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THE INLAND WATERWAYS OF TOMORROW ON THE EUROPEAN CONTINENT

PARIS - 30 January 2002

DOCUMENT No. 4
(English only)

Inland Waterways in Europe
At what level do we want to play?

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INLAND WATERWAYS IN EUROPE

AT WHAT LEVEL DO WE WANT TO PLAY ?

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1 Inland waterways in Europe

1.1 Introduction

It is without a doubt that inland waterways in Europe will play a major role in the future of the European transport system. In general one could say that a lot of developments favour inland waterways. It is a cheap, reliable mode of transport that can cope with a lot of the customer requirements. Furthermore, inland waterways get a lot of positive attention at the policy making levels, be it regional national or international. Still inland waterways is not developing according to the general expectation. Who is to blame? Are we wrong to have such expectations? Is the inland waterway sector itself not responding according to the challenges? Are shippers and logistics service providers hindering the development of inland waterways, are they not aware of the potentials of inland waterways? Are the regulations not according to the positive attitude of governments throughout Europe? All rightfull question’s that, I’m afraid to say, will not all be answered in this paper, though I will give it my best shot. A lot of attention has been given to the notion of a “level playing field”. In such a field, the parties concerned can take the actions they want and a social desirable level of activities would result, within a market that has fair competition. In order to understand how such a field would look like, it is very important to look into the specific market elements of the existing situation. We are not creating a new world, free from history, but have to deal with aspects we can (perhaps!) do little about. The question therefore is: at what level do we want to play?

1.2 What’s the paper about?

In order to discuss around the question raised in the introduction above, the following aspects will be dealt with in the paper.

- A short overview of the market position of inland waterways in Europe (section 2);
- A distinction in geographical markets (section 3);
- A number of statements on the future of inland waterways in Europe (section 4).

The paper is based on public knowledge about the sector and holds the opinion of the author, which is based on a ten years experience with inland waterway related research.
2 Market position of inland waterways

2.1 Level of transport

Indicated as tonkilometres, the figure below gives a clear insight into the development of Inland Waterways in Europe (figure concerns the EU-15, figures on CEC are given below the picture).

Figure 1 Transport in the EU-15 (x 1.000 million tonkilometres)

![Graph showing transport in the EU-15 from 1970 to 1998 for IWT, Road, and Rail]

Source: EU Transport in figures, European Commission, 2001

The figure clearly shows the stability of Inland Waterways in absolute terms. Between 1970 and 1998 the level of transport (measured in tonkilometres) 103 and 121 billion. With this inland waterways have had a better performance than railways. The railways have seen a decline in transport in the same period. The major development in freight transport though, was the sharp rise in road transport, the level in 1998 is three times the level in 1970. This has resulted in this period road has increased its share from 48% (1970) to 74% (1998) for the EU-15, whilst other modes have all seen a decline. Inland waterways; 12% (1970) to 7% (1998), railways; 33% (1970) to 14% (1998), and pipelines; 8% (1970) to 5% (1998).
The level of inland waterway transport in CEC is around 10% of that in the EU-15; 10 billion tonkilometres. The share of inland waterways in the total transport has remained the same during the period 1997-1998; around 2.5-1.8%. In the CEC there has also been a sharp decline of the share rail transport (77% in 1970 to 42% in 1998), together with a sharp increase of the share of road transport (15% in 1970 to 47% in 1998).

### 2.2 Other figures around freight transport in Europe

Of course the figures on the level transport do not tell the whole story. In this section some other figures are presented, just as an illustration.

**Modal split per country (1998)**

On average inland waterways had a modal split of 7% in 1998 in the EU-15. Actually, only four countries have a modal split higher than 7%. In the Netherlands inland waterways have a modal split of 42%, Germany 14% and Belgium 13%, and Luxembourg 10%.

In the CEC, there is also a few countries with relatively high shares. They are: Rumania (40% of CEC inland waterways), Hungary (15%), Slovak Republic (15%), Czech Republic (10%) and Poland (10%).

