



# Interreg



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## Danube Transnational Programme

### DAPhNE

## 4.1.5 Report on good practices regarding Danube ports processes

Work Package 4

Activity 4.1

PP responsible: UOC

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## Table of Contents

<b>Table of Figures .....</b>	<b>4</b>
<b>1 Scope of the document .....</b>	<b>5</b>
<b>1.1 Surveys on Danube port processes .....</b>	<b>5</b>
<b>2 European perspective on ports and relevant good practices .....</b>	<b>8</b>
<b>2.1 General aspects on European ports .....</b>	<b>8</b>
<b>2.2 Framework for provision of port services and common rules on financial transparency of ports .....</b>	<b>9</b>
<b>2.3 Application and modernization of the State aid rules .....</b>	<b>10</b>
<b>2.4 Planning, financing and funding of inland water transport and port infrastructure .....</b>	<b>11</b>
<b>2.5 Initiatives to simplify procedures in ports .....</b>	<b>12</b>
<b>2.6 Initiatives to rise environmental ports by promoting the exchange of good practices .....</b>	<b>13</b>
<b>3. Presentation of Danube ports (both from PP's and other riparian countries) 15</b>	
<b>3.1 Ukrainian Ports .....</b>	<b>15</b>
<b>3.2 Moldovan Port .....</b>	<b>17</b>
<b>3.3 Romanian Ports .....</b>	<b>18</b>
<b>3.4 Bulgarian Danube Ports .....</b>	<b>19</b>
<b>3.5 Serbian Ports .....</b>	<b>20</b>
<b>3.6 Hungarian Ports .....</b>	<b>22</b>
<b>3.7 Slovakian Ports .....</b>	<b>24</b>
<b>3.8 Croatian Danube Port .....</b>	<b>25</b>
<b>3.9 Austrian Ports .....</b>	<b>25</b>
<b>3.10 German Danube Ports .....</b>	<b>26</b>
<b>4. Best practices in Danube region (both from PP's and other riparian countries)</b>	
<b>29</b>	
<b>4.1 Best practices in connecting of the Danube ports .....</b>	<b>29</b>
<b>4.1.1 Best practices in Association of Inland Port Authorities .....</b>	<b>29</b>
<b>4.1.2 Best practices on improving the cooperation between Danube River administrations .....</b>	<b>30</b>
<b>4.1.3 Best practice in electronic reporting software .....</b>	<b>35</b>
<b>4.1.4 Best practices in the education of port managers .....</b>	<b>38</b>
<b>4.1.5 Best practices in legal harmonization of port processes .....</b>	<b>38</b>
<b>4.1.6 Best practices in the harmonization of customs and trade procedures in inland waterway ports .....</b>	<b>40</b>
<b>4.1.7 Good practices in the harmonization of legislation in ports .....</b>	<b>41</b>

<b>4.18 Best practices in the harmonization of maritime legislation on inland waters</b>	<b>42</b>
<b>4.2 Best practices in strengthening of Danube regions - Access point for harmonised data covering a wide-range of scientific issues and encompassing the whole Danube Region</b>	<b>44</b>
<b>4.3 Best practices in protection of the environment</b>	<b>44</b>
<b>4.3.1 Best practice in developing of Convention for Waste Management for Inland Navigation on the Danube, CO-WANDA project</b>	<b>45</b>
<b>4.3.2 Best practice in improving waste management along Danube through CO-WANDA Project</b>	<b>45</b>
<b>4.3.3 Best practice in pilot actions of CO-WANDA Project</b>	<b>46</b>
<b>4.3.4 Best practises in development of tools to improve environment protection on Danube – Acvadepol Colloquium</b>	<b>47</b>
<b>4.3.5 Best practices in sustainable waterway planning</b>	<b>48</b>
<b>4.4 Best practices in building prosperity</b>	<b>49</b>
<b>4.4.1 Best practices in public procuments</b>	<b>49</b>
<b>4.4.2 Best practices on the development of a technology and service oriented, energy-efficient intermodal port system</b>	<b>50</b>
<b>4.4.3 Best practices on the development of a port performance methodology</b>	<b>52</b>
<b>5. References</b>	<b>54</b>

## Table of Figures

Fig. 1 Danube region .....	15
Fig. 2 Ports in Ukraine .....	16
Fig. 3 Port of Giurgiulesti, Moldova .....	17
Fig. 4 Danube ports in Romania .....	18
Fig. 5 Danube ports in Bulgaria .....	20
Fig. 6 Danube ports in Serbia.....	21
Fig. 7 Danube ports in Hungary.....	22
Fig. 8 Port of Bratislava (left) and Komarno (right) .....	24
Fig. 9 Port of Vukovar .....	25
Fig. 10 Port of Vienn.....	25
Fig. 11 Port of Regensburg .....	27
Fig. 12 Photo of Danubeportal .....	33
Fig. 12 Danube D4D portal .....	34
Fig. 13 RIS in Austria.....	36
Fig. 14 DoRIS Portal .....	37

## 1 Scope of the document

DAPhNE aims to contribute to the balanced development of the Danube ports, which will be imposed in the region as multimodal transport centers, accessible and in harmony with the environment.

The objective is that the Danube ports become strong economic centers and turn into real catalysts for economic growth and job creation.

A permanent work platform will be set up within the project, which will manage the issues with recommendations, guidelines and pilot activities based on examples of good practice embodied in a development strategy and work plan.

The solutions developed by the consortium will be made available to over 60 Danube ports as possible execution plans.

Transnational integration as well as improved co-ordination through pilot actions and working tools developed by members of the port communities will lead to common solutions for the revision and harmonization of port legislation, administration and port management across the Danube area.

The objective of work package 4 of DAPhNE Project is to analyze the procedures that port authorities/administrations apply to vessels and terminal operators as well as to other users of port infrastructure and services, and its goal is to determine what aspects need to be simplified, modified, and eliminated to increase efficiency and reduce the red tape in connection to port administration processes.

To this end, surveys were conducted in five countries and the survey results were incorporated in five national reports. Main findings of these reports, such as best practices and aspects taken into consideration for recommendations, are included into this report.

### 1.1 Surveys on Danube port processes

In principle based on Article 107 (1) of the Treaty on the Functioning of the European Union (TFEU), any aid granted by a Member State or through state resources in any form is generally prohibited. The reason of the prohibition is that state aid distorts or threatens to distort competition in the internal market.

The national reports had as main goal to analyze the procedures that port authorities/administrations apply to vessels and terminal operators as well as to other users of port infrastructure and services and is to determine what aspects need to be simplified, modified, and eliminated to increase efficiency.

The research was carried out in five countries: Austria, Hungary, Croatia, Bulgaria and Romania, in relevant ports selected on the basis of criteria such as: cargo throughput, the connection with the transport corridors, the development of the port infrastructure, etc.

In order to prepare the report, a number of two questionnaires were developed and used, one for port administrations and the other one for the port users.

The port users interviewed for the research included:

- Terminal operators;
- Ship owners;
- Ship agent;
- Cargo shippers/ cargo owners;
- Forwarding companies;
- Road/ railway transport companies;
- Inspection companies;
- Other (e.g. classification societies).

Particularities and disparities between ports are generated by the following aspects:

- Direct access to seagoing ships' routes (case of Port of Constanta);
- Total cargo throughput;
- Hinterland connections;
- Infrastructure development;
- Hinterland potential economic development;
- Level of co-operation among port stakeholders.

Ports have the ability to operate almost all types of goods, but their traffic is still linked to the economic characteristics of their hinterland.

There is a real need in the hinterland for the development of container traffic, but the navigation conditions on the Danube and the development of the infrastructure are still barriers to be addressed in the next future.

The port processes analyzed are considered to be of medium complexity, and their improvement is primarily due to the cooperation capacity of port stakeholders.

Initiatives to harmonize administrative procedures and to address port processes are rarely found, most of them being the result of projects implemented or under implementation.

Even if the operation of a quality management system is not a legal requirement, usually the port administrations operate such a system, and in some cases this is integrated with another one or two other management systems based on international standards.

The processes considered as improved by port administrations during the last 10 years are:

- Managerial planning
- Integrated management policy
- Planning and control of risks
- Providing port services
- Communication with port stakeholders
- Ships' moving monitoring.

There is still a high level of expectation regarding the harmonization of practices along the Danube, so that port users can optimize their specific activities.

The area considered to have an increased need for improvement remains the procedure for inspection of the ship at arrival in port.

A better communication between institutions from different European countries could be a solution. Also, the use of information systems to allow for better reporting and monitoring is strictly needed.

Extending of the good practices from Danube ports to other similar ports is also a good opportunity for improvement.

For many ports the main source of developing good practices proved to be the European projects implemented or being under implementation.



## 2 European perspective on ports and relevant good practices

### 2.1 General aspects on European ports

The ports are key points on transport corridors, playing an important role in commodity exchanges but also in connecting peripheral areas. 74% of goods entering or leaving Europe go by sea, and Europe has the most developed port facilities in the world. 400 million passengers embark and disembark in European ports every year. Ports generate employment; 1.5 million workers are employed in European ports, with the same amount again employed indirectly across the 22 EU maritime Member States<sup>1</sup>.

Administrative barriers and inadequate flows of goods, as well as the lack of an infrastructure to provide effective connections with the hinterland, are important issues at European level, taking into account the additional costs and the increase in the level of pollution generated by these issues.

The European Commission adopted on 23 May 2013 an initiative aimed at improving port operations and onward transport connections at the 329 key seaports which belongs to the trans-European transport network.

The main legislative measures and non-legislative measures considered to implement this initiative are as follow:

- Regulation (EU) 2017/352 of the European Parliament and the Council of Ministers establishing a framework for the provision of port services and common rules on the financial transparency of ports
- Application and modernization of the State aid rules, in the context of the competition policy
- Promotion and support of the European social dialogue between port workers and their employees and of training
- Support to better planning, financing and funding of port infrastructure and their connexions in the trans-European network
- Initiatives to simplify procedures in ports
- Initiatives to raise the environmental of ports by promoting the exchange of good practices.

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<sup>1</sup> [https://ec.europa.eu/transport/modes/maritime/ports/ports\\_en](https://ec.europa.eu/transport/modes/maritime/ports/ports_en)

## 2.2 Framework for provision of port services and common rules on financial transparency of ports

The concerns of the main port actors to have balanced competition conditions and adequate framework for increasing investment in ports led to the adoption last year of the regulation *Regulation (EU) 2017/352 of the European Parliament and the Council of Ministers establishing a framework for the provision of port services and common rules on the financial transparency of ports*.

This regulation taken into consideration among others the need that the ports, fully integrated in transport and logistics chains, to contribute to growth and a more efficient use of the trans-european transport network.

This requires modern port services that contribute to the efficient use of ports and a climate favourable to investments to develop ports in line with current and future transport and logistics requirements.

It was considered that facilitating access to the port services market and introducing financial transparency and autonomy of maritime ports will improve the quality and efficiency of the service provided to port users and contribute to a climate that is more favourable to invest in ports.

The regulation intends to lead to reduce costs for transport users and to contribute to the promotion of short sea shipping and a better integration of maritime transport with rail, inland waterway and road transport.

Another aspect is related to the need of simplification of custom procedures in order to create economic advantages of ports in terms of competitiveness. That is way it is encouraged the adoption of an effective risk-based approach by the custom authorities.

It is considered that the establishment of a clear framework of transparent, fair and non-discriminatory provisions relating to the funding of and charges for port infrastructure and port services plays a fundamental role in ensuring that a port's own commercial strategy and investment plans.

The regulation does not impose a specific model for the management of ports and do not intends to limit the managing body of the port in setting up its charging system, as long as the port infrastructure charges are transparent and contribute to the maintenance and development of infrastructure and service facilities.

The ports are supposed to define in an appropriate way minimum requirements for the performance of services, having in view the interest in efficient, safe and environmental sound port management. Such requirements should contribute to higher quality of port services and should not introduce market barriers.

All port services providers are expected to be able to demonstrate their availability of necessary staff and equipment.

Due to the complexity and competitiveness of the port services sector, initial and periodic training of staff is considered essential to ensure the quality of services and to protect the health and safety of port workers.

## 2.3 Application and modernization of the State aid rules

DAPhNE project addressed the State aid for investments in ports in Work Package 3. National reports for all 5 Danube countries involved into project implementation were prepared. In the reports were included specific recommendations.

