

# INLAND NAVIGATION IN EUROPE

Marketobservation

2009

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# **Market Observation - No. 10**

**Analysis of the economic situation - Autumn 2009**

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# CONTENTS

## Foreword

## Section 1: Demand for transport in autumn 2009 and forecasts for 2010

### I. Global economy – situation and forecasts

### II. Demand for transport by sector

1. Agricultural products
2. Iron and steel industry
3. Solid mineral fuels
4. Construction material
5. Container
6. Mineral oil products
7. Chemicals and fertilizers

### III. Demand and supply on the market for the transport of passengers

## Summary

## Section 2: Relationship between supply and demand for transport

## Introduction

### I. Evolution of the fleet - New constructions / vessels withdrawn from the market

1. Transport of dry goods
2. Tankers
3. Passenger boats

### II. Capacity utilization

1. Principles for evaluating the utilization of transport capacity

2. Transport of dry goods
3. Tankers

## **Summary**

## **Section 3: Situation of inland navigation companies**

### **Introduction**

#### **I. Evolution of the activity**

1. Transport of dry goods
2. Tanker fleets
3. Influence of water conditions

#### **II. Evolution of charges**

1. Price of vessels
2. General evolution of charges
3. Fuel
4. Personnel charges
5. Cost of maintenance
6. Financing and financial costs
7. Insurance

## **Summary**

## **Summary and prospects**

### **Appendices:**

New constructions

### **Glossary**

### **Sources**

## FOREWORD

Market Observation 2009-2 appears at a time when inland navigation is in a position to take the measure of the economic crisis. The slump in demand further to the substantial fall-back in industrial production in Europe noted since the autumn of 2008 has resulted in an equally severe drop in income for companies. The financial situation of many companies is also cause for concern in view of the major investment efforts made in the preceding years. Many companies are facing serious financial problems, and some are even having to ask questions about their viability.

Despite the signs of a recovery, particularly in the iron and steel industry, which is one of the main motors of the economy, and in the chemicals industry, it is not yet possible to say that the crisis has now been overcome. At the most, we are able to think that the worst is behind us. We must nevertheless remain prudent, as there are still potential threats, such as, for example, the catastrophic financial situation of a number of European Union Member States.

In this context, the inland navigation sector has been thinking about possible accompanying measures that would make it possible to overcome the crisis. This thinking has not yet resulted in any actual measures answering requirements at the level of the functioning of the market. It is above all the effectiveness of the measures that is causing doubt, particularly as the effects of the crisis are not assessed in the same way in all the countries. The effectiveness and acceptance of these measures are sine qua non conditions for moving forward.

This Market Observation publication aims to describe the economic situation of inland navigation, on the basis of the available figures; this will enable everyone to check their own observations and supplement their own impressions. This publication cannot answer all the questions, obviously, or forecast the subsequent evolution of the crisis. Nevertheless, the authors of this study hope to be able to assist all the decision-makers in the inland navigation sector in their difficult search for solutions for reaching the end of the tunnel.





# **The market for inland navigation in the second half of 2009**

# DEMAND FOR TRANSPORT IN AUTUMN 2009 AND FORECASTS FOR 2010

## I. GLOBAL ECONOMY - SITUATION AND FORECAST

After the first signs of recovery at the end of the first half of the year in France and Germany, an upswing in the economic situation was confirmed in the second half of the year in Europe generally. Between July and September, the gross domestic product (GDP) in Germany progressed by 0.7% compared with the previous quarter, after an increase of 0.4% between April and June.<sup>1</sup> This positive sign was also evident in France, with an increase of 0.3%.

In some countries, the third quarter was marked by the end of the economic contraction process. This was the case in the Netherlands (+0.4%), Belgium (+0.5%), Italy (+0.6%), the Czech Republic (+0.8%) and Austria (+0.9%). The negative development persisted in other countries in southern and eastern Europe (Hungary, Estonia, Romania, Spain, Greece and Cyprus) and in the United Kingdom (-0.4%).

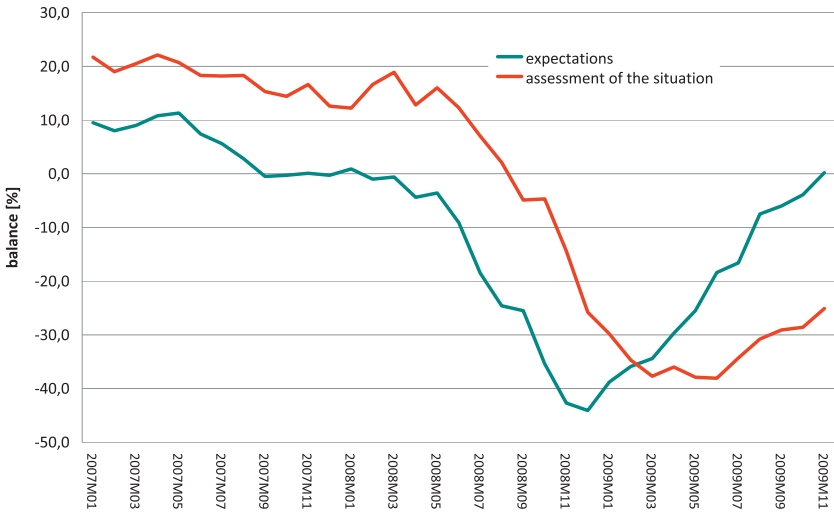
The IFO index, the main barometer for the economic situation in Germany, calculated on the basis of surveys of companies in the manufacturing, building, wholesale

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<sup>1</sup> All information based on data corrected for seasonal variations.

and retail companies<sup>2</sup>, shows that the majority of the companies in the survey felt at the end of 2009 that their situation was still “bad”. On the other hand, their forecasts had generally improved to “neutral”, given that negative and positive expectations cancelled each other out.

**Graph 1: Evolution in the evaluation of the current situation and expectations in Germany\***

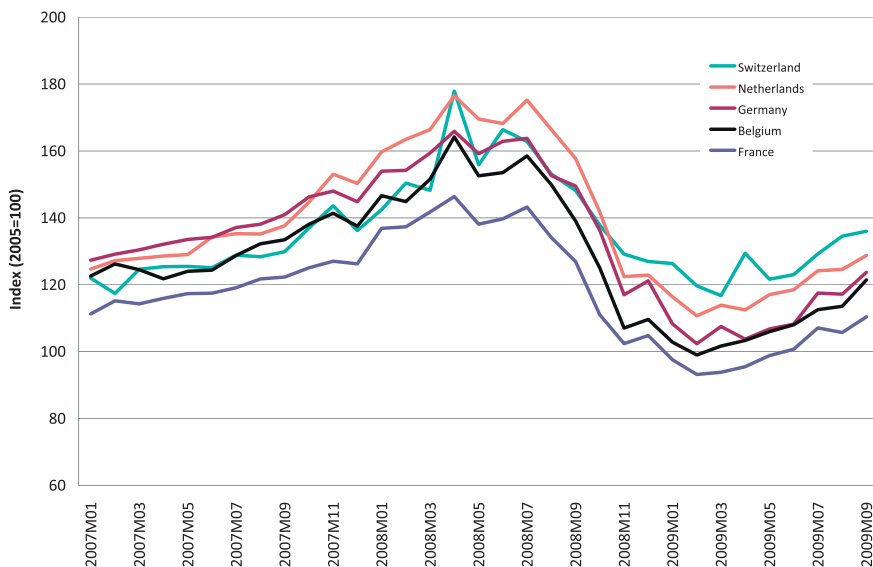


\*According to the IFO index on the business climate. Source: IFO - Institut für Wirtschaftsforschung

2 The 7 000 companies surveyed each month are asked to evaluate the current situation of their business and describe their expectations for the next six months. They may qualify the present climate as “good” or “bad” and the future climate in the next six months as “better”, “unchanged” or “worse”. The index of the present business climate corresponds to the difference between the percentages of “good” and “bad”; the index of expectations corresponds to the differences between the percentages of “better” and “worse”.

Since the drop at the end of 2008, the evolution of exports, which are crucial to demand for transport in the containers and chemicals segment, followed different trends in each of the CCNR's member countries. The following graph shows that, of the five member countries, Switzerland has emerged best from the crisis. Exports in September 2009 had already returned to the level of September 2007. The Netherlands came next, followed by Germany, Belgium and then France.

**Graph 2: Evolution of exports in comparison with 2005\***



Source: OECD; calculations by CCNR Secretariat, using values corrected for seasonal variations\* for each country, compared with the level in 2005

Developments in Asia give cause for hope of a continued upturn in world trade. In November 2009, the growth of industrial production in China returned to the level it was at before the international financial crisis. A continued upturn is threatened by the value of the dollar, which has been falling in comparison with the euro since March 2009. An increasingly strong euro could at the least seriously hamper European exports, at a time when everyone is hoping for an improvement in world trade.

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## II. DEMAND FOR TRANSPORT BY SECTOR

### 1. Agricultural products

In the agricultural products segment we have been able to see, since May, a strong increase in demand for transport on inland waterways in Germany. In June, July and August, the transport of agricultural products was more than 30% higher than the figure for the previous year, further to the excellent harvest in 2009.

On the other hand, the volumes transshipped in the sea ports decreased substantially. Thus until September the sea port of Rotterdam saw its volume fall by 18% compared with the previous year, for cereals, seed and forage. The volume of foodstuffs and forage also fell sharply in Antwerp, up to and including September. This situation is also due to the excellent harvest, as the products transshipped in the sea ports are mainly imports – an exceptionally abundant harvest makes imports less necessary.

### 2. Iron and steel industry

#### A) Ores and metal wastes

According to the econometric calculations presented in the 2008-1 publication, the transport of ore is closely linked to the production of steel.<sup>3</sup> This continued its resumption in the third quarter of 2009, having hit its low point in April. In Germany, production increased continuously between April and September 2009, from 1.9 to almost 3.2 million tonnes (see graph), i.e. an increase of approximately 70%.

The transport of ore and metal scrap increased continuously from its low point in April, in the wake of the increase in the production of steel. July saw an increased of 16% compared with the previous month, followed by an increase of about 10% in August.

