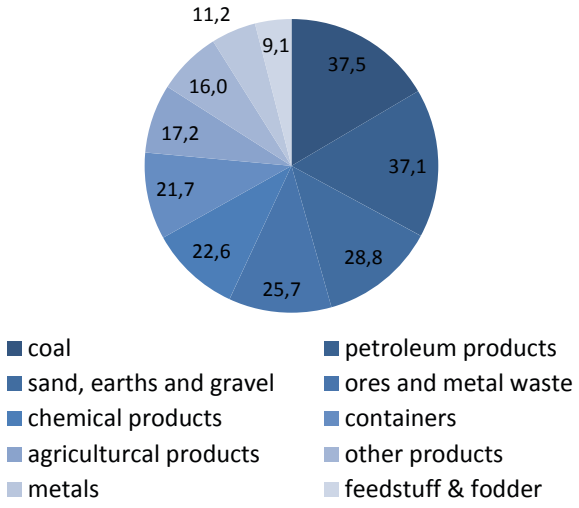
226.8 mio. t of goods were carried in Germany in 2013, representing a 1.7 % increase compared with 2012. This marks an increase in the growth rate compared with the year before (2012/2011: 0.5 %).

The transport performance was 60.1 billion tkm. Not quite half this transport performance was realised over distances greater than 500 km. Container traffic, expressed in TEU, increased by 1 % to 2.2 mio. TEU. Approximately two thirds of them were loaded containers. 26.7 mio. t of goods were carried in containers, 2 % more than the year before.

As the traditional Rhine carries around 85 % of the total within Germany, the trends pertaining to goods segments at German level are in large measure identical with those for the traditional Rhine explained in the previous section.

Both in terms of transport performance and transport volume, German-flagged ships had a share of around 30 %. This share is gently declining over time.[1] The proportion of Dutch-flagged ships increased slightly to 56 %; vessels flying the Belgian flag have a 7 % share of transport volume or 9 % of transport performance. In total, vessels flying the flags of Rhine riparian countries account for a 97.3 % share of the traffic volume on German waterways.

Figure 22: Freight traffic on German inland waterways in 2013 (mio. t)



Source: destatis, CCNR calculation

79.5 % of the goods in 2013 were carried in vessels with their own propulsion (motor cargo vessels, motor tankers); 20.5 % were transported on lighters. That puts transport by pusher vessel and lighter in Germany on a par with the average for Europe as a whole[2].

1 Whereas the market share of German-flagged vessels on the German waterway network has exhibited a downward trend for years, vessels flying the Dutch flag are taking an increasing share of transport performance. Since the beginning of the millennium, the latter have increased their market share, expressed in transport performance, from around 49 % in 2000 to more than 55 % in 2013. The market share of German-flagged vessels fell from around 35 to around 30 per cent in the comparison period.

2 Approximately 21 % of total transport movements in the EU-28 in 2012 were by lighter.

Table 6a: Transport involving vessels with their own propulsion by flag (1,000 t)

Flag	Vessels with own propulsion				
	total	Motor cargo vessel	Motor tanker	Container vessel	Other freight vessel
Rhine region	176 023,7	117 306,4	49 138,1	9 354,1	225,0952
Danube countries	517,8	479,6	36,1	0,0	2,1
Poland and Czech Republic	3 781,1	3 555,4	161,4	1,3	63,1
Total	180 322,6	121 341,3	49 335,7	9 355,4	290,2

Source: destatis.

Table 6b: Transport involving vessels without their own propulsion by flag (1,000 t)

Flag	Vessels without their own propulsion		
	Cargo barge	Tank barge	total
Rhine region	43 964,2	822,3	44 786,4
Danube countries	380,2	2,2	382,3
Poland and Czech Republic	1 369,6	2,6	1 369,7
Total	45 714,0	827,0	46 538,4

Source: destatis.
Rhine region flags = Netherlands, Germany, Belgium, Switzerland, France, Luxembourg.

Apart from the Rhine region, the regions with the highest waterway transport are the West German canal region and the Mittellandkanal region. Positive trends were apparent for all three regions in 2013. The biggest increases however were in the Elbe region and on the Berlin waterway network.

Table 7: Freight transport in Germany by waterway region

Region	Mio. t in 2013	2013/2012 in %
Rhine region, Lahn, Main, Moselle, Neckar, Saar	193,5	+2,2
West German canal region	39,2	+4,0
Mittellandkanal region	21,4	+4,7
Elbe region	17,6	+7,8
Weser region	8,5	-4,8
Danube region	7,5	+1,3
Berlin region	4,7	+12,3
Brandenburg and inland region Mecklenburg-Vorpommern	3,6	+3,1
Coastal region of Mecklenburg-Vorpommern	0,04	-90,5

Source: destatis.

Significant increases were recorded on the most important Rhine tributaries in 2013:

- Main: 16 mio. t (+ 9 %)
- Moselle: 14 mio. t (+ 8%)
- Saar: 4.7 mio. t (+17%)

Coal transportation on the Saar made an absolutely critical contribution to the increase in 2013 with growth of 480,000 t. Since the Saar was opened to large scale inland shipping in 1987 never has the amount of goods transported on this river been so high as in 2013.[1]

Freight traffic on French waterways

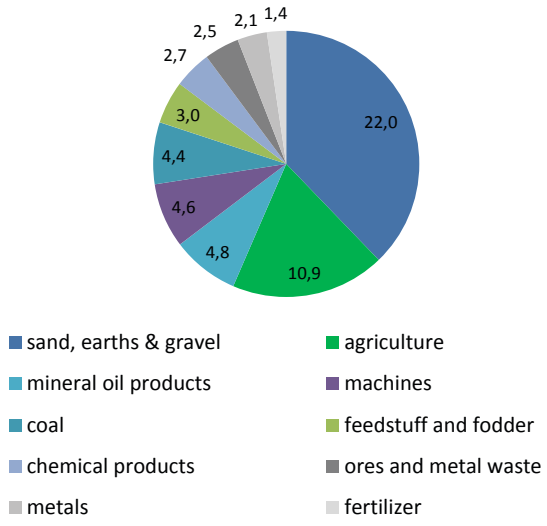
Freight traffic on French waterways remained essentially constant at 58.2 mio. t. The transport performance increased by 1 % to 7.9 bn. tkm. Increases were recorded for coal (+25 %), metals (+13 %), grain (+4.6 %) and for chemical products (+7.6 %). The carriage of coal, grain and metals benefited from low world market prices. In the case of grain, this was as a consequence of the good domestic grain harvest, which in conjunction with the low prices resulted in higher exports.[2]

In the case of liquid goods, there is a structural shift in transport routes. Less crude oil is being imported[3] owing to the closure of refineries in France (Reichstett, Dunkirk) and more finished mineral oil products instead. The seaports play the role here of import ports and also as interim storage facilities. Given the geography of the waterway network, however, delivery is not always by inland waterway vessel but often by HGV.

The quantitatively biggest goods segment is sand, soil & building materials with 22 mio. t. It has a 38 % share of the total volume. A further 25 % is accounted for by agricultural products as well as foodstuffs and fodder.

The French-flagged share of freight transport movements is around 90 % for national traffic but only 12 % for international traffic.

Figure 23: Transport volumes in French inland navigation 2013



Source: VNF

1 Source: Federal German Waterways and Shipping Administration. The year before, coal transports on the Saar increased by even more, by one mio. t.

2 In the case of coal, this was for the same reasons as explained for the navigation of the Rhine. Metal prices are currently relatively low owing to the crisis in the steel industry.

3 See: CCNR Market Observation report 2011-2.

Overall this yields a share of around 50 %.[1]

The transport statistics reveal certain regional specialisations.

- For example, on the Seine the transport of sand, soil & building materials is far and away the most important market, supplying as it does the building industry in Paris. 13.7 mio. t of sand, soil & building materials were carried on the Seine in 2013. That was two thirds of the total of this goods segment transported in France.
- Somewhat more than half of all transport movements of crude oil products on French waterways is accounted for by the French stretch of the Rhine.

Among French regions in 2013, the Moselle posted the biggest increase, a consequence of increasing grain exports from the French Moselle region (Lorraine).

Table 8: Freight transport in France by waterway region

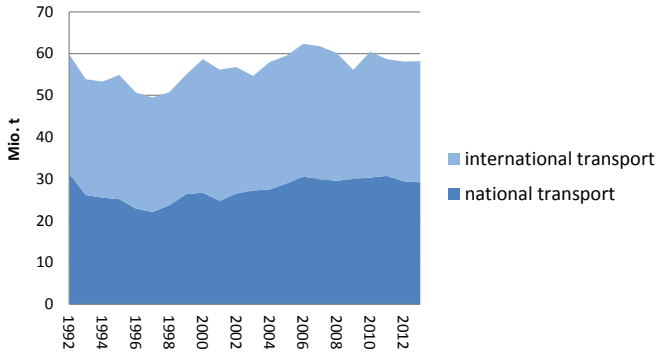
Waterway region	Mio. t in 2013	2013/2012 in %
Seine	22,2	- 4,4 %
Rhine	12,8	+5,1 %
Moselle	5,0	+9,2 %
Saone-Rhone	5,7	-5,7 %
Nord-Pas de Calais	9,1	-2,8 %

Source: VNF

Taking a longer term perspective, freight transport on French inland waterways exhibited a significant upward trend from the second half of the 1990s onward. This has also resulted in a modest increase in the modal split share of inland navigation n France (see the chapter on the modal split).

The bulk of this increase was accounted for by domestic (national) traffic, which increased from 22 mio. t to around 30 mio. t between 1997 and 2006, namely by 38 %. Since then, however, this national traffic has tracked at a relatively constant level of around 30 mio. t per annum.

Figure 24: Freight transport on French inland waterways (1992-2013)



Source : Ministère de l'Ecologie, du développement durable et de l'énergie

1 Source: CCNR calculation based on data from the Ministère de l'Ecologie, du développement durable et de l'énergie

International traffic also increased during this period, albeit by less. There was a constant upward trend here in exports to Belgium and the Netherlands (south-north traffic). Exports to Germany in this period however have fallen.

For the period after 2006 a slight downward trend can be observed for international traffic. Once again, this resulted in a slight falling trend for total transport volumes in the past few years.

Freight traffic on Belgian waterways

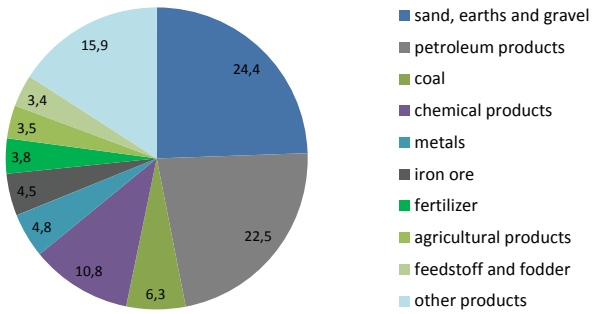
Belgium boasts Europe's second largest seaport, Antwerp, and third largest inland port, Liege. Other important ports, such as the seaport of Zeebrugge and inland port of Brussels, underline the country's importance for European inland and maritime navigation as a whole.

In the absence of data for the whole of Belgium, we have used data from three organisations, Instituut voor het Transport langs de Binnenwateren (ITB), Promotie Binnenvaart Vlaanderen and Voies Hydrauliques de la Wallonie for a statistical look at transport demand by goods segment. The ITB regularly collects data on the hinterland traffic of the seaports of Antwerp and Ghent as well on transport movements on the other Flemish and Walloon inland waterways.

According to the ITB's analyses, transport demand (of around 190 mio. t) on Belgium's inland waterways is broken down as follows (in percentage terms):

As is to be expected from the upward trend in transport as a whole, a number of goods segments have exhibited a strong positive trend in the past decade. This applies in particular to building materials, agricultural products and liquid goods. In the latter case, not only was there an increase in transport movements of chemical products but of crude oil products as well.

Figure 25: Composition of transport volume on Belgian waterways (%)



Source: ITB

If one compares the two parts of the country, Flanders and Wallonia, freight traffic in Flanders has developed somewhat more favourably than in Wallonia since the end of the 1990s with growth of 27 % (vs. 20 %)[1]. This can be explained by differences in economic structure. For example, Wallonia is primarily a steel location with the commercial, service and logistics sectors less well represented than in Flanders.

1 Calculation based on Promotie Binnenvaart Vlaanderen and Voies Hydrauliques de la Wallonie data

Container traffic on Flemish inland waterways reached 527,652 TEU in 2013, equalling the previous year's performance. Container traffic in Flanders over the long term has grown very strongly over the long term. Volumes in TEU terms have increased almost tenfold in the period 1997 to 2013 (factor of 8.9). In percentage terms the increase has been even more marked than container traffic in the seaport of Antwerp, which of course in absolute figures leads by a long way with a volume of 8.58 mio. TEU (2013).

The Liege region in Wallonia has suffered steel mill closures in recent years, which has resulted in declines in ore and coal shipments. Coal traffic on inland waterways in Wallonia has therefore approximately halved between 2004 and 2013, with ore traffic falling even further. These declines were however more than offset in quite astonishing fashion by other goods (primarily agriculture, fertilisers, crude oil products), resulting in the aforementioned 20 % overall increase in the period 2000 to 2013.[1]

2.2.2 Danube area

The navigable Danube is typically subdivided into the following three stretches:

- Upper Danube from Kelheim (German) to Komárno (Slovakia)
- Middle Danube from Komárno (Slovakia) to Turnu Severin (Romania)
- Lower Danube from Turnu Severin (Romania) to where it flows into the Black Sea.

In terms of the types of vessel employed, much of the navigation of the Danube is characterised by a convoy structure. Approximately 90 % of all transport movements downstream from Passau on the Danube are in pusher-barge or pushed convoys[2]. The prevailing structure in the Rhine region is diametrically opposite in that motor cargo vessels proceeding independently account for far and away the greatest share of vessel types employed.

A structural similarity between the navigation of the Danube and the navigation of the Rhine resides in the fact that the steel industry accounts for a considerable share of transport volumes on the Danube as well. In absolute quantities, however, transport volumes are less than on the Rhine. For example, approximately 3 mio. t of ores and metal wastes annually are carried on the Upper Danube[3], which on a multi-year comparison corresponds approximately to the monthly transport volume on the Rhine. The steel industry in the Upper Danube region primarily derives its raw materials from the Black Sea ports.

1 Source: Direction générale opérationnelle de la Mobilité et des Voies hydrauliques

2 This does not therefore apply to the German stretch of the Danube. Here the proportion of transport movements on lighters and barges since the opening of the Main-Danube canal has fallen significantly, from 65 % in 1992 to 18 % in 2013.

3 These raw materials are destined for the steel industry on the Upper Danube in Austria. Compare with the detailed figures: Statistik Austria and Via Donau (2013), Annual Report 2012.

Traffic on the Upper Danube

The Upper Danube flows through Germany, Austria and Slovakia. From Regensburg there is a 3 to 1 structural quantitative predominance of goods transport movements coming from the east (primarily foodstuffs and fodder and agricultural products from the Middle Danube region) over west-east transport movements[1]

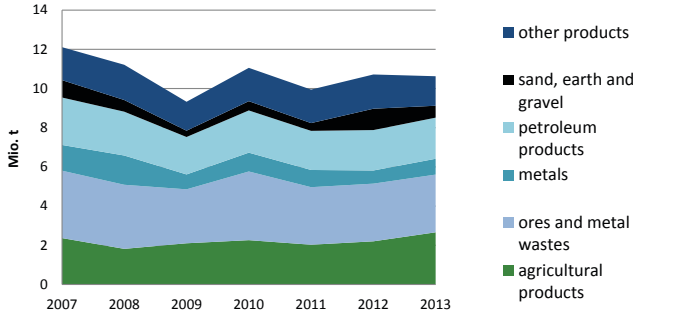
The transport volume on the German and Austrian Danube in 2013 was virtually unchanged from the year before. Approximately 6.5 mio. t were transported on the German stretch of the Danube and 10.6 mio. t. on the Austrian Danube[2]. The difference between these volumes is attributable to the additional quantities of imports (especially ores) carried in east to west traffic to Linz in Austria.

There were increases in the carriage of agricultural products and foodstuffs and fodder (+10 % in Germany, +20 % in Austria). This goods segment represents approximately a quarter of transport volume on the Austrian Danube. Just short of 3 mio. t of ores & metal wastes were transported in Austria, exactly in line with the previous year's level. The transport of mineral oil products was also unchanged (2.1 mio. t).

The serious flooding in June interrupted navigation. A 47 % decline in cargo was recorded at the German-Austrian border (Jochenstein barrage). This navigation standstill in June caused losses in the shipping industry. The lost cargo quantities were however made good in the following months, especially in July.

The Slovakian stretch of the Upper Danube begins approximately 70 km east of Vienna, lending itself to measurement based on transport movements at the Gabcikovo barrage. More than 6 mio. t of freight were registered here in 2013, 73 % of it upstream. Here too, the June floods caused a fall in cargo throughput of around 33 %.

Figure 26: Transport volumes on the Upper Danube (Austria)



Source: Statistik Austria

In the period under consideration the biggest transport performance was achieved on the Upper Danube by the upstream transportation of foodstuffs and fodder together with iron ore and crude oil products and the downstream transportation of fertilisers and crude oil products. The amount of freight carried by motor cargo vessels was equally high in both directions (downstream and upstream).

1 Source: Via Donau (2013) and Federal German Waterways and Shipping Administration (2013)

2 Sources: destatis (Germany) and Statistik Austria.

Traffic on the Middle Danube

The Middle Danube flows through Hungary, Croatia and Serbia. An average of approximately 8 mio. t was carried on Hungarian waterways in the period 2004 to 2013; in Croatia it was around 5 mio. t.

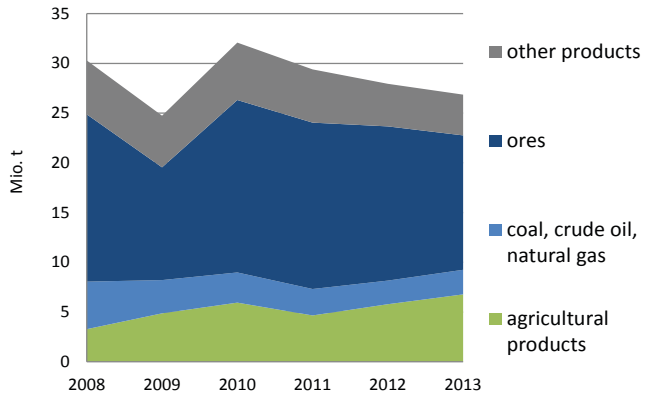
Pushed convoys account for a very high proportion of traffic on the Middle and Lower reaches of the Danube. In 2013, 75 % of freight traffic passing through Mohács, a town on the Danube in southern Hungary, was in pushed convoys[1] On average, 35-40 pushed convoys pass through this recording point every month. Pushed convoy transits were mainly by vessels flagged in the following countries: Romania (219), Germany (199), Ukraine (94), Hungary (58), Austria (58) and Bulgaria (49).

Motor vessels carried the remaining 25 % cargo volume. On average, 160-180 motor vessels per month passed through the Mohács recording point in 2013 (except for the month of June).
The greatest transport performance on the Middle Danube was achieved by the upstream transportation of iron ore and solid mineral fuels and downstream transportation of grain (with a significant seasonal effect) and crude oil products.

Traffic on the Lower Danube

Romania and Bulgaria boast the highest transport volumes within the entire Danube region. Transport movements on this stretch of the Danube are closely associated with the seaports of Constanza and Galati.

Figure 27: Freight transport on inland waterways in Romania 2008-2013



Source: Eurostat

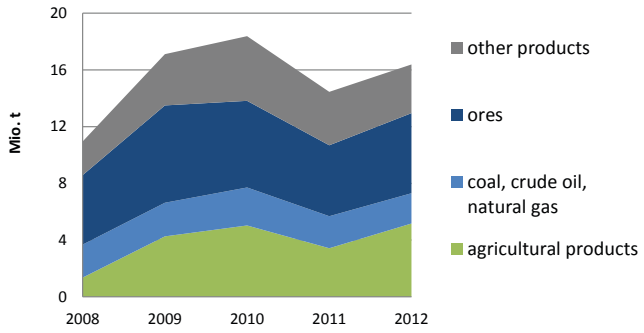
Bulk cargo transport movements in Romania and Bulgaria (ores, coal, crude oil products) have been declining in recent years. Of critical importance in this was the decline in steel production in recent years. The Romanian steel industry's leading producers are currently struggling to be internationally competitive in the face of falling steel demand and the need for the Romanian mills to modernise.

1 Source: Danube Commission (2014), market observation of navigation of the Danube: assessment for 2013

The transport of ores and coal on the Lower Danube has suffered from the decline in Romanian steel production.

The fall in ore and coal movements was countered both in Romania and Bulgaria by an increase in the transport of agricultural produce. In Romania these transport volumes increased to 6.8 mio. t between 2008 and 2013; the increase was even more pronounced in Bulgaria.

Figure 28: Freight transport on inland waterways in Bulgaria



Source: Eurostat

Summary Transport demand

Transport on the main European inland waterway axes enjoyed differing fortunes in 2013. The traditional Rhine experienced growth of 2.5 %, driven by 2 % higher volumes in the dry goods shipping sector, 3 % growth in tanker shipping and a 3.7 % hike in container traffic. The overall rate of 2 % is the product of the percentage shares of the three segments, with the dry goods sector having a two thirds weighting, making it the key determinant of the overall outcome. Inland waterway transport volumes in Germany increased by 1.7 %, in the Netherlands and Belgium by around 0.5 %. French waterway volumes were stagnant.

Countries in the Danube region exhibited differing growth rates. On the upper reaches of the Danube (Danube in Germany, Austria and Slovakia), year-on-year volumes remained constant. This is also largely true of the central Danube region (Hungary, Croatia). For the lower Danube region, however, a decline in transport volume is to be observed, attributable primarily to the very adverse development in the raw materials and goods associated with the steel industry (ores, metals and coal). The steel industry in the lower Danube region was significantly harder hit by the economic crisis than the steel industry on the Rhine.

2.3. Port transshipments

2.3.1 Seaport and hinterland traffic

Seaport traffic

In 2013, Europe's four largest seaports (Rotterdam, Antwerp, Hamburg and Amsterdam) accounted for a 73.3 % market share of total European seaport transshipments.

Rotterdam is not only Europe's largest seaport but also deserves to be known as a universal port, with a major presence in virtually all areas of both dry and liquid bulk cargo as well as container traffic.

Antwerp is very strongly specialised in liquid bulk cargo (especially chemical products). During the past four years, transshipments in this segment expanded by 73 %, currently making Antwerp the fastest growing of the ARA ports[1].

Hamburg, as the most easterly of the four big seaports, majors primarily in container traffic while also operating as a global trading hub between Asia and Europe. Feeder traffic with the countries of the Baltic region is of enormous importance to Hamburg.

Amsterdam ranks second behind Rotterdam among European coal ports. It also plays an important role in the liquid goods sector (35 % of total transshipments) as well as in foodstuffs and fodder (world's largest cocoa port) and biomass.

Table 9: Development of seaport transshipments in Europe's four largest seaports in 2013

Seaport	Total (mio. t)	of which dry bulk cargo	of which dry liquid cargo	Container traffic mio. t	Containers mio. TEU
Rotterdam	440,5 (-0,2 %)	89.2	206.8	121.2	11.6
Antwerp	190,8 (+3,7 %)	14.4	59.5	102.3	8.6
Hamburg	139,0 (+6,0 %)	39.6	14.6	95.7	9.3
Amsterdam	95,7 (+1,5 %)	46.2	41.0	No info	0.06

Source: named ports.

- Transshipments of dry bulk cargo in Rotterdam were 14 % higher than the year before whereas liquid cargo transshipments fell 3 %. Container traffic as well suffered a small decline of 3 % to 121.2 mio. t.

