

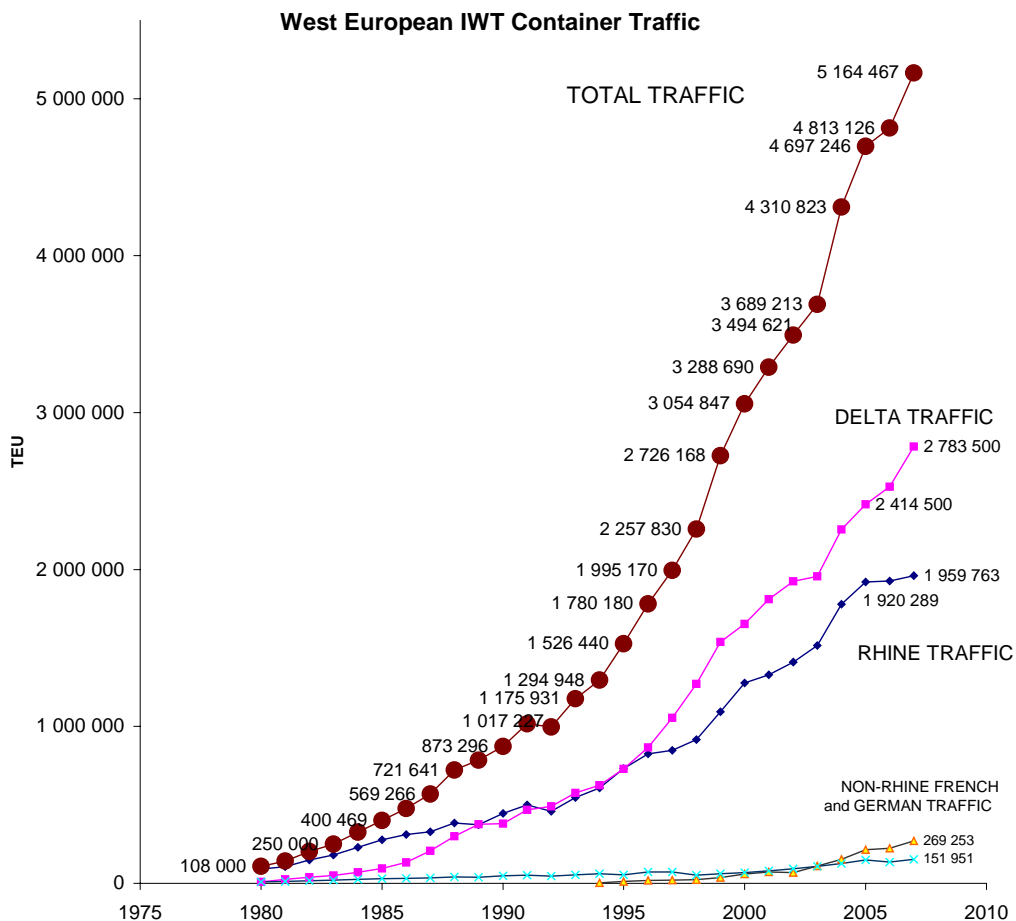
# Traffic & Modal share of IWT in European Container Transport

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## I. WEST-EUROPEAN IWT TRAFFIC of CONTAINERS

In 2000, carriage of containers had reached for the first time 3 millions TEUs over West-European waterways. In 2004, it topped 4 millions TEUs, and in 2007, 5 millions TEUs.



A slight softening of container traffic growth, due to low waters and the recent economic recession, had taken place in 2002 and 2003. Since then, the growth trend continues, boosted by the growth of maritime traffic. However, dramatic congestion at the harbour terminals has, during some years, resulted in a loss of market share by IWT traffic, due to the damaging delays inflicted to river trade.

Compared to early issues of this series, intra-harbour traffic is only counted once, as loadings, but this takes place in Rotterdam as well as Antwerp, at a comparable level, thus figures are similar to the early version of the series.

The revised figures are shown in the following table :

**Tableau I.1 - West-European IWT Traffic of Containers**

Year	Total Rhine Traffic	Total Delta Traffic	Non-Rhine French Traffic	Non-Rhine German Traffic	West-European Grand Total
1987	327 766	207 000		34 500	569 266
1988	383 641	298 000		40 000	721 641
1989	372 275	375 000		38 500	785 775
1990	446 296	380 000		47 000	873 296
1991	498 227	467 000		52 000	1 017 227
1992	458 057	491 000		46 000	995 057
1993	546 431	575 500		54 000	1 175 931
1994	607 748	625 500	1 700	60 000	1 294 948
1995	731 818	729 500	10 122	55 000	1 526 440
1996	824 197	865 250	17 733	73 000	1 780 180
1997	847 287	1 054 500	21 323	72 060	1 995 170
1998	914 676	1 271 000	21 441	50 713	2 257 830
1999	1 092 303	1 537 000	36 628	60 237	2 726 168
2000	1 276 643	1 652 500	58 273	67 431	3 054 847
2001	1 329 423	1 809 000	71 308	78 959	3 288 690
2002	1 409 046	1 924 500	67 800	93 275	3 494 621
2003	1 514 602	1 955 500	110 994	108 117	3 689 213
2004	1 777 559	2 254 500	152 264	126 500	4 310 823
2005	1 920 289	2 414 500	214 086	148 371	4 697 246
2006	1 926 485	2 528 000	223 496	135 145	4 813 126
2007 (est.)	1 959 763	2 783 500	269 253	151 951	5 164 467

Sources: Ports of Rotterdam and Antwerp, DeStatis, VNF and AVV (Transport Research Institute of the Netherlands) and AFTM estimates

The curve is striking, and demonstrate the ability of IWT to adjust to the New Economy, whatever recession is taking place.

