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Working Party on Inland Water Transport

Working Party on the Standardization of Technical and Safety Requirements in Inland Navigation

Thirty-eighth session
Geneva, 16–18 February 2011
Item 4 (b) of the provisional agenda
Special editorial session on the White Paper on efficient and sustainable inland water transport in Europe

Chapter 2: Current state of the European network of inland waterways of international importance

Note by the secretariat

I. Mandate

1. At its fifty-fourth session, the Working Party on Inland Water Transport (SC.3) approved, in principle, the draft White Paper on efficient and sustainable inland water transport in Europe of the United Nations Economic Commission for Europe (UNECE), but noted that some additional comments from the delegations would be forwarded to the secretariat by 15 November 2010. SC.3, therefore, requested the Working Party on the Standardization of Technical and Safety Requirements in Inland Navigation (SC.3/WP.3) to hold a special editorial segment during its thirty-eighth session to finalize the paper in time for the seventy-third session of the UNECE Inland Transport Committee to be held from 1 o 3 March 2011 (ECE/TRANS/SC.3/187, para. 12).

2. In accordance with the request of SC.3, the Working Party may wish to consider any last editorial corrections, to the text of Chapter 2 on the current state of the European network of inland waterways of international importance.

II. Chapter 2: Current State of the European Network of Inland Waterways of International Importance

3. The adoption of the 1996 White Paper took place in parallel with the final steps in the adoption of the European Agreement on Main Inland Waterways of International Importance (AGN), opened for signature at the Office of the United Nations in Geneva on 1 October 1996. The AGN agreement entered into force on 26 July 1999. As of February 2011, it counted seventeen Contracting Parties: Austria, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Hungary, Italy, Lithuania, Luxembourg, Republic of Moldova, Netherlands, Romania, Russian Federation, Slovakia, Switzerland and Ukraine.

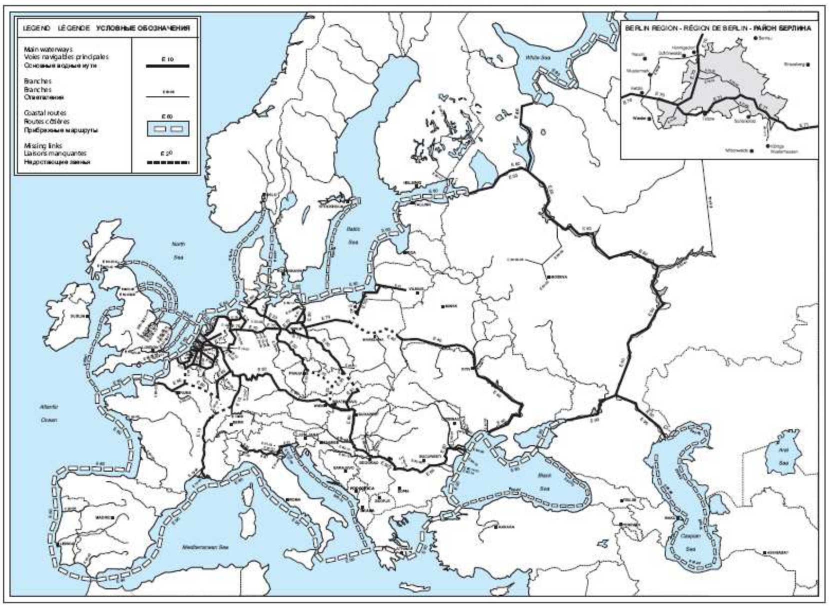
4. The purpose and the mechanism of the AGN agreement were described in the 1996 White paper and are just briefly recalled here. Similar to the other so-called "UNECE infrastructure agreements" for road, rail and intermodal transport,[1] the AGN establishes an international legal framework laying down a coordinated plan for the development of a network of inland waterways and ports of international importance. By acceding to the AGN, Governments commit themselves to the development and construction of their inland waterways and ports of international importance in accordance with the uniform technical and operational characteristics contained in the annex to the agreement. The existing inland waterways and ports of international importance, corresponding to these characteristics, are listed in the annexes to the agreement.

5. In accordance with its article 12, the AGN is maintained by the UNECE Working Party on Inland Water Transport and is continuously updated to reflect the evolution of technical requirements and the latest infrastructure developments in the region. The agreement is complemented by a reference document (UNECE Inventory of Main Standards and Parameters of the E Waterway Network or "Blue Book") which contains detailed information on the technical characteristics of European inland waterways and ports of international importance (E waterways and ports) identified in the AGN. The Blue Book also contains a list of the most important bottlenecks and missing links in the E waterway network with the goal to help countries focus their infrastructure development projects on the further development of an integrated inland navigation network.

6. In addition to the AGN agreement, the Protocol on Combined Transport on Inland Waterways to the European Agreement on Important International Combined Transport Lines and Related Installations (AGTC), another UNECE infrastructure agreement, establishes uniform requirements to be met by the infrastructures and services of combined transport using inland waterways. This Protocol entered in force on 29 October 2009 and as of February 2011 counts nine Contracting Parties. It identifies some 14,700 km of E waterways and terminals that are important for regular and international intermodal transport and correspond, as a minimum, to inland waterways of Class Vb.

[1] Other UNECE infrastructure conventions include the European Agreement on Main International Traffic Arteries (AGR), of 15 November 1975, the European Agreement on Main International Railway Lines (AGC), of 31 May 1985 and the European Agreement on Important International Combined Transport Lines and Related Installations (AGTC), of 1 February 1991.

Figure 1
Map of the AGN network

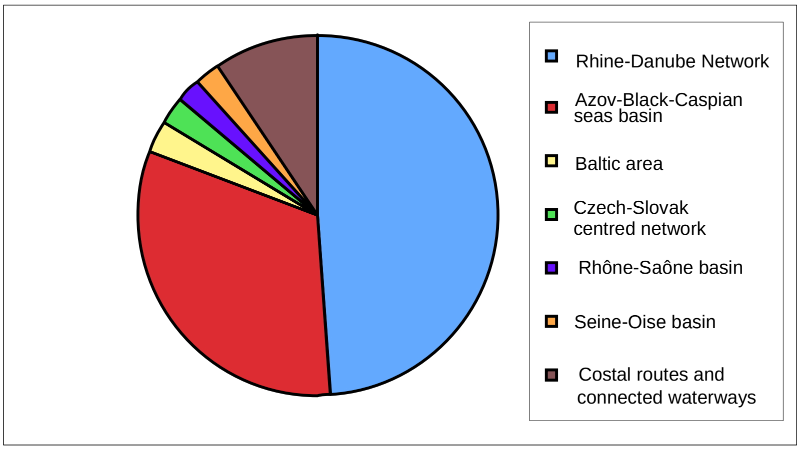


Source: UNECE secretariat, 2010.

7. Fifteen years after the adoption of the AGN agreement, this chapter describes the current state of the AGN network by presenting the six main subnetworks, namely:

A. Rhine-Danube network (14,362 km or 47.6 % of the total length of the AGN network (30,177 km));
B. Azov-Black-Caspian seas basin (9,339 km or 30.9 %);
C. Baltic area (840 km or 2.8 %);
D. Czech-Slovak centred network (715 km or 2.4 %);
E. Rhône-Saône basin (679 km or 2.3 %);
F. Seine-Oise basin (632 km or 2.1 %); and
G. Costal routes and connected inland waterways (2,774 km or 9.2 %).

Figure 2
The sub-networks of the AGN network



Source: the UNECE Blue Book.

8. For each of the six networks, this chapter presents the status and parameters of the existing inland waterway infrastructure. The data on the network parameters is derived from the first revised edition of the UNECE Blue Book (ECE/TRANS/SC.3/144/Rev.1).

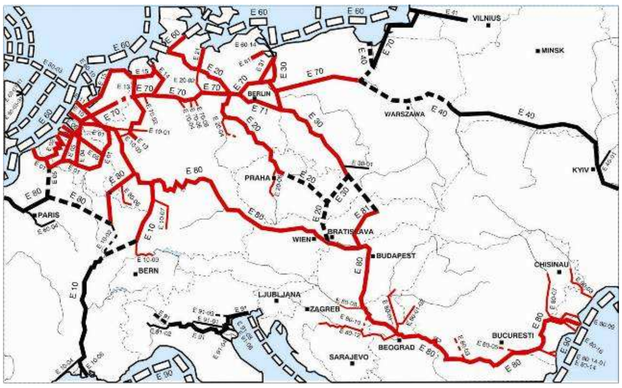
9. As chapter 1 highlighted the strong impact of the geography on the use of inland water transport (IWT) and, thus, the benefits of analysing the use of IWT in the light of the location and parameters of existing of inland waterways, the analysis of each subnetwork will include the information on the existing inland fleet and the IWT performance in terms of freight traffic.

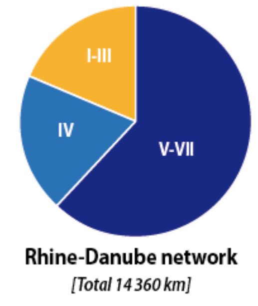
A. The Rhine-Danube network

10. The Rhine-Danube interconnected network (routes E 10, E 80, E 70, E 20, E 30) came into existence in 1992 with the opening of the Main-Danube Canal, linking routes E 10 (north-south) and E 80 (east-west). This part of the network represents nearly half of the total length of AGN waterways and breaks down into the following waterway classes: Classes V–VII (8,913 km), Class IV (2,813 km) and Classes I–III (2,636 km).

Figure 3

The Rhine-Danube network





Source: the UNECE Blue Book.

