



Mixed Environment Transport External Expert Team (METEET) Training on Integrated Planning of Inland Waterways Transport Projects

Web training, November 25-26, 2021

Integrated Planning of Inland Waterways Transport Projects

- EU Perspective -
- Technical Parameters -

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EU Perspective

Europe 2020/Transport Policy (2010)

EC White Paper on Transport (2011)

TEN-T Rules and Regulations

Other Complementary Regulations

Good Navigation Status (GNS)



EU Strategic and Legal Framework



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Europe 2020 / Transport policy (2010)

Building future upon **three priorities**:

- **Smart** growth – developing an economy based on knowledge and innovation
- **Sustainable** growth – promoting a more resource efficient, greener and more competitive economy
- **Inclusive** growth – fostering a high-employment economy delivering economic, social and territorial cohesion



Europe 2020 / Transport policy (2010)

- Seven **flagship initiatives**, including (among others):

"Resource efficient Europe" - to help decouple economic growth from the use of resources, support the shift towards a low carbon economy, increase the use of renewable energy sources, **modernize our transport sector** and promote energy efficiency



Europe 2020 / Transport policy (2010)

- **Challenges**, including:
...severe constraints in public spending have made it more difficult for some Member States to provide sufficient funding for the basic infrastructure they need in areas such as transport and energy...



Europe 2020 / Transport policy (2010)

- Pursuing **smart budgetary consolidation for long-term growth**

...budgetary consolidation programmes should **prioritize “growth-enhancing items”** such as education and skills, R&D and innovation and **investment in networks**, e.g. high-speed internet, energy and **transport interconnections** – i.e. the **key thematic areas of the Europe 2020 strategy**.



EC White paper on Transport (2011)

Vision for a competitive and sustainable transport system

- **growing transport** and supporting mobility while reaching the **60% emission reduction target**
- an **efficient core network** for **multimodal** intercity travel and transport
- global level playing field for long-distance travel and intercontinental freight
- clean urban transport and commuting



EC White paper on Transport (2011)

An efficient core network for multimodal intercity travel and transport

- **Inland waterways, where unused potential exists, have to play an increasing role** in particular in moving goods to the hinterland and in linking the European seas.



EC White paper on Transport (2011)

Ten goals for a competitive and resource-efficient transport system, inc.:

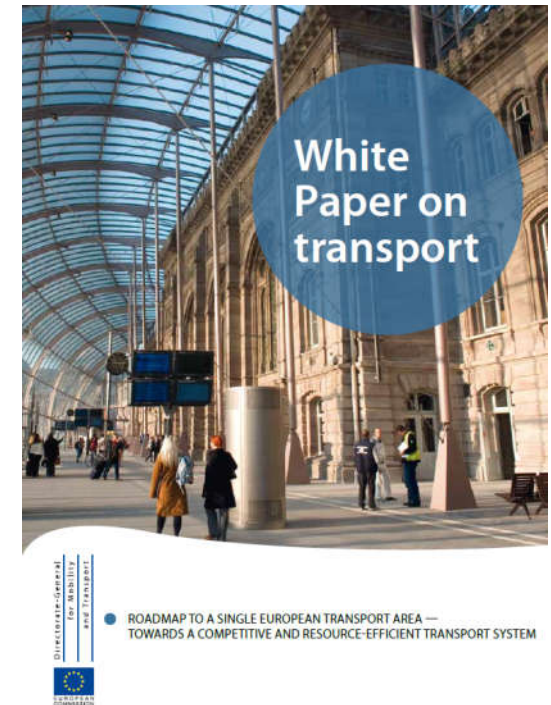
- A fully functional and EU-wide **multimodal TEN-T ‘core network’ by 2030**, with a high-quality and capacity network by 2050 and a **corresponding set of information services**.
- By 2050...; ensure that **all core seaports are sufficiently connected** to the rail freight and, **where possible, inland waterway system**.



EC White paper on Transport (2011)

A single European transport area:

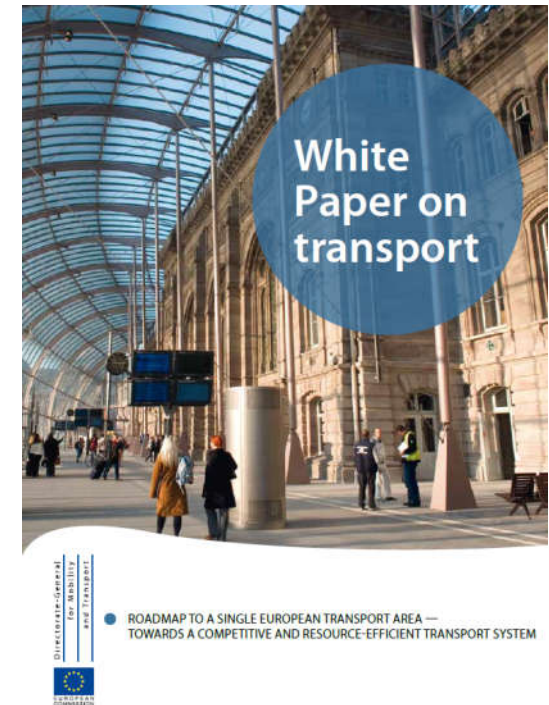
- For maritime transport, a ‘blue belt’ in the seas around Europe shall simplify the formalities for ships travelling between EU ports, and **a suitable framework must be established to take care of European tasks for inland waterway transport**



EC White paper on Transport (2011)

A suitable framework for inland navigation

- Establish an appropriate framework to **optimize the internal market** for inland waterway transport, and to **remove barriers** that prevent its increased use.
- Assess and define the **necessary tasks and mechanisms** for their execution, also with a view to the **wider European context**.



EC White paper on Transport (2011)

Transport safety - Safer shipping

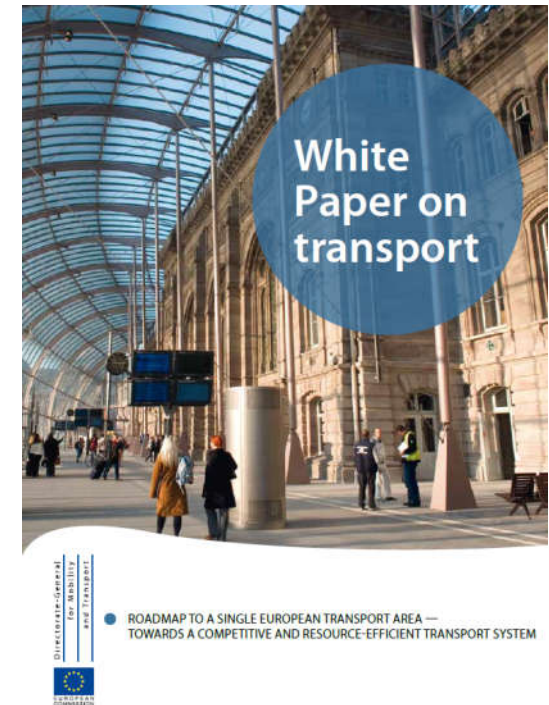
- Assess the feasibility of the creation of an **EU register and EU flag for maritime and inland waterway transport**.
- In essence, the EU sign would represent a **quality label** certifying safe, secure, **environmentally friendly ships** manned by highly qualified professionals.



EC White paper on Transport (2011)

Multimodal freight corridors for sustainable transport networks

- Support **multimodal transport** and single wagon load business, **stimulate the integration of inland waterways into the transport system** and promote eco-innovation in freight transport
- Support the deployment of new vehicles and vessels