Together with national regulation, the elements that have been taken into account when defining such schemes are:

- Commission Regulation (EU) No. 1084/2017/14 June 2017 amending Regulation (EU) No. 651/2014 with respect to aid for port and airport infrastructures, notification thresholds for crop and for heritage conservation, aid for sport infrastructure and multifunctional leisure facilities, as well as regional operating aid schemes for the outermost regions and amending Regulation (EU) No. 702/2014 as regards the calculation of eligible costs;
- Regulation (EU) No.1303/2013 of the European Parliament and of the Council of 17 December 2013 laying down common provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund, the European Agricultural Fund for Rural Development and the European Maritime and Fisheries Fund as well as for laying down general provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund and the European Maritime and Fisheries Fund and abrogating Regulation (EC) No. Council Regulation 1083/2006;
- Large Infrastructure Operational Program 2014-2020, approved by European Commission Decision No. C (2015) 4823 of 9.07.2015;
- Commission Regulation (EU) No. 651/2014 of 17 June 2014 declaring certain categories of aid compatible with the internal market pursuant to Articles 107 and 108 of the Treaty;

The State aid schemes for investments in the port infrastructure and in the intermodal / multimodal local infrastructure related to the Large Infrastructure Operational Program (POI 2014-2020) have as objectives:

- Increasing the use of waterways and ports on the central TEN-T network,

- Developing a multimodal, quality, sustainable and efficient transport system,
- Increasing the volume of goods transited through intermodal terminals and ports.

Transparent state aid schemes for investments in the infrastructure of the maritime and inland ports and in the intermodal / multimodal local infrastructure are established, in order to improve the quality of the infrastructure, increase the safety of the river and sea transport and the uninterrupted operation throughout the year, as well as to make investments in local infrastructure specific to intermodal terminals, resulting in increased intermodal transport attractiveness, the integration of ports into efficient transport and logistics chains, increased volume of goods handled in units intermodal ports and ports, in order to contribute to economic growth and more efficient use and operation of the trans-European transport network.

The State aid scheme to which reference is made does not fall under the obligation of notification to the European Commission (Commission) 108 par. (3) of the Treaty, on the basis of Art. 56b, art. 56c and art. 56 of Regulation (EU) No. 651/2014, as amended and supplemented by Regulation (EU) No. 1084/2017.

The objectives of such a state aid scheme could aim at:

- a) modernization and development of the port infrastructure in maritime and inland ports,
- b) modernization/development of the access infrastructure to maritime and inland ports,
- c) dredging activities in the maritime and inland ports,
- d) construction/modernization of intermodal and multimodal terminals at the priority sites through the Master Plan of Transport.

## **2.4 Planning, financing and funding of inland water transport and port infrastructure**

The ports are integrated into the corridor work plans as it is described in the guidelines for the development of the trans-European transport network<sup>2</sup>.

The European Commission provides targeted grants and other forms of financial supports to port infrastructure projects by using the Connecting Europe Facility<sup>3</sup>. More than € 1 billion have already been awarded since 2014 to support rail or inland waterways connecting ports with the hinterland, basic port infrastructure, innovation and green port projects.

The report issued by INEA<sup>4</sup> in February 2018 shows that the inland waterway portfolio in the Rhine Danube Corridor consists of 24 Actions, receiving €381.9 million in CEF Transport

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<sup>2</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>3</sup> [https://ec.europa.eu/transport/themes/infrastructure/ten-t-guidelines/legal-basis\\_en](https://ec.europa.eu/transport/themes/infrastructure/ten-t-guidelines/legal-basis_en)

<sup>4</sup> CEF support to Rhine-Danube corridor, European Commission, Innovation and Networks Executive Agency, February 2018

funding, which aim at establishing and maintaining a good navigation status along the Danube and the Sava rivers.

The Corridor Flagship Action, "FAIRway Danube" (2014-EU-TMC-0231-S, 2014-EU-TM-0219-S), is addressing the provision of on-time harmonized information about the Danube shallow sections, water levels and water level forecasts to identify maintenance priority measures and the implementation of large scale work measures to ensure and improve good navigation status along the whole Danube.

Targeting 6 major bottlenecks, the other CEF-funded IWW projects concentrate mainly on three areas of intervention: upgrade and construction of infrastructure, studies with pilots addressing environmental concerns and the implementation of RIS along the whole Danube.

Several bottlenecks resulting in unreliable, unsafe and non-compliant navigation infrastructure are being tackled through works actions, namely: the reconstruction of the cross-border Komarno- Komarom Bridge (2014-EU-TMC-0485-W) and Gabčíkovo lock (2015-SK-TM-0151-W) or the upgrade of the inland ports of Giurgiu (2014-RO-TMc-0313-W) and Galati (2015-RO-TM-0275-W).

The other group of Actions aims at ensuring a long term good navigation status side by side with a good ecological status (GES) along three stretches of the Danube and the Sava rivers (Romanian-Bulgarian and Hungarian-Slovakian common sections: Actions 2014-EU-TMC-0297-S and 2016-SK-TMC-0263-S, Croatian Sava 2014-HR-TMC-0122-S).

## 2.5 Initiatives to simplify procedures in ports

In order to ensure efficient ship port calls and the increasing of throughput of cargo European Commission considers that improving the digital information flows and reducing administrative burden are very important.

The solution will be European Maritime Single Window<sup>5</sup>, which will facilitate the use of digital information improving the efficiency, attractiveness and environmental sustainability of the maritime transport and contributing to the integration of the sector to the digital multimodal logistic chain.

On 20 October 2010, the European Parliament and the Council adopted Directive 2010/65/EU on reporting formalities for ships arriving in and/or departing from ports of the Member States. This directive is more commonly known as the Reporting Formalities Directive (RFD).

The objective of the RFD is to simplify and harmonise the administrative procedures applied to maritime transport and it sets an obligation for Member States to establish National Single

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<sup>5</sup> [https://ec.europa.eu/transport/modes/maritime/digital-services/e-maritime\\_en](https://ec.europa.eu/transport/modes/maritime/digital-services/e-maritime_en)

Windows (NSW) for reporting formalities from ships arriving in and/or departing from ports by 1 June 2015 for 14 reporting formalities.

## 2.6 Initiatives to rise environmental ports by promoting the exchange of good practices

As part of its research and innovation agenda the European Commission launched in 2016 the "Port of the Future" call as part of the Horizon 2020 programme<sup>6</sup> to encourage innovation in ports and the links with port cities.

The Work Programme *Smart, green and integrated transport*, adopted through *European Commission Decision C(2017)2468 of 24 April 2017*, includes the following four board lines:

- a) **Resource efficient transport that respects the environment.** The aim is to minimise transport's systems' impact on climate and the environment (including noise and air pollution) by improving its efficiency in the use of natural resources, and by reducing its dependence on fossil fuels and energy imports.
- b) **Better mobility, less congestion, more safety and security.** The aim is to reconcile the growing mobility needs with improved transport fluidity, through innovative solutions for seamless, inclusive, affordable, safe, secure and robust transport systems that make full use of modern ICT capabilities.
- c) **Global leadership for the European transport industry.** The aim is to reinforce the competitiveness and performance of European transport manufacturing industries and related services on global markets including logistic processes and retain areas of European leadership (e.g. such as aeronautics).
- d) **Socio-economic and behavioural research and forward looking activities for policy making.** The aim is to support improved policy making which is necessary to promote innovation and meet the challenges raised by transport, including the internalisation of external costs, and the societal needs related to it. Socio-economic research is also an important instrument for reaching the objectives under this programme.

The section 2 of the programme addresses the waterborne transport.

The specific challenge of Port of the Future is described as follows:

*Ports are a major example of hubs' need for modernisation. Ports are essential for the European economy as a global player and for the internal market. They are a main catalyst for regional development and their optimisation and inclusion in the territory is fundamental to ensure that*

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<sup>6</sup> <https://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/mg-7-3-2017.html>

*efficient operations will not affect negatively the surrounding areas, including city-port relations and the smart urban development of Port Cities. Specific issues (like dredging, emission reductions, and energy transition, incl. electrification, smart grids, port-city interface and the use of renewables management and emissions) are combined with other challenges common to all multi-modal terminals.*

The research financed by the programme is related to implementation of new port concepts, new management models, and innovative design, engineering, construction and operation technologies solutions for full customer, stakeholder and citizen satisfaction.

Inland waterways are declared as deserving a particular attention.



### 3. Presentation of Danube ports (both from PP's and other riparian countries)

The Danube Region extends over 14 countries, nine of which are EU Member States. As shown in the Danube Region Strategy, although the countries are different in terms of economic strength, the region is strongly interlinked, with potential for further integration and growth.

The Danube region hosts the world's most international river, which is a major transport axis, a crucial interconnected hydrological basin, and a worldrenowned ecological corridor. Thus, the region is connected through both opportunities and challenges.



Fig. 1 Danube region  
(Source: <http://ec.europa.eu>)

The policies of the countries are interdependent, however they can all benefit greatly from improved cooperation in, for example, completing missing transport links, reducing pollution and danger from floods, lowering dependency on energy providers from outside the region, and addressing demographic change or the brain drain.

The Danube ports represent the engines of the economy in the area where they are located, as well as important transport nodes, which contribute to the connectivity of the entire basin

#### 3.1 Ukrainian Ports

There are three relevant ports on Danube River in Ukraine, all located in the north part of Danube delta and administrated by the Ukrainian Sea Ports Authority. There is one more port,



port of Kiliya, located at Km 1366 n left bank of Danube's arm, with same name, with local economic importance, specialised in handling of dry and break bulk.

**Port of Ust - Danube** –is a sea port located in the north part of the Danube Delta (connected to Danube River through Prirva River) used for transshipment of cargoes from sea vessels on the river vessels for further transportation on Danube. The area of the port is 15 hectares and there is one quay of 150 m length in the river side of the port, the turnover capacity being of 4.7 mil. of carog, especially bulk cargoes: ore, ore concentrates and grains.

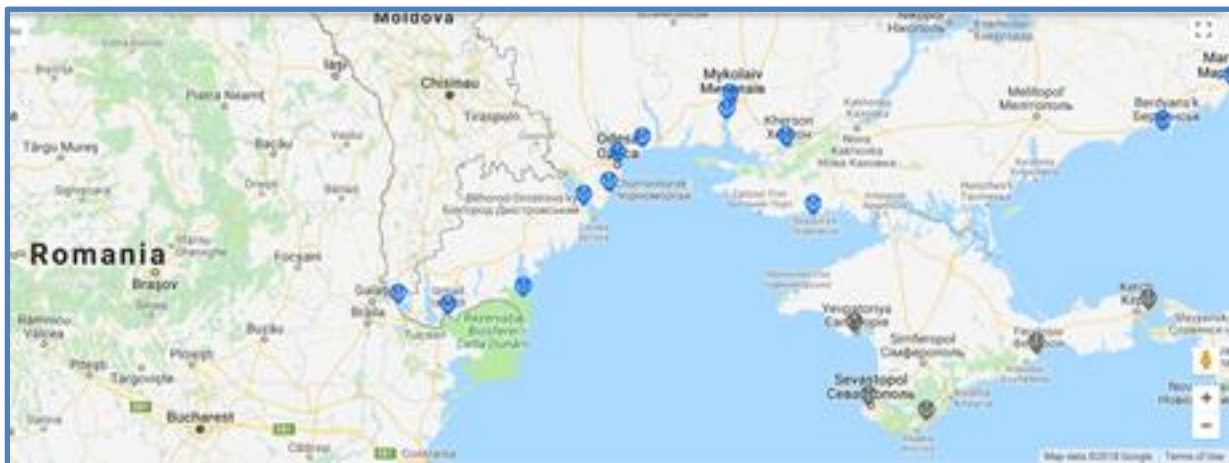


Fig. 2 Ports in Ukraine  
 (Source: <http://investinports.com/en/>)

**Port of Izmail** –is located on the left bank on Kiliya mouth of the Danube at Km 85 being one of the most modern and highly mechanised ports on the Danube River, having an area of 107,5 hectares and 24 berths in length of 2618 m.

The storing capacity consists in area of open spaces of 201,100 m<sup>2</sup>, covered spaces of 19,700 m<sup>2</sup> and the capacity of handling and lifting equipment of Izmail is up to 8.5 mil. tons of cargo per year. The port of Izmail is divided in three terminals, as follows:

Terminal 1 - specialised for packaged cargoes in bags, equipment, agricultural machines, metals, packed cargoes and grain, with a capacitiz of 1,2 mil. tons per year,

Terminal 2 – specialised for handling bulk cargoes: ore, coal, coke, concentrates, iron ore, pellets, metal products, grain and containers, with an annual capacity of 5,4 mil. tons,

Terminal 3 - handle bulk and general cargoes: equipment, coal, metal, ore, and grain.

**Port of Reni** –is located on the left bank of the Danube between Km 123.6 and Km 128.3 covering a total area of 940,000 m<sup>2</sup> and a length of quay of 3927 m.

The storing facilities includes 30,000 m<sup>2</sup> of covered spaces, 195,000 m<sup>2</sup> of open spaces in three cargo areas, oil handling site and one ferry terminal.

Cargo area 1 is specialised in handling of metal produscts, scrap metal, genral cargoes, bulk chemicals and cereals, using a berthing lentgh of 960m and a year capacity of 1 mil.tons,

Cargo area 2 is specialised in handling of metal products, scrap metal, grains, timber, petroleum products, general and bulk cargoes and chemicals, using a berth length of 1,960 m and a year capacities of 25,5 mil. tons,

Cargo area 3 is dedicated of bulk cargo – ore, coal – with an annual capacity of 2 mil. tons.