11. More than a third of these inland waterways are below the standards of the AGN network (i.e. below class IV) – from the point of view of vessel capacity and, incidentally, also in terms of suitability for combined transport. Looking at the network and its performance in more detail, it is important to underline that there remain substantial differences in the quality of the infrastructure East and West of the Bavarian watershed, and this has an impact on the development of traffic, in addition to economic, political and regulatory factors. The essential – and durable – difference between the networks East and West of this divide lies in the character and density of the network.

1. Infrastructure

(a) Rhine basin

12. The Rhine basin is evidently the most developed, maintained and utilized for the transportation purposes part of the AGN network. It is characterized by the highest

population and waterway density and its share of the upper classes of inland waterways is considerably higher than on other European inland waterways.[2]

13. Infrastructure projects in the Rhine basin and East across northern Germany to Poland and the Baltic countries essentially aim to eliminate strategic bottlenecks and to increase the carrying capacity on routes converging on the Rhine. Project on the Mittelland Canal route (E 70), for upgrading to class Vb, has been completed through to Berlin. It is now being followed–up with the Niederfinow enlargement by construction of a new barge lift. Work is ongoing on doubling of the locks on the Mosel and increasing its carrying capacity by deepening the channel for vessels drawing up to 3 m. The Rhine basin will soon acquire further density, improved operating conditions for carriers and new possibilities of supply, especially in combined transport, by implementation of the Seine-Scheldt waterway project, including the 106 km long Seine-Nord Europe Canal (E 05, class Vb). The canal will provide a link from the Rhine basin to the currently isolated western part of E 80 and E 80–04. In the near future (2015), this isolated network will therefore become a subnetwork of the overall interconnected system.

14. A weakness of the existing main network regarding interconnection with the new EU member States east of Germany is the poor overall condition of the inland waterways throughout Poland, i.e. route E 70 east of the Oder. Waterways of international importance (classes IV and Va) represent only 1.9 and 3.0 % respectively of the total length of 3,650 km of waterways in this country. The Polish Government identifies all the main routes (E 30, E 40 and E 70) as “basic bottlenecks” where upgrading from Class I, II or III to Class Vb is required, but at present there is no indication of such projects being on the agenda of the Polish Government. Poland holds the key to interconnection with the currently distinct “Five Seas” network centred in the Russian Federation, through the river Bug, but free-flow navigation poses serious problems of variable hydrological regimes and available depths. Moreover, environmental protection lobbies oppose major engineering works (whether free-flow or canalization). In this context, investment decisions are taken in some countries on the assumption that neighbouring countries will eventually make compatible infrastructure investments as per AGN Agreement, to provide a coherent overall network.

15. Less critical to the development of traffic is the E 70 “missing link” (Twente to the Mittelland Canal), which was included in the AGN, but was qualified as a long-term project. Discussions in the Netherlands on this canal have lead to the conclusion that the project could only be realized against very high costs and very little gain and that there exists sufficient alternative routes for inland navigation. The Netherlands, therefore, support the deletion of this project from the AGN missing links. This position is shared by Germany.

(b) Danube basin

16. By contrast, the issues on the Danube relate to the intrinsic navigability and carrying capacity of the river itself and its tributaries and connecting waterways. Hence the strategic bottleneck of limited draughts in the Straubing-Vilshofen section of the Danube (currently guaranteeing no more than 1.55 m draught), and other sections offering less than the required 2.50 m in Romania/Bulgaria, Serbia and Hungary (for a variable number of days in the year, 7–15 in some cases, but up to 2 months or more). Eliminating these bottlenecks is the aim of the EU Priority Project 18 under the trans-European transport network (TEN-

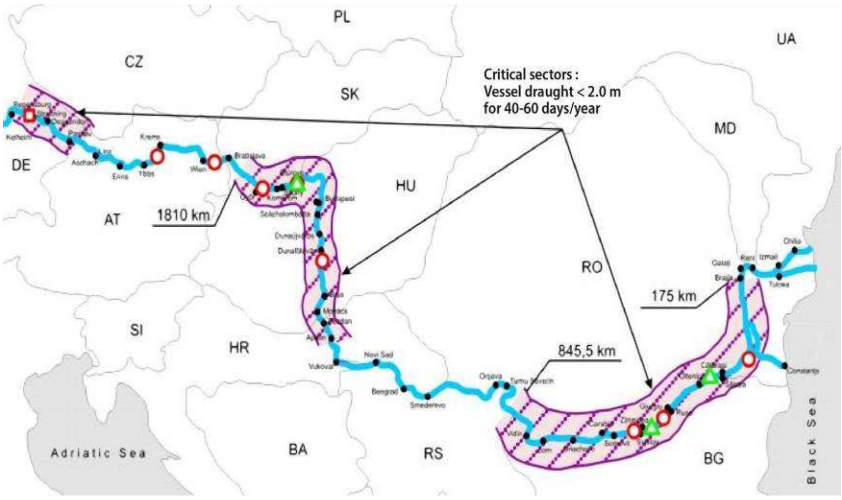
[2] PINE Study “Prospects of Inland Navigation within the Enlarged Europe” (Concise report) (September 2004), para. 21.

T) programme. The project aims to establish uniform characteristics throughout the 3,000 km long waterway from the North Sea to the Black Sea.

17. Figure 4 highlights the critical sectors on the Danube in terms of its carrying capacity, identified by the Danube Commission (DC). In the 2010 working documents on the main directions on its nautical policy, DC stressed that the major infrastructure works are required to qualify the entire waterway as part of the E waterway network, as defined by the AGN agreement.

Figure 4

Critical sectors on the Danube in terms of its carrying capacity



Source: Draft “Principales directions et recommandations dans le domaine de la politique nautique sur le Danube”, DC, Budapest, 2009.

18. Possible solutions are examined in a study involving all major stakeholders, including representatives of the transport sector and environmental groups. Works are already under way in the Austrian section of the Danube. The situation in Romania and Bulgaria is different as the countries are dealing with the application of EU environmental regulations. The Straubing–Vilshofen project can be seen as representing a unique opportunity and a truly European project, to establish high-quality inland navigation infrastructure between the North Sea and the Black Sea.

19. The contrast regarding network penetration between the Rhine and the Danube basins is also pronounced, considering the very poor conditions of navigability on all the tributaries of the Danube, none of which provides service as “feeders” of the artery in the way that the canalized Mosel, Main, Neckar, etc, effectively “feed” traffic to the Rhine. The Sava to Sisak in Croatia is a basic bottleneck. Upgrading to Class Vb is the objective, but even the present Class III limit is not attainable for long periods. The Tisa in Hungary is not even included in the AGN. The Váh in Slovakia is, like the Sava, a basic bottleneck with major infrastructure works required in the lower section connecting with the Danube. The Morava offers no potential for free-flow navigability. Accordingly, the Danube functions as an artery without branches, with the limitations that are implied.

20. A significant exception would be the Danube-Bucharest Canal in Romania (E 80–05), where the works interrupted in 1990 have recently resumed. In this context the Danube-Oder-Elbe missing links are also potentially of great importance, including the possible first phase consisting of a “branch” from the Danube to an inland port in Moravia at Břeclav. In the current situation, many factors thus combine to make the Danube side of

the pan-European AGN network less efficient for IWT than the Rhine basin west of the Bavarian divide.

2. Fleet

21. The infrastructure imbalance between the Rhine and the Danube also applies to the fleet, since the vast majority of vessels operating on this network belong to the Rhine fleet. The analysis made on the rather restrictive definition of International Vessel Registration (IVR) criteria, gives a total of nearly 9,000 goods-carrying boats, all certified for plying on the Rhine ("jauge du Rhin", Rhine Survey). Some 4,603 more boats[3] with 4.2Mt capacity are counted by IVR as "national fleets".

22. The CCNR adopted the following 2010 numbers for the Rhine fleet:

(a) 4,450 motor cargo vessels (6,050,000 tonnes capacity);

(b) 1,235 cargo barges (dry goods) (2,500,000 tonnes capacity);

(c) 1,170 motor tankers (2,200,000 tonnes capacity);

(d) 54 pushed tanker barges (105,000 tonnes capacity).

The Danube fleet in 2007 amounted to the total of 3,962 inland vessels.[4]

(a) Rhine fleet

23. The first observation about the Rhine fleet is the rise in average size. Before 1970, the average size was class II barges (up to 1960), then class III. Later, from 1970 to 1999, the average was around class IV, then further increasing to class V in the last decade. The number of vessels in this later class almost doubled over a period of a few years.