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<sup>3</sup> *The transport of ore and metal scrap increased by 61% between April and August, whereas the production of steel in Germany increased by 57% over the same period. The production of steel in France, on the other hand, stagnated. This basically confirmed the relationship between the production of steel and the transport of ore established in Market Observation 2008-1.*

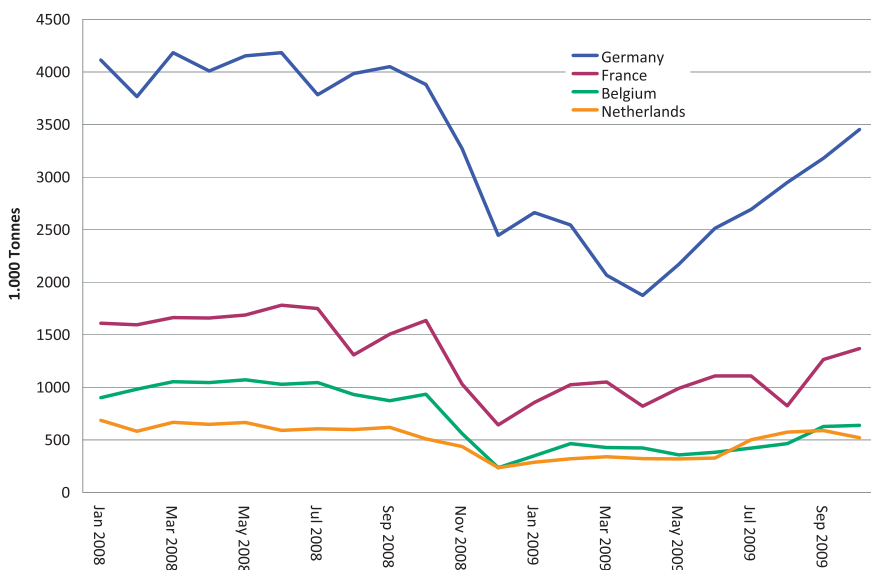
Exports of ore from Brazil (the principal supplier of iron ore) to Europe have leaped upwards. In the sea port of Ghent, volumes of ore and metal scrap practically doubled in August and September compared with the first half of 2009; the resumption of operation of ArcelorMittal's blast furnace in Ghent was a major contributor to this improvement.

At the worst of the crisis, the ArcelorMittal group was only operating 9 of the 25 blast furnaces it owns in Europe. Most of the factories shut down because of the crisis have started up again in Europe. The group does not see any need to close the other factories definitively. In this crisis context, ArcelorMittal has only closed down definitively two sites in the USA.

We can expect a consolidation in the upturn of the iron and steel industry starting in autumn 2009. 2009 reflected the constitution of stocks for producers (ore) and traders (steel products). The fundamental factor will nevertheless be the evolution of demand for steel from the automobile industry and the building sector in 2010.

Even supposing a slowing down in the upturn, the fact nevertheless remains that the production of steel in Germany could probably reach its former volume of production of 4 million tonnes per month in the year 2010, which would mean that the transport of ore and metal scrap would return to average volumes of about 3 million tonnes per month.

**Graph 3: Production of steel in selected countries**



Source: Eurofer

## **B) Iron and steel products**

Whereas the transport of ore has begun to increase, this has not been the case for the steel segment. This is the segment which, among all the different types of goods, saw the biggest drop in volumes transported. No improvement was apparent until the end of September 2009 (see graph).

Final demand for steel is determined above all by the building and automobile industries. Real growth expected in 2010 in the building sector (see Section II.4) should boost demand for construction steel in 2010. An upturn in global automobile sales also looked likely in the autumn of 2009.

**Graph 4: Transport of iron and steel products on German inland waterways**

Source: Destatis; 1 - 12 = month in the year

### 3. Solid mineral fuels

In August 2009, the transport of solid mineral fuels was still 17% lower than during the same month a year earlier; in July, the rate was -25%. The period between January and the end of August showed a drop of 20%, which was much less than for ore. This is because February and March were particularly cold months. In February and March, imports of coal for the production of energy were higher than the multi-annual average; there was a decline during the other months.



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The volumes of coking coal for the iron and steel industry began to increase again in the sea ports in the autumn of 2009, thereby following the increase in the volumes of ore. However, in August, transport in inland waterways in Germany (2 million tonnes) was still far below its multi-annual average of almost 3 million tonnes. If the iron and steel industry recovers as forecasted, these volumes of transport could be reached once more in the spring of 2010; the weather, however, remains an unforeseeable factor.

#### **4. Construction material**

During August, the transport of ore and construction materials on inland waterways in Germany fell by 14% in comparison with the previous year, after having fallen by 13% the previous month. In the European Union, production in the construction sector, which had already shown a decline since the start of 2008, had still not hit its low point at the end of 2009.

However, the picture varies from one country to another. In 2009, the building sector in Germany generally maintained its level of the previous year, as a result of a second scheme to boost the sector. It is expected that the results of the programme will be visible in 2010; this would make it possible to forecast an increase, excluding inflation, of 2% of production in the construction sector in Germany in 2010.<sup>4</sup>

About a third of the public funds earmarked for this programme will be devoted to infrastructures. The Government also intends to invest (approximately 2 billion euros) in developing and renovating the country's transport routes (roads, railways, inland waterways). The demand for the transport of construction materials should benefit from this series of measures in 2010.

#### **5. Container**

The transport of containers saw a clear upturn starting in the first half of 2009. In July, the figures were almost back to those of the previous year, and in September the volumes transported by inland waterways in Germany were even higher than the level observed one year earlier.

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<sup>4</sup> See Gornig, M., Weber, S. (2009): *Bauwirtschaft: Konjunkturprogramme zeigen Wirkung*, in: *DIW-Wochenbericht no. 47/2009 (18 Nov. 2009)*

In previous years it was possible to observe that world trade, and in particular international trade by sea and the transport of containers, was growing faster than the economy during boom times. Thus the transport of containers grew on average by about 10% per year between 1985 and 2007.<sup>5</sup> On the other hand, international trade by sea falls back more seriously during a recession.

At the moment there are a number of possible scenarios for global transport of containers at the end of the economic crisis. After a transition period of one or two years, the evolution could resume its former pace of growth. In that case, the level and the rate of growth should be achieved once more in the space of one or two years.

However, the trend could also remain at a lastingly low level and/or at a low level of growth.<sup>6</sup> This last scenario is, for the moment, considered relatively likely. Thus the German institute for sea transport economics and logistics (Institut für Seeverkehrswirtschaft und Logistik - ISL) is expecting annual growth in the global transport of containers to be reduced to "just" 6 or 7% for the period from 2011 to 2020, compared with about 10% between 1985 and 2007.<sup>7</sup>

These lower growth rates are thought to be caused above all by the saturation of the containerisation of packages, a trend which would have become apparent even without the economic crisis. The economic crisis is thus thought to be responsible only for the shift in the level of the curve, but to have no effect on the rate of growth for the transport of containers.

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5 Source: ISL Bremen

6 The possible scenarios (level shift of the trend, change in growth rates) were presented by Mr van den Bossche (ECORYS) at a conference organised by the EU on the "Impact of economic crisis on inland waterway transport sector", held in Brussels on 16 November 2009. The presentation did not cover container traffic, but global GDP. Nevertheless, the comments made on GDP may be applied in a similar fashion to the transport of containers.

7 See: "Le liner renouera avec la croissance à partir de 2011" in 'Le Loyd', 08 June 2009.

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Growth in the transport of containers on inland waterways has certainly been slowed down because of this, but the structural conditions necessary for its development would remain valid.

Thus the increasingly marked trend for an international sharing of labour, in the wake of the development of the emerging countries, will continue to feed the growth of global world trade. Indeed, the economic crisis will not change the routes used for international flows of goods. According to information from the German federation of sea port companies (Zentralverband der deutschen Seehafenbetriebe), approximately 95% of intercontinental trade takes place by sea.<sup>8</sup> The transport of containers on inland waterways will also benefit from this situation, particularly as the number of new transshipment terminals and container lines is continuing to increase.

Thus the Dutch company Rhinecontainer opened a new line in September 2009 between the North Sea ports and an inland port in the hinterland. It has also included the port of Bonn in its network of lines.

The development of the modal split for container transport in the Port of Antwerp is also a favourable element. The market share of inland navigation in container traffic (incoming and outgoing) increased from 21.4% in 1998 to 32.4% in 2008. The share of rail freight also increased, from 7.8% to 11% (information according to Transport en Logistiek Nederland).

## 6. Mineral oil products

Apart from the long-term trend, seasonal variations, water conditions and winter temperatures, the determining factor for demand for the transport of oil-based products remains above all the price of oil.<sup>9</sup> The calculations for the period from 2000 to 2008 have shown that the increase in the price of crude oil and mineral oil products was reflected by a decrease of transport demand.

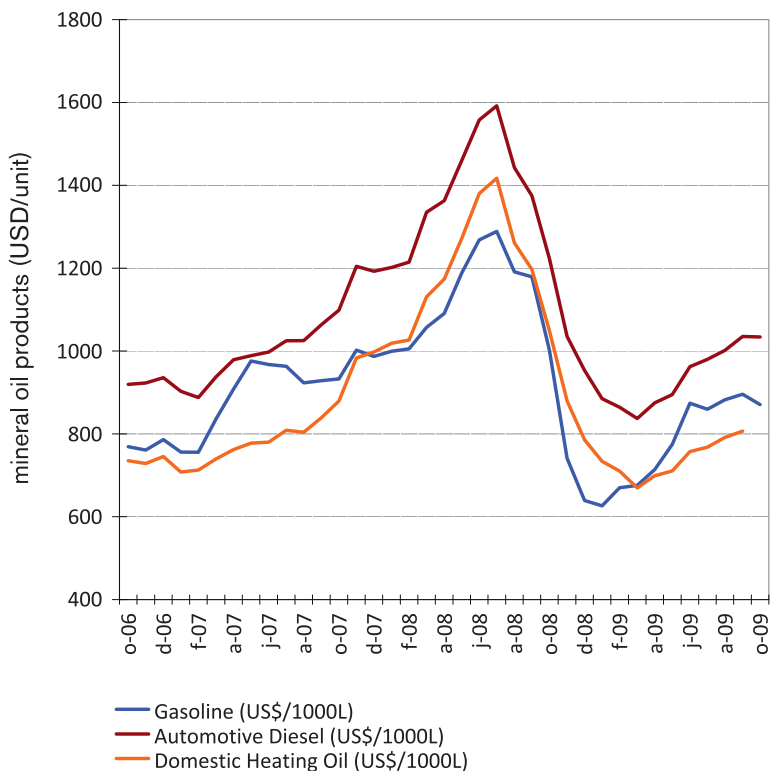
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8 ZDS (2009), press release of 18 November 2009 entitled "Deutscher Seegüterumschlag wird 2010 wieder wachsen".