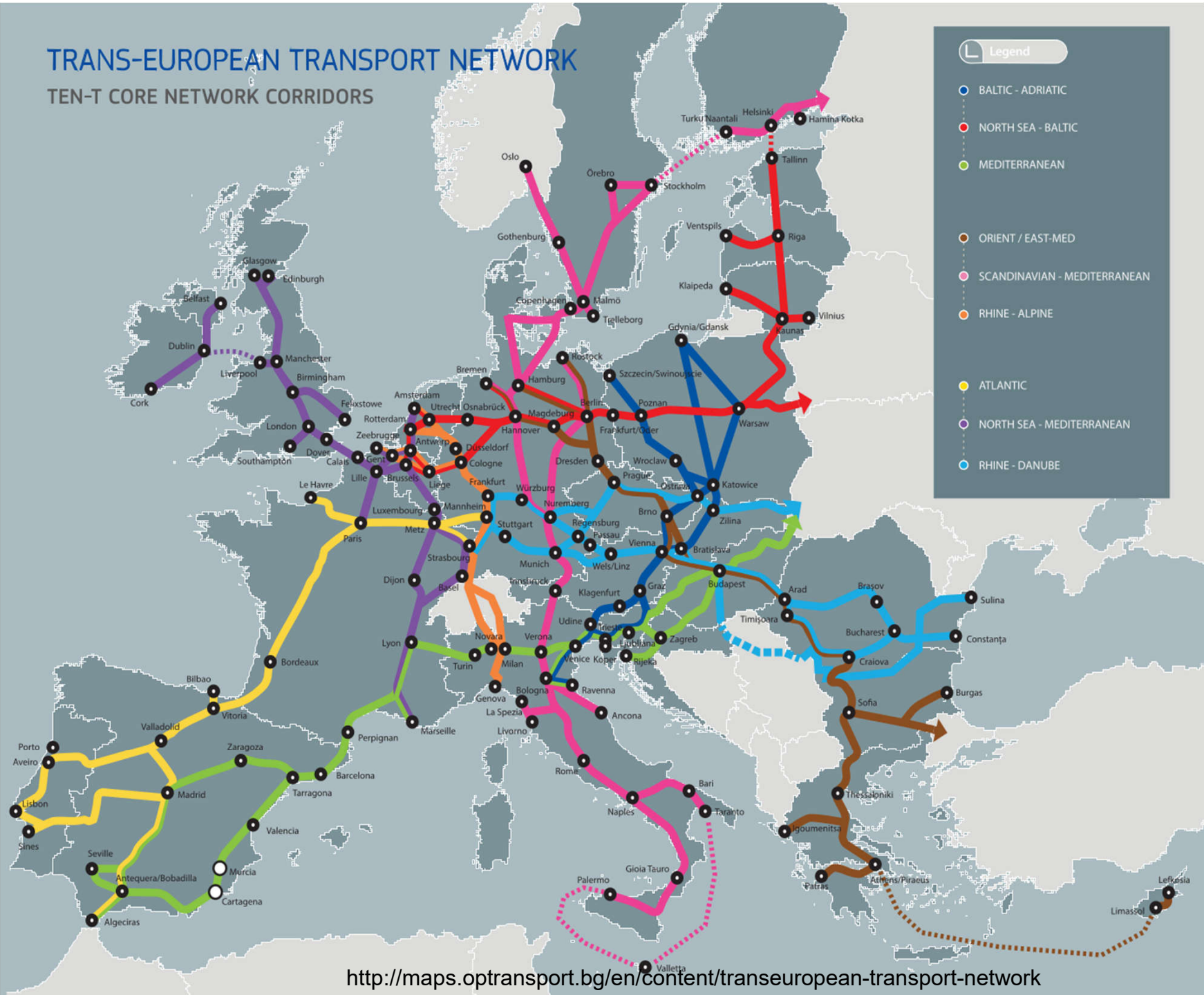
TEN-T rules and regulations

- REGULATION (EU) No **1315/2013** OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 December 2013 on Union guidelines for the development of the trans-European transport network and repealing Decision No 661/2010/EU (**TEN-T Guidelines**)
- COMMISSION DELEGATED REGULATION (EU) **2016/758** of 4 February 2016 amending Regulation (EU) No 1315/2013 of the European Parliament and of the Council as regards adapting Annex III thereto

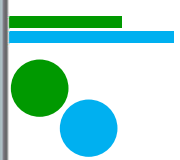


TRANS-EUROPEAN TRANSPORT NETWORK

TEN-T CORE NETWORK CORRIDORS



<http://maps.optransport.bg/en/content/trans-european-transport-network>



TEN-T rules and regulations

TEN-T Guidelines – Highlights

- ...contribute to **the attainment of major Union objectives**, as set out in the Europe 2020 Strategy and the Commission White Paper
- ...**uniform requirements regarding the infrastructure** should be established in a Regulation to be complied with by the infrastructure of the transEuropean transport network
- ...**developed through** the creation of **new transport infrastructure**, through the **rehabilitation and upgrading of existing** infrastructure and through measures promoting its **resource efficient use**



TEN-T rules and regulations

TEN-T Guidelines – Highlights

- In the implementation of projects of common interest, **due consideration** should be given to the **particular circumstances of the individual project concerned**
- **Exemptions from the infrastructure requirements** applicable to the core network should be **possible in duly justified cases**
- When carrying out the review of the implementation of the core network by 2023, the **Commission should take into account national implementation plans and future enlargements**



TEN-T rules and regulations

TEN-T Guidelines – Highlights

- ...making it possible to **maximize the network benefits**, Member States concerned should ensure that **appropriate measures** are taken **to finalize the projects of common interest by 2030**
- Projects of common interest should demonstrate a **European added value**
- **Cooperation with neighboring and third countries is necessary** in order to ensure connection and interoperability between the respective infrastructure networks



TEN-T rules and regulations

TEN-T Guidelines – Highlights

- ...**adequate planning** of the transEuropean transport network is required
- ...**set priorities** in order to enable the transEuropean transport network to be developed within the **specified timescale**
- During infrastructure planning, Member States and other project promoters should give due consideration to the **risk assessments and adaptation measures** adequately **improving resilience to climate change and environmental disasters**



TEN-T rules and regulations

TEN-T Guidelines – Highlights

- ...Member States and other project promoters should carry out **environmental assessments** of plans and projects as provided for in Council Directive 92/43/EEC (8), Directive 2000/60/EC of the European Parliament and of the Council (9), Directive 2001/42/EC of the European Parliament and of the Council (10), Directive 2009/147/EC of the European Parliament and of the Council (11) and Directive 2011/92/EU in order to avoid or, where avoidance is not possible, **to mitigate or compensate for negative impacts on the environment**, such as landscape fragmentation, soil sealing and air and water pollution as well as noise, and to protect biodiversity effectively.



TEN-T rules and regulations

TEN-T Guidelines – General Priorities

- ensuring **enhanced accessibility and connectivity**
- optimal **integration and interoperability**
- bridging missing links and **removing bottlenecks**, particularly in cross-border sections
- efficient and **sustainable use** of the infrastructure
- improving or maintaining the **quality of infrastructure**
- telematic applications and **innovative** technological development



TEN-T rules and regulations

TEN-T Guidelines – Priorities for IWT

- measures to **reach** the standards of the inland **waterways class IV** (where appropriate, achieving higher standards)
- implementing **telematics**, including RIS
- **connecting** inland port infrastructure to rail freight and road transport infrastructure
- paying **particular attention to free-flowing rivers** which are close to their natural state and which can therefore be the **subject of specific measures**



TEN-T rules and regulations

- **TEN-T Guidelines**
(**Annex III** - Indicative
Maps of the Trans-
European Transport
Network Extended to
Specific Third Countries)



TEN-T rules and regulations



Other complimentary regulations

CEF (Connecting Europe Facility)

- REGULATION (EU) No **1316/2013** OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 December 2013 establishing the Connecting Europe Facility, amending Regulation (EU) No 913/2010 and repealing Regulations (EC) No 680/2007 and (EC) No 67/2010 CEF Regulation (**CEF Regulation**)
 - **Guide to Cost-Benefit Analysis** of Investment Projects
 - Economic appraisal tool for Cohesion Policy 2014-2020 (December **2014**)



Other complimentary regulations

- REGULATION (EU) No **1301/2013** OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 December 2013 on the **European Regional Development Fund** and on specific provisions concerning the Investment for growth and jobs goal and repealing Regulation (EC) No 1080/2006 (**ERDF Regulation**)
- REGULATION (EU) No **1303/2013** OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 December 2013 laying down common provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund, the European Agricultural Fund for Rural Development and the European Maritime and Fisheries Fund and laying down general provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund and the European Maritime and Fisheries Fund and repealing Council Regulation (EC) No 1083/2006



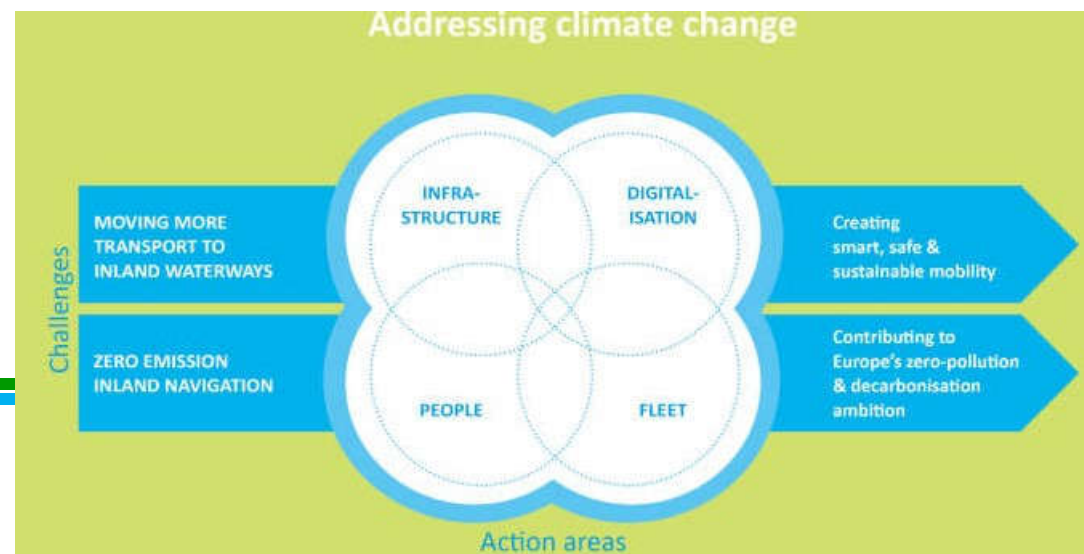
Other complimentary regulations

- **NAIADES II** - Commission Staff Working Document - Greening the Fleet: reducing pollutant emissions in inland waterway transport, Accompanying the document Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - Towards quality inland waterway transport