The oil harbour use 258 m of berth and has capacity of handling of 1,8 mil. tons of oil products.

### 3.2 Moldovan Port

Moldova has a very limited shore on the Danube River (450 m), and for this reason only one port was developed, in the vicinity of Romanian port of Galati and the Ukrainian border in east side.



Fig. 3 Port of Giurgiulesti, Moldova  
(Source [www.gifp.md](http://www.gifp.md))

**Port of Giurgiulesti** – is located on the left bank of Danube at Km 133.8, covering an area of 1,200,000 m<sup>2</sup> is in continuous development due to the link to the maritime sector of the Danube, becoming a logistic hub for the region.

The entire territory of the port has a status of a free economic zone until 2030 and the handling operations are performed in the following terminals:

Terminal of oil products consists in eight tanks with 63,600 m<sup>3</sup> and facilities for loading/unloading maritime vessels, the annual transshipment capacity being of 1 mil. tonnes.

Container and general cargo terminal has a quay of 160 m, 500 TEUs storing capacity and an annual turnover of 30,000 TEUs.

Grain terminal of Giurgiulesti has a storage capacity of 50,000 tons and vessel up to 7,000 dwt can be successfully operated.

Vegetable oil terminal has a storage capacity of 6,000 tons and can operate vessels up to 10,000 dwt.

### 3.3 Romanian Ports



Fig. 4 Danube ports in Romania  
(Source: [www.ria.org.ro](http://www.ria.org.ro))

In Romania the Danube Ports are administrated by three port administrations. For this project six relevant port have been considered to collect and collate data, as follows:

**Port of Constanța** – administrated by the National Company “Maritime Ports Administration” of Constanta, is a sea port located on the Western coast of the Black Sea and connected with the Danube River through the Danube-Black Sea Canal.

The Port of Constanta contains 33 terminals and 156 berths, uses a surface of 39,260,000 m<sup>2</sup> and performs an annual (maritime and inland water) throughput of 60 mil. tons, but the capacity for turnover is 120 mil. Tons, this can be achieved by all types of transport - road, railway and air.

**Port of Galați** – administrated by the National Company “Maritime Danube Ports Administration” – Galati, is the largest Romanian river-sea port, located on the left bank of the Danube river, between Km 157 and Km 144.

The Port of Galati includes a total surface of 864,131 m<sup>2</sup>, having 4 terminals and 56 berths with 28.4 mil. Tons capacity for cargo turnover.

**Port of Brăila** – administrated by the National Company “Maritime Danube Ports Administration” – Galati, is the second river-sea port of the Danube, situated 19.2 km from Galati, between Km 167 and Km 175.

The Port of Braila, has one terminal and 25 berths on a total surface of 398,630 m<sup>2</sup>, which allows 2.8 mil. Tons capacity for cargo turnover.

**Port of Tulcea** – administrated by the National Company “Maritime Danube Ports Administration” – Galati, is one of the largest and most important Romanian river ports situated on the right bank of the Danube, between km 70.0 and km 73.5 including the Industrial and Commercial sectors.

The Port of Tulcea has one terminal and 41 berths on a total surface of 82,762 m<sup>2</sup>, with 1.99 mil. Tons capacity for cargo turnover.

**Port of Giurgiu** – administrated by the National Company “Administration of Danube River Ports” – Giurgiu, is located on the left bank of the Danube at km 489-497. The port is considered to be the port of the TEN-T central network and it is located at the intersection of the Danube River and Corridor IX, which is on the north-south route between the Baltic countries and Bulgaria, Greece and Turkey.

The Port of Giurgiu has one terminal and 23 berths, on a total surface of 393,035 m<sup>2</sup>, with 2.5 mil. Tons capacity for cargo turnover.

**Port of Drobeta-Turnu Severin** - administrated by the National Company “Administration of Danube River Ports” – Giurgiu, is located on the left bank of the Danube at km 927-934 near the water storage Hydroelectric and Navigation Complex Portile de Fier 2.

The Port of Drobeta-Turnu Severin has two terminals and 7 berths, on a total surface of 137,592 m<sup>2</sup>, with 0.5 mil. Tons capacity for cargo turnover.

### 3.4 Bulgarian Danube Ports

In Bulgaria there are two relevant Danube Ports, administrated by Bulgarian Ports Infrastructure Company, through Branches -Territorial Directorates, as follows:

**Port of Ruse** – administrated by Branch -Territorial Directorate Ruse, includes terminals of ports of national importance, grouped as follows:

- (1) Port terminals Ruse – 3 terminals and 29 berths, on a total surface of 242,800 m<sup>2</sup>, with 4.5 mil. Tons capacity for cargo turnover.
- (2) Port terminal Silistra – one terminal with 3 berths designed for passengers.
- (3) Port terminal Tutrakan – one terminal with two berths, on a total surface of 2,500 m<sup>2</sup> and 100,000 tons capacity for cargo turnover.
- (4) Port terminal Shishtov – one terminal with 8 berths, on a total surface of 22,800 m<sup>2</sup> and 1 mil. Tons capacity for cargo turnover.
- (5) Port terminal Somovit – one terminal and 3 berths, on a total surface of 11,875 m<sup>2</sup> and 500,000 tons capacity for cargo turnover.
- (6) Port terminal Nikopol – one terminal designated for ro-ro and ferry services.



Fig. 5 Danube ports in Bulgaria

**Port of Lom** – administrated by Branch -Territorial Directorate Lom, includes terminals of ports of national importance, grouped as follows:

- (1) Port terminals Lom – one terminal and 13 berths, on a total surface of 64,343 m<sup>2</sup>, with 2.5 mil. tons capacity for cargo turnover.
- (2) Port terminal Oryahovo – one terminal with 3 berths on a total surface of 5,362 m<sup>2</sup>, with 0.5 mil. tons capacity for cargo turnover.
- (3) Port terminal Vidin – 4 terminals with 10 berths on a total surface of 28,000 m<sup>2</sup>, with 0.8 mil. tons capacity for cargo turnover.

### 3.5 Serbian Ports

There are nine Serbian ports opened for international traffic and all are owned by the Republic of Serbia. The Danube ports have a relative poor infrastructure and outdated superstructure affecting the efficiency of cargo handling and the multimodal traffic is at a low level.

**Port of Prahovo** –is located on the right bank of the Danube at Km 861, covering an area of 70,473 m<sup>2</sup>, has a quay of 560 m long, indoor storage spaces of 2,000 m<sup>2</sup>, outdoor storage spaces of 6,000 m<sup>2</sup> and has rail connexion with the national railway network. The main cargos handled in the port are: dry bulk, break bulk and liquid bulk through a small facility. The volumes of handling operations in the port of Prahovo was up to 350,000 tonsper year. (until 2015 - <http://www.aul.gov.rs/folder/strategy.pdf> )

**Port of Smederevo** –is located on the right bank of the Danube at Km 1111, known as New Port, with five mooring places for simultaneous accomodation of ships along a 572 m of quay. The volumes of cargo was up to 4 mil. tons of raw materials and finished products of steels



(output of Steel Plant). There is an advanced plan for expansion of the bulk and general cargo terminal at the port of Smederevo including also a container terminal.

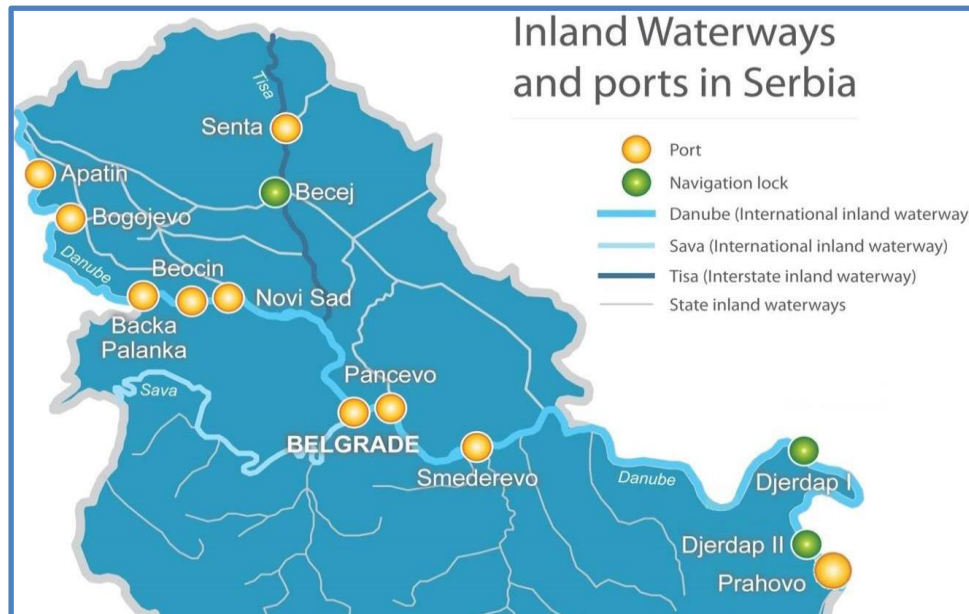


Fig. 6 Danube ports in Serbia

Source: [www.aul.gov.rs](http://www.aul.gov.rs)

**Port of Pancevo** –is located on the left bank of the Danube at Km 1153, and is one of the most developed ports in Republic of Serbia with respect to its infrastructure and handling operations. The port cover an area of 21 hectares and has a vertical quay of 860m in length, able for nine mooring places simultaneously.

The port of Pancevo has 40,000 m<sup>2</sup> of closed spaces and 100,000 m<sup>2</sup> of open storage area and the annual volume of cargo handled was upt ot 800,000 tons of grains, metal products and scrap irons.

**Port of Belgrade** –is located on the right bank of the Danube at Km 1168, with a water area of 11 hectares and a length of quay of 940m. There is one public storage which has 200,000 m<sup>2</sup> of indoor and 600,000 m<sup>2</sup> of outdoor storage facilities and one container terminal.

The cargo structure is dominated by general cargo and there is one limitation for port expansion and traffic of bulk cargo because of the vicinity of the city, in this moment the port being in the urban environment. The annual capacity of handling is 3 mil. tons of various goods and 10,000 TEUs.

**Port of Novi Sad** –is located on the left bank of the Danube at Km 1254, at the entrance of the Danube-Tisza-Danube Canal (DTD Canal) and play an important role in the Serbian industry recognized by Regulation 1315/2013/EU and classified as *inland core port* within the “EU Commission Study on TEN-T Rhine-Danube Core Corridor”.

The port has an aquatorium of 6 hectares and the length of quay is 800m with five simultaneous mooring places. The Port of Novi Sad disposes of 44,000 m<sup>2</sup> close and 100,000 m<sup>2</sup> opened

spaces and oil products storing capacity of 270,000 m<sup>3</sup> and the last turnover reported in 2016 was 1,180,000 tons of various commodities. (In year 2017 was recorded a increase of 16% of total cargo transshipment and passenger transport on the rivers in Serbia).

**Port of Backa Palanka** –is located on the left bank of the Danube at Km 1295 and is a basin type port with a water area of 5.2 hectares and 322 m length of the quay meaning three mooring places for simultaneous accomodation of vessels.

The port of Backa Palanka is not connected to the national railway network and the storage facilities consists in 8,260 m<sup>2</sup> of open spaces and 650 m<sup>2</sup> closed spaces. The types of cargo handled in the port are bulk commodities including construction materials, metallurgy products, heavy loads and general cargo.

**Port of Bogojevo** –is located on the left bank of the Danube at Km 1366 and is an open-type port with a quay length of 167. The port is equipped with a silo of 30,000 tons and a closed space storing place of 7,500 m<sup>2</sup>.

The main types of cargo handled in port are grains, chemical fertilizers, gravels and sand with annual reported volumes between 200,000 and 300,000 tonnes.

**Port of Apatin** –is located on the left bank of the Danube at Km 1401 and is an canal-type port with an area of 1 hectare and a quay in length of 240 m. The port is not connected to railway network and there are only open spaces for storing with an area of 25,000 m<sup>2</sup>.

The commodities usually handled in the port of Apatin are only bulk - sand, gravel and grains – due to existing operating facility.