1 These developments in liquid goods are the product of investments by many mineral oil companies and tank farm businesses in the port area. The background to this is an increase in the global trade in crude oil and mineral oil products.

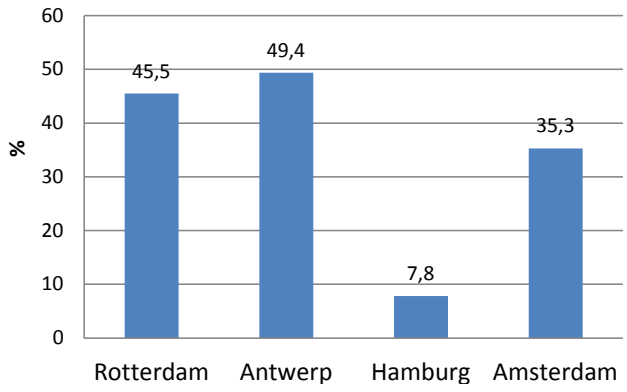
- In Antwerp liquid cargo leaped 30 %, strongly influencing the overall result. Container traffic however registered a decline.
- The Port of Hamburg notched up growth of 6 %, primarily attributable to container traffic, which increased by 6 % in terms of freight weight and 4 % in TEU volumes. The bulk cargo segment stagnated.
- Amsterdam saw a 5 % fall in liquid cargo transshipments but 11 % growth in dry bulk cargo.

Seaport hinterland traffic

Different choices of mode of transport as regards seaport hinterland traffic are largely driven by the prevailing infrastructure situation. The latter determines the ability, from any given seaport, to reach the greatest possible number of consumers and achieve the greatest possible amount of industrial value creation while incurring the lowest possible transport costs.

For Central and Western Europe, this therefore drives a clearly discernible geographical segmentation in the market shares of individual seaports in the hinterland. The western seaports of Rotterdam, Antwerp and Amsterdam enjoy market shares of between 90 – 100 % in container traffic with Northern France, Western Germany, South West Germany and Switzerland. Hamburg achieves a similarly high market share of hinterland traffic with Northern and Eastern Germany, Poland, Bavaria, Austria and the Czech Republic.[1]

Figure 29: Total modal split share of inland navigation in the four largest North Range ports



Source: CCNR calculations based on port information

Linked to these market shares in the hinterland is the choice of mode of transport. Owing to the very good infrastructure the Rhine has to offer, the navigation of the Rhine can make great play of its advantages in the ARA ports' hinterland, achieving correspondingly high modal split shares (see graph below). In Hamburg's hinterland on the other hand, rail is the dominant mode of transport.

The following table depicts the evolution in maritime traffic and inland navigation traffic in Northern Europe's four largest ports. In Antwerp and Hamburg, inland navigation hinterland traffic in 2013 enjoyed stronger growth than for inland navigation as a whole in Belgium or Germany. This underlines the fact that hinterland traffic represents a disproportionate growth area within traffic growth as a whole.

1 Source: Institute of Shipping Economics and Logistics (ISL)

Table 10: Seaport and inland navigation traffic in Rotterdam, Antwerp, Hamburg and Amsterdam

	Seaport traffic		Inland navigation traffic		
Seaport	2013 (mio. t)	2013/2012	2013 (mio. t)	mio. t 2013/2012	Number of inland waterway vessels 2013
Rotterdam	440,5	-0,2 %	200*	n.b.	99.000
Antwerp	190,8	3,7 %	94,3	+7,3 %	60.000
Hamburg	139,0	6,0 %	10,8	+3,8 %	9.900
Amsterdam**	95,7	1,5 %	33,5	n.b.	n.k.

Source: named ports.
** tpartly estimated*
*** entire port region (Amsterdam, Velsen, Beverwijk, Zaandam), of which the Port of Amsterdam accounts for 78 mio. t.*
n.k. = not known

The following tendencies can be observed as regards inland waterway vessel traffic in the ARA seaports' hinterland:

- In Rotterdam the modal split share for container traffic accounted for by inland navigation increased from 30.2 % in 2008 to 35.3 % in 2013. With the expansion of port capacity as part of Maasvlaakte 2, the port's objective is to increase the modal split share for container traffic accounted for by inland navigation to more than 40 % by 2020.
- Since 2000 hinterland traffic via inland vessel in Antwerp has increased by a third (34 %)[1]. The main growth areas were liquid cargoes and containers. For example, the transport of crude oil products increased by two thirds (63 %) and the transport of chemical products by as much as 80 %[2]. Mirroring the maritime traffic situation, liquid cargoes account for a high proportion of total inland vessel traffic at 54 % (equates to 51 mio. t in 2013).
- The Port of Amsterdam is currently positioning itself as a transfer hub for container traffic in the Northern Netherlands. The idea is for large inland container vessels (400 to 500 TEU) to operate a scheduled service between Rotterdam and Amsterdam. The intention then is to trickle feed containers from Amsterdam to the smaller ports in the north of the country using small container vessels[3]

2.3.2 Inland ports

Rhine ports

In 2013, Duisburg, Europe's and the world's biggest inland port, posted riverside transshipments of almost 50 mio. t. Of this transport volume, approximately 72 % was accounted for by steel industry raw materials

1 Source: Port of Antwerp (2014), Statistical Yearbook 2013.
2 Source: Port of Antwerp (2014), Statistical Yearbook 2013.
3 See: Port of Amsterdam (2014), Amports – Ports magazine, article "Hinterland Connections".

and finished products. For example, there were 20.7 mio. t of riverside transshipments of iron ore, a further 11 mio. t of coal and 3.7 mio. t of steel products and metals.

As the example of the Port of Duisburg illustrates, the main focus areas of riverside transshipments in the individual ports are closely correlated with the economic and industrial structures in their catchment area. This applies to the steel industry in the Duisburg region but also to the chemical and mineral oil industry in the Cologne area and the Rhine-Neckar region in the vicinity of Mannheim/Ludwigshafen.

Table 11: Total riverside port transshipments in the ten largest Rhine ports 2013

Port	Transshipments 2013 (mio. t)	2013/ 2012 in %
Duisburg	49,4	+ 0,5
Cologne	11,7	+/- 0 %
Mannheim	8,7	+10 %
Strasbourg	8,0	+/- 0 %
Ludwigshafen am Rhein	7,6	+ 2 %
Neuss	7,6	+ 11 %
Basel	6,8	-5 %
Karlsruhe	6,4	+ 0,4 %
Kehl		+ 0,4 %
Krefeld		-2%

Source: destatis (German ports), Swiss Rhine ports, Port of Strasbourg

Table 12: Riverside container transshipments in the ten biggest container ports on the Rhine 2013

Port	TEU volumes 2013	2013/2012 in %
Duisburg	409.293	+3,2
Mannheim	138.138	+15,1
Wörth am Rhein	125.351	+11,0
Germersheim	125.345	+23,4
Strasbourg	118.359	-1,1
Mainz	110.815	+7,1
Emmerich	106.855	-3,5
Basel	105.000	+2,6
Cologne	102.390	+7,2
Neuss	99.884	-4,7

Source: destatis (German ports), Swiss Rhine ports, Port of Strasbourg

In common with Ludwigshafen, and also Karlsruhe, the Port of Cologne is a liquid cargo transshipment centre. 6.7 mio. t of mineral oil products were transshipped in Cologne in 2013, accounting for 57 % of the port's total riverside transshipments. 2 mio. t of chemical products were handled riverside such that around two thirds of riverside transshipments in Cologne were accounted for by liquid goods.

In Ludwigshafen the transshipment of chemical products in 2013 was around 4 mio. t and that of liquid mineral oil products 2.4 mio. t. Liquid cargoes thus account for 84 % of riverside transshipments.

In addition to these industrial clusters there are also ports with an emphasis more on agricultural products and foodstuffs and fodder. Here we might mention the ports of Strasbourg and also Mannheim, which receive grain as well as foodstuffs and fodder from their catchment areas (principally from Alsace, Lorraine and south-western Germany).

The Swiss port of Basel posted a slight decline, attributable to the disappearance of a special effect dating from 2012. That was when the outage of Switzerland's refineries resulted in higher shipborne imports of liquid mineral oil products. This effect disappeared in 2013.

Inland ports in Belgium and France

Paris

River traffic in Europe's second largest inland port in 2013 was down 6 % at 20.8 mio. t. This was primarily due to a decline in sand, soil & building materials, which account for approximately 70 % of total transshipments. River-sea traffic totalled 354,534 tonnes (-2 %). Container traffic increased by 4 % to 161,479 TEU. That gives container transport on the Seine and Marne in the Paris ports a modal split share of 35 %.

A remarkable new development is container transport in the very heart of Paris, which kicked off in 2012. This is related to the supply of foodstuffs to a French department store chain. This new urban container traffic transported 10,013 TEU in 2013. That represents around 28 containers per day being carried by inland waterway vessel on the Marne and Seine to the vicinity of the Eiffel Tower in Paris. The subsequent "last mile" distribution to branches is by HGV[1].

Liege

The modal split share of inland navigation in Europe's third largest inland port is the very high level of around 71 %. In 2013, riverside transshipments were 13.2 mio. t, compared with 13.9 mio. t the year before (- 5 %). The port has been relatively successful in compensating for declines in the steel sector. An example of this structural transformation is container traffic, which last year exhibited growth of 11 %, rising to 27,638 TEU.

1 This container line has existed since 2012, its purpose being to supply around 80 branches of a department store chain in the heart of Paris. The benefits are a significant reduction in pollutants and the avoidance of congestion on the roads of Paris. These container traffic movements begin in Bonneuil-sur-Marne in the south of the Ile-de-France and run for approximately 20 km on the Marne to within the vicinity of the Eiffel Tower. See: Franprix, Groupe Casino (2012), Communiqué de presse: Franprix entre en Seine

Brussels

Riverside transshipments in the Port of Brussels, Belgium's second largest port after Liege, were 6.6 mio. t in 2013, representing a 3 % increase year-on-year. The major freight categories of the Port of Brussels are sand and building materials, accounting for 55 % of transport movements, and mineral oil products (27 %). Container traffic movements last year fell by 18 %, attributable to a special effect. Riverside transshipments totalled 13,083 TEU, compared with 16,000 TEU the year before. The previous years' growth can however be expected to resume starting next year.

Lyon

Including river-sea traffic, the waterway in the Port of Lyon has a modal split share of 14 %. After four years of increases, 2013 posted a small drop in ship traffic of 4 %. Pure inland traffic totalled 1.4 mio. t. River-sea traffic in 2013 returned very strong growth (+26 %), but in absolute terms, at around 55,000 t, represents a smaller tonnage. Container traffic on the Rhone grew by 4 %, to 72,500 TEU. Railway container traffic totalled 36,500 tonnes (-20 %).

Table 13: Inland waterway vessel traffic in Paris, Liege, Brussels and Lyon

Port	Riverside transshipments in 2013	Change 2013/2012	TEU volumes 2013	TEU 2013/2012 in %
Paris (FRA)	20.8 mio. t	-6 %	161.479	+ 4%
Liege (BEL)	13.2 mio. t	-5 %	27.638	+11%
Brussels (BEL)	6.6 mio. t	+3 %	13.083	-18%
Lyon (FRA)	1.4 mio. t	-4 %	72.500	+ 4%

Sources: named ports

Inland ports in the Danube region

Regensburg

Freight transshipments in Germany's largest Danube port currently enjoys a 20.5 % modal split share of total port traffic. Traffic increased by 5 % in 2013 year-on-year, putting it at 1.6 mio. t. That represents growth for the second year in succession, following a protracted decline between 2003 and 2011. In 47 % of the freight transport movements the point of origin or destination was within the Rhine area (Germany, Netherlands, Belgium). 30 % of the freight was bound for or came from Austria and the remaining 23 % of ship transport movements was accounted for by transport movements involving the other Danube countries, especially Hungary.

Linz

Approximately two thirds of transshipments in Austria's biggest inland port are made up of ores and metal wastes used in Linz's steel industry. The larger proportion of these volumes is delivered up the Danube, a smaller proportion being carried from the ARA seaports to Linz. In 2013 2.9 mio. t were delivered by ship. (This quantity is almost identical with the transportation of ore on Austrian waterways). Total transshipments in the Port of Linz were 4.4 mio. t and thus somewhat less than the year before.

Vienna

The inland port in Austria's capital is specialised in liquid goods. They accounted for almost 1.2 mio. t in 2013,around 200,000 t more than in 2012. Mineral oil products account for almost three quarters of total transshipments.

Riverside container transshipments are significantly less in the Danube ports than in their Rhine counterparts and the inland ports of Belgium and France. Of significantly greater importance is rail container traffic, originating from the seaports.

Table 14: Inland waterway vessel traffic in Regensburg, Linz and Vienna

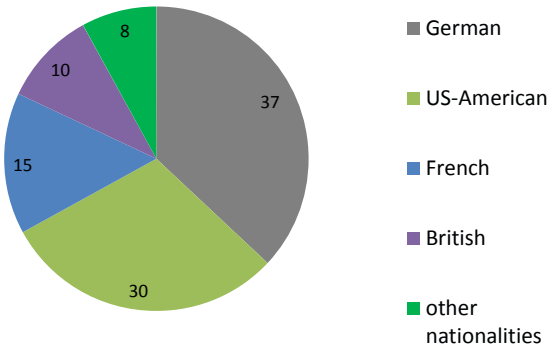
Port	Riverside transshipments in 2013	Change 2013/2012	TEU volumes 2013
Regensburg (D)	1.6 mio. t	+5 %	1,026 TEU
Linz (AUT)	4.4 mio. t	-2 %	No info
Vienna (AUT)	1.6 mio. t	+3 %	1,218 TEU

Sources: named ports. N.I. = no information

2.4 Demand in passenger navigation

Around 840,000 passengers a year currently travel Europe's rivers in a cabin vessel. Travellers are broken down by country of origin as follows:

Figure 30: River cruise passengers on European rivers by nationality (share in %)



Source: SeaConsult

The share of customers from the US has been increasing for years. The attraction of European river travel for these customer groups includes that of seeing numerous European countries within a relatively short period – a cruise from Amsterdam to Budapest lasts 12 days – with little organisational effort.

In 2013 German passenger numbers suffered a fall for the second consecutive year. One explanation for this is the after-effect of the "Costa Concordia" disaster in January 2012. There was a negative impact in 2013 as a result of Europe-wide flooding and the week-long strike by lock workers. Both resulted in a temporary immobilisation of the fleet and in considerable revenue losses by the shipping companies[1].

At the same time, river cruises have had to cope with a 12 per cent point increase in value added tax since 2012. Given the high price elasticity of demand, this price increase can only partly be passed on to the final consumer. Overall, it needs to be borne in mind that river cruises and ocean cruises are situated within one and the same travel segment, such that there is a high degree of substitutability between these two variants.

Plaizier (2011) has calculated the economic impact of river cruises in the Netherlands. His calculations relate to the expenditure during excursions ashore during river cruises. The estimated induced consequential effects amount to around €34 mio. of additional value creation in the Netherlands as a result of excursions ashore by passengers.

The induced effects of excursions ashore during river cruises were estimated in this market observation report based on an impact assessment method. The calculations yielded a positive effect of €262 mio. of additional value creation in gastronomy and retail in Europe. The induced employment amounts to 14,570 individuals. Both figures apply for Europe as a whole[2].

1 As there is no income protection insurance for such mishaps and the operating costs continue to be incurred, the losses have to be absorbed by the shipping companies alone.

2 Source: CCNR . The method employed is based on relationships within the system of national accounts, in particular on the relationship between value added tax statistics, value creation per sector of the economy and the input ratio per sector of the economy.

Part 3:

Modal split position of inland navigation

Preliminary remark on methodology

The proportion of the total transport performance of all

land transport modes accounted for by the transport performance generated by inland waterways is referred to as inland navigation's modal split share.

Calculating the modal split share is a challenging undertaking from a methodological standpoint. For example, the so-called territorial principle should be applied if one is to achieve the most realistic possible depiction of the market share of individual modes of transport. This means that one should only look at the transport performance that occurs on a country's territory. The transport performance accounted for by domestic transport companies in other countries is not therefore to be included. Conversely, however, cabotage, namely the domestic transport performance accounted for by foreign transport companies, is to be taken into account.

It is possible to apply this territorial principle for inland navigation and for rail transport, and this is indeed achieved and complied with in the case of the modal split data published by Eurostat. For road freight traffic, on the other hand, full implementation of the territorial principle is precluded owing to problems in EU member states in capturing the transport performance of foreign HGVs. In isolated cases therefore a slight underestimate or slight overestimate of inland navigation's modal split share may arise. The modal split figures documented here are therefore to be seen subject to this limitation.

3.1 Modal split position by country in Europe

- The Netherlands are the country with the highest transport volume, the second highest transport performance and the highest modal split share in the transport of freight on inland waterways in Europe. Moreover, market share increased yet further in recent years. It increased from 31.6 % in 2003 to almost 38.7% in 2012.

  Market share in the hinterland of the Port of Rotterdam is set to rise further in future. To this end, as in Antwerp, logistic projects are in progress that are intended to result in more efficient, faster (shorter waiting times at the container terminals) and cheaper handling of inland container vessels at the terminals[1].

- Germany is the country with the second highest transport volume and highest transport performance. The waterways' market share, however, is lower than in either of the neighbouring countries to the north-west, the Netherlands and Belgium. This is attributable on the one hand to factors to do with the natural environment as there is no dense network of waterways on an equivalent scale to that in the Netherlands and Belgium.

  The waterways' modal split share had been in modest decline since the beginning of the last decade. This decline is attributable on the one hand to structural effects. A further reason is the ongoing inadequate integration of the waterways into the logistic chain on the container market[2].

- In Belgium the waterways' market share increased from approximately 15 % in 2008 to around 25 % in 2012, according to Eurostat figures. The conditions for the waterways taking an increasing market share are very favourable. This is attributable on the one hand to natural geographical advantages, such as the country's location at the heart of the dense Western European waterway network. These are complemented by waterway-friendly initiatives. In recent years, these have emanated both from the public sector and from the country's major seaports (especially Antwerp). The public sector has supported a modal shift by means of targeted subsidies, which are proving to be very successful (quay wall programme).

  The seaport of Antwerp, together with the Dutch seaport of Rotterdam, is striving to boost riverside hinterland traffic and to achieve this goal is setting in train logistic efficiency measures with regard to the handling of inland waterways vessels in the port terminals. These measures aim to make container inland vessel transshipments more efficient, cheaper and faster[3].

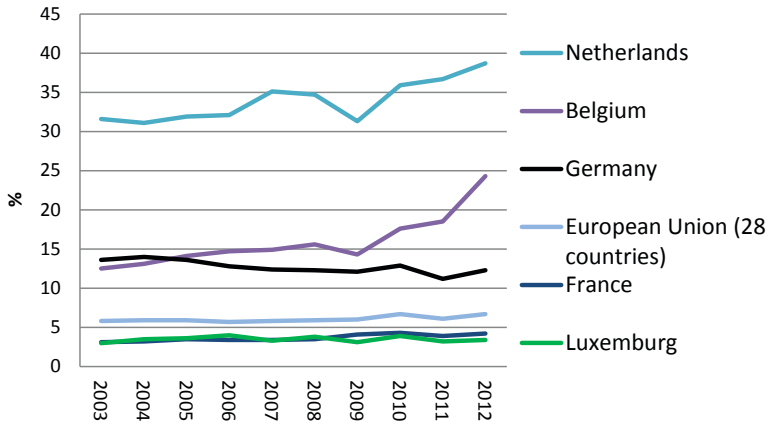
1 An important project in this regard is the Nextlogic project, which envisages the systematic recording of inland container vessel movement data and, building on that, a bundling and scheduling approach to the handling of inland waterways vessels. See: http://www.nextlogic.nl/uk/

2 Cf. CCNR report (2013): Analyse und Bewertung der strukturellen Tendenzen auf dem Binnenschiff-fahrtsmarkt; http://www.ccr-zkr.org/files/documents/ompublicationssp/eco12_15de_rev2.pdf

3 2013 saw the conclusion of the "Barge Traffic System" project in Antwerp, comprising a central monitoring and control unit for inland waterway vessel traffic in the port. This system is intended to reduce transit times for inland waterway vessels in the port. Cf: Port of Antwerp (2013), Annual Report 2013.

- In France the waterways' market share has managed a modest increase. From 3.1 % in 2003 the share has risen relatively continuously to 4.2 % in 2012. In Luxembourg the market share has fluctuated between 3 and 4 % in recent years.

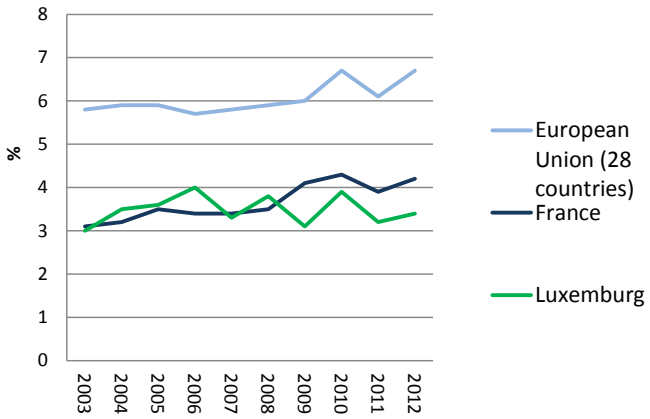
Figure 31: Modal split share of inland navigation in the Rhine region and in the EU-28 ∗



Source: Eurostat
∗ based on transport performance (tkm)

Because the figures for France and Luxembourg are markedly lower than for the other countries of Western Europe, a separate graph will be used to highlight developments in France and Luxembourg.

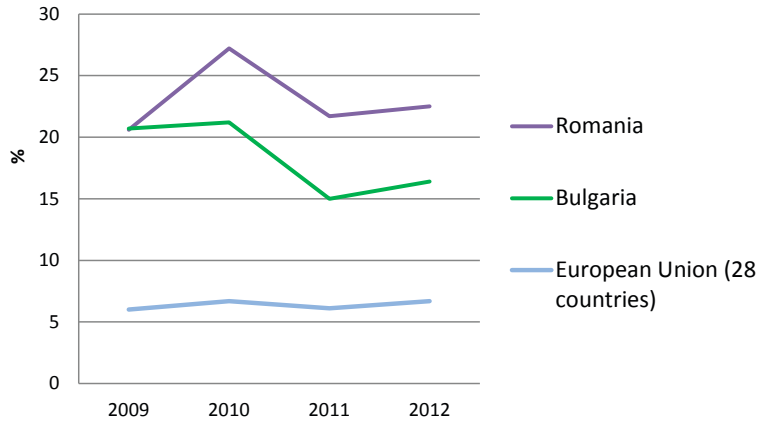
Figure 32: Modal split share of inland navigation in France and Luxembourg



Source: Eurostat

In the case of the Danube countries a distinction needs to be made from a regional perspective between the Upper Danube, the Middle Danube and the Lower Danube. In general terms one can say that the waterways' market share is highest on the Lower Danube (Romania, Bulgaria).

Figure 33 : Modal split share of inland navigation in the Lower Danube region and in the EU-28

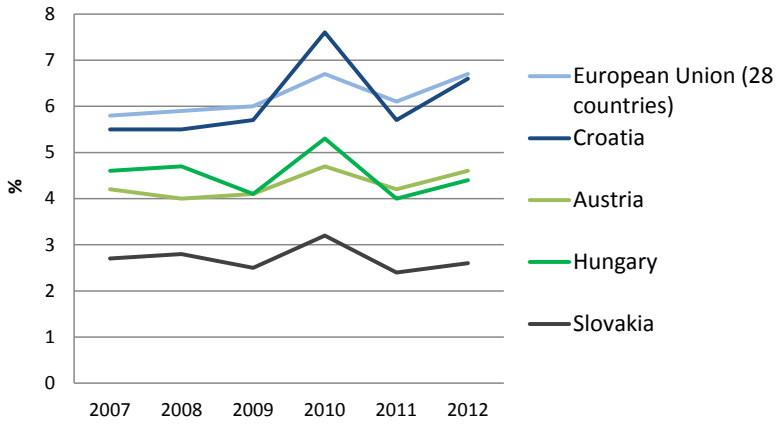


Source: Eurostat

The evolution in the modal split share of the waterways in the Middle and Lower Danube regions in recent years has been essentially synchronous – synchronous both between individual countries and relative to inland navigation's EU-wide modal split share.