Other complimentary regulations

- **NAIADES II** – An Inland Waterway Transport Agenda 2021-2027 - Recommendations by the NAIADES II Implementation Expert Group (2019) with the goal to move more transport to inland waterways (by creating smart, safe and sustainable mobility), with zero-emission inland navigation



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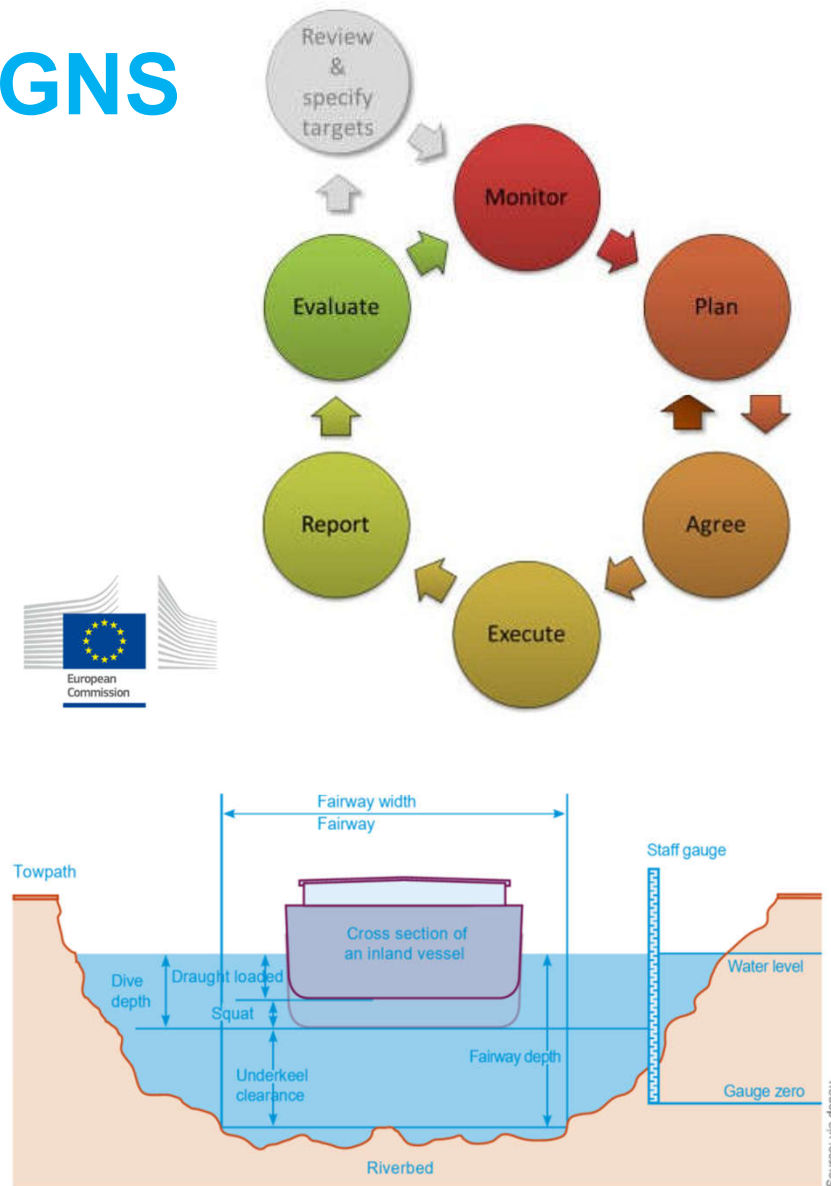
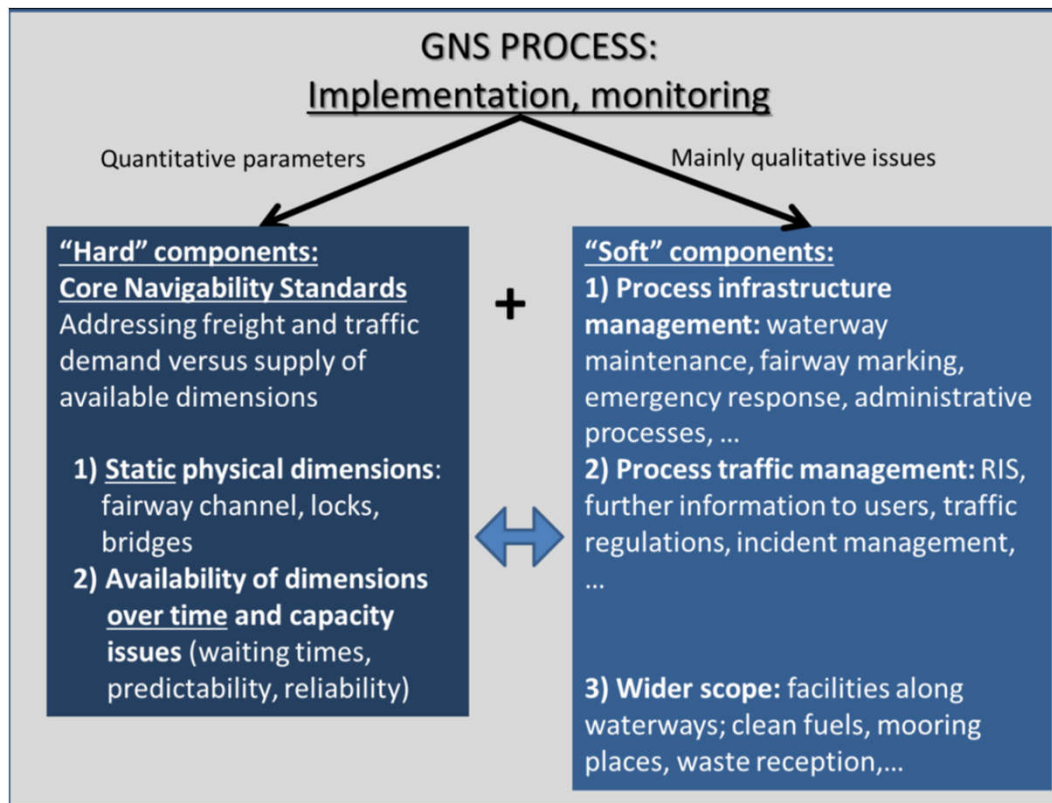
Other complimentary regulations

- **EC** - Communication from the Commission on the EU Strategy for a Sustainable and Smart Mobility (2020)
- European Green Deal includes a target to reduce transport-related greenhouse gas emissions by 90% by 2050. EC is planning to adopt a comprehensive strategy to meet this target and ensure that the EU transport sector is fit for a clean, digital and modern economy, including: increase of uptake of zero-emission vehicles, making sustainable alternative solutions available to the public/businesses, supporting digitalization and automation, improving connectivity and access.



