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**SUSTAINABLE TRANSPORT DEVELOPMENT:
THE CASE OF INLAND WATER TRANSPORT**

Panel Discussion

***Can Inland Water Transport become Competitive
and an Integral Part of Global Supply Chains?***

Note by the UNECE secretariat

I. THE CHALLENGE: SUPPLY CHAIN MANAGEMENT

1. Supply chains and logistics will become of paramount importance for the competitiveness of our economies. They will increasingly shape the way goods are supplied, produced, delivered and returned. Driven by consumer demand and the globalization of production and trade, supply and distribution chains are getting longer. Just-in-time (JIT) and just-in-sequence (JIS) supply, production and distribution systems increasingly require reliable, flexible, fast and efficient transport systems and have a crucial importance for modal choices made by the industry.

2. The predicted increase in European freight transport within the next decade (in the order of 30 per cent) will not be possible unless better logistics and supply chain systems allow goods to move more rationally and intelligently than in the past. As transport infrastructure will simply not be able to follow the predicted transport increase (for ecological and financial reasons), all existing transport infrastructures must be utilized and intermodal transport solutions must make optimum use of all transport capacities at all places and at all times.

II. INLAND WATER TRANSPORT TODAY

3. Half of the European population live close to the coast or to the European inland waterways and most industrial centers can be reached by inland navigation. However, while the European road and rail transport cover and link virtually every country and region, European inland waterways are considerably less dense and cover only around 28,000 km. Around 5% of this European network consists of missing links and another 16% still has very limited infrastructure.

4. Only 22,000 km of inland waterways meet the basic requirements of the UNECE AGN Agreement and are considered inland waterways of international importance (E-waterways of class IV and higher). Two-thirds of these inland waterways (14,700 km) fulfil the necessary minimum requirements for efficient international container transport as required under the UNECE AGTC Protocol on Inland Waterways. Some 330 inland navigation ports can be considered to be of international importance, 150 of which are located along the Rhine and 45 along the Danube. Around 100 of these ports operate terminals for intermodal transport.

5. Around 7% of all goods transported in the 27 countries of the European Union are carried on inland water vessels (road and rail transport carry 79% and 15% respectively). In the Russian Federation, under difficult meteorological conditions, inland waterways account for around 4% of total goods transport. In the Ukraine this share is only 1.3%. However, countries with efficient navigable waterways and year-round access, particularly along the Rhine corridor, have considerably higher shares of freight transport by inland waterways, such as the Netherlands (44%), Belgium (14%) and Germany (13%).

6. The two main international inland waterways in Western Europe and South-Eastern Europe are the Rhine and the Danube where around 208 and 73 million tonnes of goods were carried in 2008 respectively. On the Rhine, these goods are carried by some 5,500 self-propelled cargo vessels, around 1,000 tankers and 1,100 pushed barges. On the Danube, around 2,600 dry and around 330 tank barges are in operation together with around 200 self-propelled vessels. On the extensive inland waterway network of the Russian Federation, around 150 million tonnes of cargo are carried annually (2007). The total registered fleet comprises more than 28,000 vessels, including more than 1,000 river-sea vessels.

7. In 2009, transport performance on European inland waterways declined in the order of 15 to 25% due to the economic and financial crisis that hit particularly the steel industry and led to a severe reduction in transport demand for coal, iron ore, metal products, but also for port-hinterland transport of containers.

III. INLAND WATER TRANSPORT: WHAT CAN IT PROVIDE?

8. In 1996, the first UNECE White Paper on Inland Navigation has highlighted the potential and the advantages of inland navigation in comparison with other land transport modes in Europe. More recent analyses confirm these conclusions and describe inland water transport as a safe, versatile, reliable, economical and environmentally friendly mode of transport with still untapped capacities and potential for growth, while major pan-European road and rail transport and port-hinterlands corridors are increasingly overloaded and congested.