Table 1
Number of craft in the Rhine Fleet by year of build and size

31/12/2008	*Number of craft in the Rhine fleet, by year of build and size*							
Year/Class	*<400t*	*400–999 t*	*1 000–1 499 t*	*1 500–1 999 t*	*2 000–2 999 t*	*3 000 t & +*	*unknown*	*Total*
<1930	249	325	189	67	19	2	6	857
1930–1949	137	209	150	18	6	2	8	530
1950–1969	876	1 251	899	185	78	21	35	3 345
1970–1979	160	289	237	196	282	38	7	1 209
1980–1989	108	535	114	159	347	104	16	1 383
1990–1999	75	125	52	63	260	47	4	626
2000–2008	37	39	45	77	239	164	23	624
unknown	6	4	3	2	5	1	79	100
Total	**1 648**	**2 777**	**1 689**	**767**	**1 236**	**379**	**178**	**8 674**
	19 %	32 %	19 %	9 %	14 %	4 %	2 %	100 %

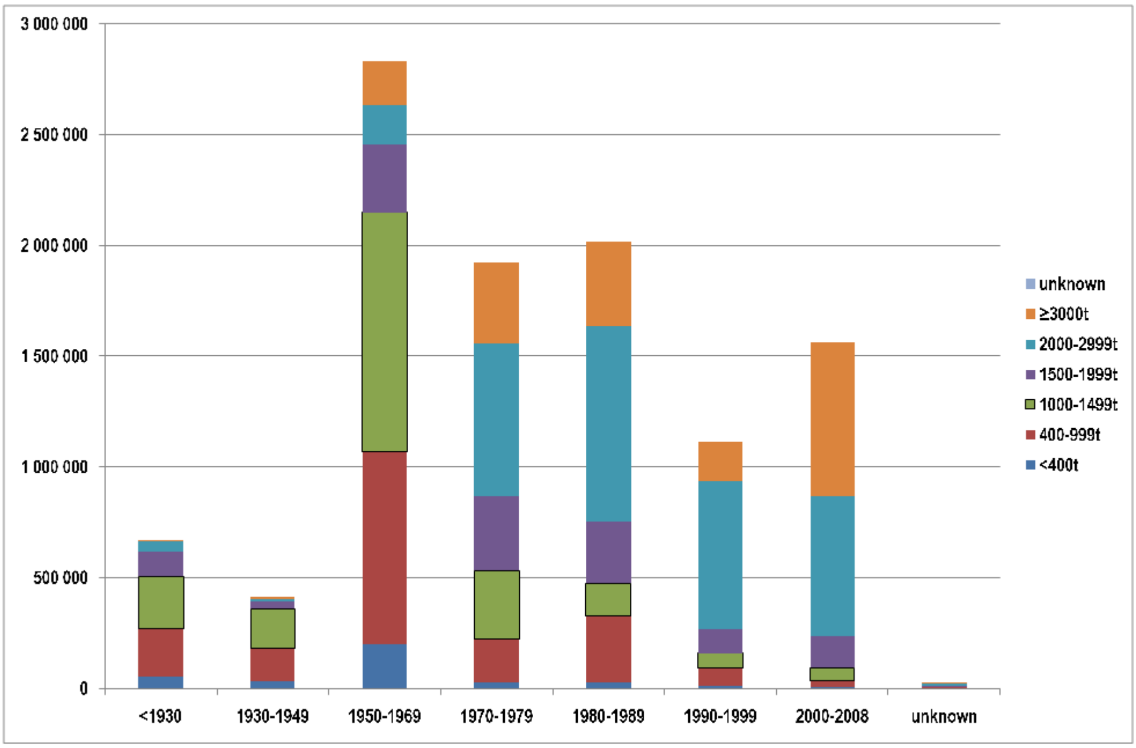
Source: International Vessel Registration (IVR).

24. While only representing 4 % of the number of craft, vessels of 3,000 tonnes or more aggregate 17 % of the capacity, and craft between 2,000 and 2,999 tonnes total 30 % of the

[3] 1,044 craft registered in Belgium, 1,532 in France, 250 in Germany, 1,759 in the Netherlands.
[4] Main indicators on the navigation on the Danube in 2007, the DC.

capacity, with only 14 % of the fleet. The acceleration of this trend is revealed by the years of build: in the 1980s craft of 2,000 t and more represented hardly 30 % of the new builds, from 1990 onwards it was 49 % and 67 %, with respectively 75 and 85 % of the capacity. This is a deep-seated trend, and appears unlikely to stop. 1970 was clearly a turning point: since that date, very few craft of less than 400 t have been built. Yet, due to the very long life of IWT craft, the structure of the fleet will evolve slowly in time. As demonstrated by Figure 5, the period 1950–1969 towers above the rest: it is the period of reconstruction and the beginning of push-towing. By contrast, the period 1990–1999 shows a significantly reduced rate of renewal of the fleet.

Figure 5
Evolution of the Rhine fleet in terms of its capacity



25. Another noticeable variable is the length of the vessels on the Rhine. A major breakthrough has occurred in this area since the publication of the 1996 White Paper. Starting from 1996, self-propelled craft 135 m long were authorized in the Rhine basin, and a number have been built, leading to the steep rise in average capacity as observed above. However, this creates a new category of boat, which could be termed “Vab” or “Va+” and which cannot use 110 m long locks (class Va).[5] Craft between 76.75 and 85.74 m belong to

[5] There are several such locks in France (Clévant on the Mosel/Meurthe, St Maurice, St–Maur on the Marne, Créteil, Bellerive and Janville on the Oise lateral canal), many in Belgium (Scheldt, Leie and Sambre waterways) and the Neckar in Germany, among others. Furthermore, they cannot use the existing turning basins on many waterways, designed for 110 m long craft or short push-tows, and acceptable for all long push-tows when split. Finally, few terminals are long enough to accommodate them under satisfactory conditions.

Class IV (RHK, or Johann Welker). Since 1970, they have been replaced as the most common boats by Class Va craft (from 85.75 to 110.74 m).[6]

Table 2
Number of craft in the Rhine fleet by year of build and length

31/12/2008	*Number of craft in the Rhine fleet by year of build and length*					
Year/Class	*<76.75 m*	*76.75–85.74 m*	*85.75–110.74 m*	*≥110.75 m*	*unknown*	*Total*
<1930	708	185	63	1	77	1 034
1930–1949	368	121	33	0	20	542
1950–1969	2 351	736	212	1	58	3 358
1970–1979	648	247	282	2	32	1 211
1980–1989	932	118	311	5	19	1 385
1990–1999	328	52	218	11	21	630
2000–2008	183	38	325	67	15	628
unknown	14	5	2	1	80	102
Total	**5 532**	**1 502**	**1 446**	**88**	**322**	**8 890**
	62 %	17 %	16 %	1 %	4 %	100 %

Source: IVR.

26. Another point of interest is the split between self-propelled craft and dumb craft. Up until the World War Two, most boats were towed. Then self-propulsion boats came in. Starting from 1959, conventional towage was rapidly replaced by push-towing, a much safer and more efficient technique. Self-propelled barges dominate the picture, since they total 60 % of units and capacity in the Rhine fleet. Since push-tows aggregate a number of barges, they can move large quantities of cargo, yet with smaller unit loads. It is more important that the barges (or lighters) should be of the same size, and this standardization concept has had a restraining influence on the move towards larger barges.[7]

Table 3
Number of self-propelled craft in the Rhine fleet, by year of build and length

31/12/2008	*Number of self-propelled craft in the Rhine fleet, by year of build and length*					
Year/Class	*<76.75 m*	*76.75–85.74 m*	*85.75–110.74 m*	*≥110.75 m*	*unknown*	*Total*
<1930	578	159	54	0	64	855
1930–1949	281	113	27	0	14	435
1950–1969	1 591	702	189	1	21	2 504
1970–1979	70	209	258	2	4	543
1980–1989	36	72	243	4	4	359

[6] The fact that some craft older than 1996 exceed 110.74 m is explained by lengthening or jumboisation, a procedure which is becoming common.

[7] Furthermore, it may be advantageous to combine in the same tow goods of different kinds, bringing economies of scale even to small consignments. Thus the average size of barges has not grown substantially, remaining on average well below 2,000 tonnes. The "100 m long/14 m wide" barge which was widely envisaged as the "vessel of the future" in the 1980s has not caught on, and remains anecdotal (1 unit).

1990–1999	27	35	173	11	3	249
2000–2008	40	26	266	67	9	408
unknown	2	4	2	1	29	38
Total	**2 625**	**1 320**	**1 212**	**86**	**148**	**5 391**
	49 %	24 %	22 %	2 %	3 %	100 %

Source: IVR.

27. However, a move towards 110 x 11.4 m barges, in parallel to 135 m self-propelled craft, is to be observed (30 units). There are only 49 barges with lengths between 90.75 and 109.74 m, which leaves 155 barges between 85.75 and 90.74 m. These are indeed small numbers compared to the Europa II type (76.5 x 11.4 m) lighter which totals some 579 units, and its lengthened versions, up to 85.74 m long (182 units), which has become the reference, displacing the Europa I type (70 x 9.5 m), of which there remain only 43 units.

Table 4
Number of craft in the Rhine barge fleet, by year of built and length

31/12/2008	*Number of craft in the Rhine barge fleet, by year of built and length*					
Year/Class	*<76.75 m*	*76.75–85.74 m*	*85.75–110.74 m*	*≥110.75 m*	*unknown*	*Total*
<1930	249	26	9	1	71	356
1930–1949	90	8	6	0	15	119
1950–1969	766	34	23	0	44	867
1970–1979	578	38	24	0	30	670
1980–1989	896	46	68	1	17	1 028
1990–1999	302	17	45	0	21	385
2000–2008	145	12	59	0	8	224
unknown	13	1	0	0	52	66
Total	**3 039**	**182**	**234**	**2**	**258**	**3 715**
	82 %	5 %	6 %	0 %	7 %	100 %

