



Danube Transnational Programme  
DBS Gateway Region

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# Joint Vision 2040 for the DBS Gateway Region

WP 3 – Activity 3.3

Sofia, December 2017



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## 1 Introduction

### 1.1 Project objectives and priorities

With the enlargement of the EU the borders were opened to reunite the historical Danube region. Economic development and the emergence of new markets led to raising transport flows mainly using roads. High traffic volumes not only restrain economic development again, but have negative effects on the regions, too.

The main objective of the project is to support the Danube-Black Sea region to become an attractive gateway region for environmental-friendly modes of transport preferably maritime and inland waterway transport between Central Europe and the Black Sea, the Caspian region and the Far East (DBS Gateway Region) by facilitating the cooperation between ports, regions and other key actors. The joint effort shall improve accessibility of both the ports and the regions and strengthen interoperability between maritime and inland waterways as well as with their hinterland. Together with raising the awareness of the possibilities of intermodal transport, this will lead to shifting existing and attracting new cargo flows to environmentally friendly transport systems.

At present, aging infrastructure and inefficient, non-transparent intermodal services limit the potential of the water transport system. The multitude of private companies in a fragmented market cannot be expected to be the promoters of an intermodal network system that leads to higher efficiency at the macro-level rather than the level of the firm. The project is built upon the belief that the cooperation of public authorities, ports and their related associations is the key success factor in order to raise quality, reliability and efficiency of the waterway transport system.

Cooperation in itself will not yet lead to the envisaged results. It needs to be elevated on a well-informed, well-prepared, well-focused and well-supported level. The specific objectives of the project accommodate this fact: The project aims at creating a basis for cooperation between the relevant stakeholders in order to be able to work together towards the development of the DBS Gateway Region. Through increased attractiveness of the waterway transport system, it aims at providing the preconditions for the region to take over the envisaged role as DBS Gateway Region. In order to be able to further develop and actively promote the DBS Gateway Region beyond the lifetime of the project, the project aims at facilitating long-term cooperation of all key actors within an institutionalised Cooperation Platform.

## 1.2 Danube – Black Sea Gateway Region

**Danube region**, as defined in the Danube Transnational „Cooperation Programme” (see Regional cooperation, in APPENDIX I – Integration of Joint Vision into existing Strategies) consists of eight countries with fast growing economies, which is bordered by new emerging markets. Thus, the region has potential to become a very important gateway for sustainable and environmentally-friendly waterway freight transport between Central Europe, the Caspian region and the Far East.

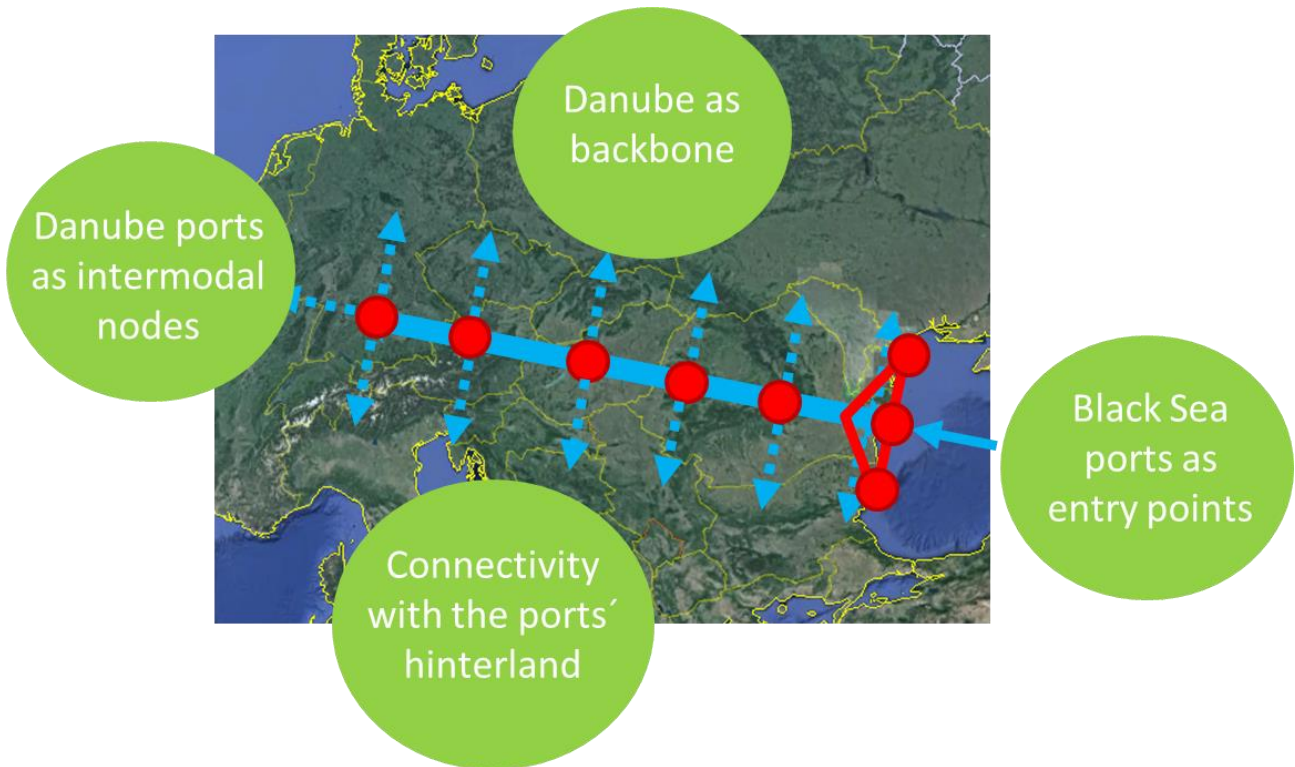


The current level of infrastructure development and logistics performance of the environmentally sustainable transport modes in the regions, however, is not sufficient to take over the envisaged global role and rising transport demands. This way, the growing demand will inevitably result in higher traffic by road, which will at its turn restrain economic development again and will have negative effects on the regions.

The **DBS Gateway Region** project aims at preparing and promoting the **Danube-Black Sea Region** as the gateway for sustainable and environmentally-friendly freight transport between Central Europe and the Black Sea, the Caspian region and the Far East.

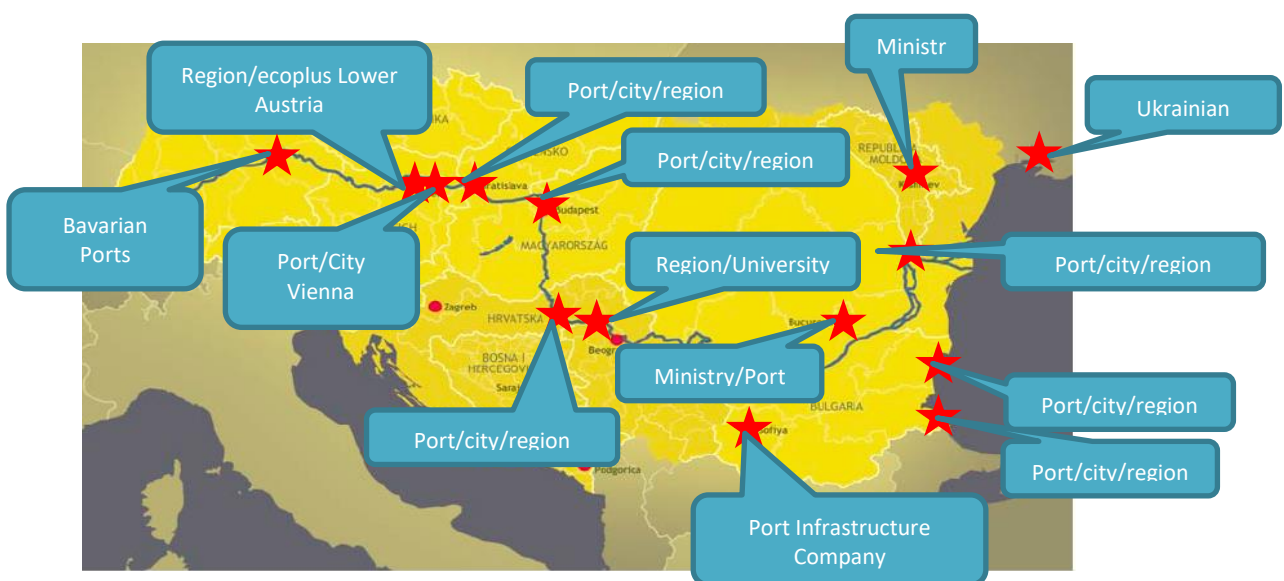
The **DBS Gateway Region** consists of the Western Black Sea ports as entry points, the Danube as a backbone for inland waterway connection towards Central Europe, Danube ports as intermodal nodes and efficient connections between the ports and their hinterland.





To achieve the main project objective 10 financing partners and 20 strategic partners from 10 counties, namely Austria, Bulgaria, Croatia, Germany (Bavaria), Hungary, Moldova, Romania, Serbia, Slovakia, and Ukraine, joint forces to establish *cooperation network* for:

- Exchanging information, ideas, capacity building etc.
- Establishing joint voice for joint interests and
- Better develop inter-connectivity throughout the whole transport chain (inter-modality to the last mile).





### 1.3 Project output

Based on these goals and objectives several strategies and plans will be developed, which will be the core of the planned communication and dissemination actions.

- **Potential analysis**

The potential analysis will be the basis for the Joint Vision 2040 and will give an overview of existing and future market potentials. Relevant information from existing studies is gathered, harmonised in terms of indicators, actuality and data quality. The analysis builds on the outputs of projects like DaHar, GIFT, INWAPO, ADB, EMPIRIC and others.

- **Joint Vision 2040**

The Joint Vision 2040 is based on the potential analysis and describes the economic, regional and logistic development targeted for the DBS Gateway region. It is an aspirational description of what the region would like to achieve or accomplish in the mid-term or long-term future. It will serve as a guide for choosing current and future courses of action.

- **Road map**

The road map consists of measures suitable to reach the Joint Vision 2040 and aims at turning the DBS region into an attractive gateway region for maritime and inland waterway transport. It will be a basis for future cooperation and increase the attractiveness of the water transport system.

- **Regional action plans**

Each participating region will work on concrete actions feasible to tackle relevant challenges and to provide the standards set in the roadmap. Timelines, responsibilities and necessary steps to be taken will be defined for each action.

- **Cooperation Platform**

The cooperation platform will ensure long-term commitment, continuous promotion and active engagement for the incorporation of the project's recommendations after project completion. The platform will offer transferability of the know-how acquired within the project through trainings and will monitor the implementation of the projects. It will facilitate funding for necessary activities within the roadmap, ensure durability and sustainability of the project results and enhance further development steps towards realisation of the Joint Vision 2040.

### 1.4 Joint Vision 2040

Formulation and agreement of a **Joint Vision 2040** about the desired economic, regional and logistic development of the Danube-Black Sea gateway region by 2040 is being developed within **Activity 3.3 Joint Vision**. The **Joint Vision 2040** provides the general framework to enable the relevant authorities and stakeholders to work together towards the development of the DBS Gateway Region.

The Joint Vision 2040 builds upon the results of Potential Analysis, elaborated within Work Package (WP) 3 of the project. The analysis consists of two parts and gives a clear picture on existing and future markets by presenting relevant information from existing studies, harmonized in terms of indicators, actuality, data quality and adding missing information (*APPENDIX I – Integration of Joint Vision into existing Strategies*). Future





development options and requirements are discussed within the second part of the analysis, which reflects the view of the stakeholders and adding perspective for the potential of the DBS Region in order to step into new markets, attract new cargo flows to the Danube-Black Sea gateway and improve related business location policies (*APPENDIX II – Potential Analysis*).

Both the documents Potential Analysis and Joint Vision are designed to be prerequisite for the next step of the project – the **WP 4 Roadmap**, and contribute to the project’s specific objective 1 to provide a basis for future cooperation. The roadmap focusses on measures in order for the Joint Vision 2040 objectives to be reached, namely to improve the connectivity of existing infrastructure and thus strengthen the hinterland connection. It also draws attention to the Intermodal services and communicational bottlenecks. The roadmap on the other hand leads to the next action for the DBS Region – to set-up of an institutionalised Cooperation Platform that will take over the agenda after the project-lifetime and will allow the broader use of the roadmap.



## 2 Joint Vision 2040 for the DBS Gateway Region

The DBS Gateway Region project has three specific objectives, as follows:

1. **to create a basis for cooperation between the relevant stakeholders; increased knowledge about similar challenges and joint market potentials, the agreement on a *Joint Vision 2040* and fields of joint action as well as the identification of needed learning interactions will have an immediate effect on the quality of future cooperation**
2. **to increase the attractiveness of the waterway transport system in the Danube-Black Sea region and**
3. **to facilitate long-term cooperation of all key actors within an institutionalized Cooperation Platform.**

Being actually the first specific objective of the project, the *Joint Vision 2040* is understood as an aspirational description of what the DBS Gateway Region would like to accomplish in the mid-term and long-term future. It gives a jointly agreed common direction and serves as a clear guide for choosing current and future action.