9. Inland water transport, however, is also facing problems and challenges given its limited speed and sometimes low and irregular frequency of services. Also certain shortcomings in reliability due to weather and hydrological conditions may occur, depending on geographical location. Also infrastructure development and maintenance is not always at a level that allows for efficient transport operations and the very fragmented industry is often not well integrated into sophisticated door-to-door transport chains and potential high-value markets, such as the transport of containers and manufactured goods.

10. The tables below provide, in a concise form, a general list of the main advantages and challenges for freight transport on European inland waterways. It is well recognized that not all of these issues apply to all Europeans rivers and canals as well as to all types of freight transport on European inland waterways.

13 Advantages of freight transport on inland waterways	
Superior safety	Operates away from populations and traffic: More than 50 times safer than road, more than 5 times safer than rail (in persons killed per tonne-km).
High versatility	Tailor-made services suitable for dry/ liquid bulky, heavy and dangerous goods, containers and roll on/roll off services.
Good reliability	Few unpredictable traffic constraints due to accidents, ice, floods and low waters in Western and South-Eastern Europe.
Low costs	Considerably cheaper than road and rail main haul services (by 30% to 60%, depending on cargo and distance).
High energy-efficiency	For most bulk transport operations, 3-6 times less fuel consumption than road and up to 2 times less than rail.
Good carbon footprint	For most bulk transport operations, 3-6 times less CO2 emissions than road and up to 2 times less than rail.
Low noise levels	Little noise emissions, mostly away from major populations.
Low infrastructure costs	Low investment and maintenance costs.
Supply chains and logistics	Low cost buffer stock and storage capability.
Good transport supervision	Effective tracking and tracing of vessels and cargo (RIS).
No traffic restrictions	No night, weekend and holiday traffic restrictions.
Dedicated transport network	Little interference with passenger traffic.
Untapped spare capacity	20-100% short-term spare capacity on major corridors.

13 Challenges for freight transport on inland waterways	
Insufficient network	Persistence of inland waterway bottlenecks and missing links at pan-European level. Investment backlogs.
Deficient maintenance	Inadequate maintenance of infrastructure and inland water fleet.
Seasonality of operation	Traffic shut-down during winter in Northern and Eastern Europe.
Complex decision-making	Difficult application of a holistic approach in construction of smart and sustainable infrastructure (in search of “triple-win” solutions for transport, health and environment).
Diminishing + ageing fleet	Diminishing and ageing inland fleet of cargo vessels with difficulties to comply with modern market and regulatory requirements.
Segmented industry	Large number of small inland water enterprises (70 to 90% single- vessel operators)
Supply chains + logistics	Deficiencies in integrating inland water transport in global and regional supply chains and logistics processes.
Hurdles in intermodal transport	Lack of efficient intermodal road or rail/inland water transport facilities. Lack of specialized operators/cooperatives for intermodal transport services. Costs for transshipment and last mile may offset gains on long haul.
Port-hinterland traffic	Still untapped potential, but perceived “discrimination” of inland water transport in some maritime ports.
Diffused professional image	Lack of knowledge/expertise on inland water transport by shippers, freight forwarders and logistics providers.
Shortage of skilled personnel	Declining attractiveness of inland water labour markets and shortage of skilled personnel, mainly in Western Europe.
Complex regulatory architecture	Segmented administrative and regulatory rules and regulations as well as implementation procedures (compared to road and rail).
Institutional framework	Multi-layered Governmental authorities and organs at local, national, regional and pan-European levels.

IV. THE WAY FORWARD: NEW POSSIBILITIES AND MARKETS

11. While road and rail transport infrastructures, particularly along major European North-South corridors, are increasingly congested, inland water transport still offers untapped capacities in the order of 20 to 100% in many UNECE countries, 24 hours a day, 7 days a week. However, adequate capacity on inland waterways is not sufficient to increase its market share and modal split vis-à-vis road and rail transport.