Overall one can observe a relatively constant market share trajectory for Hungary and Slovakia. A slight upward tendency is apparent in Austria and Croatia.

Figure 34 : Modal split share of inland navigation in the Upper and Middle Danube regions and in the EU-28



Source: Eurostat

The waterways have a very small modal split share in the remaining European countries where transport by inland waterway vessel is significant (Poland, the Czech Republic, Italy, Great Britain). According to Eurostat figures, this share was relatively constant at 0.1 % in the past approximately ten years.

3.2 Modal split position by goods category

Steel industry

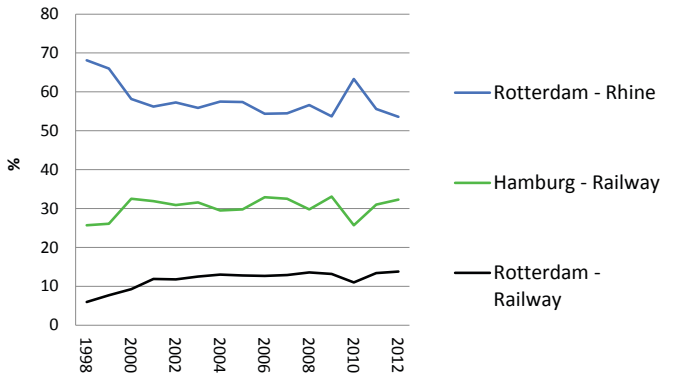
Much of the European steel industry is on river courses such as the Rhine, the Moselle, the Saar and the Danube. The bulk of the German, French and Luxembourgish steel industry is located on the first three rivers mentioned. These three countries together produced around 60 mio. t of steel in 2013, representing 36 % of total European steel production. 42.6 mio. t are accounted for by the German steel industry, primarily located on the Rhine and Saar and with a 25 % share of European steel production.

Other leading European steel producing countries are Italy, Spain and Great Britain (total combined share of European steel production of 30 %). In these countries, however, the inland waterways are virtually unused for ore and steel logistics[1].

It is in the German steel industry's logistics, in the transport of ore and coal, namely the consumption of raw materials,

that inland navigation achieves the highest modal split shares. As the following figure illustrates, the navigation of the Rhine's share of hinterland ore traffic is currently 54 %. Over a period of years, since 1998, this share has remained relatively constant.

Figure 35: The share of German seaward imports of iron and manganese ores accounted for by the seaports and various modes of transport (in %)



Source: Statistical Yearbook of the Steel Industry 2013/2014: published by WV Stahl und Stahlinstitut VDEh (Steel association and Steel Institute)

The share of rail transport via the Rhine axis has increased marginally since 2010 and is currently at 14 %. The increase can be explained by the development of the "Betuwelijn" rail freight line between Rotterdam and the Ruhr district.

As German steel production is partly located in Northern Germany, the seaport of Hamburg, in conjunction with rail transport in the hinterland, has a major share of total ore imports (currently 32 %).

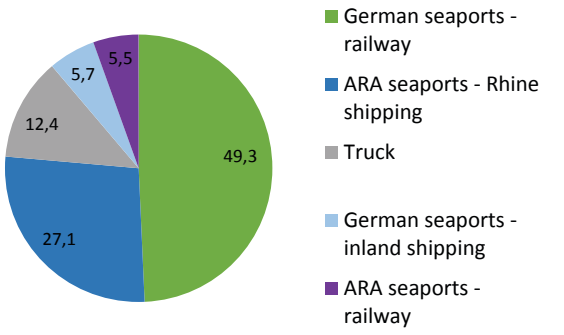
In the hinterland, the navigation of the Rhine accounts for approximately 27 % of the export traffic of steel products and metals bound for overseas. A further 6 % of steel products are exported via the North German inland waterway network and the seaport of Hamburg. That puts the waterways' total share when it comes to exports at over 30 % in the hinterland. However, as the following figure illustrates, it is less than the share accounted for by rail transport via the export route Hamburg and Bremen/Bremerhaven.

More recently, since 2010, rail transport and inland navigation have gained market share when it comes to metal exports. Road freight transport has suffered losses.

1 In the case of Spain, this is down to natural geographical reasons, owing to the lack of inland waterways for freight transport. In Italy and Great Britain, the state of the waterway infrastructure does not currently permit the carriage of large quantities of ores or metals via the waterways.

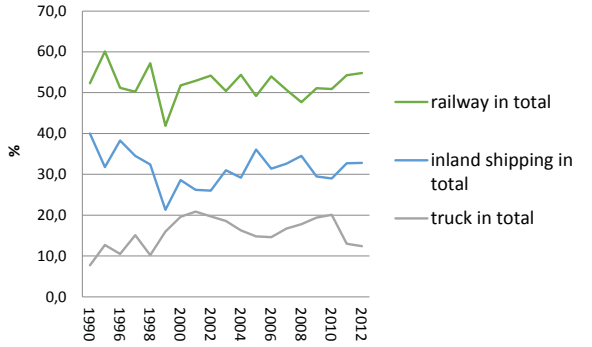
Inland navigation has also managed to increase its modal split share from 20 % to more than 30 % since the end of the 1990s.

Figure 36: The share of German seaward exports of pig iron and flat steel products accounted for by the seaports' and various modes of transport (in %)



Source: Statistical Yearbook of the Steel Industry 2013/2014: published by WV Stahl und Stahlinstitut VDEh (Steel association and Steel Institute)

Figure 37: Share of seaward exports of pig iron and steel products from Germany accounted for by the various modes of transport (in %)



Source: Statistical Yearbook of the Steel Industry 2013/2014: published by WV Stahl und Stahlinstitut VDEh (Steel association and Steel Institute)

Chemical industry

The Rhine region plays a very important role in Europe as a production location for chemical products. The chemical industry pulls in crude oil and mineral oil industry finished products, such as naphtha, as raw materials and processes them into chemical products. Inland navigation enjoys a higher market share of the inbound logistics of the chemical industry than it does of the outbound logistics. This is apparent from the example of the chemical cluster in the Rhine/Main region.

The chemical industry in the Rhine/Main region around Mannheim/Ludwigshafen makes extensive use of the waterways for its logistical activities. For example, inland navigation's modal split share in the chemical locations on the Rhine is approximately 40 %[1].

This overall 40 % modal split share can be broken down further. At more than 50 %, the share of inbound logistics is disproportionately high. This is driven by deliveries of chemical raw materials such as naphtha from refineries to chemical plants. These are very frequently by inland waterway vessel. When it comes to outbound logistics, almost half the flow of goods is accounted for by HGV[2]. In the hinterland of the Port of Rotterdam as well, the inland waterways' modal split share for chemical products is extremely high at approximately 76 %[3].

1 Source: BASF – Landeshafen Nord – Umschlagplatz von großer Bedeutung (BASF – Landeshafen Nord – Important transshipment location)

2 Source: Lecture "Intermodal transport movements @ BASF" at the conference "Does the future belong on rail? ", 21.8.2012 in Padborg / Denmark

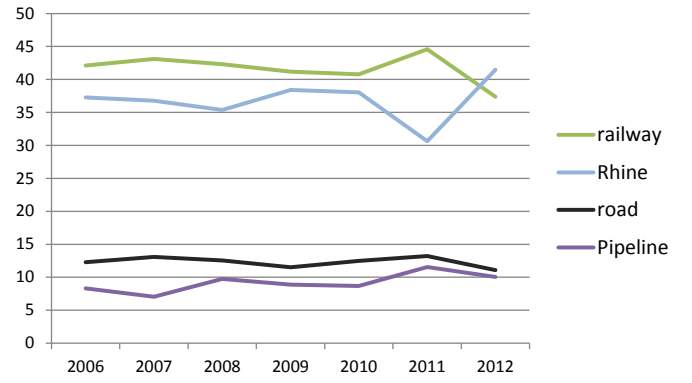
3 Source: Port of Rotterdam (2006), Facts and Figures on Rotterdam's Oil and Chemical Industry, p. 31.

Mineral oil industry

Western Europe is home to large-scale crude oil refining capacity. Rotterdam, Antwerp, Cologne, the Ruhr district and the Upper Rhine all feature here. The Port of Rotterdam comprises a cluster of five refineries, including Europe's two largest and most efficient refineries[1]. The total annual processing capacity of Rotterdam's refineries is around 58 mio. t.[2]

If one looks at the modal split from the perspective of the producers of mineral oil products, namely the refineries, it will be noted that inland navigation plays an important role in the shipping of finished products (fuels such as diesel, petrol, aviation fuel, heating oil). In Shell's two Cologne refineries, 38 % of finished products are shipped by vessel, 23 % by HGV, 1 % by rail and 33 % by pipeline. In inbound logistics it is the pipeline or seagoing vessel (in the case of coastal locations) that accounts for the bulk of crude oil deliveries to refineries.

Figure 38: Modal split for Swiss imports of mineral oil products



Source: CCNR calculations based on Swiss Crude Oil Association data (various annual reports)

One can also look at the modal split in the case of mineral oil products from the customers' perspective. For example, Switzerland obtains approximately two thirds of its total mineral oil product requirements from abroad.[3] Rail and Rhine navigation together have a modal split share of approximately 80 %. The waterways still have spare capacity. This was apparent in 2012 when they were able to make up for the two refineries' lost production. This year saw correspondingly higher mineral oil imports transported on the Rhine to Basel. The decline of 2011 was attributable to a period of low water.

Agricultural sector

Inland navigation accounts for high market shares in the transport of agricultural and forestry products, especially for grain and sugar beet. For example, its share of these transport movements in Germany is approximately 24 % and in France 10 %. Germany exhibited an increase in recent years[4].

A goods category that is closely related to agricultural and forestry products is foodstuffs and fodder.

1 This is also down to the optimal local conditions, such as the seaward access to crude oil.

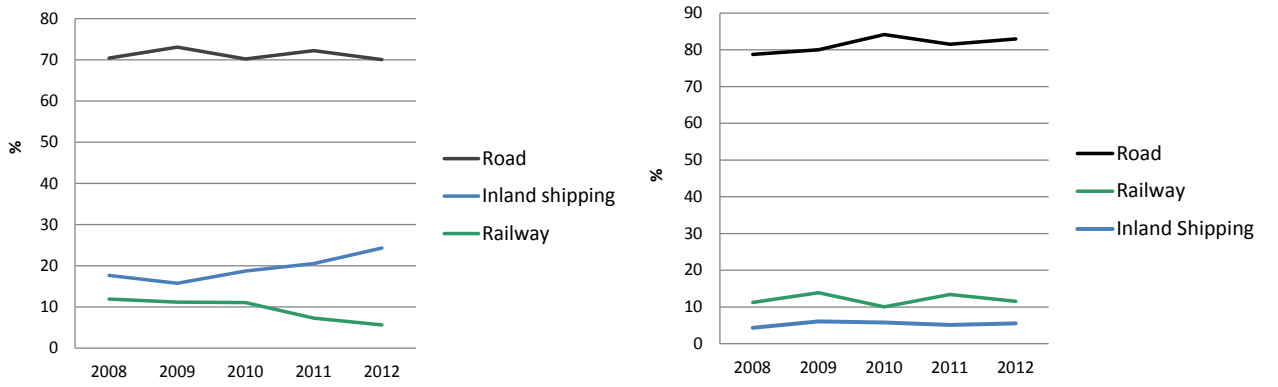
2 Source: Port of Rotterdam (2006), Facts and Figures on Rotterdam's Oil and Chemical Industry, p. 11.

3 Sources for information on Switzerland: own calculations based on data from the Swiss crude oil association, various annual reports. And: University of St. Gallen, logistics market study Switzerland.

4 A caveat here is that road freight data no longer include foreign vehicles' transport performance.

These are not just foodstuffs for private consumption but also animal and plant oils and fats as well as oilseeds, used for numerous purposes (food production, use as fodder for livestock, production of alternative fuels, and production of industrial base chemicals).

Figure 39: Modal split in the transport of agricultural and forestry products in Germany (left) and France (right) ∗



Source: CCNR calculation based on data from destatis, Kraftfahrt-Bundesamt, the Ministère de l'Ecologie, du Développement durable et de l'Energie ∗ based on tonne-kilometres. Foreign vehicles are not included in road freight transport.

Inland navigation carries large quantities of foodstuffs and oilseeds. But to date it has had a very small share of the transport market for foodstuffs for private consumption. In future, however, this could change given the urban logistics projects, such as have recently been launched, in Paris for example (deliveries to a department store chain using container vessels on the Seine and Marne). For the time being, however, the HGV accounts for far and away the biggest market shares. In Germany therefore the HGV has around a 90 % share of the carriage of all staple and semi-luxury foods, beverages, tobacco and fodder. Inland navigation accounts for approximately 7-8 %, rail for 2-3 %[1].

In Germany, the waterways account for a modal split share of only around 3 % in the transport of plant and machinery, namely goods that lend themselves to containerisation[2]. Its is this goods segment, however, that is exhibiting the strongest growth rates, in which the inland navigation industry has only been able to participate to a relatively limited extent. This last-mentioned point therefore concerns structural effects, namely shifts in individual goods segments' shares of the total volume.

1 Calculation based on the transport performance of inland waterways vessels, rail and domestic HGVs.

2 See the study by the Federal Office for Goods Transport.

Part 4:

Development in transport capacity

4.1 Fleet

Dry goods shipping sector

Currently there are a total of approximately 8,000 dry goods vessel units in Western Europe (Netherlands, Germany, Belgium, France, Switzerland and Luxembourg). Of these approximately 66 %, namely two thirds, are accounted for by units of less than 1,500 t, nowadays designated as small vessels. This segment is around 80 % in France and Germany, while it is significantly lower in Belgium with 63 % and the Netherlands with 53 %.

Between 2005 and 2012 there was a slight numerical decline in the fleet (-5 %) but a slight increase in total tonnage (+5 %). This was the outcome of the decommissioning of small ships (< 1,500 t) and the construction of new units. Consequently, average tonnage has increased by almost 11 %, to a figure of around 1,100 t.

- The biggest reduction in vessel numbers was in 2009 (-1.1 %), 2010 (-1.7 %) and 2012 (-2.2 %).
- The biggest increase in tonnage was seen between 2008 and 2009 (+3.8 %) because of the large number of new vessel orders in the wake of the very good economic situation in 2008 (before the outbreak of the crisis in autumn 2008).

Figure 40: Number of dry goods vessel units in the Western European inland navigation industry∗

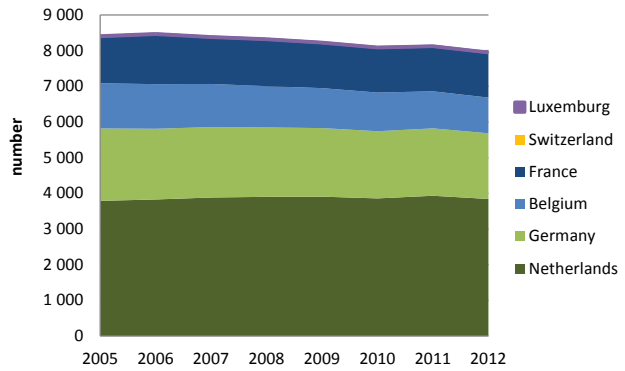
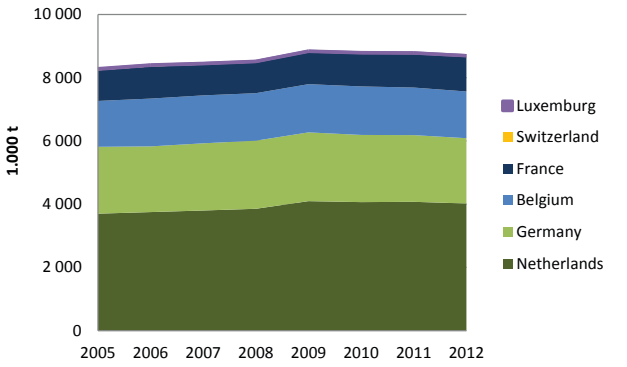


Figure 41: Freight capacity of dry goods vessel units in the Western European inland navigation industry



Sources: Switzerland: Swiss Rhine ports;Belgium: SPF Mobilité et Transports; France: French Ministry of Transport; Germany: Central Inland Waterway Vessel Fleet File at WSD South-West; Luxembourg: Ministère des Transports/Service de la Navigation; Netherlands: Centraal Bureau voor de Statistik. ∗ excluding tugs and pusher vessels.

Over time there has been scarcely any movement in individual countries' shares since 2008. The Netherlands marginally increased their share, the German fleet's share has fallen slightly.

Table 15: Western European countries' shares of the dry goods shipping fleet in Western Europe.

Country	% share based on number of vessels	% share based on tonnage
Netherlands	48,3	46,2
Germany	23,1	23,7
France	15,6	12,6
Belgium	12,6	17,0
Switzerland	0,2	0,4
Luxembourg	0,1	0,07

Source: CCNR calculation based on national sources

The following figure depicts the distribution of the
Western European dry shipping fleet by the number of vessels per size category. Of the approximately 8,000 units (motor cargo vessels, barges) approximately half the units have a freight capacity of no more than 1,000 t. The numbers of this size category in the part ten years, however, have been on the decline[1].

1 In France there was a decline from 1,613 to 950 vessels in the period from 2003 to 2013. The corresponding figures for Belgium in the same period are a reduction from 860 to 496. In Germany and the Netherlands as well, there was a decline in this size category.

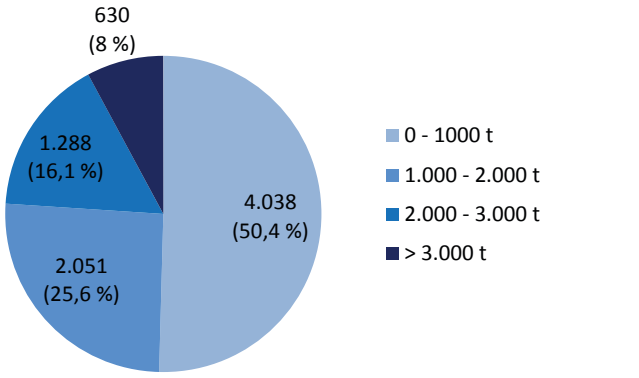
In the French fleet, the proportion of units of less than 1,000 t is the highest in Western Europe. They include numerous vessels with a cargo volume of less than 500 t (péniches or Freycinet). In 2012 this represented approximately 500 vessels. Péniches thus account for approximately half of the 1,000 French vessels with a capacity of less than 1,000 t. In 2003, however, there was still twice the number of péniches and the total number of vessels of less than 1,000 t transport capacity was 1,600.

Whereas approximately half the dry goods vessels in Western Europe have a maximum freight capacity of 1,000 t, the total tonnage of this size category accounts for only 20.7 % of the total tonnage of the Western European dry shipping fleet. This is apparent in the following graph. It also shows the corresponding shares of the other size categories for Western Europe.

This structure depicts the overall distribution for Western Europe. It is an average value derived from the sometimes very different structures in the individual countries.

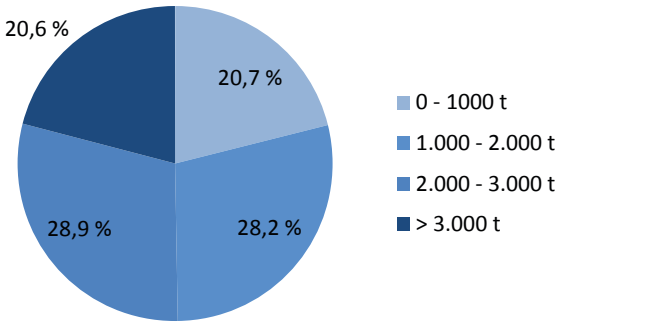
The following four figures depict the structural change over time. They feature the tonnage split by size category within the relevant total fleet tonnage in the Western European countries. The graphs for Belgium and France in particular illustrate the declining proportion of small vessels. This is apparent from the declining percentage shares accounted for by fleet segments 0 to 1,000 t and 1,000 to 2,000 t. In the case of France, the decline began mainly from 2009 onward, which points to the conclusion that the phasing out of small ships was accelerated in the course of the economic crisis.

*Figure 42: Number of vessels in the dry shipping fleet in Western Europe by tonnage size categories **



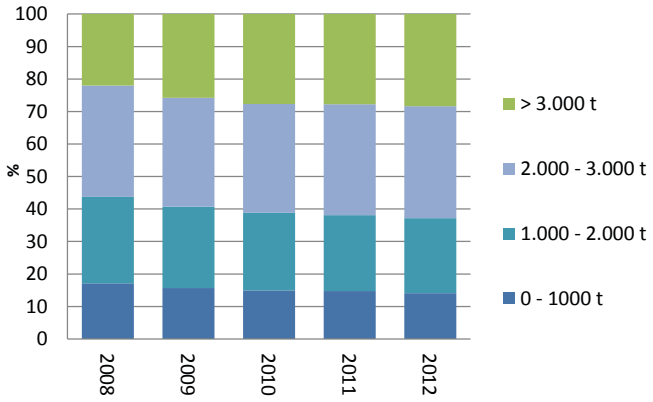
Source: CCNR calculation.
**The numbers quoted is the absolute number of vessels as well as the percentage shares of this size class in brackets*

Figure 43: Percentage shares of tonnage by size category in the Western European dry shipping fleet.



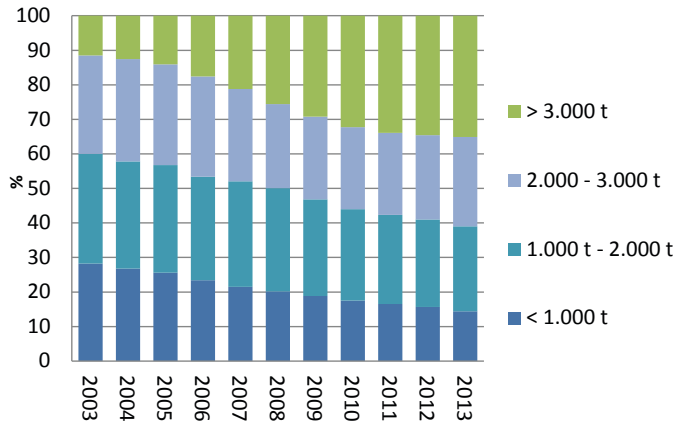
Source: CCNR calculation

Figure 44: Distribution of the Dutch fleet (dry shipping) by tonnage size categories



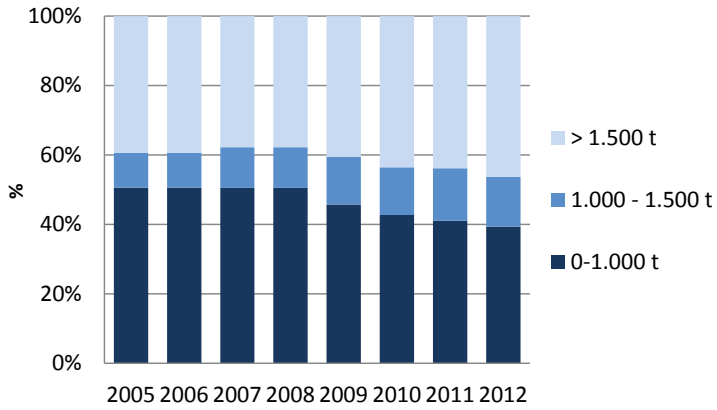
Source: CCNR calculation based on Centraal Bureau voor de Statistiek data

*Figure 45: Distribution of the Belgian fleet (dry shipping) by tonnage size categories **



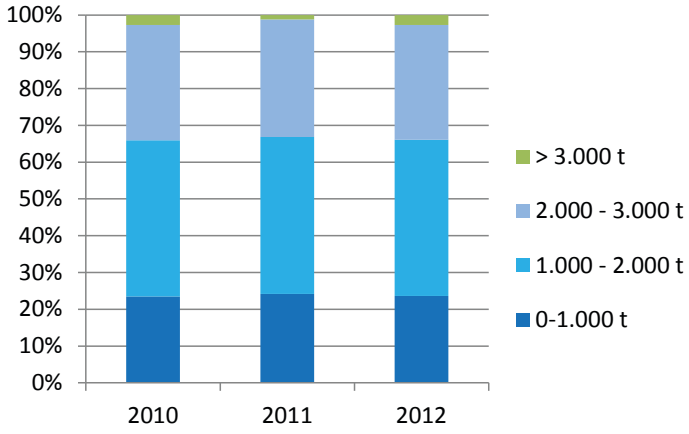
Source: CCNR calculation employing data from the ITB / SPF Mobilité et Transports
** based on freight capacity*

Figure 46: Distribution of the French fleet (dry shipping) by tonnage size categories



Source: CCNR calculation based on French Ministry of Transport data

Figure 47: Distribution of the German fleet (dry shipping) by tonnage size categories



Source: CCNR calculation based on data from the Central Inland Waterway Vessel Fleet File at WSD South-West.