More informations can be obtained thanks to CCNR (Central Commission for the Navigation on the Rhine) and its Market Observation for inland navigation in Europe, which details the strong increase of container activity in the various sectors of the Rhine over the years.

Container traffic over the Scheldt-Rhine waterway had been, between 1997 and 2000, even superior to that over the Rhine at the German Dutch border: This artificial waterway thus assumes a role that its builders could hardly imagine, since it had been designed well before the container revolution. Starting from 2002, the slower growth of

traffic over this link, coupled to the dynamic traffic at the German border, has brought the Rhine back in first place.

Yet, traffic in the Mouths of the Rhine is substantially higher than that over the Rhine, mainly because of the Rotterdam-Antwerp interchange.

As in earlier years, there is a slight discrepancy between Dutch and German figures, especially at the German-Dutch border. The German figures, a more stable series, has been selected.

There are also discrepancies between Port of Antwerp and Dutch data, especially at Kreekrak lock. Every effort has been done to reconcile it, even when this entails from time to time to reconstruct series.

To explain these variations, it may be recalled that some estimates are based on direct counting of boxes, while others are extrapolated from tonnage data, on which conversion ratios (t/TEU) are applied, sometimes copied from the maritime mode. This is remote from the truth, as the German statistics show.

Therefore, some series were adjusted, using better coefficients for IWT, according to countries when sources allow. This fine tuning leads at time to erratic variations, since series have to be amended with the passing of time, whenever better figures become available.

## **I. GEOGRAPHICAL ANALYSIS BY ENTITIES**

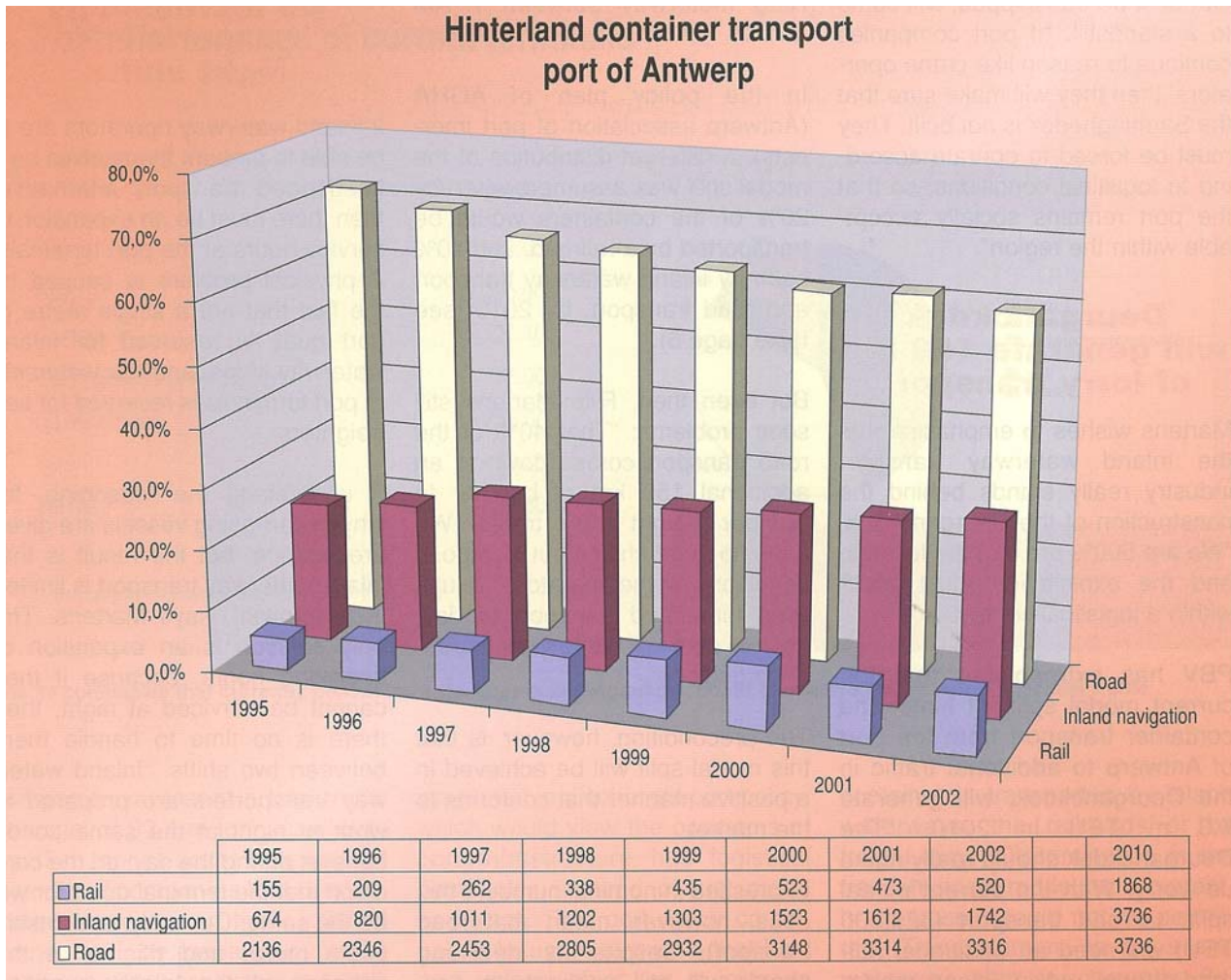
The activity of container transport in Europe is very strongly related to the land transportation of the so-called "sea containers", linked to the major seaports. It therefore concentrates mainly on the Rhine, itself divided into two entities, the traditional Rhine, upstream from the border between Germany and the Netherlands, and the Mouths of the Rhine, sometimes called Delta in the following tables, downstream from this border.