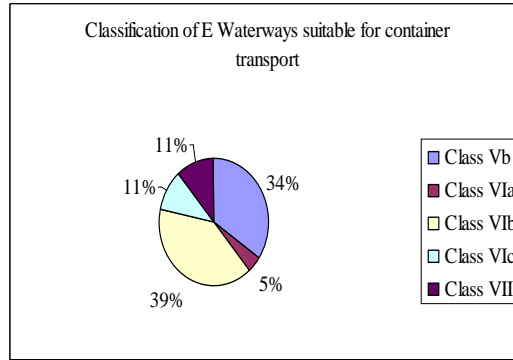
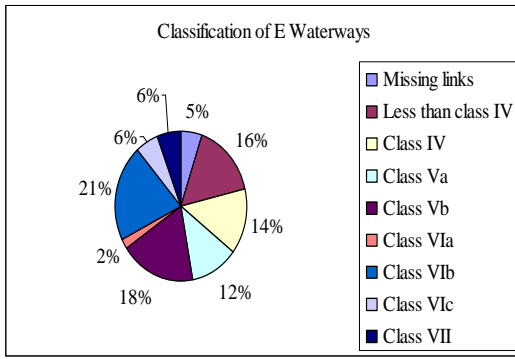
12. In order to capture and stay in growth markets and market niches, such as for containers, bulky and heavy goods or for waste and recycling materials, the inland water transport industry needs to comply with the increasingly sophisticated needs and requirements of supply chain and distribution managers and must integrate better into seamless door-to-door transport chains, including efficient transshipment operations and terminal hauls.

13. The boom in container traffic on the Rhine shows that inland waterways could play such a role in the transport of high-value manufactured goods and could thus contribute to a reduction of congestion on major European transport corridors. Europe's network of inland waterways links Europe's maritime ports with virtually all of its economic centers. This should provide ample opportunities for cost-effective and sustainable transport solutions in global and regional supply chains.

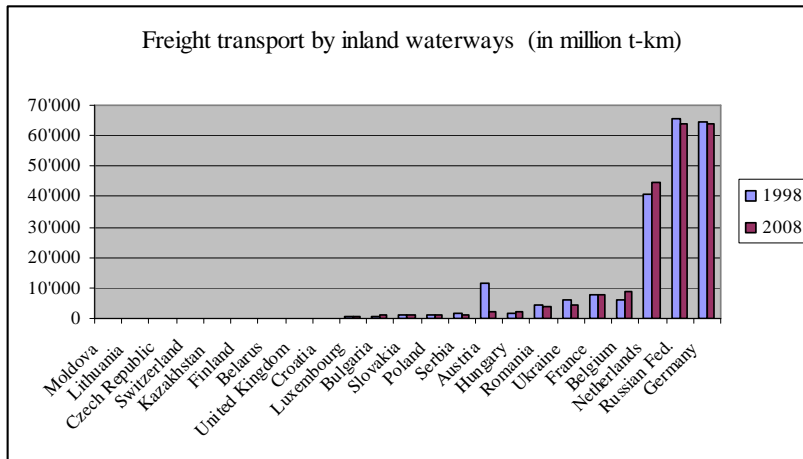
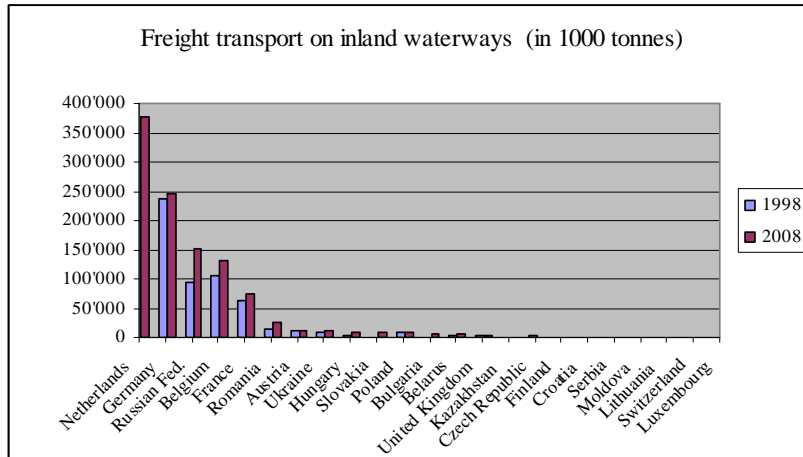
14. Governments also have an important role to make this happen. Logistical processes optimized by the private sectors do not necessarily constitute optimal solutions for the society and economy as a whole. Apart from planning and providing adequate infrastructures, Governments have to develop and supervise the institutional framework as well as the rules of the game to ensure a level playing field between all modes of transport. Governments also have to safeguard that freight transport does not interfere overly with passenger mobility and is in line with economic, social, environmental and spatial policies, rules and regulations applicable at local, national and regional levels.

