



DAPhNE – Danube Ports Network

Developing Danube Ports into
environmentally-friendly multimodal logistics hubs

Project Compendium



About the DAPhNE project

The overall scope of the DAPhNE project is to reduce the knowledge, development and innovation gap between the Western and South – Eastern European Danube ports, and thus facilitate the Danube Region ports becoming efficient, sustainable elements of the overall EU transport and logistics system. In this sense, the envisaged activities aim to improve port legislation, funding of port investments (State Aid Schemes and Public-Private Partnership models), port administration processes, port business strategies as well as port infrastructure & industrial development strategies. Special attention is also paid to human capacity building and eco-improvement options for the port sector.

Project name: Danube Ports Network

Acronym: DAPhNE

Funding programme: Danube Transnational Programme

Programme priority: Better connected and energy responsible Danube region

Project duration: 30 months (January 2017 – June 2019)

Project budget: 2.985.406,15 Euro of which:

- ERDF Funds: 2.415.219,42 Euro

- IPA Funds: 122.375,77 Euro

Project Consortium: 23 Project partners from 9 Danube Riparian Countries (AT, SK, HU, HR, RS, RO, BG, MD, UA)

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Passau

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Enns

Krems

WIEN

BRATISLAVA

Győr-Gönyű

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BUDAPEST

Százhalombatta

Dunaújváros

Dunaföldvár

Baja

Mohács

Bezdán

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Osijek

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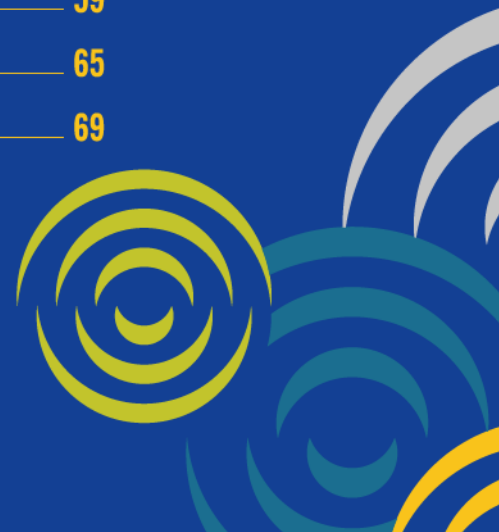
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Foreword





On 1 January 2017, twenty-three partners from the Danube region officially started the project DAPhNE (Danube Ports Network). Co-funded by the Danube Transnational Programme as one of the 54 approved projects out of 547 initially submitted applications in the first Call for Proposals, the project focuses on improving the performance of Danube Ports with the aim to turn them into buzzing economic centres. In a nutshell, DAPhNE touches on topics such as port legislation & funding, port administration & management, port development and port strategy & port network formation. By exploring these four topics, the consortium significantly contributed to stepwise close the existing gaps between the 70 Danube ports located along the 2.414 km of the Danube River that deal with poor access infrastructure and superstructure, uncoordinated legal and regulatory frameworks, different ownership and administrative models, reduced private investments in the port area and decreasing human resources for this specific sector. Public bodies like ministries and port authorities/administrations which provide the regulatory framework for the Danube ports joined forces with private port operators, port associations, specialized consultancy firms, logistics companies and universities. The Danube Ports Network (DPN) cooperation platform launched by the DAPhNE consortium in June 2018 will ensure the continuation of the excellent work delivered by the DAPhNE project partners, representing the unified, coordinated message of the Danube Region's inland and sea ports community in Europe and beyond.



“Efficient and sustainable Danube ports are essential elements for a competitive Danube logistics system and thus vital for the economic development of the Danube region. DAPhNE has supported Danube ports in getting closer to becoming buzzing economic centres functioning as catalysts for economic growth and job creation”

“Let's use the power of Danube Ports Network (DPN) to have a stronger influence in the IWT sector!”

Manfred Seitz, Pro Danube International, Coordinator DAPhNE project

Capt. Béla Szalma, President Hungarian Federation of Danube Ports;
Chairman of the Advisory Board, Danube Ports Network



“With projects like DAPhNE, the Danube region wins concrete results in terms of ports development as well as ensures efficient cooperation between the public and private sector with long-term benefits on building up prosperity.”

Many thanks to everyone that contributed with their know-how and dedicated support to the implementation of the DAPhNE project!”

Ruxandra Florescu, Project Manager
DAPhNE project



“DAPHNE is the best project I have been involved so far in terms of how the partnership works. What else could be a better basis for a well-functioning port network than such a partnership.”

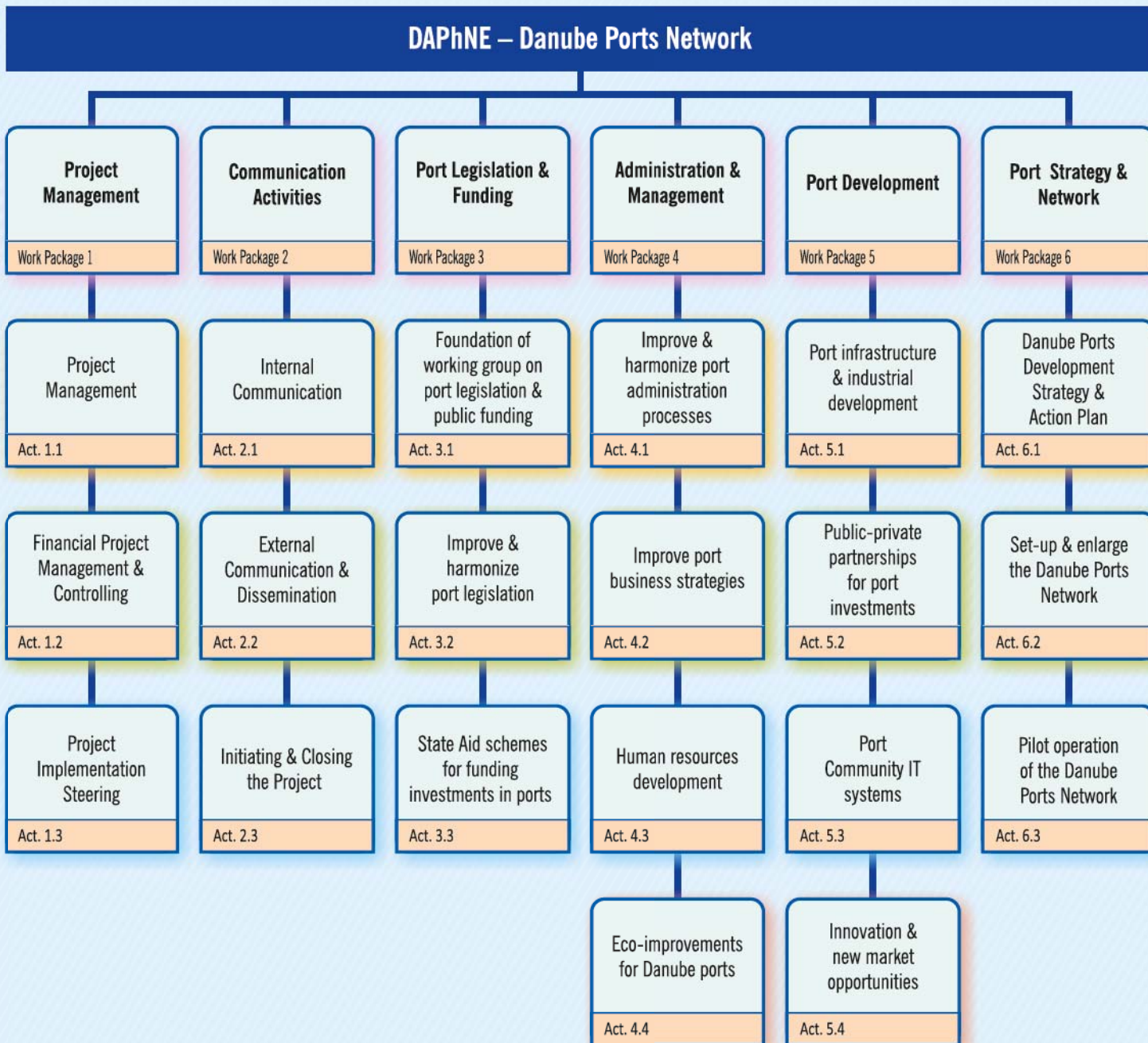
Mónika Thury, Project Manager Hungarian
Federation of Danube Ports;
Activity leader Communication activities
DAPhNE project



For the Danube Ports Network, the completion of the DAPhNE Project marks the end of its pilot action phase (June 2018 - June 2019) and the beginning of the start - up phase (July 2019 – June 2022). We strongly believe this shall provide opportunities for further consolidating our strategic partnership and delivering the DPN's mission and objectives to the benefit of DPN's partners and the Danube Region port community at large. Good Luck to us in making the DPN work successful!

Janeta Toma, Senior Expert Danube Ports
Network - Technical Secretariat

Work breakdown structure







**Reaching out to the Danube
port community**







The communication activities of the project were led by the Hungarian Federation of Danube Ports in close cooperation with Pro Danube, and all partners actively contributed to the dissemination by sharing information on their own website, organising national or international events, participating in relevant conferences or producing promotional materials.



DAPHNE partners used several types of communication tools to inform the public about the project and its result and to involve external stakeholders in their activities. Main communication tool was the project website (www.interreg-danube.eu/daphne), where besides the basic information and the project news, visitors can find and download the project's main outputs and deliverables. During the 30 months of implementation, 6 newsletters, more than 50 project news and several publications were elaborated by the partners and 30 types of promotional materials were produced and distributed.

Target groups of DAPHNE were national public authorities, infrastructure and (public) service providers, local public authorities, higher education and research and business support organisations. Most of them were reached through international project events and were actively involved in the national workshops.

DAPHNE partners organised several public events on both national and international level to facilitate the regional collaboration of the port community.

Kick-off event

The official launch of the project was on 20 February 2017 in Budapest, hosted by the Hungarian Federation of Danube Ports. The event brought together more than 70 experts having a dedicated interest in the development and improvement of Danube Ports. Among the participants were representatives of port authorities, port logistics operators, ministries of transport, river commissions and port technology providers as well as the General Secretary from the European Federation of Inland Ports (EFIP).





Port Info Days

The Danube Ports Info Days, which were organised by Pro Danube and the DAPHNE partners on 11 May 2017 and 5 June 2019, brought together around 100 participants (industry representatives, port authorities, NGOs, universities) interested to debate and discuss on Danube ports development opportunities. The events meant to promote Danube Ports as logistics & service hubs as well as ideal locations to setting up businesses that need waterborne & intermodal logistics infrastructure. The events facilitated with the help of roundtable discussions and panel discussion a structured dialogue on port

development opportunities touching on topics such as port infrastructure, Public-Private Partnerships for port investments and innovation & new markets in the Danube Region. The venue of the events was the Austrian Ports exhibition stand at the Transport Logistic Fair in Munich, which is the most relevant event for logistics in Central and South East Europe, and therefore can be considered as lead event for the entire Danube region.

Danube Ports Policy Days

The Port Policy Days addressed policy and management issues for the port community allowing all 72 Danube ports to connect and generate synergies. Two Port Policy Day events were organised during the project. The first one was connected to the programme of the 6th Annual EUSDR Forum, the second edition was connected to the official launch event of the Danube Ports Network.

The first event organised in 2017 in Budapest brought together 50 experts from the Danube port community (port authorities, port administrations, port operators), IWT stakeholders, representatives of ministries of Danube States and of European Commission services relevant for port governance/port policy as well as of international organisations including financial institutions.