**Infrastructure**

The length in use (navigable canals, rivers and lakes regularly used for transport) of Inland waterways in the EU 15 is around 30.000 kilometres. In 1998 the length of the network was 8% less than in 1970. The length of the inland waterway system in CEC is 9.000 kilometres.

**Number of enterprises**

The total number of enterprises in the EU-15 is around 10.000. Of these two-third are Dutch or Belgium, countries where shipper-owners play an important role in inland shipping.

**Turnover**

Inland shipping has a turnover of around 4.200 million Euro’s. This is far less than road (131.000), but the turnover per person employed is higher (114.000 Euro for inland waterways compared to 77.000 Euro for road transport).
3 Inland waterway transport in Europe: four corridors

3.1 Introduction

Transport by barge is being used extensively on the Rhine, the Schelde, the Meuse, the Main, the Danube and many smaller waterways. Inland waterway transport plays a key role in the imports and exports passing through Northwestern Europe and constitutes a major part of the hinterland connection for the EU's largest seaports. Inland waterways carried 121 000 million tonnekilometres of goods in 1998 (source: Eurostat "Transport in figures"). This figure rose by 14% since 1970 and represents a modal share of 7%. This needs to be looked at with regard to the fact that only six countries of the EC have river systems, which are interconnected (Austria, Belgium, France, Germany, Luxembourg and the Netherlands). About 1.000.000 containers transited via the Rhine in 1999. Inland waterways account for more than one third of intra-Community transport operations, i.e. commercial traffic between the Member States.

Inland waterway transport is an environmentally friendly, low cost and safe means of transport compared with the land based alternatives, particularly the congested road transport. In North-western Europe, for shipments travelling over 150 kilometres or more, in many cases inland waterway transport is both the cheapest and the most environmental friendly way of transport.

The above shows that inland waterway transport is an important hinterland connection with attractive aspects. Efforts to shift additional loads towards inland navigation have however not been particularly successful. Previous research, and other initiatives, have pointed out the main reasons: inland navigation has a poor image as a mode regarding door to door transport chain due to lacking information about services, physical limitations and the length of the transport time. The advantages of this mode of transport could be marketed more prominently to convince the user that inland navigation is a valuable alternative to road haulage. Customers still want their shipments to be delivered to them in a short time frame, and barge transport is relatively cheap, but also has relatively long transport times. Due to various economic and logistics trends, the market share of barge transport in traditional markets such as ore, coals, petro-chemicals and animal fodder are also under pressure by road and rail transport.

One of the specific characteristics of the inland waterway transport market is that the barges have a long span of life. It is not unusual for barges to be used for 50 years or longer. These barges are often already depreciated to a large extent. Furthermore, a substantial number of barge owners live on their ships. This has led to the following:

▲ Barge owners have relatively low costs and can offer sharp prices to customers;
▲ An overcapacity has developed, especially in the segment of older barges with a small capacity (below 650 tonnes).
Therefore, competition in inland waterway transport between barge companies has been intense during the last decades. Especially in the bulk markets, barge shippers were frequently working around the cost price in order to be able to get transport assignments.

Over the last years, as a result of liberalisation of the market and the removal of technical boundaries with the opening of the Rhine-Main-Danube Channel, the Western European market has seen an influx of Eastern-European entrepreneurs who are able to offer very competitive rates.

### 3.2 The waterways network under consideration

The picture below shows the main area of interest to inland waterways.

**Figure 2** Geographical overview of main European inland waterway network

In this paragraph, the main transport areas of concern are described. From the point of view of Trans-European networks four transport corridors making use of inland waterway transport can be identified. These corridors are:

- The Rhine corridor;
- The North-South corridor, comprising rivers and canals in the Netherlands, Belgium and France;
The East corridor covering the inland waterway transport from Germany to Poland and the Czech republic;

The South-East corridor including the Danube, Main and the canals Main-Danube Canal and Danube-Black Sea Canal.

3.3 The Rhine area

Of all European countries, the Netherlands have the most dense inland waterway network. The large rivers Rhine, Meuse and Schelde all have their estuary in the Netherlands. Total length of the Dutch waterways amounts to 5,200 km. The river Waal –between the Rhine near Nijmegen and the port of Rotterdam– is the most important waterway.