15. The discussions at this 2010 policy segment of the Inland Transport Committee offer an opportunity for European Governments and the industry to evaluate the role of inland water transport and to identify policies and actions to turn the existing capacities and the potential of inland water transport into an efficient, safe and sustainable pan-European transport system.

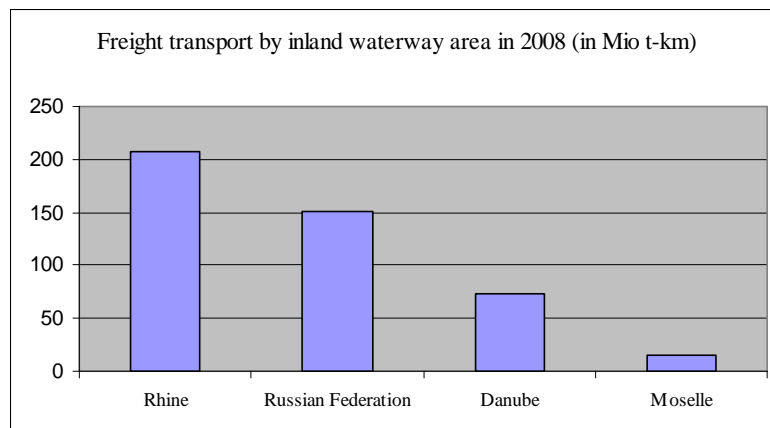
INLAND WATER TRANSPORT INDICATORS



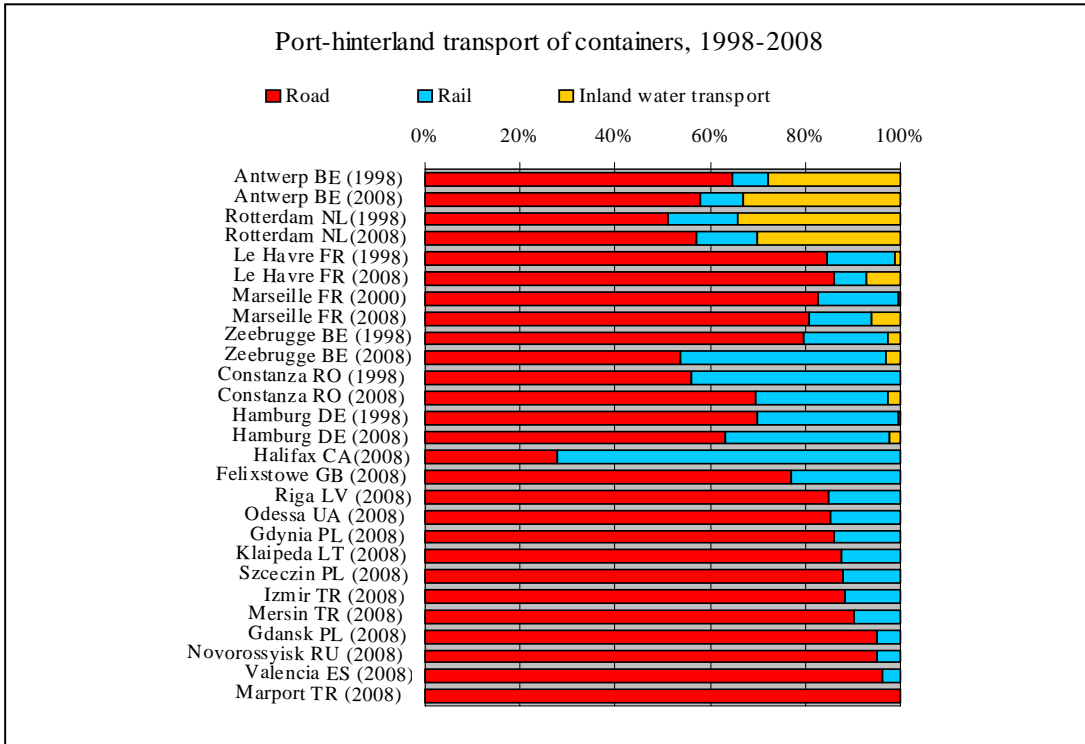
Source: AGN Agreement and Protocol to the AGTC Agreement.