Tanker shipping

In the Western European countries of the Netherlands, Germany, France, Belgium, Switzerland and Luxembourg, in 2012 there were approximately 1,650 tankers registered with a tonnage of almost 3.2 mio. t. Here again approximately half the total by tonnage as well as by number of vessels is accounted for by the Dutch fleet.

Table 16 : Western European countries' shares of the tanker fleet in Western Europe

Country	% share based on number of vessels	% share based on tonnage
Netherlands	51,7	55,5
Germany	26,2	23,4
Belgium	12,6	11,3
Switzerland	3,4	5,0
France	5,0	3,9
Luxembourg	1,1	1,0

Source: CCNR calculation based on the sources identified beneath the respective figures.

In terms of the number of units the period 2005 to 2012 saw growth of almost 9 %; freight capacity on the other hand increased by 50 %. Owing to the investment pouring into double hull ships between 2005 and 2012, average transport capacity increased by 38 %, to around 1,920 t in 2012.

Figure 48: Number of tanker units in the Western European inland navigation industry

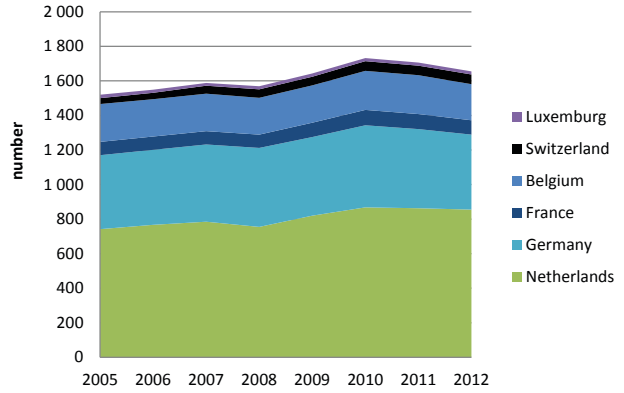
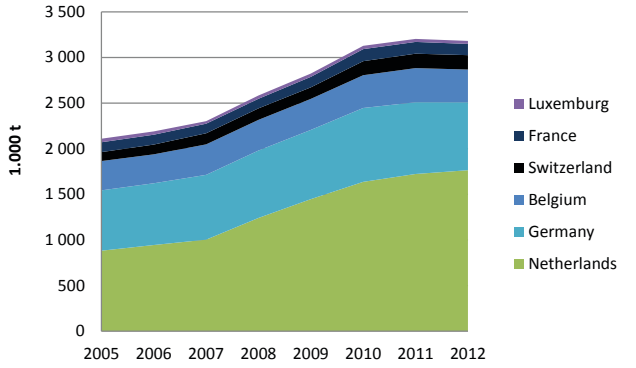


Figure 49: Tanker freight capacity in the Western European inland navigation industry

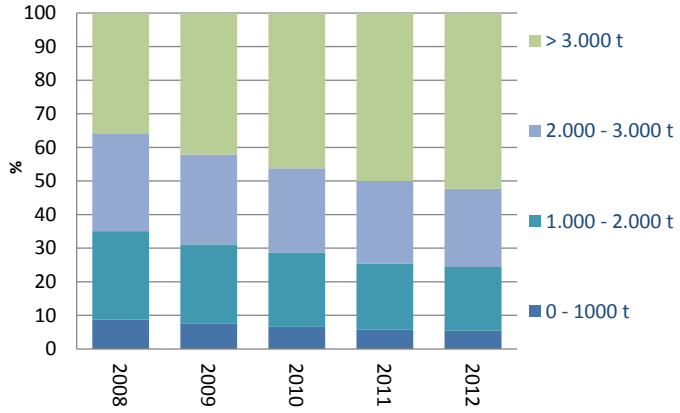


Sources: Switzerland: Swiss Rhine ports;
Belgium: ITB/ SPF Mobilité et Transports;
France: French Ministry of Transport;
Luxembourg: Ministère des Transports/Service de la Navigation;
Germany: Central Inland Waterway Vessel Fleet File at WSD South-West;
Netherlands: Centraal Bureau voor de Statistik

Size category split in the tanker sector

The investment boom in the European tanker sector was primarily evident in the Netherlands and Belgium. The tonnage accounted for by vessels with a cargo volume greater than 3,000 t already exceeds half the total tonnage of the Dutch tanker fleet (see following figure).

*Figure 50: Distribution of the Dutch (tanker) fleet by tonnage size categories**

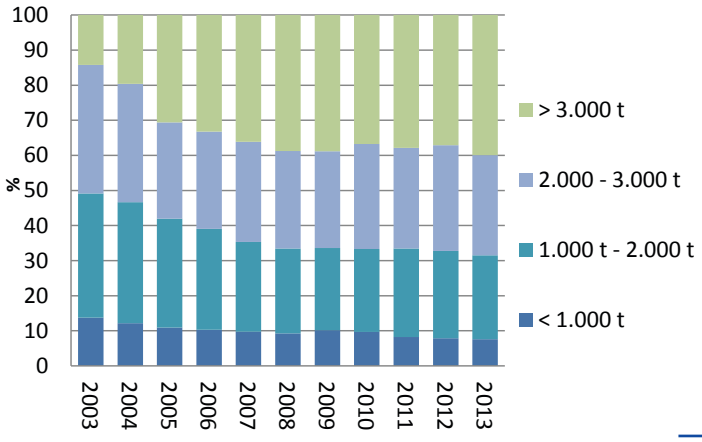


Source: CCNR calculation employing data from the Centraal Bureau voor de Statistiek
** based on freight capacity*

The distribution of the Belgian tanker fleet strongly resembles that of the Netherlands. Here the tonnage category > 3,000 t accounts for around a 40 % share. When one looks at the distribution for Belgium, the structural transformation, namely the increase in the proportion of the size category > 3,000 t for the period 2003–2008 is clearly apparent.

Since then, however, this structural transformation has slowed significantly, which can be explained in terms of the decline in the rate of construction of new double hull vessels.

*Figure 51: Distribution of the Belgian (tanker) fleet by tonnage size categories**



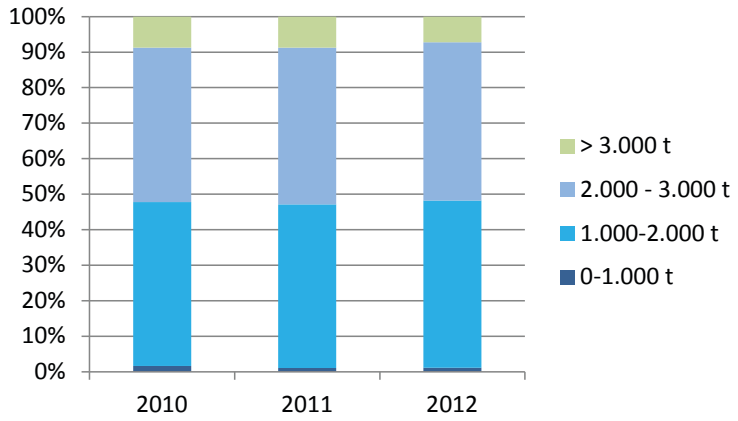
Source: CCNR calculation employing data from the ITB / SPF Mobilité et Transports
** based on freight capacity*

The share of the tonnage category (>3,000 t) in the German tanker fleet is almost 10 %.

What emerges from the German tanker fleet statistics is that approximately 50 % of the total of 424 German-flagged tankers feature a double hull, compared with the Western European average of 75 %.

Together with the higher average age of the German tankers, this explains the differences in size category structure as evident from the comparison of the graphs above.

Figure 52: Distribution of the German (tanker) fleet by tonnage size categories∗



Source: CCNR calculation based on WSD South West data.
∗ based on freight capacity

Fleets in the Danube region

The Danube countries' fleets differ from the Western European fleet both quantitatively and structurally. The quantitative or numerical differences are readily apparent from the following table. There are significantly fewer motor cargo vessels in the Danube region than in the Rhine region and this discrepancy is even more marked for tankers than it is for dry shipping.

The number of tugs and pusher vessels on the other hand is relatively high, which is to do with the fact that approximately 90 % of all transport movements on the Danube are with convoys. In 2012 the Danube countries' fleets comprised 412 pusher vessels and 276 tugboats[1]. Most of these are accounted for by Romania, Ukraine and Serbia.

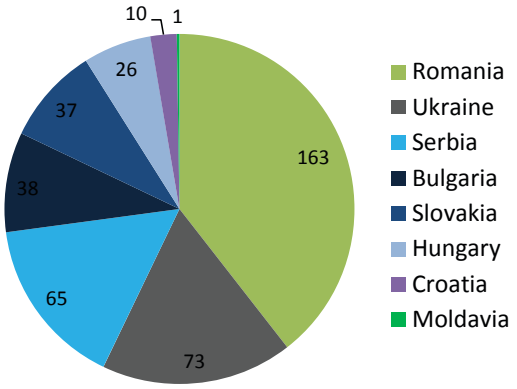
Table 17: A comparison of fleet capacities between the countries of the Rhine region and the Danube countries

	Dry shipping		Tanker shipping		Tugboats and pusher vessels
	Number Units	Tonnage (1,000 t)	Number of units	Tonnage (1,000 t)	Number of units
Rhine region	8,000	8,700	1,655	3,200	1,700
Danube region ∗	2,770	2,943	35	n.k.	700

Source: CCNR based on national sources and Danube Commission.
∗ excluding Austria n.k. = not known

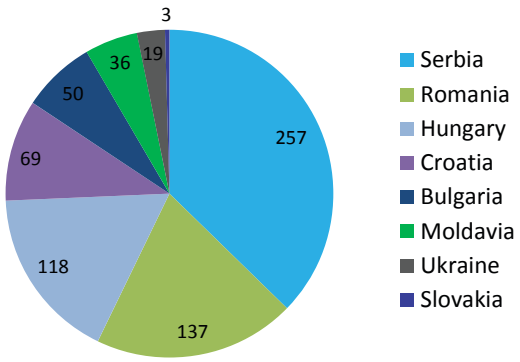
1 Owing to the absence of fleet statistics, Austrian vessels are not included here.

Figure 53: Number of pusher vessels in Danube countries ∗



Source: Danube Commission.
∗ including push-tug vessels. excluding Austria

Figure 54: Number of tugboats in Danube countries ∗



Source: Danube Commission.
∗ excluding Austria

Nowadays on the Danube, tug-navigation has become relatively scarce owing to its lower profitability relative to pushed barges.

In addition to pusher vessels and tugboats, fleets in the dry cargo sector also include 2,770 further units, mostly lighters and barges (approximately 2,400). Approximately one quarter of them are accounted for by the Romanian fleet. The lighters' and barges' average carrying capacity for all the Danube countries is 1,117 tonnes.

Table: 18: Motor vessels and lighters in Danube countries

Country	Motor vessels		Cargo barges	
	Number	Tonnage (in 1,000 t)	Number	Tonnage (in 1,000 t)
Serbia	97	88.0	262	82
Romania	90	91.6	1,051	1,418
Hungary	78	No info	300	No info
Ukraine	38	95.1	391	581
Austria	29	No info	70	No info
Bulgaria	26	31.1	161	244
Slovakia	17	19.24	116	182
Moldavia	8	15.9	26	24
Croatia	7	4.7	101	64

Source: Danube Commission and Via Donau.

The approximately 360 motor vessels in the dry cargo sector have an average carrying capacity of 1,176 tonnes, which is broadly comparable with the average for the Western European fleet.

Regarding tendencies in the fleets in the dry cargo sector, an increase in the number of motor cargo vessels, and a slight decline in the number of tugboats and pusher vessels, lighters and barges is evident for the period 2005-2012.

Excursion sector

In many European countries (with the exception of Germany and France) there are no official data on the number of day excursion vessels. For most countries, therefore, it is necessary to look for unofficial sources, including empirical studies, such as the one carried out by *Plaizier* (2011) for the Netherlands. This yields the following snapshot of the fleet and passenger accommodation.

Table 19 : Day excursion vessels in individual European countries

Country	Number of ships	Passenger accommodation
Belgium	26	3,000
Germany	820	168,500
France	421	49,100
Netherlands	300	No info
Switzerland	6	No info
Austria	56	16,300
Slovakia	15	1,421
Hungary	74	11,628

Source: CCNR based on various national sources and Plaizier (2011).
n.i. = no information available

River cruise sector

For the river cruise sector as well there are no official sources for Europe as a whole, requiring recourse to empirical work. These market research studies reveal that there are around 265 river cruise vessels operating on European rivers. A European river cruise vessel has an average passenger capacity of 143 persons and an average age of 17 years. Since 2004, vessel numbers have increase by around 60 %.

4.2 New construction and scrapping

Freight navigation

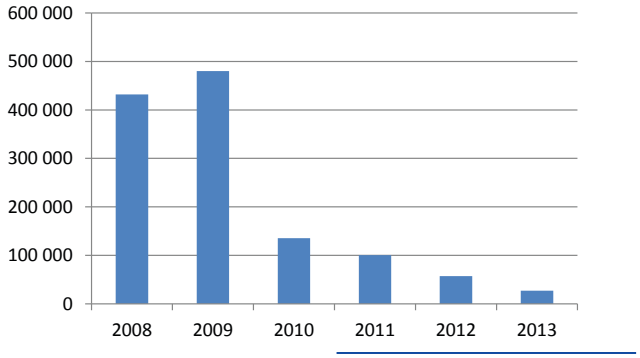
Over the past ten years and more, new construction has very clearly mirrored the economic fortunes of the inland navigation industry. Owing to the ongoing overcapacity, the only marginal increase in transport demand, and stagnating freight rates, the past four years have seen scarcely any signals for investment in new shipping capacity in the dry goods shipping sector.

This is reflected in the new construction figures. The new tonnage coming onto the market in the dry shipping sector in 2013 compared with the year before has fallen yet further, at just shy of 30,000 t for the whole of Western Europe.

Owing to the conversion of the fleet from single hull to double hull, still in progress, tanker shipping has exhibited significantly higher new construction rates than for dry shipping. In the tanker sector as well, however, new construction figures have been in steep decline since 2010, when as many as 121 new double hull tankers came onto the market.

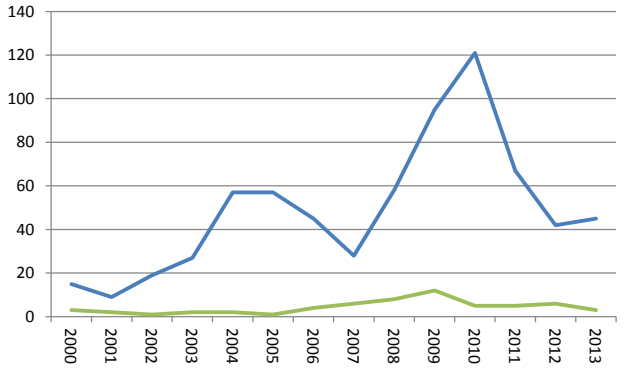
According to the European Barge Inspection System EBIS, 2013 saw 45 new double hull vessels come onto the market, broadly as many as in the year before (42). The conversion from single hull to double hull is on a very small scale, at a rate of only 3 vessels in 2013 and 6 vessels in 2012.

Figure 55: New construction tonnage in the dry shipping sector in Western Europe (in 1,000 t)



Source: IVR

Figure 56: New construction of double hull vessels and conversion from single hull to double hull ∗



Source: EBIS

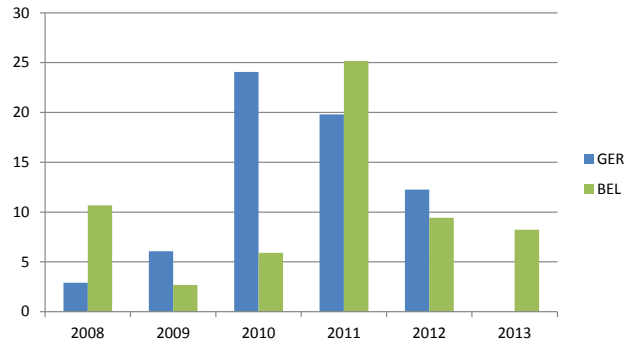
∗ Blue line: New construction of double hull vessels. Red line: conversion of single hull to double hull

Double hull vessels currently account for approximately 75 % of the Western European tanker fleet. Calculations show that the current overcapacity in tanker shipping, expressed in terms of tonnage, is higher than the remaining tonnage of single hull vessels. This demonstrates that the conversion of the fleet from single hull to double hull has given rise to over investment.

Broadly in parallel with the fall in the new construction rate there was an increase in scrapping. Numbers for Germany and Belgium show that the scrapped tonnage in these countries was approximately five times higher in 2011 than in 2008 and 2009. In 2012 and 2013 however, the scrapping rate fell again.

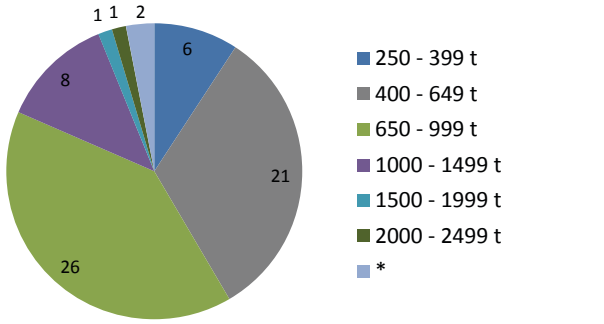
65 dry goods vessels with a tonnage of 47,812 t were scrapped in the Netherlands in 2013. 47 of these 65 vessels had a cargo volume of less than 1,000 tonnes.

Figure 57 : Scrapped tonnage in the dry cargo sector in Germany and Belgium (in 1,000 t)



Source: Zentrale Binnenschiffsbestands-Datei (Germany), Federale Overheidsdienst Mobiliteit en Vervoer (Belgium). Figures for 2013 for Germany were not yet available.

Figure 58: Number of scrappings in the Dutch dry shipping fleet in 2013



Source: PANTEIA
** not known*

15 Dutch tankers were scrapped in 2013, 14 of them motor tankers with an average tonnage of between 500 and 1,800 tonnes. The entire scrapped tonnage amounted to 16,700 t, representing 0.4 % of the current Dutch tanker tonnage.

As these figures for Germany, Belgium and the Netherlands show, scrappings represent only a very small proportion of the existing fleet. Their percentage share of the fleet is no more than 1 %.

Figures for the German fleet however point to the conclusion that the elimination of single hull vessels from the tanker fleet is not just being achieved by scrapping but primarily by means of sales abroad. These figures reveal that 10 % of the German tanker fleet was sold abroad in each of the years 2011 and 2012[1].

New river cruise vessel construction

In addition to tanker navigation, passenger navigation also experienced very high new construction rates in the river cruise segment. These have resulted in a very marked rejuvenation of the fleet in this segment. Somewhat more than half of all river cruise vessels in commission in Europe in 2013 were built between 2000 and 2012.

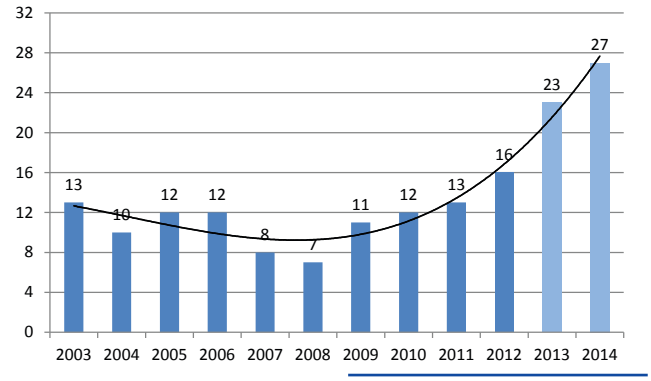
It is not easy to ascertain the precise new construction rate in this segment as there are no official sources. However the various unofficial sources agree in indicating that there was a sort of "take-off" phase in the new construction rate of river cruise vessels in Europe from the beginning of the current decade onward. The new construction rate increased continuously from this year onward, having tended to stagnate between 2005 and 2010. Based on order book information, a continued increase in the new construction rate is to be anticipated for 2013 and 2014.

1 No reliable information can be provided as to the countries for which these sales are bound.

The order books point to a continued increase in the new construction rate for 2014. Almost 30 vessels and 3,500 to 4,500 bunks are anticipated. This growth in the fleet is being fuelled first and foremost by overseas customers (USA, Australia, Canada, New Zealand). River cruises enjoy enormous appeal among this public as cultural tourism in Europe. A large proportion of current new construction activity is accounted for by Swiss-flagged vessels, explicitly designed for the English-speaking customer market.

From a Market Observation perspective, this marked expansion in capacity in the cruise sector requires a rather closer analysis of this market to discern possible indications of overcapacity.

Figure 59: New construction and new construction forecast based on river cruise sector order books



Source: SeaConsult

The first place to look for an explanation of the strong growth in the fleet in this sector's financing models. That means the ship funds. On the one hand these funds are fed by capital contributions from private investors seeking to profit from the growth in this market. The fund company also takes on loan capital. There is a relatively even balance between equity and debt, in the case of most funds being around 60 to 40 % or 50 to 50 %. The total level of the fund is typically somewhat more than the cost of building the new vessel, in order to be able to cover the fund company's fund administration and management costs.

As a rule, these funds have a term of between 12 and 15 years. At the end of the term, the vessel is sold. The achievable sales proceeds depend on the vessel's condition and situation of the river navigation market at this time. From an investor perspective, the sales proceeds are part of the investment's overall yield. That is why at the time of the emission, an investor and the fund company need, as a basic principle, to forecast how river tourism will develop over the next 12 to 15 years.

This growth concept on the supply side was matched on the demand side, and still is, by strong interest on the part not just of European (especially German) customers, but of US, British, Australian and New Zealand customers as well.

Notwithstanding this uninterrupted customer flow on the demand side, a certain slackening on the supply side is now in prospect. The reason for this is to be seen in a change of sentiment among private investors. For example, the economic crisis and decline in global maritime traffic inflicted losses on numerous ship funds in the maritime sphere, which has reduced private investors' interest in ship funds across the board. As a result, investors induced in river cruise funds the same pessimistic outlook as in maritime freight transport funds, despite them being very different markets. In addition, tax changes in Germany have contributed to the ship fund model becoming less profitable.

The bottom line of all this is that the financing mechanism in the cruise sector can be expected to take a new direction in the near future. Major German fund companies have announced that they will not be establishing any new funds for the time being but will instead be administering existing funds until they mature.

For the aforementioned reasons the new construction rate in the next few years can generally be expected to moderate. Should the new construction rate pick up again, the market can expect a degree of risk of overcapacity. Such a risk could, for example, materialise in the event of unforeseen events triggering a heightened travel warning for US tourists.