9 See CCNR, *Market Observation 2009-1*, page 64.

Prices of crude oil practically doubled between January and November 2009. This increase was due to both the resumption of economic activity and the depreciation of the dollar since March 2009. This new increase in the price of oil has brought with it an upward revaluing of the price of other oil-based products such as diesel oil, light heating oil, and petrol (see following graph).

**Graph 5: Consumer prices of mineral oil products\***



Source: OECD / International Energy Agency (IEA)

\* Average weighted prices, including taxes, on the basis of current exchange rates, for France, Germany, Italy, Spain, Great Britain, Japan, Canada and the United States

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Contrary to this return of increasing prices, demand for transport fell substantially in the second half of the year. While the second quarter still showed an increase of 3.5%, July saw the beginning of a drop of approximately 10%, with a further drop of 19% in September.

Demand for transport in 2010 should end up at a level lower than that for 2009, which is explained firstly by the increase in the price of oil as a result of the upturn in the economic situation: economic growth in the emerging countries (China, India, Russia, Brazil, etc) is resuming, resulting – for these countries whose economies consume large quantities of energy – in a strong increase in requirements. The analysts are forecasting that demand for oil will increase much more than supply in 2010, causing an upward pressure on prices. Lastly, demand for transport is also slowed in the long term by structural factors, such as the drop in per capita consumption of heating fuel and petrol.

## **7. Chemicals and fertilisers**

The chemicals industry appears to have emerged from the trough in the first half of 2009. In Germany, turnover corrected for seasonal variations in the chemicals branch increased by 5.5% in the third quarter compared with the previous quarter. The figure nevertheless remains 15% lower than the level of the previous year, but there is no doubt that recovery has set in.

Every segment increased production between July and September. More particularly, basic chemicals used for a wide range of industrial products saw a clear improvement.

Transport by inland waterway improved in a similar fashion. Transport on inland waterways in Germany increased slowly but surely, after having touched bottom in the first quarter. In August, the difference in comparison with the previous year was only -10%, compared with -14% in July, almost -16% in June, and even -21% in May.

Fertilisers are one of the market segments that saw a very clear decline in demand for transport in the past quarters. The cause lies not so much in the economic crisis as in the structural situation of the branch. The transport of fertilisers on inland waterways has tended to decline for a number of years. The trend has been accentuated

further by the drop in the prices of agricultural products that farmers are having to face, which has led them to economise on their purchases of fertilisers, all the more so in that, depending on soil quality, it is possible to do without some types of fertiliser, such as potassium-based products.

As regards offer, the fertiliser industry features a market structure with oligopolistic tendencies, which reduces the leeway available to manufacturers in proposing price reductions. From the purchaser's point of view, farmers were waiting for a drop in prices and limiting their orders, which resulted in a clear drop in sales and income for most manufacturers in the second half of 2009.

Demand for transport has not escaped that development. Transport on inland waterways in Germany fell by 16.5% in July, compared with the previous year, and by approximately 18% in September.

It is true that we may expect to see a slight increase in the use of fertilisers if the price of agricultural products increases: if harvest yields were to fall substantially as a result of an under-use of fertilisers, the prices of agricultural products would increase again, thereby improving farmers' incomes. The consequence would be a slight increase in the fertiliser branch. The general trend, however, is for a decline in the use of fertilisers.

### **III. DEMAND AND SUPPLY ON THE MARKET FOR THE TRANSPORT OF PASSENGERS**

In 2009, the cruise market suffered losses of income of about 20%, as a result of the economic crisis.<sup>10</sup> These losses are connected less to the drop in the number of passengers transported and more to the price reductions allowed to American customers, severely affected by the crisis, so as to not endanger the occupation rate of the vessels. Tourists from the United States are playing an increasingly important role in the European cruise market. Their share has been increasing for a number of years now, and currently stands at about 50%.

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<sup>10</sup> Source: *IG River Advice Basel*

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The Rhône is gaining in importance, since it is attracting increasing interest among American tourists. Cruises on the Rhine and the Danube are still the most important, offering routes such as Amsterdam to Budapest, Passau to Budapest, and Amsterdam to Basle.

Between January and August, French inland waterways saw an increase in the number of passengers carried compared with the previous year<sup>11</sup>, although the situation varies from one region to another, however. The Rhine in Alsace and the Rhine-Rhône canal were able to show two-figure growth. The Rhône and Lorraine also saw substantial growth. On the other hand, the number of passengers fell on the Seine, the Oise, and the Canal du Nord. Burgundy and south-western France (around Toulouse) showed losses of almost 10%.

In 2009, about ten new vessels came onto the market, which corresponds more or less to the number in previous years. Given that orders have fallen temporarily as a result of the crisis, the number of new constructions coming onto the market could be slightly lower in 2011. For 2010, a figure similar to that in 2009 is nevertheless expected.

Over a longer time span (since 1970), we have been able to see an acceleration in the increase in the number of vessels. This is noticeable by the decrease in the time taken to double available capacity. The number of vessels doubled between 1970 and 1990; in the space of 20 years, the number increased from 30 to 60. The number doubled again in just nine years, however, between 2000 and 2009 (the number increased from 105 to 210 vessels). We have also been able to see that the size of the vessels has a general tendency to increase regularly.

## Summary

By the end of 2009, most of the segments of goods affected by the crisis had given some sign of recovery. This trend will also continue in 2010.

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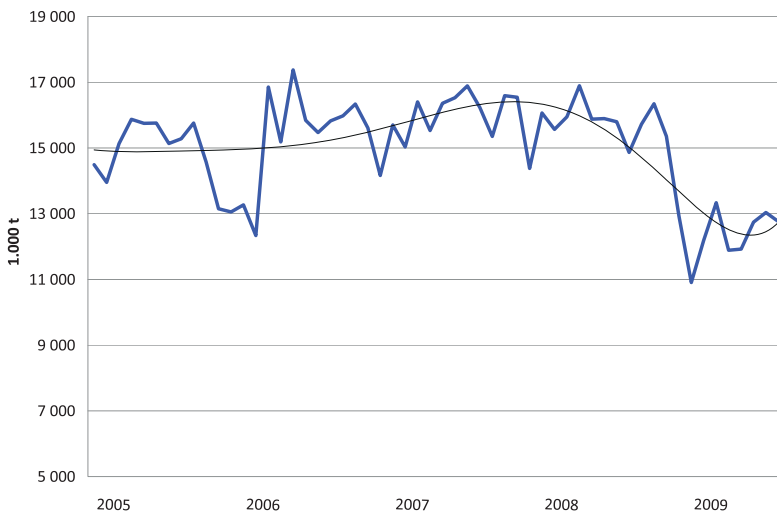
11 Source: VNF

The transport of ore increased slightly, in the wake of the resumption of the production of steel. The same is true of the chemicals industry and the corresponding demand for transport. The container segment is benefiting from a slow but sure rebound of world trade. The situation of the transport of minerals and construction materials also improved in the second half of the year and will continue to do so in 2010, once the public schemes for economic recovery have produced their effect in the field of infrastructures.

The main areas that have not started to recover are the transport of iron and steel products and fertilisers. Steel will come out of the tunnel next year, in all probability. On the other hand, the transport of fertilisers faces an overall downturn that will hardly be influenced by an economic recovery.

For the transport of dry goods, we have the following general table: the graph shows the evolution of demand for transport since 2005. The polynomial trendline clearly shows the good situation of transport in 2007 and 2008, the fall in 2008 and, finally, recovery in 2009.

**Graph 6: Demand for the transport of dry goods in Germany\***



Source: Destatis; \*with polynomial trendline

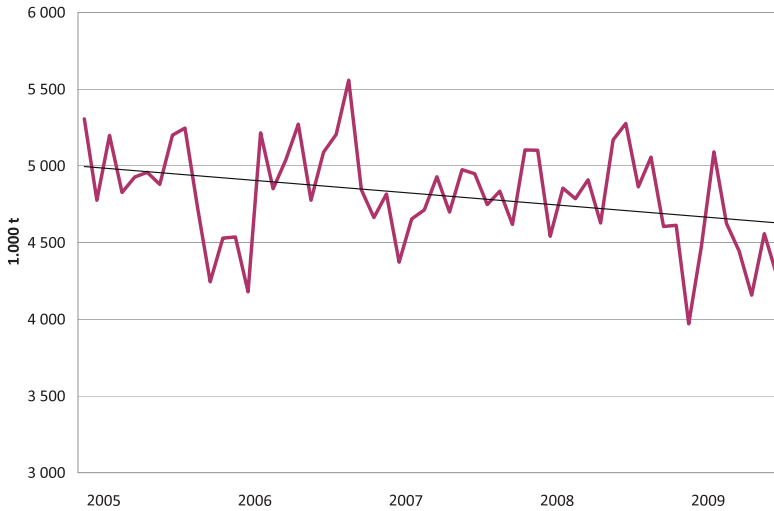


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Among the sectors referred to above, a distinction should be drawn between those that were temporarily influenced in a positive way by the crisis (oil-based products), or which were not affected at all (agricultural branch). For mineral oil products, the exceptional economic situation in the first quarter of 2009 rapidly deteriorated, giving way to a drop in the demand for transport. This situation should basically continue in 2010. The transport of agricultural products increased relatively dramatically in the middle of 2009, as a result of excellent harvests. This exceptional situation will probably not be seen in 2010.

Evolution in the tanker sector, which includes oil-based products and chemicals, is marked by a general downward tendency. This is due to the superposition of two trends: the transport of chemicals shows similar variations to those for the transport of dry goods (basically corresponding to the business cycle), whereas the segment of mineral oil products is tending to decline in the long term. The linear trendline determines the general evolution of tanker transport, since it replaces the variations of the chemicals sector.