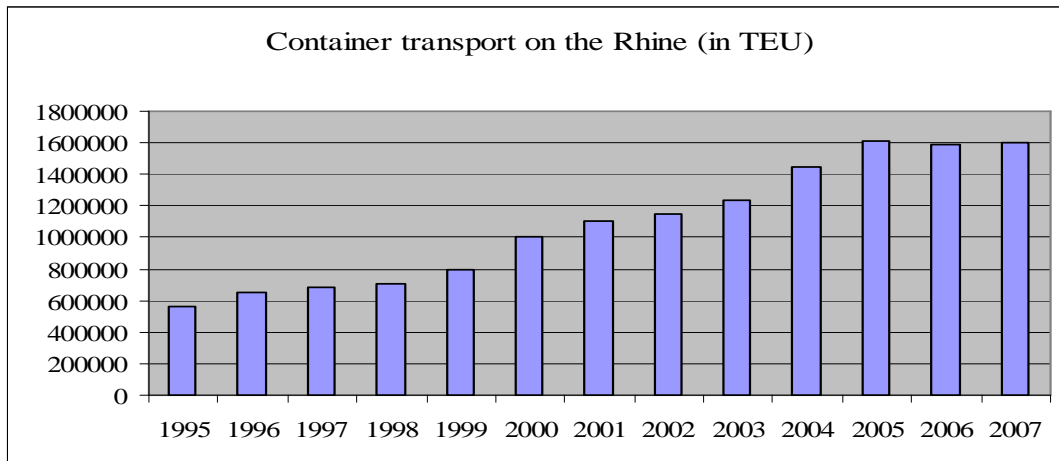
Sources: UNECE Transport Database, International Transport Forum, National Statistical Offices.



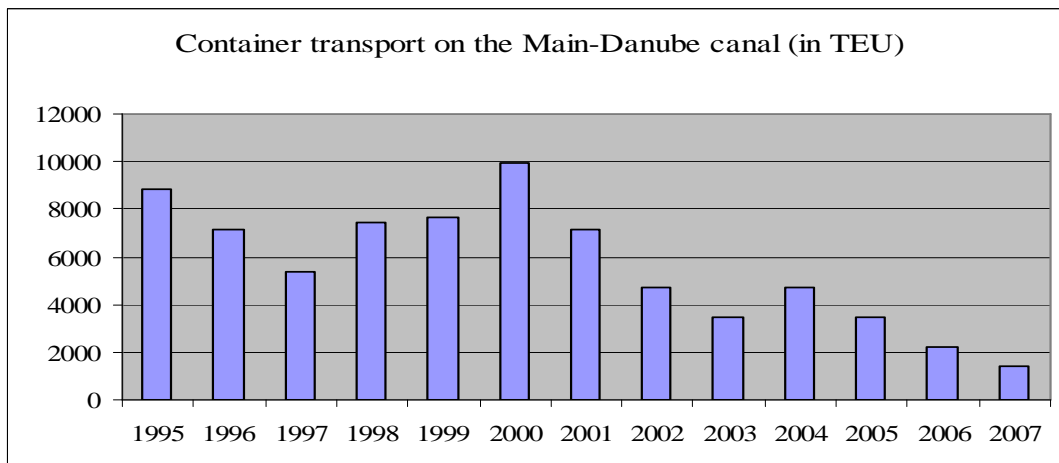
Source: National data, Danube Commission, CCNR and Mosel Commission.