This is why it is directly interlinked with the Potential Analysis (grey in the graphic below) on one side and the Roadmap (grey in the graphic below) on the other side:



The *Joint Vision* (blue in the graphic above) includes:

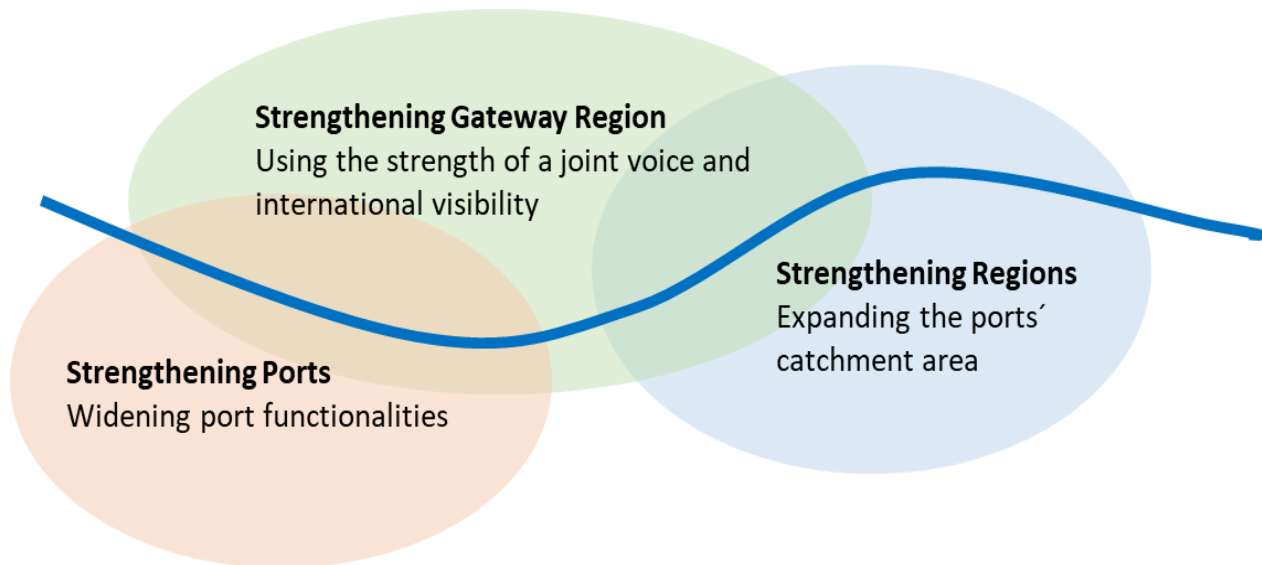
- Mission Statement
- Strategic Objectives
- Fields of intervention
- Operational Objectives

Measures of the Roadmap will provide to achieve the operational objectives within the defined fields of intervention derived from the strategic objectives of the Mission Statement (= Roadmap is the implementation framework of the Joint Vision).

### 2.1 Mission Statement

The Mission Statement defines 3 pillars that all partners want to focus on. There is no hierarchy between them as they go hand-in-hand:

- **Strengthening Gateway Region**
- **Strengthening Regions and**
- **Strengthening Port.**



## 2.2 Strategic Objectives

The Strategic Objectives sharpen the above-defined pillars of the Mission Statement. Their fundamental character defines the framework of all further action. Success of implemented actions will be monitored against the Strategic Objectives.

### Strengthening the DBS Gateway Region

The DBS Gateway Region ***competes successfully at the international freight transport market*** by using the strength of a joint voice and international visibility of a common brand and marketing strategy.

- Sustainable development through a long-lasting cooperation of the stakeholders within a ***Cooperation Platform. All stakeholders*** are welcome to join the Cooperation Platform and participate in the process. Offer and demand side are integral parts of the concept.
- Building up an ***internationally recognized brand*** for sustainable multimodal transport route "DBS Gateway Region".
- Supporting an innovative Gateway region with ***modern infrastructure, operation and services***.
- Using the strong joint voice to lobby for the implementation of ***legal preconditions for competitive shipping***.

### Strengthening the Regions

DBS Gateway Region is an ***economically prosperous region*** (good conditions for business and population) supported by competent, efficient and reliable logistic services ***along the whole transport chain (=expanding the ports' catchment area)***.

- ***Ports and their hinterland*** (city/region) are one entity working together towards the same goal (which is the economic prosperity of the region). In line with the TEN-T technical requirements, the ***multimodal connections of the ports*** to the hinterland enable efficient and reliable door-to-door services for cargo flows of small, medium and big enterprises.
- ***Business settling around ports*** in cooperation with business agencies, the region and the ports.

### Strengthening the Ports

DBS Gateway Region is an **attractive gateway for maritime and inland waterway transport** within Central Europe and the Western Black Sea Region (covering Bulgaria and Romania) and towards Western Europe, the entire Black Sea region, the Caspian region and the Far East with **ports serving as modern intermodal nodes and additional service providers**.

- Even though seaports generally compete against each other, they cooperate with each other on common needs to attract cargo flows and to support economic development of the whole DBS Gateway Region (“**coopetition**”<sup>1</sup>). Each port (seaports and Danube ports) using their **unique selling point** (location, facilities etc.) together adding up to a **comprehensive service** for the users.
- **Danube ports** transform into **logistic centres** offering a large variety of functional and value adding services in place.

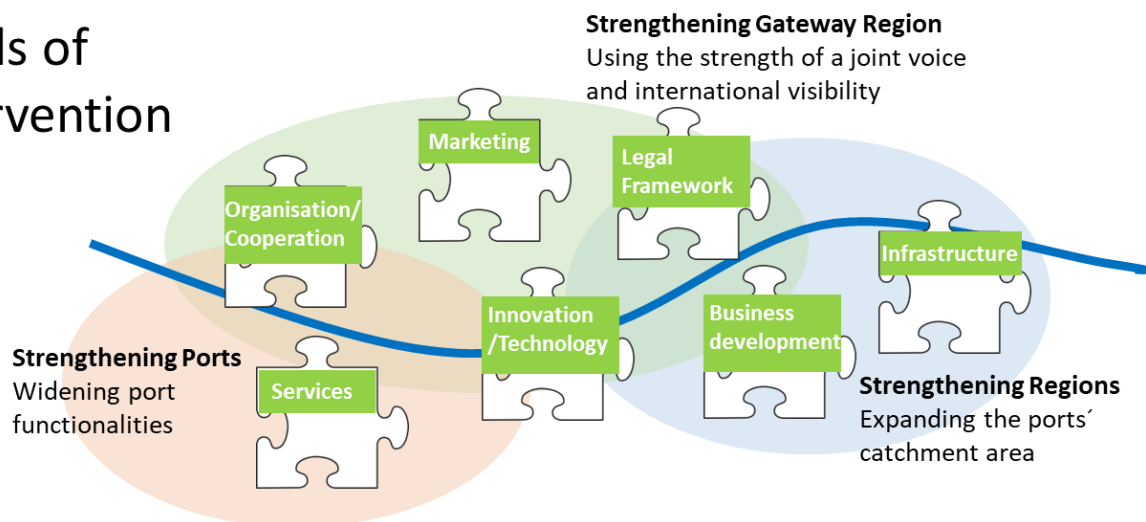
As a horizontal value, the DBS Gateway Region stands for **environmentally friendly intermodal transport** (green shipping and hinterland connections):

- The **environmental aspect of Inland Water Transport (IWT) on the Danube** is considered in all actions (shipping as environmentally friendly mode of transport).
- In order to secure the regions’ future the adoption of **renewable energy and modern technologies** is required.

### 2.3 Fields of intervention

In order to achieve the strategic objectives, seven specific fields of intervention are identified, as depicted in the next figure.

## Fields of intervention



### Strengthening the DBS Gateway Region

The Danube-Black Sea region is a region with high potential for economic development with the Danube River as the backbone for environmentally friendly waterborne freight transport.

- Sustainable development through a long-lasting cooperation of the stakeholders within a **Cooperation Platform**. All stakeholders are welcome to join the Cooperation Platform and participate in the process. Supply and demand side are integral parts of the concept.

<sup>1</sup> Coopetition = cooperation + competition

- In order to eradicate weaknesses and threats discovered in the Potential Analysis and to support strengths and potentials, a joint voice of all stakeholders involved in the process is necessary. With a strong joint voice the partners can lobby, e.g. for implementation of already planned measures and for harmonisation of national policies. (*Field of intervention: Organisation/ Cooperation*)
- Building up an **internationally recognized brand** for sustainable multimodal transport route “DBS Gateway Region”.
 

→ On the other hand, joint marketing will make the DBS Gateway region more visible at international level. This will be the crucial step towards a common brand with joint services easily accessible for the user. (*Field of intervention: Joint Marketing*)
  - Supporting an innovative Gateway region with **modern infrastructure, operation and services**.
 

→ Together they can boost research and implementation of new technologies in different fields, e.g. modernisation of fleet, ICT deployment, etc. (*Field of intervention: Joint Research/ Technology/ Innovation*)
  - Using the strong joint voice to lobby for the implementation of **legal preconditions for competitive shipping**.
 

→ Shipping confronts a wide range of different legal barriers in comparison to road transport. Transnational harmonisation and simplification would make shipping more competitive. Additional support for shipping could include incentives for environmentally-friendly freight transport or even subsidies in order to make prices more compatible. (*Field of intervention: Legal Framework*)

### Strengthening the regions

The aim is to expand each port’s catchment area. There are two variables flexible to change:

- **Ports and their hinterland** (city/region) form a single entity working together towards the same goal, i.e. the economic prosperity of the region. **Multimodal connections of the ports** to the hinterland enable efficient and reliable door-to-door cargo services for small, medium and big enterprises.
 

→ Upgrading the region’s infrastructure will make improve the region’s accessibility and thus, will geographically expand port’s catchment area. (*Field of intervention: Infrastructure*)
- **Business settling around ports** in cooperation with business agencies, the region and the ports.
 

→ Wise economic policy and planning of business settlement around the ports and along the main corridors will increase the cargo demand within the port’s catchment area (inner expansion). (*Field of intervention: Danube-affine business development*)

### Strengthening the ports

- Even though seaports generally compete against each other, they cooperate with each other where necessary to attract cargo flows and to support economic development of the whole DBS Gateway Region (“**coopetition**”). Each port (seaports and Danube ports) using their **unique selling points** (location, facilities etc.) together adding up to a **comprehensive service** for the users.
 

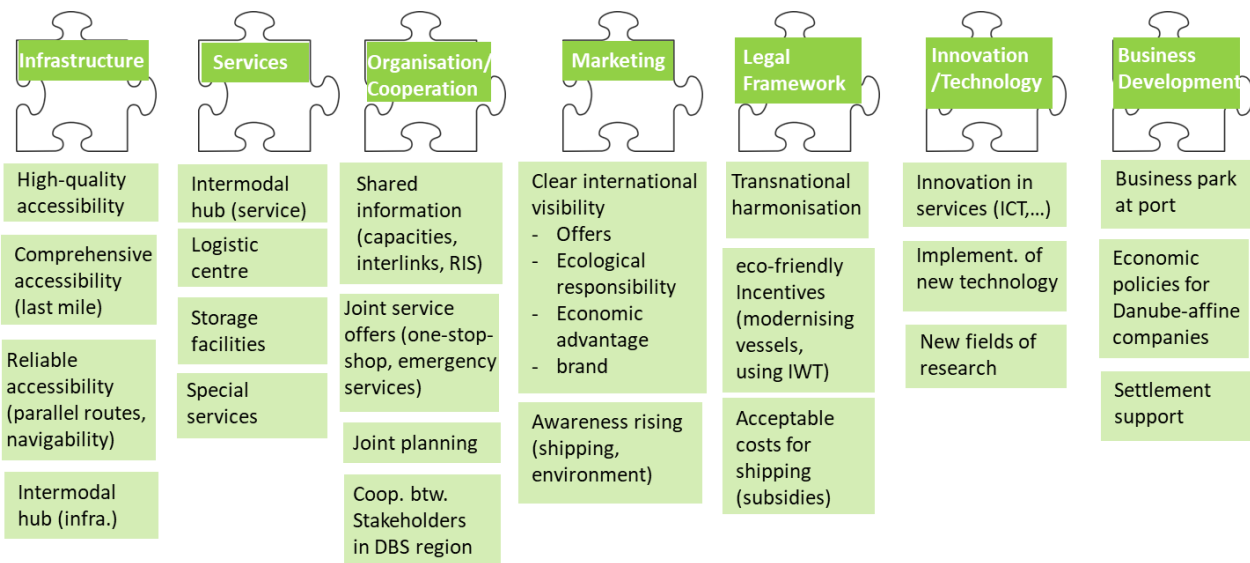
→ Upgrading each port’s infrastructure regarding the port’s specific role within the region will strengthen each port’s unique selling point (single port advantage). At the same time, the whole DBS Gateway Region will benefit as all the ports’ services add up to a comprehensive service for all users. (*Field of intervention: Infrastructure*)
- **Danube ports** transformed into **logistic centres** offering a large variety of functional and value adding services in place.



→ The number of handlings is considered as disadvantage of intermodal transport in comparison to lorry-only transport. In order to make intermodal transport more attractive the necessity of handling will be used for additional services. This will turn the disadvantage into an advantage! The aim is to widen the ports' functionalities and add new services such as storage facilities (externalise storage for the companies), stuffing and stripping, distributional services, cargo bundling, etc. (adding value to the transported goods). (Field of intervention: Service)

## 2.4 Operational objectives

The seven fields of intervention are further elaborated into operational objectives, as presented in the next figure and explained hereunder.