### 3.6 Hungarian Ports

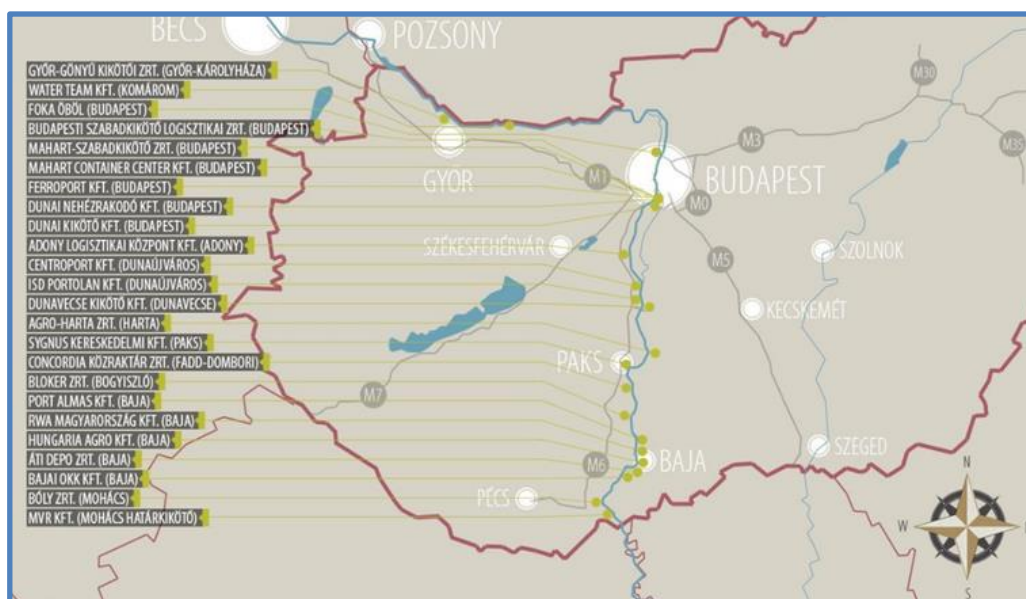


Fig. 7 Danube ports in Hungary

(Source: [www.hfip.hu/](http://www.hfip.hu/))

In Hungary there are 11 relevant Danube Ports of which 8 are private owned and the most important in terms of traffic values are as follows:

**Port of Mohács** – administrated by BÓLY ZRT. is the largest port in southern border region, on the right bank of the Danube, at Km 1450 and includes 2 terminals with a loading capacity of 350,000 tons per year.

**Port of Baja** – considered to be the second most important Hungarian port of the Main-Rhein-Danube waterway system, is composed of:

- (1) Public Port of Baja on the left bank of the Danube between Km 1479 and Km 1480, having 9 terminals (one Green Terminal) and an annual turnover capacity of 2 mil. tons.
- (2) 4 private ports that operate 4 terminals with an annual turnover capacity of 900,000 tons.

There are 4 more Danube private ports between Baja and Dunaújváros consist of 6 terminals with a loading capacity of 1.6 mil. tons, exclusive bulk cargo.

**Port of Dunaújváros** – is the biggest port in the country regarding its annual turnover, with 8 terminals operated by two private companies and a loading capacity of 3,500,000 tons per year.

**Port of Adony** – is located in Central Hungary on the right bank of Danube at Km 1597-1598, and benefits from multiple transportation links and one of the largest warehousing facilities in CEE, with a 550K t bulk storage capacity. The port consist of 3 terminals and a loading capacity of 600,000 tons per year.

**Port of Budapest** – is located between Km 1639 and Km 1652 and is a group of 7 ports, both private and operated by a state-owned company (Mahart-Freeport Ltd).

The ports in this group through the 12 terminals ensure the transshipment of a large variety of goods – heavy cargo, bulk, bundled, containers - with an annual total capacity of over 2,800,000 tons.

**Port of Győr** – is located at Km 1794, being the greatest intermodal logistic centre of the West Transdanubian region providing possibilities of cargo transportation by river, road, rail and air. The harbour is directly connected to European Highway E60 leading from Brest to Constanta, and to Highway System E75 Helsinki-Athens and Ystad-Rijeka.

The Port of Győr has 4 terminals which ensures the operation of various types of cargo – bulk, ro-ro, special seized and weighted goods – with a loading capacity of 500,000 tons per year.



### 3.7 Slovakian Ports



Fig. 8 Port of Bratislava (left) and Komarno (right)

(Source : [www.vpas.sk](http://www.vpas.sk))

The navigable waterway of Slovakia on Danube consist of 172 km and there are two relevant ports, both public port, Bratislava and Komárno, which have old technologies and infrastructure with technical and safety issues and shortcomings in transport connections. Both ports

**Port of Komarno** –is located on the left bank of Danube between Km 1770 and Km 1762, at the end of confluence with the Váh river, covering an area of 20 hectares. Komarno is a public port built for bulk materials transshipment having 26,000 m<sup>2</sup> of unsheltered storage, 6,600 m<sup>2</sup> sheltered storage and a warehouse of 1700 m<sup>2</sup>. The development possibilities of the port are limited due the proximity of the Komarno city.

**Port of Bratislava** –is the most important port of Slovakia, located on left bank of Danube between Km 1871 and Km 1862, with an area of 1,431,586 m<sup>2</sup> and is divided in three parts:

- (1) The Winter Port with two pools, which is the old port, in the proximity of the city,
- (2) „Lodenica” which is the vessel repair facility,
- (3) The newest port (Palenisko), with transshipment and services berths including mineral oil loading/unloading facilities, has a quay of 1,400 m equipped as multimodal terminal and general cargo warehouse but also ro-ro and heavy cargo terminal.

The port of Bratislava has sheltered storing surfaces of 25,000 m<sup>2</sup> and unsheltered storing surfaces of 75,000 m<sup>2</sup> and also a container terminal with an area of 15,000 m<sup>2</sup> but limited in expansion due geografical terms.

### 3.8 Croatian Danube Port



Fig. 9 Port of Vukovar  
(Source [www.port-authority-vukovar.hr](http://www.port-authority-vukovar.hr))

**Port of Vukovar** – is the single Croatian cargo port on Danube River, located at Km 1335 on right bank and stretches over a surface of 26 ha and total length of the operational coastline is 450 meters.

The port has 3 terminals with cargo operating capacity of 2 mil.tons per year but the current traffic reach only 250,000 – 300,000 tons per year.

### 3.9 Austrian Ports



Fig. 10 Port of Vienn  
(Source: [www.hafen-wien.com](http://www.hafen-wien.com))

The Danube river flows eastward for 350 kilometers across the north of Austria, which counts up to 50 % of the Upper Danube and there are four important ports as follows:

**Port of Vienna** – is located between Km 1917 and Km 1920, covers a total area of 350 ha and contains five thousand meters of quays, being the largest port on the Danube in Eastern Europe and the largest trimodal logistics centre in Austria.

The port of Vienna has 6 terminals and 80 berths in three cargo locations:

- (1) Port of Freudenau, Austria's largest free port, has an area of 1.4 mil m<sup>2</sup> on which there are container, car and ro-ro terminals.
- (2) Port of Albern covers an area of 780,000 m<sup>2</sup> and is the terminal for building materials, grains and other agricultural products.
- (3) Port of Lobau with an area of 750,000 m<sup>2</sup> contains terminals for handling and storing of mineral products.

**Port of Krems** – is located between Km 1998 on left bank of Danube river covers a total area of 483,581 m<sup>2</sup> with a total length of the quay wall of 1,560 m.

The cargo types handled in the port are: dry bulk, containers, break bulk, high and heavy cargo.

**Port of Enns** – is located at the border between federal states of Upper Austria and Lower Austria at Km 2112 in the largest connected industrial area on the upper Danube. The port area is divided in a private area of 242 ha and an area of 110 ha owned by the port authorities.

The port has 7 terminals and 16 berths capable of transiting different kinds of cargo, such as grains and agricultural products, high and heavy cargo, LPG, iron, steel and containers, the volume of goods handled being about 678,000 tons of cargo and 314,000 TEUs containerised goods.

**Port of Linz** – is the largest port on the upper Danube, between Km 2124 and Km 2128 on the right bank of Danube. There are three important terminals in the port of Linz, most of cargo being transshipped in the private port of voestalpine (about 3.3 mil. tons) using a surface of 168,000 m<sup>2</sup>, the other two terminals - Linz Service GmbH and Felbermayr - focusing on containers, petroleum products refined, ro-ro and heavy cargo, using 1.5 mil m<sup>2</sup> for storing and handling.

### 3.10 German Danube Ports

In Germany there are five relevant Danube ports, with very good connectivity and very well developed of handling and logistic facilities.

**Port of Passau** – is located on the left bank of the Danube at Km 2232, and has a quayside facility of 650 metres in length and uses an area of 1.3 hectares.

The port includes storage capacities of 77.000 m<sup>2</sup> opened and 5,125 m<sup>2</sup> covered, equipment for handling of heavy cargo, bulk or ro-ro cargo, and the reported quantity of cargo handled in 2017 was 317,617 tonnes.

**Port of Deggendorf** – is located on the left bank of the Danube at Km 2283, covers an area of 550,000 m<sup>2</sup> and 1500 m quay length and has very good connection with all the ways of transport .



The port of Deggendorf is divided in three sections:

- (1) The mineral oil terminal with 14 tanks of 25,800 m<sup>3</sup> and loading/unloading facilities,
- (2) The general port with storage area of 17,000 m<sup>2</sup> and handling equipment for heavy and dangerous goods, ro-ro, bulk and containers,
- (3) The old free port has a handling area of 7,000 m<sup>2</sup> and facilities for transshipment of bulk and break cargo.

**Port of Straubing-Sand** – is located on the right bank of the Danube at Km 2313 is a basin type port covering an area of 220 hectares, with 1,050 m of quay. The annual cargo traffic on the vessel in the port of Straubing was reached 800,000 tons in 2017 but the total quantity manipulated in the whole port area was 4 mil. tonnes, most of the cargo handled was via road, 2.8 mil tons and the rest used the railway.

The port has a trimodal cargo terminal and the facilities are suitable for heavy cargo, bulk, ro-ro and break bulk.

**Port of Regensburg** – is located on the left bank of the Danube at Km 2373 is the main port of east Bavaria, covering 185 hectares and very good connections with the international rail and roads network. The freight volumes in 2017 was about 1.5 mil tons of goods handled on inland waterways in the port of Regensburg.

The length of quay is 5,200 m and the storage capacities are 283,000 m<sup>2</sup> of opened spaces, 157,000 m<sup>2</sup> in deposits, 251,000 m<sup>3</sup> in silos, 80,000 m<sup>3</sup> tanks and 52,000 m<sup>3</sup> of cooled spaces.

There is one container terminal, one ro-ro ramp, one rolling road terminal and one terminal with oil loading facilities. Break bulk and heavy cargo can be handled in many parts of the port (West Port and East Port).

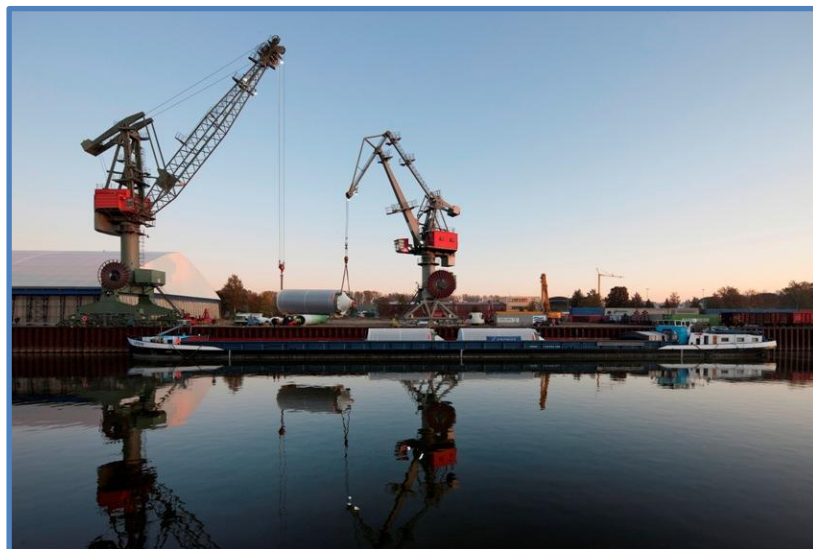


Fig. 11 Port of Regensburg  
(Source: <https://www.donauhafen.de>)

**Port of Kelheim** – is located on the right bank of the Danube at Km 2411 and port area cover 85 hectares.

The port has a quay of 1200 m, ro-ro ramp, 80,000 m<sup>2</sup> of open spaces, 400,000 m<sup>2</sup> for cars depositing and 45,000 m<sup>2</sup> general cargo deposits. The annual turnover reported for ship handling was 383,200 tons and the main types of cargo are dry bulk, break bulk and ro-ro cargo.

## 4. Best practices in Danube region (both from PP's and other riparian countries)

EU Strategy on Danube Region's Action Plan is count on four pillars in order to achieve a sustainable impact on development of the Danube regions.

- (1) Connecting of Danube regions,
- (2) Strengthening of Danube regions
- (3) Protecting of environment,
- (4) Building prosperity,

Examples of good practices that the administrations in the Danube region have implemented with the projects implemented for the sustainable development of inland waterway transport can be grouped in about same way.