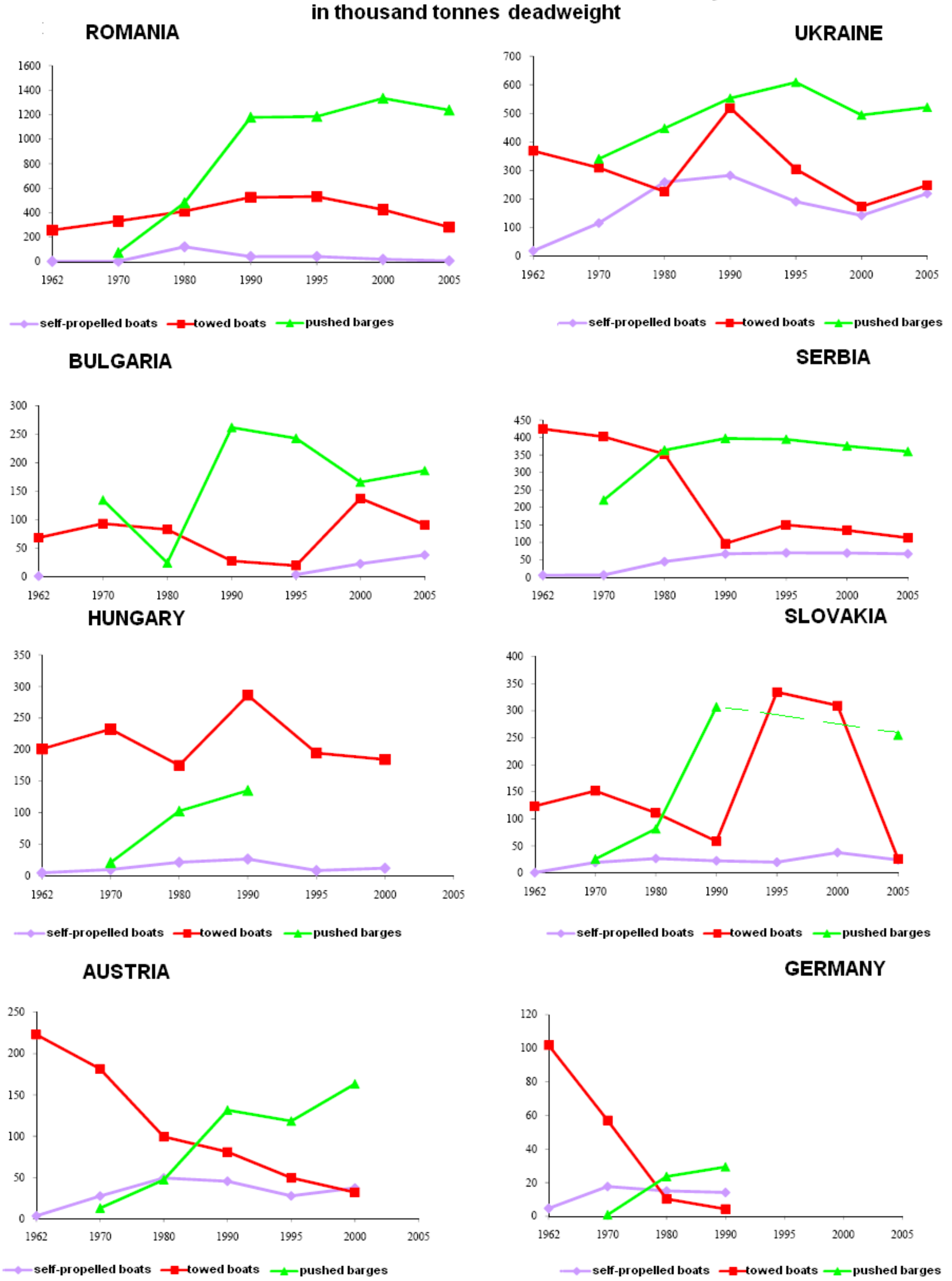
Source: IVR.

(b) *Danube fleet*

28. The capacity of the Danube fleet, as described by DC Statistics for the period between 1950 and 2005, has markedly grown from the 1970s (+36 %), yet has reduced since 1990 and its peak of 5 million tonnes. The total capacity of the Danube fleet in 2007 was 3.84 million tonnes. Figure 6 shows the evolution of the fleet capacity by country and Table 5 reflects the evolution of the total capacity of the fleet over the years.

Figure 6

EVOLUTION OF THE DANUBE FLEET between1962 and 2005, by COUNTRY in thousand tonnes deadweight



Source: DC, "Ouvrage de référence statistique pour la période 1950–2005", Budapest, 2008.

Table 5
Evolution of the total capacity of the Danube fleet by country between 1962 and 2005

	Boats in use													
	Tugs		*Pushers*		*Self-propelled craft*			*Towed barges*		*Pushed barges*		*Total*		
Years	*Number of units*	*Power in kw*	*Number of units*	*Power in kw*	*Number of units*	*Power in kw*	*Tonnes dwt*	*Number of units*	*Tonnes dwt*	*Number of units*	*Tonnes dwt*	*Number of units*	*Power in kw*	*Tonnes dwt*
1962	504	187 263	...	...	82	43 364	39 827	2 556	1 767 692	...	...	3 142	230 627	1 807 519
1970	717	214 285	100	120 300	180	125 227	199 733	2 631	1 758 722	668	829 488	4 296	459 812	2 787 943
1980	687	194 300	194	218 166	318	260 481	441 450	2 195	1 469 513	1 281	1 788 177	4 675	672 947	3 699 140
1990	634	177 708	364	393 624	423	314 754	499 973	2 190	1 598 708	2 143	2 993 692	5 754	886 086	5 092 373
2000	552	154 848	398	512 281	263	218 300	348 750	1 699	1 463 342	1 617	2 573 895	4 529	885 429	4 385 987
2005	292	86 834	404	436 255	342	216 507	358 087	900	825 459	1 949	2 598 564	3 887	739 596	3 802 680

Abbreviation: dwt, deadweight tonnes.
Source: DC, “Ouvrage de référence statistique pour la période 1950–2005”, Budapest, 2008.

29. According to 2008 data, received by the DC secretariat, the cargo and passenger fleet in the Danube ports consists of 4,132 vessels (in 2007 – 4,127 vessels).[8] In 2008 the number of the fleet units has increased by 0.1 %. The parity between cargo and passenger vessels remains in favor of the cargo fleet – 96.7 % and 3.3 % respectively to all numbers of the Danube fleet units. Thus the cargo fleet has grown by 0.3 %. About 70 % of the cargo fleet tonnage belongs to the pushed barges, less than 20 % – to the towed barges and more than 10 % – to the self-propelled vessels.

30. In 2008 the small increase in the cargo fleet (except for the pushed barges), from 3,984 units in 2007 to 3,996 units in 2008, was accompanied by the increase in its general capacity – from 799,034 kW to 811,350 kW. At the same time the general carrying capacity of the fleet decreased slightly from 3,876,889 tonnes to 3,874,066 tonnes.

31. As shown above, the vast majority of the fleet is pushed barges, rising from 30 % of total capacity in 1970 to 70 % in 2008. Modernized Europa–II type barges will remain the main type of non-self-propelled vessel for container transport on the Danube over the next few years. The share of conventionally towed craft has been reduced by more than half over the same period, with the decline more marked since the year 2000. They still represent 20 % of the capacity. Besides, they are sometimes lashed alongside pushed convoys, which is clearly the dominant technique. Self-propelled craft, contrary to the Rhine, are still a minority and this is not evolving.

3. IWT Performance

32. The widely varying characteristics of the waterways across the network, from the Lower Rhine and Albert Canal (9,000 tonnes) to “branches” E 20 and E 30 often limited to 1,000 tonnes, result in substantial variations in the price of IWT solutions.

[8] These numbers do not include the cargo and passenger fleet of Austria, the cargo fleet of Germany and the data on the capacity and carrying capacity of Hungarian fleet. However, they take into consideration the quantitative data of the Hungarian vessels and the data provided by the Southern management of internal waterways and navigation of Germany on the passenger fleet on the Danube.

(a) Rhine

33. On the Rhine, traffic in 2007 increased by 2.6 % and this growth involved largely the agricultural (4.6 %) and the metallurgic (15.7 %) sectors. The demand had been particularly strong for the transport of dry goods (4.4 %). At the same time, the Rhine navigation only moderately (+2.2 %) benefited from the general growth of the transport of containers. Moreover, the tanker transport decreased in 2007 by 3.5 %, due to the general decrease (10 %) in the transport of oil products.

(b) Danube

34. In 2008 the total volume of the goods transported on the Danube reached the level of 79.1 million tonnes, which is almost 1 million tonnes less in comparison with the previous year (–1.2 %). The transportations between the Danube ports represent 70 % of this traffic.

35. In 2008 the total amount of goods turnover in all Danube ports (without the German ports on the Danube site) reached the level of 63.5 million tonnes, which represents 2.2 million tonnes or 3.3 % reduction in comparison with the previous year (65.7 million tonnes).

36. The whole structure of goods turnover in the previous years in all Danube ports remains the same – more than 80 % in the turnover of the goods consists of raw and processed minerals; iron ore, scrap metal, blast-furnace production waste; blanks; cement, lime, processed construction materials; solid mineral fuel; grain; natural and artificial fertilizers; and oil products.

B. Azov-Black-Caspian seas basin

37. The most structured and uniformly developed subnetwork of the AGN network is formed by the E 50 waterway in the Russian Federation, along with the Belomorsko-Baltijskiy canal, the section of the Don river from Azov to Kalach and the Volga-Donskoi navigation canal,[9] associated with route E 40 in Ukraine (Dnepr to Kiev and Belarus). This network presents uniform characteristics as 88 % of the total length is open to deep-draught river-sea shipping, and sub-standard (Class III) waterways represent less than 5 % of the length (the “branches” formed by the Dnestr/Nistru and Desna rivers).

[9] This includes the integral parts of the E 60 coastal route from Gibraltar to Saint-Petersburg and on to Arkhangelsk and of the E 90 coastal route from Gibraltar to Azov and Astrakhan.

Figure 7
Azov-Black-Caspian seas basin

Source: the UNECE Blue Book.

38. Interconnection with the rest of the AGN network depends on the following missing links: the link to the main network through Poland, and the E 40 (or E 41) missing link itself (Baltic-Black Sea Waterway). Regarding the link west to Poland, the waterway runs from the Ukrainian border near Chernobyl through Belarus to Brest at the Polish border (via the river Pripyat and the Dnieper-Bug canal). It is a class IV inland waterway, but some structures of the canal have deteriorated and no longer meet modern environmental requirements. Belarus is therefore building new locks here to meet the standards of class Va. Four gated weirs and two locks have been built, allowing the passage of vessels 110 m long, 12 m wide and with a draught of 2.2 m. Work is still in progress. On the other hand, there is no project in Poland, and this is likely to remain a missing link for the foreseeable future.[10]

39. While it is possible to consider the waterways of Ukraine as belonging to this interconnected network, in view of the reality of river-sea shipping services via the Black Sea, there is no inland waterway link between the Russian and the Ukrainian parts of the AGN network. Therefore, the following sections will present the parts of the AGN network in the Russian Federation and Ukraine separately.