### 2.4.1 Field of Intervention: Infrastructure

- Ensure the accessibility of the ports hinterland:
  - High-quality rail and road axes from the ports to TEN-T nodes/business areas/ customers in the region
  - Wide-reaching network of last mile infrastructure from the ports to customers/ consumers
- Ensure reliability and accessibility of the whole DBS Gateway Region:
  - All year-round reliable fairway conditions of the Danube river (bring the Danube River in a good navigation status and ensure effective river and waterway infrastructure maintenance)
  - High-quality infrastructure along the Danube Corridor (backup systems/ alternative routes to IWW for cargo in case of low and high water or ice)
- Provide adequate infrastructure within the ports to transform them into intermodal hubs:
  - Improvement of rail and road infrastructure within the port area
  - Modernization of ports equipment and storage facilities.

### 2.4.2 Field of intervention: Service

- Establish high- quality connections between Black Sea seaports and the Danube river ports
- Transform ports into functional intermodal hubs by optimising processes and interlinks
- Transform ports into logistic centres by functional specialization of the ports based on specific transport demand of their hinterland and their role within the logistic chain

- Provide sufficient storage facilities at the ports: have the port take over storage for the companies as special asset (just-in-time delivery)
- Optimize processes and communication within the ports for a better use of available capacities and equipment (implementing Port Community Systems)
- Widen the ports' functionalities by adding new/special logistic services to the ports' portfolio (stuffing and stripping, maintenance and cleaning of containers, distribution services, city logistics, etc.)

#### 2.4.3 Field of intervention: Danube macro-region-affine business development

- Develop of business parks at the ports or in their vicinities:
  - establish and maintain operational business parks adjacent to the ports (provide appropriate size and location for business settlement)
  - provide additional services at site to support companies with regard to shipping
- Planning: include Danube-affine companies in the regional economic policies and planning
- Business settlement services: support companies

#### 2.4.4 Field of intervention: Organisation/ Cooperation

- Enable the efficient share of information between all ports to optimise operation and processes:
  - Support full deployment of the information and communication systems and linking them with similar systems for the maritime sector; provide logistic stakeholders with access to these; integrate customs agencies in the information flow
  - Share information between ports in terms of capacities
  - Share information between ports and hinterland connection providers
- Encourage joint planning processes and solutions to address transnational challenges:
  - Lobbying to develop and implement short and mid-term concepts and action plans for fairway maintenance to guarantee good navigation status
  - Lobbying to improve coordination between the national infrastructure managers regarding maintenance activities
  - develop and implement a DBS Gateway Region resilient strategy
- Encourage the offer of joint services:
  - Development of joint services (e.g. emergency services of the DBS countries)
  - Accessibility of joint services: ICT applications and integrated information exchange (one stop shop) for supporting intermodal and logistic services
- Create a strong joint voice: Improve the communication and cooperation between DBS Gateway Region stakeholders to agree on, present and defend common interests.

#### 2.4.5 Field of intervention: Marketing

- Create clear international visibility:
  - Promote offers of the ports and region (sustainable transport chains development)
  - Advertise ecological responsibility (promotion of the DBS region as the sustainable multimodal gateway)
  - Information on economic advantages of shipping
  - Create a joint brand

- Support awareness raising campaigns to gain the trust of shippers and forwarders towards waterborne transportation services and their relative advantages

#### 2.4.6 Field of intervention: Legal framework

- Ensure transnational harmonisation of standards:
  - Promote harmonisation and uniform application of the relevant EU legislation
  - Set standards for port labour training and qualification at DBS Gateway level and develop a regulatory framework at European level to provide multi-skilled port workers and enable port labour mobility
  - Promote harmonisation of custom and administrative rules and procedures
- Provide incentives for eco-friendly behaviour
  - Incentives for companies to use environmental friendly transport modes
  - Incentives for transport sector to modernise /make greener infrastructure and fleet
- Ensure competitive prices for shipping in order to make IWW transport competitive and ensure transparency of infrastructure charges.

#### 2.4.7 Field of intervention: Research/ Technology/ Innovation

- Make IWW more transparent through ICT tracking
- Make IWW more accessible by implementing online transport planning tools
- Include the last mile of the logistic chain into the city (city logistic/ mobility plans)
- Open new fields of research (e.g. alternative energy, lower draught new design of ships, speed ships etc.)
- Ensure uptake of innovation in IWW and ports.

### 3 APPENDIX I – Integration of Joint Vision into existing Strategies

#### 3.1 Regional cooperation

The main document relevant for the entire Danube Region is the **European Union Strategy for the Danube Region (EUSDR)<sup>2</sup>**, which builds up on the commitments of **Europe 2020 strategy** towards the **smart, sustainable and inclusive growth**. The Danube Region Strategy addresses a wide range of issues clustered in four pillars as follows that are further split into 12 priority areas:

- Connect the region
- Protecting the Environment
- Strengthening the Region
- Building Prosperity.

Beside the priority area 1B Mobility rail-road-air, presented in the DBS Gateway Project Handbook (chapter 12.3), relevant to the DBS Gateway Region is the priority area **1A Mobility waterways** under the first pillar **Connect the region**. The targets set for this priority area are<sup>3</sup>:

- Increase the cargo transport on the river by 20% by 2020 compared to 2010
- Solve obstacles to navigability, taking into account the specific characteristics of each section of the Danube and its navigable tributaries and establish effective waterway infrastructure management by 2020
- Develop efficient multimodal terminals at river ports along the Danube and its navigable tributaries to connect inland waterways with rail and road transport by 2020
- Implement harmonised River Information Services (RIS) on the Danube and its navigable tributaries and ensure the international exchange of RIS data preferably by 2020
- Solve the shortage of qualified personnel and harmonize education standards in inland navigation in the Danube region by 2020, taking duly into account the social dimension of the respective measures.

The DBS Gateway Region addresses directly targets set for the Mobility waterways priority area. Nevertheless, in formulating the **Joint Vision 2040**, all the four pillars are considered with a central focus on the connectivity. As stated in the EUSDR, *“Good connections are key for the Danube region, either internally or to other European and global regions. No part should remain peripheral. Transport and energy infrastructures have many gaps and deficiencies, due to insufficient capacity, quality or poor maintenance.”*

The **Black Sea Synergy<sup>4</sup>** launched by the EU is an initiative for regional cooperation with and between the countries surrounding the Black Sea. It is designed as a flexible framework to ensure greater coherence and policy guidance while also involving a more integrated approach. The **Black Sea Synergy** is the expression of the EU’s commitment to the Black Sea region, and to the shared objective of bringing concrete improvements that can benefit the peoples in the region through cooperative approaches. The EU aims to give reality to this initiative by establishing **sector partnerships in three crucial sectors: environment, transport and energy**. These sectors are chosen because of their non-questionable importance to the region. Improvements in these sectors will have direct effect in the whole wider Black Sea region.

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<sup>2</sup> Document COM(2010) 715, 8 Dec. 2010

<sup>3</sup> <https://www.danube-navigation.eu/targets-governance-1>

<sup>4</sup> [https://eeas.europa.eu/headquarters/headquarters-homepage/346/black-sea-synergy\\_en](https://eeas.europa.eu/headquarters/headquarters-homepage/346/black-sea-synergy_en)

**Strategic goals and recommendations for the EU's maritime transport policy until 2018<sup>5</sup>** is a document that although issued in 2009 is relevant because it acknowledges the economic importance of international shipping and the vital necessity of a global regulatory framework, particularly with regard to support for the development of a package of measures to reduce shipping's CO2 emissions and for the implementation by Member States of the ILO Maritime Labour Convention. Furthermore, the Commission recognises the importance of quality shipping, maintaining competence in key maritime professions, the promotion of careers at sea and supporting maritime research.

**Commission Staff Working Document on the implementation of the EU Maritime Transport Strategy 2009-2018<sup>6</sup>** issued in 2016 is a review of developments and achievements in 2009-2015 period and highlights the areas where further work is needed. Relevant to the DBS Joint Vision are priority given to the following issues:

- Administrative simplification and achieve a comprehensive international regulatory framework for shipping
- Establish a true 'European maritime transport space without barriers', removing unnecessary administrative barriers, duplicated cross-border controls, the lack of harmonised documents and all other factors that hamper the potential growth of short-sea shipping, which is very relevant to the DBS Region
- Ensure the right conditions for attracting investment flows to the port sector, prioritising modernisation and expansion of port and hinterland connection infrastructure projects in those areas that are more likely to suffer from congestion problems
- Examine economic instruments (such as taxes, charges or emission trading schemes) for "getting the prices right" encouraging users to make use of short sea shipping alternatives, and others.

**Greening transport package is another initiative of the European Commission<sup>7</sup>** launched in 2008 which aimed at internalization of the external costs of transport, so transport prices to better reflect their real cost to society to the economy as a whole.

### 3.2 Economic, environmental and social dimension of cooperation

**Blue growth<sup>8</sup>** that is relevant to the Black Sea is an EC initiative to further harness the potential of Europe's oceans, seas and coasts that is considered as **one of the drivers for Europe's welfare and prosperity**. The initiative focuses on five sectors with high potential for sustainable blue growth, such as aquaculture, coastal tourism, marine biotechnology, ocean energy and seabed mining. Transport is mentioned among the other sectors that are vital for value and jobs.

Report on the Blue Growth Strategy towards more sustainable growth and jobs in the blue economy<sup>9</sup> identifies Sea-basin strategies as bottom-up vehicles to trigger regional cooperation and to direct funding from the EU funds (mainly the ERDF) towards the blue economy. These strategies provide frameworks for cooperation between the European Union, the Member States and their regions and, where appropriate, third countries sharing a sea basin. Such strategies have been developed so far for three macro-regions: the

<sup>5</sup> <http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52009DC0008>

<sup>6</sup> [https://ec.europa.eu/transport/sites/transport/files/swd2016\\_326.pdf](https://ec.europa.eu/transport/sites/transport/files/swd2016_326.pdf)

<sup>7</sup> [https://ec.europa.eu/transport/themes/strategies/2008\\_greening\\_transport\\_en](https://ec.europa.eu/transport/themes/strategies/2008_greening_transport_en)

<sup>8</sup> [https://ec.europa.eu/maritimeaffairs/policy/blue\\_growth\\_en](https://ec.europa.eu/maritimeaffairs/policy/blue_growth_en)

<sup>9</sup> Commission Staff Working Document SWD(2017) 128 final, Brussels, 31.3.2017



Atlantic Ocean, the Baltic and the Adriatic and Ionian Seas, but not for the Black Sea, where an annual cycle of regional conferences<sup>10</sup> informs about Blue Growth and funding opportunities.

The last Black Sea Stakeholders Conference on Blue Economy underlined the importance of the *Black Sea as an important transport corridor between Europe and Asia*, a tourist destination and an *emerging market with space for cooperation and sound competition*. The Black Sea Region blue economy, already plainly visible in cities like Odessa, Constanta, Varna or Istanbul, has great potential. In order to allow the blue economy to thrive, the Conference suggested certain issues should be addressed: for instance, there is room for **adapting infrastructures** to an innovative and global economy and **improving access** to the common heritage, **offering high-quality services and optimizing security**.

### 3.3 Transport sector development

The EU common transport policy set in the *White Paper - Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system* is in coherence with the European strategy for smart, sustainable and inclusive growth “**Europe 2020**”.

The EU actions in respect to waterborne transport sector could be summarised in the following three main directions:

1. Promotion of waterborne transport in the context of the **Trans-European Transport Networks** and Connecting Europe Facility with specific emphasis on the **Rhine-Danube TEN-T Core Network Corridor and Motorways of the Sea**
2. Establishment of a regulatory framework for inland navigation based on EU internal market principles (fair level playing field, open market access, respect of social and environmental rules); **NAIADES II Action Plan** is the relevant action in respect to Danube
3. **Cooperation with** International Institutions (e.g. Danube Commissions, Black Sea Region) and **Neighbouring Countries**, promoting convergence to internationally agreed standards.