Good Navigation Status - GNS

Guidelines towards achieving a Good Navigation Status (January 2018)



Good Navigation Status - GNS



- **NAIADES II** – sub-group on Good Navigation Status
 - Draft recommendations for the development of common, harmonized guidelines/standards for Good Navigations Status (2019)
 - Draft recommendations for the development of future TEN-T policy and the revision of the TEN-T regulation (2020)

Good Navigation Status	Navigable channel depth			Bridge clearance			Locks and movable bridges
	Navigable channel depth	Reference water level ^{*6}	Availability	Headroom ^{*5} recommended for standard container transport	Reference water level ⁴	Availability	Availability ^{*2}
	[m]		[days per year]	[m]		[days per year]	[days per year]
GNS A	≥ 2.80	Hydrostatic/ Reference low water level	343 ^{*3}	≥ 9.10	Highest navigable water level	360	365 (24/7)
GNS B	≥ 2.50	Hydrostatic/ Reference low water level	343	≥ 7.0	Highest navigable water level	360	365 (24/7 upon request)
GNS C	≥ 2.50	Hydrostatic/ Reference low water level	[300/290] ^{*7}	≥ 5.25	Highest navigable water level	360	365 (minimum 16 hours per day)

Fairway Rehabilitation and Maintenance Master Plan for Danube (2014)

- Part of the TEN-T Corridor Work Plan for the Rhine-Danube Corridor
- Prepares for harmonized initiatives to tackle infrastructure bottlenecks along the corridor, and was elaborated in close cooperation with riparian countries
- **National Action Plan** Reports, published twice a year (May and October) reports on progress and initiatives to improve navigability conditions on the Danube River (10th update published in October 2019)



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Technical Parameters

United Nations Economic Commission for Europe

Danube Commission

International Sava River Basin Commission



United Nations – Economic Commission for Europe (UNECE)



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European Agreement on Main Inland Waterways of International Importance- AGN

- **1990** – Standardization of Inland Waterway's Dimensions, PIANC
- **1992** – New Classification of Inland Waterways (CEMT Classification), European Conference of Ministers of Transport
- **1996** - European Agreement on Main Inland Waterways of International Importance (AGN), UNECE

United Nations Economic Commission for Europe

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

Accord Européen sur les grandes voies navigable d'importance internationale (AGN)

Европейское Соглашение о Важнейших Внутренних Водных Путиях Международного Значения (СМВП)



Photo Source: Belarus (2008)



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European Agreement on Main Inland Waterways of International Importance- AGN

The Contracting Parties adopt the provisions of this Agreement as a coordinated plan for the development and construction of a network of inland waterways, hereinafter referred to as the "**network of inland waterways of international importance**" or "**E waterway network**", which they intend to undertake within the framework of their relevant programmes.

The **E waterway network**, in terms of this Agreement, consists of inland waterways and coastal routes used by sea-river vessels as well as of ports of international importance situated on these waterways and routes

(Article 1 of the Agreement)



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European Agreement on Main Inland Waterways of International Importance- AGN

Table 1

CLASSIFICATION OF EUROPEAN INLAND WATERWAYS OF INTERNATIONAL IMPORTANCE ^{±/}

Type of inland waterway	Classes of navigable waterways	Motor vessels and barges					Pushed convoys					Minimum height under bridges ^{2/}	Graphical symbols on maps
		Type of vessel: General characteristics					Type of convoy: General characteristics						
		Designation	Maximum length L (m)	Maximum beam B (m)	Draught ^{3/} d (m)	Tonnage T (t)	Length L (m)	Beam B (m)	Draught ^{6/} d (m)	Tonnage T (t)			
1	2	3	4	5	6	7	8	9	10	11	12	13	14
OF INTERNATIONAL IMPORTANCE	IV	Johann Welker	80-85	9.5	2.50	1,000-1,500		85	9.5 ^{5/}	2.50-2.80	1,250-1,450	5.25 or 7.00 ^{4/}	
	Va	Large Rhine vessels	95-110	11.4	2.50-2.80	1,500-3,000		95-110 ^{1/}	11.4	2.50-4.50	1,600-3,000	5.25 or 7.00 or 9.10 ^{4/}	
	Vb							172-185 ^{1/}	11.4	2.50-4.50	3,200-6,000		
	Vla							95-110 ^{1/}	22.8	2.50-4.50	3,200-6,000	7.00 or 9.10 ^{4/}	
	Vlb	^{3/}	140	15.0	3.90			185-195 ^{1/}	22.8	2.50-4.50	6,400-12,000	7.00 or 9.10 ^{4/}	
	Vlc							270-280 ^{1/}	22.8	2.50-4.50	9,600-18,000	9.10 ^{4/}	
								195-200 ^{1/}	33.0-34.2 ^{1/}	2.50-4.50	9,600-18,000		
VII							275-285 ^{1/}	33.0-34.2 ^{1/}	2.50-4.50	14,500-27,000	9.10 ^{4/}		

AGN, Rev.4

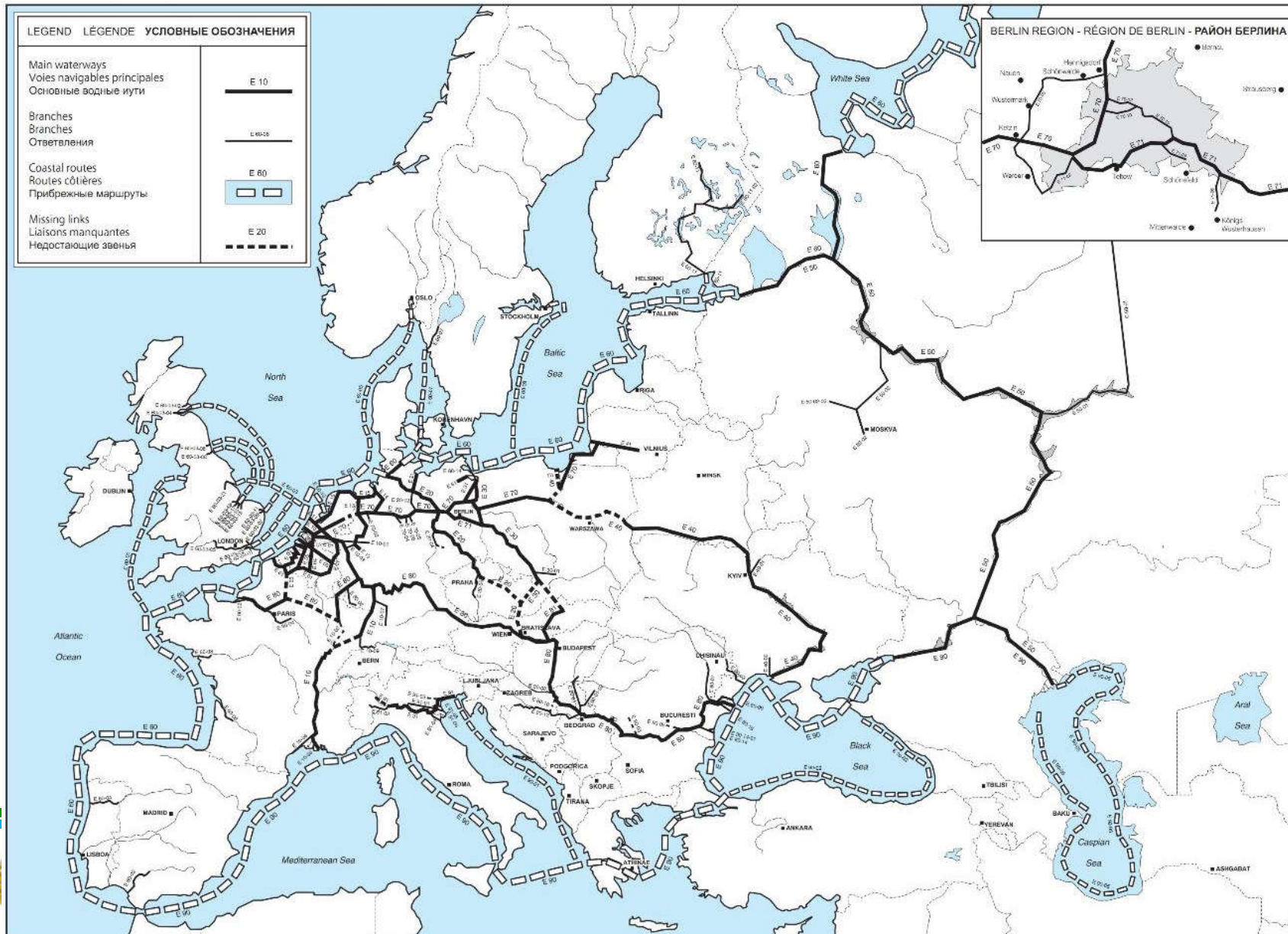


European Agreement on Main Inland Waterways of International Importance- AGN

- **Technical Characteristics** of “E waterways”
 - at least class IV
 - Vessel draught 2.5m (60% of time during the year)
 - Modernization of existing E waterways - at least to class Va
 - New E waterways should meet class Vb, with draught of 2.8m
 - Bridge clearance – 9.10m



European Agreement on Main Inland Waterways of International Importance- AGN



Inventory of main standards and parameters of the “E waterway” network – Blue Book

- Defined **bottlenecks and missing links** in the E waterway network by country
- **Navigational Characteristics** of Main European Inland Waterways of International Importance
- Parameters of Locks on E Waterways
- Technical Characteristics of Inland Navigation Ports on E waterways