### 4.1 Best practices in connecting of the Danube ports

#### 4.1.1 Best practices in Association of Inland Port Authorities

A) Port Authority Vukovar - **Croatia**, is a member of Association of Inland Port Authorities at the national level. Association of Inland Port Authorities is established on the initiative of all inland port authorities with support of the Ministry of Maritime, Transport and Infrastructure of Republic Croatia. Association is established with the purpose to perform task of harmonization and cooperation between inland ports, as well as with other competent bodies connected with inland ports and waterways on the national level. Tasks related to harmonisations are directed to equal development of all inland ports without creating competition related to public service, as well as harmonization of port dues, other fees and port fees for usage of infrastructure and superstructure.

Furthermore, focus is also on the permanent cooperation between Croatian Railways, ship-owners, port agents, forwarders, as well as with Agency for Waterways that is in charge for maintaining of inland waterways. However, the cooperation with Association of Maritime Port Authorities is being implemented as a reason to collecting and exchanging practices from the maritime ports.

Regarding the activities related to education in the field of inland ports and Association of Inland Port Authorities organizes educations, conferences and seminars at the national level.

B) The practice of association is also found in **Romania**, where is the association of Romanian inland ports, non-governmental and non-profit -"Union of Romanian Inland Ports"(UPIR)- with the main office in Galati and six members, founded by the administrations of Galati, Giurgiu and Navigable Canals of Constanta.

UPIR is member of European Federation of Inland Port and its mission encompasses:

- To study general problems of development and prognosis, which inland ports are interested in, especially the transportation problems, port transshipment and goods storing and promotion of joint positions towards these problems at national level and in behalf of the Romanian inland ports association,
- To reinforce the position of Romanian inland ports at national and international level through active participation at implementation of viable investment projects,
- Achievement of partnerships in order to support the implementation of projects having an active role in economically and socially sustaining and accelerated development of the port sector,
- To attract new good flows and to promote the VII - Pan European - Corridor of Transport - Danube- as a main artery for good and/or passenger transport to/from the European Union.

The success of this association depends on how its goals are met and the mainly objectives of UPIR are:

- To make the necessary approaches to the State institutions or other similar institutions in order to ensure the participation of its members to training courses, seminars, conferences related to the activity developed and to the financing programmes;
- Collaboration with economic agents during the implementation of the programmes in order to support them in the Project successful completion;
- To ensure the information exchange among its members;
- To promote the activities existing in the romanian inland ports and the importance of these ports concerning the national and international economy system;
- To represent the Romanian inland ports by national and international institutuion and bodies.

UPIR has a useful website which contains importants information regardings ports, members and a large data base with the European projects relating to inland waters.

#### **4.1.2 Best practices on improving the cooperation between Danube River administrations**

##### ***Romania and Bulgaria common database and legal framework for ship inspections***

Even if it is not a good practice already fully implemented, considering that a number of actions have already taken place and others are going to take place, within the framework of the project "*Development of a common database and legal framework for ship inspections carried out in the joint Danube River Danube Region through an Interface to the National River Information System*" (DANRiSS), we consider that is important to mention this example of harmonization of practices in Danube ports.

The project is financed under INTERREG V-A Programme (Cross-Border Cooperation Romania-Bulgaria) and has as leading partner Maritime Administration Executive Agency of Bulgaria and is a joint project with the Romanian Maritime Administration.

The objectives of DANRiSS project are:

- development of common inland water transport rules on the Danube for the Romanian-Bulgarian sector;
- avoid to duplicate ship inspections and mutual recognition of the results of inspections performed by the other authority;
- improve communication between the authorities;
- develop procedures to be followed by both authorities in ships' inspection;
- develop a common database with the results of inspections and related follow up.

The analysis of the success of DANRiSS project will be a good opportunity to see the way to extend such a practice able to:

- increase the harmonization of ships' inspection practices;
- reduce time spent by ships in ports;
- reduce the risks of pollution and increase the possibilities of monitoring the impact of inland water transport to the environment.

### ***Network of Danube Waterway Administrations - Data & User Orientation***

The international project *NEWADA duo* has been a good practice in the process of enhancing the cooperation between the waterway authorities in the Danube region. Currently, different qualities of service exist concerning the maintenance of the Danube waterway infrastructure and the provision of information on the current status of the fairway.

The main objective of the project was to achieve a common level of service along the Danube in all areas of the maintenance cycle, i.e. monitoring and surveying of the riverbed (hydrology and hydrography), dredging of shallow areas, realignment of the fairway and provision of customer-oriented information via different tools and services.

Under the *NEWADA duo* project, a Danube Region information portal ([www.danubeportal.com](http://www.danubeportal.com)) was created to provide data on water levels and critical bottlenecks, as well as notices to skippers, ice warnings, WiFi hotspot information, etc., with benefits for the users.



Based on these project's results, in 2014, transport ministers from the Danube countries adopted the Rehabilitation and Maintenance Master Plan for the Danube and its navigable tributaries.

The important project activities were:

- Improved waterway management by commonly defined performance indicators, expert exchange on ecological aspects with reference to the Joint Statement and the PLATINA Manual on Sustainable Waterway Planning, pilot action on functional electronic waterway maintenance management system;
- Enhanced waterway maintenance: Improved and coordinated performance in waterway maintenance, i.e. surveying and dredging, based on the strategic concept of the "waterway maintenance cycle"; national gap analyses on the resources needed for reaching the agreed-on performance indicators;
- Improved customer orientation: Enhanced Electronic Navigational Charts, atlas of berths; paper charts on the Danube waterway; pilot action on feasibility of enhanced provision of information on available fairway depths by making use of depth information provided by vessels' echo sounders
- Harmonised basic data: Defined quality, scope and availability of data on waterway infrastructure with a focus on water levels, shallow sections and waterway marking plans; consolidated basic data in the fields of hydrology, hydrography and maintenance;
- Enhanced ICT<sup>7</sup>: Harmonised and up-to-date fairway information services (FIS) provided online on the FIS Portal, i.e. shallow section information, water level information, water level forecasts, etc.; functional WLAN access points at locks and ports along the Danube; establishment and maintenance of virtual and remote-controlled aids to navigation (buoys etc.);
- Increased visibility of waterway authorities: Improved communication skills; involvement of stakeholders; launch of Danube PR activities, e.g. Annual Report on Danube Navigation.

The project partners was waterway administrations from Austria, Slovakia, Hungary, Romania, Bulgaria, Croatia and Serbia, and the most important target group of them are the users of inland waterways (skippers, vessel operators, logistic service providers, port and terminal operator and authorities for inland navigation) performing freight and passenger transport by using the infrastructure provided and maintained by waterway administrations.

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<sup>7</sup> ICT - Information and Communication Technology

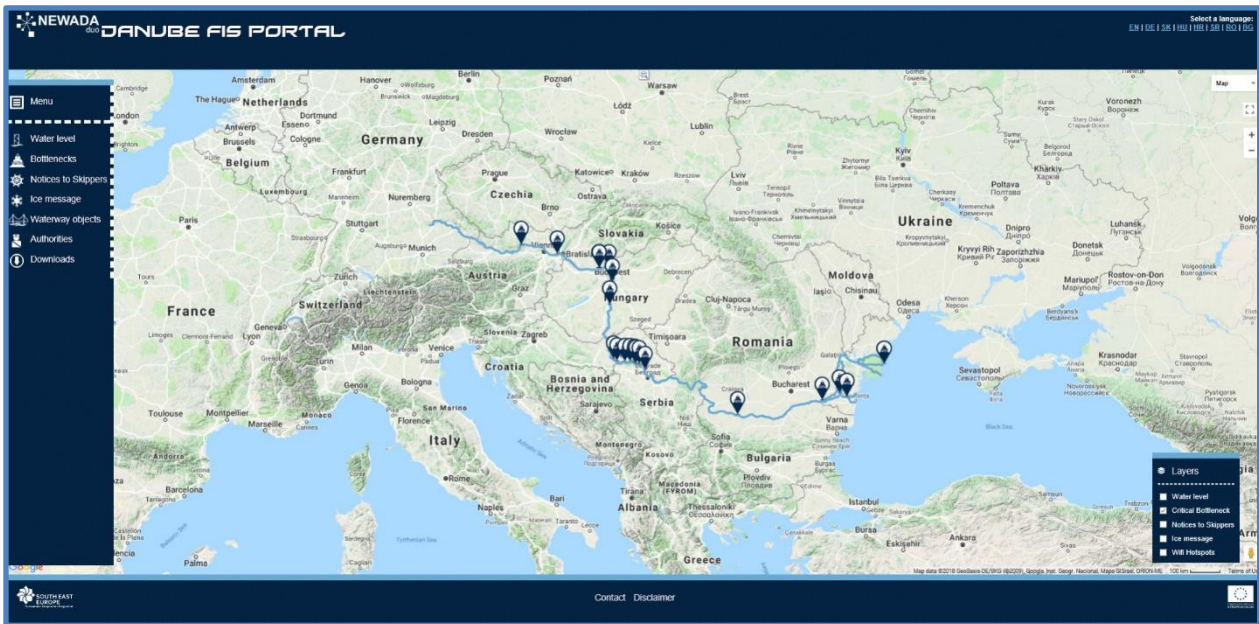


Fig. 12 Photo of Danubeportal  
 (Source <http://www.danubeportal.com/>)

### ***Best practices in the Harmonised Waterway Management***

A transnational harmonisation of smart traffic infrastructure information for the Danube as an entire transport corridor is an important prerequisite for public authorities in order to be capable of satisfying user needs of the commercial IWT sector.

Data about fairway conditions from all Danube countries help vessel operators to optimise their voyage and transport planning, which is in most cases international, therefore the project *DANUBE STREAM - Smart, Integrated and Harmonised Waterway Management* is an example of good practice in the cooperation between the waterways administrations of the riparian states with on the improvement of the information system of the Danube.

To achieve a higher utilization of waterway transport in the region, the project through its objectives contributed to consolidate the quality of waterway infrastructure and waterway maintenance. The project has many innovative elements which are part of future technologies and services (i.e. inland waterway infrastructure improvement pilots). Moreover, Danube STREAM efficiently capitalises on previous project results (i.e. South East Europe project NEWADA duo) building on existing knowledge and implementing the results with the targeted users of the Danube waterways.

The planned projects activities are of interest to the following stakeholders in the Danube basin:

Danube shipping companies (incl. captains, personnel on board),

Danube logistics companies (incl. shipping and forwarding companies, logistics operators, port/ terminal operators, cargo owners),

Transnational (i.e. DG MOVE, DC) and national (ministries) public administrations.

There are described several instruments which are available free-of-charge to the users of the Danube waterway and its main tributaries. With the updates provided in relation to these services the waterway administrations will be providing information according to the latest standards to users.

At the end of the project (2019), it will be foreseen how the intersectorial cooperation with Protected Areas, to minimize the environmental impact of inland navigation.

The project also present a good examples for:

- The common user services provided by the waterway administrations (e.g. ENC development, FIS portal development, D4D web portal),
- Improved waterway management tools (e.g. transnational fairway marking application,
- berth occupation monitoring tool, pilots for the measurement of vertical bridge clearance) through implementing of the results from NEWADA duo project and facilitate cooperation between Protected Areas and waterway administrations along the Danube River,
- The Strategic perspectives as, strategic cooperation between the administrations and Board of Directors.

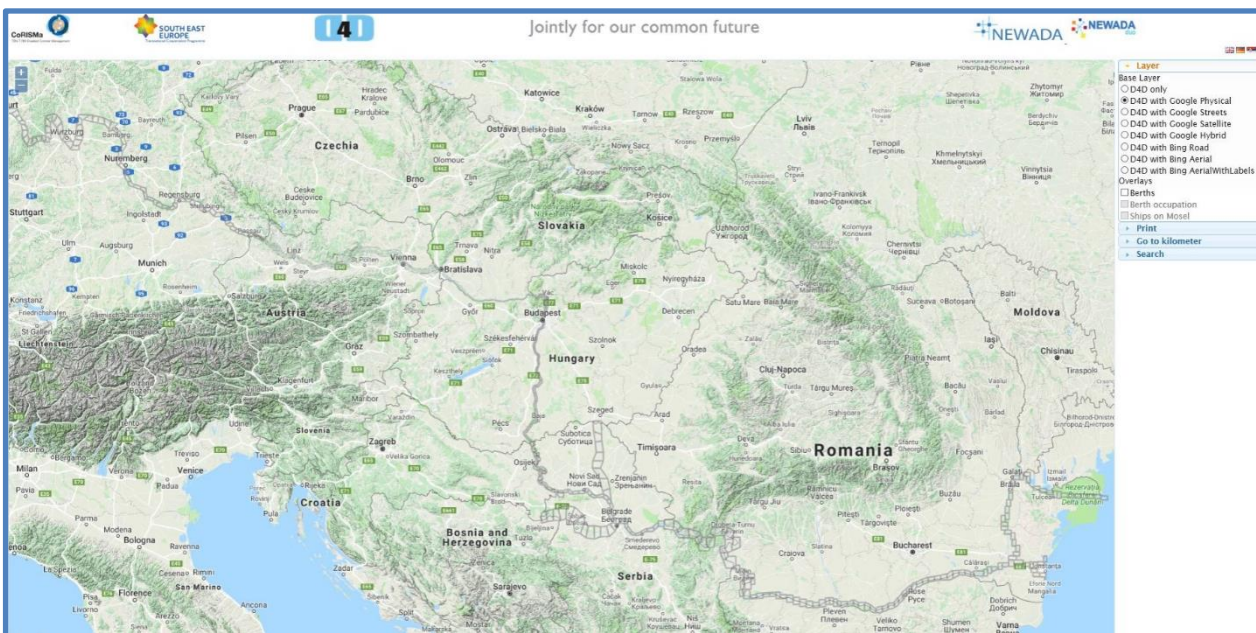


Fig. 12 Danube D4D portal  
(Source: <https://www.d4d-portal.info/>)

The importance of the Danube STREAM is given by the participation of nine partners of the water management from seven country : Austria, Slovakia, Hungary, Romania, Serbia, Croatia and Germany.