In a workshop atmosphere, the participants discussed current and forthcoming policy issues of strategic importance for the Danube ports. The issues touched during the discussions with the invited speakers from DG Move, DG Competition, EFIP and Mierka Donauhafen Krems ranged among the following areas:



- Infrastructure development needs,
- Activities of EU to support port development in Danube region,
- Public funding / State Aid / General Block Exemption Regulation,
- Instruments for financing infrastructure needs,
- Good practices in public funding and private-public partnership,
- Role of ports for economic development of the region.

The second edition of the Port Policy Day was organised on 10 April 2019 in Vienna, and with this event, the successful work carried out within the DAPHNE project was acknowledged and one of its successful outputs was introduced to the larger audience, namely the Danube Ports Network (DPN).

Keynote speeches were delivered by strategic partners of the DPN, such as European Federation of Inland Ports (EFIP) and Southeast European Cooperative Initiative (SECI). The keynote speakers shared their views about the role of Danube ports in the overall EU inland ports sector and the areas of possible cooperation with the Danube Ports Network.

National workshops on Port legislation & State aid schemes

Between March and June in 2018, five national workshops took place in Bulgaria, Croatia, Hungary, Romania and Slovakia, focusing on port legislation & state aid schemes, giving the opportunity to the **national stakeholders** to meet and have discussions on the basis of the draft national reports elaborated in the project.



Representatives of cargo ports, shipping authorities, ministries and external experts of inland navigation and port development **discussed challenges to be improved** in the fields of regulations, administration, operational rules, other business activities, environmental issues, ecological facilitators in ports, as well as challenges to be improved in the fields of general block exemption regulation (GBER), de minimis, local infrastructure development, programs directly focusing on port development and these instruments' potential beneficiaries and eligibility criteria.



National workshops on HR

In May 2018 three national workshops on the topic of Human Resources in Danube ports were organized in Austria, Hungary and Romania.



More than 100 experts from industry, research, policy and education attended the one-day workshops, which started with keynote speeches to give a short overview of the latest HR trends in the field of logistics and the influence of digitalization. After the key-notes participants were divided into small groups and discussed different topics (future business models, relevance of digitalization and diversity in inland ports) in an interactive setting. The participants also elaborated profiles for port employees of the future (management and operational level). At the end of the workshops a target group specific catalogue of measures was elaborated for politics, education, research and economy to facilitate a balanced development of inland ports and to make sure that the people required are available in the future.

International, workshops on port management models and port administration

In September 2018, Constanta Maritime Ports Administration and Ovidius University of Constanta organized international workshops on port management and port administration topics in Constanta, where relevant representatives of authorities and stakeholders from the port industry were invited.

The event gave the opportunity to external stakeholders to have an overview about the work carried out in six partners countries regarding both topics. The feedback received from the stakeholders was reflected in the recommendations for enhancing and harmonizing port administration and the port management model.



Participation in relevant conferences

Participation in relevant national and international events was an important element of the DAPhNE dissemination strategy, allowing experts to get informed about the project overview, the latest developments and concepts planned for the Danube region. DAPhNE partners have been very active in attending relevant national and international conferences. A few examples of these conferences can be found below.

- EUSDR Forum; 26-27 June – Bucharest (RO)
- Transport Logistic Fair; 4-7 June 2019 Munich (DE)
- 7th EUSDR Forum; 18 - 19 October 2018 – Sofia (BG)
- Danube Business Talks; 10-11 October 2018 – Vienna (AT)
- ALICE workshop on the topic of the Physical Internet; 9-10 October 2018 – Munich (DE)
- Austrian Logistics Day; 12-13 June 2018 – Linz (AT)
- Present Issues of Global Economy; 8 June 2018 – Constanta (RO)
- Danube Transport Day; 6 June 2018 – Brussels (BE)
- European Integration Realities and Perspectives 13th Edition; 18-19 May 2018 – Galati (RO)
- SIGA2 Conference „Maritime and Ports”; 2-4 May 2018 – Antwerp (BE)
- Transport Research Arena (TRA); 16-19 April 2018 – Vienna (AT)
- Ports & The City; 12-13 April 2018 – Nijmegen, The Netherlands
- Danube Skills Constanta Event – Session: Synergies with Thematic Pole7; 19-21 February 2018
- Green, efficient & innovative Danube Transport; 23 October 2017 - European Parliament, Brussels (BE)
- 6th Annual Forum of the EU Strategy for the Danube Region [EUSDR]; 18-19 October 2017 – Budapest (HU)
- Silk Road Summit; 6 October 2017 – Constanta (RO)
- FAST Danube Project – Workshop on “Field Surveys and Environmental Activities”; 4 July 2017 – Bucharest (RO)
- Transport Logistic Fair; 9-12 May 2017 – Munich (DE)

Promotional materials

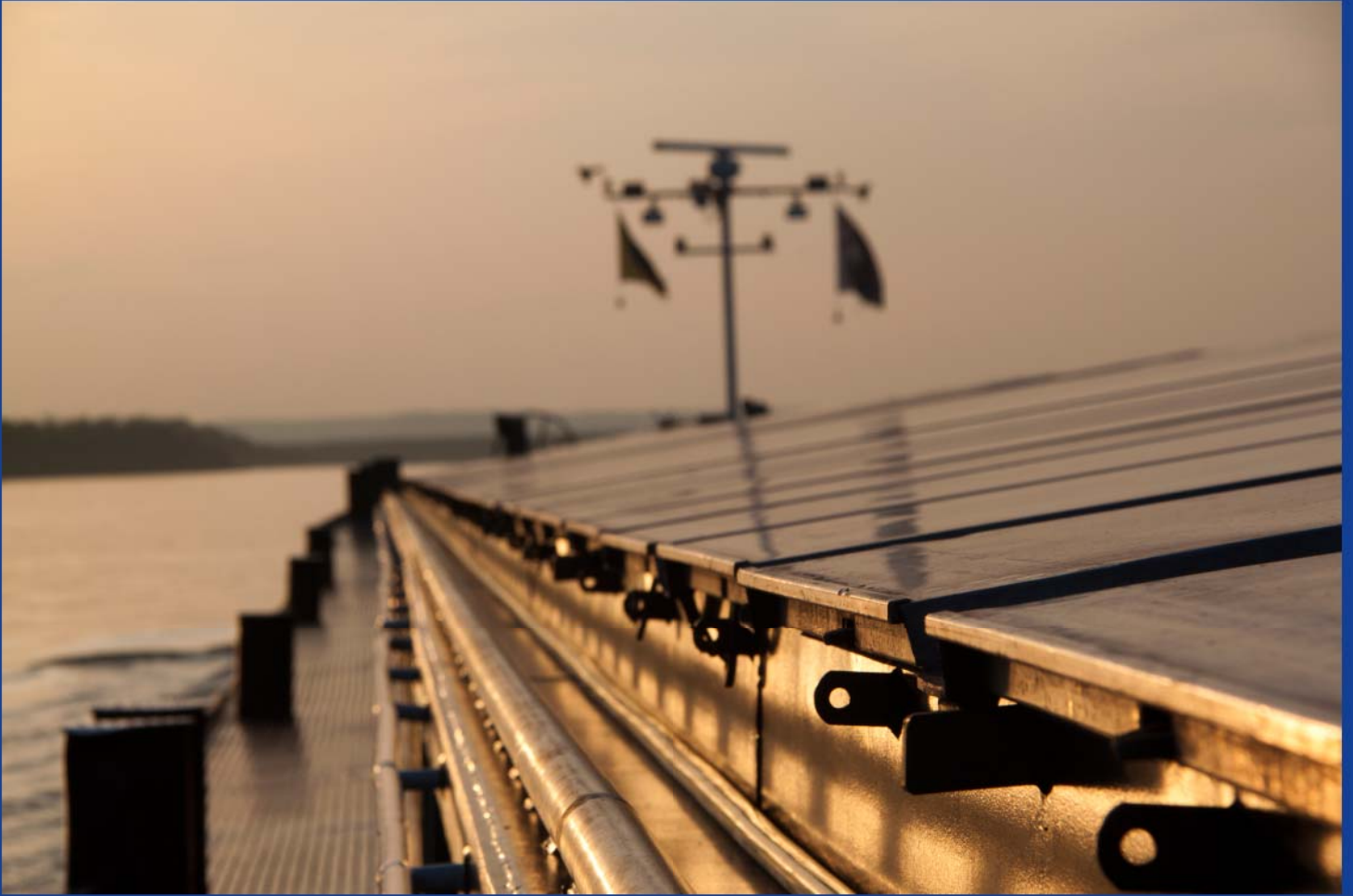
DAPhNE project partners produced and distributed around 2000 promotional materials amongst their stakeholders. The following pictures introduce some of them:



Social media

DAPhNE project has been represented on the website and social media accounts of of INDanube – Centre for Innovation Transfer in the Danube Region, which are available at the links below:

- Website: <https://indanube.eu/>
- Facebook: www.facebook.com/INDanube
- LinkedIn group: www.linkedin.com/groups/8560850
- Group name: INDanube - Centre for Innovation Transfer
- Twitter: <https://twitter.com/INDanube>



Port Legislation and Funding Opportunities





Under the coordination of Maritime Danube Ports Administration Galati project partners from 6 Member States (Austria, Slovakia, Croatia, Hungary, Romania and Bulgaria) have investigated the legal conditions in force as well as funding possibilities for Danube ports with the objective of adopting a joint harmonized approach in regards to legal port issues as well as use of the existing financial means. To this end, the representatives from the private and public port sector all along the Danube (RO, HR & BG Ministries of Transport, port administrations and port associations) have join forces. To properly tackle the matter of port legislation and port funding, the consortium has focused on identifying the national experts in these activity areas. As a result of the investigations carried out, national databases were created in six of the Danube riparian countries represented in the consortium (AT, SK, HU, HR, RO, BG). An international Working Group has been established in order to ensure the collaboration with the consortium members and to help them to prepare a set of legal recommendations concerning Danube ports.

To investigate the legal conditions in force on Danube ports, as well as the funding possibilities available, the project partners elaborated appropriate national reports (AT, SK, HU, HR, RO, BG) regarding the port legislation and port funding framework. The next step was to organize national workshops on port legislation & state-aid schemes to ensure the opportunity for the national stakeholders to have discussions on these topics, based on the national reports elaborated. Five national workshops were organized between March and May 2018 in SK, HU, HR, RO, BG. These events allowed to collect recommendations at national level.

The same approach has been taken with regard to the funding issues, in order to determine what financial aids/programs already exist in the Danube Region to support port investments and how to initiate a regional model for such State-Aid schemes. These tools should encourage the private sector to invest in port infrastructure and in other logistics facilities in the area.

Port Legislation Recommendations & State-Aid Model were elaborated based on the inputs provided by the National Reports and by the discussions held during the national workshops. These significant outputs of DAPhNE project will be used as attempts to bridge the differences between the ports located on different Danube Sections (Upper, Middle & Lower Danube) in order to facilitate the balanced port development and the transfer of specific know-how.