**Graph 7: Demand for the transport of liquid goods in Germany\***



Source: Destatis; \*with linear trendline

While it is true that the passenger transport segment showed a significant drop in income in 2009, there is nevertheless potential for growth in demand in the years to come. This situation is due to the structure of the segment's customer base. On the whole, cruises attract older customers, especially from the United States, and their number will remain stable in the long term because of longer life expectancy and the demographic structure of western societies.

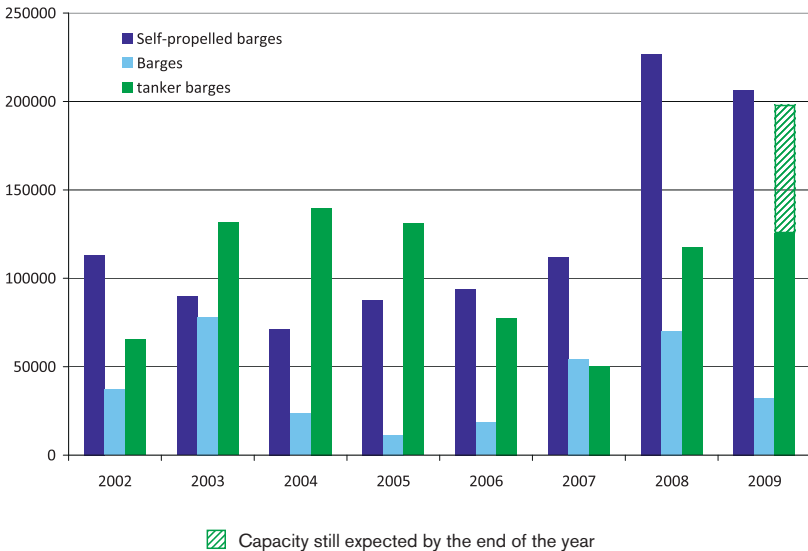
## Section 2

# RELATIONSHIP BETWEEN SUPPLY AND DEMAND FOR TRANSPORT

## I. EVOLUTION OF THE FLEET - NEW CONSTRUCTIONS / VESSELS WITHDRAWN FROM THE MARKET

In 2009, the pace of new vessels being brought into the market for both the transport of dry goods and tanker transport was faster than in 2008. This is mainly due to the fact that the vessels were already under construction or ordered before the autumn of 2008.

**Graph 8: New transport capacity entering the market**



Source: IVR

## 1. Transport of dry goods

During the first 11 months of the year, 62 new self-propelled vessels representing transport capacity of more than 200 000 tonnes were actually commissioned. Others are still awaited. For barges, however, there was a slowing down, with only 14 new barges representing capacity of 32 000 tonnes coming onto the market in 2009, compared with 38 in 2008. In the short term and in a market where demand for transport is more than 20% lower than 18 months earlier, this additional capacity merely increases the temporary overcapacity.

The current reticence on the part of the banks to finance new constructions for the transport of dry goods and the momentary uncertainty as to the evolution of demand would seem to point to a clear slowing down, and even a temporary stoppage, in the building of new vessels once those currently under construction have been completed.

Regarding vessels withdrawn from the market, we can see that on average the capacity withdrawn from the fleets of western Europe each year is in the order of 62 000 tonnes. These are mainly units smaller than 1 000 tonnes that are either converted for accommodation (particularly the smaller vessels) or delocalised to central European countries.

## 2. Tankers

The tanker market is in a restructuring phase in order to respond to changes in the regulations which will require, by 2018, transport to be by double-hulled vessels for more than 90% of the volume of liquids transported. A first important stage (middle range distillates like Diesel and heating oil) is scheduled for 2015. In this context, 2009 saw a sustained and accelerating pace in the arrival on the market of double-hulled tankers.

Thus approximately 50 self-propelled tankers have actually come onto the market since the start of 2009, and a number of vessels are still expected by the end of the year. This notable acceleration in new constructions compared with the figures for 2008 is mainly a result of the delays observed in their construction.

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However, if this pace were to be sustained, the capacity of double-hulled vessels already on the market would rapidly reach the level structurally necessary to meet demand. In terms of numbers, 672 double-hulled vessels are currently registered, for a total number of approximately 1 370 potentially active self-propelled tankers. In terms of capacity and in view of the substantially larger average size of recent vessels (more than 2 700 tonnes on average), the proportion of capacity double-hulled vessels represent is much greater than 50%.

As for the issue of balance on the market, it is a fact that during the transitional scheme which will end in 2018, single- and double-hulled vessels are operating on the same market. If the commissioning of new vessels is not accompanied by more vessels with little future prospects being withdrawn from the market, structural – but temporary – overcapacity may appear.

### **3. Passenger boats**

With the arrival of new vessels on the market, the pace of construction on this market has remained stable in relation to previous years. Demand for transport in this sector does not seem to have been much affected by the economic crisis.

## **II. CAPACITY UTILIZATION**

The main purpose of market observation for inland navigation in Europe consists of analysing and quantifying the relationship between supply and demand for transport on the market and studying the evolution of the relationship. In a situation where a structural imbalance between supply and demand could jeopardise the proper functioning of the system of transport that includes river transport, the evolution over time of the degree of capacity utilization constitutes an additional parameter for comparison in addition to the elementary comparison of offer and demand on this market.

### **1. Principles for evaluating the utilization of transport capacity**

Determining the degree of capacity utilization is a complex business because of the diversity of the determining parameters that must be taken into account. An econometric model called “capacity monitoring” has been drawn up for market

observation purposes; it is intended to highlight the trends in the evolution of the use of capacity. This tool has been applied to the period from 2003 to 2008 with an extrapolation on the base of estimates for 2009. In geographical terms, for practical reasons, the study initially covers only inland navigation and the fleets of western Europe (Germany, Belgium, France, Luxembourg, the Netherlands, Switzerland), although it must be said that these account for approximately 90% of the European inland navigation market, in terms of both services and transport capacity.

### **Factors taken into account:**

#### **A) The available fleet**

Account is taken of the nominal theoretical capacity of existing operational vessels at the end of each year in the countries under study.

#### **B) Method of operating the vessels**

To be able to take the normal method of operating the vessel into account (number of hours per day), different categories of vessels have been determined, thereby size serving as the principal parameter.

#### **C) Secondary use of barges for storing goods**

Account is taken of the storage activity provided in some cases by barges and tankers.

#### **D) Water conditions**

The “water conditions” factor plays a major role inasmuch as the capacity available on the market is immediately dependent on it. When displacement is reduced because of low water, the use rate of the fleet tends to increase.

#### **E) Demand for transport**

The demand for transport is evaluated on the basis of the volumes transported and services in TKM provided. It is worked out for each industrial sector, taking into account the seasonal cycles of demand, where they exist. It is also apparent that the seasonal or cyclical fluctuations in demand are variable in the different sectors. Thus these fluctuations are for example on average almost 13% for coal and ore, but nearly 39% for construction materials.

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The evaluation of necessary capacity in comparison with demand for transport is carried out by taking extreme situations into account (peak in demand and low water) to allow a margin of security.

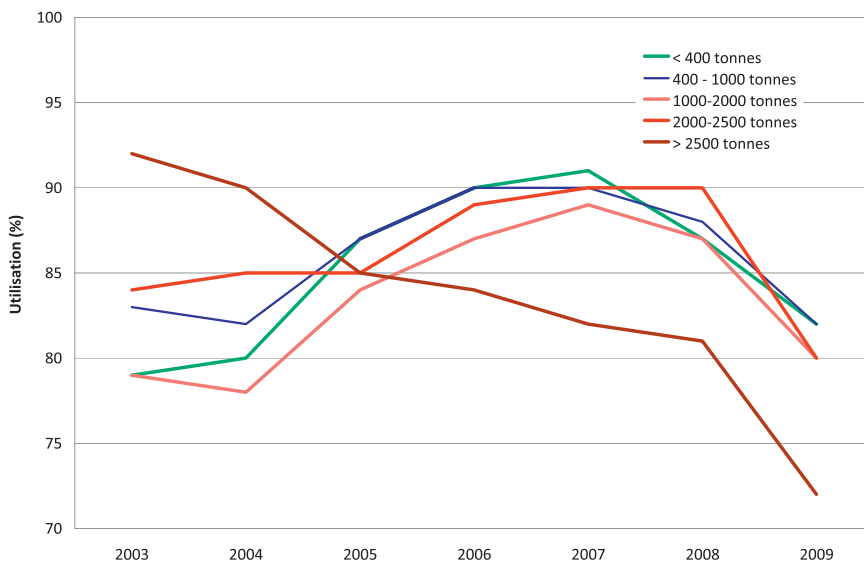
The reference year is 2004, since it was a year of average demand for transport and average water conditions. The balance of offer and demand is considered to be suited, as the fleet had just been through a period of restructuring.

**Prior comment:** It should be noted that for both the transport of dry goods and tankers the low water phenomenon that lasted from August to the end of October 2009 has been taken into account in calculating the degree of capacity utilization. This had a moderating effect inasmuch as, under normal conditions, the degree of capacity utilization would have been even lower in 2009.

## 2. Transport of dry goods

In the dry goods transport sector there was an increase in the demand for transport in the order of 8% between 2002 and 2008 in the geographical area under consideration. The nominal capacity of the fleet progressed in comparable proportions, although in actual fact the overall productivity of the fleet increased by more because of operation on the basis of a most sustained mode (18 or even 24 hours a day) of recent vessels.

Analysis of evolution in capacity utilization shows an increasing rate of use for all vessels of less than 2500 tonnes up to 2007.

**Graph 9: Degree of capacity utilization for the transport of dry goods**

Source: NEA

In 2008 and 2009, the degree of capacity utilization fell by 10 to 20% for all sizes of vessel in comparison with the previous period. With a view to making better use of economies of scale, a considerable number of large vessels have been built since the end of the restructuring policy. One of the reasons for the relative low degree of utilization may lie in the fact that the market is not yet ready to accept this class of tonnage in the proportions observed.