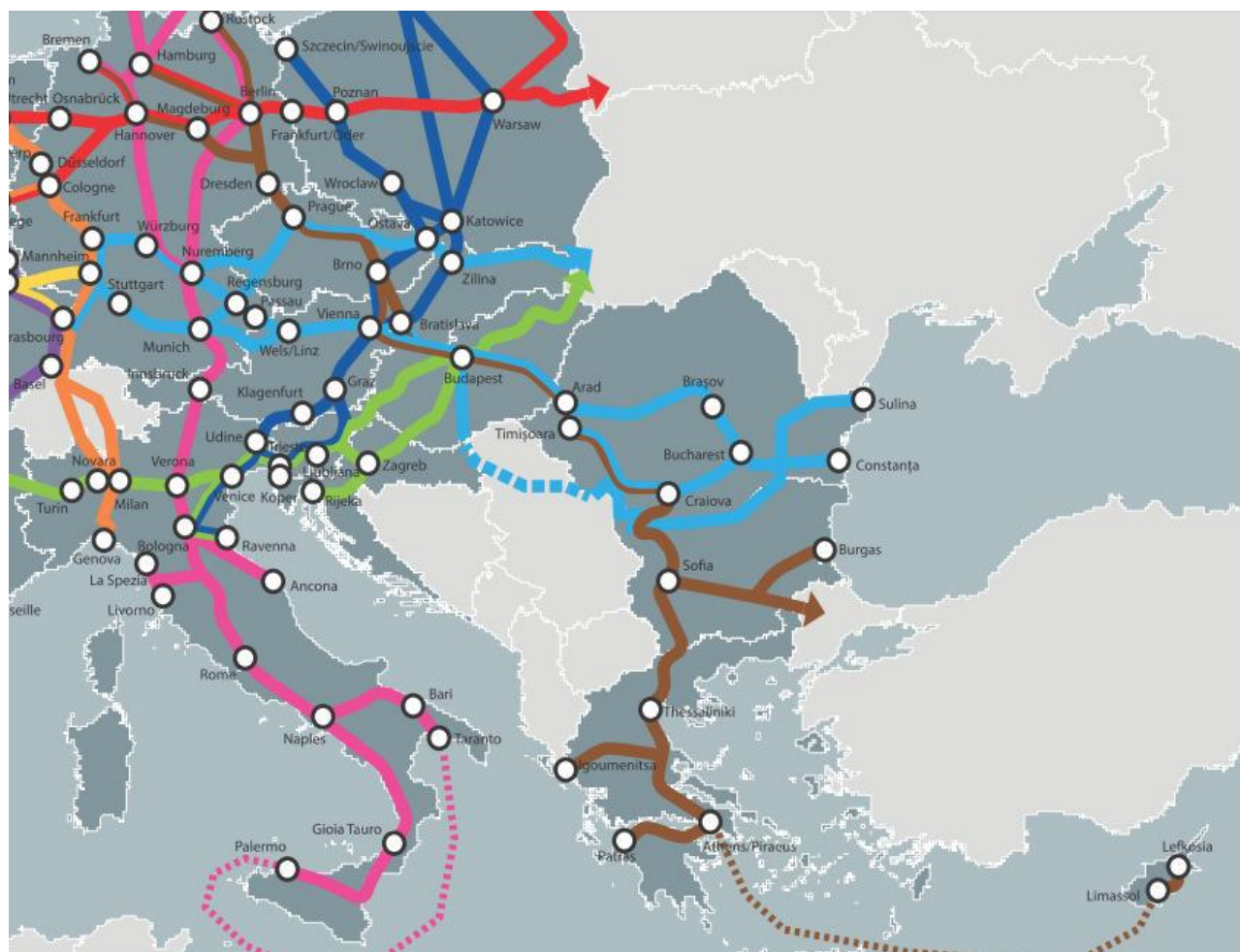
The **TEN-T guidelines regulations 1315/2013**<sup>11</sup> and the **CEF regulation 1316/2013**<sup>12</sup> define a multimodal core transport network, which should be developed until 2030 by the Member States together with the EU and other relevant stakeholders. The Regulation also provides the setting up of nine TEN-T core network corridors, as presented in the next map. The alignment of the corridors is contained in the Annex to the Regulation 1316/2013 on the Connecting Europe Facility.

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<sup>10</sup> Bucharest 2014, Sofia 2015, Odessa 2016, Batumi September 2017

<sup>11</sup> 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

<sup>12</sup> 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



**Figure 1 Schematic overview map of the TEN-T Core Network Corridors (detailed view on the DBS Region)**

The Core Network Corridors are an instrument to facilitate the implementation of the TEN-T core network and are focused on:

- Modal integration (interoperable multimodal centres, ports, airports);
- Interoperability (e.g. different electrifications, different standards regarding train length, axle load);
- Coordinated development of infrastructure, in particular on cross-border sections and bottlenecks (e.g. physical, operational, administrative cross borders, navigability of rivers);
- Deployment of interoperable traffic management systems (RIS, ERTMS).

Art. 42.2 of the TEN-T Guidelines determine that the Core Network Corridors shall enable Member States to achieve a coordinated and synchronised approach with regard to investment in infrastructure, so as to manage capacities in the most efficient way. The Core Network Corridors shall support the comprehensive deployment of interoperable traffic management systems and, where appropriate, the use of innovation and new technologies.

The Core Network Corridor that is specifically relevant to the DBS Gateway is **Rhine-Danube TEN-T Core Network Corridor**.

### 3.3.1 Rhine-Danube TEN-T Core Network Corridor (CNC)

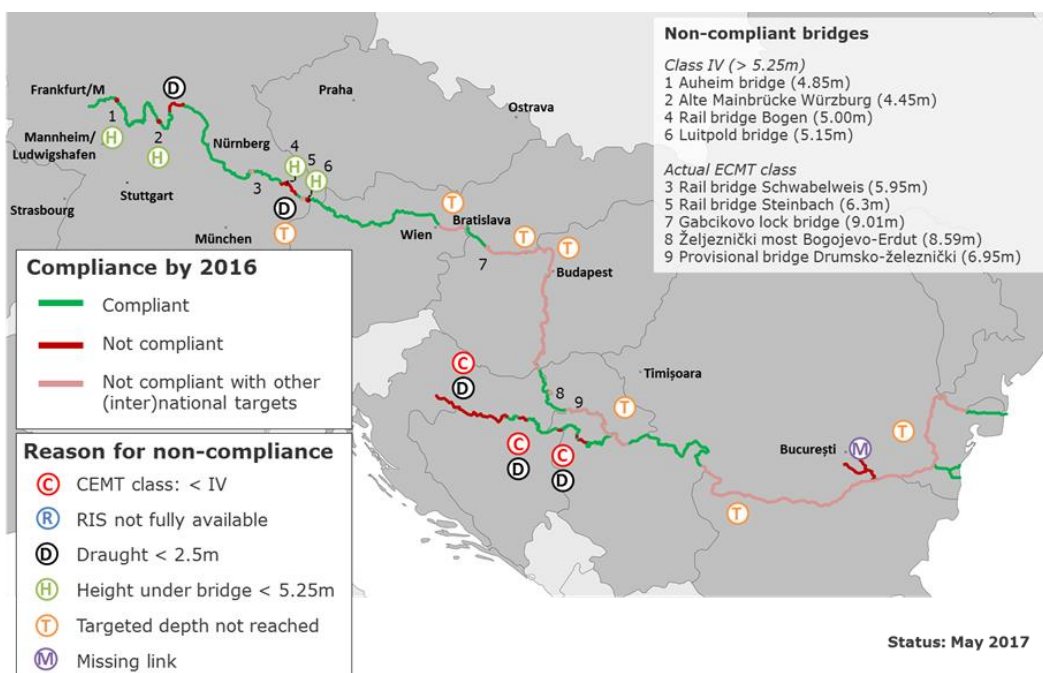
The planning, development and operation of the TEN-T contribute to the attainment of major Union objectives, as set out in the Europe 2020 Strategy and the White Paper 2011, such as the smooth functioning

of the internal market and the strengthening of economic, social and territorial cohesion. TEN-T contributes to the creation of a single European transport area, increases the benefits for its users and supports the inclusive growth. The modern and performing TEN-T is a key element for EU growth, the creation of jobs and the fight against climate change.

The TEN-T future development<sup>13</sup> is based on a dual-layer structure consisting of the comprehensive network and of the core network. The core network encompasses those parts of the comprehensive network, which are of the highest strategic importance for achieving the objectives of the trans-European transport network. This multimodal network approach supported by financial instruments will boost the competitiveness of the European economy and will contribute to sustainable growth and development of the internal market. This new concept of TEN-T core network corridors underlines the need to go further than national visions for transport and to encompass a trans-border vision on the way people and goods can cross Europe.

In respect to the IWW in particular, the TEN-T Regulation substantiates the concepts of **good navigation status**<sup>14</sup> and **good ecological status** (Art. 15 paragraph 3(b)), as follows: *“Rivers, canals and lakes are maintained so as to preserve Good Navigation Status while respecting the applicable environmental law”*.

The strategic importance of the Danube River for the EU is confirmed by the fact that Danube forms the backbone of the **Rhine-Danube TEN-T CNC** in its central and east sections, as depicted in the next map.



**Figure 2 IWW Rhine-Danube CNC**

<sup>13</sup> 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

<sup>14</sup> TEN-T Guidelines do not provide definition for Good Navigation Status (GNS); under discussion is the following *“GNS means the state of the inland navigation transport network, which enables efficient, reliable and safe navigation for users by ensuring minimum waterway parameter values and levels of service”*, Working Document (22 Jun 2017), Study on Support Measures for the Implementation of the TEN-T Core Network Related to Sea Ports, Inland Ports and Inland Waterway Transport, Lot 3 Good Navigation Status

The economic significance of Rhine-Danube CNC, and this way of the Danube River as inland waterway too, is reconfirmed by the Corridor analysis made, according to which "*the corridor plays a crucial role for the Internal Market, connecting Europe's industrial heartland with the Black Sea region serving the economic development needs of a macro-region with extremely high growth potential*".

Results of a Rhine-Danube Corridor study that made detailed analysis of the Corridor and a multi-modal transport market study could be summarised as follows:

- Freight transport on the Danube is only 10%-20% of that on the Rhine, which indicated the potential of the River are not fully used
- Nevertheless, the Danube River basin has much potential for sustainable inland navigation, and the river is central
- Improving water management will help to improve navigation conditions, address risks of flooding and achieve also good ecological status.

Member States along all the CNC, Rhine-Danube CNC included, shall take the appropriate measures for development of the core network in order to comply with a set of minimum technical requirements by 31 December 2030<sup>15</sup>. The Work Plan<sup>16</sup> for the bringing the Rhine-Danube TEN-T CNC in line with the these includes:

- Improving compliance with TEN-T requirements, mostly for rail and IWT
- Implementing the large rail cross-border projects
- Investing in ERTMS along the corridor (currently 12% rate of deployment)
- Reduce external effects of transport, in particular rail noise pollution
- Promote innovative solutions (RIS, ITS, deployment of LNG infrastructure) and
- Maintain existing infrastructure in good condition, in particular road and inland waterways.

### 3.3.2 NAIADES II Action Program

In 2006 the European Commission adopted a Communication on the promotion of inland waterway transport by running NAIADES - an integrated European action programme for inland waterway transport. The NAIADES Action Program was intended for the period 2006-2013 and focused on five strategic areas for a comprehensive IWT policy: market, fleet, jobs and skills, image and infrastructure. These measures are rounded off by reflections on an appropriate organizational structure.

Issues being addressed under NAIADES include working time arrangements, professional qualification requirements, the examination of administrative and regulatory barriers, the adoption of innovative technologies, such as the River Information Services (RIS), and infrastructure improvements.

The European Commission has adopted on 10 September 2013 the **NAIADES II** package "Towards quality inland waterway transport". The package comprises in particular the following documents:

- a NAIADES II Communication "Towards quality inland waterway transport";

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<sup>15</sup> Regulation (EU) No 1315/2013

<sup>16</sup> [https://ec.europa.eu/transport/sites/transport/files/2nd\\_workplan\\_rd\\_0.pdf](https://ec.europa.eu/transport/sites/transport/files/2nd_workplan_rd_0.pdf)

- a staff working document “Greening the fleet: reducing pollutant emissions in inland waterway transport” accompanying the Communication;
- a Proposal for a Directive of the European Parliament and of the Council laying down technical requirements for inland waterway vessels and repealing Directive 2006/87/EC of the European Parliament and of the Council;
- a Proposal for a Regulation of the European Parliament and of the Council amending Council Regulation (EC) No 718/1999 on a Community-fleet capacity policy to promote inland waterway transport.

The NAIADES II Communication aims at creating the conditions for inland navigation transport to become a quality mode of transport. It sets out the program for policy action in the field of inland waterway transport for the period 2014-2020. Actions are taken in the following key areas of intervention:

- Quality infrastructure;
- Quality through innovation;
- Smooth functioning of the market;
- Environmental quality through low emissions;
- Skilled workforce and quality jobs;
- Integration of inland navigation into the multimodal logistics chain.

Priorities under the NAIADES II programme are as follows:

- Waterways: Improving the navigability of inland waterways of European importance
- Fleet modernisation: advanced design, IT-driven, clean and energy efficient vessels, adapted to multimodality and efficient cargo-handling technology
- Port development: ports adapted both to the sea-river and to the land (road and railways) interfaces; support adaptation into modern tri-modal terminals
- Training of skilled nautical personnel: training adapted to technological development, opening up opportunities to young people and life-long careers in the sea-rivers industry and services clusters
- Improving the image of inland navigation in the Danube and all other rivers: IWW contribute to improved environmental status: good navigation status and good ecological status go hand in hand.

### 3.3.3 Ports: an engine for growth

In its communication of 2013 entitled “**Ports: an engine for growth**”<sup>17</sup> the Commission reviews the European Port Policy and builds on the progress achieved after 2007, when a set of soft measures on a fair market access and on transparency was proposed. According to this, it is acknowledged ports can contribute significantly to the economic recovery and long-term competitiveness of European industries in world markets while adding value and jobs in all EU coastal regions. Ports will have a key role to play in the development of an efficient and sustainable trans-European network by diversifying transport choices and contributing to multimodal transport.

The communication emphasizes on the structural performance gap between TEN-T ports and the consecutive necessity of participation of all TEN-T ports in order to handle the constantly increasing freight volumes. The

<sup>17</sup> [https://ec.europa.eu/transport/modes/maritime/infographics\\_en](https://ec.europa.eu/transport/modes/maritime/infographics_en)





absence of a fair level playing field ensuring consistency with the principles of the internal market in the port sector is at the core of the structural performance gap between ports.