### 4.1.3 Best practice in electronic reporting software

In the framework of River Information Services (RIS) tending to harmonize processes concerning Danube navigation and port activities across the European Union, electronic reporting software contributes to standardize administration procedures.

A) **Hungary** implemented a browser-based application on computer, simplifying the process when completing a report on the vessel, fairway and cargo. The application helps to modify and delete data on the fairway and cargo and to import and export data. Due to commodity codes, cargo can be clearly identified in a foreign language. This is an important innovation especially regarding dangerous goods, with the use of electronic reporting to avoid mistakes.

In addition, electronic cargo information makes it easier to organize loading and unloading goods as well as the administration, as customs declarations no longer need to be sent by fax or mail.

River Information Services supported by electronic navigation data provision:

- cargo handling
- border police and customs services
- strategic traffic information
- lock and bridge management
- accident prevention.

Additionally, a system called *PannonRIS* is indispensable for ports to standardize information management. PannonRIS system is based on the microwave backbone, AIS relay stations on shore, infrastructure of radio navigation channels 10, 16, and 22, related accessories (antenna systems, cables, etc.) and the 150 onboard Inland AIS transponders. It is important to emphasize that fundamental components of the system and state-of-the-art constituents currently in use are operating thanks to the past 20 years of strategic cooperation of ministries responsible for water transport, the shipping authority and RSOE (EDIS – Emergency and Disaster Information Service) in accordance with current and applicable legislation.

B) The use of River information services (RIS) on Danube River in **Serbia** is one of the best practices used in the Danube basin for the benefits this system offers to users, such as:

Tracking and tracing of vessels (15 base stations),

Notices to skippers,

Voyage planning,

Correction of GDP signal according to IALA standard, etc.



Having in view the concept and design, the RIS system in Serbia is one of the most sophisticated systems on the whole stretch of the Danube River and it was full implemented from 2014, as a result of a successful project financed from IPA (Instrument of Pre-Accession Assistance).

C) On behalf of the Supreme Navigation Authority (OSB) of BMVIT,<sup>8</sup> Viadonau - **Austria** operates a portal to manage transport reports by electronic means within the scope of its duties for the operation of River Information Services and therefore offers an attractive opportunity to current practice of reporting by means of fax or email.

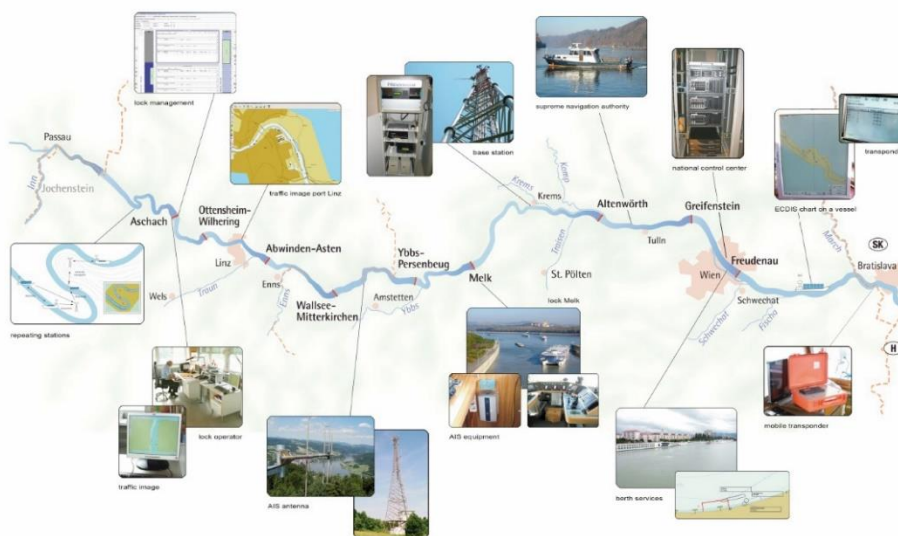


Fig. 13 RIS in Austria  
(Source: <http://www.doris.bmvit.gv.at> )

An authorized user can create electronic transport reports for all vessels allocated to its account via the *DoRIS* Portal and submit the transport report to competent authorities and moreover disclose to third parties.

This is one of the best practice in electronic reporting on the Danube River and the functions of the portal offer following benefits:

- New transport reports can be easily created and published to competent authorities in a user-friendly way.
- It is possible to determine whether the transport report will automatically be forwarded to the responsible authorities of the next country along the route preventing the skipper or fleet operator from having to report again after border crossing. At the moment, transport reports can be exchanged with the Slovak Republic.

<sup>8</sup> BMVIT - Austrian Ministry for Transport, Innovation and Technology

- Templates for transport reports can be saved to avoid reentering of consistent information for future transport reports.
- Actual and closed transport reports (these reports can also be used as a template) and their history are provided in an overview.
- The transport reports can always be viewed by the related user who is also able to forward these reports by e-mail in various formats, each in German and English language available.
- In case of an accident, information on dangerous goods and the number of persons on board can be made available to the emergency service providers immediately together with a tactical traffic image of the accident area.

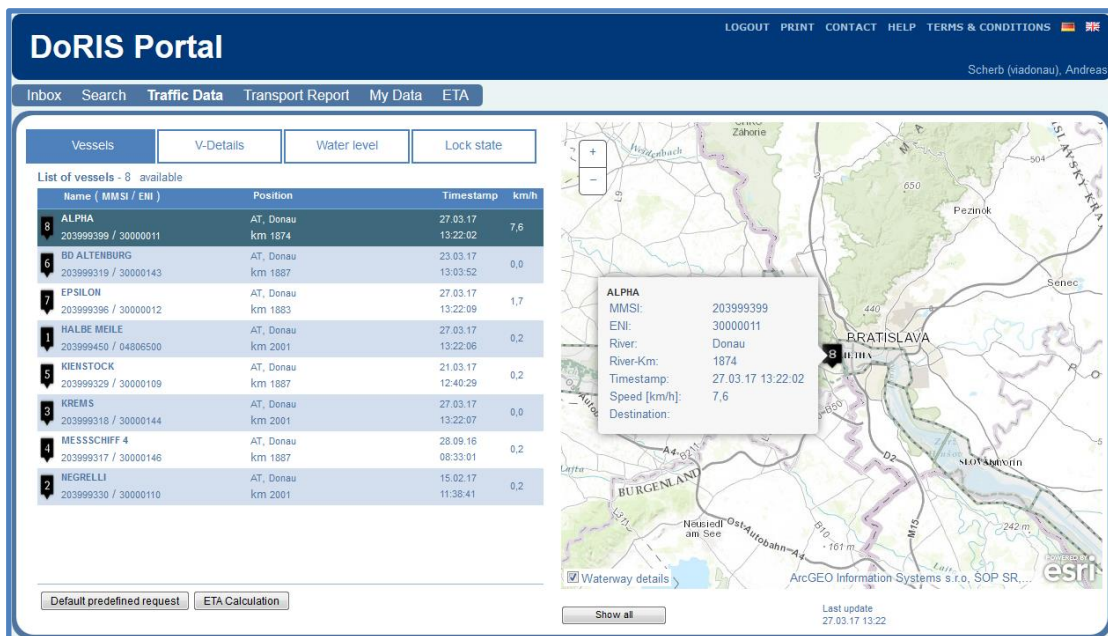


Fig. 14 DoRIS Portal  
(Source: <http://www.doris.bmvit.gv.at>)

A new service of DoRIS is available for mobile device with important information related to:

- Bridge clearance,
- Shallow sections,
- Water levels,
- Notices for skippers,
- Lock status,
- Fairway condition,
- Position service.

The system permits to report the dangerous goods on Austrian waterways, downloading the reporting form and to report statistics for vessels in freight transport transiting the Austrian waterways, also through a statistic form available on the site.

The Austrian portal receive in real time messages from the other national administrations regarding navigation or important aspects related to it.

The Danube logistic portal in viadonau offers potential customers a neutral guide to Danube logistics services with information related to: shipping companies & brokers, Danube ports, travel time calculator or transport planner.

D) A good practice that is applied in **Bulgaria** is the *BuLRIS* system where are presented enough information to assist captains of vessels in the procedures of filling documents and the vessel could be self-agented because national legislation allows this.

The Notice to skippers has also a mobile device version, giving the opportunity for searching current notices related to fairway limitations and conditions, water levels, ice related messages and weather conditions.

#### 4.1.4 Best practices in the education of port managers

An indirect, but strategic tool for harmonizing port administration processes has begun in recent years and this tool is education.

Port management studies are available at University of Dunaújváros – **Hungary**. The major and background of the programme were created by experts, members of the Hungarian Federation of Danube Ports in 2016-2017. The one-year programme provides theoretical and practical competencies in the fields of port economics, human resources, finance, marketing, commerce, as well as engineering, cargo security, occupational security and health, and language of profession. Hungarian ports could delegate one or more students (colleagues) to the programme.

Thanks to the university programme, graduates educated in the same, standardized system, acquiring new skills will contribute to harmonize processes in the ports along the Danube by adapting the same/similar port management routines and administration processes. Human harmonization being implemented in the frame of education via personal relations facilitate the initiative to develop standard regimes in Hungarian ports.

#### 4.1.5 Best practices in legal harmonization of port processes

A) An example of good practice in the port processes is that used by **Hungary**, where, by accepting General Conditions of Contract 2015 (KÁSZ), legal harmonization could be implemented, port management organizations and operators, port users, trading companies working by the same rules in all Hungarian ports.

These conditions are legally controlled and jointly created by members of HFIP<sup>9</sup> two years ago.

B) Functioning of the System for Electronic Processing of Documents in **Bulgarian** River Ports - Single Window is a good practice of the document management in ports. The system allows and requires the submission of electronic data for all vessels visiting the Bulgarian river terminals. The data is submitted by the ship agents and is observed and approved by EAMA, Customs, Border Police and BPICo. Access to data can also be given to other interested parties such as port operators, for example. The information is received in real time, immediately. It is believed that this has led to the facilitation of administrative processes and the speeding up of the interaction between users and authorities.

The system complies with Directive 2010/65/EU of the European Parliament and of the Council of 20 October 2010 on reporting formalities for ships arriving in and/or departing from ports of the Member States, and the Ordinance on the provision of river information services on the inland waterways of the Republic of Bulgaria.

Using the above systems, port operators have access to real time data and the ability to timely and accurately determine the schedule of arrival of ships in ports, effective planning capacity, better distribution according to cargo ships under the individual terminals depending on the necessary equipment capacity draft - for optimal and more effective use of the capacity of terminals and facilities for loading and unloading, as well as shortening the deadlines for cargo handling.

Managers of fleets and shipping companies will be able to refine the journey time, and to choose alternative routes for their craft.

Customs, border and sanitary authorities are preliminary transmitted by electronic means for goods and passengers, as well as traceability of cross-border services, which creates conditions for simplifying procedures and reducing downtime ships. Thus creating conditions for coordination between different institutions performing control of cargo ships and crews.

Emergency services and rescue receive facilitated monitoring of dangerous goods transported by river. And to allow coordination of the teams in emergency management and rescue planning of preventive actions to curb the harmful effects on people and the environment.

C) Functioning of and *Integrated Information System (IIS)* for resources and information management in BPICo<sup>10</sup> – SAP ERP 6.0 in **Bulgaria** is an example of good practice for planning and managing the resources in the ports.