However, we shall first deal with the Port of Antwerp, which is involved in the two types of traffic. Its growth has been most dramatic in recent years, and is best known.

## I.1. ANTWERP

The Antwerp series consists of, on the one hand, traffic to and from the traditional Rhine, i.e. ports located upstream of Emmerich-Lobith, and on the other, traffic exchanged with Rotterdam, which is part of the Mouths of the Rhine series. There is also some intraport activity, as well as the transport between Antwerp and the rest of Belgium or Northern France (NPC).

The modal share of this traffic is undergoing profound changes. The Port of Antwerp Authority hopes that IWT shall exceed trucking and become the main mode of transportation to its hinterland. Prognosis was that it achieves this by 2010, with 3.736 million TEUs.



Source : Lloyd Special Report, Inland Navigation, May-June 2004

In 2002, the growth of IWT to 31% of the market, added to a resurgence of rail traffic, drove for the first time trucking below 60%. This was a good sign for achieving the goal of equality between these two modes, with 40% each in 2010.

More recent figures came to confirm that hope, as IWT reaches more than two-thirds of the 3.7 million TEUs target, with 2.618 million in 2007, showing an almost exponential growth.

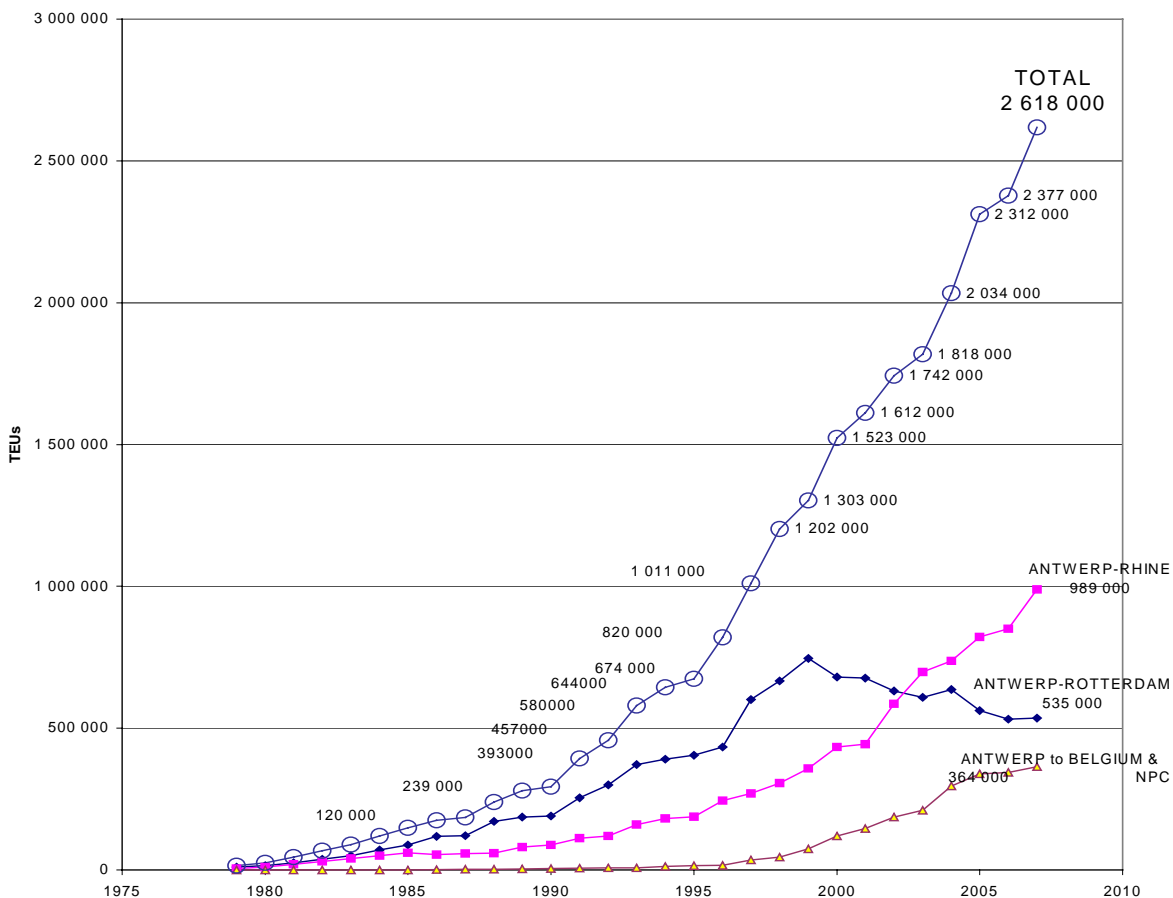
**Tableau I.2 - Port of Antwerp : History of Container Modal Split**  
(without direct transhipment) (in per cent)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	Var. 95/07
<b>Barge</b>	22,7	24,3	27,1	27,6	27,9	29,3	29,9	31,2	31	32	34	33	34	+11,5
<b>Rail</b>	5,2	6,2	7,1	7,8	9,3	10,1	8,8	9,3	9	8	8	9	11	+6
<b>Road</b>	72,1	69,5	65,8	64,6	62,8	60,6	61,3	59,5	60	60	58	58	55	-17,5
<b>Total</b>	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100	100	100	100	100	

Source: Port of Antwerp & Containerisation International, May 2008

However, with overall traffic growing even faster, IWT, even reaching the TEUs target, may not reach the proposed market share, especially because of delays experienced at the deep sea terminals by the river barges, which are damaging its competitiveness..