Key findings

- Strong need for harmonization of legislation and encouragement of uniform application of the EU legislation in the Danube Region;
- Not enough up-to-date information about funding opportunities for port development;
- Technical condition of public ports, low interest in commerce through water transport, the age of the fleets and decreasing trends in shipping freight;
- Funding programs shall be more sensible on the core profile and main activity of port companies to make them eligible when applying;
- Concrete measures should be taken in order to achieve changes in the administrative procedures and legal framework to make the inland transport more attractive;

- Lack of good practices and guidelines for state aid schemes; support by the government is essential when applying for state aid;
- Public-Private Partnership as a form of public-private collaboration can be a viable way to fund infrastructure projects at regional or national level. The size of investments in PPP projects can have important consequences for the economic and social development of the countries in which such partnerships are taking place;
- The need to simplify the administrative procedures for the authorization of superstructure development projects;
- An improved regulatory framework will help to eliminate the quality differences in infrastructure and superstructure that exist in the upper, middle and lower Danube sector;
- Laws and regulations should be more flexible and adjustable to fast market changes;
- Concessions and PPP regulations should be established on a good basis like property issues in ports should be solved in advance.

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**Improving port administration processes
and management models**





Led by Bulgarian Ports Infrastructure Company (BPICo), the work package dealing with Port administration processes and management models aimed to help ports tap their full potential as eco-friendly multimodal hubs. Starting from the current situation along the Danube, suggestions were collected for the improvement and harmonization of port administration processes as well as for fine tuning port business strategies. Since ports deal with a wide range of activities covering administrative functions (control of all types of vehicles accessing the port area, cargo control, environmental issues, safety & security within the jurisdiction area) and operational functions (controlling the arrival & departures of vessels, the loading & unloading of cargo, berth distribution, etc.) these items were treated together. Special attention was paid on the one hand to human resource development and, on the other hand, to the way natural energy resources are being used within the port area. BPICo worked together with ports, port administrations & associations, universities, ministries and representatives from the private sector to deliver high-quality outputs regarding the topics approached. Transnational cooperation was fully achieved in this workpackage as upper, middle & lower Danube project partners collaborated and shared their know-how and expertise in order to jointly produce recommendations and guidelines to help upgrade & better run ports.

Within the activity dealing with improving and harmonizing port administration processes the following documents were elaborated: 5 National reports on port administration processes (AT, BG, HU, RO, HR), Conclusions report on port administration processes and Good practice report on port administration. Around 100 stakeholders gave feedback with the help of a specially created survey. The documents contain significant information on port infrastructure, services and facilities of ports under survey. Analysis was made on the procedures that port authorities/administrations apply to vessels and terminal operators and to other users of port infrastructure and services with the aim to determine the aspects to be simplified, modified or eliminated in order to increase efficiency. Contributing partners found that EU projects implemented with regard to administrative procedures for vessels and environment protection are a source of good practice. Also, there is high level of expectation regarding the harmonization of administrative practices along the Danube. On the other hand, there is significant need to facilitate public procurement procedures and administrative burdens in carrying out the repair and maintenance of port infrastructure in ports. Port users find that there is need for improvement of the procedure for inspection of the ships at arrival in port. The burden has to be reduced for customs procedures. Long and complicated border controls were identified in Ukraine, Serbia, Hungary & Romania. In some cases the lack of staff in control institutions increases the time for checks. IT solutions with regard to collection of information and communication are identified as one of the main sources of development for port procedures. Duplication of efforts in sending the same information in electronic format and then on paper copies is considered useless. Although the main theme of the activity was related to administrative procedures, stakeholders identified infrastructural improvement as much needed – new access roads, new facilities, container transport development. Partners identified over 15 good practices on the basis of implemented or undergoing projects, current EU legislation and practices in Danube ports. Some of them include: associations and unions of port stakeholders; common database on BG and RO ship inspections; NEWADA, DANUBE STREAM, River Information Services (RIS), DAHAR, DANUBE SKILLS, CO-WANDA projects, etc.

Improved port business strategies

Partners concluded that there is no general solution applicable to every inland port because ports have different background conditions. However, they have identified and recommended some good practices which can improve port operation / port management model. Among these, some examples worth-mentioning are the smartPORT concept from Hamburg (Germany), the model of Thinkport in the Port of Vienna, the successful concession example from Bulgaria or the management model applied by smaller, private-owned ports from Paks (Hungary). More details about the above mentioned and further recommended port management models and guidelines for implementation can be found in the report **Recommendations for port management**.

Transnational cooperation

On 5 September 2018, National Company Maritime Ports Administration Constanta organized an international workshop on port management models, where project partners and other relevant representatives of the authorities and stakeholders from the port industry were invited. On the next day, the Ovidius University of Constanta hosted an international workshop on port administration processes having as audience the representatives of the DAPHNE project partners, external advisors and stakeholders with interest in ports activities. During these two international workshops several topics were discussed and debated such as: “Conclusions reports on port administration processes”, the most relevant aspects of the conducted survey and the main research results, the “Best practices report regarding port administration processes and port management models”, as well as the draft of the “Port processes and port management models' harmonization recommendations”. The Hungarian Federation of Danube Ports (HFIP) had an important role, presenting the conclusions of the “National Reports on Port Management Models” which were elaborated in six Danube riparian countries (AT, RO, BG, HR, HU, SK).

Solutions proposed

A better communication among institutions from different European countries could be a viable solution. Also, the use of information systems to allow for better reporting and monitoring is strictly needed. The design and implementation of a dedicated knowledge management system could provide the framework for the identification and dissemination of good practices and lessons learnt for the development of Danube ports. Extending 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.

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Human resources development in the port sector





Recent years have witnessed a growing acknowledgement by the port industry that appropriate attention must be given also to the human factor, as skilled and motivated work force contributes greatly to the overall productivity. Ports should be seen as “socio-technological” systems as in practice the operations in port terminals are carried out by a partnership between human beings and technology.



A survey on the status-quo of human resources in Austrian, Hungarian, Romanian, Bulgarian and Croatian Danube ports was conducted to assess the needs of the inland port sector concerning human resources development. In total, eleven port authorities covering around 1,400 employees from five Danube countries participated in the survey. Moreover, three workshops were conducted in Austria, Romania and Hungary to collect information about the current status and future developments of HR in ports along the Danube.

The study shows that the majority of the employees in Danube inland ports are male and have a school-

leaving qualification. The majority of port employees employed by port authorities participating in the study are older than 36 years entailing the risk of shortage of staff in inland ports in the next decades due to the retirement of current employees. In the future, experts from the inland port sector expect a balance in terms of gender in inland ports. Results show that in the future further training measures are required by inland ports. In addition, measures to promote inland ports as an attractive work place to young people and women are required.

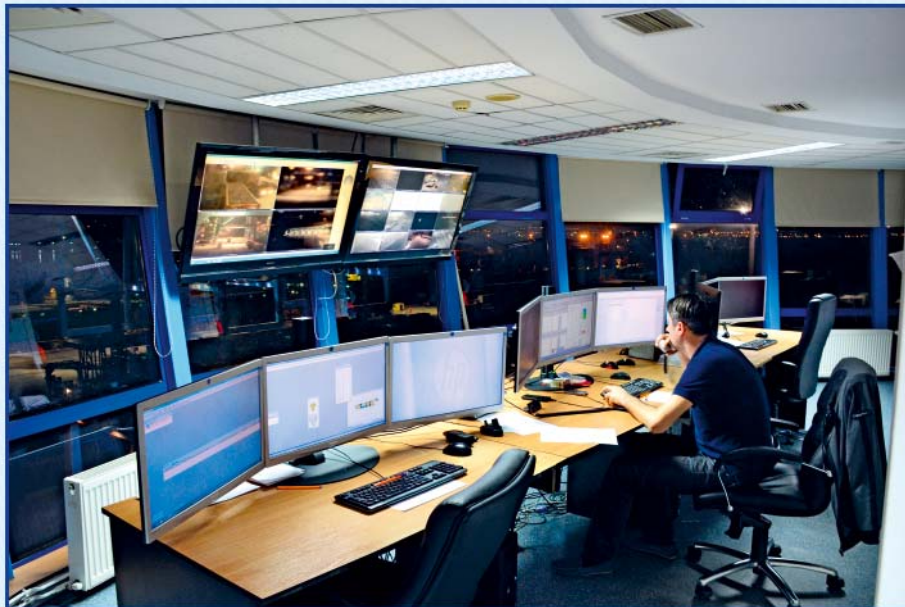
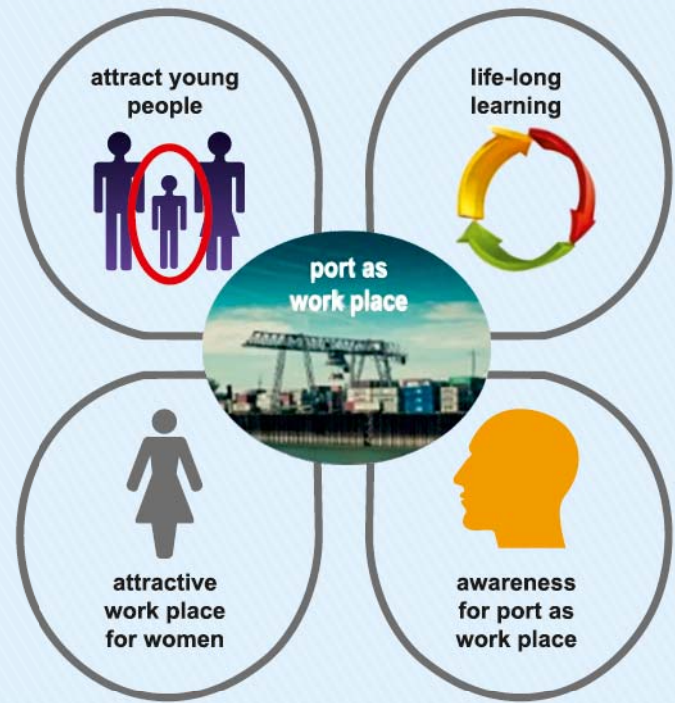


To keep ahead with the changing environment and break-up the conservative port procedures there are four guidelines defined in order to create diversity in ports as preparation for the future of ports to become important economic centers in supply chains:

- Create general awareness on ports as workplace
- Promote inland ports as attractive work place for young people
- Promote inland ports as attractive work place for women
- Life-long learning for port employees

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Eco-improvement solutions





With the aim of developing guidelines for green port policies to be applied in the Danube region, the involved partners under the lead of the University of Applied Sciences Upper Austria compiled a list of environmental key performance indicators (EKPIs) for management and improvements in port operations. In line with these EKPIs, several examples from the Danube community were investigated to see how implementation has been performed and what new initiatives are being developed. Examples from the Rhine region were analysed in order to determine good-practices that can be transferred to the Danube region. Based on the EKPIs elaborated, a questionnaire was elaborated and applied to collect information from ports from the Danube region in regards to their current green port level. The goal of the questionnaire was not only to assess the current status of implementation of such measures and of EKPIs, but also to determine the eco-improvement fields that are of future interest to the community.

Findings show that at least 80% of the surveyed ports have some sort of a method (either environmental management system - EMS, policies or guidelines) to monitor the environmental performance at the port in place. The most common method to monitor the environmental performance of Danube inland ports is to follow governmental policies and guidelines. There are differences in the governmental level of those policies as they range from internal guidelines to the port to federal or national regulations. Respondents were requested to prioritise five important issues that play a key role in keeping track of or need improvement at the respective port. These answers were ranked to assess EKPIs for Danube inland ports. EKPIs were limited to important issues named by at least three ports per environmental priority. Comparing theory with practice, valuable parallels were found. It can be observed that PORTOPIA's EKPIs for inland ports overlap in seven out of ten EKPIs with the findings for EKPIs for Danube ports. Suitable EKPIs for Danube inland ports include soil contamination, dredging and development on land, which represent rather qualitative indicators and water quality, port waste, air quality, noise and energy consumption, which are quantitatively measurable indicators.