Source: T. Notteboom (OECD/ITF Discussion Paper 2008-10), Schiffahrt, Hafen, Bahn ... (8/2009), UNECE.



Source: CCNR.



Source: Water and Inland Navigation Authority Nürnberg (Germany).

PAN-EUROPEAN INLAND WATER TRANSPORT AGREEMENTS

European Agreement on Main Inland Waterways of International Importance (AGN)

The AGN Agreement is a United Nations treaty adopted by the UNECE Inland Transport Committee in 1996. It entered into force on 26 July 1999 and is administered by the UNECE Working Party on Inland Water Transport (SC.3).

The objective of the AGN Agreement is to make international inland water transport in Europe, including transport by sea-river vessels using coastal routes, more efficient and attractive to customers. It establishes a legal framework that lays down a coordinated plan for the development and construction of a network of inland waterways of international importance, based on agreed infrastructure and operational parameters.

The E-waterway network consists of nearly 22,000 km of inland waterways as well as some 330 ports of international importance situated on these waterways. Only inland waterways that meet the basic minimum requirements of class IV are considered E-waterways. In addition to technical characteristics of E-waterways and ports, the AGN Agreement also stipulates operational criteria for such waterways and ports in order to ensure efficient and reliable international traffic.

The AGN Agreement has, at present 15 Contracting Parties: Belarus, Bosnia and Herzegovina, Bulgaria; Croatia; Czech Republic; Hungary; Italy; Lithuania; Luxembourg; Netherlands, Republic of Moldova; Romania; Russian Federation; Slovakia; Switzerland; Ukraine.

More information:

<http://www.unece.org/trans/conventn/agn.pdf>

http://www.unece.org/trans/main/sc3/legalinst_06_TINF_AGN.html

Protocol on Combined Transport on Inland Waterways to the European Agreement on Important International Combined Transport Lines and Related Installations (AGTC)

The Protocol on Combined Transport on Inland Waterways to the AGTC Agreement is a United Nations treaty adopted by the UNECE Inland Transport Committee in 1997. The Protocol entered into force on 29 October 2009 and is administered by the UNECE Working Party on Intermodal Transport and Logistics (WP.24).

The objective of the Protocol is to make container and ro-ro transport on inland waterways and coastal routes in Europe more efficient and attractive to customers. It establishes a legal framework that lays down a coordinated plan for the development of intermodal transport services on pan-European inland waterways and coastal routes, in line with those in the AGN Agreement, based on specific internationally agreed parameters and standards.

The Protocol identifies some 14,700 km of E waterways and transshipment terminals that are important for regular and international intermodal transport in Austria, Belgium, Croatia, Czech Republic, France, Germany, Hungary, Luxembourg, Netherlands, Poland, Romania, Russian Federation, Slovakia, Serbia, Switzerland and Ukraine. The Protocol stipulates technical and operational minimum requirements of inland waterways and terminals in ports that are required for competitive container and ro-ro transport services.

Specifically and among many other criteria, the Protocol stipulates that inland waterways suitable for container transport should, as a minimum, correspond to Class Vb and should allow vessels with a width of 11.4 m and a length of 110 m to carry containers in three or more layers. In case only two layers of containers are possible, a permissible length of pushed convoys of 185 m should be ensured.