Fleet development summary

The three components of the fleet (dry goods vessels, tankers and passenger vessels) have exhibited very different trends in in Western Europe in recent years. In the dry shipping sector there was a sharp fall in the number of small units. Notwithstanding this departure of small vessels, they still account for half (units < 1,000 t) or two thirds (units > 1,500 t) of total dry goods vessel numbers in Western Europe.

Total new construction activity in 2013 halved compared with the year before and is at a level of around 30,000 t, representing approximately 0.3 % of the current dry goods shipping fleet. In recent years, and again in 2013, the tonnage that was scrapped was on a similarly small scale.

The new construction rate for tankers in 2013, as in 2012, fell yet further, such that the existing fleet has grown hardly at all for around the past two years. There continues however to be a very large overcapacity in this sector. Calculations show that overcapacity would still exist even if all the single hull vessels were eliminated. Despite that the number of vessels scrapped in recent years has been very low (around 1 % of the fleet). A somewhat higher proportion of vessels, however, has been sold abroad.

All in all, only a limited increase in freight navigation transport demand is to be anticipated in 2014 and 2015 (see Chapter 8). In this context no significant reduction in the existing overcapacity can be expected. This very much constrains the market's ability to absorb new construction. It is therefore to be anticipated (or hoped) that the new construction rate in 2014 and 2015 will remain low.

The fleets in the Danube region are, as regards freight capacity, smaller than those of the Rhine countries by a factor of 3. As regards development trends, a small reduction in the number of vessels can be observed for all types of vessel.

Passenger navigation in 2013 continued its breakneck pace of new construction and the same is to be expected in 2014 and 2015. However there are signs of an attenuation of this growth owing to a change in financing conditions.

Part 5:

Capacity utilisation of the fleet in Western Europe

5.1 Dry goods shipping

The average transport capacity utilisation in the dry cargo sector increased slightly in the year 2013 compared to 2012. This is shown in the following figure and table presenting the development between the demand and supply of IWT transport capacity in the dry cargo sector[1].

After an increase of the transport capacity utilisation in 2011 due to periods of extreme low water levels and an accident temporarily blocking parts of the Rhine, the capacity levels decreased again in 2012. It was clear that the increase in 2011 was purely incidental and not the result of structural developments in the market.

In 2013 it appears that the dry cargo sector is showing signs of structural recovery in the market. The transport demand for IWT in 2013 increased stronger than the added fleet capacity, resulting in an increase of the transport capacity utilisation. This increase has not been the result of periods of extreme low water, as the levels reached in 2013 showed normal heights similar to 2012.

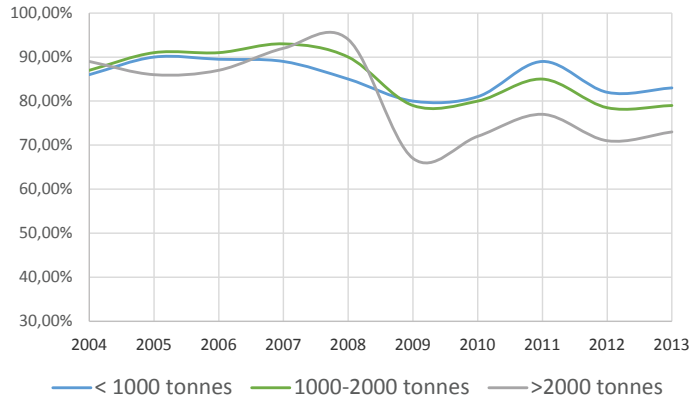
1 For more information on the methodology behind the model of the capacity utilisation in Western Europe, see Annex 1 and Annex 2 of the report "Monitoring the capacity utilisation level of the Western European fleet, Results: 2010 and 2011" by PANTEIA. Available upon request via the Central Commission for the Navigation of the Rhine (CCNR).

It is important to note that although the transport flows in the dry cargo sector are increasing, overcapacity remains an issue[1], especially in the fleet segments of the larger vessels (>2,000 tonnes). Regarding the overcapacity in the dry cargo sector in Western Europe in 2013:

- there is hardly any overcapacity in the smallest shipping category (< 1,000 tonnes).
- for ships between 1,000 and 2,000 tonnes: about 0.34 million tonnes[2]. This is around 250 ships (including pushed barges)[3].
- for ships of more than 2,000 tonnes: about 1 million tonnes[4]. This is around 350 ships (including pushed barges)[5].

Due to the fragmented IWT market structure, the IWT operators are currently not able to regulate the overcapacity themselves.

Figure 60: Transport utilisation rate of the fleet in the dry cargo sector in Western Europe ∗



Source: PANTEIA

∗ The figures presented here can differ from figures presented in previous years. The capacity monitoring model has been updated in the year 2014 based on new statistical information.

1 See also the quarterly report Transport & Logistics by ING Economisch Bureau, March 2014.

2 Due to changes in demand for transportation, there were fluctuations in overcapacity, whilst the supply remained relatively stable. The overcapacity has been calculated by taking the figure of 0.61 million tonnes (= difference between available loading tonnage and demand in 2013) less the estimated reserve capacity for ships between 1,000 and 2,000 tonnes (i.e. 0.28 million tonnes). The reserve capacity is the average difference between the available and required transport capacity reported for the years 2004 to 2008, where overcapacity was not an issue.

3 Assuming an average tonnage per dry cargo ship of 1,370 tonnes in 2013.

4 This is calculated by taking the figure of 1.44 million tonnes (= difference between available loading tonnage and demand in 2013) less the estimated reserve capacity for ships with more than 2.000 loading capacity (i.e. 0.42 million tonnes). The reserve capacity is the average difference between the available and required transport capacity reported for the years 2004 to 2008, where overcapacity was not an issue.

5 Assuming an average loading capacity per dry cargo ship of around 2,900 tonnes in 2013. As the forecasts for the evolution of the transport demand in inland shipping are highly uncertain, the estimated overcapacity cannot be split up into the two components of cyclical and structural overcapacity.

Table 20: Total required and available tonnage in the dry cargo sector in Western Europe (in million tonnes)

Demand and supply in the dry cargo sector in W-E	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Required tonnage										
- Vessels <1000 tonnes	2.23	2.19	2.07	1.99	1.86	1.73	1.71	1.85	1.67	1.66
- Vessels between 1000-2000 tonnes	2.57	2.66	2.67	2.73	2.67	2.38	2.36	2.49	2.30	2.29
- Vessels >2000 tonnes	3.27	3.29	3.51	3.93	4.11	3.40	3.74	4.05	3.74	3.92
Total required tonnage	8.06	8.14	8.24	8.65	8.64	7.50	7.81	8.38	7.70	7.88
Available loading tonnage										
- Vessels <1000 tonnes	2.58	2.45	2.31	2.24	2.18	2.16	2.11	2.09	2.04	1.99
- Vessels between 1000-2000 tonnes	2.95	2.93	2.94	2.92	2.95	3.02	2.97	2.94	2.92	2.91
- Vessels >2000 tonnes	3.68	3.82	4.04	4.27	4.40	5.06	5.22	5.26	5.28	5.36
Total available loading tonnage	9.22	9.20	9.30	9.42	9.53	10.23	10.30	10.29	10.24	10.26
Average transport utilisation rate (in %)	87%	88%	89%	92%	91%	73%	76%	81%	75%	77%

Source: PANTEIA

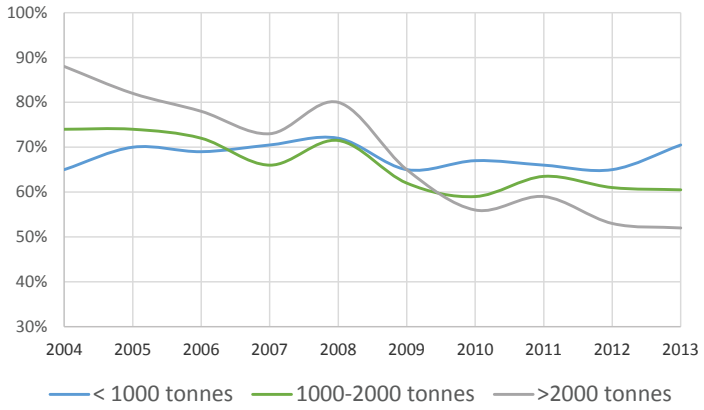
5.2 Tanker shipping

The average transport capacity utilisation in the liquid cargo sector decreased slightly in the year 2013 compared to 2012. This is shown in the following figure and table presenting the development between the demand and supply of IWT transport capacity in the liquid cargo sector. In 2013 the liquid cargo fleet capacity expanded again, while the estimated required fleet remain stable. The average transport utilization rate in the tanker shipping sector in 2013 was about 55%. Especially for vessels in the largest categories (>2000 tonnes) there is a substantial overcapacity (around 52%).

While the overcapacity in the liquid cargo sector is considered to be temporary and should be reduced significantly by the end of 2018, the phasing out process of single-hull tankers is going slower than expected and is affecting the market. The value of mono-hull tankers is gradually decreasing to very low levels and this is affecting market prices for tanker services in an undesirable way (it creates an artificial bottom price in the market whit too low "not normal" capital depreciation cost component).

It is important to note that a share of the unused capacity is not considered as overcapacity, because it is used as 'floating stock' for mineral oil products. However, milder winters affect the need for floating storage. The extent of the storage, furthermore, also depends on expectations and speculation on price developments in the oil product markets.

Figure 61: Transport utilisation rate of the fleet in the liquid cargo sector in Western Europe ∗



Source: PANTEIA

∗ The figures presented here can differ from figures presented in previous years. The capacity monitoring model has been updated in the year 2014 based on new statistical information.

Table 21: Total required and available tonnage in the liquid cargo sector in Western Europe (in million tonnes)

Demand and supply in the dry cargo sector in W-E	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Required tonnage										
- Vessels <1000 tonnes	0.13	0.13	0.13	0.13	0.13	0.11	0.11	0.10	0.10	0.10
- Vessels between 1000-2000 tonnes	0.53	0.54	0.52	0.48	0.51	0.47	0.47	0.50	0.47	0.48
- Vessels >2000 tonnes	0.87	1.05	1.08	1.04	1.15	1.09	1.08	1.21	1.11	1.11
Total required tonnage	1.53	1.72	1.73	1.64	1.79	1.67	1.65	1.82	1.69	1.69
Available loading tonnage										
- Vessels <1000 tonnes	0.21	0.19	0.19	0.18	0.18	0.17	0.17	0.16	0.15	0.14
- Vessels between 1000-2000 tonnes	0.72	0.73	0.72	0.72	0.72	0.75	0.79	0.80	0.78	0.78
- Vessels >2000 tonnes	0.99	1.28	1.38	1.42	1.44	1.64	1.93	2.05	2.11	2.14
Total available loading tonnage	1.91	2.19	2.29	2.32	2.34	2.56	2.89	3.01	3.04	3.07
Average transport utilisation rate (in %)	80%	78%	76%	71%	76%	65%	57%	60%	56%	55%

Source: PANTEIA

Part 6:

Water conditions and vessel load factor

Without doubt, the severe flooding on the Rhine in late May and early June can be cited as a special event from a hydrological standpoint. However, this event only caused the Rhine to be closed for a short period of a matter of days. In detail, the Elbe, Danube, the Main and Neckar were each closed for around two weeks. In August there was a low water phase, resulting in local restrictions for limited periods.

We will now investigate how the water levels impacted the maximum possible load factor of various vessel categories on the Rhine, the Elbe and the German section of the Danube between 2011 and 2013.

This will entail consideration of vessel categories with a maximum draught of 2.5 metres, 3 metres, 3.5 metres and 4 metres.

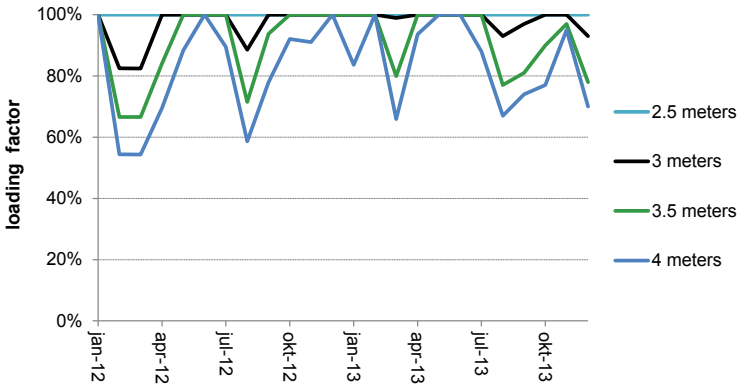
In freight navigation it is above all the available water depth that determines a vessel's possible loaded draught and thus cargo size and possible load factor. The water level data at a specific location critically underpin the calculation; however, in order to derive the loaded draught, the Equivalent Water Level[1] and target depth the Shipping Administration is endeavouring to achieve have to be included in the calculation. The next step leads to the maximum possible load factor by taking account of a safety margin under the keel and a factor for the empty draught of the vessel.

1 The Equivalent Water Level is the name given to that low water level below which the average low water level does not fall on more than 20 ice-free days a year. Its magnitude varies at different locations on the Rhine and may alter over time as a result of natural changes to the river.

The statistical basis for the calculation of the maximum possible load factor is the water level data at selected points on the Rhine, Danube and Elbe. The water level locations were selected on the strength of their characteristic importance for the conditions on individual stretches of the river.

As is evident from the following graph, Maxau on the Upper Rhine, where very favourable water levels are to be encountered on a multi-year comparison, enjoyed a relatively high load factor for all types of vessel.

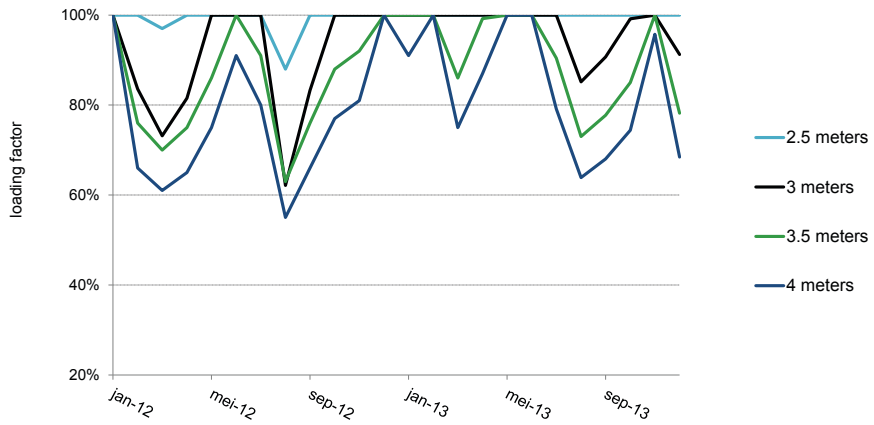
Figure 62: Impact of water levels at Maxau/Upper Rhine on the maximum load factor of different categories of vessel (draught of between 2.5 meters and 4 meters)



Source: CCNR calculation

The water level conditions in Kaub on the Central Rhine are typically lower and also more volatile than in Maxau and in Ruhrort. Following the occurrence of relatively significant low water phases in Kaub in 2011 (Autumn 2011), on the whole, water level conditions in 2012 and 2013 were more favourable, if one ignores a low water phase in spring 2013 and the flooding phase in June 2013. The flooding in June 2013 resulted in navigation being interrupted only very briefly for a matter of days.

Figure 63: Impact of water levels at Kaub/Middle Rhine on the maximum load factor of different categories of vessel (draught of between 2.5 meters and 4 meters)

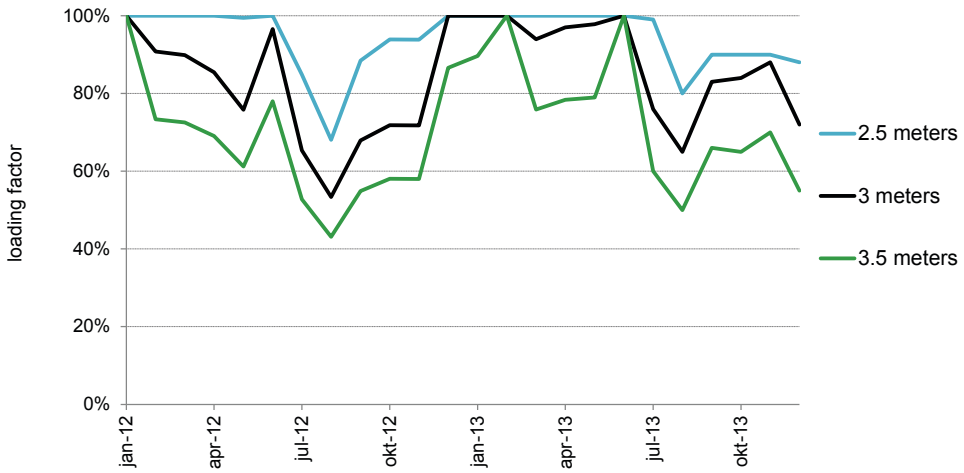


Source: CCNR calculation

On the Lower Rhine the water conditions generally permit a very high load factor throughout the year. In 2012 and 2013, vessel categories with a draught of up to 3.5 metres managed to achieve a load factor approaching 100 %. In the case of even bigger vessels, the maximum possible load factor was between 80 and 100 %.

The flooding phase occurring on the Danube towards the end of May and early July brought navigation to a standstill for around ten days. In August there was then a low water phase. During the rest of the year the maximum load factor in 2013 was similar to the previous year's level. Vessels with a loaded draught of 4 metres are not taken into consideration for the Danube.

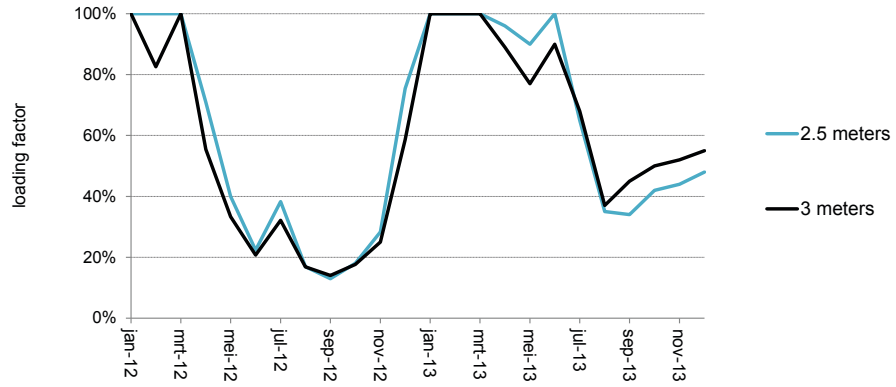
Figure 64: Impact of water levels at Hofkirchen/Danube on the maximum load factor of different categories of vessel (draught of between 2.5 meters and 3.5 meters)



Source: CCNR calculation.

The following figure shows the impact of water level data on vessel load factor on the Elbe at Magdeburg. Because of the significant restrictions on the loaded draught achievable on the Elbe, the following graph only includes vessels with a draught of up to 3 metres. Low water periods can be relatively widespread on the Elbe, as was the case in autumn 2012, for example.

Figure 65: Impact of water levels at Magdeburg/Elbe on the maximum load factor of different categories of vessel (draught of between 2.5 meters and 3 meters)



Source: CCNR

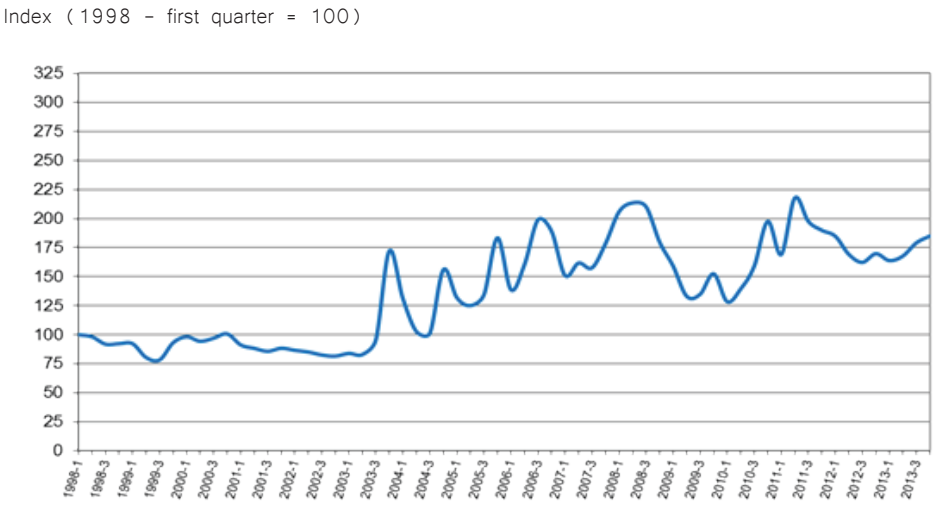
Part 7:

Freight Rates, Costs and Operating Conditions in 2013

7.1 Freight rates

The freight rates in the dry cargo shipping sector increased in 2013 compared to 2012. Under normal water levels as in 2012, the increase in freight rates is related to the growth in the transport demand of industrial and energy raw materials (especially coal).

Figure 66: Freight Rates Index in the Dry Cargo Shipping Sector on the Rhine ∗

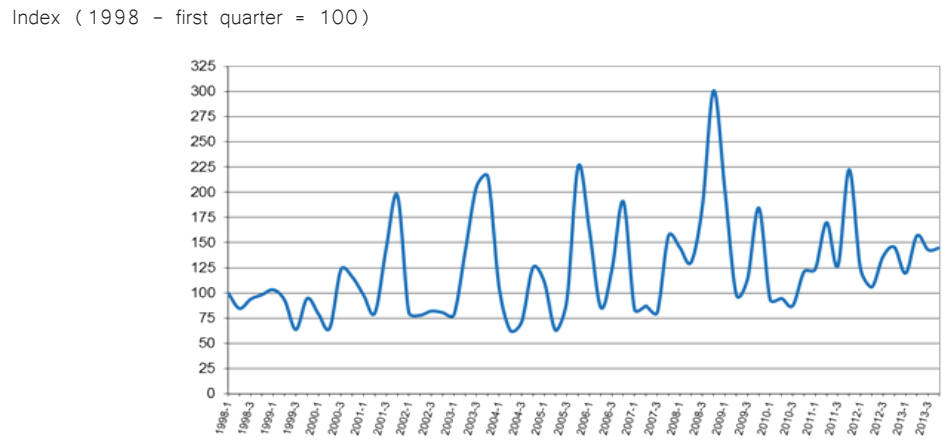


Source: PANTEIA based on Binnenschifffahrt and Vaart

∗ The development of the freight rates are not adjusted to low water surcharges (KWZ) paid for the River Rhine.

The freight rates in the liquid cargo shipping sector also increased on average in 2013 compared to 2012. However, it is important to note that especially in the last two months of 2013 and the first quarter of 2014, a sharp deterioration occurred in freight rates. Tanker shipping volumes have been significantly lower, partly explained by the milder winter compared to the one of 2012/2013.