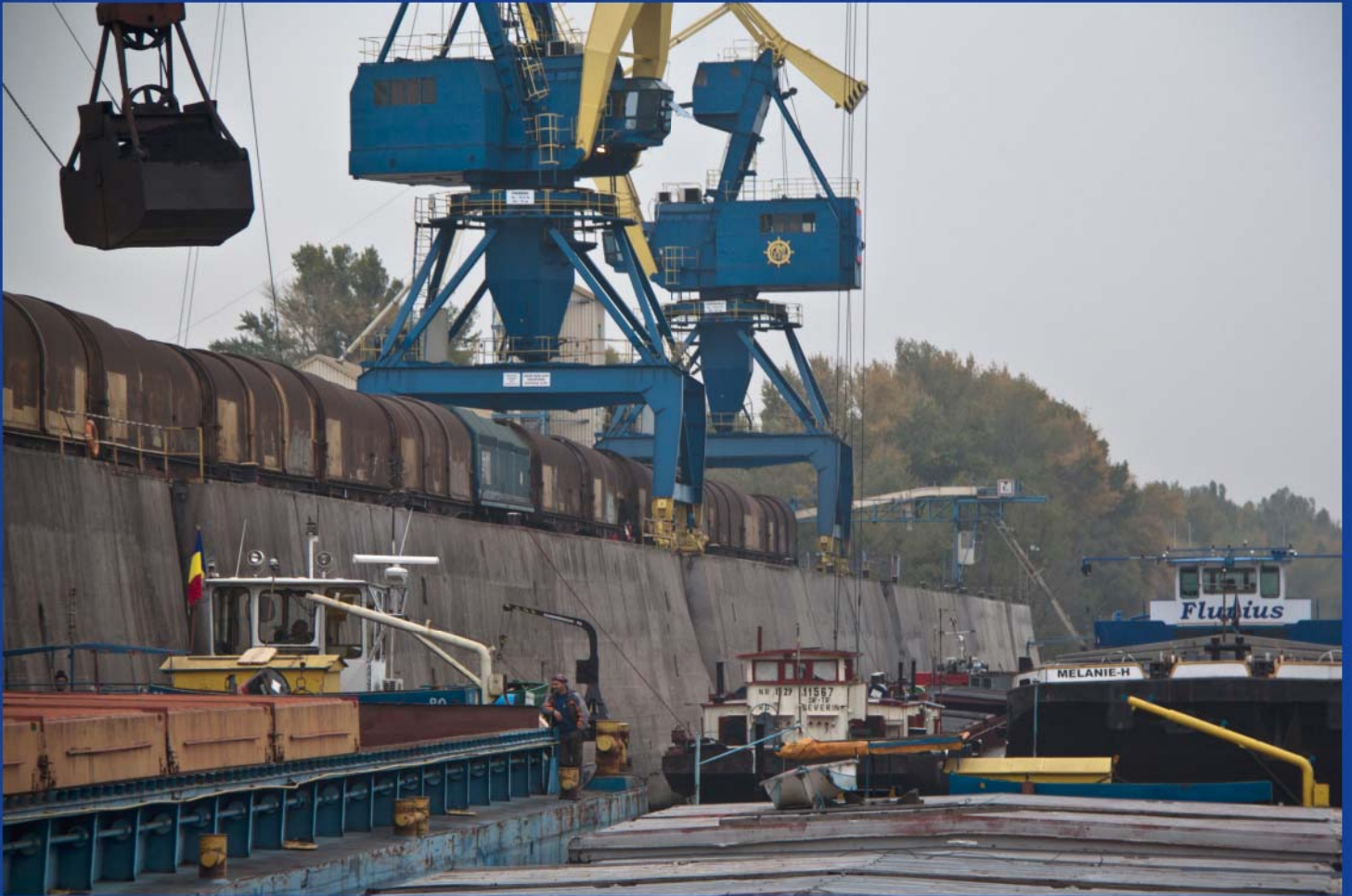
The assessed EKPIs for Danube inland ports represent a suggestion for monitoring to improve the environmental performance. Ports that already monitor some of these EKPIs can enhance their observation with further controls of EKPIs. It is also crucial for Danube inland ports to start reporting their controls. This eases the monitoring of progress of EKPIs.

This research reflects that practice is very close to how theory describes it. Research on the topic of environmental improvement at ports shows an increasing relevance of the importance of environmental concerns for ports. This report supports this as most inland ports show many measures to improve the environmental conditions.

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Overview of port infrastructure and industrial development





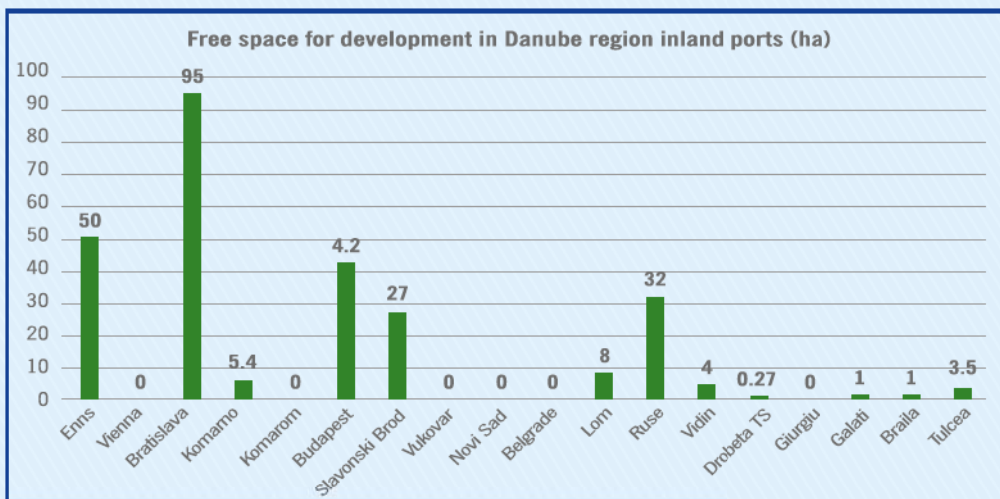
Under the coordination of iC consulenten, the DAPhNE consortium assessed the status of the port infrastructure in the Danube area and clarified questions related to the usage, port development and rehabilitation plans and infrastructure gaps.

In terms of infrastructure, ports have reported various gaps. Currently, only three ports have 100% of vertical quay length, while only four ports have more than 60% of the vertical quay length of their total quay length. Most of the ports are faced with the problem of the lack of free space for further port development, except the port of Constanta. Available space for further port development stretches from virtually zero hectares in the ports of Vienna, Komárom, Vukovar, Novi Sad, Belgrade and Giurgiu, to maximum 50 ha in Enns and 95 ha in Bratislava. The number one gap for ports is the lack of sufficient quay space or the quay length. A total of 16 (out of 19) ports have identified the need to extend the quay length, that is, their waterside capacities. Rail connections need to be improved in 15 ports while internal roads need to be improved in 14 ports. Ten ports have expressed the need for an extension of cargo handling areas, usually located just behind the quay wall or between the quay wall and storage areas. Almost half of the analysed ports identified the need for capital and/or specialized transshipment and handling equipment including heavy lift capacities. An encouraging number of ports showed their awareness of the need to “green” the ports and port operations. Five ports identified the need for structures needed for collection and treatment of precipitation water (rain, snow, etc.), while six ports have expressed the need for alternative clean fuels (LNG) bunkering facilities. Four ports identified the need for alternative fuelled (LNG, electric, etc.) handling equipment such as cranes, reach-stackers, forklifts, straddle carriers, etc.

The survey of the port development plans demonstrated that 19 selected ports had a total of 136 projects. Out of this, 26 projects were already completed, while 39 projects were on-going, and 73 projects are planned as of the end of 2017 onwards. Costs of completed projects in all ports was 302 MEUR, while the current investments in on-going projects are almost double and reached a level of 532 MEUR. Planned port infrastructure investments are ten times higher (5.5 bn EUR) than the current investments, but financing sources for most of these projects are yet to be secured. Regardless of that, the general conclusion is that the investments in ports are on the rise.



In order to overcome significant differences in legislation and practice of industrial development in ports of riparian countries, a concept of “Hybrid Logistic Zone” (HLZ) is suggested, which recommends, without any imposing, the framework for initiatives to develop industrial activities in ports. Hybrid logistic zone have the best chances for success if they are located within, or close to port areas. Such zones facilitate freight distribution and manufacturing activities and have a dominant international trade orientation.



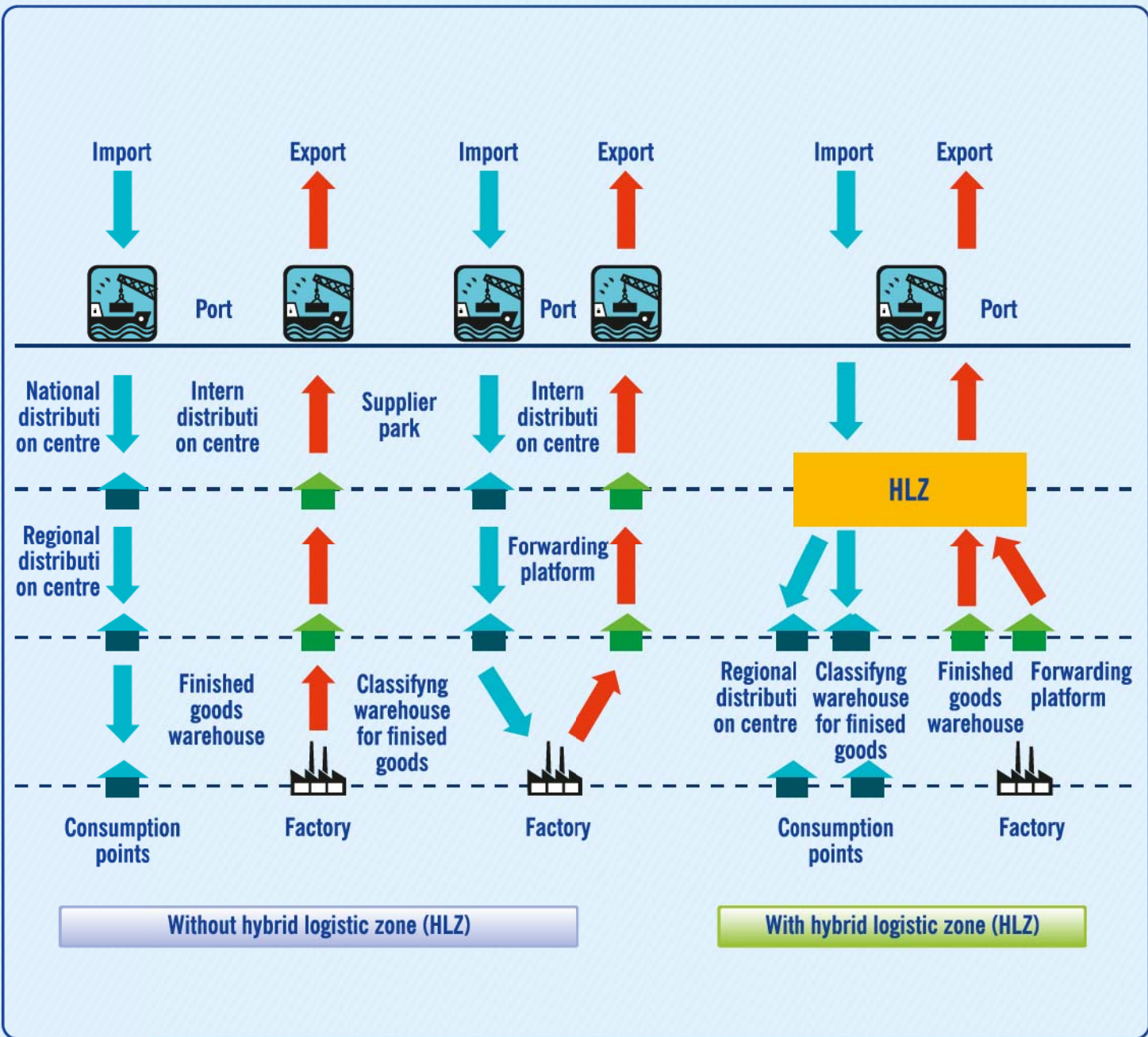
HLZs are composed of distribution centres and determined manufacturing activities. They provide geographical advantages in terms of accessibility, land availability and infrastructures as well as operational advantages in terms of favourable regulations (features of free zones) and economies of agglomeration. Since HLZs encompass three basic elements: an industrial zone, a free zone and a logistic zone, these elements may all be within the limits of the port areas, but

they can also be outside the official port areas and in this case they should be located adjacent to port areas whenever possible. The legislation governing HLZs should be such to encourage HLZs to compete based on facilitation, facilities, and services in addition to the provision of incentives. The importance of regulatory relief to investors is a crucial yet overlooked aspect of successful HLZ programs.