The need for adaptation of the ports to new requirements related to the increased size and complexity of the fleet, environmental requirements and energy source shift will put pressure on infrastructure and force investments in new facilities.

The EU strategy is founded in the principle of avoiding unnecessary interferences with ports that perform well, helping ports lagging behind to implement good practices and sound managerial approaches while fully respecting diversity and particular circumstances. The proposed actions are grouped into five directions - ***connect ports to the TEN-T, modernise port services, attract investment to ports***, promote the Social Dialogue, raise the environmental profile of ports and ***encourage innovation***.

## 4 APPENDIX II – Potential Analysis

### 4.1 Current Status

#### 4.1.1 Socio-economic characteristic of DBS Region

Danube region, as defined in the Danube Transnational „Cooperation Programme”, encompasses eight EU countries, as follows: Austria, Bulgaria, Croatia, the Czech Republic, Germany (only Baden-Württemberg and Bayern provinces), Hungary, Romania, Slovakia and Slovenia; and five non-EU countries: Bosnia and Herzegovina, Moldova, Montenegro, Serbia and part of Ukraine (Odessa, Zakarpatska, Ivano-Frankivska and Chernivska Regions), as depicted in the next figure.



**Figure 3 DBS Gateway Region**

The total area of the so defined DBS is over 1 116 thousand km<sup>2</sup> or some 11% of the entire Europe. The socio-economic potential of the Region is impressive, too: 106 million population<sup>18</sup> (15% of Europe population) and total GDP of USD 2 470 billion<sup>19</sup>, which exceeds the GDP of India and represents about 14.7% of the total EU GDP and 3.3% of the total world GDP.

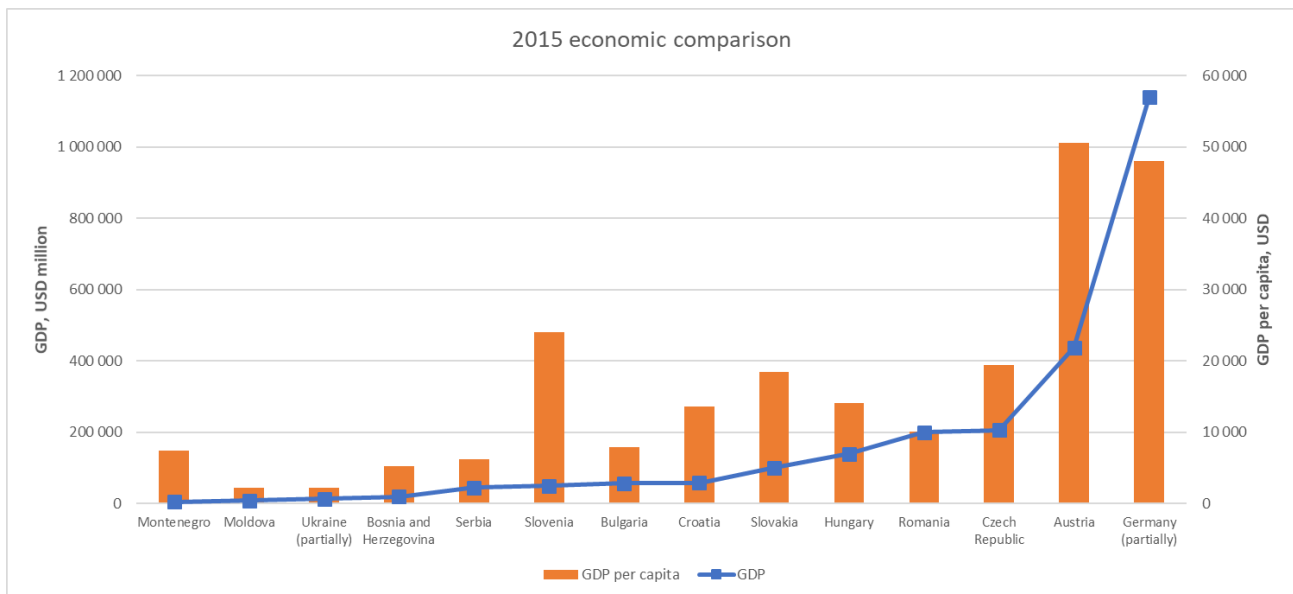
Despite the relatively close geographical location, the DBS countries differ among them a lot. Area and population per country vary in broad ranges from 13.8 thousand km<sup>2</sup> and 622 thousand people (Montenegro) to 238.4 thousand km<sup>2</sup> and 19.8 million persons (Romania). The level of economy varies in even more: from USD 4.6 billion in Montenegro to USD 1 140 billion for Baden-Württemberg and Bayern in Germany.

In terms of GDP per capita, Austria and Germany score the best with values above USD 48 thousand, followed by the other EU MSs with GDP per capita between USD 24 thousand (Slovenia) and USD 8 thousand (Bulgaria).

<sup>18</sup> 2015, national statistics data

<sup>19</sup> 2015, national statistics, Eurostat, CIA

The third group of countries encompasses the remaining 5 countries where this indicator is between USD 7.4 thousand (Montenegro) and USD 2.1 thousand (Ukrainian regions).



Source: National Statistics, EUROSTAT, CIA

**Figure 4 GDP per country**

The DBS Gateway Region interacts closely with the Black Sea Region, the scope of which is not clearly defined. According to the definition the EC has adopted in 2007, beside the countries that border the Black Sea, i.e. Bulgaria, Georgia, Romania, Turkey and Ukraine, the Black Sea Region encompasses also other countries, which due to historical and/or geographical reasons have been strongly influenced by the firsts, such as Greece, Moldova, Armenia and Azerbaijan.

## 4.2 Transport and logistic sector

### 4.2.1 Waterborne transport demand

Total demand for freight transport by IWW in the DBS Region amounts some 250 million tons/year, which figure remains rather stable throughout 2010 – 2016 period, as presented in the next table. Transit flows are not included in order to avoid double counting.

Thousand tons	2010	2011	2012	2013	2014	2015	2016
Bulgaria	4 523	4 229	3 895	3 830	4 529	4 569	3 993
Czech Republic	833	911	838	608	802	850	832
Germany	207 196	203 269	202 857	207 089	210 071	205 865	206 926
Croatia	515	502	646	577	491	566	677
Hungary	6 303	4 312	5 111	5 037	5 325	5 678	5 225
Austria	8 324	7 675	8 303	8 151	7 813	6 769	6 884
Romania	23 818	22 438	22 715	22 646	23 406	24 462	25 096
Slovakia	4 481	3 279	2 962	2 638	2 059	1 718	1 914
<b>Total</b>	<b>255 993</b>	<b>246 615</b>	<b>247 327</b>	<b>250 576</b>	<b>254 496</b>	<b>250 477</b>	<b>251 547</b>

Source: <http://ec.europa.eu/eurostat/web/transport/data/database>

**Table 1 National and international transport of goods by IWW**

It should be noted that beside figures for Danube River, above figures include data for goods transported on Rhine – Main section, as well. Having in mind that Germany accounts in average for some 82% of the total volumes and considering the estimation of Rhine-Danube CNC study according to which “*freight transport on the Danube is only 10%-20% of that on the Rhine*”, the actual current demand of EU MSs for IWW transport on Danube could be estimated to maximum 65 million tons/year. Based on transit data for Romania and Croatia, the international demand of Serbia, Moldova and Ukraine, could be estimated at some 4 million tons/year, which results finally to an **optimistic estimation** of the current demand for transport **on Danube River between 65 and 70 million tons/year**. This relatively low demand reflects the current level of services, which suffer serious deficiencies.

According to Danube Commission<sup>20</sup> data, however, the total amount of goods transported on the Danube River is, is even lower, as presented in the next table.

000 tons	Left countries on the Danube		Transported within national territories on the Danube		TOTAL	
	2014	2015	2014	2015	2014	2015
UA	4 327	4 426	14	6	4 341	4 432
MD	...	...	...	...	...	...
RO (2014=2013)	2 159	7 284	6 009	13 564	8 168	20 848
BG	1 410	1 169	1 412	1 695	2 822	2 864
RS	2 290	1 938	1 041	406	3 331	2 344
HR	205	347	0	0	205	347
HU	3 571	3 969	332	220	3 903	4 189
SK	1 875	1 605	62	19	1 937	1 624
AT	2 030	1 764	799	680	2 829	2 444
DE <sup>1</sup>	1 225	1 202	...	...	1 225	1 202
<b>TOTAL</b>	<b>19 092</b>	<b>23 704</b>	<b>9 669</b>	<b>16 590</b>	<b>28 761</b>	<b>40 294</b>
Arrived on the Danube:	trough Sulina canal from the sea (2014=2013)				459	585
	through Chilia arm from the sea				185	18
	trough the Danube-Black Sea canal from the sea and from the canal ports (2014=2013)				13 966	14 018
	trough the Main-Danube canal from the Main and from canal ports <sup>2</sup>				2 420	2 045
<b>TOTAL GOOD TRABPORTED ON THE DANUBE</b>					<b>45 791</b>	<b>56 960</b>
Out of which:	International between Danube countries				19 092	23 704
	Domestic				9 669	16 590
	International between Danube and non-Danube countries				17 030	16 666

Source: Danube Commission

1 Only ports on the German section of the Danube are taken into account

2 Data for the Kelheim lock

**Table 2 National and international transport of goods by IWW**

The above data show that the relative share of the “intra-Danube” freight traffic, i.e. the domestic plus the international traffic between the Danube countries, was about 63%-70% out of the total traffic in 2014/2015

<sup>20</sup> <http://www.danubecommission.org/dc/en/>

period. The Danube - Black Sea canal brings the highest volume of “inter-Danube” traffic for the DBS Gateway region. Although from the available data it is not possible to estimate what part of this is domestic traffic between the Romanian ports, it seems at least some 4-5 million tons are transported between the Black Sea and DBS Gateway Region countries different than Romania.

The list of major Danube ports in terms of cargo turnover in thousand tons is presented in the next table.

Port	Country	2014	2015
Linz	AT	3 814	4 335
Galați	RO	4 318	3 515
Izmail	UA	4 521	3 021
Oriahovo	BG	2 613	2 613
Tulcea	RO	2 550	2 159
Brăila	RO	2 217	2 358
Regensburg	DE	1 579	2 198
Smederevo	SR	1 813	1 553
Bratislava	SK	1 362	1 793
Vidin	BG	1 224	1 224
Svishtov	BG	1 213	1 213
Dunaújváros	HU	1 341	1 046
Vienna	AT	970	1 372
Ruse	BG	1 166	1 166
Novi Sad	SR	980	1 278
Budapest	HU	1 118	1 109
Pančevo	SR	651	1 281
Belgrade	SR	831	1 056
Reni	UA	248	1 465

Source: Danube Commission

**Table 3 Major Danube ports with annual cargo turnover of more than 1 million tons**

Analysis of the past and current demand trends in the DBS Gateway Region shows potential demand is mainly for bulk cargo, such as metal ores, coal and lignite, coke and petroleum products refined and products of agriculture, hunting and fishery. These commodities account over 50% of the total cargo turnover, while other commodities, such as high and heavy goods, cars, biomass and scrap have lower importance. Demand per countries is as follows:

- Among the German ports, most of the cargoes, transported on the Danube, are handled at port of Nurnberg (43.5% share) and port of Regensburg (35.5% share); the cargoes are predominantly liquid and dry bulk; the number of containers, handled at each port, is increasing every year, except for port of Roth
- Among the Austrian ports, Vienna holds the biggest share of cargoes handled – 52.8%, port of Enns – 30.9% and port of Krems – 16.3%; Most of the cargoes handled are petroleum products refined (mineral oil and mineral oil products) – 51%, the others are general cargoes – metals (2.1%), non-metallic and building materials (46.4%) and high and heavy cargoes – vehicles and oversized or heavy lifts (0.1%)

- At the port of Bratislava mainly bulk cargo is handled (metal ores and other mining – 48.7%, coke and petroleum products refined – 33.9%); most of the cargo handled at the port of Komarno is also bulk cargo – 49.2% coke and petroleum products refined, 29.2% products of agriculture, hunting and fishery, 19.3% - chemical fertilizers.
- Bulk cargo accounts for the greatest share in the total amount of cargo handled at Hungarian ports – products of agriculture (32.1%), coke and petroleum products refined (18.5%), metal ores (20%).
- At the Croatian port of Vukovar mainly bulk cargo is handled – non-metallic mineral products take 89.4% of the total amount of cargos handled, coke – 4.1% and coal and lignite. The amount of general cargos handled is under 1%.
- Bulk cargo is handled at most of the Serbian ports: The greatest amount of cargo is handled at the ports of Smederevo, Novi sad, Pančevo, and Belgrade; the share of the metal ores handled at the port of Smederevo is at the port of Novi Sad products of agriculture, hunting and fishery have share of 67.8%; at the port of Pančevo – products of agriculture, hunting and fishery have share of 71.3%; at the port of Belgrade - metal ores and chemicals have share of 69.34 %; at the port of Apatin – only products of agriculture, hunting and fishery are transhipped; at the port of Bogojevo – products of agriculture, hunting and fishery have share of 95.4% share and at the port of Bačka Palanka – products of agriculture, hunting and fishery have share of 79.4% share).
- The main types of cargo handled at Romanian ports on the Danube are break bulk and dry bulk – products of agriculture, hunting and fishery (58%), secondary raw materials (26.1%), metal ores (9.7%); most of the cargoes handled at the maritime port of Constanța are bulk cargos as well – coal and lignite (21.6%), coke (13%).
- Among the Bulgarian ports on the Danube, port of Svishtov accounts for the highest share in handling of bulk cargos (46.8%); in the maritime port of Burgas, the bulk cargoes' share is 64.3% of the total freight turnover. Most of the cargos handled at maritime port of Varna are bulk cargos – products of agriculture, hunting and fishery take 25.4% chemicals and chemical products – their share is 21.5%. Metal ores and other mining are also handled at port. The amount of general cargos handled at port of Varna is insignificant - under 1%.