1. Infrastructure

(a) Russian Federation

40. There currently are the following bottlenecks on E 50:

(a) On the river Svir of the Volga-Baltic waterway: in order to eliminate this bottleneck, it is planned to build the second part of the Nizhne-Svirsky lock.

(b) On the river Volga from the Gorkovsky hydroelectric complex to Nizhni Novgorod: in order to eliminate the insufficient draught it is planned to build the low-head hydraulic complex in the area of Boljshoe;

[10] The Baltic-Black Sea waterway was considered by the forty seventh session of the UNECE Working Party on Inland Water Transport in 2003 for its possible inclusion in the AGN, but no positive decision was reached. It should be noted, however, that the most serious bottleneck for the foreseeable future is the radioactive fallout following the Chernobyl disaster, which restricts commercial navigation through the 30 km exclusion zone.

(c) On the river Don below the Kochetovsky hydraulic complex: in order to eliminate the insufficient draught, the construction of the low-head hydraulic complex near the Bogaevsky village has been considered.

41. The development strategy for the Russian transport system in 2010−2015 includes major investment projects, such as the construction of the new low-head hydraulic complex in Nizhni Novgorod on the river Volga and a second parallel lock on Nizhne-Svirsky hydraulic complex on the river Svir of the Volga-Baltic waterway, which are aimed to eliminate the bottlenecks in the unified inland waterways system of the European part of the Russian Federation. The major repair and reconstruction works of the inland waterways infrastructure in the European part of the Russian Federation, the Siberia and the Far East are also planned.

2. Fleet

(a) Russian Federation

42. In 2008, there were 28,200 vessels listed in the Russian River Register, including 1066 river-sea vessel. In 2007, over 2,000 license-holders carried out shipping activities. Developing the inland fleet to meet the needs of a growing market is an integral part of the national strategy for IWT development. Under the Guidelines for the renewal of the fleet (R.002–2002), which entered into force on 1 January 2003, there are two levels for the refurbishment of vessels, with separate requirements for hulls, machinery, equipment and electrical fittings. The corresponding elements are considered to be in the same technical state as on a new vessel with a designed service life of 20 years after 5 years of service in the case of level 1, and after 10 years of service in the case of level 2. Other efforts to renew the inland fleet include the application of the R.003–2003 Guidelines on the construction of inland and mixed river-sea vessels employing elements of vessels currently in use, which entered into force as from 30 June 2003.

(b) Ukraine

43. At the end of 2006, there were 806 vessels in the Ukrainian inland navigation cargo fleet, including 54 tankers and 752 dry cargo vessels. There are also plans for a vessel in the dry-cargo estuary vessel class, with a capacity of between 5,000 and 6,000 tonnes and a draught of 5.5 m, to be used for “river-sea” traffic through the estuary ports on the Dnepr (Kherson), Pivdenny (or Yuzhne) Buh (Mykolaev) and Danube (Ismail, Reni). Such vessels will not count in the statistics for IWT fleet, since their draught clearly places them in the category of coasters, not river vessels.

3. IWT Performance

(a) Russian Federation

44. Every year, Russian IWT carries some 130 to 140 million tonnes of cargo, representing 80 to 90 billion t-km, passenger-kilometres. As mentioned before, IWT accounts for about 2 % of freight transport in the country, but in certain segments of the market its share is quite substantial, e.g. over 80 % of cargoes delivered to districts in the Far North.

45. The volume of cargo carried by IWT in the Russian Federation in 2007 was 152.4 million tonnes (an increase of 9.5 % over 2006), and 83.7 billion t-km. Domestic movements accounted for 131.3 million tonnes (12.4 % more than in 2006), and international movements 21.1 million tonnes. In 2007, Russian river ports handled 225 million tonnes of cargo, 17.6 % more than in 2006; this included 17.5 million tonnes of exports, 1.4 million tonnes of imports and 206.6 million tonnes of domestic cargo.

Handling of exports increased by 21.7 %, of imports by 14.3 % and of domestic cargo by 17.3 %. The growth in domestic IWT in 2007 is explained by a longer navigation season in the river basins and an increase of 12.5 % in the absolute volume of dry goods carried (principally cement, metals, timber and building materials), and also by an increase in the transport of timber rafts.

46. The Government of the Russian Federation together with the interested federal executive bodies has assigned to the Russian Ministry of the Transport a set of the measures to be carried out by 2015, which are aimed to open the inland waterways of the Russian Federation for the navigation of the ships under the flags of the foreign states.

(b) Ukraine

47. In Ukraine, the volume of cargo carried by IWT has been regularly increasing since 2000, but the latest figure (14 million tonnes in 2006) is still far short of the 1990 level of 66 million tonnes. It represents a modal share of only 0.8 % in tonnage, and 1.3 % of the 6.3 billion t-km.[11] These figures remain well below the potential of inland navigation. In fact, between 1990 and 2000 the volume of cargo transported in Ukraine by inland navigation decreased more rapidly (–87 %) than the corresponding figure for all cargo (–75.4 %). However, all the decrease occurred before 1995, and between 2000 and 2006 IWT grew more rapidly (by 69 %) than transport overall (19 %). This reflects the concern in recent years to develop a particularly advantageous mode of transport.

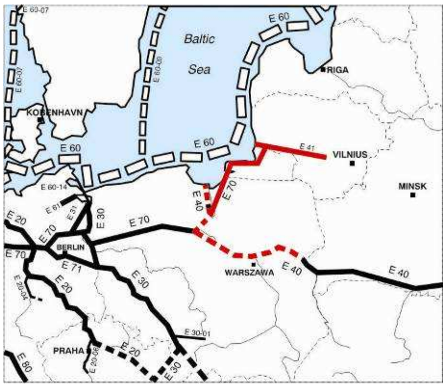
48. To increase the volume of cargo carried on inland waterways in domestic and international (including transit) carriage, besides adding inland and sea-river vessels to the national fleet and encouraging domestic vessel construction, planned measures include reserving cargoes for Ukrainian carriers (quotas), refining the State regulation system to make the domestic fleet more competitive and setting economic conditions to stimulate the carriage of goods in transit.

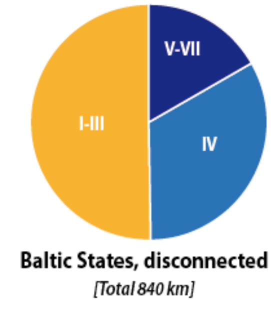
C. The Baltic area

49. The Baltic area consists of northern part of E 40, eastern part of E 70 and E 41, the possible Baltic-Black Sea waterway.

[11] The statistics of the former Soviet republics often include t-km carried on foreign soil or at sea by the national fleets, which departs from the general methodology agreed upon by UNECE, and makes comparison somewhat difficult. Besides, some t-km may be counted twice, by the country of the carrier and by the country where the carriage takes place. This also occurs on the Danube.

Figure 8
The Baltic area





Source: the UNECE Blue Book.

1. Infrastructure

50. Planning essentially concerns the gradual improvement of the Nemunas/Neman river navigation from Kaliningrad and Lithuania inland to Kaunas, which is the designated limit of route E 41. Plans are relatively modest, however, since they involve increasing the draught to 1.60 m. Kaunas dam prevents development of navigation beyond Kaunas towards Vilnius or Belarus, and there are currently no plans to bypass this obstacle.

51. The concept of a Baltic-Black Sea waterway, whether by extension of this route E 41 or by development of the Daugava river inland from Riga, therefore remains hypothetical at present, in the absence of any support from the respective Baltic States of Lithuania and Latvia. Belarus is thus alone in promoting this waterway connection.

52. It should be noted that the Daugava (not on the AGN network) presents conditions of free-flowing navigability that are comparable to those of the Nemunas (downstream of the dam), and those of the Polish rivers. All these rivers are blocked by ice many months per year. Only a deep-seated change in the conditions surrounding transport policies and environmental protection of rivers could give rise to a change in the prospects for this subnetwork, which is unlikely to evolve in the medium term.

53. Only very limited investments have been made in recent years on this network, which concerns two countries: Lithuania and the Russian Federation (the region of Kaliningrad), essentially concentrated on the seaports and their approaches. Integration of this subnetwork with the main network depends on investments on basic bottlenecks in Poland.

2. Fleet

54. The fleet engaged in IWT in this area is negligible in Kaliningrad and Lithuania. In Poland it amounts (in 2007) to 107 self-propelled barges, average capacity 600 tonnes, and 428 barges for push-tows, average capacity 500 tonnes. This fleet operates on those Polish waterways that are interconnected with the German waterways and the Rhine basin. The relatively low deadweight relates to the current characteristics of the Oder and the Oder-Vistula Canal. In this subnetwork east of E 70, in view of the restrictions on depth in particular, waterborne traffic accounts for a very small proportion of freight movements: less than 1 % of inland freight movements in Poland, for example. The percentage is negligible in Lithuania, Latvia and the region of Kaliningrad (the Russian Federation).