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Photos used:
 Port of Belgrad
 Port of Prahovo
 Port of Novi Sad







Guidelines for investments in Danube ports





The aim of this these guide times was to provide a comprehensive overview of the financing options in order to help compensate the development imbalance between the Upper Danube ports and ports on the remaining sectors of the river. Work on the elaboration of this output was managed and led by iC consulenten, while project partners from Austria, Romania, Bulgaria, Croatia, Hungary, Slovakia and Serbia greatly contributed with their inputs on national level.

In their constant quest for development, port authorities in the Danube region have engaged considerable financial means to develop, rehabilitate or modernize their ports. In order to develop ports, many countries are forced to involve third party funds, apart from their own financial means, like those from international financing institutions (IFI), such as the World Bank, European Investment Bank or similar. Some countries have been doing it with more success, some with less. Substantial funds have already been dedicated to port development, while even more funds are planned to be engaged in the forthcoming period, as the needs for further development are tremendous.



The investment needs for the projects that are planned to be completed before 2030, a year which matches the deadline for the full establishment of the core network on the Rhine-Danube Core Network Corridor, reach a total amount of 5.5 billion Euro, and that is the amount needed only for the 19 ports analysed in the DAPhNE project in seven Danube region countries.

Port development can be financed by EU funds out of various financing instruments, including those for financial support for implementation of European policies and strategies. Out of five European Structural and Investment Funds (ESIF), two funds are aimed, mostly, at reducing the

wealth gap among the regions of the Union through the provision of grants: the European Regional Development Fund (ERDF) and the Cohesion Fund (CF). These multisector funds are accompanied by some sector-specific funds, such as the Connecting Europe Facility (CEF) supporting Trans-European Networks.

Since Public-Private Partnership (PPP) was a preferred method of port investment by all partners, various guidelines and recommendations for PPPs are given. For example, **Austria** recommends the transformation of port authorities into commercialized or corporatized entities so that they could work under the commercial law and thus perform faster and easier business relations with port tenants and lessees. **Slovakia** recommends clear and specific PPP legislation which would clarify the issues on priority investments, land lease and payment methods. **Hungary** applies long-term concessions which were directly agreed, with no public tenders, and the only issues recommended to be solved are the conditions for concession termination. In **Croatia**, main recommendations are focused on resolving the issues of land ownership, where for efficient PPPs, including concessions, the land should be state-owned. In addition, it is recommended that the concession granting,

Port	Number of planned projects	Cost of planned projects (MEUR)
Enns	0	0.00
Vienna	1	9.02
Bratislava	11	292.22
Komarno	1	122.12
Komarom	0	0.00
Budapest	0	0.00
Vukovar	2	25.77
Slavonski Brod	0	0.00
Novi Sad	0	0.00
Belgrade	1	343.00
Drobeta TS	1	20.00
Giurgiu	2	108.53
Braila	0	0.00
Galati	3	56.48
Tulcea	0	0.00
Constanta	39	4,514.97
Vidin ^[1]	1	0.00
Lom	6	25.60
Ruse ^[2]	5	0.00
Total	73	5,517.70

(Source: iC consulenten, based on inputs from project partners)

and re-negotiating rules should be more flexible. **Serbia** recommends such legal background which provides a level playing field for all parties, caution with land issues, and determination of the port land as a “good of common interest” before any concession plans. In addition, transparency, flexibility and clarity in concession conditions and payment methodologies (calculation of fees) are also highly recommended. **Romania** recommends, above all, the clarity and precision of PPP legislative framework, clear guidelines for PPP procedures implementation, better training on PPP procedures and even a regional agency tracking and assisting PPPs. **Bulgaria** recommends more autonomy of port authorities in terms of decision-making on concessions, as well as keeping the incomes from the concession “in the house”, that is, within the port authorities so that such revenues could be used for further port development and infrastructure investments in ports where concessions are not convenient, not applicable, not possible, not attractive or not planned.

Finally, apart from the flexibility requirements, it is highly recommended that the risk allocation process is carefully performed and agreed. Significant part of the negotiation “package” between the port and the private sector during the tendering process belongs to the process of risk allocation. When PPP agreements involve capital investments, negotiations for risk allocation frequently include potential lenders.

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Public-Private Partnership models for Danube ports





Public–private partnerships (PPPs) in port development projects have become common in the last few decades. The most common form of PPP is a concession, be it a public works concession, service concession or a combination thereof. Other forms of less complex modalities of PPP exist, such as land leases, management and/or operation outsourcing, licensing, franchising and similar.

The aim of this activity, which was coordinated by iC consultants, was to give an overview of PPP schemes in the Danube region ports and to deliver a set of bottom up recommendations from both public and private entities in the regional port industry.

Both public and private stakeholders (port authorities, port operators, ministries, etc.) in ports were required to fill in a questionnaire containing questions related to regulatory and practical aspects of PPP in ports in the Danube region. These questions were meant to point out the practices and problems in property rights, rights and obligations of the grantors and concessionaires, tariffs, risk allocation, investment responsibilities, access rights, concession fees, termination conditions, procurement of concessions, return of land, facilities and equipment, different/preferred forms of concessions, pre-qualifying conditions, etc.

In addition, the participating partners elaborated on the PPP specificities in their countries. In **Austria**, no specific Public-Private Partnership (PPP) laws exist. Port companies (i.e. port authorities) are corporatized and work under the corporate (company) law. Thus, they are free to enter any kind of lawful agreements with other public or private partners, including the lease of land, infrastructure, suprastructure and the right to operate the port or a terminal. **Slovak** legislation does not explicitly define any special regime for port-based PPP projects.

All terms of the concession contracts (PPP model based on risk distribution, financing, liability, etc.) are the result of lawful agreement between the parties. There are two types of concessions in Slovakia: concessions of construction work and service concessions. In case of **Hungarian** ports, there is no relevant PPP system, as most of ports are owned and operated by private entities. However, the Freeport of Budapest, the Port of Baja and the Port of Győr-Gönyű are already managed in a concession structure.

As an example, port operator Freeport of Budapest Logistics has a 75-year concession contract with the asset manager state-owned company for the management and development of the Freeport. Currently no regulation tackles port PPPs in Hungary, but a complex law of the management of state assets must be considered for each and every concession-like case. Subject of PPP in **Croatian** ports is building/reconstruction of public facilities with a purpose of public service providing. Public body delivers a PPP project proposal to the Agency for the PPP which approves it, following a confirmation from the Ministry of Finance. Concession in inland ports can be given for: a) port services, b) right to exploit common good and c) public works.

Port services in private ports and private wharfs are carried out based on concession for the right to exploit common good or other goods. In **Serbia**, two types of concessions are allowed: for the providing of port services, and concession for public works, with the right for the commercial use of executed public works. Port Governance Agency (having the role of national port authority) initiates the procedure, while the

concession grantor is the government itself. Nevertheless, despite the existing legal framework, no port is constructed/operated under concession agreements up to this day. In **Romania**, the basic legislation for PPP is the law on works concessions and service concessions. The legislation allows a PPP in which a new project company resulting from a PPP agreement can be either public or private.

Such project company, after becoming a member of the company register, acquires the status as a party to the respective PPP contract. In **Bulgaria**, there are three basic types of concessions suitable for ports: concession for construction, service concessions and concessions for use of public property. Public ports of national importance may be granted to third parties under the procedure of the Concessions Act with a concession for a service or concession for construction. For both types of concessions envisaged, the port territory and infrastructure remain state-owned.

Finally, a set of generic and specific recommendations for improvement of port PPPs is given. These recommendations include the variety of PPP models which are applied in the port industry world-wide, recommendations for risk allocations and recommendations based on experience and lessons learned in the countries along the Danube.

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**Innovation trends and new
market opportunities**





Most of the Danube ports on the middle and lower river sections are still struggling to compete with their Upper Danube counterparts in terms of cargo types, infrastructure and logistics facilities. The DAPhNE project aims to facilitate a balanced development of Danube ports as eco-friendly, well-accessible multimodal hubs for the transport system of the region.

Hungarian Federation of Danube Ports together with Pro Danube, Ennshafen Port and the University of Applied Sciences Upper Austria investigated market opportunities which can be adapted by Danube ports in the future considering other sectors – renewables in particular – with economic performance strongly linked to industrial ecology, LNG as cargo, the Danube container market and the Physical internet. The Hungarian Federation of Danube Ports prepared a report entitled **New Market Studies** based on all these topics.

To reach conclusions, a survey was organized among predetermined target groups (port owners, port managers, port authorities, port operator companies, shipping companies, etc.), inviting them to share their knowledge and experience. The results of the interviews were summarised first in thematic studies which shed light on:

- the environmental framework that triggers the deployment and further extension of the four markets;
- the current supply/demand status (barriers and competitive powers);
- the costs and available infrastructure elements in the region;
- the success factors that can help with the expansion of the four markets;
- the profile of the entities that are most likely to start using these services; and
- the changing training needs of the constantly updating technologies and new innovations.

Industrial Ecology

Industrial ecology, also known as circular economy, is an environmentally sustainable model for managing industrialized/logistic zones. In a closed loop system, activities, functions and services are connected, instead of being separated from each other. This means that if a manufacturing activity generates by-products and waste as well, besides the main product, by-products and waste must be handled and reused by other units to avoid, or at least to significantly reduce, the volume of pollution.

Hungarian Federation of Danube Ports made a research on this topic, and based on the literature and external examples presented by European countries in or out of the Danube region, there are plenty of practices adapted around the world for running ports on an eco-innovative way in a closed loop system, where industrial activities and functions run by companies settled in a port are connected, well-embedded into each other to respectfully reduce the volume of waste and by-products generated and the volume of pollution harmful for air, soil and water.