Since many years, the use of this inland waterway network is significant. Of all Dutch border-crossing goods, over 60 percent is transported by barges. In 1999, over 234 million tonne was transported by barges, of which 42 percent concerned domestic transport, 49 percent concerned international traffic and 9 percent was transit. Within the Netherlands, many intermodal terminals have been constructed, in order to look after transport to the final destination. Dutch public investment in inland waterways for the period up to 2004 amounts to almost 270 million Euro.

From the biggest Dutch seaports, Rotterdam, Amsterdam and Flushing, several liner services depart to inland terminals in the Netherlands, but also in Germany, Belgium, France, Switzerland and Austria. Especially the transport relations with Belgian and German inland ports are intense. The river Rhine accounts for about 67 percent of all Dutch international inland waterway transport.

The German waterway system consists of approximately 7,700 km of waterways, which connects the seaports with the hinterland and the major industrial centres of the country. In fact 56 out of 74 German metropolitan regions are directly connected to the waterway system. The German federal transport plan envisages investments in the waterway system up to the year 2012 of approximately 15 billion Euro.

In Germany the share of inland navigation with regard to the entire goods transport is 20 percent, which is comparable to the haulage of the German railway. In 1999 229 million tonnes of goods have been transported on the inland waterway system. 30 percent are intra-German transport volumes, 10 percent is transit traffic and 60 percent relates to international traffic. The main waterway is the river Rhine, which holds about two thirds of the inland navigation transport volumes. Bulk goods amount to 88 percent of the transported goods and are still the dominant good type but containerised goods are gaining more importance. In 1999 approximately 750,000 containers have been shipped on German inland waterways, which is an increase of about 14 percent compared to 1998.
3.4 North-South corridor

The river Scheldt is used intensely for north-south transport between the Netherlands and Belgium, especially between the big seaports of Rotterdam and Antwerp. The river Meuse, which both has both an east-west direction in the Netherlands, as well as a north-south position in the Netherlands, Belgium and France, connects Dutch industrial areas with industry areas and cities in the east of Belgium and the north of France. North-south inland waterway transport accounts for some 32 percent of all barge transport in the Netherlands.

The Belgian waterway system consists of approximately 1,513 km of waterways. Almost every major industrial area in Belgium is connected to the inland waterway system e.g. Brussels, Antwerp, Ghent, Liège, Charleroi. Several waterways that cross Belgium form part of Trans-European Networks, notably the Albert Canal, the Canal Ghent-Terneuzen, the Scheldt-Rhine connection, the Lys and the Canal Brussels to the Scheldt.

Since 1980, the total amount of tonnes transported via the inland waterway system in Belgium is stable around 100 million tonne. In 1999 and 2000 a strong expansion could be detected, with a growth to approximately 120 million tonne in 2000. Some 12 percent of this are intra-Belgian transport volumes, another 12 percent is transit traffic, some 32 percent is traffic with a Belgian origin, but with a foreign destination (export) and 44 percent concerns traffic with a Belgian destination, but with a foreign origin (import). Although transport of bulk goods still accounts for the largest share in transport volumes, the share of containerised goods is growing quickly and currently represents about 15 percent of all the transport volume on the Belgian inland waterways. Inland navigation has a modal share of about 20 percent, based on tonnes transported.

The French network of waterways is very extensive, with a dense network of navigable canals and rivers in the parts of the country situated East of the Marseille-Le Havre line. West of this line, there are few navigable canals and rivers. Nonetheless, the overall French navigable network lags behind those of neighbouring countries in Benelux and Germany. The majority of the waterways of the French system are only suited for vessels of the "Freycinet", the width of the locks being sufficient for the passage of small boats, 38.5 m long and 5.05 m wide (carrying from 250 to 350 tonnes depending on the depth of the waterway. The obsolescence of this network is due to the limited total amount of cargo loads, and, more generally, to lack of possibilities to obtain transport efficiencies or low productivity due to the large number of locks, necessary to cope with the considerable “fall” which characterizes most French waterways.
Modern waterways in France, able to handle vessels of 3,000 tonnes and pushed convoys of two Europa II barges, are few and are not linked. These modern waterways are:

- the Rhine;
- the Rhone and the Saône from Fos sur Mer to Chalon sur Saône (a prolongation is under way extending to Pagny, river port close to a large logistical zone);
- the Seine from Le Havre to Paris (beyond that, the Seine is navigable, but only for smaller boats);
- the Lille-Dunkerque-Valenciennes link;
- the Moselle from Nancy to the German border.