The above described situation is result of the fact that many of the countries in the Danube region are either agricultural or specialized in heavy and chemical industries (as is the case with Hungary, Serbia, Bulgaria, Slovakia, Romania etc.).

In the Report on market potential Danube Region, dd. April 2016 (PLATINA II – at form for the implementation of NAIADES), an information on identification of new markets for inland waterway transport is aiming at detecting new promising markets for inland waterway transport and pointing out new opportunities for the logistics sector and the industry.

The estimated potential for promising market segments was summarized in the table below taking into account production, trade volumes, production and processing site as well as feedback received from the industry and logistics sector using “traffic light system” clearly illustrating the identified potential for modal shift towards inland navigation.



Cargo	Main points of origin	Main points of destination	Potential
Round wood	DE, AT, HU, BG, UA	DE, AT, RO	High
Sawn wood	DE, AT, BG, RO, UA,	DE, AT, HU	High
Wood-based Panels	DE, AT, RO	All (except MD)	High
Pellets	DE, AT, RO	DE, AT	High
Wheat	DE, AT, HU, RS, BG, RO, UA,	DE, AT	High
Maize	HU, RS, BG, RO, UA	DE, AT	High
Bioethanol	Domestic		High
Soybean	AT, HR, RS, RO, MD, UA	DE	High
Rape	AT, HU	DE, AT	High
Sunflower seeds	HU, BG, RO, UA	DE, AT, RO	High
Biodiesel	DE, AT, BG, RO, UA	DE, AT, RO	High
Sugar beet	Regional		Low
Cars	DE, SK, RO	DE, AT, HU, UA	High
Chemical products	DE, AT, SK, HU	DE, AT, SK, HU, RO	High
Cement	DE, SK, HR	DE, AT, HU, UA	High
Salt	DE, AT, RO, UA	DE, HU	High
Iron ore	UA	AT, SK, (RS), RO	High
Steel	DE, UA	DE	High
Crude oil	NON-EU	ALL	High
Diesel & gas fuel	DE, SK, HU	SK, HU	High
Gasoline	DE, AT, SK, HU, HR, BG, MD, UA	DE, AT, SK, HR, BG, MD, UA	High
LNG	Non-EU		High
Coal	DE, AT, HU,	AT, SK, HU, RO	High
Metal scrap	DE, AT, RO	DE, AT	High
Waste paper	DE, AT, HU	DE, AT	High
Used glass	DE, AT	AT, DE	High
High & Heavy	All	all	High

**Legend:**  great potential, IWT should be considered  
 moderate potential, IWT suitability should be checked on a case-to-case basis  
 low potential

Source: PLATINA II project

**Figure 5 Estimated IWW potential in the Danube region per commodity and O/D**

According to the results of above Platina II project, agricultural products and foods stuff, coal, petroleum products, ores, construction materials, and chemical products are the most suitable to be transported by IWW.

Demand for general cargo is concentrated in several ports, among which the most important are Regensburg, Linz, Vienna, Bratislava, Budapest, Belgrade, Ruse, and Black Sea ports - mainly Constanța and less in Varna and Burgas.

Containerized goods are the next potential commodity group the demand for which is expected to further develop the Danube-Black Sea region. In 2016, the Black Sea ports of Bulgaria, Romania, Russia and Ukraine have registered positive development in this respect. Georgian port of Poti registered slight decrease in number of TEUs handled, while the Turkish Black Sea ports report just a marginal total turnover of containerized goods (some 58 thousand TEU in average for 2012-2015 period, out of which about 56% are in

cabotage transport<sup>21</sup>). Thus, the overall annual containerized goods demand for Black Sea ports is estimated at about 1.8 million TEU.

There is a regular passenger liner service on the Danube and the Black sea – the Navrom Delta, which calls the Romanian ports of Tulcea, Mahmudia and Chilia Veche. Regular line service exists between the port of Constanța and Danube River<sup>22</sup>.

The analysis of the existing macro-regional transport flows of container suitable goods in the Danube region showed<sup>23</sup> that the lion's share relates to the section Austria-Germany. In addition, significant flows of goods exist between Slovakia-Germany, Hungary-Germany, from Slovakia to Hungary, from Germany to Romania and from Hungary to Austria. High growth potential exists for transportation of containers from Romania, part of which could be transhipped at Constanta, to Germany. High potential for switching from rail to IWW exists in the countries with high container traffic by rail: Germany, Austria, Hungary and Slovakia.

The overall conclusion from the Report on the Potential Analysis of the Danube – Black Sea Region is as follows:

**Taking into account the economic growth of the most of the Danube riparian countries, there is a potential for increase of the volume of goods transported by waterborne transport if the infrastructure and operational barriers are removed.**

#### 4.2.2 Port infrastructure

The total number of Danube ports between Kelheim and the Black Sea is 78 ports, out of which the following 22 are the most important ones:

- Regensburg and Passau in Germany; these are well equipped with transshipment facilities, can handle containers and are connected by road and by rail with the hinterland
- Enns, Vienna and Krems in Austria, which have in total 234 berths; all of them are directly connected to the railway network and are well equipped with transshipment facilities such as mobile cranes, gantry cranes, mobile bridges, conveyor belts, forklifts and Ro-Ro ramps, etc.
- Bratislava and Komarno in Slovakia, which have 134 berths in total; Bratislava port is well connected to the railway, road and pipeline networks of the country; Komarno lacks equipment for handling containers
- Budapest-Csepel, Baja, Dunaújváros and Győr-Gönyü, in Hungary with 41 berths in total; all of the ports are connected by rail; facilities for handling containers exist in the Freeport of Budapest
- Vukovar is the greatest Croatian port on the Danube River with 7 berths in three terminals, one of which is for transshipment of liquid cargos; the port is connected to the rail network; a regular liner service on the Danube River and Black Sea – TTS – operates in the port
- Smederevo, Novi Sad, Pančevo and Belgrade in Serbia have in total 5 berths (and including smaller ports of Apatin, Bogojevo, Bačka Palanka and Prahovo in Serbia there are in total only 9 berths); all

<sup>21</sup> Source: Republic of Turkey National Transport Master Plan, EuropeAid/136025/IH/SER/TR, Phase 1 Report - Review of the Existing Situation, April 2017

<sup>22</sup> Source: WP3-Act. 3.1 Report on Potential Analysis of the Danube – Black Sea Region Part I: Capitalization of existing data and studies, page 67

<sup>23</sup> NEWS project – Development of a **NEW** Generation Inland Waterway Ship and Logistic System

- ports have the connection by rail except the ports of Bačka Palanka and Bogojevo; ports of Novi Sad, Belgrade, Pančevo and Prahovo can handle containers;
- Vidin, Lom, Ruse together with smaller ports of Somovit and Silistra in Bulgaria, which have in total 58 berths; Vidin, Lom and Ruse are connected by rail and road and can handle containers;
  - Brăila, Galați and Tulcea in Romania; the three ports are located on the maritime sector of the Danube linked to Black Sea by Sulina canal offer 50 operational berths (for maritime and inland vessels) and a surface of 1 500 ha; all the three ports are directly connected to road and rail national network; Galați port is connected to large gauge rail system to Republic of Moldova; containers could be handled in Galați only;
  - Giurgiulești in Moldova.

The gateway Black Sea ports are those in Bulgaria and Romania:

- Burgas, Varna, Lesport and Balchik in Bulgaria; ports are equipped with the necessary equipment depending on the cargo handling (mobile cranes, gantry cranes, reach stackers, belt conveyors and ship loaders facilities for handling of dry bulk, break bulk, Ro-Ro cargoes, high and heavy cargoes)
- Constanța in Romania in Romania; Port of Constanța is the only Black Sea port that is connected to the Danube river via Danube – Constanța canal. The port has 156 berths in total and has various terminals for handling of liquid bulk, break bulk, Ro-Ro cargoes, petroleum products refined, crude oil, high and heavy cargo and containers. It is directly connected to the national rail, road and pipeline networks

The other Black Sea ports that could be either sending or receiving ports for the goods to be transported between the DBS Gateway Region and Caspian basin and the far East, are the following:

- Ilichevsk and Odessa in Ukraine; with its 55 berths and max draught of 13 m, the port of Odesa is one of the largest ports of the Black and Azov Seas basins; the length of the port's approach channel is 1,400 m, width – 160 m and depth – 17 m. 12 miles southwest of Odessa the port of Ilychevsk is located; it can accommodate ships up to 275 m length and 12 m depth; Ilychevsk container handling capacity is about 1 1500 00 TEUs/year.
- Novorossiysk in Russia; Novorossiysk Commercial Sea Port (NCSP) is Russia's largest and most important Black Sea container port with a throughput of approximately 720 thousand TEUs in 2014, i.e. for 13.5% of total Russian container traffic; the number of berths in the port is 43 with depth ranging from 4.25 to 24 m.
- Poti and Batumi in Georgia; Port of Poti with its 15 berths for cargo and Ro-Ro service and total quay length of 2 900 meters and more than 20 quay cranes, is the European gateway for international trade of Georgia, Armenia and Azerbaijan; an international container terminal with 2 berths operates in the port of Batumi.
- Samsun and Istanbul in Turkey; Samsun port is connected to the railway network; it has 10 berths, max draught of 10.5 m and 17 shore cranes.

#### 4.2.3 Danube inland waterway

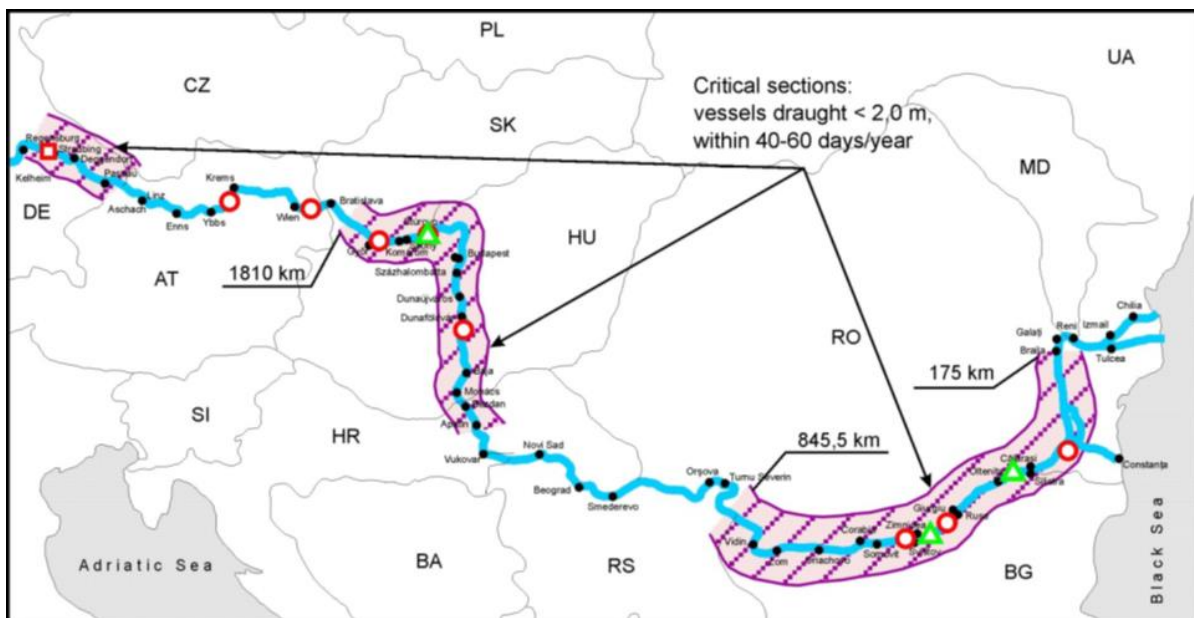
The Danube River is the major waterway in Central and Eastern Europe with a total navigable length of 2 411 km that is 87 % of the total river length.

The recommended minimum Level of Service related to fairway depth for the Danube and its navigable tributaries is defined at 2.50 m at Low Navigable Water Level (LNWL or ENR/ Étiage navigable et de

regularization), i.e. on 94% (343 days) of the year, calculated on the basis of the discharge observed over a period of 30 years with the exception of ice periods. In some river sections, however, e.g. in Germany, Slovakia and Hungary, this target is not valid, as it is not achievable by stream regulation and maintenance measures due to physical preconditions.