Port of Duisburg (Germany) adopted several environmentally friendly solutions that can be identified as a well-implemented model of industrial ecology. Port of Antwerp (Belgium), being one of the largest ports in Europe, has a huge environmental impact, thus it invests in

LNG as Cargo

Pro Danube investigated the use of LNG (liquefied natural gas) as cargo in the Danube ports and provided a status overview over the current situation and ongoing projects in the region as well as a market outlook towards future LNG-cargo flows. Worldwide trends show that natural gas usage grows strongly including continuing expansion of supplies by liquefied natural gas (LNG), which is also increasing the global availability of natural gas. In Europe, LNG will make the gas market more flexible: it can be traded on spot-markets and is in competition with the existing long-term contracts of the pipeline gas. The general situation on the natural gas market in Europe is, that domestic gas production is set to roughly halve over the outlook (BP Energy Outlook 2018) causing the share of imported gas in total consumption to increase from around half in 2016 to three-quarters by 2040.

For the eco-political reasons known brought in by the use of LNG as fuel and as cargo, measures have to be taken on different levels: public funding opportunities and financing support for fleet owners and investors in infrastructure, political support and stricter environmental regulations on European as well as on national level for polluting fuels in order to facilitate Liquefied Natural Gas/Liquefied Bio Gas. Moreover, education & training as well as research in the field of LNG technologies should be even more promoted on country level and promoted to the general public as well as to fleet owners. There are already some projects ongoing in the Danube Region (development of infrastructure in Germany, Austria, Slovakia, Hungary, Bulgaria, Romania, etc.), in order to meet the requirements of EU Directive 2014/94/EU on the deployment of alternative fuels infrastructure". As an example, for a good integration into the regular business of ports, the port of Enns has started to develop LNG infrastructure on their property together with a regional gas provider as partner. Based on the built-up of infrastructure (storage and fuelling station for trucks) it is envisaged to make further steps into bunkering of inland vessels and becoming a hub for LNG cargo traded in the Danube region.



The dynamic worldwide market development and the ongoing actions taken in various regions of Europe let expect, an increase of LNG equipment produced worldwide, which will decrease the unit costs from the currently relatively high production costs. In addition to the expected stronger competition in Liquefied Natural Gas/Liquefied Biogas supply, the economies of scale for cryogenic equipment will widen the market potentials for LNG as a transport fuel as well as a cargo for inland waterway transportation.

To conclude, on the one hand both the European road transportation sector and the inland navigation sector will make steps forward in the right direction for a more environmentally friendly transport industry and on the other hand, supply diversity and flexibility of natural gas will be increased with LNG deployment. However, the timing and speed of implementation in single countries will strongly depend on European as well on national alternative fuel supportive policies together with targeted deployment projects.

Most important findings

- Liquefied Natural gas is an environmentally friendly alternative compared to oil and the European dependency on it in the transport sector (94%). Moreover, as an alternative in the supply chain of natural gas, it can also increase the supply security and diversity of the important energy carrier in general.
- A view on the European energy market shows, that in comparison with other fossil primary energy carrier, natural gas is the only one increasing its shares and volumes in the total primary energy consumption in the EU until 2040.
- The prospective challenge in the future will be the integration of a bio-component (via bio-gas production and liquefaction) in order to supplementary improve the CO2 performance of LNG in the transport sector.
- Several measures on different levels are still necessary for a faster and easier implementation process in the Danube Region; e.g. public funding opportunities and financing support for fleet owners and investors in LNG infrastructure, political support and stricter environmental regulations.
- The Danube ports can offer perfect infrastructural conditions for being distributional and storage hubs in the region.
- Ports can function, based on their central logistical locations and in addition to the purpose of being a hub for the cargo, also as knowledge centres for education and training in regards of LNG technologies and handling of the freight

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Danube Container market

Container transport on inland waterway is highly developed on the river Rhine, while the corresponding figures on the Danube are very low. The EU's decarbonizing strategy calls for sustainable freight transport and all forecasts assume that the railway infrastructure will soon be overloaded. Taking these into account, inland waterway transport and containerization will be of high value and get a strategic focus in the future.

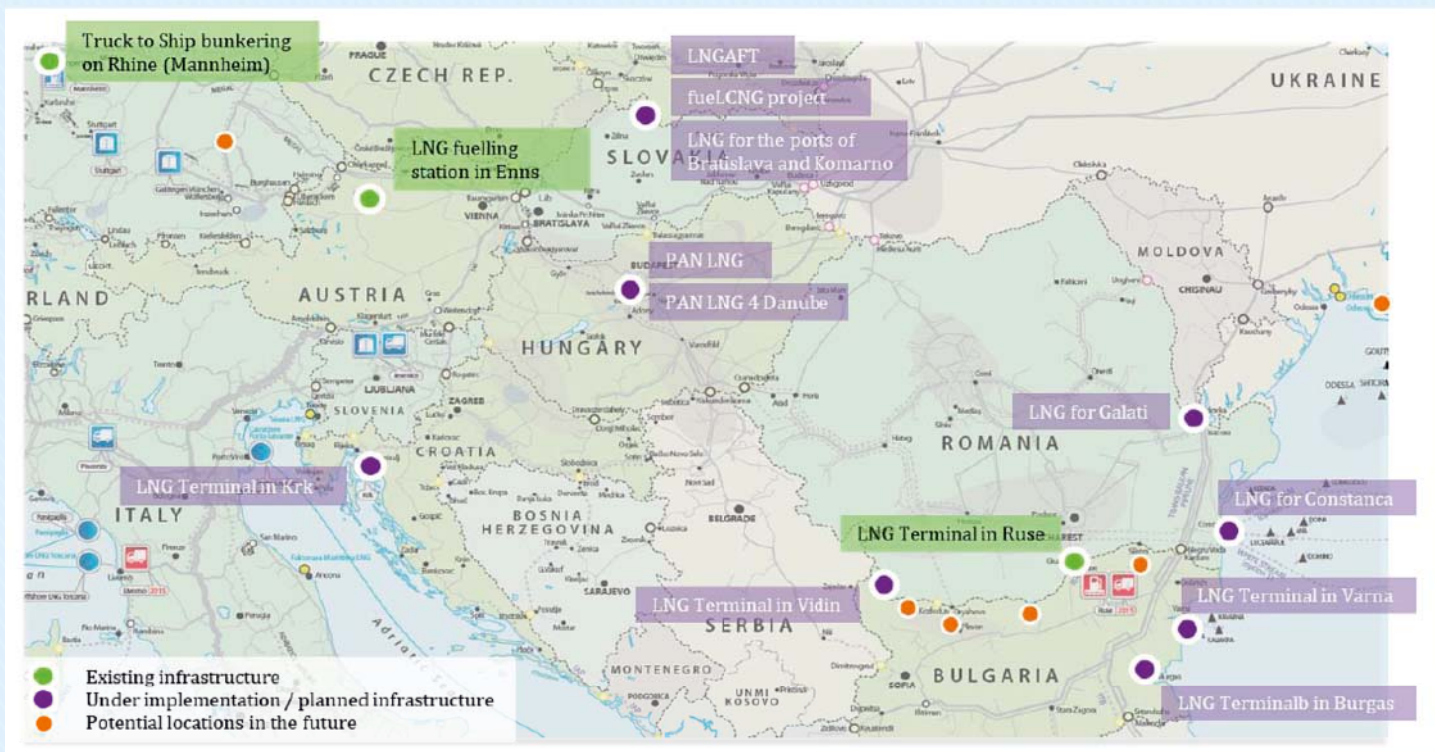
Ennshafen OÖ GmbH, with the cooperation of project partners from Austria, Slovakia, Hungary, Croatia, Serbia, Bulgaria and Romania, prepared a study to provide an update on the general situation regarding container transport on the Danube, a reflection on the development of recent history as well as an outlook on the future and, above all an approach for ports and other partners to develop the future of container cargo to increase Danube transportation.

According to the conclusions of the report, in some areas in the Danube Region, there is a need for establishing and developing full container liner services due to the currently insufficient railway capacity – downstream from Budapest to Constanta, for example. It would be prudent to use this demand to precede the potential railway development projects – as soon as the railway network expands, IWT's competitive edge will significantly decrease in terms of market price and handling time. However, full container transport “to the west” (i.e. from Austria via the locks in the Rhine-Main-Danube Canal established in Germany) is not a viable option. An alternative opportunity is the empty container traffic. Establishing an empty container liner service is a complex – and expensive – process, but it could be realized with appropriate handling times and potentially economic conditions.

While the expansion of spot traffic seems more efficient and economical in the short term, the offer of an empty container liner service should remain a part of the long-term strategy for the Danube – and so is the adaptation of the required framework conditions. This strategy should include the following terms, which are meant to be the crucial success factors of the empty container business:

- reference for the Regensburg-Budapest section (as a medium-term offer),
- longer relations (up to seaports),
- formation of an interest/implementation community,
- detailed survey of the market demand,
- definition of the investment needs,
- definition of the market price in competition.





Also, some recommendations have been collected based on the conclusions, which could be followed-up by the Danube Ports Network (DPN). The recommendations are as follows:

- investigate the feasibility of the shown model product for an empty container regular service on the Danube in more detail with potential realization partners,
- examine and initiate the creation of the transport policy framework for empty container business compared to railway system,
- meanwhile expand or attract the system of spot traffic for empty container business, because it can respond quickly and easily to concrete customer inquiries,
- common concepts of waterway and rail as a contribution to the developing decarbonization strategies in freight transport, with the goals of reducing emissions
- link the New Silk Road (OBOR – one belt one road) with a direct trimodal Danube logistic hub as a strategically important step and pursue an Adriatic linking strategy,
- coordinated overall strategic planning of rail and waterway development, especially in the lower section of the Danube,
- execution of several developing projects of actors within the DPN – e.g. basic planning of future alternatives in burden industrial congested areas,

- examine the new technologies in the container sector regarding new market opportunities even for waterway transport in a trimodal logistic hub.