3. IWT Performance

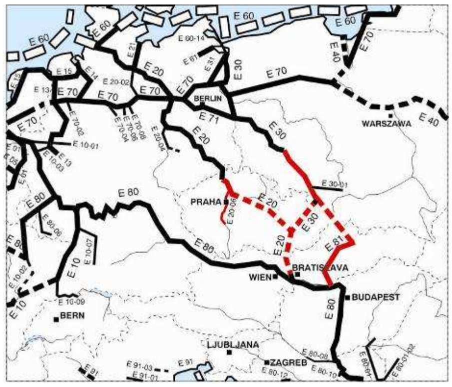
55. This is the subnetwork which carries the least traffic. The reason lies in the basic parameters coupled with severe draught restrictions on the free-flowing rivers. In fact, waterways below international standards represent 50 % of the length of this subnetwork.

D. The Czech-Slovak centred link

56. At the geographical core of the European waterway network and the AGN are the Czech and Slovak Republics, which have what can be seen as the most critical strategic bottlenecks, in the lower reaches of the river Elbe near the German border, and the most obvious missing links.[12] This part of the network consists of routes E 20 and E 30 and southern extension, and E 81.

Figure 9

The Czech-Slovak centred network



Source: the UNECE Blue Book.

1. Infrastructure

57. The priority for the Czech Republic is the navigation improvement on the free-flowing river Elbe between the German border and Ústi nad Labem, where two relatively low-head dams (less than 6 m) and hydropower plants, with locks 200 by 24 m, are projected. The works are essential to provide the same draught as that available on the German side of the border. Development of inland shipping is seriously limited in the present situation, with available draughts of as little as 90 cm in low flow periods (compared to 1.30 m on the free-flowing Elbe in Germany).

58. The extension of routes E 20 and E 30 and connection south to the Danube make up the ambitious Czech project for the “Meeting of the Three Seas” (North Sea, Baltic and Black Sea). The project dates from 1901, and was originally to be completed by 1924. Until recently, the Czech Republic did not support the implementation of this project. However, in July 2009, it adopted its spatial development policy which recognized the need to develop waterways in the country in the next decade. Priorities were defined as the river Elbe and Vltava, but provision is also made for possible implementation of the Danube-Oder-Elbe (DOE) “water corridor”. The Government adopted a resolution which laid the basis for thorough examination of the need for these missing links at the international level.

[12] Missing links E 20 and E 30 are essentially within the Czech Republic. The Váh-Oder Link (route E 81) is an alternative project which is still under consideration by Slovakia.

Specifically, it intends to discuss the path of this waterway with representatives of Austria, Germany, Poland, Slovakia and the European Commission, as well as other signatories of the AGN. These discussions are expected to lead to an international assessment of the possible construction, transport efficiency and investment demands for individual sections of the DOE water corridor. The results of this new approach to the project will be presented to the Government by the end of 2010 for subsequent decisions.

59. All investments in the network have been blocked in recent years. Short-term investments concern the Elbe and Vltava, in particular the badly-needed lock and weir at Děčín, without which cross-border barge traffic with the port of Hamburg is stopped during low-water periods. Some of the investments planned in the short term are on smaller waterways, such as the upstream part of the Vltava and the Morava connected to the Bata Canal (both Class I). Both of these projected investments would be of value for waterway tourism rather than modern waterborne freight movements, and both are disconnected from the DOE water corridor project itself.

2. Fleet

60. The Czech fleet is made up of 68 self-propelled barges and 249 barges for push-tows, with respective average capacities of 900 tonnes and 500 tonnes. All are currently engaged mainly in the limited domestic traffic, while the economic feasibility of transnational movements is seriously affected by the limited depths as indicated above.

3. IWT Performance

61. Traffic has been very erratic, despite the high-quality infrastructure in the upper reaches of the Labe/Elbe, because of low waters in the Labe/Elbe as outlined above. Extreme floods have also brought difficulties, by the damages inflicted to embankments and training works, and some of the worst have taken place recently.[13] Also, part of the traffic between Hamburg and Prague moves by waterway up to Dresden, and then crosses the border by road. This can be explained by the fact that depth on the first 40 km of the Czech route is 0.4 m less than in the German part, making it very unprofitable to proceed upstream.

E. The Rhône-Saône basin

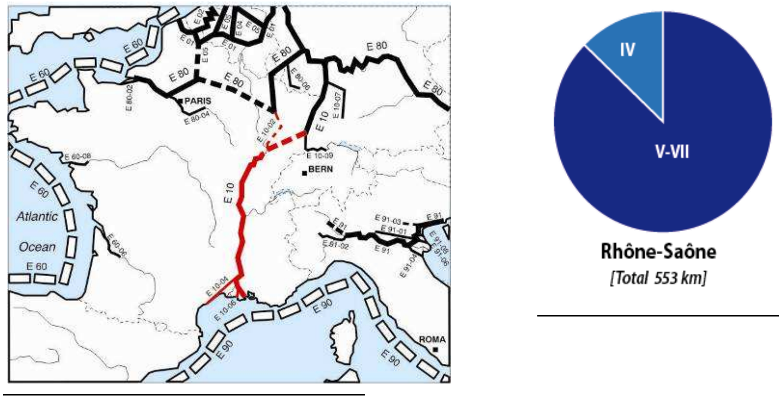
62. This small isolated network consisting of route E 10 (south) offers excellent conditions for development of IWT in the hinterland of the ports of Marseilles-Fos and Sète, through to Lyon and the inland port of Pagny near Dijon.

1. Infrastructure

63. The Rhône-Saône waterway network offers characteristics compliant with the AGN and with the standards for combined transport, with limited works to be completed to guarantee the required depth on the Saône and the required cross-section on the Rhône-Sète Canal.

[13] Three epoch-making floods took place in 2002, 2006 and 2007, with smaller peaks in 1997 and 2010.

Figure 10
The Rhône-Saône basin



Source: the UNECE Blue Book.

64. The difficulty of developing IWT to its full potential on this subnetwork lies in its isolation from the main network. From the early 1990s France focused its efforts on creating the Seine-Nord link connecting the Seine and the Benelux basins, thus designating the E 10 link as lower priority. The Rhine-Rhône project which had been planned since the late 1960s was then abandoned in 1997. After a few years of limited planning activity, the French Government, the Regions (led by Lorraine and Rhône-Alpes) and the national public corporation “Voies Navigables de France” (VNF) resumed studies of the link with the goal to organize a public debate in 2011 on the inland water connection between the Rhine and the Mediterranean. This connexion is included in the French legislation (a so-called “Grenelle” law) and in the 2010 national scheme for transport infrastructure.

65. As indicated above, only limited works remain to be completed to obtain full Class Vb characteristics throughout this subnetwork, and dredging in certain sections of the Saône, and widening and deepening of the channel of the Rhône-Sète canal, to Class IV capacity.

2. Fleet

66. The fleet specific to the Rhône-Saône basin is comprised of boats that are wider than 5.10m, or narrow enough but longer than Freycinet locks (38.5 x 5.20 m), making it captive in the basin because every route out of the basin is Freycinet size. Presently, it totals 215,400 tonnes and 152 boats, out of which 134 boats, totalling 209,600 tonnes, were operating in 2008. The public transport part is regularly reported by VNF, while there are some 57 more boats in private carrying of sand and gravel which are also captive.

Table 6
Public transport craft present in 2008 in the Rhône-Saône basin

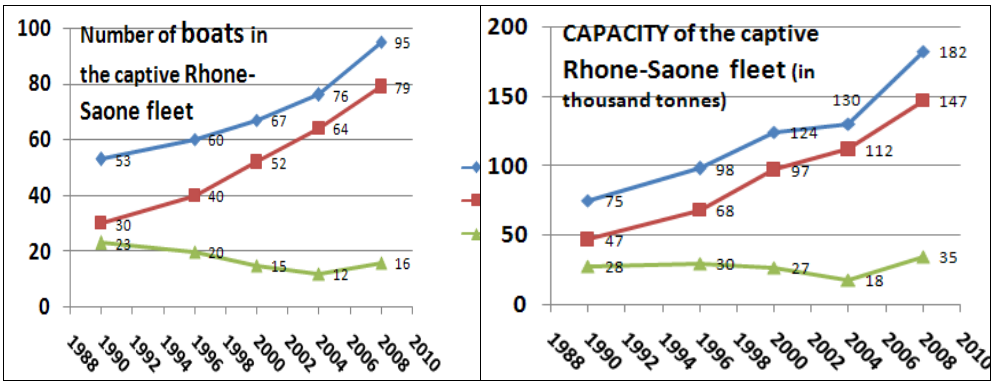
	No	*Tonnes*	*power kW*	*Average capacity (t)*
Dry cargo fleet	79	147 240	32 524	1 864
Self-propelled barges	41	59 335	32 524	1 447
Pushed barges	38	87 905		2 313
Tanker fleet	16	35 322	8 290	2 208
Self-propelled tanker	7	13 898	8 290	1 985

barges				
Pushed tanker barges	9	21 424		2 380
Total	**95**	**182 562**	**40 814**	**1 922**

Source: VNF Lyon.

67. A first noticeable point is the very high average size of the fleet, nearly three times that of the French fleet overall. This is understandable, since all Freycinet-type barges, which lowers the average, are excluded, because they are not captive. Furthermore, the own-account fleet is not included in the statistics, and its average size is much lower (571 tonnes). This is driven by a logistics logic, a sand port needs only the amount of construction materials that it sells in a day, which is hardly 500 tonnes in France. Serving it with 2,000 tonnes barges would unnecessarily freeze a large investment to serve as floating storage, and no operator does this. The size and capacity of the fleet grew enormously in the last decade, in line with the growth of traffic.

Figure 11
The size and capacity of the Rhône-Saône fleet



Source: VNF.