**ANTWERP IWT CONTAINER TRAFFIC**



Source : Port d'Antwerp, and AFTM estimates, based on AVV & Port of Antwerp data.

The corresponding table is found in Annex 1. <sup>1</sup>.

It can be seen that the traffic between Antwerp and Rotterdam<sup>2</sup>, following a very strong growth in 1997-98 (+40% in two years), has tended to stagnate, while that between Antwerp and the traditional Rhine, as well as the traffic exchanged with the rest of Belgium and the Nord-Pas de Calais, increased significantly: On the Scheldt-Rhine link, while container traffic was earlier 1/3 with the Rhine and 2/3 with Rotterdam, Antwerp traffic with the Rhine is now 57% of the total.

It may also be noted that anticipations on this route indicated that in 2010, 49% of global traffic may come from containers (source Mobiliteitsplan Vlaanderen, june 2001).

However, the figures of Antwerp, like those of Rotterdam, may not be included as such in the statistics, because they participate in the activity of both the Rhine and its Delta, and some flows would be counted twice. In addition, the containers handled in domestic traffic should be taken into account only in one direction of the journey. Similarly, the traffic within the port district should be counted as half.

Thus, the flows of the two ports have been broken down depending on their actual journey, which will subsequently enable an analysis of the market share of some corridors. The figures of these ports have been spread between the various series studied below.

## **I.2. TRANSPORTATION OF CONTAINERS IN THE MOUTHS OF THE RHINE**

The transport of containers in the Mouths of the Rhine is for some time the largest container traffic in Europe. It covers activity in the Delta, downstream of Lobith-Emmerich, and includes trade between the Netherlands, Belgium and France as well as domestic Dutch and Belgian traffic, plus traffic to Germany via the Dollart. The traffic between Rotterdam and Antwerp, as well as the strong Dutch domestic traffic, are its main flows. This later transport, over short distances, has developed strongly in recent years and now exists in every corner of the country. There is even since 1997 exchanges from terminal to terminal, without touching the seaport.

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<sup>1</sup> The table as well as the curve do not entirely follow new statistical series describing the river traffic released by the Port of Antwerp, which is using a new average weight for transforming tonnes into TEUs. It appears preferable to retain the earlier average weight, 9 tonnes/TEU since 2002, because it is the observed value on the Rhine, and this has been followed here. With 8 t/TEU, West European traffic would increase by 145 000 TEUs.

<sup>2</sup> When compared to other sources, it has to be remembered that the "Antwerp-Rotterdam traffic" does not include the traffic between Rotterdam and the rest of Belgium (Albert Canal, Avelgem, etc.), counted separately.

The Belgian domestic traffic is also in a period of rapid growth since 1998, with numerous terminal openings.

Finally, the Netherlands traffic exchanged with Antwerp, mostly concerning Rotterdam, has experienced a spectacular growth nearly ten years ago. Thanks to the cooperation of the Research Center of the Dutch Transport (AVV) and the Port of Antwerp, a revised calculation of these data was made possible. It shows a certain stagnation of these exchanges on the latest years, but at a very high level.

**Tableau I.3 –River Traffic of containers in the Mouths of the Rhine (TEUs)**

Yera	Antwerp-Rotterdam Traffic <sup>3</sup>	Domestic DutchTraffic		Intra-port Flows	Belgium+ Nord-Pas de Calais	Netherlands-Germany via Dollart	TOTAL DELTA TRAFFIC
		Inter-terminals	Via Rotterdam				
1987	121 000		80 000	2 000	4 000	0	207 000
1988	171 000		110 000	3 000	14 000	0	298 000
1989	187 000		165 000	4 000	19 000	0	375 000
1990	190 000		160 000	10 000	23 000	2 000	385 000
1991	255 000		160 000	20 000	28 000	4 000	467 000
1992	300 000		125 000	30 000	30 000	6 000	491 000
1993	372 000		123 000	40 000	32 500	8 000	575 500
1994	391 000		137 500	52 000	35 000	10 000	625 500
1995	405 000		199 500	66 000	48 000	11 000	729 500
1996	434 000	5 000	234 500	125 500	54 000	12 000	865 000
1997	601 000	11 000	246 000	105 000	78 000	13 000	1 054 000
1998	667 000	25 000	291 000	184 000	90 000	14 000	1 271 000
1999	746 000	58 000	468 000	125 000	125 000	15 000	1 537 000
2000	680 000	64 000	534 000	174 000	184 000	16 500	1 652 500
2001	677 000	72 000	580 000	243 000	216 000	21 000	1 809 000
2002	631 000	74 000	521 000	406 000	271 000	21 500	1 924 500
2003	609 000	50 000	580 000	370 000	323 000	23 500	1 955 500
<b>2004</b>	<b>636 000</b>	<b>70 000</b>	<b>636 000</b>	<b>443 000</b>	<b>444 000</b>	<b>25 500</b>	<b>2 254 500</b>
<b>2005</b>	<b>562 000</b>	<b>75 000</b>	<b>675 000</b>	<b>590 000</b>	<b>496 000</b>	<b>16 500</b>	<b>2 414 500</b>
<b>2006</b>	<b>532 000</b>	<b>80 000</b>	<b>736 000</b>	<b>650 000</b>	<b>514 000</b>	<b>16 000</b>	<b>2 528 000</b>
<b>2007 (est)</b>	<b>535 000</b>	<b>100 000</b>	<b>831 000</b>	<b>730 000</b>	<b>569 000</b>	<b>18 500</b>	<b>2 783 500</b>

Source: for 1993 and 1996, Brolsma, AVV, PIANC Bulletin, June 1997; for the other years, AFTM estimates based on data of AVV and the Port of Antwerp.