The Protocol has, at present, 9 Contracting Parties: Bulgaria; Czech Republic; Denmark; Hungary; Luxembourg; Netherlands, Romania, Serbia and Switzerland.

More information:

http://www.unece.org/trans/wp24/Protocol1_text.html

http://www.unece.org/trans/wp24/legalinst_05_TINF_AGTC.html

European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (ADN)

The ADN Agreement was done at Geneva on 26 May 2000 on the occasion of a Diplomatic Conference held under the joint auspices of UNECE and the Central Commission for the Navigation of the Rhine (CCNR). It entered into force on 29 February 2008 and is overseen by an Administrative Committee serviced by UNECE.

The ADN Agreement consists of a main legal text and annexed Regulations and aims at:

- ensuring a high level of safety of international carriage of dangerous goods by inland waterways;
 - contributing effectively to the protection of the environment by preventing any pollution resulting from accidents or incidents during such carriage;
- facilitating transport operations and promoting international trade in dangerous goods.

The Regulations annexed to the ADN contain provisions concerning dangerous substances and articles, provisions concerning their carriage in packages and in bulk on board inland navigation or tank vessels, as well as provisions concerning the construction and operation of such vessels. They also address requirements and procedures for inspections, the issue of certificates of approval, recognition of classification societies, monitoring, training and examination of experts.

Before entry into force of the Agreement, updates of the annexed Regulations have been carried out regularly by a Joint Meeting of Experts of UNECE and CCNR. The Joint Meeting played the role of the Safety Committee foreseen in article 18 of the Agreement.

According to Directive 2008/68/EC of the European Parliament and of the Council of 24 September 2008, Member States of the European Union, shall, with the exclusion of the derogation provided for in Article 1, paragraph 3 of the Directive, apply these annexed Regulations as well as Article 3 (f) and (h) and Article 8, paragraphs 1 and 3 of the AND Agreement to the transport of dangerous goods by inland waterways from 1 July 2009 and at the latest by 30 June 2011.

The AND Agreement has, at present, 12 Contracting Parties: Austria; Bulgaria; Croatia; France; Germany; Hungary; Luxembourg; Netherlands, Republic of Moldova; Romania, Russian Federation; Slovakia.

More information:

http://www.unece.org/trans/danger/publi/adn/agreement_text.pdf

http://www.unece.org/trans/danger/publi/adn/legalinst_56_TDG_ADN.html

Budapest Convention on the Contract for the Carriage of Goods by Inland Waterway (CMNI)

The CMNI Convention is a treaty adopted on 3 October 2000 by a Diplomatic Conference organized jointly by CCNR, the Danube Commission and UNECE in Budapest. The CMNI Convention entered into force on 1 April 2005. Amendments to the Convention require the adoption by a conference of Contracting States which is to be convened by the depositary, the Government of Hungary.

The CMNI Convention is a legal framework for international transport by inland waterways establishing mandatory and uniform rules concerning the contracts for the carriage of goods by inland waterways. The Convention regulates the rights and obligations of carriers and shippers, provides for the issuance of a transport document, stipulates the conditions for the disposal of goods and determines the liability of the carrier and the claims period.

The CMNI is the inland water counterpart of the CMR Convention applicable to international road transport in 55 countries and administered by UNECE.

The CMNI Convention has, at present, 13 Contracting Parties: Bulgaria; Croatia; Czech Republic; France; Germany; Hungary; Luxembourg; Netherlands, Republic of Moldova; Romania, Russian Federation; Slovakia; Switzerland.

More information:

<http://www.unece.org/trans/main/sc3/cmnicnf/cmni.pdf>

http://www.unece.org/trans/main/sc3/sc3_cmni_legalinst.html

NETWORK OF INLAND WATERWAYS OF INTERNATIONAL IMPORTANCE (E WATERWAYS)

(Annex I of the AGN Agreement)