3. IWT Performance

68. The growth of the Rhône-Saône fleet has been fuelled by the growing container traffic, and the numerous barges and self-propelled craft assigned to it. This is clearly a sector with a future, irrespective of local or global crises. On the other hand, the decline in the tanker fleet is noticeable. This results from two opposite trends: the release for civil transport of a NATO pipeline reduced drastically the amount of petroleum products to be carried, and led to the phasing out of many tanker vessels; new markets opened, particularly in chemicals and gas transport. The recent expansion in this sector has been accelerated by the pending obligation to operate vessels with double hulls for transport of dangerous goods; this has been taken as an opportunity to win new markets, with some success, thanks to the increased security it offers.

69. Prices offered, in comparison to rail, are broadly equivalent for regular volume traffic. Accordingly, the competition is fierce, but there have already been some cases of cooperation in order to stop cut-throat competition.[14] Moreover, the future of the rail freight in France is quite uncertain in the context of the liberalization of the rail service, the quality

[14] For instance, the Edouard Herriot port on the Rhône in Lyon is an advanced port of Fos/Marseille for both IWT and rail, with similar prices applied.

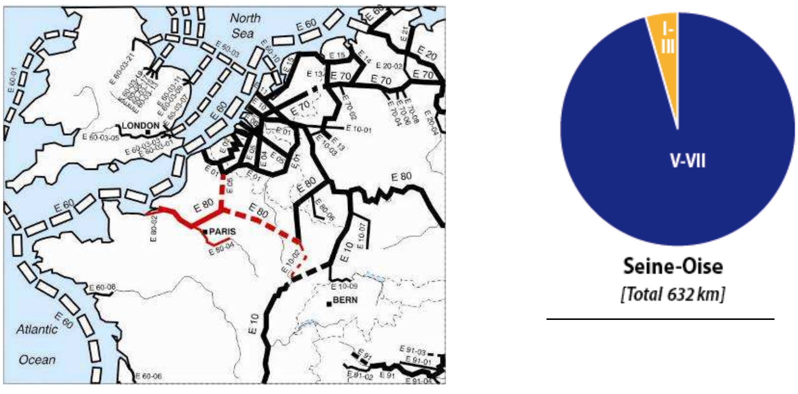
of service offered by the infrastructure provider and the transporters and the strong passenger traffic development.

70. The growth in demand was estimated in the context of studies of the possible Saône-Mosel link (E 10–02). These concluded (in 2005) on three possible scenarios of evolution of demand on the route, analysing all road traffic between the French *départements* on the waterways situated south of the new link and all the *départements* on the waterways to the north of the link, plus Belgium, the Netherlands and the Rhine basin in Germany. Under the scenario most favourable to inland waterways (blue scenario) the potential annual traffic could reach 15 million tonnes. A new round of studies is currently ongoing with the view to organize a public debate in 2012.

F. The Seine-Oise basin

71. This part of the network includes route E 80, west, and missing link north to E 10.

Figure 12
The Seine-Oise basin



Source: the UNECE Blue Book.

1. Infrastructure

72. The Seine-Oise waterway network offers characteristics compliant with the AGN and with the AGTC standards for combined transport. The major infrastructure project with far-reaching implications in this basin is the Seine-Nord Europe Canal implemented by VNF, which will eliminate the missing link between the Seine basin and the inland waterway network in the Nord-Pas de Calais region. Seine-Oise will then become in reality a route common to E 10 and E 80.

73. The expected benefits of the Seine-Nord Europe canal, which is expected to be operational by 2016, are significant. The canal will remove one of the major missing links on the European inland waterways connecting the Seine basin with its high traffic capacity and the rest of the European network of inland waterways of international importance. The canal will also connect seven major ports in the North of Europe (Havre, Rouen, Dunkerque, Gand, Zeebrugge, Anvers and Rotterdam), raising their attractiveness and competitiveness in the context of growing maritime traffic. Finally, the canal will offer four multimodal platforms, whose loading/unloading, storing, transhipment capacities will effectively enable the integration of the rail and water traffic in the global logistic chain.

74. The feasibility, economic and public consultation stages of the project were completed in 2004 and the full project documentation was finalized in 2010. Work in the

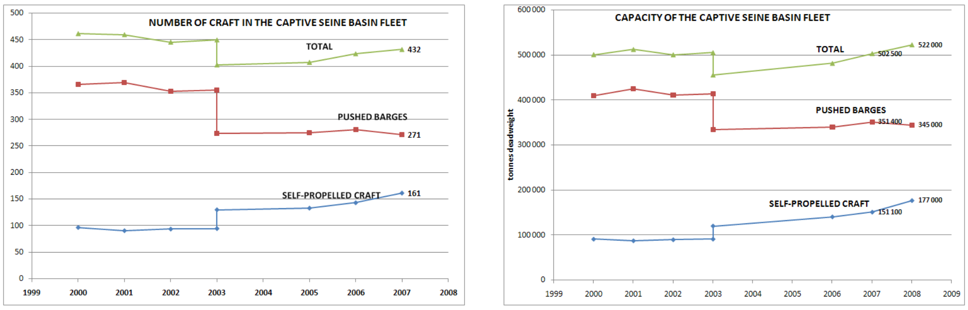
field began in mid-2006. The competitive stakeholder dialogue is crucial at the present stage to proceed with the economic, technical and financial development of the project, which requires inputs and commitment of all the parties contributing to financing and implementing the project (State, regions, users of the canal and its multimodal platforms, and private partners).

2. Fleet

75. The number of craft isolated in the Seine-Oise Basin is around 500 (craft wider than 5.8 m). The only connection at this size is Canal du Nord (6 m wide locks), all other canals being Freycinet type, with 5.2 m wide locks. A large share of the fleet is pushed craft, due to the importance of aggregates traffic towards Paris. The average size is larger than the overall French fleet, since there is no Freycinet craft (<400 tonnes).

Figure 13

The fleet in the Seine-Oise Basin



Source: VNF & Consultant’s estimates.

76. Some new craft are inducted into the basin from time to time, passing through the sea or carried on submersible barges, both ways being costly. In particular, there were a few 135 m craft, specialized in container transport, brought in this way. Yet, fleet owners are investing in the anticipation of the coming Seine-Nord Europe link, which will enable a complete fluidity of the North-West European fleet and may bring in the Seine basin many craft attracted by higher freight.

3. IWT Performance

77. Freight rates are a little high compared to those on the Rhine, but this is offset by the less severe competition from rail as in other parts of Europe, because most of the tracks are overloaded with passenger trains around Paris. Competition is fierce with road transport, however, especially on account of the circuitous route taken by the Seine to reach the sea: 330 km from Gennevilliers near Paris, while it is less than 200 km as the crow flies. Yet it retains an appreciable share of the traffic, better than the French average, because of the quality of waterway depth (3.5 m draught). There is also a significant growth of container traffic on the Seine between Havre and Paris, despite the current lack of waterway connection between Port 2000 and the waterway. The share of the waterway in the total traffic of the port of Havre increases each year. In 2007, 170 million tonnes of total freight and almost a million containers (TEU) were transported on the north-south corridor. The Seine-Nord Europe canal will allow in 2016 capturing of around 230,000 containers on this route.

78. The modal share of road transport, which has the dominant market share (87 % versus 8 % for rail and 5 % for water transport), is explained by saturation of the railway

network as indicated above, but also by the absence of interconnection of the high-capacity waterway network. The presence of high-capacity waterways has a major impact on the market share of IWT. On sections where high performance is possible, such as on the Seine, water transport has a significant market share (13 % of the movements studied). On the other hand, the constraint of capacity on the north-south waterway route (Canal du Nord limited to 650 tonnes) limits the water transport share on the existing route to just over 3 %. Once the Seine-Europe Nord canal is operational, the overall modal share of IWT will be tripled, reaching 10 %, the percentage being even higher for bulky goods (granulated goods, cereals, chemical products, containers).

79. The demand is expected to grow in line with EU projections. The traffic forecasts for 2020 on the Seine-Scheldt connection predict 10 % modal share of the waterway on the North corridor (17.1 million tonnes), which would mean the increase of the national modal share from 3 to 6 %. Construction materials, cereals, agro-industrial products, combustible materials and fertilizers, already dominant in inland navigation, but made more competitive and benefiting from improved logistics, are expected to constitute 60 % of the transported goods. The freight traffic by inland waterway would also be increasingly able to benefit from the ongoing growth in the maritime container traffic and from the expected relocation to France of the major distribution centres, currently located in Benelux. Various studies carried out between 2005 and 2010 identified the new market niches for inland navigation (chemicals, recycled goods, automobiles, heavy goods, inland containers etc), which are expected to contribute in the long run to the redistribution of the modal shift and alleviation of the urban traffic congestion.

G. Coastal routes and connected inland waterways

80. Infrastructure here relates to the ship canals incorporated in these routes (E 60 – Nord-Ostsee Kanal and E 90 – Corinth Canal), but above all to the port facilities enabling development of river-sea traffic or coastal shipping, notably under the “Motorways of the Sea” project promoted by the EU. This also covers the isolated inland waterways which are interconnected by these maritime routes: Guadalquivir estuary (E 60–2), waterways of the United Kingdom of Great Britain and Northern Ireland open to sea vessels (E 60–1 and E 60–3), Douro (E 60–04), Göta (E 60–07), Finnish waterways (E 60–11) and the Pô in Italy (E 91).

1. Infrastructure

81. There are by definition no system-wide investments on these routes. It is nevertheless of significance that investments are continuing or are being planned in order to increase the efficiency or the potential economic benefits of these combined river-sea routes. Some investments appear to concern only maritime traffic, but in reality may serve shipping throughout the AGN river-sea network. For example, the German Government’s investment of more than €400 million on the Kiel Canal (eliminating a 20 km bottleneck and building a third lock chamber at Brunsbüttel) will cut transport times and lower transport costs, primarily benefiting the German seaports with their substantial share of Baltic Sea trade, but also benefiting all river-sea operations from the North Sea through the Baltic Sea and into Finland and the Russian Federation. Other infrastructure investments of note are the new lock for access to the port of Sevilla, opened in October 2009 (route E 60–2, although this is more for maritime access than river-sea traffic) and projected improvements on the Saimaa Canal in Finland (lengthening the operating season) and the Bistroe Channel of the Danube (for flows to and from Ukraine).