Analysis of the Dutch traffic has revealed that at Rotterdam, the TEU/Box ratio is substantially lower for IWT than in deep-sea.

One might think that this stems from the fact that 20-foot containers are over-represented, including loaded 20-footers, whose average weight of 16 tonnes exceeds the optimum of a truck travelling without overload. At this weight, in fact, it is possible to

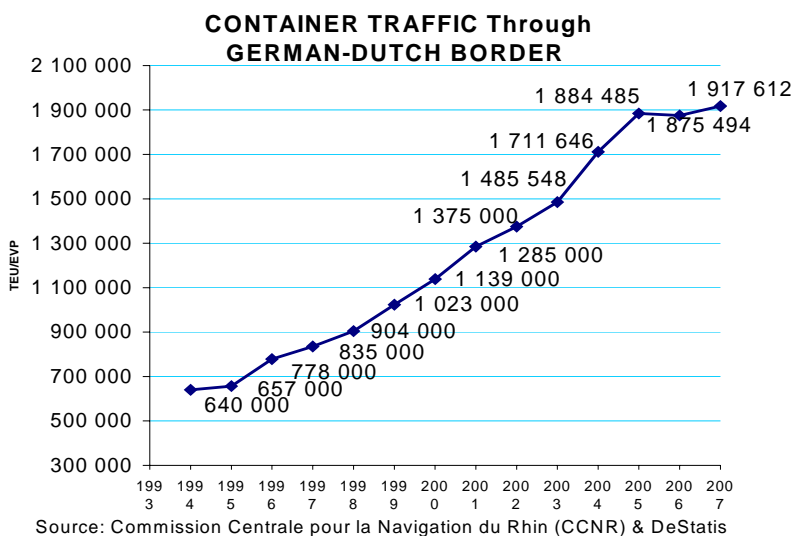
carry only one 20-footer per truck, while road carriage of two lighter 20-footers (up to 13 tonnes each) is possible on a 40-foot trailer. It is thus understandable that this type of "heavy" boxes uses IWT more towards Germany, a country where the permissible payload of trucks is lower than in the Netherlands.

The characteristic of the traffic in the Mouths of the Rhine is its low average haul, well below what the economic analysis usually suggests. Thus, it shows that the flexibility of the IWT solutions can largely offset any theoretical weaknesses, to the point of suggesting to theoreticians to revise their analyses.

The strong intra-port traffic appears to stem from the multiplicity of terminals within the major seaports, as well as of the very powerful industrial port areas, which also generates this type of short haul. They reach a high level in the two main ports, but Rotterdam does not include them in its statistics. To take this into account, it was deemed to be equivalent to that at Antwerp, and thus the 'intraport' series is double to what was recorded earlier.

### I.3 TRADITIONAL RHINE

The activity on the conventional Rhine aggregates Germany, France and Switzerland flows from or to seaports, with the addition of some flows within the Rhine Basin.



To estimate this traffic, there are several sources: One of the more interesting to observe is the activity at the German-Dutch border (Emmerich-Lobith). An estimate in TEU has been available since 1994. After a hesitant start, its growth has been continuing and it trebled between 1994 and 2007, probably reaching 2 million TEUs in 2008.

<sup>3</sup> When compared to other sources, it has to be remembered that the "Antwerp-Rotterdam traffic" does not include the traffic between Rotterdam and the rest of Belgium (Albert Canal, Avelgem, etc.)



However, traffic on the Conventional Rhine includes certain other flows, internal to the Rhine Basin in Germany, and the figures in the table cannot therefore correspond completely with those at the border

The new method of calculation aggregates 3 other flows to the international Rhine trade: shipments internal to the Rhine basin, which are beginning to no longer be marginal, traffic of the Rhine with the "Westdeutsches Kanalgebiet", and transit. This new figure, more in tune with the evolution of border crossings, is used since 1999

<b>Table I.4 - New Series of RHINE CONTAINER TRAFFIC (in TEUs)</b>					
	Domestic Rhine Traffic	Rhine part of « Westdeutsches Kanalgebiet »	International Rhine Traffic	Transit	<b>RHINE TOTAL</b>
1997	12 691	2 483	710 317	121 796	<b>847 287</b>
1998	18 328	4 417	761 593	130 338	<b>914 676</b>
1999	25 632	9 450	921 006	136 215	<b>1 092 303</b>
2000	32 370	12 213	1 026 380	205 680	<b>1 276 643</b>
2001	41 695	9 613	1 076 514	201 601	<b>1 329 423</b>
2002	42 367	26 577	1 141 664	198 438	<b>1 409 046</b>
2003	35 721	30 164	1 240 185	208 532	<b>1 514 602</b>
2004	40 549	28 118	1 446 057	262 835	<b>1 777 559</b>
2005	40 253	37 633	1 599 761	242 642	<b>1 920 289</b>
2006	53 288	42 158	1 596 414	234 625	<b>1 926 485</b>
2007	43 531	47 181	1 624 225	244 826	<b>1 959 763</b>

Source : Destatis, Fachserie 8, Reihe 4, 2007&sq (Domestic traffic based on loadings)

It may be recalled that in 1987, in a "Special containers" of "Navigation, Ports & Industries" (June 25, 1987, p. 348), some people predicted that in 2000, 414,000 TEUs would be transported on the Rhine, including 64,000 in transit. The real number was in fact three times higher!

A Planco study in 1998 expected 1.027 million TEUs in 2000, a level widely exceeded. And the forecast for 2005, with a figure of 1.303 million, was reached as early as 2001. The forecast for 2010, a bit timid, was 1.665 million. It was overtaken much earlier, in 2004. Sky seems to be the limit !