Fairway conditions were very difficult along the whole Danube over the last years due to *shortcoming in maintenance work of almost all the waterway administrations*. On a large part of the main critical maintenance and rehabilitation sections along the Danube, the recommended fairway depth of 2.5m at Low Navigable Water Level was not achieved in almost all the years of the last decade resulting in severe financial losses or even disruption of the logistics chains and thus, withholding the economic potential of Danube transport.

Although the exact situation of the critical sections of the River, i.e. where the fairway depth is below 2 m during 40-60 days/year, varies over the years due to the intense dynamics of the river, their approximate location is presented in the next map.



**Figure 6 Critical sections along Danube River**

Between the ports of Kelheim and Sulina, a total of 130 bridges span the international Danube waterway. Out of these 130 bridges, 21 are bridges over locks and weirs. By far the highest number of bridges, namely 89, can be found on the Upper Danube: 41 bridges span the German section of the Danube, 42 the Austrian and six the Slovakian sections of the Danube. On the Central Danube, there are a total of 34 bridges; on the Lower Danube, there are only seven.

There are in total of 18 river power plants on the Danube, with 16 of these being located on the Upper Danube due to the high gradient of the river between Kelheim and Gnyq. Fourteen of the eighteen in total lock facilities on the Danube feature two lock chambers, thus enabling the simultaneous locking of vessels sailing upstream-and-downstream.

All the lock facilities downstream of Regensburg feature a minimum utilizable length of 226 m and a width of 24 m, which enables locking of convoys made up of at least two pushed lighters which are coupled in parallel.

Locks constitute bottlenecks for inland navigation as the bundling of vessel traffic and the time-intensive process of locking delay the journey. Waiting times can be expected by vessels particularly before locking, as currently no long-term advance notification of a vessel's arrival at a lock is possible. Due to the short radio range, boat masters can only register for the locking process when they are already in the proximity of the lock facility. Therefore, vessels arriving at the lock are handled according to the principle of "first come, first served" (the only exceptions are liner services, which are given priority in some countries).

#### 4.2.4 Railway connections

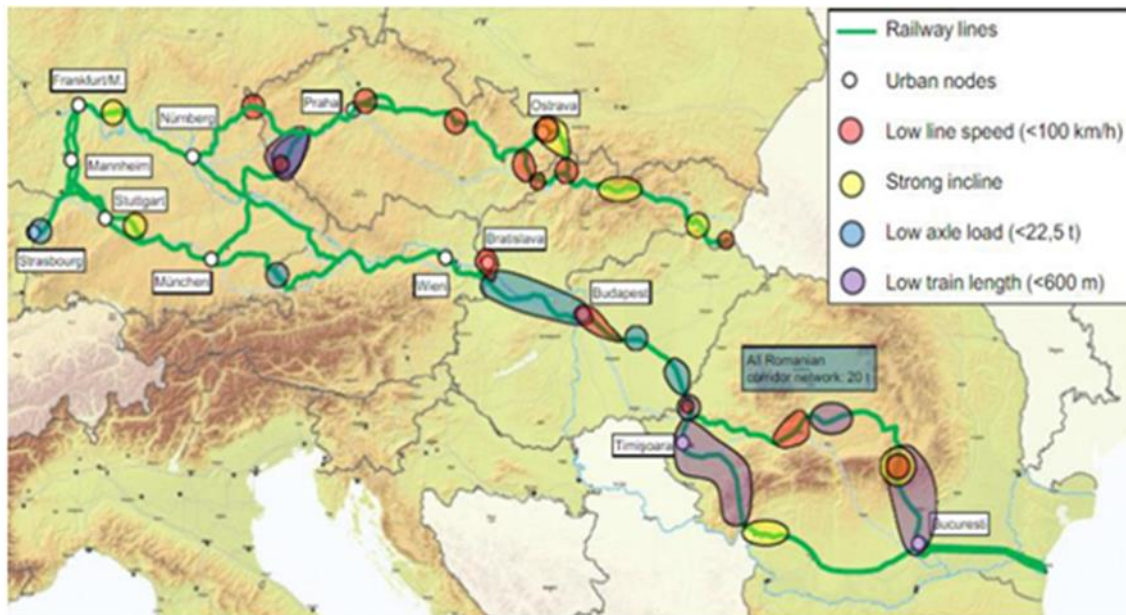
The analyses made identified the following shortcomings of the railway network in DBS hinterland:

- Single track sections (Figure 7)
- Non-electrified sections (Figure 7)
- Low speed sections (Figure 8)
- High inclination sections (Figure 8)
- Low axle load sections (Figure 8)
- Low train length sections (figure 8)
- Sections with capacity issues (figure 9).



**Figure 7** Single and non-electrified railway sections in DBS Gateway Region





**Figure 8 Railway alignment issues in DBS Gateway Region**



**Figure 9 Railway capacity issues in DBS Gateway Region**

The former Pan-European corridor X crosses Serbia and connects by railway the Serbian section of the Danube with Macedonia and Greece.

Currently, Serbian Railway company is making intensive investments and works for the reconstruction of the corridor. Serbian Railways launched the reconstruction and modernization works on different sections of the corridor that should be completed in two phases. Part of the reconstruction and modernisation works are performed by the Russian Railways and funded with resources from the loan Russia granted for the modernization of Serbian Railways, while other part of the reconstruction and modernisation works are performed by China Railways International and China Construction Company and funded from the loan from the China Export Import Bank. Works should be completed in 2023.



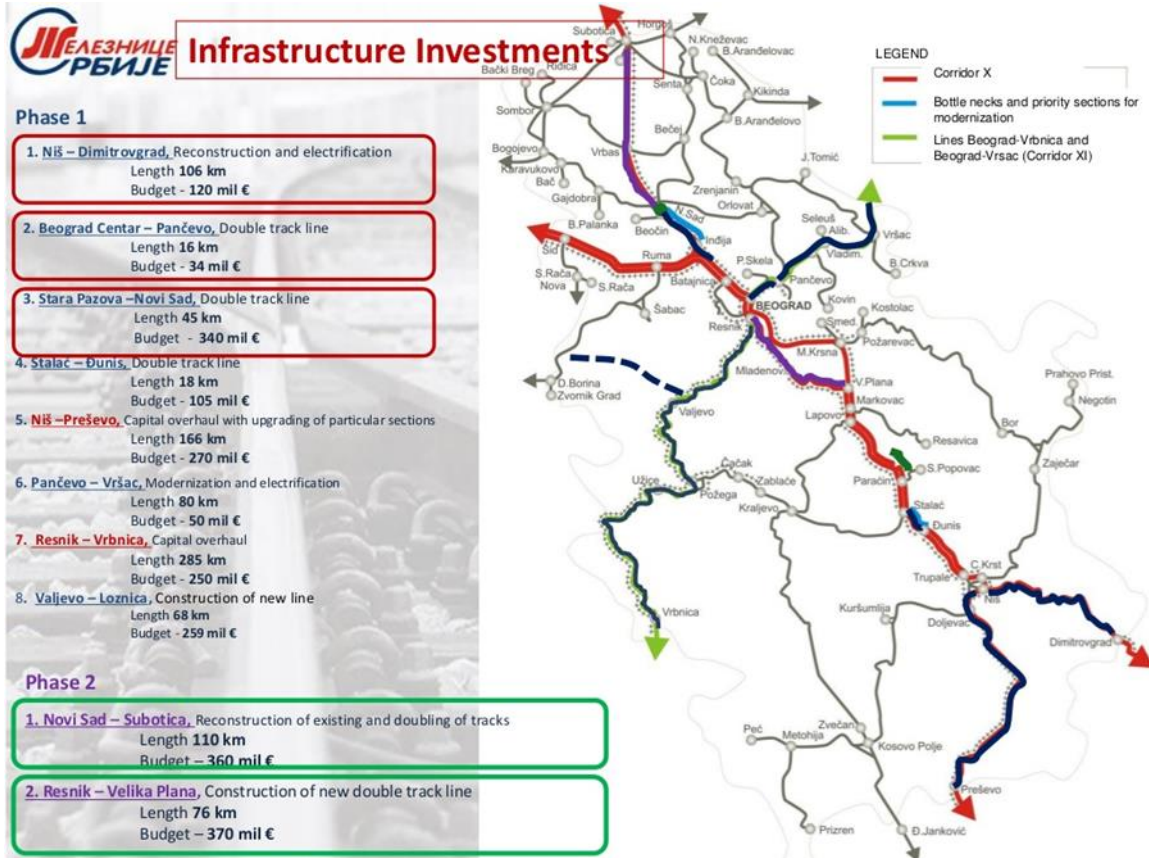


Figure 10 Railway network in Serbia

4.2.5 Road connections

Issues, such as critical road conditions and missing links, exist on the road network in the DBS section, as visualised in the next figure.



Figure 11 Road issues in DBS Gateway Region

In Serbia, the main Danube ports Novi Sad, Belgrade and Pančevo are directly connected with the road section of the former Pan-European corridor X and the proposed corridor XI, which with its four branches

connects the Danube region with the Adriatic ports of Koper, Rijeka and Bar, as well as with Thessaloniki and Istanbul. Critical sections on the former Pan-European corridor X through Serbia are under construction and reconstruction and will be finalized in December 2017. Critical sections on the proposed corridor XI through Serbia are under construction and most of them should be finalized until 2020.



**Figure 12 Road corridors via Serbia**

### 4.3 Summary of conclusions made in the analysed studies

#### 4.3.1 Impact of transport and logistics development trends

Transport and logistics development trends in general and their impacts towards the DBS Gateway Region were subject of a large number of studies. Hereunder, the conclusions of the most relevant to the topic of these are summarized<sup>24</sup>.

- **Efficiency of the IWW transportation directly depends on the fairway conditions**

Larger cargo volumes by vessel or convoy improve the relations between freight revenues and the cost and thus the overall competitiveness of inland waterway transport. This implies that there is a direct relationship between fairway conditions and the load factor of the vessel and, ultimately, the competitiveness of this mode of transport. Currently, minimum fairway conditions cannot be guaranteed on some sections of the Danube, resulting partly from poor planning, partly from the lack of adequate maintenance equipment and finally from a lack of financial resources.

***In order to enable Danube navigation to make use of its key strengths, waterway maintenance and ensuring reliable fairway depth remain indispensable tasks for all Danube countries.***

- **Unsatisfactory reliability could be offset by lower prices**

As central conditions for a transport shift, primarily time-related and price-related factors play a significant role. Thus, a lack of reliability due to water level fluctuations and ice formation, frequently handling and lack

<sup>24</sup> INWAPO, DaHAR, NEWS, ABD, GIFT, EMPIRIC

of flexibility represent clear obstacle for shifting goods transport from land modes to the Danube. Furthermore, the interaction between the factors time and costs is critical: if the offer regarding the costs would be accordingly attractive, some companies would accept a longer duration of the transport, especially if backup solution/s in case the Danube cannot be driven, for example due to low water levels, would be ensured.

***In order to achieve modal shift, a right balance between the price and level of services should be found.***

- **Ineffective port capacities and underutilised port infrastructure**

The main challenges for the ports along the Danube are their underutilization. The ports' capacities are far larger than what their usage statistics show.

***The optimization of ports and modernization of the service provided to the ports' users – could lead a better capacity usage.***

- **Specific market niches have specific needs**

Good rail and road conditions and connecting possibilities, as well as the medium-long distances from European core territory prevent the development of waterway transportation in many cases, even if it would be cheaper to tranship products or raw materials on waterway. That is why it is necessary not only to provide flexible and quick services by waterway, but to put more emphasis on the marketing, too. In some cases, the only option for transportation is waterways, especially for the transport of high and/or heavy goods (wind generators, construction machines, power transformers, generators and Ro/Ro goods such as harvesters, tractors, mobile cranes). These cargo types will ensure demands for the ports' services, but these can only be additional market for a liner service.

The availability of adequate, cargo specific handling and storage equipment at a certain port location is – in combination with the overall service quality provided in ports (opening hours, flexibility, etc..) – a decisive factor concerning the question whether a modal shift towards inland waterway transport can be achieved or not.

***Market needs combination of adequate services to be offered by shipping and port service providers.***

- **Need of port specialization**

The main objective of building the IWW ports into logistic chains is creating possibility of appropriate cargo handling (for the appropriate types of products) at any port. It is not reasonable, however, to invest in effective – but expensive - transshipment facilities (and in its equipment and infrastructure) on the shore due to the relatively low volume of IWT traffic on the Danube nowadays. The ports have to be modernized and adapted to the future transport market demands by addressing the following aspects:

- Port ownership and management,
- Warehousing, temporary storage, internal logistics,
- Material handling equipment (berths, cranes, transshipment facilities),
- Port services, operational procedures,
- Intermodality.

Regarding the ownership status of the ports, there are different models that should match the local particularities. Critical, however, is harmonization of local regulations shall with the EU ones. This shall go on so to provide for transparency and free competition.

A number of ports have only relatively small covered warehouses compared to its open-air storage places, especially in lower Danube regions. A sufficient number and capacity of such warehouses would enable further development of high added value activities at the ports. Private operators could play important role in establishing and further developing port facilities, which could considerably accelerate the improvement of service quality.