Inventory of main standards and parameters of the E waterway network – Blue Book

E WATERWAY	SECTION OF E WATERWAY	LENGTH (km)	MAXIMUM DIMENSIONS OF VESSELS AND PUSHED CONVOYS WHICH MAY BE ACCOMMODATED			MINIMUM HEIGHT UNDER BRIDGES****	CLASS	SUITABILITY FOR COMBINED TRANSPORT**	COMMENTS
			LENGTH*** (m)	WIDTH*** (m)	DRAUGHT (m)				
1	2	3	4	5	6	7	8	9	10
E 80 (continued)	DANUBE 1 215.0 km – 1 175.0 km	40.0	110.0/285.0	11.40/34.20	...	...	...	A	Free-flowing
			No restrictions	No restrictions	2.50	No restrictions	Vic	A	
	DANUBE 1 175.0 km – 1 075.0 km	100.0	.../...	.../...	...	...	VII	A	Canalized
			No restrictions	No restrictions	3.50	9.15	VII	A	
	DANUBE 1 075.0 km – 947.0 km	128.0	140.0/300.0	15.00/33.00	3.50	23.71 ⁹⁰	VII	A	Canalized
			No restrictions	No restrictions	3.50	No restrictions	VII	A	
	DANUBE 947.0 km – 931.0 km	16.0	140.0/300.0	15.00/33.00	3.50	...	VII	A	Canalized
			No restrictions	No restrictions	3.50	10.00 ⁹¹	VII	A	
	DANUBE 931.0 km – 866.0 km	65.0	140.0/300.0	15.00/33.00	3.50	...	VII	A	Canalized
			No restrictions	No restrictions	3.50	No restrictions	VII	A	
	DANUBE 866.0 km – 860.0 km	6.0	140.0/300.0	15.00/33.00	3.50	...	VII	A	Free-flowing from
			No restrictions	No restrictions	3.50	13.50 ⁹²	VII	A	863.0 km
	DANUBE 860.0 km – 845.0 km	15.0	140.0/300.0	15.00/33.00	3.50	...	VII	A	Free-flowing
			No restrictions	No restrictions	3.50	No restrictions	VII	A	
	DANUBE 845.0 km – 375.0 km	470.0	140.0/300.0	15.00/33.00	2.50	13.91 ⁹³	VII	A	Free-flowing
			No restrictions	No restrictions	2.50	...	VII	A	
	DANUBE 375.0 km – 170.0 km	205.0	140.0/300.0	15.00/33.00	...	...	VII	A	Free-flowing
			No restrictions	No restrictions	...	...	VII	A	
DANUBE 170.0 km – 0.0 km	170.0	180.0/180.0	40.00/40.00	7.01	...	VII	A	Free-flowing	
		No restrictions	No restrictions	...	No restrictions	VII	A		



ZNACI ZA REGULISANJE PLOVIDBE

OSNOVNI ZNACI

A - ZNACI ZABRANE

A.1, A.1.1, A.1.2, A.1.3, A.1.4, A.1.5, A.1.6, A.1.7, A.1.8, A.1.9, A.1.10, A.1.11, A.1.12, A.1.13, A.1.14, A.1.15, A.1.16, A.1.17, A.1.18, A.1.19, A.1.20, A.1.21, A.1.22, A.1.23, A.1.24, A.1.25, A.1.26, A.1.27, A.1.28, A.1.29, A.1.30, A.1.31, A.1.32, A.1.33, A.1.34, A.1.35, A.1.36, A.1.37, A.1.38, A.1.39, A.1.40, A.1.41, A.1.42, A.1.43, A.1.44, A.1.45, A.1.46, A.1.47, A.1.48, A.1.49, A.1.50, A.1.51, A.1.52, A.1.53, A.1.54, A.1.55, A.1.56, A.1.57, A.1.58, A.1.59, A.1.60, A.1.61, A.1.62, A.1.63, A.1.64, A.1.65, A.1.66, A.1.67, A.1.68, A.1.69, A.1.70, A.1.71, A.1.72, A.1.73, A.1.74, A.1.75, A.1.76, A.1.77, A.1.78, A.1.79, A.1.80, A.1.81, A.1.82, A.1.83, A.1.84, A.1.85, A.1.86, A.1.87, A.1.88, A.1.89, A.1.90, A.1.91, A.1.92, A.1.93, A.1.94, A.1.95, A.1.96, A.1.97, A.1.98, A.1.99, A.1.100

B - ZNACI OBAVEZE

B.1, B.2, B.3, B.4, B.5, B.6, B.7, B.8, B.9, B.10, B.11, B.12, B.13, B.14, B.15, B.16, B.17, B.18, B.19, B.20, B.21, B.22, B.23, B.24, B.25, B.26, B.27, B.28, B.29, B.30, B.31, B.32, B.33, B.34, B.35, B.36, B.37, B.38, B.39, B.40, B.41, B.42, B.43, B.44, B.45, B.46, B.47, B.48, B.49, B.50, B.51, B.52, B.53, B.54, B.55, B.56, B.57, B.58, B.59, B.60, B.61, B.62, B.63, B.64, B.65, B.66, B.67, B.68, B.69, B.70, B.71, B.72, B.73, B.74, B.75, B.76, B.77, B.78, B.79, B.80, B.81, B.82, B.83, B.84, B.85, B.86, B.87, B.88, B.89, B.90, B.91, B.92, B.93, B.94, B.95, B.96, B.97, B.98, B.99, B.100

E - ZNACI OBAVEŠTENJA

E.1, E.2, E.3, E.4, E.5, E.6, E.7, E.8, E.9, E.10, E.11, E.12, E.13, E.14, E.15, E.16, E.17, E.18, E.19, E.20, E.21, E.22, E.23, E.24, E.25, E.26, E.27, E.28, E.29, E.30, E.31, E.32, E.33, E.34, E.35, E.36, E.37, E.38, E.39, E.40, E.41, E.42, E.43, E.44, E.45, E.46, E.47, E.48, E.49, E.50, E.51, E.52, E.53, E.54, E.55, E.56, E.57, E.58, E.59, E.60, E.61, E.62, E.63, E.64, E.65, E.66, E.67, E.68, E.69, E.70, E.71, E.72, E.73, E.74, E.75, E.76, E.77, E.78, E.79, E.80, E.81, E.82, E.83, E.84, E.85, E.86, E.87, E.88, E.89, E.90, E.91, E.92, E.93, E.94, E.95, E.96, E.97, E.98, E.99, E.100

C - ZNACI OGRANIČENJA

C.1, C.2, C.3, C.4, C.5, C.6, C.7, C.8, C.9, C.10, C.11, C.12, C.13, C.14, C.15, C.16, C.17, C.18, C.19, C.20, C.21, C.22, C.23, C.24, C.25, C.26, C.27, C.28, C.29, C.30, C.31, C.32, C.33, C.34, C.35, C.36, C.37, C.38, C.39, C.40, C.41, C.42, C.43, C.44, C.45, C.46, C.47, C.48, C.49, C.50, C.51, C.52, C.53, C.54, C.55, C.56, C.57, C.58, C.59, C.60, C.61, C.62, C.63, C.64, C.65, C.66, C.67, C.68, C.69, C.70, C.71, C.72, C.73, C.74, C.75, C.76, C.77, C.78, C.79, C.80, C.81, C.82, C.83, C.84, C.85, C.86, C.87, C.88, C.89, C.90, C.91, C.92, C.93, C.94, C.95, C.96, C.97, C.98, C.99, C.100

D - ZNACI PREPORUKE

D.1, D.2, D.3, D.4, D.5, D.6, D.7, D.8, D.9, D.10, D.11, D.12, D.13, D.14, D.15, D.16, D.17, D.18, D.19, D.20, D.21, D.22, D.23, D.24, D.25, D.26, D.27, D.28, D.29, D.30, D.31, D.32, D.33, D.34, D.35, D.36, D.37, D.38, D.39, D.40, D.41, D.42, D.43, D.44, D.45, D.46, D.47, D.48, D.49, D.50, D.51, D.52, D.53, D.54, D.55, D.56, D.57, D.58, D.59, D.60, D.61, D.62, D.63, D.64, D.65, D.66, D.67, D.68, D.69, D.70, D.71, D.72, D.73, D.74, D.75, D.76, D.77, D.78, D.79, D.80, D.81, D.82, D.83, D.84, D.85, D.86, D.87, D.88, D.89, D.90, D.91, D.92, D.93, D.94, D.95, D.96, D.97, D.98, D.99, D.100

DOPUNSKI ZNACI

S.1, S.2, S.3, S.4, S.5, S.6, S.7, S.8, S.9, S.10, S.11, S.12, S.13, S.14, S.15, S.16, S.17, S.18, S.19, S.20, S.21, S.22, S.23, S.24, S.25, S.26, S.27, S.28, S.29, S.30, S.31, S.32, S.33, S.34, S.35, S.36, S.37, S.38, S.39, S.40, S.41, S.42, S.43, S.44, S.45, S.46, S.47, S.48, S.49, S.50, S.51, S.52, S.53, S.54, S.55, S.56, S.57, S.58, S.59, S.60, S.61, S.62, S.63, S.64, S.65, S.66, S.67, S.68, S.69, S.70, S.71, S.72, S.73, S.74, S.75, S.76, S.77, S.78, S.79, S.80, S.81, S.82, S.83, S.84, S.85, S.86, S.87, S.88, S.89, S.90, S.91, S.92, S.93, S.94, S.95, S.96, S.97, S.98, S.99, S.100