Interestingly, the series does not totally follow the curve found at the border: growth in 2005 is smaller, and the traffic in 2006 does not show the slight recession of the other series. Yet, it is clear that the congestion found at the harbours over the last three years has come in the way of a stronger growth of IWT traffic.

#### I.IV. NON-RHINE GERMAN TRAFFIC

It includes the basins of the Weser, Elbe, Ems and the Danube, once removed whatever traffic in these basins transits through the Mouths of the Rhine.

These flows were less well known. They were estimated, until 1996, to 12% of traffic on the Rhine. For the last years, more detailed figures are available thanks to the kind cooperation of Destatis (Deutsche Statistisches Bundesamt), which provides both domestic traffic and distribution by river basin of all trades.

In 2005, the German domestic traffic grew by over 18%, faster than international traffic (10% "only"! ). It almost doubled between 2000 and 2004, and has tripled between 1999 and 2005!

Since, traffic has tended to stagnate, due to congestion at the ports, in a way similar to what could be seen at the border.

Another point of interest is that the average weight is firming around 9t/TEU, contradicting the tendency to reduce it to 8t/TEU, tare weight included.

Tableau I.5 – DOMESTIC TRAFFIC of CONTAINERS in GERMANY									
	1999	2000	2001	2002	2003	2004	2005	2006	2007
Total in TEUs	67 169	84 825	111 584	123 572	145 152	171 813	203 712	182 079	185 354
Goods contained (t)	492 406	593 480	703 684	766 754	975 355	1 278 189	1 354 264	1 278 591	1 327 903
Average weight per TEU (t)*	9.3	9	8.3	8.2	8.7	9.4	8.7	9	9.2

Source : Destatis, Fachserie 8, Reihe 4, 2007 & al.

\* The average weight includes 2 tonnes per TEU to account for the tare weight of containers, which increases significantly the average weight in the German statistics.

The low average weight of the domestic Twenty-foot Equivalent Unit, compared with seaports figures, may be noted. Indeed, 34% of the containers are empty in 2005, reflecting inescapable repositioning, although declining. Further, the percentage of empties is significantly lower for containers exchanged with the ports (35% empty, average weight 9.8 t), but this is due only to containers leaving Germany (14% empty, average weight 11.6 tonnes). It is more than 56% empty at the entrance to Germany (6.2 t average weight), again because of repositioning.

Given such variations, the dangers of using blanket t / TEU coefficients, modeled on the average Maritime weight (11t/TEU) on all river destinations can be understood.

Another interesting element that can be drawn from this source: In Germany, General Goods (NST 9) in river transport are over 84% containerized.

Until 1997, non-Rhine traffic was equated to domestic traffic. It was an approximation. It is in fact significantly lower than previously thought because, in its later analysis of traffic per basins, Destatis revealed that 40% of German domestic container traffic actually falls within the Rhine basin.

To identify the specific non-Rhine traffic, a close look has to be taken to each type of traffic: Regarding the traffic in transit, it is situated wholly within the Rhine. Similarly, import-export traffic is mainly made over the Rhine. The other basins realize only 6 623 TEUs. As regards the "Westdeutsches Kanalgebiet", which includes the mouth of the Ems, its traffic is absorbed in other series: it exchanged 65 000 TEUs with the outside world, partly with the Netherlands via the Ems Dollart, which belongs to the Mouths Rhine<sup>4</sup>, the rest via the Rhein-Herne-Kanal, which relates to traditional Rhine.

Table I.6 – GERMAN NON-RHINE CONTAINER TRAFFIC							
In TEUs	DOMESTIC TRAFFIC				International non-Rhine Traffic	Danube non-Rhine Traffic	German non-rhine TOTAL
	Elbe	Weser	Mittelland Kanal	Westdeutsches Kanalgebiet			
1997	686	51 377	0	29	13 321	6 647	72 060
1998	1 193	33 702	0	84	13 126	2 608	50 713
1999	18 620	27 741	1 324	127	10 040	2 385	60 237
2000	22 629	26 029	3 650	2 884	8 458	3 781	67 431
2001	24 163	33 863	6 102	1 961	8 406	4 464	78 959
2002	46 575	28 446	8 321	2 307	3 641	3 985	93 275
2003	49 376	33 864	15 671	1 132	4 252	3 822	108 117
2004	53 704	41 582	20 190	2 079	3 822	5 123	126 500
2005	67 020	35 329	33 807	3 417	3 827	4 971	148 371
2006	55 828	40 177	28 926	5 247	1 889	3 078	135 145
2007	57 298	49 168	28 475	7 583	6 623	2 804	151 951

Source : Destatis, Fachserie 8, Reihe 4, 2005 & sq (Domestic traffic based on loadings)

It may be noted that the Elbe has increased significantly over the period, while international traffic dropped sharply. The Weser, after stagnating, has resumed a positive trend.

These figures are based on port activity, and are therefore not directly comparable with those of overall traffic. They, however, are a good estimate of the location of flow, and thus provide a default evaluation of non-Rhine traffic.

Finally, the distinction between domestic traffic, international traffic and transit is sometimes misleading. Indeed, the final destination of the domestic containers transported on the Elbe is actually abroad, while the border crossing is via truck, for reasons unclear. A similar phenomenon also exists on the Upper Rhine, to Switzerland and France, because of the border position of some German container terminals (Germersheim, Weil, Kehl, Breisach, Wörth, etc.). This decreases the transit as recorded by Destatis and is reflected in the French or Swiss customs statistics as entering or leaving France or Switzerland by road, although the bulk of the route has been by river transport.