Figure 67: Freight Rates Index in the Liquid Cargo Shipping Sector on the Rhine ∗

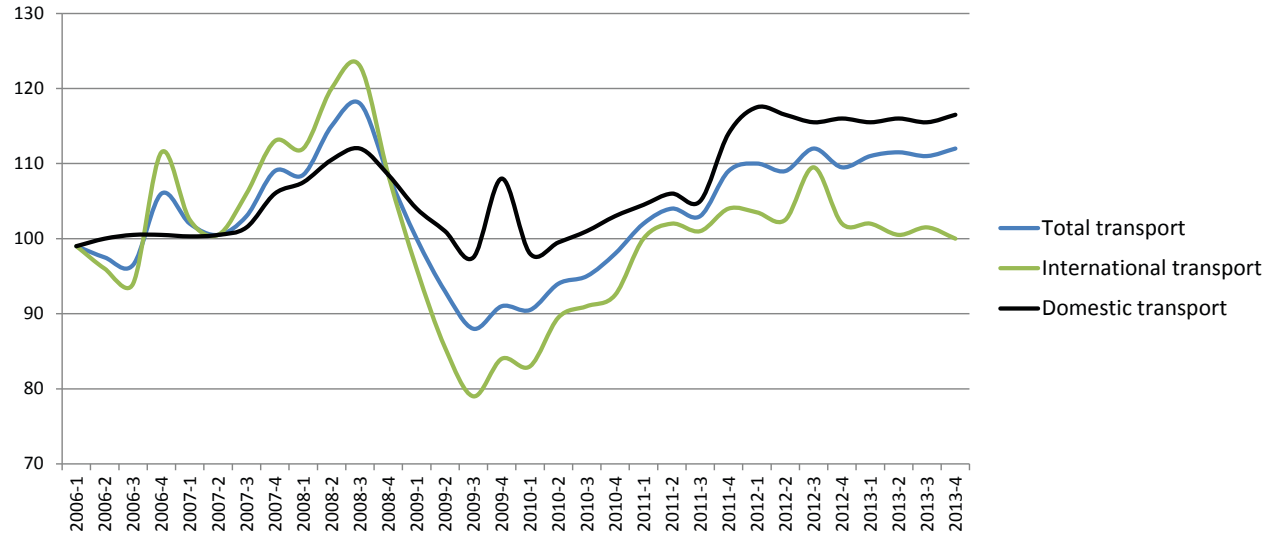


Source: PJK

∗ The development of the freight rates are not adjusted to low water surcharges (KWZ) paid for the River Rhine.

The following figure shows the development of the domestic, international and total average freight rates for the transport of goods from and to France. The freight rates for the total transport and the domestic market remained in 2013 on average the same as in 2012. On the other hand, the freight rates in the international transport decreased in 2013 with 3.6% compared to a year before.

Figure 68: Freight rate developments for the domestic and international transport of goods in France (2006=100)



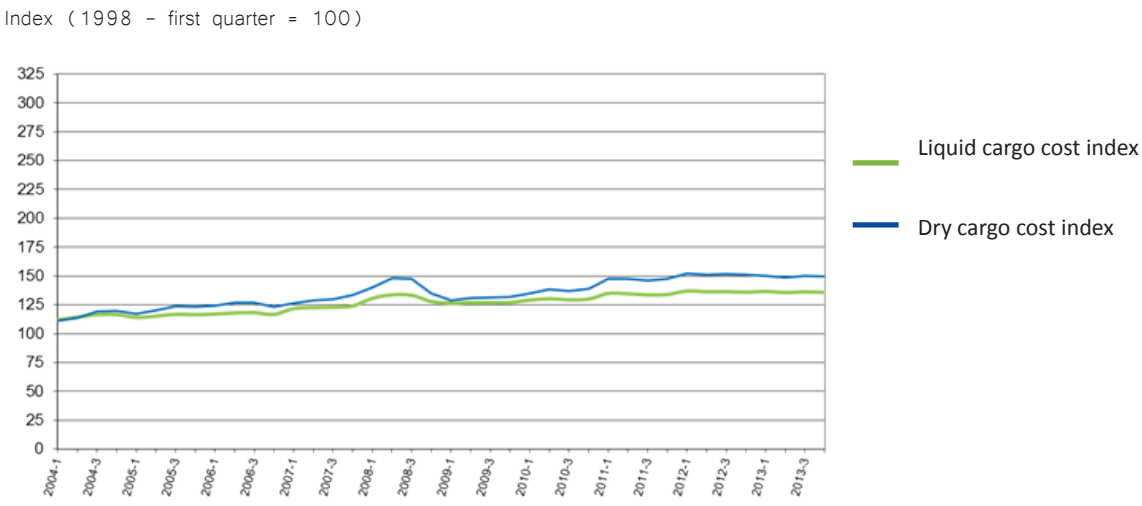
Source: Commissariat general au développement durable, Chiffres & statistiques n° 502 Mars 2014

7.2 Cost developments

The differences between the cost development of dry and liquid cargo vessels sailing on the Rhine is mainly linked to the development of the fuel and capital costs:

- the sharp increase of fuel costs during the last years has resulted in a stronger overall transport cost increase in the dry cargo sector compared to the liquid cargo market;
- the decreasing trend of the average capital costs has had a dampening effect in the overall costs for the tanker shipping sector (which is characterised by a high share of capital costs).

Figure 69: Cost development of the liquid and dry cargo shipping sector on the Rhine



Source: Panteia

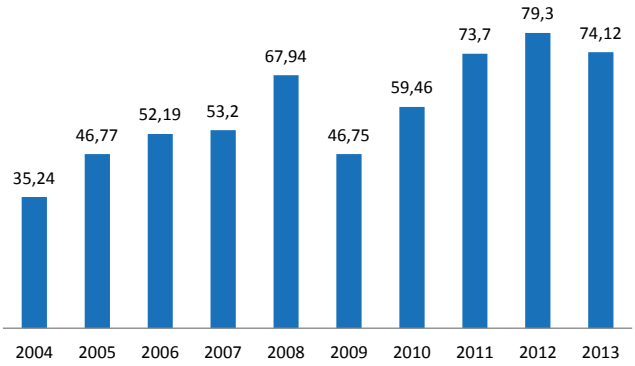
To examine these and other costs components in more detail, the following subsections provide an overview of the development of these components in IWT operations. The figures presented here are based on the cost developments seen in the Netherlands. Experts from different IWT association have indicated that, besides labour and social security cost, the cost developments seen in the Netherlands give a representative impression of the trends seen in other European countries[1]. This is especially the case given the international character of the IWT sector and the relative high share of Dutch owners/operators in the European fleet.

7.2.1 Fuel costs

The following figure presents the development of the fuel prices in the IWT sector since 2004 (excluding all taxes and disposal charges). The average fuel costs decreased in 2013 with 6.5% compared to 2012. This decrease breaks the trend seen in the previous four years. However, the average price in 2013 is still above the levels achieved between 2004 and 2011.

1 For more information see: Market Observation Report 2013 by the CCNR, PANTEIA and EC.

Figure 70: Development of the fuel prices in € per 100 litre in the IWT sector (excluding VAT, excise duty and CDNI disposal charges)

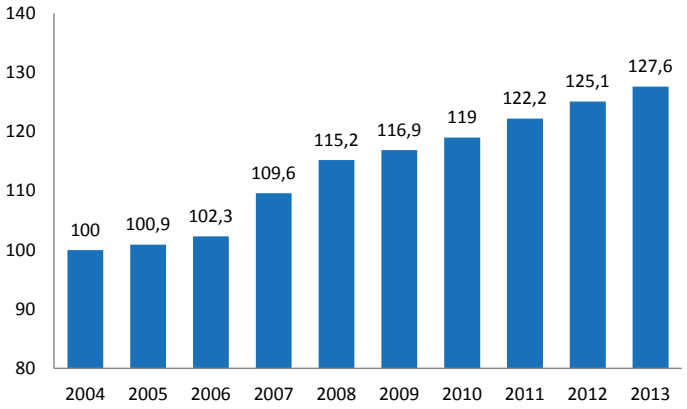


Source: CBRB Gasoliecirculaire

7.2.2 Labour costs

The following figure presents the development of the labour costs in the Dutch dry cargo sector since 2004. The labour costs in both the dry cargo as the liquid cargo increased in 2013 with 2.0%. In previous years, the labour costs in the German IWT sector showed a similar trends as in the Netherlands.

Figure 71: Development of the labour costs in the Dutch IWT dry cargo sector (2004=100)



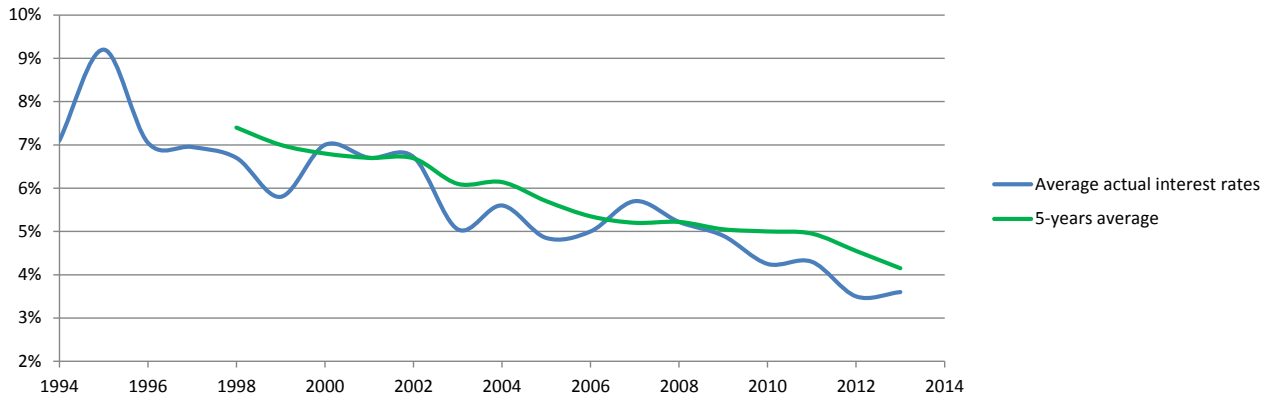
Source: PANTEIA

For other countries this might be different[1].

7.2.3 Capital costs

The development of the capital costs depends on the evolution of the depreciation and on the interest costs of loans and equity[2]. The depreciation decreased in 2013 with 3% compared to 2012. The average 5-years interest level followed the decreasing trend seen in the previous years (see following figure). This resulted in a strong decrease of the capital costs.

Figure 72: Development of the capital costs in the Dutch IWT dry and liquid cargo sector



Source: PANTEIA

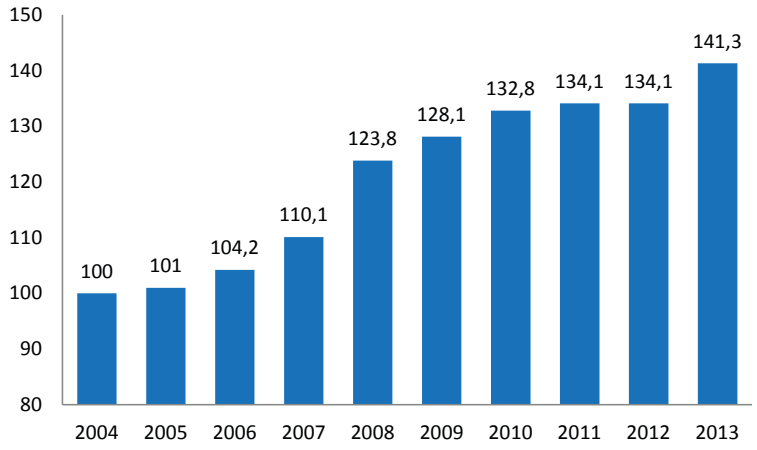
1 As mentioned in the Market Observation of 2013, the total labour costs (including social security costs) for the IWT employers in Germany is almost as equal as in the Netherlands. Belgium, France and Austria have higher total labour costs compared to the Netherlands and Germany, where as countries like Switzerland, Luxembourg and Czech Republic show lower labour costs. In particular Luxembourg has seen a significant increase in IWT employment. In 1997 the overall IWT labour force was still around 433. Many inland navigation companies have been shifting their offices and registered labour force to other member States, such as Luxembourg, in order to benefit from lower labour and social security costs: 13 approximately 20 per cent lower than Germany and the Netherlands. At this moment, around 2,500 employees work In Luxembourg. For more information on this: http://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---sector/documents/publication/wcms_234892.pdf.

2 To estimate the capital costs, PANTEIA uses the insured value of the vessels as a starting point. The interest costs are calculated based on an average of the interest levels over the last 5 years. This has to do with the average fixed interest period on ship mortgages. The 5-years average interest level can therefore differ from the current actual interest rates.

7.2.4 Insurance costs

After remaining stable between 2011 and 2012, the insurance costs in the Dutch IWT sector increased in 2013 with 5.4%. The insurance companies in the Netherlands decreased both the insured value of vessels as the insurance premium in 2013. However, the increase in the insurance costs is mainly the result of an increase in the insurance tax in the Netherlands from 9.7% to 21% (as of 1-1-2013). It has to be noted that this might not be the case in other countries.

Figure 73: Development of the insurance costs in the Dutch IWT dry and liquid cargo sector (2004=100)

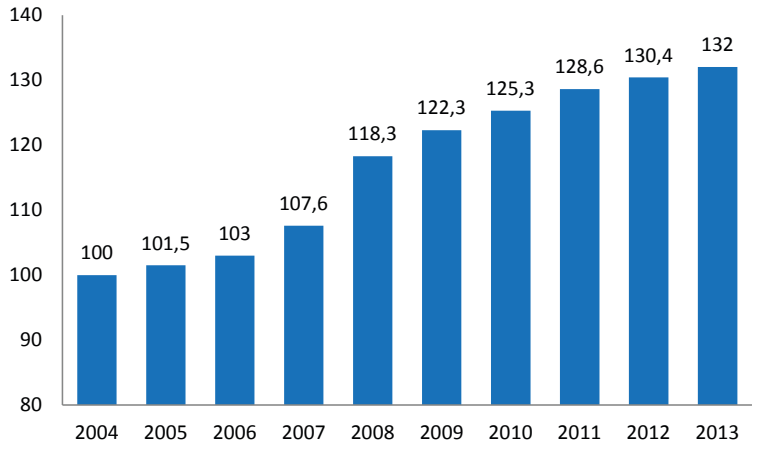


Source: PANTEIA

7.2.5 Maintenance and repair costs

The following figure presents the development of the maintenance and repair costs in the Dutch dry cargo sector since 2004. The maintenance and repair costs for the dry cargo sector increased with 1.2% in 2013 compared to a year before. For the liquid cargo sector the increase was 1.1% compared to 2012.

Figure 74: Development of the maintenance costs in the Dutch IWT dry cargo sector (2004=100)

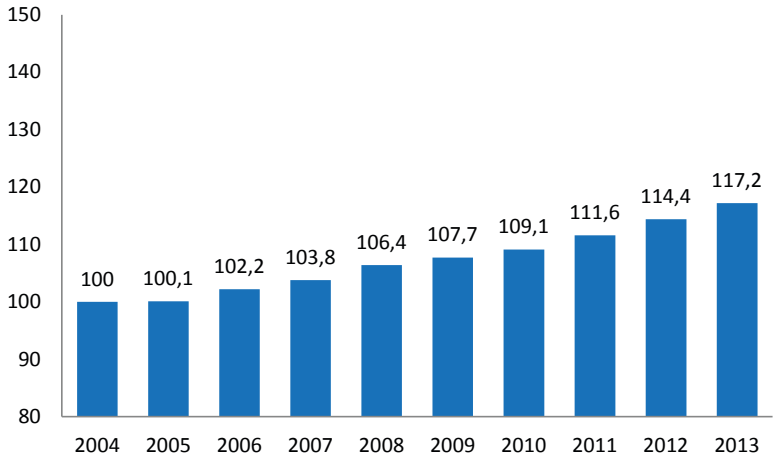


Source: PANTEIA

7.2.6 Other costs

The developpment of the others costs in the Dutch IWT sector can the observed from the following figure. These costs increased with 2.5% in 2013 compared to 2012.

Figure 75: Development of other costs in the Dutch IWT dry and liquid cargo sector (2004=100)



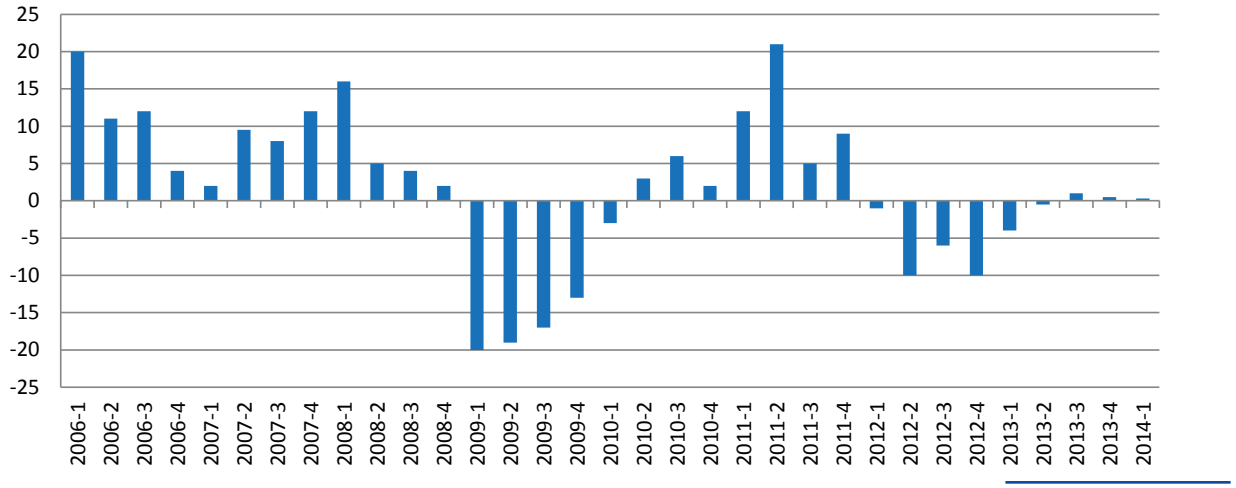
Quelle: PANTEIA

7.3 Operating conditions of the IWT sector on the Rhine market

Water levels on the Rhine in the year 2013 were more or less similar and comparable to the levels in 2012 (in contrast hover to the ones in 2011). So not much additional fleet capacity was required in the market compared to 2012. Note that the situation on the Rhine contrasted strongly with the situation on the Danube and Elbe which were confronted with a prolonged period in June with very high water levels and even floodings. In fact, in those operating areas water levels reached historically high levels in June 2013.

More generally, operating conditions on the Rhine market in 2013 were very similar to the conditions in 2012, cargo volumes increased though with a moderate rate and the level of required capacity of the fleet (both in the dry cargo and liquid cargo market) did not change dramatically either. In fact, as was shown in previous paragraphs, the capacity situation slightly improved in the market. Similarly the freight prices slightly increased and average company turnover data improved (see next figure for data from companies in the Netherlands).

Figure 76: Year-to year development (in %) of the turnover in the Dutch IWT sector (freight and passenger transport)



Source: CBS

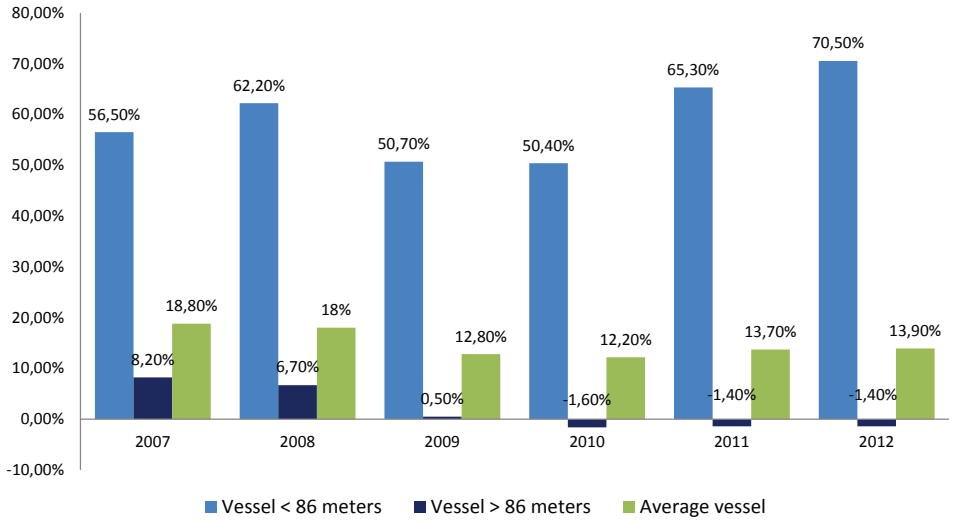
As these two figures show: developments were not uniform across the year 2013. While the first two quarters still showed a slight negative growth, there was an improvement in the second half of the year with a much better performance, in particular in the third quarter of 2013.

However, although the signs in the last two years (2012 and 2013) are positive, the size of the changes do not yet point to a strong recovery in the market, which is needed to solve the situation of structural overcapacity, This is also confirmed by financial data of businesses showing modest improvements only.

In the next two figures some financial data for Dutch operators are presented for the period 2006-2012. With a percentage of ca. 14% the own capital share is still about 5% point lower than in the past. Although the data are currently only known until 2012, it is expected that the picture for 2013 will be very similar to 2012 (based also on the previous analysis of the changes in the market that occurred between 2012 and 2013).

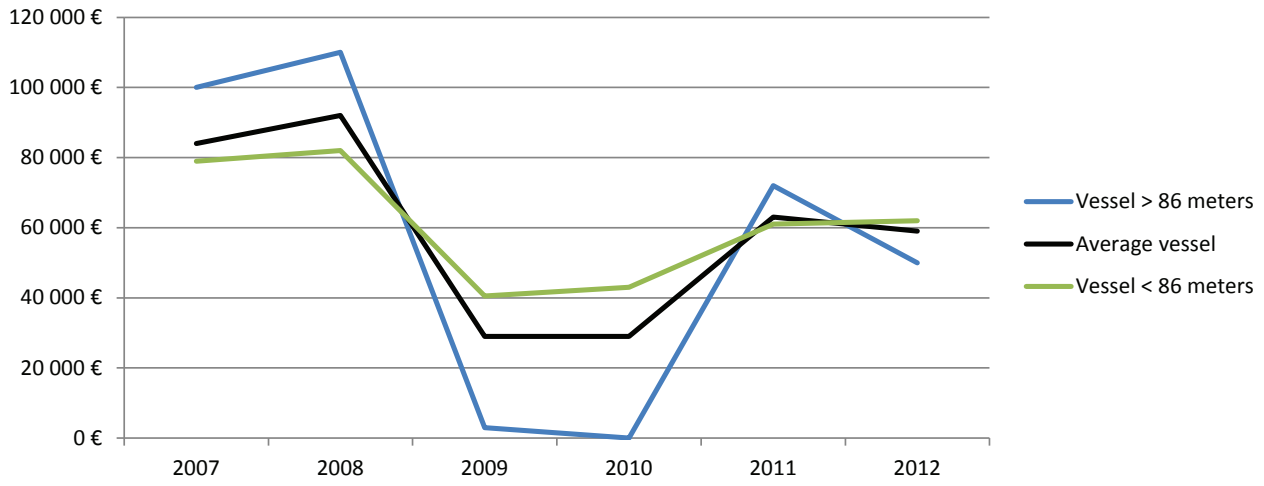
The average company data in the market, however, hide significant differences between companies. In fact the data show that companies working with smaller vessels are in a much better financial position, with a high percentage (70%) of own capital (which moreover increased in the past 3 years) than companies with bigger vessels, which still (on average) have a negative own capital, which does not show much improvement in the past years. These figures make it very clear where the problems with overcapacity in the market are located.

Figure 77: Share of own capital in company balance value of Dutch companies



Source: PANTEIA based on data from accountancy firms for Dutch companies

Figure 78: Book profits, excluding appraisal of labour efforts of the entrepreneur

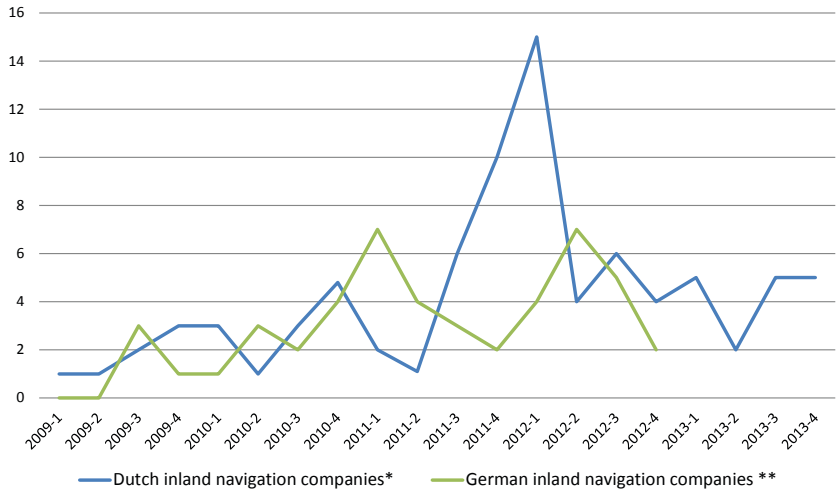


Source: PANTEIA based on data from accountancy firms for Dutch companies

In the final figure of this section some data on insolvencies are presented in the Dutch and German market.