Danube Commission



Donaukommission – Commission du Danube – Дунайская Комиссия – Danube Commission

Austria Bulgaria Croatia Germany Hungary Moldova Romania Russia Serbia Slovakia Ukraine

- **Member States** of the Danube Commission are: Federal Republic of Germany, Republic of Austria, Slovak Republic, Hungary, Republic of Croatia, Republic of Serbia, Republic of Bulgaria, Romania, Republic of Moldova, Ukraine, Russian Federation



Expert/Working Groups

- Work of the Danube Commission is organized through **expert groups (EG) and working groups (WG)**:
 - EG on Hydrotechnical Issues
 - EG on Crew and Personnel
 - EG on Ship Waste
 - EG on Security
 - WG on Technical Matters
 - WG on Legal and Financial Affairs
- Sessions of Danube Commission (on diplomatic level)



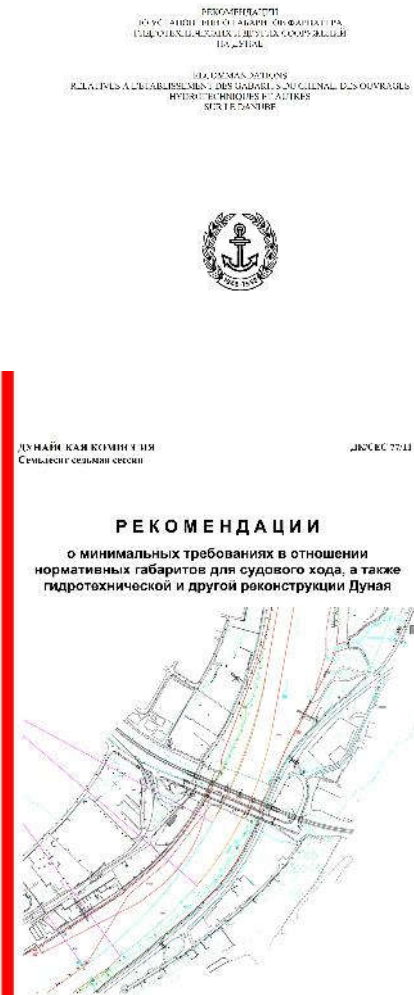
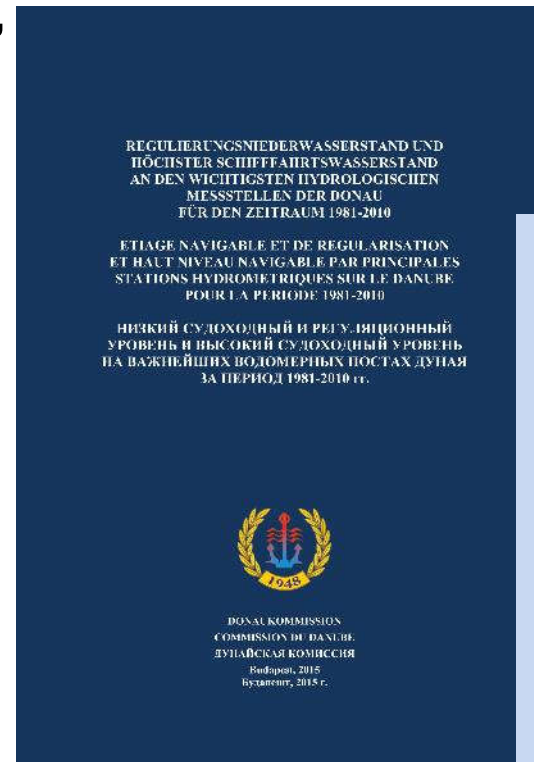
Expert Group on Hydrotechnical Issues

- Work of this EG is focusing on following subjects:
 - General plan of major works, for purpose of reaching recommended fairway dimensions, hydrotechnical, and other structures on the Danube River
 - Methodology for Calculation of Characteristic Water Levels (LNL, HNL)
 - Setup of the hydrological, morphological, and statistical database
 - Preparation of publications:
 - Hydrological Handbook of the Danube River for period 1921-2010
 - Yearbook of the Danube River Fairway
 - Longitudinal Profile of the Danube River
 - Album of Bridges on the Danube River
- As the result, Recommendations are being published



Recommendations of Interest for Design of River Training Works

- Recommendations for Establishment of Fairway Dimensions, Hydrotechnical, and other Structures on the Danube River (1988)
- Recommendations on Minimal Requirements for Fairway Parameters, Including Hydrotechnical and other Works on the Danube River (2012)
- Low Navigable and Regulation Water Level, and High Navigable Water Level on Most Important Gauging Stations on the Danube River, for Period 1981-2010, (2015)



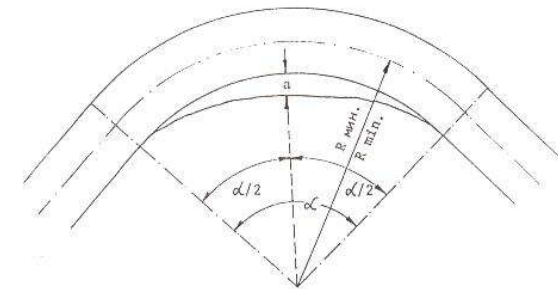
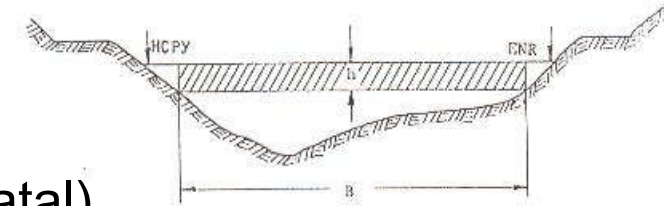
Recommendations on Minimal Requirements for Fairway Parameters, Including Hydrotechnical and Other Works on the Danube River (1988, 2012)

- Providing :
 - Definition of terms
 - Classes of the Danube River waterway
 - Methodology for calculation of Low Navigation and Regulation water level (LNL, EN)
 - Minimal fairway dimensions – depth, width, bend radius
 - Minimal dimensions of navigation locks and equipment
 - Minimal dimensions of approach channels and equipment
 - Structures in reservoirs
 - Minimal dimensions of bridge openings
 - Cables over the fairway



Recommendations for Establishment of Fairway Dimensions, Hydrotechnical, and other Structures on the Danube River (1988)

- **Fairway depth** (Vienna – Braila)
 - Free-flowing sections – at least **25dm**
 - Sections in reservoirs – at least **35dm**
- **Fairway width** (Gönyü – Georgievski Tchatal)
 - Free-flowing sections – at least **180m**
 - Sections with rocky bottom – at least **100m**
 - Sections in reservoirs – at least **180m**
 - Width widening to 200m in bends
- **Bend radius** (Vienna – Devin)
 - Free-flowing sections – at least **800m**
 - Sections in reservoirs – at least **1000m**
 - On sections with unfavorable geomorphological conditions – **min 750m**
- **Bridge clearance** – 9.5m



Recommendations on Minimal Requirements for Fairway Parameters, Including Hydrotechnical and other Works on the Danube River (2012)

- Fairway Class introduced, and is in line with AGN

	Section	Class
1	Kelheim – Regensburg (km 2414.72 – 2379.68)	V b
2	Regensburg – Vienna (km 2379.68 – 1921.05)	VI b
3	Vienna – Belgrade (km 1921.05 – 1170.00)	VI c
4	Belgrade – Ismail Tchatal (km 1170.00 – 79.636 [43.00 nautical miles])	VII
	Ismail Tchatal – Sulina (km 79.636 [43.00 nautical miles] – km 0.00)	



Recommendations on Minimal Requirements for Fairway Parameters, Including Hydrotechnical and other Works on the Danube River (2012)

Fairway Dimensions:

– Fairway depth

- Kelheim to Sulina (km 2414.72 – 170.00) – necessary to obtain fairway depth in order to provide safe navigation for vessels with **draft of 25dm**

– Fairway width

- Vienna – Belgrade (km 1921.05 – 1170.00) – **at least 120-150m**
- Belgrade – Ismail Tchatal (km 1170.00 – 79.64) – **at least 150-180m**

– Bend radius

- Vienna – Belgrade (km 1921.05 – 1170.00) – **at least 800-1000m**
- Belgrade – Sulina (km 1170.00 – 0.00) – **at least 1000m**



icpdr iksd
International Commission
for the Protection
of the Danube River



International Sava River Basin Commission



Integrated Planning of Inland Waterways Transport Projects
- EU Perspective / Technical Parameters -
Web training, November 25-26, 2021