#### I.V. FRENCH NON-RHINE TRAFFIC

Year	Seine	Rhône	Dunkerque-Zeebrugge-Lille-Valenciennes (1)	Non-maritime Containers	Total (2)
1994	500	1 200			1 700
1995	5 811	4 311			10 122
1996	11 433	6 300			17 733
1997	16 598	4 725			21 323
1998	14 927	6 514			21 441
1999	21 000	3 388	1 240	9 298	34 926
2000	32 700	2 987	3 515	19 071	58 273
2001	38 400	10 530	5 725	18 548	73 203
2002	37 500	21 387	4 887	4 126	67 900
2003	67 100	32 644	4 332	6 837	110 913
2004	81 448	46 412	7 652	15 124	150 636
<b>2005</b>	<b>100 753</b>	<b>55 807</b>	<b>8 407</b>	<b>31 445</b>	<b>196 412</b>
<b>2006</b>	<b>119 699</b>	<b>61 258</b>	<b>9 601</b>	<b>32 938</b>	<b>223 496</b>
<b>2007</b>	<b>163 139</b>	<b>67 100</b>	<b>9 014</b>	<b>30 000</b>	<b>269 253</b>

(1) Not including traffic with Rotterdam, Terneuzen & Antwerp, which are included in the Delta figures.

(2) French Rhine (Alsace) traffic is included in another series, within Traditional Rhine, above.

Source : VNF, Port de Lille, Port Autonome de Dunkerque.

The above table gives a French series since the opening of a Seine service and its resumption on the Rhône.

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<sup>4</sup> Until 2001, traffic through the Ems was included in the Rhine traffic. It seemed more accurate to link it with the Mouths of the Rhine. The entire series is therefore amended :

In 2007, double-digit growth resumes (+20%!), and the Seine becomes for the first time the largest basin, overtaking the French Rhine which drops to 135 000 TEU. The Rhône records also good results (+10%), while non-maritime containers remains stable and the flow of traffic through Dunkirk exceeds 9 000 TEU.

In all likelihood, this growth is not about to stop, even if, at the recent inauguration of Port 2000 in Le Havre, some have predicted that the market share of the waterway there shall never exceed 9%. Predictions of the same order, on the Rhine, have been surpassed in less time that it takes to say it. There is little doubt that this limit will be easily crossed in the coming years.

## CONCLUSION

A not-so-old Dutch study on 'Future perspectives of container river transport' (NPI, 30 octobre 2003, p. 526) limited the growth forecast of European river container traffic at 50% in 10 years, reaching 4.5 million TEUs in 2010. That's good, but shy: This level has been exceeded since 2005! If Antwerp, with its current traffic equalling roughly half the European traffic, wins his bet, to reach 3.7 million TEUs in 2010, the real figure should be very close to 7 million TEUs, 10 years before the date provided by the Port of Rotterdam in his '2020 study'.

Boosted by such a dynamism, overall river traffic should also exceed expectations, as can be seen in France. It is therefore urgent in this country to accompany the structural growth renewal through improved infrastructure and a vital opening on Europe: The Seine-Scheldt Link draws from these dramatic forecasts an increased justification.

## **II. LESSONS TO BE DRAWN FROM THE PAST AND DEDUCTIONS FOR THE FUTURE**

The growth of river transport of containers has been dramatic over the last 15 years. Can it continue indefinitely? To answer this question, two facts have to be taken into account:

International trade is not about to stop growing, and the use of container shipping will long continue to be its key logistic element. The pervasive container technology and the existence of multimodal centres already paid-off, may cause a contagion of container in areas still little explored, such as domestic transportation and bulk transport: "The sky is the limit". It is therefore surely a market whose vitality will only be strengthened.

River transport in Europe currently benefits from the weakness of railway transport, in full reorganization. Wherever river container lines exist, they operate at a sound level, since shippers are looking for alternative non-road modes, on environmental grounds, while only one such mode can at this time meet their demand.

Against these positive aspects, there is a medium-term threat: deregulation of rail shall eventually bear fruit, and under pressure from new entrants the railway offer will finally become attractive. River transport must be prepared to face it. It is able to cope with it.

In addition, there are niche offers: When river traffic can take place at night, a barge can beat trucks, not in pure speed of course, but because most terminals and shippers facilities hardly work at all after 17h. A boat, and even a Freycinet barge, can travel an interesting distance during the night, for example to feed a larger container terminal, instead of using a very expensive road transport, which will not arrive earlier since it will have anyway to await the opening of the terminal or of the client's premises the next morning.

Another opportunity is banking on the development of logistics service providers: they need space to settle, and river ports can provide it. In this way, instead of charging to

river transport the modal interchange towards the client, this cost will be part of the global logistics service of all these providers, another way to reduce the handicap of non-ubiquity of the river. And in this configuration, massification will have full play, giving providers a very attractive price.

This phenomenon has been noticeable in Duisburg and in Lille, then Paris-Gennevilliers and Lyon. There is certainly room for it in other less developed centers. This logic of location displays a particularly promising future.

Another development could be the use of EILU, or 45 ft palletwide container. Indeed, for the container to compete with road transport, it is best that containers offer the same capacity as trucks, a feat achieved by EILUs and 45 feet palletwide. Rather than setting up motorways of the sea, so difficult to make pay, the way could be to use short sea shipping of such EILU, using the same terminal services provided by river carriers for usual deep-sea containers.

The possibility of such development should be anticipated, and barges should be built with holds accepting these non-standard containers, since they could well become a standard by themselves. The Commission of the European Union studied this hypothesis, and the profession could well prove it right for doing so.

This will entail a trend towards enlargement and heightening of river structures, already noticeable today, which may be put to good use in order to offer tailored river logistics solutions, as the profession has succeeded so well in doing so in recent years.

Thus, can we prophesy what will be the traffic in 2010?