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<sup>9</sup> HFIP – Hungarian Federation of Inland Ports

<sup>10</sup> BPICo – Bulgarian Ports Infrastructure Company



The system aims to improve the management and control of resources and optimization of the processes of maintenance and operation of the port infrastructure, ensuring sustainability and improvement of the administrative capacity, improving the effectiveness of management when planning and implementing investment projects, as well as accelerating the process of implementation of projects under OPTTI 2014-2020. The system is in operation since January 2017 and have the function of Calculator fees – to serve the process of incomes from sea and river port fees is deployed, Calculator fees “Sea ports” and Calculator fees “Inland ports”, covering the following functionality:

- Import data for port calls;
- Calculation of fees due;
- Creation of sales order, invoice, credit or debit notification
- Approvals via mobile devices – in order to maximize flexibility and efficiency in purchasing process in the course of the project is activated functionality for approval of contracts for delivery orders on mobile devices. By the help of SAP Fiori every authorized user has remote access via various mobile devices to different functionalities of the system as review of the supply contracts, approval or refusal.

D) Good administrative practice is the *certification of port operators according to the requirements of the ISO 9001: 2008* quality management standard. It is determined as a minimum requirement for the **Bulgarian** river ports in Ordinance No 9 of 17 October 2013 on requirements for operational suitability of ports and specialized port facilities. The certificate gives assurance to the customers and contractors of port operators that they are reliable business partners. It is a prerequisite for improving the good image and attracting customers. Given the market nature of port services and the promotion of competition, it can be concluded that the certification and maintenance of the validity of such a certificate can only have a positive impact on the business of the river ports.

The above examples only identify good practices in Bulgarian river ports, and can be applied not only in port operations, but are also subject to the principle of good management.

#### **4.1.6 Best practices in the harmonization of customs and trade procedures in inland waterway ports**

The **Moldovan** legislative framework governing the Giurgiulesti International Free Port’s activities confers the status of a ‘free economic zone’ to the entire territory of the port until 2030. In addition, Giurgiulesti International Free Port is exempted from the provisions of Moldovan legislation on competition and natural monopolies, and benefits from preferential income tax treatment (25% of the national rate for the first 10 years, like other Moldovan Free Economic Zones).

Since the port procedures and practices have an important impact on logistics operations in terms of cost and speed of delivery, the port operators always seek measures to reduce the time or eliminate the "bottlenecks", maintaining the competitiveness and the governments are also looking for ways to increase investment and develop the full range of strategic facilities.

If port operations and customs clearance procedures prove to be inefficient, time consuming, non-transparent or corrupt, long-lasting and too complicated, they can quickly become a source of additional costs, delays and a deterrent to trade. Clearance procedures performed by the Moldovan Customs Service and the other border control services at Giurgiulesti International Free Port are receiving closer attention because of port's strategic importance.

Memorandum of Understanding signed by the European Commission and the Governments of Moldova and Ukraine on 7 October 2005 is the legal basis for European Union Border Assistance Mission to Moldova and Ukraine (EUBAM) whose mandate is valid until 30 November 2020.

The Mission works with the Republic of Moldova and Ukraine to harmonize border control, customs and trade standards and procedures with those in EU Member States, helping for cross-border cooperation improvement, between customs agencies and border guard and other law enforcement bodies and also by enhancing the regional security.

The reduction in the number of documents required for customs clearance, the possibility of postponing customs payments with their guarantee, as well as the electronic declaration on the import and export of goods are only a few advantages that the economic agents benefit from when passing the goods through the Giurgiulesti International Free Port.

This type of cooperation can also be applied to other ports in non-EU countries but, in the Danube basin, for EU member states there are already specific customs regulations in this respect.

#### **4.1.7 Good practices in the harmonization of legislation in ports**

A) Even that the ports of Reni, Ismail and Ust-Danube are on Danube's branch, there are considered seaports, and the administration of them is common with the Black Sea **Ukrainian** ports and in this year, Ukraine began the audit of the International Maritime Organization, whose purpose is to verify that it fulfills international obligations in the field of maritime safety as a port state, a flag state and a coastal state. The Izmail Sea Commercial Port participates in this audit within the framework of the action plan for implementation of the national legislation of international treaties in the field of maritime shipping.

According to the IMO recommendations, a new central executive authority was created - the State Maritime and River Transport Service of Ukraine (Maritime Administration), which will be operational from August 1, 2018 and implement state policy in the fields of sea and river transport, merchant shipping, navigation on inland waterways, navigation and hydrographic support for navigation, as well as in the field of maritime and river transport security.

As a good practice, the port procedures and operating in a seaport are designed and developed to meet the obligations arising from maritime conventions which implies higher standards than those developed so far for inland waters, therefore a common management of inland ports with maritime ports, where possible, can only be beneficial to the first.

B) **Ukraine** is member of the International Port Community System Association and according to these, the Port Community System (PCS), as definition:

(1) Is an open electronic platform for intelligent and secure exchanging of informations between public and private stakeholders in order to improve the competitive position of the port communities and,

(2) Optimizes, manages and automates port and logistic processes through a single submission of data and connecting transport and logistic chains.

PCS is in operation in **Ukraine** from year of 2014, when begun with the transition from traditional paper documents into electronic one in case of registration of a vessel call and cargo handling in the port of Ukraine. The system, according with Ukrainian legislation, is used in the logistic checkpoints for the sea connection, for simplification and acceleration of transportation processes, cargo handling and control procedures being implemented in all the seaports of the country.

As a good practice, the EU trade strategy adopted a program of development of a network of national mechanism "single window-local solution" which will share the information based on the standards of the UN and the World Customs organization and Ukraine, through the measure of implementation of PCS, is firmly committed to this strategy.

#### **4.18 Best practices in the harmonization of maritime legislation on inland waters**

A) The cooperation of competent authorities in harmonization of national legislation regulations and administrative procedures related to waterways of the Republic of **Serbia** with the model of EU countries of the Danube region is an important objective of Serbian strategy for transport.

Port Governance Agency, as the public agency established by the Serbian Government, is full responsible for strategic and administrative port governance, regardless of their ownership

status, and for regulatory, expert and development activities for the purpose of unhindered activities within the port area.

The Strategy on Waterborne Transport Development considered the results of the Danube Inland Development project (DAHAR) within the South East Europe Transnational Cooperation programme, related to the development of ports as the logistic centers and their integration in the Danube region logistic network.

The aim of this project, of which they were part of Serbian partners and observer entities (Port of Novi Sad and Autonomous Province of Vojvodina - Provincial Secretariat of Economy), was harmonization of long term development of small and medium sized ports on the Danube, which could lead to the development of a common development strategy.

B) Port Governance Agency from **Serbia** was also project partner in a successful project, *DANUBE SKILLS - Increased Institutional Capacity in Danube Navigation by Boosting Joint Transnational Competences and Skills in Education and Public Development Services*, which through the objectives pursued and the activities carried out are examples of good practices in the cooperation of entities interested in raising the skills and capabilities of inland waterway staff.

The Danube Skills project provides important lessons about:

- (1) how it can contribute to better work force qualification for IWT and to increasing job security;
- (2) how to achieve free movement of workers and reduce loss of life or injury by avoiding accidents;
- (3) how to adopt the EU regulations in the Danube region by the joint development and implementation of new transnational learning tools;
- (4) how can be achieved the strengthen institutional capacity and transnational cooperation in order to encourage the use of environmental friendly inland navigation in the Danube region;
- (5) how it can bring more transparency into the Danube transport sector by offering free and open information tools

The project, which will end in 2019, assist the public institutions responsible for Danube navigation development in the transnational promotion of Danube logistics, fostering their interactions with their commercial users on how to learn and use Danube transport on a regular basis.

The importance of the project results is also given by the large number of partners representing various areas such as from the education and training and the inland waterway transport industry, public authorities, non-government organizations and international associations from Austria, Germany, Slovakia, Hungary, Croatia, Serbia, Bulgaria and Romania as well Associated Strategic Partners (ASPs) from FR, HU, HR, CZ, NL and BE.

## **4.2 Best practices in strengthening of Danube regions - Access point for harmonised data covering a wide-range of scientific issues and encompassing the whole Danube Region**

The Joint Research Centre (JRC) of the European Commission is coordinating an initiative aiming to provide scientific support to the European Union Strategy for the Danube Region (EUSDR) in close cooperation with key scientific partners of the Danube Region for the implementation of the EU Strategy of the Danube Region.

The Danube Reference Data and Services Infrastructure (DRDSI) are the developers and facilitators of the open data portal storing free open data from the Danube region. The DRDSI Team is located at the JRC, Ispra site in Italy and are made up of a group of scientists with geographical and spatial science backgrounds.

The goal of the DRDSI is to make data within the Danube Region open and accessible online for all users. On the DRDSI Portal are collected thousands of datasets which can be used for developing new research projects, expanding current ideas and connecting scientists. The Danube RDSI Community is an open forum which promotes information sharing, relevant discussions and transparency to share presentations and documentation as well as spread news and events from your region (<http://drdsi.jrc.ec.europa.eu/>).

## **4.3 Best practices in protection of the environment**

Even that inland navigation is an environmentally friendly, the continuous improvement of the environmental performance of the management system of all stakeholders in the Danube basin is a permanent obligation.

Issue such as water quality may not be treated most efficiently at national level only. Transnational cooperation is inevitable. Remedy for challenges arising from climate change shall also be found at regional level. The regional approach is a useful tool for problem solving: the Danube Strategy is a platform to ensure cooperation between Danube countries related to water quality and it is also an effective platform to involve both EU and Non-EU countries for cooperation.

### **4.3.1 Best practice in developing of Convention for Waste Management for Inland Navigation on the Danube, CO-WANDA project**

In the frame of the South East Europe Transnational Cooperation Programme, the CO-WANDA project was implemented from September 2012 until September 2014, uniting 12 partners from 9 different countries (Austria, Slovakia, Hungary, Romania, Bulgaria, Croatia, and Serbia, Moldova, and Ukraine).

The main objective of the project was the coordinated harmonization of international rules and practices in the field of ship borne waste management in the Danube riparian countries by establishing a sustainable ship waste management system along the Danube from a conceptual, operational and financial point of view and to resolve the constraints imposed by national borders.

CO-WANDA centrepiece was the elaboration of an International Danube Ship Waste Convention, which provides rules and obligations for Inland Vessels navigating on the Danube River, related business operators, as well as the participating states, who will contribute to the installation of a sufficient dense infrastructure network and enforcement of the system. Being at the end of CO-WANDA project, continued common efforts, international cooperation and commitment of the states are in dispensable requirements for finalising the draft Convention, triggering negotiations and entering into force.

### **4.3.2 Best practice in improving waste management along Danube through CO-WANDA Project**

As it is presented in the final report<sup>11</sup>, one of the key points of CO-WANDA Project was the advancement and improvement of the existing Ship Waste Management System. In close cooperation with the IWT-sector waste related onboard activities were investigated. Measures for waste prevention, optimization of international network of waste reception facilities, feedback from the skippers as well as education materials for skippers were the most important outcomes of this activity.

A user friendly, sufficiently dense network of ship waste reception facilities reduces the risk of illegal discharge thereby contributing to the protection of the Danube's ecosystem. During the optimization work carried out in the CO-WANDA project it was found out, that for oily and

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<sup>11</sup> *Convention for Waste Management for Inland Navigation on the Danube (CO-WANDA) Project, Final Report about International Coordination, September 2014, [www.southeast-europe.net](http://www.southeast-europe.net)*



greasy ship waste, enough capacities along the Danube are already available; in order to keep costs low and fully exploit these facilities, common operation schemes were recommended, e.g. the relocation of **Romanian** waste collection vessels to other Danube Stretches.

Implementation possibilities for a harmonized financing model for oily and greasy ship waste, which is based on polluter-pays principle, indirect payment and waste prevention has been investigated as well as guidelines for the usage of River Information Services in a future Danube Ship Waste System.

An important key factor was considered that the implementation of a Danube Ship Waste System should be carried out stepwise in order to allow optimisation from technical point of view. In order to achieve efficient governance of the system, operational steering is necessary on transnational level.

### 4.3.3 Best practice in pilot actions of CO-WANDA Project

During the project, the practical tests and the pilot actions have verified the technical concepts developed and allowed the data collection.

All pilot actions testing the Electronic Vignette System (EVS) have been successfully completed, providing practical and necessary practical data for the development and further technical development of the International Convention on Danube Waste and Infrastructure Investigations development.

Facilitating the free delivery of oil residues from ships to well-established collection points based on a free vignette obtained from the CO-WANDA Records Portal involved a laborious Workload. The equipment used to implement these pilot actions consisted of the various types of available infrastructure and were taken into account in each of the countries participating in these pilot actions.

In order to carry out the waste disposal activities, the project partners have tested technologies such as: discharge system (AT), fixed point collection via pontoons (HR, SK, HU) and mobile vessels (RO, BG). Additionally, the information gathered during the implementation process will be used to develop an IT application for simulation designed to model costs and waste streams generated internationally.

On the **Hungarian** Danube sector, these pilot actions involve the use of a RIS-equipped vessel that will communicate with terrestrial facilities. Crew members will enter different types of information into an electronic logbook, and they will be compared to data sent and collected through RIS (NTS – Notice to skippers Application, Inland VTT – Vessel Tracing and Tracking Application).