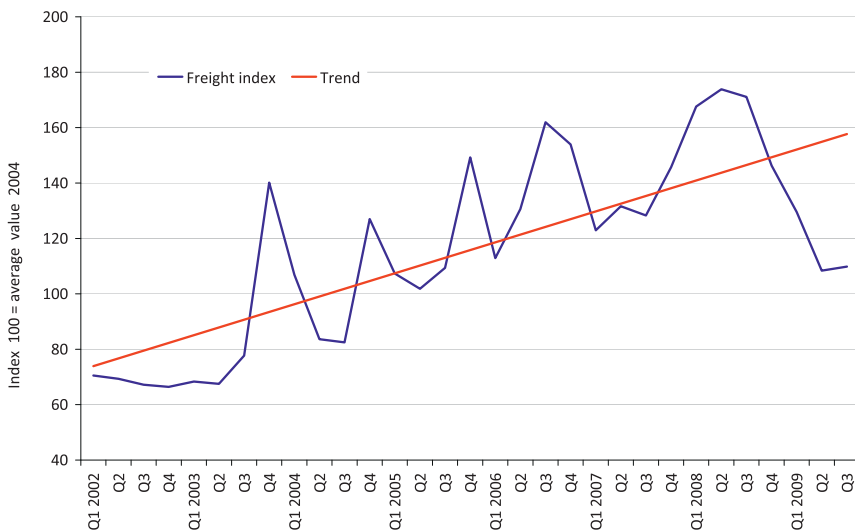
Analysis of freight rates in recent years confirms that the market functioned temporarily in a balance that could be qualified as “viable” until the third quarter of 2008. The fragility of the balance has since been demonstrated, however, inasmuch as a very rapid drop in demand for transport slashed the level of freight rates. A return to volumes comparable to those observed in 2008, with a corresponding level of freight rates, is not expected for several years yet.



Analysis of the evolution of the level of freight rates for the transport of dry goods clearly shows the effect of the additional capacity arriving on the market.

Thus freight rates have evolved since the autumn of 2008 to a particularly low level, because of the weakness of demand for transport. Whereas until the summer of 2008 freight rates had been tending to increase since 2002, reflecting a structurally growing tendency in the demand for transport in a context of capacity generally suited to demand, the arrival of this “demand crisis” in the market for the transport of dry goods has resulted in a clear break in the trend.

**Graph 10: Level of freight rates for the transport of dry goods**



Source: NEA

In the current situation, market rules mean that a fair amount of transport is carried out at prices that barely cover operating costs. This phenomenon may also be observed for other modes of transport on land, particularly road transport. Moreover, the offer of available capacity is such that a certain number of vessels are remaining inactive, for lack of goods to transport.

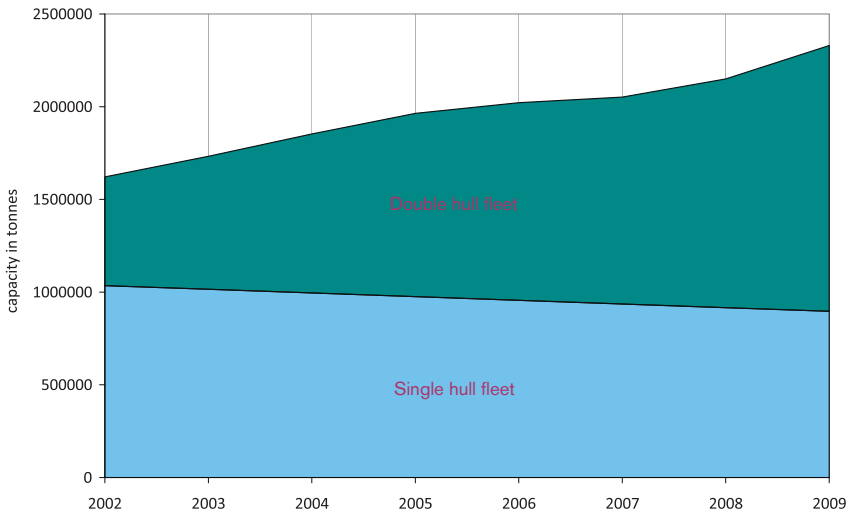
In this context, we are able to see a temporary imbalance that does not allow viable operation for inland navigation purposes.

### 3. Tanker fleets

As already mentioned, the tanker fleet is in a restructuring phase that will be completed in 2018. During this period, double-hulled vessels should replace the single-hulled vessels, which are otherwise still very present on the same market.

The level of freight rates for tankers at the end of 2008 and during the first half of 2009 was heavily influenced by the specific situation featuring temporarily very high demand for the transport of oil-based products. This momentary situation masked the effects of the overcapacity that is building up in this market, for the reasons already stated.

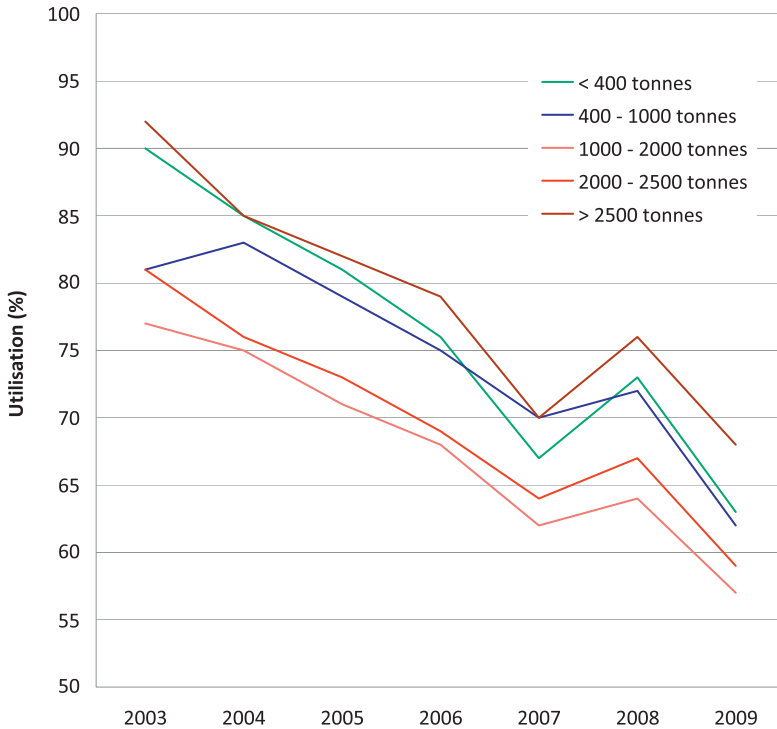
**Graph 11: Structure of the tankers in Western Europe**



Source: CCNR Secretariat

The coexistence of two types of vessel is generating latent over-capacity. The vast majority of single-hulled vessels will have no market left by 2019 at the latest. The effect this coexistence could have on the balance of the market will depend on the pace at which the single-hulled vessels are withdrawn from the market in the light of deadlines for the changes in the regulations.

**Graph 12: Rate of use of available tanker transport capacity**



Source: NEA

Observation of the operation rate of available capacity shows clearly a gradual deterioration in all the categories of tankers. 2008, which was a very good year for tankers from the point of view of activity, was marked by a temporary improvement explained by the fact that in the autumn of 2008 the entire capacity had to be

operated in order to meet demand. Apart from sustained demand and poor water conditions, mention may also be made of other conditions that are not always quantifiable, such as temporary bottlenecks at the delta's refineries.

In 2009, the drop in activity noticeable on the tanker market was of course accompanied by a further deterioration in the rate of use of available capacity.

Although the general trend is the same for all sizes of vessel, i.e. a decrease of more than 25% in the operation rate between 2003 and 2009, it is nevertheless apparent that it is the largest vessels that have the highest operation rate.

Comparing offer and demand on the market shows very pronounced extremes. The result is heavily influenced by specific circumstances that are partly exogenous to the market, such as water conditions and the effectiveness of logistics processes. The market may manifestly be defined as being very volatile.

## Evolution in the degree of transport capacity utilization

Tonnage class	Use						
	2003 (%)	2004 (%)	2005 (%)	2006 (%)	2007 (%)	2008 (%)	2009 (%)
<b>Transport of dry goods</b>							
< 400 tonnes	79%	80%	87%	90%	91%	87%	82%
400-1000 tonnes	83%	82%	87%	90%	90%	88%	82%
1000-2000 tonnes	79%	78%	84%	87%	89%	87%	80%
2000-2500 tonnes	84%	85%	85%	89%	90%	90%	80%
> 2500 tonnes	92%	90%	85%	84%	82%	81%	72%
<b>Tankers</b>							
< 400 tonnes	90%	85%	81%	76%	67%	73%	63%
400 -1000 tonnes	81%	83%	79%	75%	70%	72%	62%
1000-2000 tonnes	77%	75%	71%	68%	62%	64%	57%
2000-2500 tonnes	81%	76%	73%	69%	64%	67%	59%
> 2500 tonnes	92%	85%	82%	79%	70%	76%	68%

Source: NEA

# **SITUATION OF INLAND NAVIGATION COMPANIES**

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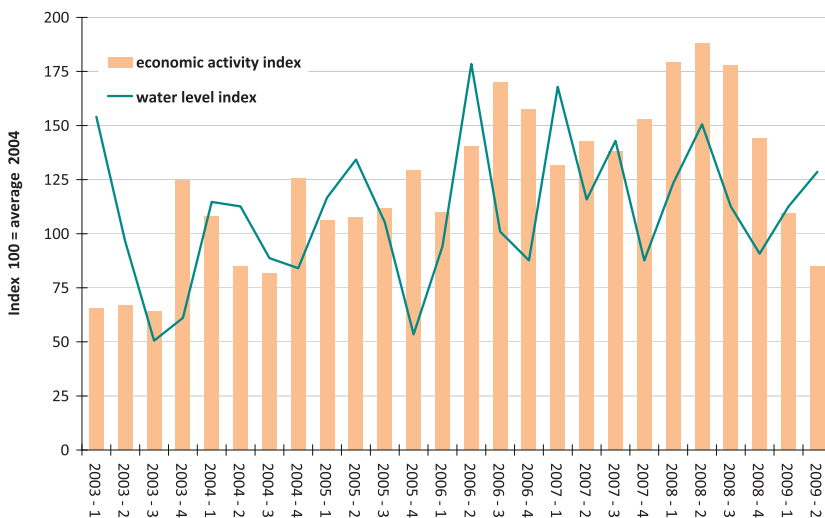
## **I. EVOLUTION OF THE ACTIVITY**

### **1. Transport of dry goods**

The CCNR Secretariat evaluates the level of economic activity on the basis of an index combining the freight rates applied and the volumes transported. In this sector it is apparent that the combination of sustained demand in a context of a suitable offer of capacity and a sustained level of freight rates has resulted in a high level of economic activity over the first three quarters of 2008, compared with previous years.