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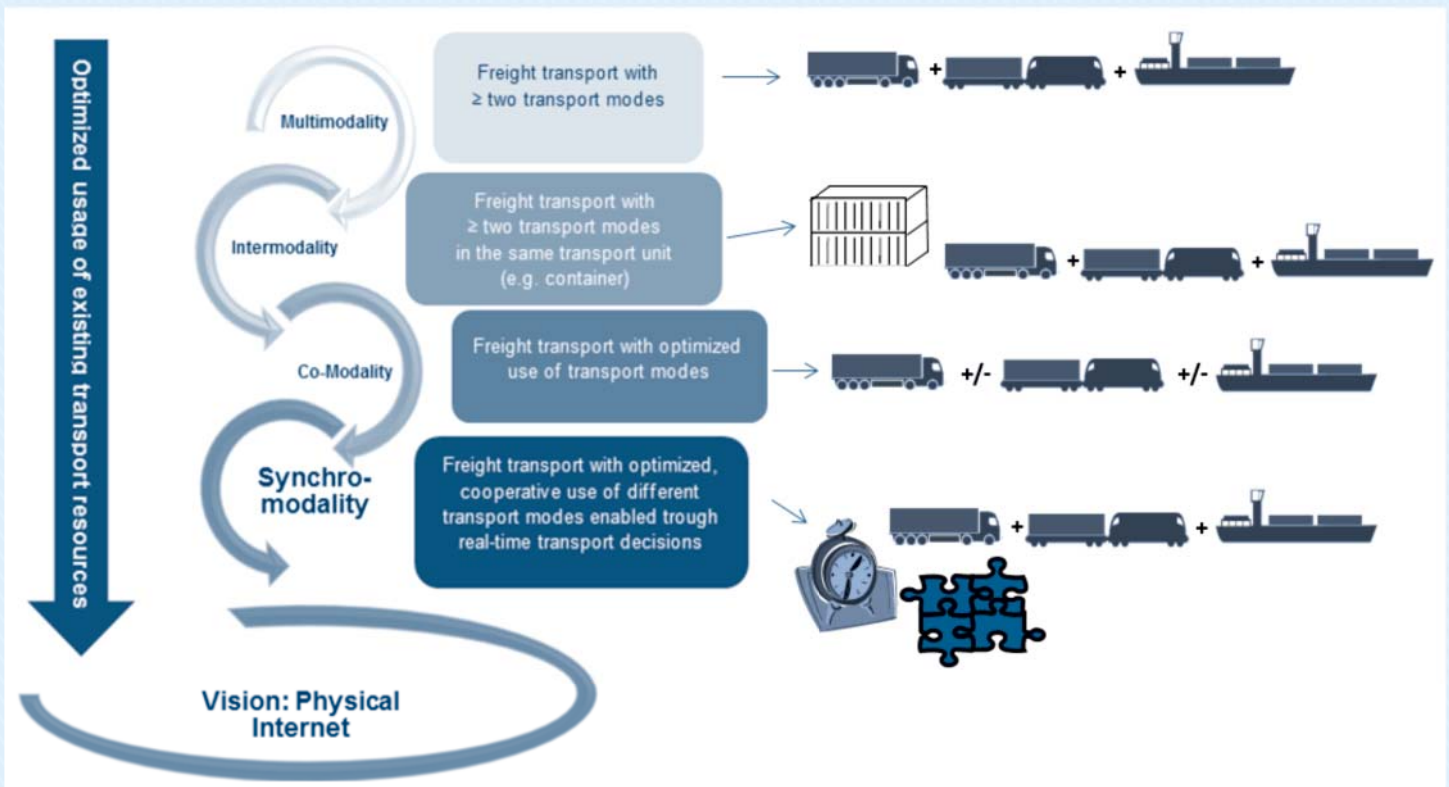
Danube Ports & the Physical Internet

Since transport is expected to triple by 2050, Europe needs to adequately accommodate transport flows on the different available transport modes to overcome capacity problems and provide sustainable use along the entire supply chain. Inland ports will play an important role in this matter due to their crucial function for the hinterland transport. The transport concepts of synchromodality and Physical Internet shall facilitate this desired modal shift.

Synchromodality aims to standardize transport units over all transport modes, to bundle strengths of different transport modes and to avoid unimodal transport by adding real-time data to guarantee the most efficient transport. Physical Internet, as the next step of the evolution, provides a smart network where standardized containers, parcels, warehouse and turnover points guarantee a barrier-free and seamless transport, and in which the units (e.g. a parcel or a warehouse) communicate almost independently – like the Internet. Based on their experience gained from previous project, University of Applied Sciences Upper Austria elaborated a report on the topic, which aimed to provide an overview of logistics changes in Danube ports triggered by the Physical Internet concept.

Experts in Austria were interviewed about the following four factors of successful implementation of synchromodality and Physical Internet: (1) awareness, mental shift (2) network, cooperation, trust (3) ICT and ITS technologies (4) physical infrastructure. Furthermore, representatives of the University Applied Sciences Upper Austria attended an international Physical Internet workshop organized by the European Technology Platform ALICE and SENSE project in Munich, to get further input from ALICE members and external industry stakeholders for the elaboration of the report on Danube Ports and the Physical Internet.

Physical Internet can create the opportunity for inland ports to be crucial nodes in the European and global transport system as their critical volume is an important prerequisite for the success of these innovative transport concepts. To realize the concept of the Physical Internet in



the future, the following actions must take place: human resources must be prepared for the changing tasks in ports, new regulations and policy frameworks must be adapted and some investments are required regarding infrastructure and technology.

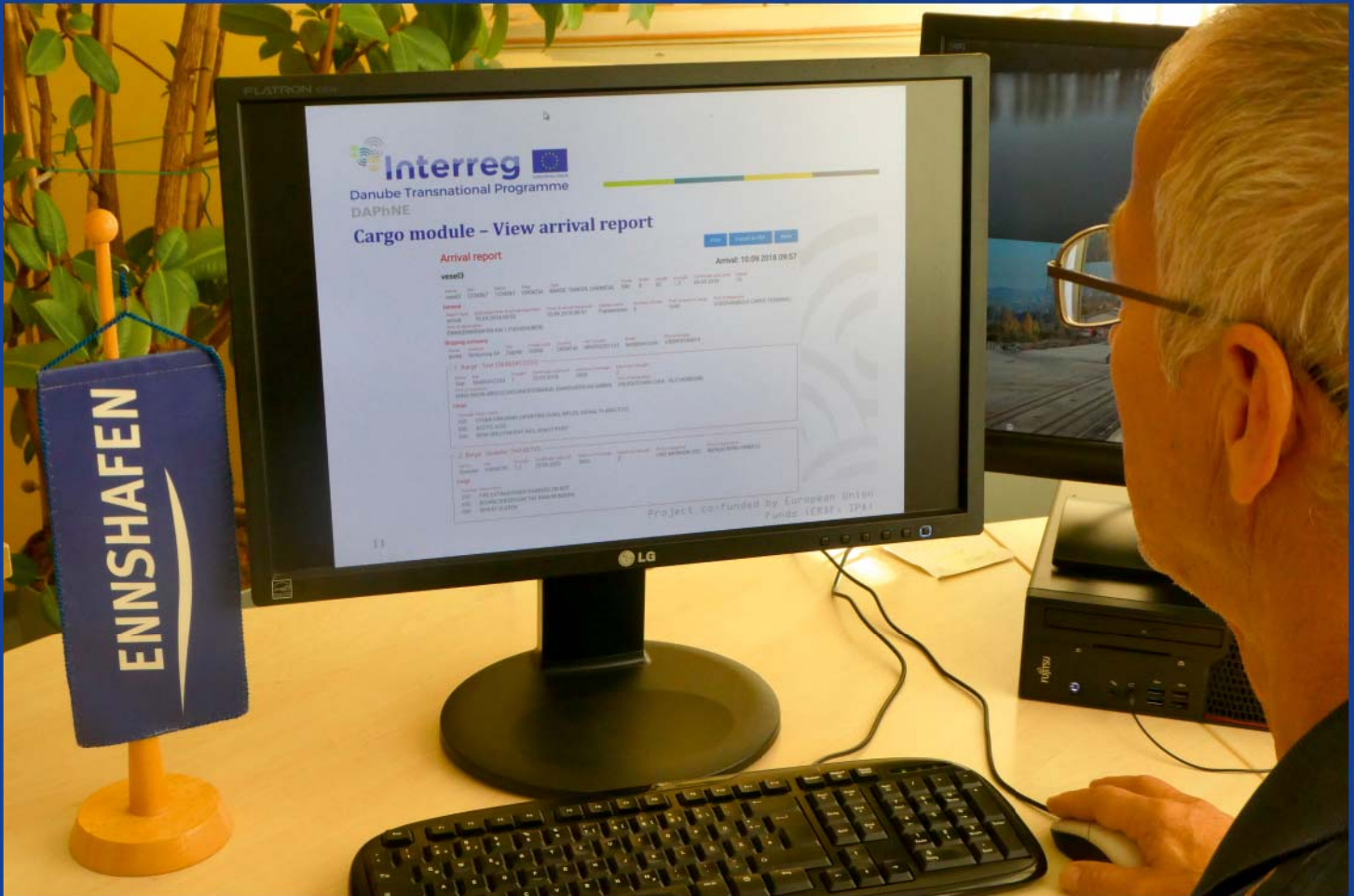
Even though the specification book may be quite long for realizing the Physical Internet in ports, various best practices such as SmartPort at Port of Hamburg, C-point at Port of Antwerp, Pronto at Port of Rotterdam, Integrated Truck Guidance at Port of Duisburg and research projects such as ATROPINE have shown that the concept can have a positive effect on the performance. For the future it may be crucial to take various steps towards the Physical Internet and realizing the different elements step by step. Further research projects, testing the concept of the Physical Internet are also important steps to create awareness of the concept on the one hand, and on the other hand to prove stakeholders that the concept can improve overall performance.

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**First steps towards the digitalisation
of Danube ports**





A Port Community System (PCS) is an innovative electronic platform that connects multiple systems operated by a variety of organizations within a port area. PCS manages, optimizes and automates port and logistics processes through a single submission of data connecting transport and logistics chains. It enables intelligent and secure exchange of information between port community members.

One of the key outputs of the DAPHNE project is the port community system implemented through dedicated pilot activities at four different Danube ports: Enns, Bratislava, Smederevo and Novi Sad. The DAPHNE partners involved, namely RGO Communications (Croatia), Public Ports (Slovakia), Ennshafen Port (Austria) and Port Governance Agency (Serbia) worked together for more than one year on the definition of technical specifications, elaboration of system architecture and roll-out of pilot operation.

Having in mind the complexity of port operations at the ports involved, the obvious conclusion was that the operational needs of different ports are very different in functionality, scale and accessibility. Therefore, RGO Communications has opted for a scalable and modular approach to the PCS implementation.

In total, eight different modules have been investigated (Statistics, Berth management, Billing, Storage allocation, Interface to other transport modes, Core module, Cargo, Tracking and tracing), whereas the last three have been developed and tested.

Having tested the application for several months, key conclusions are as follows:

- the system minimizes the administrative workload, but this cannot be expected to be achieved at the beginning. Integration into running business processes is expected to take considerable time resources. The user needs to invest significant resources in order to make it operational and automated as much as possible. Aside from automation, modifying the application to better fit business processes by eliminating redundant steps or providing different shortcuts in the application, can improve the efficiency and user adoption. However, this process is iterative and requires multiple rounds of application testing and adjustment;
- private operators at the ports are very restrictive when it comes to digitalization because of data security;
- port digitalization is a complex process at many levels - legal, corporate, operational, technological - and it needs to be dealt with on individual port community basis.

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Strategy and Action Plan for the development of Danube ports





Being a “crown” of the entire project, the Danube Ports Development Strategy and Action Plan (hereinafter: Strategy), encompassed the inputs from all other work packages and activities through the definition of objectives and measures, as well as their justification. The aim of the activity was to provide a detailed diagnosis of the current “flaws and virtues” of the Danube port industry, determine its place in the future transport and supply chains, and to define the development (strategic) objectives and the accompanying implementation measures.



The activity was headed by iC consultants who also developed a methodology for the SWOT analysis, determination of the SWOT-based strategic objectives and measures necessary to achieve the strategic objectives. In addition, iC also provided an analysis of the current position and prospects of the Danube ports in the light of significant differences from the trade patterns and port challenges in Western Europe. DAPhNE project partners provided valuable inputs for all stages during the elaboration of the Strategy.