In **Serbia**, a RIS application will be created and tested that can control the mode of delivery of waste from ships along the Serbian sector of the Danube, thus supporting the authorities in the fight against illegal waste discharges at national level.

On the **Romanian** maritime sector of the Danube is implementing another type of pilot actions in the ports of Galati and Tulcea, whereby those who wish to deliver the ship-generated waste in the maritime ports of the Danube, can book these services online through a specialized web interface.

During pilot actions, the following types of waste will be collected in the above-mentioned ports: oil residues, domestic sewage, refuse and solid hazardous waste. Waste sorts of paper, glass, plastic or metal could also be collected.

#### **4.3.4 Best practises in development of tools to improve environment protection on Danube – Acvadepol Colloquium**

Beginning as an initiative of the National Company Maritime Danube Port Administration Galati, to which all Romanian port administrations have joined, the ACVADEPOL colloquium had in 2017 the 14<sup>th</sup> edition, demonstrating that it is an important forum for finding solutions to increase environmental protection on Danube.

The topics include:

- *Legislation*: harmonization of legislation among European countries.
- *Equipment*: equipment and means of intervention to prevent and combat pollution in ports.
- *Financing*: identification of sources and financing modalities for the procurement of equipment specific to the prevention and control of pollution of Danube waters
- *European projects*: relevant projects in the field of Danube environmental protection
- *Ecological education*: pollution of the environment and its harmful effects on the planet and the health of its inhabitants
- *Water pollution*: causes, classification of pollutants, consequences, protection measures to prevent environmental pollution.

Annually, more than 100 representatives of the Romania and other Danube riparian countries participate in the colloquium, including representatives of port administrations, local government, universities and research institutes, equipment manufacturers and port actors.

The event proved to be a good opportunity to find ideas related environment protection projects implemented during last years by the participants, such as: *Waste management for*

*inland navigation on the Danube - CO-WANDA, Green Intermodal Freight Transport – GIFT, Ship-generated waste collection system in Maritime Danube ports – CODENAV, etc.*

### 4.3.5 Best practices in sustainable waterway planning

The European Commission launched the PLATINA project to implement efficiently actions and measures promoting inland waterway transport. The project brought together 22 partners from 9 European countries and aimed to serve as a platform for helping to implement the European inland navigation program NAIADES<sup>12</sup>.

The International Commission for the Protection of the Danube River (ICPDR) is a transnational body, which has been established to implement the Danube River Protection Convention, and brought together the representatives of the 14 states and the EU. It had responsibility to develop a manual and training workshops on integrated planning and both of them were best practice examples on ecological waterway management that are in line with the Danube River Basin Management Plan.

Good Practice Manual on Inland Waterway Maintenance contain usefull information for administrations in Europe in order to improve thei maintenance processes, such as:

- Illustration of an improved fairway maintenance cycle.
- Dedicated knowledge exchange across countries and corridors.
- Analysis of examples from practice and identification of “lessons learned”.
- Recommendations for efficient fairway maintenance.

A) *Directorate for Inland Waterways from Serbia* developed a support tool for management decisions within waterway maintenance, which consist of:

- (1) An integrated database (hydrographic & hydrological data, defined targeted levels of service for specific stretches – fairway width, depth),
- (2) An optimisation algorithm that identifies the most efficient and effective measure to reach defined targets against the background of restricted resources,
- (3) A number of options such as fairway realignment, traffic regulations, dredging (m<sup>3</sup>) etc.,
- (4) Parallel provision of integrated information on fairway availability to users.

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<sup>12</sup> The European Commission has adopted on 10 September 2013 the NAIADES II package "Towards quality inland waterway transport"

These practices are part of the Good Practice Manual on Inland Waterway Maintenance for waterway administrations, prepared by PLATINA II.

B) *The Austrian Waterway Management Company* carried out a longterm analysis of daily water level ranges at two critical reference gauges. The data were used to create usefull tool for industry and logistic in order to support the transpoert planning accordint to the statistically most probable fairway conditions. Due the highly fluctuating water levels, the draught of vessels is not used all the times at full potential and the safety margins take into account the available navigational depth.

The Austrian analysis from the manual:

- Is a tool indicates the probability of high or low water levels throughout the year.
- Indicates the probability of available fairway depth and draught for each month in relation to vessel and cargo type.
- Is an easy-to-handle decision support tool for the industry and provides solid economic arguments to integrate inland waterway transport into logistic chains. ([www.naiades.info](http://www.naiades.info)).

## 4.4 Best practices in building prosperity

### 4.4.1 Best practices in public procuments

Given that the phenomenon of corruption is a threat to economic prosperity, and public procurement is a sector exposed to such a threat, in **Ukraine** a system of reforming these procedures has been developed, which can be followed by other states due to positive results of the implementation of this project.

The ProZorro project (inspired by a similar project in Georgia) was launched in February 2015 and a strategy for implementing a public procurement system was developed shortly. The central platform, which was originally owned by Transparency International Ukraine, was transferred to the state, and as of August 1, 2016 the law on all public procurement, supported by this program, came into force.

ProZorro is a fully online public procurement platform and a collaboration environment that ensures open access to public procurement in Ukraine. The system was fully implemented in 2016 as a hybrid (both centralized public and decentralized private marketplaces) and has been globally recognized as one of the most innovative public procurement systems delivering government services in a stakeholder-focused, transparent, effective, fair and low-cost way.

ProZorro ensures transparent and efficient spending of public funds by simplifying oversight opportunities for the civil society and by enabling enhanced, open competition among businesses that aim to supply goods and services to the government entities in Ukraine. All the public informations are in Ukrainian language with no barriers for access online public portal and the procurement announcements are in English, without need to register.

The Ukrainian Sea Ports Authority makes procurements of goods, works and services in accordance with the requirements of the Law of Ukraine “On Public Procurement” publishing relevant bids on the official portal for publicizing public procurement information. Services as water areas maintenance, technical services, construction of hydro technical objects or dredging are now posted on the administration's and to attend the public tender in fair conditions is ensured.

#### **4.4.2 Best practices on the development of a technology and service oriented, energy-efficient intermodal port system**

The project HIGH-PERFORMANCE GREEN PORT GIURGIU, developed the Municipal Port of Giurgiu (Romania) into a high-performance, energy-efficient and environmentally friendly inland port which fulfils the service requirements of nowadays manufacturing industry. The Municipal Port of Giurgiu is located on the TEN T Corridor PP18 (waterway axis Rhine/Meuse-Main-Danube) and on the Pan- European Corridors VII and IX. Giurgiu is the closest Danube port to Bucharest and Greater Bucharest area. The project therefore has given the Port of Giurgiu the chance to become the main hub for waterborne logistics chains, connecting Bucharest with other industrial centres in the Danube region as well as with the Port of Constanta. For this reason the conducted project also connected the port to the close-by railway network and developed the port into a real intermodal hub for the entire region. In addition, the project has triggered further investment in the port area by other private sector companies and can be considered as an important catalyst for regional development in the Giurgiu – Ruse and Giurgiu - Bucharest area.

The high transport volumes being shifted to the Danube, the dedicated energy-efficiency and renewable/alternative energy sourcing concept as well the conducted environmental protection & restoration measures have led to a significant reduction in greenhouse gas emissions. The elaborated and applied “Green Port Concept” together with the pilot deployments of the first phase investment serve as best practice for modern port development and operations in the entire Danube region.

The project could be used to prepare a “Dedicated transnational development strategy for the Danube Ports together with long-term Action Plans as part of the future EU regional & economic development policy”. The development of such a Danube Port Development

Strategy was proposed by Pro Danube International and welcomed by many stakeholders within the last working group meeting of the EUSDR<sup>13</sup>.

The objective of the project was to define and to develop a comprehensive concept for a technology and service oriented, energy-efficient and green, intermodal port system. Key elements of this port system were implemented through dedicated pilot deployments in the Municipal Port of Giurgiu.

The innovative concept serves as good practice for further port development and thus trigger sustainable port infrastructure development in the entire Danube region. The project included a close co-operation and joint activities of private and public bodies and has delivered a strong form of private - public partnership. This co-operation has broken the decade-long infrastructure degradation as a consequence of missing business activities and insufficient public infrastructure spending.

New concepts as "*green port engineering*" and "*green port operations*" was developed and implemented. These concepts include measures regarding energy-efficiency, use of renewable and alternative energy sources as well as dedicated environmental protection and restoration measures, which reduce the verall environmental performance of the port regarding CO<sub>2</sub>, NO<sub>x</sub>, PM emissions as well as regarding to noise and dust. It is also taken into account the use of LPG trucks in port, considering the "LNG Rhine-Main-Danube Plan", which provides a LNG terminal in Ruse, which is only a few kilometers on the banks of the Bulgarian river, a close contact has been established with the operator of this LNG terminal, Bulmarket DM.

The project comprised the elaboration of several feasibility studies, technical concepts and the execution of important pilot deployments which prepared the full development of the port in further development stages and which serve as good practices for further investment in Danube ports.

The work which was carried out in the project was structured into 5 activities and themost important are:

- (1) Identified, described and assessed the current status of infrastructure and supra-structure, port operations, current market situation and market position as well as the environmental situation and the eco-performance of the Port of Giurgiu,
- (2) Delivered a comprehensive port concept for the Green Port Giurgiu as best practice model. This concept comprised state-of-the art technology measures for:
  - Eco-efficiency and renewable/alternative energy provision & distribution
  - Infra- and supra-structure investments
  - Enhanced port and logistics information systems
  - Consumer (customer)-oriented operations

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<sup>13</sup> EUSDR - EU Strategy for the Danube Region



The existing infrastructure (quay, cranes and warehouses) continued to be used for bulk material. The modernization of the quay and of one crane is essential for safe and efficient transshipment.

It is the intention to implement a high-technology, tri-modal, weather independent logistics centre (about 8000 m<sup>2</sup>) for high-quality product handling (for example steel products, paper).

The logistics management is being optimized through planning and control of all means of transport (truck, rail, ship).

A rail connection to the port (to the tri-modal logistics centre) is essential and has therefore been assessed and designed. Also the road network inside the port area as well as the connecting roads were redesigned and renewed.

The logistics management should be optimized by using the advanced integrated information systems: optimum storage management, crane automation, truck logistics manager, railway carriage planning and control, monitoring vessel transportation and control plant transport.

For the management of vessel and port operation the integration of dedicated RIS applications has been performed.

The key objective was to improve the efficiency and the environmental performance of the Danube Port of Giurgiu and to develop a technical and commercial model for the Danube ports on the middle and lower Danube which serves as good practice.

#### **4.4.3 Best practices on the development of a port performance methodology**

In **Hungary**, the business federation of Hungarian Danube Ports, namely the Hungarian Federation of Danube Ports (HFIP) was set up on 25th of May, 2012 at Budapest, whose objective is to promote the common interests and views of Hungarian inland ports on national and international levels, not only on industry but also on government level, which are considering issues and initiatives facing ports.

The organization also collects and provides professional information for members, promotes public awareness in order to understand the contribution of ports to national and regional development. The Federation also organizes meetings, conferences and training courses to exchange information and expertise to encourage the development of effective practices.

Between partners of HFIP are Constanta Port Administration and European Federation of Inland Ports.

In recent years, the various projects implemented have been an excellent basis for activating the potential of river and maritime ports in the Danube region.

Key Performance Indicators (KPIs) recommended to be used to measure port performance introduced by scientific methods based on different GIFT, INWAPO, DAHAR or WANDA projects are difficult to apply in practice because of their standard character, regardless of the individual's specificity of the ports.

A new port performance indicator system was tested within the *POPEI* project, implemented through the collaboration between Hungarian Federation of Danube Ports, National Company Maritime Danube Ports Administration Galați and the Port Authority Vukovar.

Aiming to increase the competitiveness and efficiency of inland waterways port operations through:

1. adjusting the KPIs to the needs and particularities of ports, so that they can use them in practice and to provide their market with real information on their services and performance;
2. transforming KPIs into a performance indicator system applicable to (self) port measurement and services qualification,

a new port performance measurement methodology has been developed within the *POPEI* project.

After an analysis of results of previous projects like NWAPO, DAHAR, GIFT and WANDA and a consultation of selected port-operators, a certain number of KPIs was built into a complex excel-based performance measurement system.

Given that the system must reflect the specificity and real needs of the markets in the Danube ports, the system has the role of measuring port performance and the system should be used for quality management purposes, an *excel-based performance measurement system*<sup>14</sup> and a detailed description of the measurement system were created within the *POPEI* project

After the testing phase, the main lesson learned is that there is something to be done with the customer satisfaction part and the timing of the evaluation is very important.

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<sup>14</sup> [http://www.hfip.hu/upload/file/popei\\_kpi\\_system\\_hfdp.xlsx](http://www.hfip.hu/upload/file/popei_kpi_system_hfdp.xlsx)

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