International Sava River Basin Commission

- **International Sava River Basin Commission** has been established for purpose of the implementation of the **Framework Agreement on the Sava River Basin (FASRB)**, signed in 2002 (ratified by member states in 2004), namely the provision of cooperation of the Parties to the FASRB, for realization of the following goals:
 - *establishment of an international regime of navigation on the Sava River and its navigable tributaries,*
 - *establishment of sustainable water management, and*
 - *undertaking of measures to prevent or limit hazards*



Integrated Planning of Inland Waterways Transport Projects

- EU Perspective / Technical Parameters -
Web training, November 25-26, 2021



Navigation @ Sava Commission

- Decisions adopted by the Sava Commission are **obligatory for member states**
- Decisions of importance for planning and design of river training works are:
 - Detailed **Parameters** for Waterway Classification on the Sava River
 - **Classification** of the Sava River Waterway



Classification of Sava River Waterway (Decision 5/17)

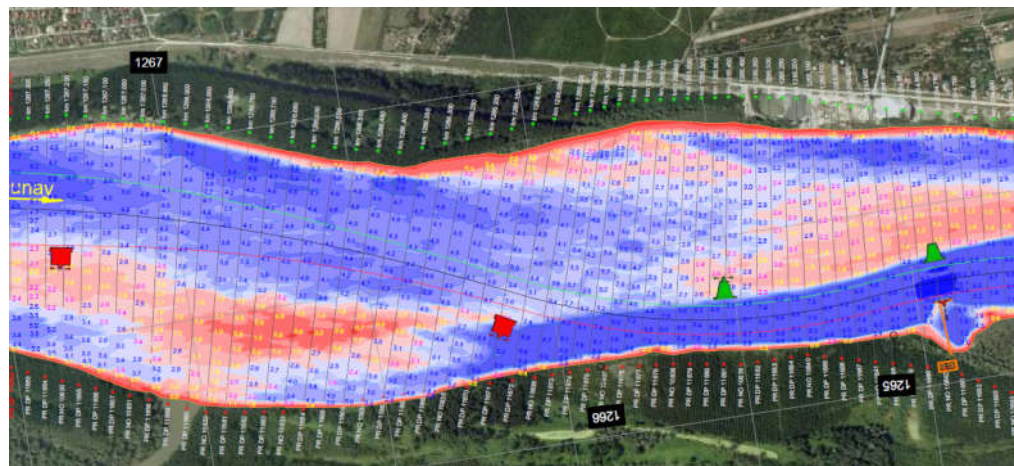
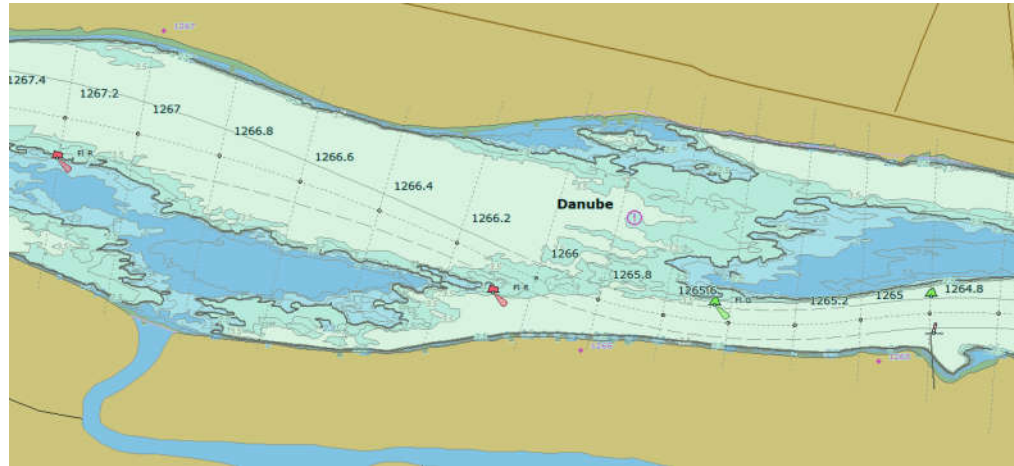
Section of the Sava River		Length (km)	Waterway class
Downstream (km)	Upstream (km)		
0.0 Sava Confluence	81.0 Kamičak	81.0	Va
81.0 Kamičak	176.0 Rača	95.0	IV
176.0 Rača	196.0 Domuskela	20.0	III
196.0 Domuskela	313.7 Slavonski Šamac/Šamac	117.7	IV
313.7 Slavonski Šamac/Šamac	338.2 Oprisavci/Rit kanal	24.5	III
338.2 Oprisavci/Rit kanal	371.2 Slavonski brod/Brod	33.0	IV
371.2 Slavonski brod/Brod	594.0 Sisak	222.8	III



Detailed Parameters for Waterway Classification on the Sava River (Decision 13/09)

DETAILED PARAMETERS FOR INLAND WATERWAY CLASSIFICATION - "SAVA INITIATIVE"																					
according to (UN/ECE, GENEVA 1996.)																					
WATERWAY	IMPORTANCE		REGIONAL						INTERNATIONAL												
	CLASS		I	II		III	IV	Va	Vb	Vla	Vlb	Vlc		VII							
	CLASS MARK		=		≡	≡≡	≡≡≡	≡≡≡≡	≡≡≡≡≡	≡≡≡≡≡≡	≡≡≡≡≡≡≡	≡≡≡≡≡≡≡≡	≡≡≡≡≡≡≡≡≡	≡≡≡≡≡≡≡≡≡≡	≡≡≡≡≡≡≡≡≡≡≡						
MOTOR VESSELS AND BARGES	SKETCH	t & s p	=		=		=		=		=		=		=		=		=		
	l (m)	t & s p	41	57		67 - 70		80-85		95-110		95-110		95-110		120-140		120-140		120-150	
	b (m)	t & s p	4,7-5,05	8,2 - 9,0 - 10,1		8,2 - 9,0 - 10,1		8,5		11,4		11,4		11,4		13-15		13-15		15	
	t (m)	t & s p	1,4	1,6 - 2,0		1,6 - 2,0		2,5		2,5-2,8		2,5-2,8		2,5-2,8		2,8-3,9		2,8-3,9		3,90 - 4,5	
	W (t)	t & s p	180	500 - 630		470 - 700		1 000 - 1 500		1 500-3 000		1 500-3 000		1 500-3 000		1 600-3 000		1 600-3 000		1 600-3 000	
PUSHED CONVOYS	CONVOYS						P.1		P.1		P.1.2		P.2.1		P.2.2		P.3.2		P.3.3		
	l (m)				118 - 132		89		95 - 110		172 - 185		95 - 110		185 - 195		195 - 270 - 280		285		
	b (m)				8,2 - 9,0		9,5		11,4		11,4		22,8		22,8		33		22,8		
	t (m)				1,6 - 2,0		2,5 - 2,8		2,5 - 4,5		2,5 - 4,5		2,5 - 4,5		2,5 - 4,5		2,5 - 4,5		2,5 - 4,5		
	W (t)				1000 - 1200		1250 - 1450		1800 - 3000		3200 - 6000		1600 - 3000		6400 - 12000		9600 - 18000		14500 - 27000		
MAIN CLASS PARAMETERS	R _{min} (m)		Regulated rivers	Regulated rivers	Canalized rivers	Regulated rivers	Canalized rivers	Canals	Regulated rivers	Canalized rivers	Canals	Regulated rivers	Canalized rivers	Canals	Regulated rivers	Canalized rivers	Regulated rivers	Canalized rivers	Regulated rivers	Canalized rivers	
	T _{NPV2} (%); T _{NPV3} (%)		60; -	60; -	85; 90	80; -	85; 90	-	60; 94	85; 94	-	60; 94	85; 94	-	60; 94	94; 94	60; 94	94; 94	60; 94	94; 94	
DIMENSION OF FAIRWAY	T (m)						2,3	2,2	2,4	2,4	2,4	2,4	2,4	2,4							
	T _v (m) + Δ		1,3	1,3	1,6	1,6	2	3,3	3,3	3,4	3,4	3,4	3,4	3,4	3,7	3,7	3,6	3,6	3,8	3,8	
	B (m)		35	45		45		55		30		55		35		65		40		150	
	B _{min} (m)	for min l _{prop} for max l _{prop}	25 35	35 45		40 45	40 45	75 75	40 40	85 90	40 45	95 100	50 55	100 120	120 150	150 160	125 125	170 200	160 160	170 160	
SAFETY CLEARANCES BETWEEN VESSEL AND BRIDGE/POWER LINES	H _{min} (m)		3	3		4		7		7		7		9,5	10	9,5	10	9,5	10	9,5	10
	min B _{min} (m)		35	45		45		45		30		55		35		65		40		150	
	H _{min} (m)	up to 110 kV up to 250 kV up to 400 kV	15 17	15 17	15 17	15 17	15 17	15 17	15 17	15 17	15 17	15 17	15 17	15 17	15 17	15 17	15 17	15 17	15 17	15 17	15 17
	H _{min} (m)		12	12		12		12		12		12		12		12		12		12	
	B _{min} (m); B _{max} (m)		B _{min} ; B _{max} = širina rubova pokosa kanala ili udaljenost vinskih stopa obrambenih nasipa kod njeke iznad VPV = 12,0m																		
DIMENSION OF LOCKS	T _{prop} (m)		1,6	2		2,25		2,5		2,5		3,0		4,0		4,5		4,5		4,5	
	min B _{prop} (m)		10	10		10		10,0 - 12,5		12,5		12,5		12 - 25		26		24 - 26		34 - 37	
	min l _{prop} (m)		60	60		70 - 75		90 - 130		115 - 150		190 - 210		230		230		260 - 310		310	
<p>l (m) - length b (m) - beam t (m) - maximum draught W (t) - tonnage t & s - barges and motor vessels p - pushed unit R_{min} (m) - minimal radius of curvature T_{NPV2} (%) - duration of low navigation level (NPV) for navigation including maximum draught (% of navigable days with NPV or higher levels) T_{NPV3} (%) - duration of low navigation level (NPV) for navigation including reduced draught (% of navigable days with NPV or higher levels) T (m) - depth of fairway for navigation with reduced draught (94% duration) T_v (m) - depth on a level of draught below NPV (with velocity subtraction and skew) Δ (m) - absolute reserve B (m) - width of waterway in a stream B_{av} (m) - width of waterway in a curve l_{prop} (m) - length of proper vessel or pushed convoy</p> <p>P.1 </p> <p>P.1.2 </p> <p>P.2.1 </p> <p>P.2.2 </p> <p>P.2.3 </p> <p>P.3.2 </p> <p>P.3.3 </p> <p>H_{min} (m) - vertical clearance under the bridges min B_{min} (m) - horizontal clearance under the bridges H_{min} (m) - vertical clearance under the power lines H_{min} (m) - vertical clearance under the cables B_{min} (m) - horizontal clearance under the power lines B_{min} (m) - horizontal clearance under the cables T_{prop} (m) - depth on lock gate min B_{prop} (m) - minimal width of chamber of lock min l_{prop} (m) - minimal length of chamber of lock</p>																					