In the Netherlands the number of bankruptcies was 17 in 2013 which does not differ much from the 24 bankruptcies in 2012. In Gemany there were 18bankruptcies in 2013, and therefore about as many as in the previous year.

Figure 79: Number of insolvencies in the German and the Dutch IWT sector



Source: BAG-Market observation 2013 and CBS.
**) Passenger and Goods transport.*
***) Only Goods transport*

Part 8:

Outlook for 2014 and 2015/ 2016

Current freight forecasts provide figures for the Rhine, the Netherlands and Germany, Europe's biggest inland navigation markets.

Navigation of the Rhine

Transport demand in the dry goods shipping sector

The development tendencies in each goods segment are expected to continue. This means in particular a continuation of the markedly positive trends as regards coal, a slight downward trajectory for iron ores and stagnation in the other segments. Given the individual groups' percentage weightings, a 2.5 to 3 % increase is to be expected for the dry shipping sector as a whole, after plus 2 % in 2013.

For 2015 / 2016, notwithstanding the emerging consolidation of the economic recovery, there is no expectation of an across the board increase in the growth rate. No rapid end to the phase of economic weakness is to be anticipated in the steel segment. For economic and structural reasons, no increases are expected for building materials, sand & soil.

Current growth in the dry shipping sector is being driven solely by solid fuels (coal). A maximum annual growth rate of 3 % for the entire dry shipping sector is this to be expected for 2015 and 2016.

Transport demand in the container sector

The expectation is of continued growth, and of the same intensity as in 2013 moreover, when it hit plus 3.7 %. This is subject to the proviso that 2014 sees no repetition of the severe low water periods, owing to container transport's special modal shift susceptibility to low water. Subject to this caveat, annual growth of 3–4 % is assumed for 2014, as it is for 2015 and 2016.

Transport demand in the tanker sector

In view of the trends on the crude oil market alluded to in Chapter 2.1.2, the most likely scenario for the transport of mineral oil products is stagnation or a modest decline of around one per cent.

In view of the trends on the crude oil market alluded to in Chapter 2.1.2, the most likely scenario for the transport of mineral oil products is stagnation or a modest decline of around one per cent.

In the case of chemical products, on the other hand, for which transport demand essentially tracks the wider economy, transport volumes are expected to increase in line with the recovery in economic fortunes that has been underway since September 2013 in the European and German chemical industry. Overall transport demand in the tanker sector should therefore again increase by around 3 %, as in 2013.

Navigation of the Rhine overall

For the navigation of the Rhine as a whole in 2014, we can thus anticipate a growth rate in transport volume of around 3 %, following 2.5 % in 2013. Slightly higher growth is expected for 2014 and 2015 meaning Rhine transport should increase by 3.5 % in each of these two years.

Germany[1]

For inland navigation in Germany the forecast is for a further increase in coal within the carriage of dry bulk cargo. This is driven by the continuing steep increase in hard coal imports to Germany. The remaining dry bulk goods will essentially stagnate in terms of volume and transport performance.

As regards liquid bulk goods, 2014 and 2015 will also see increased transport movements of chemical products on the back of the improving economic situation of the sector, thereby providing a not insignificant fillip to growth. A slight dip in transport movements of mineral oil products is expected again in 2014 owing to a fall in sales.

All in all, the Federal Office for Goods Transport, Intraplan Consult GmbH and Ralf Ratzenberger are predicting a 1.4 % increase (volume and performance) in waterway transport movements in Germany for 2014. Somewhat weaker growth is expected for 2015 to 2017 than in 2014.

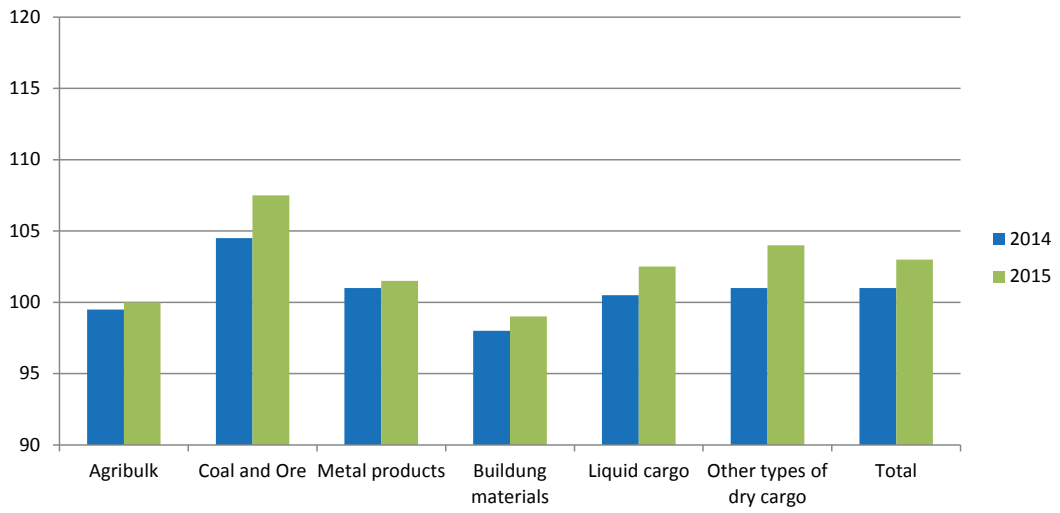
1 Source of the forecasts for Germany: Medium term forecast (Winter 2013/2014) by the Federal Office for Freight Transport, Intraplan Consult GmbH and Ralf Ratzenberger.

Netherlands

The total volume grew with 0.4 % in 2013. Overall IWT transport volumes from, to and via the Nethelands are expected to increase with slowly increasing (modest) growth rates in 2014 and 2015 compared to 2013. The growth percentage will increase to 1.1% in 2014 and 1.8% in 2018.

Since these growth rates are still modest, they do not point to a strong recovery from the impacts of the economic crisis for the demand side of the market. This means that the developments on the supply side of the IWT market and incidental factors (e.g. political developments, like oil price shocks perhaps because of the situation in the Ukraine or prolonged high or low water periods) will be dominant factors in the next years. It is hoped that the growth of capacity in 2014 and 2015 will remain lower than the growth of cargo volumes and that the slowly increasing growth in demand will not induce a new wave of investments that would expand the capacity.

Figure 80: Forecast of the developmet of transport volumes in the Netherlands



Source: PANTEIA

The transport flows from the Netherlands are expected to increase more than the domestic flows in the Netherlands and flows to the Netherlands. Growth rates are expected to be about 2.2 % respectively 1.7% and 1.0% in 2015.

The growth will occur in most IWT market segments, but there are differences in the size of the growth between the market segments. E.g. the recovery in the construction sector is expected to lag behind other sectors (in 2014 still no net growth will occur in this sector but in 2015 a small positive growth rate is expected). In contrast the metal industry (metal products and ores) will in comparison show the highest growth (almost amounting to 10% in the second half of 2014 and 2015 compared to 2013). Other growth sectors are containers, chemical products and raw materials and the transport of finished products.

The energy sector will very likely show diverging developments: a significant growth of coal transport volumes and modest or even declining volumes in tanker transport. Net volumes will still show a positive development (1.7 %) in 2014 but in 2015 biofuels will probably reduce the growth of transport volumes.

In 2014 the capacity expansion of the port of Rotterdam (Maasvlakte II project) will not yet be fully operational (although is has been taken into (partial) operation in 2013).

Fact Sheet 1:

Labor Market

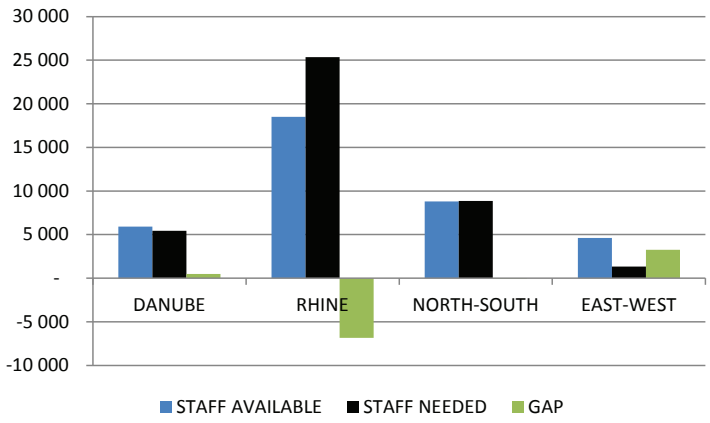
1. Overall situation

The market situation on the IWT labour market can be determined by two characteristics: the demand of workers, based on transport volumes of both the passenger and the freight market, and the supply of workers, which is driven by career perspectives and new entrants to the sector. Several submarkets can be identified in IWT: the Rhine corridor, the Danube corridor, but also the North-South corridor that connects the ARA seaport with Belgium and France and the East-West corridor that provides a link between the Ruhr area with Bremen and Hamburg, as well as Berlin, Poland and the Czech Republic. As regions are interconnected, workers are mobile: they can switch from one region to another.

In order to make calculations on the demand of workers, transport prognosis on the development of several corridors have been used from the Medium and Long Term Perspectives study (NEA, 2011). This way, projections on the demand could be derived up to 2050.
For the supply of workers, the yearly number of graduates from IWT education and training institutes have been added to the number of people working in the sector. The number of retiring people per year have been subtracted. Workers have then been assigned to a corridor based on the number of ships per flag per origin/ destination relation, i.e. a Dutch ship travelling from Rotterdam to France will be assigned to the North-South corridor.

The IWT labour market in Europe is more in balance than its respective parts. Regional differences can be noticed. For example, the demand of labour on the Danube seems to be equal with the supply. On the North-South and East-West corridor, the supply of workers is greater than the demand. However, on the river Rhine, a shortage of personnel can be observed, as can be seen in Figure 81. In total, the labour market in IWT seems more or less balanced, with a slight labour shortage.

Figure 81: Regional differences in demand and supply of IWT worker (2013)

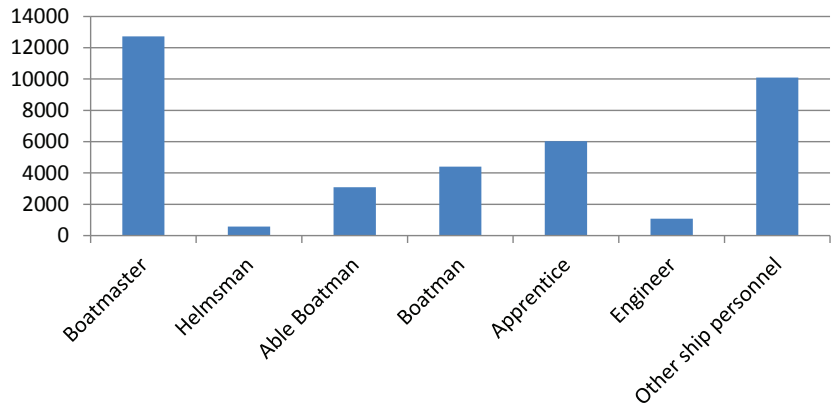


Source: Panteia (2014)

2. Functions

Staff in inland navigation can have different functions with regards to experience and qualifications gained. Figure 82 shows the distribution of the functions for the inland navigation workers. It shows a large amount of boatmasters and other ship personnel (workers on Passenger vessels).

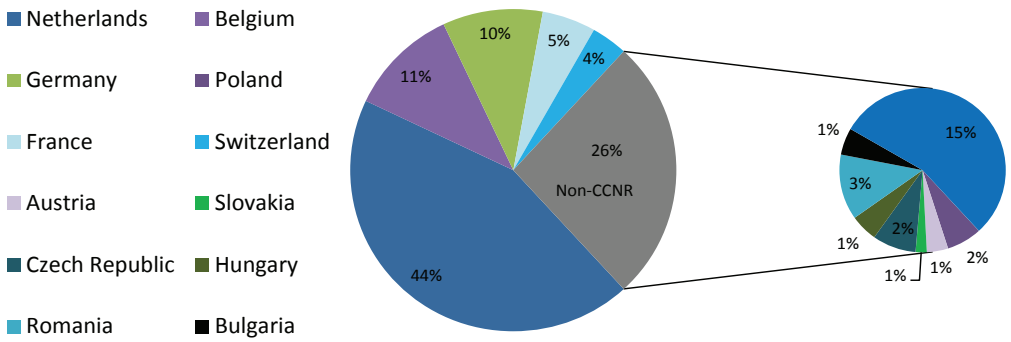
Figure 82: Amount of functions in inland navigation (2013)



Source: Panteia (2014)

The IWT labour market can be subdivided into boatmasters and operational workers. The current number of boatmasters in Europe aged between 21 and 65 is estimated as 12,721 for 2013. These boatmasters man all the passenger and cargo transporting vessels on the interconnected waterway network in Europe.
The Netherlands has got the largest share; 44% of the boatmasters in Europe have got the Dutch nationality. The Belgians and Germans have a share of 11% and 10% respectively. CCNR-countries account for 74% of the total number of European boatmasters, as can be seen in Figure 83.

Figure 83: Share of the nationalities of active boatmasters (21y-65y) in 2013

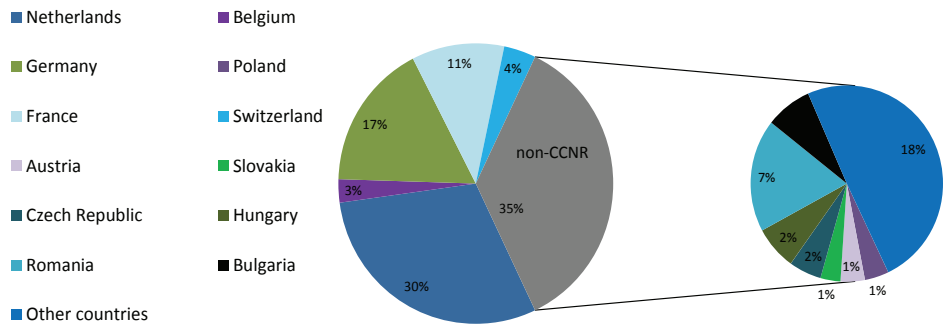


Source: Panteia (2014)

The current number of operational workers in Europe aged between 21 and 65 is estimated as 25,281 for 2013. The Netherlands has got the largest share of all European countries; 30% of the operational workers

originate from the Netherlands. Due to social security reasons, there are very few Belgian operational workers[1]. CCNR-countries account for 65% of the total number of European operational workers, as can be seen in Figure 84.

Figure 84: Share of the nationalities of active boatmasters (21y-65y) in 2013



Source: Panteia (2014)

3. Inflow

The inflow from training institutes is one of the major sources of new personnel in IWT. Table 1 shows the amount of new entrants to the sector per country. The Netherlands, Germany and Romania have the largest contribution to the amount of new entrants to the sector.

Table 22: Inflow from IWT training institutes (2012)

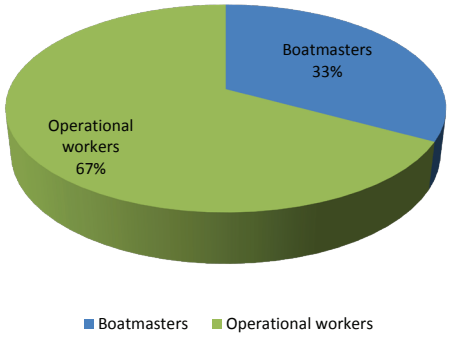
	Total inflow	Boatmasters	Operational workers
Netherlands	340	148	192
Belgium	33	23	10
Germany	152	36	116
Poland	31	13	18
France	68	15	53
Switzerland	8	3	5
Austria	6	2	4
Slovakia	19	4	15
Czech Republic	31	10	21
Hungary	10	2	8
Romania	197	42	155
Bulgaria	28	6	22

Source: Panteia (2014)

1 Most Belgian IWT companies only consist of one vessel. Due to high social security costs compared to other countries, it is very unattractive to acquire personnel and thus, most companies are family owned.

Every year, about 923 new workers enter the IWT sector after having completed a training. Out of these workers, nearly one third will be trained boatmaster and the remaining part will start working as operational workers, see Figure 85.

Figure 85: Share of functions of the new entrants



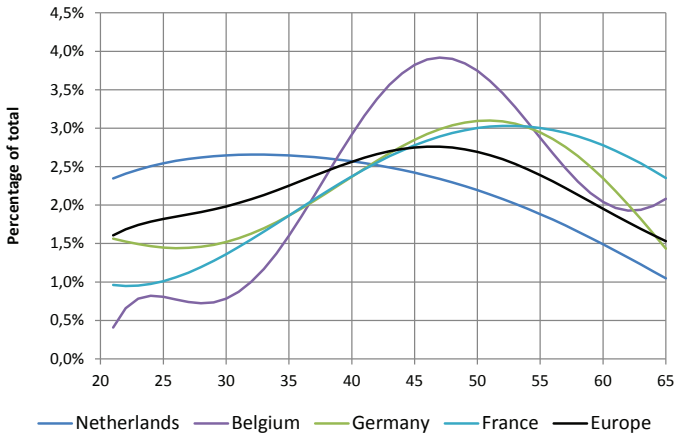
Source: Panteia (2014)

4. Ageing

4.1 Boatmasters

The current boatmaster workforce is ageing, as can be observed from Figure 86. Instead of showing a straight line, the age curves for the different CCNR-member states and the total European boatmaster workforce show an ageing trend, with the majority of boatmasters being elder than 40 years at the moment. The average age of Belgian, France and German boatmasters is elder than the European average, meaning that most of these boatmasters will retire within 10 to 20 years. The Dutch boatmaster workforce, on contrary, is younger than the European average[1].

Figure 86: Age curves for the boatmasters originating from CCNR-member states and the European average



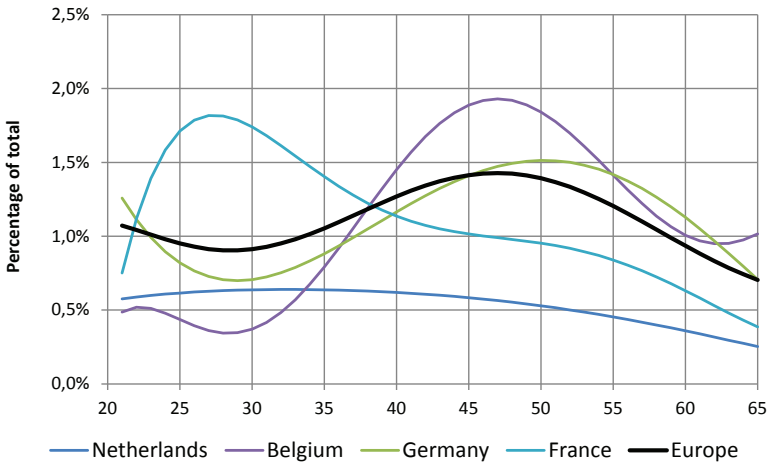
Source: Panteia (2014)

1 The self-employed Dutch boatmasters show age curves similar to those of Germany. Young, Dutch boatmasters nowadays choose to work for companies.

4.2 Operational workers

The age curves for operational workers differ per country, as can be observed in Figure 87. French operational workers are very young: 42% of them are younger than 35 years. The Dutch workforce is younger than the European average too. On contrary German and Belgian operational workers are older than the European average: 28% of the German operational workers are aged between 53 and 62.

Figure 87: Age curves for operational workers originating from CCNR-member states and the European average



Source: Panteia (2014)

5. Evolution of the supply of labour

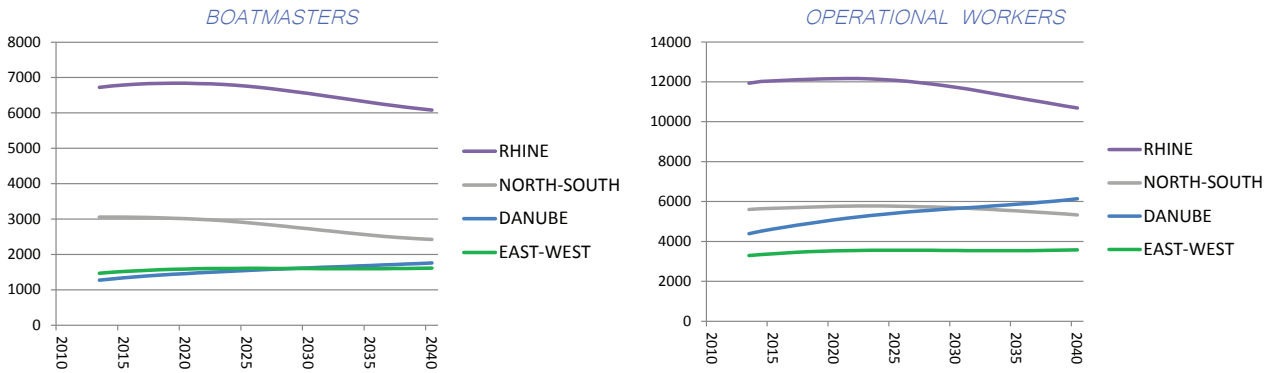
5.1 Boatmasters

Based on the age characteristics and the inflow and outflow of personnel, the evolution of workers in the IWT labour market can be determined. Figure 87 shows the evolution of the supply of boatmasters from 2013 to 2040 for the diffferent corridors. It shows a gentle increase in the supply of boatmasters on the Rhine corridor from 6,724 in 2013 to a maximum of 6,838 in 2020. From that moment, the supply of boatmasters will drop to 6,082 in 2040. The North-South corridor, that is dominated by boatmasters from Belgium, will show a continiously decreasing trend: from 3,057 boatmasters in 2013 to 2,428 boatmasters in 2040.

The workforce on the East-West corridor is expected to be constant and the amount of European boatmasters on the Danube shows increasing figures: from 1,273 in 2013 to 1,758 in 2040. It must be noted that a lot of Ukrainian boatmasters are navigating on the Danube[1]. Thus, the supply of boatmasters on the Danube may be higher than presented.

1 According to the Danube Commission, this equals about 1,000 boatmasters.

Figure 88: Evolution of the supply of boatmasters and operational workers for the European IWT corridors



Source: Panteia (2014)

5.2 Operational workers

Figure 88 also shows the evolution of the supply of operational workers from 2013 to 2040 for the diffferent corridors. It shows a gentle increase in the supply of operational workers on the Rhine corridor from 11,934 in 2013 to a maximum of 12,170 in 2021. From that moment, the supply of operational workers will drop to 10,693 in 2040, mainly due to the retirement of the German operational workers.

The North-South corridor, that is dominated by operational workers from France, will show a smilar trend: from 5,061 operational workers in 2013 to a maximum of 5,778 in 2023, to 5,334 operational workers in 2040. The workforces on the East-West corridor and the Danube are expected to show increasing figures: from 3,294 in 2013 to 3,578 in 2040 for the East-West corridor and from 4,389 on the Danube to 6.141 in 2040 for the Danube.

Fact Sheet 2:

Sea-River-Transport in the Rhine Delta and the Danube Delta

1. Transport volumes

Rhine region	Danube region	
Lower Rhine in Germany	Sulina canal (via Galati)	Danube-Black Sea Canal (via Constanza)
3.0 mio. t (2000) 1.5 mio. t (2013)*	3.2 mio. t in 2013	14 mio. t in 2013

* The decline of the volumes on the Rhine in the last years was due to the economic crisis in the steel industry. Less metals had to be exported from Duisburg. Secondly, due to the very low freight rates in maritime transport, seagoing vessels were used instead of sea-river vessels.