A few rare waterways are of intermediate dimensions, between the Freycinet network and the large-scale network. For example, the Rhone-Sète canal has dimensions adequate for vessels of 900 tonnes. The isolation of the different waterways constitutes a major handicap for the development of river transport activity. Public investments have been reduced in the last thirty years.

Inland waterway traffic on French waterways amounted to 56.57 million tonnes in 1999, an increase of 8 percent compared to 1998.

### 3.5 Eastern corridor

Since the early 1990s, trade and transport between Poland and Western Europe has increased sharply. Most of its growth has been accommodated by road and rail freight transport. Although the share of waterway transport is rather low, the Polish barge fleet is relatively large, about one third of the Dutch fleet in number of barges. Polish barges though have a three times smaller size than Western European barges.

Through the Mittelland Canal and the Elbe, together with several connecting canals in the East of Germany, Poland is connected with western European countries. The river Oder, acting as the border between Poland and Germany, functions as a north-south axis in the area. The river Warta has the function of an east-west axis and connects Berlin with the Polish industrial centra of Poznan and Warsaw. Through Polish waterways, Western Europe is also connected with the Dniepr area in the former Russian states. The river Weichsel is the biggest inland waterway of Poland, running from south to north and connecting several large industrial areas with each other. Although major industrial and population centres are connected by inland waterways, river depth still lays a restraint on the draught of inland vessels that can be used.

In the Czech Republic, some 300 km of waterways are operational for transport of goods. These are the regulated river Labe and canals of the Labe and the Vltava. Average depth of these rivers is 1.8 up to 2.0 m. There are plans to make the river Morava navigable and connect it to the river Danube after the year of 2010. The capacity of the Labe waterway lays on CEMT-IV. Most of the foreign water transport in the Czech republic has been realised to and from Western Europe. The share of this
East-West transport is 93 percent of the Czech export and 86 percent of the Czech import.

The modal share of inland water transport amounts to 8.5 percent. In real values, this is 1.3 million tonnes.

### 3.6 South-easterly (Danube) area

Water transport is an important mode of transport system in the whole area of Central and Eastern Europe.

The Danube in Austria has a length of 322 km, it constitutes the Austrian - German border for 21 km and the Austrian - Slovak border alongside 7km. The major Danube ports in Austria are Linz, Enns, Krems and Vienna. The total transport volumes in 1998 rose to 10.2 million tons. Of this, 81 percent concerns international transport, 29 percent is transit traffic and 9 percent concerns intra-Austrian transport. The technical capacity of the Danube ranges far above this level.

The Danube river, a part of the Trans-European waterway Rhine-Main-Donau (VII. Trans-European corridor) is the predominantly used navigation route in Central Europe. The Slovak reach of the Danube is 172 km long. Since November 1992 the navigation route between Cunovo and Sap (41 km) has been transferred into the bypass canal of the Gabcikovo Hydropower scheme. International water transport on the Slovak part of Danube is served by harbours at Bratislava and Komarno and partially by a factory harbour at Sturovo. At present, the Komarno-to-Sered (66 km) navigation route on the lower Vah river is also in operation.

Regarding inland waterway transport policy the Slovak Republic plays an important and active role in the Danube Commission in Budapest and the UN European Economic Commission in Geneva.

In the eighties more than 5 million tonnes annually were transported by inland waterways in Slovakia. More than 6 million tonnes were handled in inland ports. After 1990 there was a big decrease in water transport. In 1999, only 1.4 million tonne annually was transported, coming from only 1 million tonne in 1990.