***Cooperation with private business could accelerate specialization of ports provided that open access to all operators in a non-discriminatory way is offered and transparent charges are applied.***

- **Developing from points for re-loading into logistic centres**

The current European transport system with its good and bad features has been developed in a way to cope with increasing transportation distances, which is specific for industrial development and globalization of the economy. The significance of intermodal transport is emerging continuously referring to the EU transport policies and especially in view of the present and the future problems of the other transport modes (e.g. environmental pollutions, traffic jams, land use of the infrastructure etc.) In contrary, the utilization of intermodal transport solutions still remains under their real potential. Solutions to the actual problems cannot be found within EU transport policy alone; the interaction of various policy areas has to be considered. Therefore, efforts should be made to propose such kind of logistic solutions which optimally utilize the specific advantages of the particular transport modes. It is expected, however, that in a long run, Ro-Ro cargo flows and services will be substituted with container flows and container handling services.

Distribution activities centred nowadays mainly in the western part of Europe are expected to shift eastwards to the gravity of the EU and logistic sector will follow this development.

***Developing waterway ports, where appropriate, into logistics hubs/distribution centres should be supported by means of ensuring appropriate economic conditions for such investments.***

- **Administrative burden harms the competitiveness of the waterway IWT**

Different regulations and administrative procedures regarding the traffic on inland waterways and transshipment operations as well as customs and border crossing procedures are being in force in almost every Danube riparian country. This situation causes delays in transport times and inappropriate working conditions at inland waterway ports accordingly it sets backwards the competitiveness of the IWT.

***Specific measures are to taken to address the administrative barriers imposed by national public authorities, such as: (i) Border Police, Tax and Customs; (ii) Navigation / traffic control authorities; (iii) Port authorities / administrations; (iv) Waterway and Canal administrations; and (v) Other relevant authorities imposing barriers (e.g. health control, disaster management, etc.)<sup>25</sup>.***

<sup>25</sup> DANTE Improving Administrative Procedures and Processes for Danube IWT deals in particularly with administrative barriers <http://www.interreg-danube.eu/approved-projects/dante>



- **New line services – stakeholders, incentives and subsidies**

Establishing a new line service, would require a shipping company or a consortium of shipping companies to assume the full responsibility for providing regular services and the corresponding stock of regular shippers. In case of such new services, active contacts with potential shippers are crucial. Transport market in the Danube region is strongly characterized by the involvement of forwarding companies active and they are expected to keep this role for new regular services, as well.

In contrast to the general opinion, introduction of subsidies transport on inland waterways to increase its efficiency, did not proved to be the right measure. Pilots showed that provision of subsidies for establishing and operating new liner service was not successful enough because liner services could not reach the critical volumes necessary for a profitable operation and were suspended after the subsidized period or even earlier. A great number of producing companies within the Danube area cannot raise the required number of containers themselves in order to load barges and thus, shuttle transports and round trips might be necessary.

***Active contacts with shippers and forwarders are prerequisite for successful development of new line services.***

#### 4.3.2 Future potential of the Region assessed by stakeholders

Within the WP 3 Activity 3.2 a number of workshops and interviews with stakeholders were carried out in all partner countries (Austria, Bulgaria, Croatia, Hungary, Romania, Serbia, and Slovakia), in order to learn about the requirements of the stakeholders for stepping into new markets, attracting new cargo flows to the Danube-Black Sea gateway and improve related business location policies. Detailed results are presented in detailed in a separate Report and are summarised hereunder in a table format.

Topic	Key statements
<p><b>Challenges faced when transporting on Danube River</b></p>	<p>Waterway navigability: bottlenecks, water level, environmental influences            Time is critical factor, slow cargo handling            Low reliability and due to whether/ climate conditions            High costs (higher than for land transport modes)            Unpredictable transportation costs            Availability of vessels might be a problem in certain periods            Missing or bad quality hinterland connections            Customs procedures (in non-EU MSs)            Administrative burden            Organisation and planning of transport            Obsolete and inefficient port infrastructure, lack of storage capacity            Labour legislation (in AT and DE)            Lack of integrated network management (ICT)</p>
<p><b>IWW transportation price level compared to road and rail</b></p>	<p>Current costs for IWW are higher compared to rail due to inefficient use of vessels            Total costs for the entire logistic chain should be lower compared to road (and even to rail)</p>
<p><b>Landlord ownership of Danube ports</b></p>	<p>Very good in AT, PPP models provide for development            Majority position of operators in SK distorts the market            Port ownership is not relevant to ports and IWT performance in HU            Ports should urgently be privatised in HR            Municipalities should be involved in new Black Sea ports development in BG            Landlord system provides for balance between the public and private interests in RO</p>
<p><b>Time and measures to trigger significant changes in Danube logistics</b></p>	<p>No significant changes are expected in 10-20 years period unless the navigability of the Danube River is improved and/or Black Sea and Caspian Sea markets will develop unexpectedly fast</p>



Topic	Key statements
<b>Expected traffic growth in 10-20 years perspective</b>	Slight but steady increase of total traffic up to 30% subject of meeting some conditions, the first of which being improved navigability, good maintenance of waterway and port infrastructure and superstructure  29% to 90% growth of container traffic in particular
<b>Commodities for which growth is expected</b>	Bulk and over-dimensional and heavy cargoes
<b>O/Ds to experience traffic growth</b>	East-West direction with origin/destination mainly from/to other European countries, i.e. for the moment no booming traffic to/from Caspian region and Asia is expected

#### 4.4 SWOT analysis of waterborne transport in Danube – Black Sea Gateway Region

The SWOT analysis presented hereunder is developed based on the results of Activity 3.1 and Activity 3.2 only as presented in summary here above<sup>26</sup>.

Internal factors	
Strengths	Weaknesses
High capacity of the IWW for transportation without daily and/or weekly restrictions	Marginal modal share
Low unit costs for the water section of the logistic chain	Poor navigation status in many sections of the Danube River, highly dependent on whether and climate conditions
Suitable for transporting of high volumes of bulk freight	Low transportation speed
Suitable for oversized and heavy cargoes	Low time reliability and predictability
Safe and secure transport	Medium to low costs reliability and predictability
The most environmental friendly mode of transport	Underutilised Danube ports which results in obsolete and inefficient infrastructure and superstructure
	Missing or poor-quality hinterland connections, incl. to the Black Sea ports
	Lack of regular liner services along the Danube River
	Shortage of qualified staff
External factors	
Opportunities	Threats
High economic potential and large number of population to be served in the DBS region	Production and consumption centres not suitably located with the port
Expected growth in logistic services in CEE countries	Customs and administrative procedures
Constantly growing demand for transport of containerised goods	Labour legislation in some of the countries
Strong involvement of customers and forwarders	Law awareness among customers and forwarders
Public Private Partnership for developing port infrastructure	Climate change
Active marketing, lobbying and awareness raising	

<sup>26</sup> Useful information could be found also in other ongoing projects, as for instance DANTE Improving Administrative Procedures and Processes for Danube IWT <http://www.interreg-danube.eu/approved-projects/dante>

Development of trade with Caspian area and Near and Middle East counties in medium perspective	
Enhancement of environmental protection policy measures	

**The strengths** of the waterborne transport in the DBS Gateway Region that give it advantage over the other transport modes are mainly related to the traditional way of transporting high volumes of relatively cheap bulk cargo from the origin to the destination without or with minimum as possible transshipment and further processing. Typical example of such goods is coal, ores, petroleum products, construction materials, etc. This kind of goods are usually not sensitive to the transit time, but are extremely sensitive to the costs. In the future it is important to preserve as much as possible this relative advantage because the demand for these goods first, guarantees a certain volume of freight traffic to further build on it, and secondly, is expected to grow up. Equally important is not to put it under risk by introducing additional financial or administrative burden, as for instance by introducing new requirements or charges, because this is a market niche railway transport competes successfully with IWT.

The biggest advantage of the IWT is the ability to transport the so-called project cargo, such as wind generators, construction machines, power transformers, generators, etc., which due to their size or weight, cannot be moved by land. The issue with this commodity, however, is their irregularity, and thus, building a traffic growth strategy based on such cargo only is unrealistic.

Waterborne transport is known as one of the safest and most secure transport modes, and this reputation should be carefully preserved by both transport and infrastructure operators by complying to respective safety and security rules and regulations.

**The list of weaknesses** of the IWT in the DBS Gateway Region, which place it a disadvantage relative to other modes, is long, but by far the most important of these is the **poor fairway condition** of the Danube River. This only weakness harms the effectiveness and the efficiency of the transportation. The reduced navigability is one of several, but the main cause for most of the other weaknesses identified, such as low reliability and predictability of transit times and costs, which ultimately result in low demand for transportation by IWW. No matter how other weaknesses will be addressed and how positively the external factors would develop, the first and the main pre-condition for developing the DBS Gateway transportation system is **to bring the Danube River in good navigation status and to further maintain it.**

Low transit speed is inherent characteristics of the waterborne transport in general and no measures could actually address this relative weakness, which is compensated by the relatively low transportation costs. This long time-low cost concept works for the heavy and cheap goods that are traditionally transported by waterborne transport. Attracting additional traffic from competing land modes is relevant to the demand within the DBS Gateway Region, because the goods to/from Caspian area and Asia would anyway reach the Region by sea.

In parallel to solving obstacles to navigability, measures are needed to modernise and, where necessary, to enhance the capacity of the existing ports in terms of storage and freight handling facilities. This shall be done in a smart way by considering the relative advantages and disadvantages of the existing infrastructure to handle specific commodities that are relevant to the port in question, instead of investing in many ports to compete between them for a modest volume of goods. In other words, specialisation of the ports in Region and better integrating them into the intermodal logistic chain is the way to increase the competitiveness of the entire transport system of the DBS Gateway Region.

Better integration of the IWW and Black Sea ports into the intermodal logistic chain, however, requires effective and efficient connections between the ports and the customers to be in place. This means ports should be developed as real intermodal and logistic centres offering in the best case a range of services, but in any case, good rail and road infrastructure connections to the big production and consumption centres.

The relatively low volume of current demand for transportation of containerised goods on the Danube is the reason for lack of supply of regular liner services. Indeed, the level of industrialization in the currently rather limited hinterlands of the existing ports eastwards of Budapest is such that a great number of producing companies cannot raise the required number of containers for a viable regular line. Establishment of shuttle transports and round trips could a solution.

Finally, the IWT sector as a whole faces staff problem and the DBS Gateway Region transport operators are not exemption. Some of the measures to address the problem are more general and related to social and economic development and thus, go beyond the sector itself. Nevertheless, urgent actions in collaboration with other sectors and/ or local or national governments need to be identified because solving the issue and educating new generation of qualified employees will take several years.

The socio-economic environment the waterborne transport in the DBS Gateway Region develops provides important **opportunities** to be exploit to its advantage. The first and the most important one, without any doubt, is the great economic potential of the Region, which is steadily developing. This guarantees growing transport demand, for which waterborne transport should more successfully compete for with the land modes. Intensification of trade between Europe and Caspian area and Near and Middle East countries is expected for many years already, and although there is no doubt whether these will develop, it is difficult to answer the question when these will develop. Nevertheless, the DBS Gateway should prepare itself for this and use the period to solve the identified shortcomings.

The increasing demand goes hand in hand with development of more sophisticated logistic services, which in the northwest part of the Europe are very well developed and are now being spread towards the DBS Gateway Region. It is important the waterborne transport to take the chance to present and as fully as possible integrate itself in the list of the logistic services. This would involve measures for improving the marketing, active lobbying and disseminating information for raising the awareness of both shippers and forwarders about the relative advantages of the waterborne transport in the Region and services offered.

Being one of the transport modes with lowest harmful emissions, the waterborne transport is ranked high in the EU Common transport policy. It is expected that it will be further promoted and the competing transport modes, especially the road one, will become in the future less attractive for the part of customers. At this moment the IWT should be ready to take over the goods to shift.

Besides the opportunities, the external environment put some **threats**, too, which could cause trouble for the IWT in the DBS Gateway Region. The problem with the location of the shippers should be addressed by measures for developing or improving the links to the hinterland and by integrating the ports into the logistic chain. Properly designed and implemented measures should enlarge the currently small ports' hinterlands so to provide bigger number of customers with access to ports and IWT services.

Customs and administrative procedures putting additional unnecessary burden to the IWT operators are difficult to be addressed unilaterally and thus, the countries in the DBS should cooperate to find the best solutions. Even if no change is possible, solutions for facilitating the procedures should be looked for and deployment of electronic communications and services could be one possibility.

Labour legislation aiming to protect the rights of the employees is perceived in some case as an additional burden, especially from financial point of view and might negatively influence the final transportation costs. From the other side, however, this usually aims at improving the labour conditions and this way address the issue with the lack of qualified staff.

The generally low awareness among the customers and forwarders about the IWT services impedes the access of the sector to new markets. Pro-active approach is needed so to inform the clients about the possibilities, terms and condition, and to enable them to consider the IWT as an option.

Finally, all the aspects of the human life are threatened by the climate changes, but IWT is more vulnerable to these changes because it is highly dependent of the weather conditions. According to the latest studies by the end of the century, the average temperatures the DBS Region are expected to increase between 2°C and 6°C and both the minimum and the maximum temperatures during all seasons are also expected to increase. The forecasts for the average precipitations are different for the different countries, but in the sections where biggest navigability problems are fact, the precipitations are expected to fall down by some 10%. In addition, the frequency of the adverse events such as storms and hails will increase. All these will not impact positively the waterborne transport and special measures are to be designed. Although each of the DBS countries has its own strategy for climate change adaptation, international coordination might be useful, as well.