2. Direction of transport (export/import) and structure

Rhine region	Danube region	
Lower Rhine in Germany	Sulina canal (via Galati)	Danube-Black Sea Canal (via Constanza)
Exports from the Lower Rhine to the North Sea: 61 % Imports from the North Sea to the Lower Rhine: 39 % Main export destinations: Great Britain Main import origins: Scandinavia Overall, around 70 % of all sea-river shipping on the Lower Rhine comes from or goes to the port of Duisburg.	Export from the Danube to the Black Sea: 90 % Imports from the Black Sea to the Danube: 10%	Export from the Danube to the Black Sea: 70 % Imports from the Black Sea to the Danube: 30 %

3. Types of goods

Rhine region	Danube region	
Lower Rhine in Germany	Sulina canal (via Galati)	Danube-Black Sea Canal (via Constanza)
1. Metals and Metal products: 1.0 mio. t (2013) (= 2/3 of total volumes) 72 % of the metal transports are exports to the North Sea Region, among which ports at the Humber river estuary at the east coast of the UK play an important role. Imports from the North Sea to the Lower Rhine: 39 % 2. Natural gas and mineral oil products: 163.000 tons 75 % of the natural gas and mineral oil transports are imports. Natural gas is imported from Norway 3. Uranium and Thorium ores: 84.000 tons 4. Paper and printed products: 46.000 tons	Exports: cereals and metals Imports: petroleum products, Iron ore	Exports: cereals (5 mln. t) from the middle Danube region (Hungary, Croatia) and chemicals Imports: 2 mio. t of iron ore, and 2 mio. t of coal

4. Types of vessels

Rhine region	Danube region
Lower Rhine in Germany	Danube-Black Sea Canal (via Constanza)
Tonnage 2.000 t up to 4.000 t Newer river-sea-vessels have less tonnage (down to 1.800 t)	River-Sea-vessels as well as sea vessels Vessels with loading capacity up to 3.000 t: 35-40 % Vessels with loading capacity between 3.000 t and 6.000 t: 40-50 % Vessels with loading capacity between 6.000 t and 10.000 t: 10-20 %

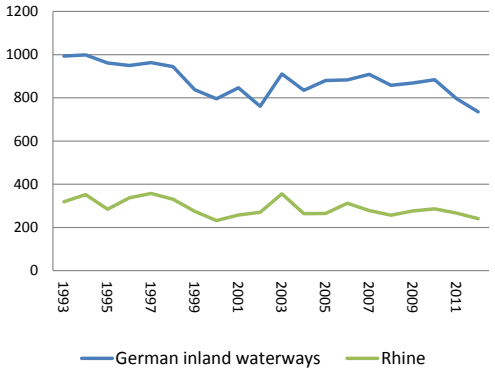
Sources: CCNR, Danube Commission, destatis, ShortSeaShipping Inland Waterway Promotion Center SPC

Fact Sheet 3: Accidents

This fact sheet looks at accidents in Germany and the Netherlands. There are currently no statistics available for the other countries of Western Europe.

For Germany the data situation as regards accidents permits an analysis by individual rivers and canals, as well as by type of accident, but not by cause. It will however be possible to differentiate in this way in future as work is currently in hand to harmonise the way in which accidents are recorded in Germany. There is a breakdown of the frequency with which accidents occur by individual German waterway. The following graph shows the time series for accidents on the Rhine and the totality of the German inland waterway network.

Figure 88: Number of accidents on the traditional Rhine and total accidents on Federal German waterways (1993-2012)



Source: Bundesministerium für Verkehr, Bau und Stadtentwicklung and CCR calculations

The Rhine accounts for approximately 1/3 of all accidents on the inland waterway network. There has been a decline over time, both for the Rhine and for all German waterways.

As in the Netherlands, in Germany as well collisions involving a vessel and facilities and bridges (infrastructure in general) are the most frequent type of accident.

In the Netherlands a distinction is made between vessel-related accidents in a more narrow sense ("scheepsongevallen") and vessel-related accidents in a more general sense (the so-called "niet-scheepsongevallen"). In the former case we are talking about traffic accidents involving collisions between vessels or between vessels and landing facilities or other infrastructure (locks and other structures) or with objects in the water. These vessel-related accidents ("scheepsongevallen") are broken down further into serious (significant) and non-serious (not significant) vessel-related accidents.

In 2012, 926 out of a total of 1,616 incidents[1] were vessel-related accidents. They increased in number between 2000 and 2010 since when they have been running at a level of around 1,000 vessel-related accidents a year.

An important trend is the increasing proportion of leisure navigation within the total number of vessel-related accidents. In 2011, 443 out of 1,047 vessel-related accidents occurred in leisure navigation (= 42 %).

The number of individuals killed or missing as a result of vessel-related accidents, as more narrowly defined, is approximately 4 to 5 individuals a year (see table). The spike in 2011 was caused by a single serious leisure navigation accident claiming four lives)[2].

1 Incidents include vessel-related accidents both in the narrower and more general sense.

2 Source: Inspectie Leefomgeving en Transport (2012), Staat van de transportveiligheid 2012, p. 43.

Table 23: Vessel-related accidents on Dutch inland waterways caused by collision vessel/vessel, vessel/infrastructure or vessel/object

Number	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Vessel-related accidents	605	678	686	710	795	982	903	987	1.047	926
Of which significant accidents	111	117	96	124	149	125	116	164	158	161
Number of dead and missing	1	4	7	3	5	4	4	5	8	4
Injured	40	26	50	52	31	49	52	45	60	58

Source: Inspectie Verkeer en Waterstaat (2012, 2013) Staat van de transportveiligheid 2011, 2012

There are different types of vessel-related accident[1]:

- Collision with infrastructure and structures is the most frequent type of accident, numbering around 500 in 2012. Over time (since 2007) an increasing trend has been discernible here.
- The second most frequent type of accident is the collision between two (or more) vessels. This type of accident has exhibited a downward trend since 2007. The figures were 231 in 2011 and 130 accidents in 2012 (this equates to a sharp drop of 48 % compared with the year before). The average figure in the period 2004 to 2011 is 250 vessel/vessel collisions.

It is also possible to differentiate by cause of vessel-related accident:

- The most frequent (known) cause of vessel-related accidents is human error accounting for 28 % of all causes of vessel-related accidents in 2012.
- However, there is no known cause in more than half of vessel-related accidents. This proportion has increased.

The second category of accidents is the so-called “niet-scheepsongevallen” (vessel-related accidents in the more general sense), including the following cases:

- Shipboard occupational accidents
- the loss or damage of cargo
- the loss of fuel
- rudder and engine damage

In 2012 there were 690 vessel-related accidents, as more widely construed, resulting in 15 dead, 2 missing and 29 injured. The year before, 2011, there were 689 such accidents. These resulted in 16 deaths, 28 injured and 2 missing. Unfortunately no statistical series over a long period of time on this category of accident are published in the traffic safety assessments or traffic safety status reports by the Inspectie Verkeer en Waterstaat.

In each of the two years 2011 and 2012 these vessel-related accidents, as more widely construed, accounted for around 40 % of all incidents (all accidents combined).

1 Source: Inspectie Leefomgeving en Transport (2013), Staat van de transportveiligheid 2012, pp. 46 – 47.

Summary and conclusions

The European inland navigation market continues to operate in a very challenging environment. In 2013, as in previous years, the countries of Western Europe experienced very modest increases in transport volume. That puts the two biggest inland navigation countries, the Netherlands and Germany, still between 7 % and 10 % short of their pre-crisis level.

The market is still beset by a major imbalance between demand and supply. Under normal or balanced market conditions, the limited increases in transport demand could be considered eminently satisfactory. But market conditions have not been balanced for some time.

The current market situation can be explained in terms of a different pace of adjustment before and after the crisis. What that means is that before the crisis the supply side experienced rapid expansion but has exhibited a very slow pace of adjustment (elasticity) to changed economic circumstances since 2009/2010. This is apparent from the depressed freight rates but even more so from very low scrapping rates (not more than 1 % of the fleet).

Before the crisis, the demand side also expanded relatively quickly (albeit not at the same pace as the supply side). Since the crisis, however, the demand side has been unable to adapt sufficiently quickly to plug the demand gap.

Compared with 2012, when Dutch and German industry revenues were in decline, turnover in 2013 was by and large stagnant. Nevertheless, the trend within the year was positive and there was a modest uplift in revenues in the second half of the year, in contrast to small first half declines. This was not attributable to external factors such as low water levels, as in 2011, but was clearly to do with an improvement in the macroeconomic situation.

A 1% to 3 % increase in transport volume is on the cards for Western Europe in 2014 and 2015. This applies both to dry shipping and tanker shipping. In view of the persistently high supply side capacity, market conditions (freight rates, revenue) will therefore improve only marginally in the near future. Given the current pace of demand growth, it will take a few years yet before a return to the pre-crisis level.

Nevertheless there are structural differences within the fleet. Capacity utilisation in the case of companies with bigger vessels, and with it their commercial situation, is less favourable than for companies with smaller vessels. Moreover, capacity utilisation in the tanker sector, and especially in the case of larger vessels, is less favourable than in the dry shipping sector.

The above statements apply to the Rhine region in Western Europe. In the Danube region prior to the crisis (and also afterwards) there was no equivalent capacity expansion to that in Western Europe, and thus also no manifestations of crisis triggered by over-investment.

But the navigation of the Danube was also beset by crises, albeit attributable more to persistent infrastructure shortcomings (low water periods on the Danube, inland port facilities, etc.) and to insufficient international industrial competitiveness in parts of the Danube region. No future increase in volumes on the Danube is anticipated for 2014 and 2015. Stagnant volumes are the more probably scenario by a significant margin.

Of the other European countries (Poland, the Czech Republic, Italy, Great Britain) it is currently in Great Britain where an increasing importance of waterway transport is more in evidence. It is no coincidence that this increase is linked to initiatives in the container shipping sector. This is to do with the integration of waterways into the sustainable supply of goods to large metropolitan regions (in this case we are talking about the Greater Manchester Area, via the Manchester Ship Canal).

This segment of the inland waterway transport market, long somewhat neglected, namely urban consumer goods logistics serving major population centres, enjoys enormous potential, primarily because there is a huge need to alleviate the (environmental and logistic) road haulage traffic burden on major population centres. This new inland navigation market is currently being discovered and exploited not just in England but in France (Paris) as well. This market will assume great importance for inland navigation given the ever increasing proportion of the world's population living in metropolitan areas and in view of the ever more pressing problems of freight transport in metropolitan areas.

Annexes

Annex 1: Forecast of transport demand in the navigation of the Rhine

Annex 2: New construction statistics 2008–2013

Annex 3: Transport volumes in 2013

Annex 1: Rhine transport forecasts 2014

Sector	Production / imports	Proportion of total transport (based on mio. t)	Foreseeable impact on transport demand (compared with year before)
Agriculture	Constant volumes	14 %	0
Coal	Increased volume of coal imports	24 %	+
Steel industry: Ores	Stagnation, in view of indications of a global crisis in the steel sector	17 %	0
Steel industry: Iron, steel	Stagnation, in view of indications of a global crisis in the steel sector	7,5 %	0
building materials	few signs of an upturn in the construction industry	18 %	0
Other goods / containers	Moderate container growth	11 %	+
Overall forecast of the development in demand in the dry shipping sector			+
Crude oil products	Slight increase in the price of oil on the spot market, existing backwardation structure on the futures market, structurally-determined slight fall in quantities	58 %	–
Chemicals	Economic upswing in European and German chemical industry since autumn 2013	42 %	+
Gesamtprognose zur Entwicklung der Nachfrage in der Tankschifffahrt			+

Development	
0 %	0
1 % to 5 %	– / +
6 % to 10 %	– – / + +
11 % to 15 %	– – – / + + +
16 % to 20 %	– – – – / + + + +
more than 20 %	– – – – – / + + + + +

Sources:
Eurofer
Euracoal
Verein deutscher Kohleimporteure (Association of German Coal Importers)
Verband der chemischen Industrie (Chemical Industry Association)
CEFIC
CCNR forecasts based on historical developments and calculations

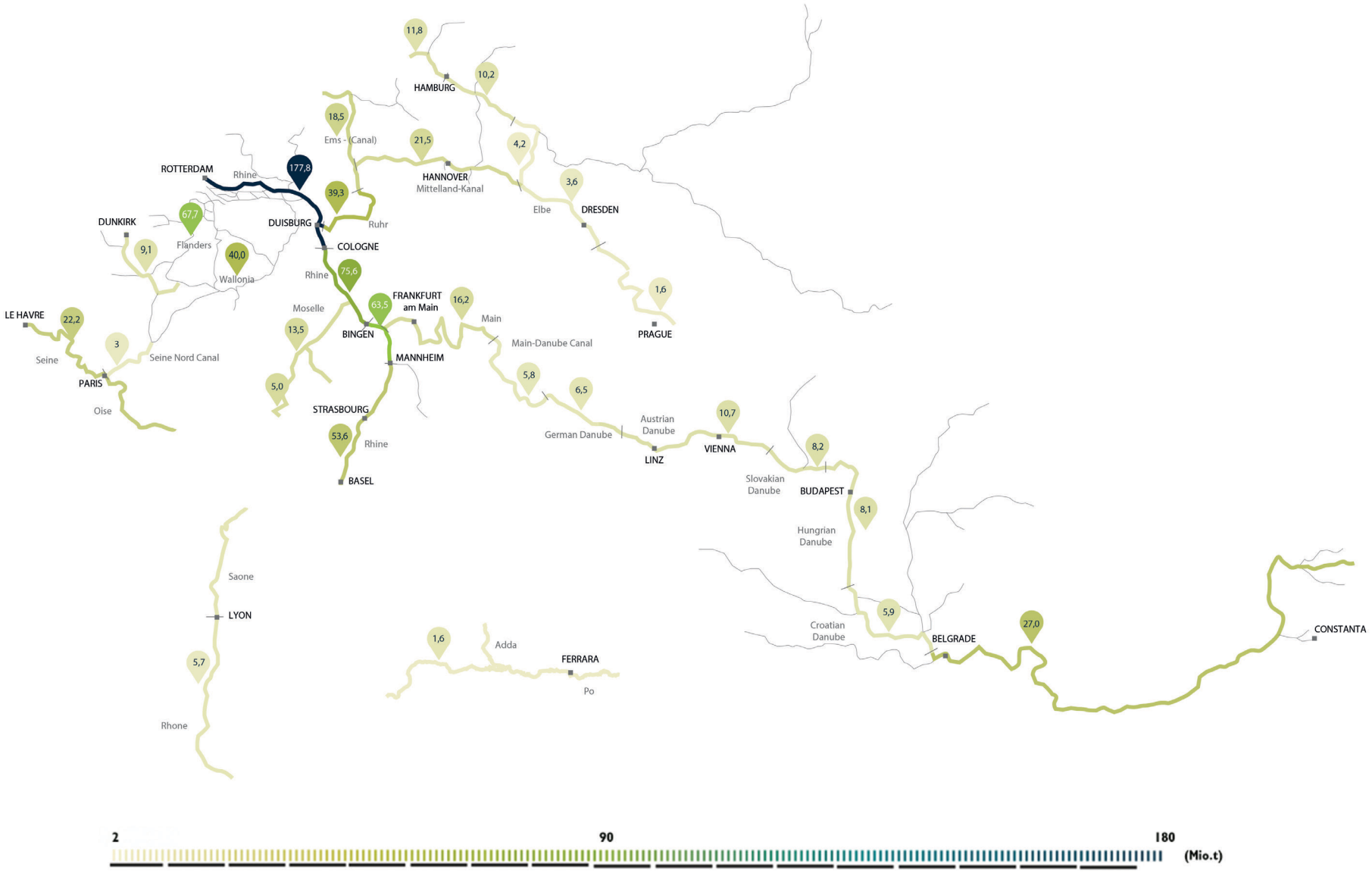
Annex 2: New construction

Ship type	2008			2009			2010		
	Number	Tonnage	kW	Number	Tonnage	kW	Number	Tonnage	kW
Motor cargo vessels	90	319 377	128 168	103	339 580	160 154	30	85 331	39 273
Pushed cargo barges	58	112 956		65	140 872		35	50 384	
Total	148	432 333	128168	168	480 452	160 154	65	135 715	39 273
Motor tankers	52	144 581	49 678	131	391 058	133 439	105	338 759	124 598
Pushed tanker barges	0	0		0	0		0	0	
Total	52	144 581	49 678	131	391 058	133 439	105	338 759	124 598
Pusher boats	4		1 684	8		12 760	2		2 156
Tug boats	4		3 890	5		7 780	1		810
Total	8		5 574	13		20 540	3		2 966
Cabin ships	4		5 432	17		17 072	16		5 872
Excursion ships	20		5 252	12		3 686	12		5 177
Total	24		10 684	29		20 758	28		11 049

Ship type	2011			2012			2013		
	Number	Tonnage	kW	Number	Tonnage	kW	Number	Tonnage	kW
Motor cargo vessels	20	57 600	26 665	9	23 776	12 392	4	14.250	6.332
Pushed cargo barges	15	43 000		8	18 492	0	3	12.962	0
Total	40	100 600	26 665	17	42 268	12 392	7	27.212	6.332
Motor tankers	84	182 000	90 500	39	117 000	33 333	24	58.900	26.900
Pushed tanker barges	2	3 262	0	0	0	0	0	0	0
Total	86	185 262	90 500	39	117 000	33 333	24	58.900	26.900
Pusher boats	2		1 268	1	878	4 083	3	0	0
Tug boats	1		5 280	4	0	21 120	0	0	0
Total	3		6 548	5	878	25 203	3		
Cabin ships	10		12 420	23	0	44 136	23	0	21 000
Excursion ships	9		2 421	4	0	1 131	2	0	722
Total	19		14 841	27	0	19 518	25	0	21 722

Source: IVR

Annex 3: Transport volumes in 2013 (Mio. t)



Source: Eurostat, nationale Statistikbehörden; VNF, Elbstromverein.

Glossary

ARA – ports: abbreviation for the three large European ports of Amsterdam, Rotterdam and Antwerp.

Transport or freight capacity offering: comprises the total load capacity of the available fleet, stated in tonnes.

Inland navigation: the carriage of goods or passengers on board a ship, intended for transport by inland ship traffic on a particular inland waterway network.

Inland waterway: waters located on the mainland capable of being used by ships with a minimum 50 t carrying capacity when normally loaded. These include navigable rivers, lakes and canals.

Revenue: the term “revenue” as used in this publication is intended to define inland navigation activity in the form of an index having regard to a specific level of demand and market transport prices.

River/lake traffic: the transportation of goods onboard a river/seagoing ship (seagoing ship designed for travel on inland waterways) performed wholly or in part on an inland waterway network.

Freight: means either the cargo or price of transportation.

Freight capacity: a cargo vessel’s transport capacity expressed in tonnes.

Output: refers to freight transport output, measured in tonne kilometres.

Ship/ship-transhipment: unloading of freight from a cargo ship and the loading of this freight onto another cargo ship, even if the freight remains on land for a period of time before resuming its onward passage.

Tanker freight capacity: used in the context of the transportation of tanker cargoes.

Draught: the height of the immersed part of the ship, the draft thus changes as the ship is unloaded.

Tonne kilometres (tkm): unit of measure for recording transport output, corresponding to the carriage of one tonne over 1 km by inland waterway transport. Calculated by multiplying the quantity carried in t by the distance covered in km.

Dry freight capacity: used in the context of the transportation of dry goods.

Transshipment: the transfer of goods from one means of transport to another or ashore.

Water conditions: measurement of the water level of a water course or canal in cm.

Upstream: portion of the water course between the point in question and the source.

Downstream: portion of the water course between the point in question and the mouth or confluence.

Twenty-foot equivalent unit (TEU): standard unit of measurement for recording containers according to their size and for describing container ship or container capacity. A 20 foot ISO container (20 foot length and 8 foot width) corresponds to 1 TEU.

Bibliography and reference list

National authorities

Agenzia interregionale per il fiume Po AiPo (Italien)

Bundesamt für Güterverkehr BAG (Deutschland)

Bundesanstalt für Gewässerkunde BfG (Deutschland)

Bundesministerium für Verkehr, Bau und Stadtentwicklung Deutschland)

Centraal Bureau voor de Rijn- en Binnenvaart CBRB (Niederlande)

Centraal Bureau voor de Statistiek CBS (Niederlande)

Destatis (Deutschland)

De Scheepvaart (Belgien)

Federale Overheidsdienst Mobiliteit en Vervoer (Belgien)

Instituut voor het Transport langs de Binnenwateren ITB (Belgien)

Deutsches Kraftfahrt-Bundesamt (Deutschland)

Inspectie Leefomgeving en Transport (Niederlande)

Inspectie Verkeer en Waterstaat (Niederlande)

Ministère de l'Ecologie, du développement durable et de l'énergie (Frankreich)

Ministère des Transports/Service de la Navigation (Luxemburg)

Promotie Binnenvaart Vlaanderen (Belgien)

ShortSeaShipping Inland Waterway Promotion Center SPC (Deutschland)

SPF Wallonie (Belgien)

Statistik Austria (Österreich)

Supreme Audit Office (Polen)

UK Department of Transport (Großbritannien)

Via Donau (Österreich)

Voies Navigables de France VNF (Frankreich)

Wasser- und Schifffahrtsverwaltung des Bundes WSV (Deutschland)

Ports

Port of Hamburg

Port of Linz

Port of Regensburg

Port of Vienna

Port of Brussels

Port of Liege

Port of Lyons

Port of Strasbourg

Port of Paris

Seaport of Antwerp

Seaport of Amsterdam

Seaport of Rotterdam

Swiss Rhine ports

Private companies

Franprix, Groupe Casino

ING Economisch Bureau

PJK International

SeaConsult

International organisations and authorities

Danube Commission

European Barge Inspection Scheme (EBIS)

European Commission

Eurostat

ILO

IMF

International Energy Agency

IVR

World Steel Association

Trade associations

Bundesverband der Deutschen Binnenschifffahrt e.V. (BDB)

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Wirtschaftsvereinigung Stahl und Stahlinstitut VDEh

Verein deutscher Kohleimporteure (VDKI)

Verband der Chemischen Industrie in Deutschland (VCI)

Schweizerische Erdöl-Vereinigung

Studies and lectures

BAG / Intraplan Consult GmbH / Ralf Ratzenberger (2014), Rolling medium-term forecast for freight and passenger transport. Medium-term forecast winter 2013/14

Hamburgisches Weltwirtschaftsinstitut (2013), Economic Development Perspectives of the Elbe/Oder Chamber Union (KEO)

Institut für Seeverkehrswirtschaft und Logistik (2012), Investigation into the structure of container transport movements in the North Range ports

Nextlogic (2014) – Towards a reliable and competitive inland container shipping

Plaizier, C. J. (2011), Passenger shipping: Out of the blue - The economic impact of passenger shipping on inland waterways in the Netherlands in 2010. Master Thesis Erasmus University Rotterdam

Supreme Audit Office of Poland (2014), Audit on inland shipping, 11 April 2014.

Lecture "Intermodal transport movements @ BASF" at the conference "Does the future belong on rail?" on 23.8.2012 in Padborg /Denmark by Mr. Holger Schmiers (intermodal transport terminal representative, BASF SE)

Lecture "The changing petroleum products arena and its implications for European terminals" at the FETSA annual meeting 2014 in Venice, by Mr. Niels von Hombracht (Flowcom Consultancy bv) University of St. Gallen (2014), logistics market study Switzerland

CCNR (2013), Analysis and evaluation of structural tendencies on the inland navigation market

Articles

Amports – Ports magazine of the Port of Amsterdam - Article "Hinterland Connections"

Binnenvaart magazine, issue 47/2010; article "De nieuwe supply chain van Cargill"

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