In the fourth quarter of 2008 and even more so in 2009, the general drop in demand in the order of 20% on average halved the level of economic activity in this sector.

**Graph 13: Evolution in the economic activity of the transport of dry goods**



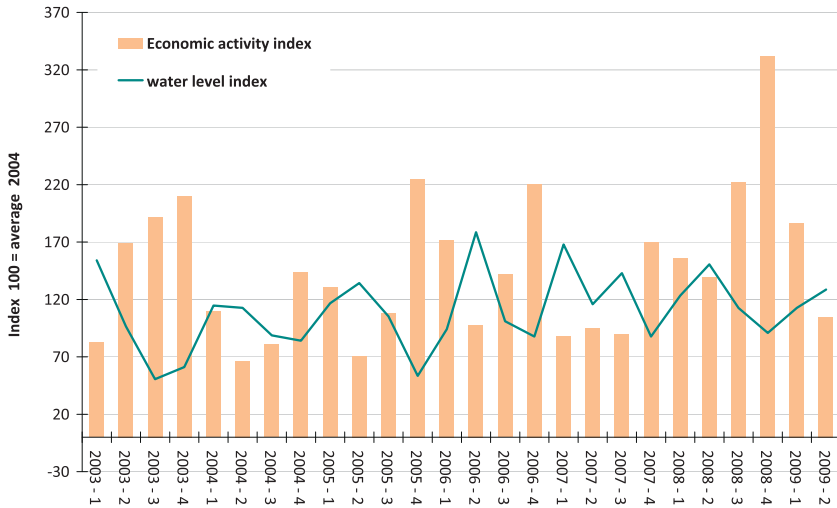
Source: CCNR Secretariat

## 2. Tanker fleets

On this market, almost two-thirds of which involves the transport of oil-based products, freight rates evolved at a fairly moderate rate until August 2008. From the end of the summer of 2008, the slump in prices on the world market boosted purchasing, particularly with the onset of winter. Demand on the market was quite animated as a result, with as a corollary a strong increase in freight rates. The trend was somewhat attenuated at the end of the year, as the most urgent purchases had been made, but activity remained sustained during the first four months of 2009 thanks to a reconstitution of stocks.

Over the summer, demand for transport was extremely low, which encouraged operators to immobilise part of their capacity.

It was only in the autumn of 2009, under the combined effect of seasonal pre-winter purchasing and water conditions only allowing partial loading, that a slight temporary increase in the level of freight rates could be observed.

**Graph 14: Evolution of the economic activity for tankers**

Source: CCNR Secretariat

### 3. Influence of water conditions

Although water conditions were favourable for optimum operation of available capacity during the spring and until July, this did not in fact happen because of the weakness of demand. In August the absence of rain resulted in a period of low water on the Rhine which lasted until November. For many weeks, large vessels could not be loaded to more than 30% of their capacity, if that.

The following table shows the effect on the loading capacity of vessels according to their size of the practicable draught of water.



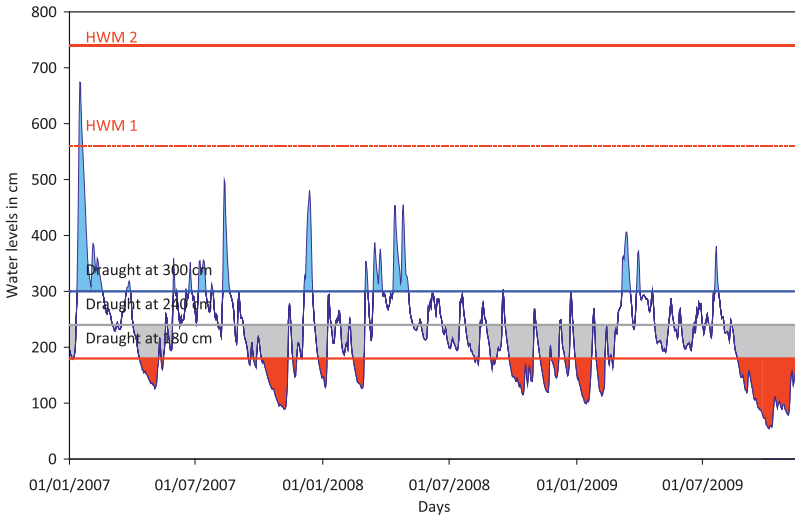
Loading capacity according to vessel size	Displacement / Draught of water				
	1.50 m	2.00 m	2.50 m	2.80 m	3.50 m
L 135.00 X W 11.45	750 t	1 475 t	2 225 t	2 600 t	3 700 t
L 110.00 X W 11.40	600 t	1 200 t	1 800 t	2 100 t	3 000 t
L 85.00 X W 9.50	570 t	930 t	1 350 t	1 350 t	1 350 t
L 67.00 X W 8.20	420 t	670 t	1 000 t	1 000 t	1 000 t

$L$  = length

$W$  = width

Source: VBW (WESKA)

**Graph 15: Level of the Rhine at Kaub**



Source: BAFG

## II. EVOLUTION OF CHARGES

### 1. Price of vessels

The combination of a large number of new constructions and the high price of steel, the market for new vessels reached its maximum prices in the first half of 2008. Since then, the economic crisis has stopped new orders, and this has also produced a substantial drop in prices.

On the market for second-hand vessels, there is uncertainty because of the current economic climate. It is structurally not a buyer's market because of the lack of visibility and capital. The downward trend will have as its main result a drop in guarantees and hence in the ability of the banks to support and finance inland navigation undertakings.

### 2. General evolution of charges

The cost structures described in the table below have been drawn up to give a summary image in the form of indexes of the general evolution of the charges vessel operators have to pay. These two indicative structures correspond to two methods of operation. The structure varies according to the size, age and operating method of the vessel.

**Table 1: Comparison of cost structure for recent self-propelled vessels**

Reference year = 2004		Self-propelled vessels operated individually	Self-propelled tankers operated corporately
Fuel		20%	18%
Personnel charges		40%	42%
Other charges	Interest	40%	40%
	Insurance		
	Maintenance		

Source: CCNR Secretariat

Aggregation of the evolution of the different headings for charges gives the following results:

**Table 2: Indexes of charges**

<b>Index</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009(*)</b>
<b>Fuel</b>	84	100	130	145	148	181	122
<b>Personnel charges</b>	98	100	101	103	105	108	111
<b>Other charges</b>	100	100	100	132	170	163	161
<b>Global cost index for transport of dry goods</b>	96.0	100.0	106.4	123.0	139.6	144.6	132.2
<b>Global cost index for tankers</b>	94.3	98.0	103.8	120.1	136.6	143.1	132.9

(\*) estimation

Source: CCNR Secretariat

Aggregating the charges shows a slight decrease in the general level of charges. The effect of this evolution on the situation of the undertakings should nevertheless be seen in perspective, inasmuch as it is largely due to the drop in fuel costs, the variations and impacts of which are generally attenuated in both directions by the “diesel oil clauses” that are included in contracts.

In addition, the theoretical drop in charges is trivial compared with the drop in production suffered by the inland waterways transport undertakings over the past twelve months, particularly for the transport of dry goods.

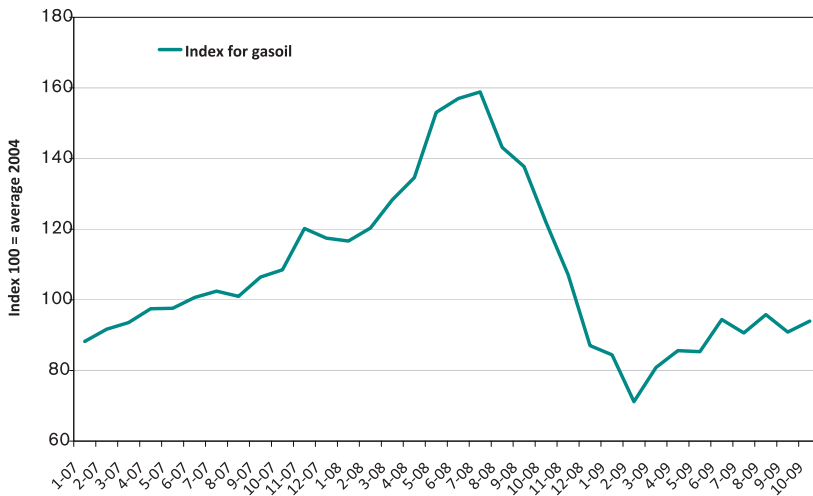
### **3. Fuel**

After a substantial drop in prices during the second half of 2008, the price of fuel held steady throughout the first half of 2009 and until the autumn, at a level that was on average lower than the price observed during the first half of 2008. On average, the price of diesel oil is 32% lower than the average value for 2008.

**Table 3: Average annual price of diesel oil**

Year	2002	2003	2004	2005	2006	2007	2008	2009 (*)
Price of 100 litres of diesel oil	28.50	30.07	35.88	46.67	52.12	53.16	67.94	45.96

Source: CBRB (\*) to mid-November 2009

**Graph 16: Evolution of fuel prices**

Source: CBRB (\*) to mid-November 2009

#### 4. Personnel charges

Personnel charges constitute an important part of overhead costs. There is a degree of elasticity in companies of a certain size. Indeed this type of undertaking is able to make use of paid leave, reduced working hours or reduced staff numbers to some extent. For operators of individual vessels, this charge is relatively incompressible, as wages are fixed and the operator's income is constituted by the profit made, if any.

From the point of view of collective wage agreements, a 3% increase in salaries and the payment of a single-payment bonus were applied in January 2009 in Germany. An increase of 1.1% is also scheduled for July 2010.