If one applies a trend curve over the west-European traffic graph, the results vary widely depending on whether or not continuation of recent growth is felt possible.

With a fixed percentage growth (exponential curve), the trend reaches 11.2 MTEU. In view of the recent economic shocks, this appears unlikely.

A polynomial curve type, displaying smoother expectations, leads to 6.5 MTEU, which appears presently the more logical prognosis.

## ANNEX I

### DETAILS of ANTWERP TRAFFIC

In TEU					
Year	TRAFFIC ANTWERP ROTTERDAM	TRAFFIC ANTWERP- RHINE	Assumed Intraport Traffic	ANTWERP Traffic with Belgium & Nord-Pas de Calais	TOTAL ANTWERP IWT CONTAINERS
1979	10 000	5 000	0	0	15 000
1980	15 000	10 000	0	0	25 000
1981	25 000	20 000	0	0	45 000
1982	38 000	30 000	0	0	68 000
1983	50 000	40 000	0	0	90 000
1984	70 000	50 000	0	0	120 000
1985	88 500	60 000	0	0	148 500
1986	118 000	54 000	2 000	1 000	175 000
1987	121 000	58 000	4 000	2 000	185 000
1988	171 000	59 000	6 000	3 000	239 000
1989	187 000	81 000	8 000	4 000	280 000
1990	190 000	88 000	10 000	5 000	293 000
1991	255 000	112 000	20 000	6 000	393 000
1992	300 000	120 000	30 000	7 000	457 000
1993	372 000	160 000	40 000	8 000	580 000
1994	391 000	182 000	59 000	12 000	644 000
1995	405 000	188 000	66 000	15 000	674 000
1996	434 000	244 000	125 500	16 500	820 000
1997	601 000	270 000	105 000	35 000	1 011 000
1998	667 000	306 000	184 000	45 000	1 202 000
1999	746 000	358 000	125 000	74 000	1 303 000
2000	680 000	433 000	290 000	120 000	1 523 000
2001	677 000	444 000	345 000	146 000	1 612 000
<b>2002</b>	<b>631 000</b>	<b>586 000</b>	<b>339 000</b>	<b>186 000</b>	<b>1 742 000</b>
<b>2003</b>	<b>609 000</b>	<b>698 000</b>	<b>300 000</b>	<b>211 000</b>	<b>1 818 000</b>
<b>2004</b>	<b>636 000</b>	<b>737 000</b>	<b>365 000</b>	<b>296 000</b>	<b>2 034 000</b>
<b>2005</b>	<b>562 000</b>	<b>821 000</b>	<b>590 000</b>	<b>339 000</b>	<b>2 312 000</b>
<b>2006</b>	<b>532 000</b>	<b>851 000</b>	<b>650 000</b>	<b>344 000</b>	<b>2 377 000</b>
<b>2007</b>	<b>535 000</b>	<b>989 000</b>	<b>730 000</b>	<b>364 000</b>	<b>2 618 000</b>

*Source : Estimates AFTM, based on AVV & Port of Antwerp data ;*

The above figures use the new series describing the river traffic provided by the Port of Antwerp. However, it seemed preferable to retain since 2004 the same coefficient of passage, 9 tonnes / TEU, applied in 2002 and 2003, because this is the value observed on the Rhine. The port itself is using this coefficient in the modal split table of its web site.







## ANNEX IV

### CONTAINER TRAFFIC IN GERMANY – Year 2007

	Domestic traffic	International traffic		Transit	2007	2005 (recall)	2000 (recall)
	Total	Imports	Exports		Total	Total	Total
Loaded TEUs	106 551	377 517	791 422	169 372	1 444 862	1 354 858	897 296
Goods contained (t)	1 327 903	3 801 444	8 788 175	1 873 698	15 791 220	14 692 459	9 363 836
Empty TEUs	78 803	435 453	95 682	75 454	685 392	754 709	460 722
Total TEUs	185 354	812 970	887 104	244 826	2 130 254	2 109 567	1 358 018
Tare of containers (t)	370 697	1 625 687	1 773 683	489 652	4 259 721	4 218 575	2 716 036
Total Tonnage of containers (t)	1 698 600	5 427 131	10 561 860	2 363 350	20 050 941	18 911 034	12 079 872
<i>Tonnage not in containers (t)</i>	<i>57 451 081</i>	<i>101 999 935</i>	<i>48 939 488</i>	<i>20 532 633</i>	<i>228 923 137</i>	<i>217 854 188</i>	<i>230 143 128</i>
<b>Grand Total (t)</b>	<b>59 149 681</b>	<b>107 427 066</b>	<b>59 501 348</b>	<b>22 895 983</b>	<b>248 974 078</b>	<b>236 765 222</b>	<b>242 223 000</b>
<i>of which coasters (t)</i>	<i>9 000</i>	<i>1 046 600</i>	<i>1 926 700</i>		<i>2 973 300</i>	<i>2 661 100</i>	-
Average haul NST99 in 2004 (km)	70	256	108	623*	251,5	251,5	-
Coefficient t/TEU	9,16	6,68	11,91	9,65	9,41	8,96	8,9
Coefficient TEU/container	1,49	1,54	1,54	1,57	1,54	1,54	1,51
Number of 20'	68 868	258 420	282 846	77 006	687 140	624 012	442 465
Number of 30'	799	3 885	4 147	0	8 831	13 233	4 848
Number of 40'	57 641	274 298	298 888	83 910	714 737	732 713	454 058
Containers Total	185 354	812 970	887 104	244 826	2 130 254	1 369 958	901 371

\*average haul available only for NST99, and which appears excessive

Source : Destatis, Fachserie 8, Reihe 4, Wiesbaden, 2007

*Italics do not describe container traffic 2007.*