The Danube in Hungary runs on a length of 324 km, it constitutes the Hungarian-Slovak for 149 km. The major Danube public ports in Hungary of country interest are Gyor-Gonju Budapest-Csepel, Nagyteteny, Dunaujvaros, Baja. The total transport volumes at the end of nineties rose to 2.5 million tons export/import and 3.0 million tons intra-Hungarian transport (of this, 2.5 million are tons dredging products). Water transport downstream Danube direction has been recently heavily influenced by war in Yugoslavia.
The Danube, runs on a length of 589 km, on former Yugoslavian territory. The minimum navigable depth on this section is 2.5 m. Navigation is possible continuously, day and night both upstream and downstream. Push convoys as well as barges are equipped with all necessary equipment, in concordance with the Danube norms, similar to those of Rhine. The casual restrictions on navigation, temporary, periodical or local, have only a small impact on travel timing.

Romania is the main Danube country, with a length of 1075 km on its soil. On the Romanian sector, the Danube is divided into two big sections:
▲ River Danube, from Bazias (at km 1075) to the upstream Braila (at km 171);
▲ Maritime Danube, from Braila (at km 171), to Sulina (at km 0).

The minimum navigable depths on these sectors are 2.5 m on the upper river sector, and 7.5 m on the maritime sector. Romania also has some navigable channels of which the most important are the Danube – Black Sea Channel and the Poarta Alba – Midia – Navodari Channel.
4 Statements

In this section some, tentative, statements are made that could be the basis of further discussion. They are not conclusions based on scientific research or whatsoever, but represent some of the feelings of the author concerning inland waterways. It is perhaps good to know that the major feeling is that inland waterways in Europe will indeed prove to be an asset for European Transport, even more than it does now.

Statement 1: Inland waterway transport in Europe is not a single market, a corridor approach is still valid.
The reasoning behind this is that only a minor portion of the market is interested in dealing with inland waterway transport throughout the complete network. For those who are of course the issue of further harmonisation is vital, but it would be wrong to overestimate the importance from this point of view.

Statement 2: Do not make the railway-mistake by putting so much emphasis on technical harmonisation.
Inland waterways differ quite a lot compared to rail transport, the technical issues within rail are indeed much more complex. It can however, not be ignored that the (once) national railways protect their own interest

Statement 3: In terms of investments in traffic management, new transport concepts inland waterway can be seen as one of the more innovative modes of transport
We all know that inland waterways doesn’t always have the right image, especially with people that have little to do with inland waterways. Here still lies a challenge for all. Examples are quite easy to find, for instance concerning traffic information.

Statement 4: A free market is no guarantee for a rise in inland waterway transport.
It is an illusion to think that a free market is the most favourable market organisation for inland waterway transport. In general it can be stated that a more controlled market shows relatively more inland waterway and rail transport. A free market will, however, enhance the competitive elements within the logistics processes, potentially a change for inland waterways if it can meet the challenges (which is more difficult coming from a regulated market).

Statement 5: A free market is also no guarantee for an efficient transport system
The current practice in the Netherlands, after abandoning the tour the role is an increase in the number of empty trips, due to the fact that long term contracts are now more in use.

Statement 6: Don’t focus too much on modal shift.
Without a doubt modal shift is an issue, but it would be wrong to look at the inland waterway sector and give all the attention to flows where there is a strong competition
between modes. The majority of flows is not that much in competition, but should nevertheless be treated with care in order to be part of an efficient logistics chain.

Statement 7: Don’t just focus on long distances
There are several reasons for this. For once it is a fact that there just is not very much to be transported on the very large distances. Secondly, it is shown today that inland waterways can do well even on shorter distances, again providing it meets market demands and thus cooperation with end-to-end organisation.

Statement 8: Inland waterways should get (even) more attention in Europe.
Despite the above, the inland waterways have great potential and should be treated likewise. I don’t have any numbers, but I think that comparing the number of people and the money dealing with inland waterways is not in line with the political or economic interest of the sector.

With these statements this paper ends. I hope that it is a contribution to further discussions and further positive development of Inland waterways in Europe, the EU and beyond.