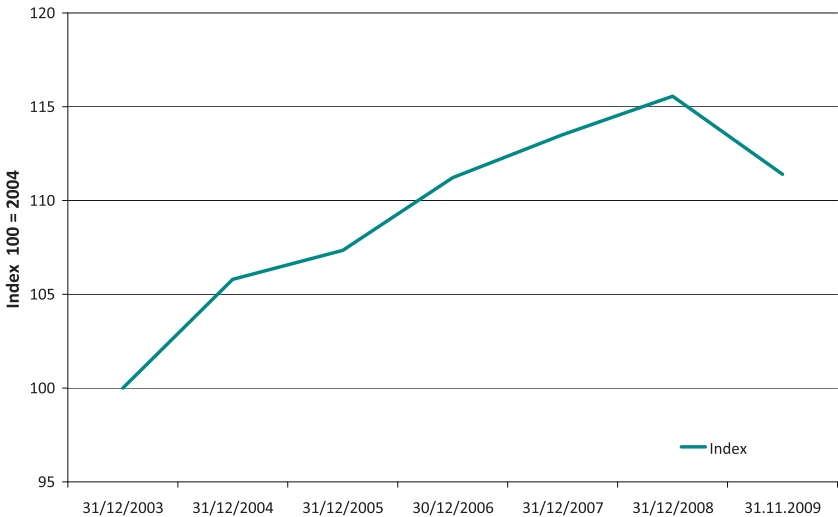
In the Netherlands, a general increase of 0.65% was applied on 01 January 2009. It is to be followed by an increase of 0.75% on 01 July 2009. No increase is planned for 01 January 2010, however.

## 5. Cost of maintenance

In relation to the current economic crisis, maintenance costs have tended to fall since the beginning of 2009, after having reached a maximum in 2008. This drop may be partly due to the drop in the price of steel.

The shipyards have also seen a drop in activity caused by a shortage of funds on the financial markets.

**Graph 17: Index of maintenance costs (\*)**



Source: ITB

(\*) The weighting use in calculating this index is 20% for the price of steel and 80% for the cost of labour.

## 6. Financing and financial costs

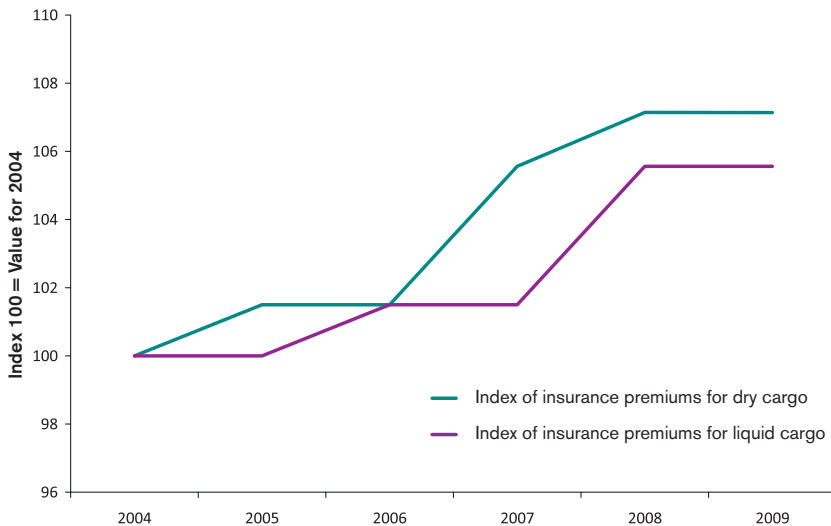
Although interest rates on the interbank market fell considerably during 2009, this was far from being passed on in the loans granted by the banks. The interest rates charged fell only slightly between 2008 and 2009 for customers in inland navigation. As a result, loans in hand, which are generally at a fixed rate for five years, did not benefit from the reduction.

Moreover, the banks are extremely prudent in financing inland navigation, in view of the decreased activity in the sector.

## 7. Insurance

Insurance premiums have remained stable since the beginning of 2009. The value of the vessels used as the basis for insurance is in fact tending to diminish. As this element is currently uncertain and heavily dependent on the evolution of the market in the coming months, it has not had yet any real impact for the moment.

**Graph 18: Evolution of insurance premiums**



Source: OEB

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## **Summary**

Faced with a serious drop in economic activity for the transport of dry goods in 2009 and a rather less serious drop in the tanker sector, the charges navigation companies have to pay decreased slightly overall in 2009. The decrease remains out of proportion, however, when compared with the drop in economic activity.

## SUMMARY AND PROSPECTS

The worst of the crisis seems to have been overcome a few months ago. In April 2009, some national economies showed the beginnings of economic recovery, and certain industrial sectors have been able to start up again, thanks to the reactivation of production capacity that had been restricted for some time. For inland navigation, economic evolution in France and Germany is of particular importance. Both countries offer prospects for growth in 2010 which, although they are still relatively modest, are the sign of economic recovery. The recovery of the iron and steel industry in particular should provide a kick-start for inland navigation. More than any other sector, this industry serves as a barometer for economic evolution. The increase in the transport of containers also hints at a resumption of global trade, and more particularly an upturn in consumption in Europe.

This timid economic recovery has not so far had any real impact on the market for inland navigation. Freight rates are still at an extremely low level; the sector of the transport of dry goods remains virtually unchanged, despite the poor water conditions this autumn. The situation would tend to indicate that the available capacity on offer is still much greater than demand. Nevertheless, we may also expect a resumption in freight rates in the coming months, in line with the evolution of the iron and steel industry and the transport of containers.

Inland navigation as a means of transport is heavily dependent on the evolution of industry. It was precisely industry that was hard-hit by the crisis, and it will be the sector that will take the longest to emerge from the crisis; inland navigation will take the same amount of time. However, not all the sectors were affected by the economic recession in the same fashion. Thus oil-based products follow their own cycle for the demand for transport, and in the segment of the transport of dry goods, the transport of agricultural goods is also influenced more by exogenous factors than by the consequences of the crisis. Nevertheless, given the importance of the segments affected by the crisis, it will take several years before demand returns to the level it was showing at the end of 2007.

Meanwhile, recent years have seen a strong increase in the fleet in the segments of the transport of dry goods and tankers. This increase has nevertheless taken place



in different contexts. In the segment of the transport of dry goods, the fleet has been renewed and enlarged, and volumes transported have increased. Attention has been paid more particularly to optimising economies of scale. The markets for the transport of containers and the transport of coal more particularly appear to justify such investments. The development of the freight rate up to an including 2008 is the best proof of this. Given that demand for transport is now in all probability likely to remain at a substantially lower level, we may wonder whether the enlargement has not generated over-capacity, and as a result that this over-capacity is not of a structural nature.

The indexes we have at the moment are not sufficient to answer this question. Given that the market seemed to be developing in a balanced fashion unless the crisis came along, only substantially lower structural demand in one or more segments might support such a conclusion. There is no argument in that direction at present. Nevertheless, we must be very attentive. It is possible that the road to economic recovery involves profound restructuring. In the financial world, this process has already begun. Moreover, awareness of climate change may have consequences for inland navigation. Thus it is not beyond the bounds of possibility that the iron and steel industry may undergo some change, that pressure may be brought to bear on the consumption of coal for the production of energy, and that the rationalisation of transport in the hinterland may result in some reduction in the use of inland navigation in the container segment. On this last point, the increased competition from rail transport should be borne in mind. To sum up, it may be said that the market's demand will be the determining factor for the medium-term evolution of this segment.

The situation is different in the tanker transport segment. The market for the transport of oil-based products has been shrinking for a number of years, and will continue to do so. Moreover, the segment has not been directly affected by the consequences of the crisis. It is true that bio-fuels have mitigated this downward trend, but they have not made up for it entirely. The increase in the transport of chemicals, a sector that has in fact been hard-hit by the crisis, has also not managed to withstand the trend. The fact that tanker transport has operated in recent years in what has in fact been a perfectly satisfactory manner from an economic point of view may be explained by a number of positive factors in the economic climate in a market that is characterised by its volatility. The evolution of the offer of transport capacity

will be the determining element for the prospects of evolution for tanker transport: will the sector manage, despite the decline in demand, to replace the fleet of single-hulled vessels by a fleet of double-hulled vessels, or is there a risk of over-capacity, albeit temporary? During the period from 2012 to 2017, which will correspond to the phasing out of single-hulled vessels, the coexistence of the two types of vessel in the fleet may disturb the balance of the market.

A single mode of transport that refers to two different universes. Nevertheless, the need to overcome the financial problems exists for both segments – both have had their balance overturned, both lack the capital to make the necessary investments, both are affected by an increase in capital costs, and both have (too) weak cash-flow to be able to cope with their current financial obligations. Different indexes provided by the branch tend to show that many undertakings have cashflow problems. If these problems were to result in bankruptcies, the catastrophic consequences that would result for the entire sector of the arrival on the market of the capacity released in this way would be all too foreseeable.