82. The status quo applies in the United Kingdom of Great Britain and Northern Ireland (e.g. ports of Goole on the Ouse, Manchester on the Manchester Ship Canal), on the Göta in

Sweden (no enlargement now planned at Trollhättan) and in Italy (no progress on the Padua-Venice Canal).

2. Fleet

83. The technical innovation of "box-shaped" short-sea mini-bulkers enables river-sea transport to compete with roll-on/roll-off and container ships by avoiding the break of bulk at coastal seaports, according to a report published in 2002.[15] This has important regional consequences in hitherto land-locked or isolated areas with navigable rivers and canals. Door-to-door journeys by river-sea transport have potential for future growth, but the trend is hindered by the higher investment and operating costs of such vessels.

84. For the same reason, there has been very limited development under the EU "Motorways of the Sea" project, which was found by recent studies to be uneconomic. Why put the trailers on to Ro-Ro vessels for long transits, with the implied immobilization time, and the risks involved (ferries with their folding doors are intrinsically vulnerable), where 45–feet pallet-wide containers on regular maritime container lines could provide the equivalent transport service more efficiently and cheaply?

3. IWT Performance

85. Freight operations on the inland waterways of the United Kingdom of Great Britain and Northern Ireland are inevitably on a much smaller scale than those commonly encountered in mainland Europe. Nevertheless, there is some freight traffic in several areas, the main ones being:

(a) in London, on the River Thames;

(b) in the North-East of England on the Rivers Hull, Humber and Trent; and

(c) in the North-West of England on the River Mersey and the Manchester Ship Canal.

86. These are all areas where there is a viable interface with seagoing vessels. Little or no expansion of inland waterway transport in the United Kingdom is expected at the present time, particularly in view of the current economic climate.

87. The transport demand and supply throughout the maritime routes in Europe is beyond the scope of this report. The issue is to move towards combined investments – countries' investments in port and waterway infrastructure, and shipowners' investments in new vessels adapted to the changing demand – which will accelerate the trends observable today, and encourage investments in modern vessels optimizing the service to meet new demand sectors in particular (cf. pallet-wide containers as mentioned above).

88. Small coasters (up to 2000 or 3000 dwt) will continue to have a role to play in many river-sea services between points on the AGN network, and they would also benefit from certain investments (Saimaa Canal, dredging the entrance to the Douro, etc.).

H. Conclusions: Policy trends and challenges ahead

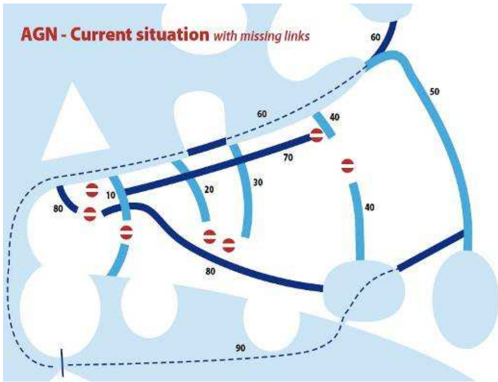
89. What is particularly important to note in 2010 is the much more widespread awareness of IWT advantages, now also selling points to governments planning and building improved or new infrastructure. It is clear today that this heightened awareness is

[15] Jean-Pierre Rissoan, "River-sea navigation in Europe", Laboratoire d'économie des transports à l'Université Lumière Lyon 2, 2002.

levering changes in investment decisions at the pan-European level, and this in turn is raising confidence among operators who are themselves investing at a higher rate than in the 1980s and 1990s. The clear trend is towards a consolidated share of the market for IWT throughout the main networks in sections A and B of this chapter. The smaller, less integrated networks, presented in sections C–F, offer infrastructure of adequate quality which may be expected to serve a greater role, wherever there is essential demand for economical transport of large volumes of bulk goods or liquids, or where conditions justify a waterborne leg in combined transport operations. In the Russian Federation, for instance, the current plans for increasing the role of IWT in the "North–South" international transport could lead to the increase of IWT transit transport up to 20 to 25 million tonnes. Accordingly, it may be observed that the efficient response of the profession to new transport demand has succeeded in breaking down the barriers which for long prevented the industry from working to its full potential and, in particular, the barrier of non-existent or incomplete infrastructure.

90. This drawback of the non-existent or incomplete infrastructure relates not to the IWT mode itself, nor to its competitive position, but to the impossibility of serving many AGN routes. Missing links make up nearly 1500 km, or 5.3 % of the E waterway network of 27,900 km. The percentage is small, but the impact of the interruptions significantly weakens the network as a whole. The following diagram, which focuses on the main routes only, shows clearly the non-integration of the network in the current situation.

Figure 14
Missing links in the AGN network



Source: UNECE secretariat, 2010.

91. The answer to this drawback lies in phased completion of the infrastructure. The impending start to works on the Seine-Nord Europe Canal, with locks up to 30 m deep and a network of ports, proves the feasibility of building high capacity canals connecting parts of the existing network with a significant economic cost-effectiveness, excellent environmental performance and strong acceptance by the regions involved in the project. It also shows that the methodology for estimating socio-economic benefits of such projects has changed in the last 10–15 years. The expansion of the scope of the analysis, the environmental advantages of IWT and the positive impact on the local development have all contributed to the global benefits of such projects. It is important to note that one of the major factors, influencing the result of the cost-benefit analysis, is the reduction of the transport costs through the economies of scale. The benefits, therefore, are subject to strong influence by the overall transport policies, especially in terms of the internalization of the external costs, as for instance introduction of Eurovignettes for road transport considered by the European Union.

92. The threshold of acceptable infrastructure costs in relation to projected benefits, taking fully into consideration all the factors as appreciated under current criteria (in 2010), is being pushed higher. If this trend continues, then other more ambitious and more costly watershed connections may be expected to become economically feasible.

93. The EU has the advantage of considerable pooled resources devoted to Europe-wide evaluations and policy definition. The results of analyses conducted for the 27 member States may be considered relevant for the entire AGN waterway network. In 2005 three-quarters of traffic flows in the EU were via roads, compared with half in 1970. Forecasts indicated that there would continue to be sustained growth in freight transport in the EU. In 2001, in its White Paper on transport policy, the Commission predicted an increase of 38 % in exchanges of goods by 2010, leading to an increase of 50 % in HGV traffic if no remedial measures were applied. This growth would have notable effects on the environment: the external costs generated by this sector (pollution, energy consumption, congestion of main roads, etc.) represent 8 % of Europe's GDP.

94. In the non-EU countries, such as Kazakhstan, the Russian Federation, and Ukraine increasing focus is on upgrading the inland infrastructure parameters. Significant investment in development (about 4.8 % of GDP) will be required to bring the Russian transport system to the desired level of quality. A number of investment projects have been drawn up under the federal programme for the modernization of the Russian transport system (2002–2010) and the Transport Strategy of the Russian Federation for the period until 2020. The Ukrainian transport policy foresees the modernization of the locks on the main national waterways (Dnipro) and development of the sea and transport facilities in the Ukrainian Danube region. In Kazakhstan, national strategy aims at rebuilding the hydraulic engineering structures on inland waterway, upgrading the technical parameters of main navigable rivers and canals, such as Irtysh River and the Ural-Caspian canal, and integrating inland water transport in the Caspian regions of the country into the North-South international transit route.[16]

95. In reality, some remedial measures were taken, and have already resulted in a small but significant transfer of freight from road to IWT (while transfer from rail is marginal). The policy, embodied in the measures taken by national Governments in the transport sector, has produced in the first place a significant change in the image of IWT, which is taken into account as an essential component of future transport supply, instead of being condemned to a marginal position, in a political and electoral "backwater".

96. Of course, growth has been fuelled in part by ongoing investments in the infrastructure, giving operators the confidence to invest in carrying capacity. This is typically the case in Germany, where east-west exchanges through the enlarged Mittelland Canal have increased significantly. But growth is also remarkable on the isolated high-capacity waterways in France.

97. This reveals that a new dynamic has been created in advance of major new investments, and in advance of completion of the European inland waterway network. The new dynamic is fuelled by several complementary phenomena:

(a) Additional credibility given to the industry by the fact that new investments such as the Seine-Europe Nord canal are being prepared;

(b) Industry given extra motivation to seek and adopt IWT solutions through the "win-win" arguments of lower costs and eco-responsibility;

[16] A more detailed account of the national IWT transport policies of these three countries is available in the 2009 secretariat study, ECE/TRANS/SC.3/WP.3/2009/13.

(c) The phenomenal growth in container movements by inland waterway, 30 years after the first such movements on the Rhine, gives IWT a “modern” image which it could hardly cultivate when major flows were coal to fuel thermal power plants;

(d) The water transport industry is assisted in logistics and in its communications with shippers and freight forwarders by modern technology;

(e) Waterway authorities have started energetically to promote the water transport industry, i.e. the major use of the infrastructure which they build, maintain and operate, as part of their mission in the public interest;

(f) As part of this new outreach, the waterway authorities are also promoting the professions of the water transport industry, particularly, that of barge skipper, to ensure that fleet capacity is maintained and increased in line with demand.

98. As a result, the IWT component of overall transport supply is now in the mainstream of transport policy definition and decisions, and this is a relatively new situation, which is likely to be confirmed in the coming years.