Synchronized data publication



Available Fairway Depths and Widths at Critical Sectors
15/4/2018, 18:00

River	Critical sector	From km	To km	min. depth (dm)	max. depth (dm)	Available width (m)	Date of survey	Layout	Remark
Danube	Bezdan	1429.0	1425.0	/	/	/	/	/	/
	Siga-Kazuk	1424.2	1414.4	/	/	/	/	/	/
	Apatin	1408.2	1400.0	50.1	76.1	130	06.09.2017	/	/
	Čivutski rukavac	1397.2	1389.0	49.8	71.8	140	03.09.2017	/	/
	Drava confluence	1388.8	1382.0	51.4	100.4	150	02.09.2017	/	/
	Aljmas	1381.4	1378.2	53.7	80.7	200	01.09.2017	/	/
	Staklar	1376.8	1373.4	52.2	74.2	160	29.08.2017	/	/
	Erdut	1371.4	1366.4	/	/	/	/	/	/
	Bogojevo	1366.2	1361.4	50.8	73.8	200	28.08.2017	/	/
	Dalj	1357.0	1351.0	/	/	/	/	/	/
	Borovo 1	1348.6	1343.6	50.5	92.5	170	25.08.2017	/	/
	Borovo 2	1340.6	1338.0	/	/	/	/	/	/
	Vukovar	1332.0	1325.0	52.2	73.2	180	23.08.2017	/	/
	Sotin	1324.0	1320.0	/	/	/	/	/	/
	Opatovac	1315.4	1314.6	/	/	/	/	/	/
	Mohovo	1311.4	1307.6	/	/	/	/	/	/
	B. Palanka-Ilok	1302.0	1300.0	/	/	/	/	/	/
Susek	1287.0	1281.0	54.6	72.6	120	11.08.2017	/	/	
Futog	1267.4	1261.6	54.9	67.9	80	09.03.2018	/	new	
Novi Sad	1255.4	1254.2	/	/	/	/	/	/	
Arankina Ada	1247.0	1244.8	57	92	160	14.07.2017	/	/	
Cortanovci	1241.6	1235.0	58.7	82.7	160	13.07.2017	/	/	
Beska	1232.0	1226.6	61.5	142.5	150	10.07.2017	/	/	
Preliv	1207.0	1195.0	62.4	84.4	200	06.07.2017	/	/	
Sava	Drina confluence	184.0	177.0	/	/	/	/	/	/
	Sremska Mitrovica	134.0	126.8	79.6	83.6	75	04.06.2017	/	/
	Klenak	112.6	106.0	75.3	80.3	55	30.05.2017	/	/
	Sabac	104.0	90.0	78.3	82.3	55	29.05.2017	/	/
Kamčick	88.2	82.2	75.1	81.1	75	26.10.2017	/	/	

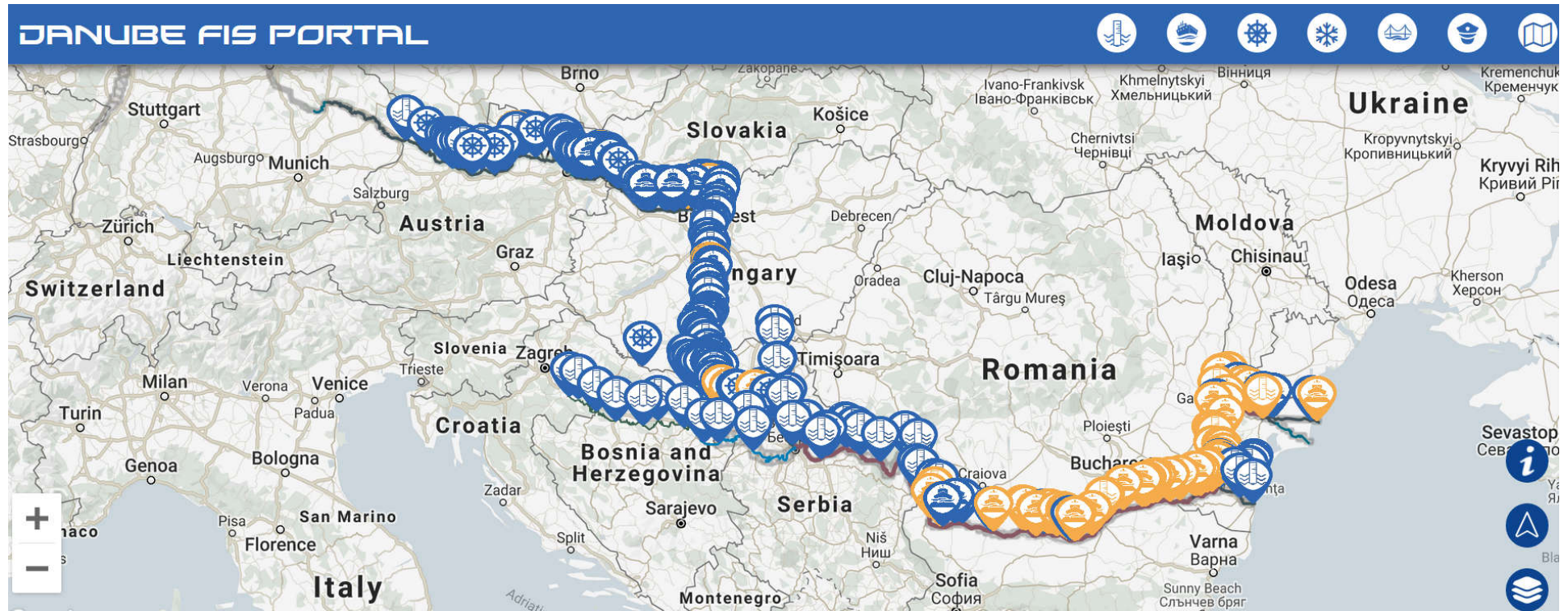
Layout guide

Source: Directorate for inland Waterways



Danube FIS Portal

<https://danubeportal.com/>



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Web training, November 25-26, 2021





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Web training, November 25-26, 2021**





Mixed Environment Transport External Expert Team (METEET) Training on Integrated Planning of Inland Waterways Transport Projects

Web training, November 26-27, 2020

Thank you for your kind attention

Dr Jasna Muškatirović



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