# APPENDIX 1

## New constructions on the market until the 15 of November 2009

Type of vessel	2002			2003			2004		
	Number	Tonnage	kW	Number	Tonnage	kW	Number	Tonnage	kW
<b>Self-propelled vessels</b>	45	113114	56138	34	89676	41894	28	71326	34400
<b>Ordinary barges</b>	29	37180		28	78156		14	23636	
<b>Total</b>	<b>74</b>	<b>150294</b>	<b>56138</b>	<b>62</b>	<b>167832</b>	<b>41894</b>	<b>42</b>	<b>94962</b>	<b>34400</b>
<b>Self-propelled tankers</b>	22	65548	30547	45	131455	50332	54	139718	61236
<b>Tanker barges</b>	2	178		1	1800		3	2427	
<b>Total</b>	<b>24</b>	<b>65726</b>	<b>30547</b>	<b>46</b>	<b>133255</b>	<b>50332</b>	<b>57</b>	<b>142145</b>	<b>61236</b>
<b>Push tugs</b>	2		1276	0		0	1		992
<b>Push tugs</b>	3		11670	1		279	1		177
<b>Total</b>	<b>5</b>		<b>12946</b>	<b>1</b>		<b>279</b>	<b>2</b>		<b>1169</b>
<b>Cruise boats</b>	17		13251	10		7238	5		4021
<b>Day-trip boats</b>	9		4834	1		1566	1		662
<b>Total</b>	<b>26</b>		<b>18085</b>	<b>11</b>		<b>8804</b>	<b>6</b>		<b>4683</b>

Type of vessel	2005			2006			2007		
	Number	Tonnage	kW	Number	Tonnage	kW	Number	Tonnage	kW
<b>Self-propelled vessels</b>	34	87645	27490	33	93985	26637	35	111655	31460
<b>Ordinary barges</b>	12	11401		18	18385		29	54336	
<b>Total</b>	<b>46</b>	<b>99046</b>	<b>27490</b>	<b>51</b>	<b>112370</b>	<b>26637</b>	<b>64</b>	<b>165991</b>	<b>31460</b>
<b>Self-propelled tankers</b>	46	130860	43736	28	77565	24637	23	50333	16534
<b>Tanker barges</b>	2	2527		0	0	0	0	0	0
<b>Total</b>	<b>48</b>	<b>133387</b>	<b>43736</b>	<b>28</b>	<b>77565</b>	<b>24637</b>	<b>23</b>	<b>50333</b>	<b>16534</b>
<b>Push tugs</b>	0		0	0		0	1		0
<b>Tugs</b>	0		0	0		0	0		0
<b>Total</b>	<b>0</b>		<b>0</b>	<b>0</b>		<b>0</b>	<b>1</b>		<b>0</b>
<b>Cruise boats</b>	5		6280	4	1644	3186	2		1816
<b>Day trip boats</b>	5		2832	2	1959	2244	1		1570
<b>Total</b>	<b>10</b>		<b>9112</b>	<b>6</b>	<b>3603</b>	<b>5430</b>	<b>3</b>		<b>3386</b>

Type of vessel	2008			2009		
	Number	Tonnage	kW	Number	Tonnage	kW
<b>Self-propelled vessels</b>	68	226750	92944	62	206408	97482
<b>Ordinary barges</b>	38	70260		14	32096	
<b>Total</b>	<b>106</b>	<b>297010</b>	<b>92944</b>	<b>76</b>	<b>238504</b>	<b>97482</b>
<b>Self-propelled tankers</b>	47	117500	31870	47	125600	30719
<b>Tanker barges</b>	0	0		0	0	
<b>Total</b>	<b>47</b>	<b>117500</b>	<b>31870</b>	<b>47</b>	<b>125600</b>	<b>34719</b>
<b>Push tugs</b>	3		1684	4		4208
<b>Tugs</b>	3		0	4		1335
<b>Total</b>	<b>6</b>		<b>1684</b>	<b>8</b>		<b>5543</b>
<b>Cruise boats</b>	3		5092	8		9452
<b>Day trip boats</b>	6		3092	0		0
<b>Total</b>	<b>9</b>		<b>8184</b>	<b>8</b>		<b>9452</b>

Source: IVR and CCNR Secretariat

## GLOSSARY

**20-foot Equivalent Units (TEUs):** Unit of measurement for registering containers according to their dimensions and for the description of the capacity of container vessels and terminals. One ISO 20-foot container (20 feet long and 8 feet wide) corresponds to 1 TEU.

**ARA ports:** Abbreviation for the three major European ports of Amsterdam, Rotterdam and Antwerp.

**Downstream navigation:** navigation downriver

**Downstream:** Refers to the part of an inland waterway located between a given point and the embouchure or confluence.

**Draught:** Height of the immersed part of a vessel; thus draught affects the loading level.

**Dry hold:** Used for the transport of dry cargo.

**Econometric ratio:** Estimated ratio between two or more values (e.g. production of steel, transport on inland waterways, imports of coal, etc.) on the basis of statistical data, using electronic calculation procedures. This estimate is used in making forecasts.

**Electric steel:** Electric steel is produced by melting down scrap metal using electric arc technology.

**Freight:** Refers to goods being transported or the price of transport.

**Handling:** Trans-shipment of goods from one means of transport to another.

**Hold:** Compartment covering the larger part of a commercial vessel, for the storage of cargo to be transported.

**Inland navigation / inland waterways transport:** Transport of goods or persons on board a vessel intended for transport on a given network of inland waterways.

**Inland waterway:** Navigable inland waterways that may be used with a normal load by vessels with a minimum deadweight of 50 tonnes. Inland waterways include navigable rivers, lakes and canals.

**Offer of transport or of capacity:** Total loading capacity of the available fleet, expressed in tonnes.

**Oxygen steel:** Steel produced from iron ore and coal using blast-furnace technology, passing through a number of stages (injection of oxygen, etc).

**Production/yield:** The notion of production/yield as used in this publication is intended to define in index form the activity of inland waterways transport, taking into account a given level of demand and the freight rates applied on the market.

**River/sea transport:** Transport of goods on board a river/sea vessel (seagoing vessel designed for use on inland waterways), carried out entirely or partly on the inland waterways network.

**Service:** Refers to the service of the transport of goods, expressed in tonnes/kilometre.

**Tanker hold:** Used for the transport of cargo in tankers.

**Tonnes/kilometre (Tkm):** Unit of measurement for transport services, corresponding to the transport of one tonne over one kilometre of an inland waterway. Determined by multiplying the volume carried in tonnes by the distance travelled in kilometres.

**Transshipment:** Unloading of a cargo from one seagoing freight vessel and loading onto another seagoing freight vessel, even if the cargo has remained on land for any length of time before the transport continues.

**Upstream navigation:** Navigation travelling upstream.

**Upstream:** Refers to the part of an inland waterway located between a given point and the source.

**Water conditions:** Height of the water in a river or canal, in cm.

## Sources of information

### International organisations

Eurostat  
OECD  
Moselle Commission

### National authorities

Bundesanstalt für Gewässerkunde (Germany)  
Bundesamt für Güterverkehr (Germany)  
Destatis (Germany)  
Voies Navigables de France (France)  
WSD Süd-West (Germany)  
WSD-OST (Germany)

### Other public-sector organisations

Deutsches Institut für Wirtschaftsforschung (DIW) (Germany)  
Ifo Institut für Wirtschaftsforschung (IFO) (Germany)  
Transport en Logistiek Nederland (Netherlands)

### Private-sector organisations

ECORYS Research and Consulting (Netherlands)  
Institut pour le Transport par Batellerie (ITB) (Belgium)  
Institut für Seeverkehrswirtschaft und Logistik (ISL) (Germany)  
NEA Consulting (Netherlands)  
Zentralverband der deutschen Seehafenbetriebe e.V. (ZDS) (Germany)

### Inland navigation organisations

CBRB  
UENF  
OEB  
IVR  
Kantoor Binnenvaart

### Industrial organisations

Eurofer  
Verein der deutschen Kohleimporteure (VDKI)

### Ports

Antwerp  
Ghent  
Rotterdam

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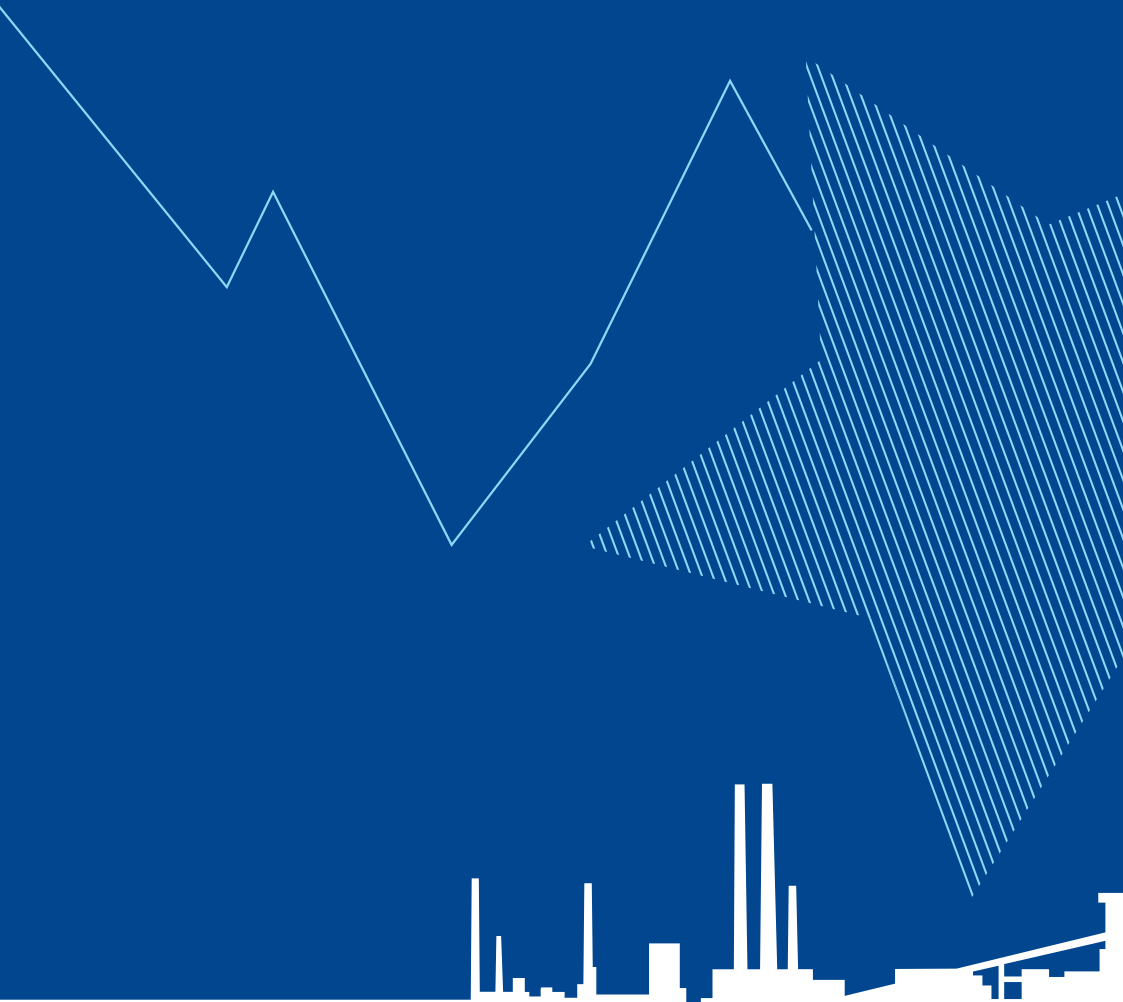
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