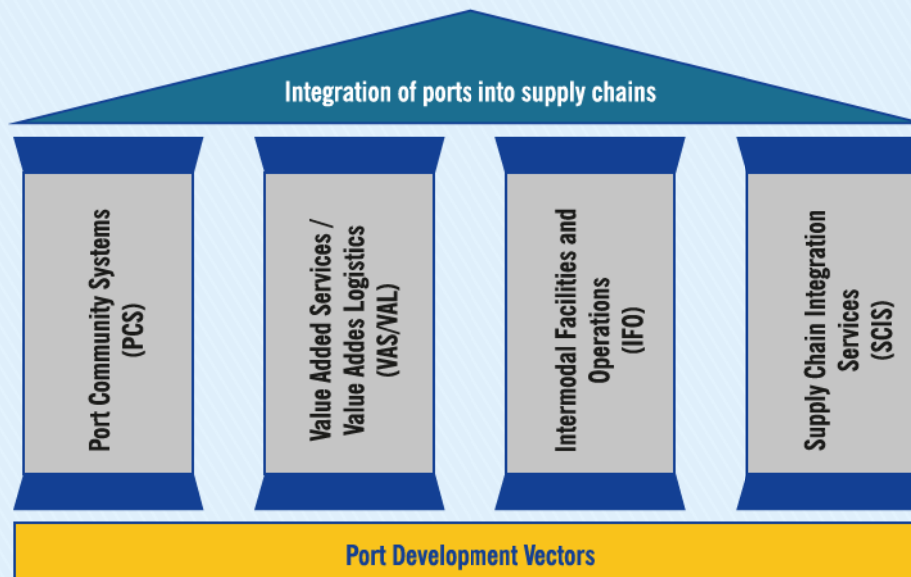
The activity was performed from October 2017 to June 2019. Constant communication with participating port authorities, port associations, ministries, port operators taking part in the elaboration of the Strategy, provided the necessary polishing and fine tuning. Various elements of the Strategy have been presented during various meetings within the project implementation itself, as well as during the Tenth Meeting of the Working Group on Inland Waterways and Ports of the Rhine–Danube Core Network Corridor, held in Brussels, on 21 November 2018. Several stakeholders took active discussion and provided valuable feedback, which was embedded in the Strategy.

The Strategy, covering the period of 8 years (2020 – 2027) is divided into an analytical part and a part containing individual strategic objectives and implementation measures for each objective. The SWOT analysis of the Danube region port industry, being an analytical part of the Strategy, was performed using a triple layer – that of individual ports participating in the analysis, national port industries and an entire Danube region port industry. A total of 21 ports in the Danube region were subject to SWOT analysis. Based on these 21 SWOT analyses, a country wide SWOT analyses of port industries in Austria, Slovakia, Hungary, Croatia, Serbia, Romania and Bulgaria were elaborated, reflecting the current situation of the respective port industries, taking into account the internal (with respect to the port industry) strengths and weaknesses and external threats and opportunities. In order to facilitate a provision of harmonized inputs for the Strategy, a “Common SWOT analysis” was created involving the most important strengths, weaknesses, threats and opportunities of the entire Danube area port

industry as a single “entity” with a single “voice”.

All Danube ports are directly connected with the seaport of Constanta, acting as a gate, or the “Rotterdam of the East” for virtually all Danube countries. This gives them a comparative advantage over other transport routes in terms of cost efficiency, generalized transport costs and even cost of externalities. Corporatization of port authorities is also seen as one of the strengths on which future development directions should be built, as this port management model provides enough flexibility to port authorities to react on market dynamics and changes in demand for different port operating services, including the value-added services. Thanks to the growing reintroduction of industrial production in the ports or in their immediate vicinity, Danube ports have the opportunity to exploit this phenomenon and use it to their own advantage, by offering the industry a quick, competitive and reliable service and the benefits of the economies of scale offered by inland waterway transportation.

Danube ports also have several weaknesses which need to be minimized or eliminated when and if possible. Most notable weaknesses focus around the excess capacity or low utilization of the available capacities, as well as lack of resources for provision and improvement of high-quality road and rail connections of ports with the rest of the network. Insufficient lobbying for interests of ports is also seen as one of the common weaknesses of the entire Danube port industry. Port industry in the Danube area is faced with a number of threats which are external to ports themselves, such as persisting navigation hindrances along the Danube and fierce competition of road and rail sectors feeding the industrial and commercial sectors along the Danube directly from nearby seaports in the Adriatic, Aegean and even North Sea.



Four indicators determining the integration of ports into supply chains

Based on the carefully identified and analysed strengths, weaknesses, opportunities and threats of the national port industries, the project team has identified strategic development objectives and adequate development measures needed to ensure the implementation of the objectives. Both objectives and development (implementing) measures are identified on a dual level – national (based on “Cumulative” SWOT analysis of all participating ports) and regional (based on “Common” SWOT analysis) level. In this view, the second part of the Strategy contains the national strategies and the common strategy based on common objectives and measures.

Considering all strengths, weaknesses, opportunities and threats, as well as the defined objectives and measures, the following main development vectors can be identified as common for the entire port industry in the Danube region:

- Multimodal hubs with varying levels of intermodal facilities, serving at least as the basic interface between the various transport modes.
- Port-centric and sustainable hybrid logistic zones attracting port-related services, and, wherever possible, industrial facilities for the manufacturing, processing and logistic industries.
- Convenient regional business platforms for the trade and industry. Danube region ports have a vast but heavily underused potential to be the focal points of the regional economy.
- Specialised centres for handling of specific cargoes, including not just ship-to-shore transfer facilities and services, but also a full spectrum of logistic and industrial activities for specific cargoes.
- Facilitators of supply chains through integration into them.

From the Strategy's point of view, it is very important to avoid a common mistake of comparing the Danube ports with the Rhine ports. Most of the accessible development strategies of EU inland ports are based on the challenges, issues, trade patterns and transportation geography of inland ports of the Western Europe and focus mostly on container traffic to/from main gateway ports in the North Sea. Quite the contrary, regular containerized cargo flows converging in the Danube ports from inland waterways are virtually non-existent.

Since their third generation, ports are extending their service portfolio towards the wide array of logistics and value-added services for vessels and cargoes. By doing so, ports are integrating themselves into supply chains. Integration of ports into supply chains is done through intermodality and organisational integration.

What is common for most of the successful contemporary ports is the various level of industrial and logistic activities in or adjacent to port areas. In this view, the Strategy contains various approaches on how to attract more industrial and logistic activities, to be either integrated in port activities or to be very closely correlated with them in order to benefit from synergies, concentration of vehicles and cargoes, intermodal options for cargo distribution, as well as from the spatial concentration of production, transport and logistic activities.

Globalization and the modern age have put a tremendous pressure on port authorities. In order to survive and thrive, port authorities should become less static and think “out of the box”. This means that port authorities should widen their scope beyond that of the traditional trade facilitator with the century's old focus on the provision of basic and operational infrastructure and facilities for transshipment and storage. Modern waterborne logistics, transportation and port operations dictate that ports should have a new strategic role to play in land use planning, facilitation of the relocation of production, manufacturing and logistic facilities in or near port areas, supply chain integration, information systems and intermodality/multimodality. This role requires networking, not just between ports, but also between ports and other nodes, operators and market players. Although it may not be a universal panacea for ports, going beyond the limits of the port area in terms of physical interventions and organisational capabilities along supply chains stands good chances to gain competitive advantage for ports in the medium and long run.

The Strategy itself will be used in the updates of the national and individual port strategies as an inventory of objectives and measures applicable in all ports as per their own needs. Moreover, it will be a source of ideas for the future project pipeline of the Danube Ports Network.

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Danube Ports Network (DPN) - the way forward





The Danube Ports Network (DPN) is a new actor in the Danube Region port governance system. With the support and collective effort of its partners, the Network shall become a long-term, sustainable structure contributing to good port governance and cooperation strengthening in the Danube Region. The concept has emerged within the framework of the DAPhNE project in response to a real need for a unified, coordinated message of the Danube Region's inland and sea ports community in Europe and beyond.

Launched in June 2018, the DPN acts as a regional coordination and collaboration platform involving public and private Danube port and terminal organisations in the Danube Region. At this stage, the Network brings together public & private Danube port organisations involved in the DAPhNE Project. However, with the support and collective effort of 8 strategic partners, the Network shall continue functioning as a coordination and cooperation platform after the end of the project (June 2019).



Pictures from the official DPN launching event, 10 April 2019, Vienna



DANUBE Ports Network

COOPERATION ↕ COMMUNICATION ↕ PROJECTS

COMING TOGETHER
IS THE BEGINNING

WORKING TOGETHER
BRINGS THE PROGRESS

WWW.DANUBEPORTS.EU



 **Interreg** 
Danube Transnational Programme
DAPHNE
PROJECT CO-FUNDED BY EUROPEAN UNION FUNDS (ERDF, ERDF)

DPN focuses its work on key areas such as (i) Good port governance, sustainable port development & operations, (ii) Environment, renewable energy, climate change mitigation, (iii) Port digitalisation, RTD & Innovation, (iv) Ports' connectivity & logistics, (v) Port training & education.

In connection to the needs of its partners, DPN takes pride for the following services: (i) Developing & implementing common interest projects & strategic initiatives, (ii) Initiating port policy & network awareness activities, (iii) Fostering active cooperation, strategic alliances & partnerships to benefit the network, (iv) Facilitating network collaboration & support activities.

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Project deliverables and outputs





Deliverables

Port Legislation and Funding

- National databases for the working group (AT, RO, BG, HR, HU)
- Internal regulation for the working group
- National legal report template
- National legal framework reports (RO, AT, BG, HR, HU, SK)
- Min. 5 sets of recommendations collected based on the national workshops organized
- National state-aid report template
- National reports on port funding (RO, AT, BG, HR, HU, SK)
- Min. 5 sets of recommendations collected based on the national workshops organized

Port Administration Processes and Management Models

- Survey- port users
- Template for the national reports – port administration processes
- National reports on port administration processes (AT, RO, BG, HR, HU)
- Conclusions report – port administration processes
- Good practice report in port administration
- Template for the national reports on port management models
- National reports on port management models (AT, RO, BG, HR, HU, SK)
- Methodology on good practice for port management models
- Good practices report on port management models
- Status-quo report on HR in the Danube region
- List of EU funding sources for HR –port sector employees
- Best practices report on HR in ports
- National HR events (AT, RO, HU)
- Report on Environmental Key Performance Indicators (EKPIs)
- Questionnaire applied to ports
- Questionnaire report
- Good practice report on eco-improvements

Port Development

- Report on the status of port infrastructure development along the Danube
- Good practices reports for Port Master Planning
- Guidelines for industrial development initiatives in ports
- Questions list: obstacles on PPP formation in the Danube region
- Report on PPPs in the Danube region
- Study visit in the Rhine region
- Report on the study visit
- Input collection form for the PCS
- Monitoring report for the pilot action
- Pre-feasibility studies regarding PCS on the lower Danube-Romania:
 - Galati/ Braila/ Tulcea ports
 - Constanta ports"
- Best practice examples regarding industrial ecology
- LNG as cargo in the Danube ports
- Danube Container Market Report
- Danube Ports & the Physical Internet

Port Strategy and Network

- Danube Ports SWOT Analysis
- List of objectives & necessary development measures
- Role of Danube ports now & in the future
- Electronic database of the members
- Bylaws of the Danube Ports Network
- Financing Model & Business Plan
- Work program for the Danube Ports Network
- Website of the Danube Ports Network
- Initial Danube Ports Network Meeting
- Danube Ports Network yearly plan
- Danube Ports Network survey
- Monitoring report for the pilot of the Danube Ports Network

Outputs

- Port Info Day and Port Policy Day
- National workshops on port legislation
- Port legislation recommendations
- Port processes international workshops
- Concept for the Danube Ports Network Platform
- Recommendations on port processes
- Green port policy
- Port investments guidelines
- Model architecture for port community system
- Port community system implemented in min 3 ports
- Danube Ports Development Strategy & Action Plan
- Pilot operation of the Danube Ports Network

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A decorative graphic in the bottom right corner consisting of several overlapping circles and arcs in shades of green, blue, and yellow, creating a sense of movement and connectivity.