Hungarian Federation of Danube Ports

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SYNTHESIS OF DOCUMENT ANALYSIS AND INTERVIEWS

Title of the project:

Danube ports in the light of numbers – Introducing the new level of Port Performance Indicator System for the inland waterway ports

Project number:

01_PA1a-C1

Project acronym:

POPEI

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1 INTRODUCTION

In the recent years initiatives established a great basis for activating the potential of river and sea ports in the Danube region. To raise the volume of cargo ports requires an optimization of the performance of ports, while it is also necessary to set the path to sustainable development of the ports in their economic and urban environment.

The project POPEI was based on the idea that although in the past few years a few projects targeted the observation and development of freight water transport possibilities from a scientific point of view, the defined indicators were not aimed to be used by economic operators.

Our goal was to analyse these science based projects, namely WANDA, CO-WANDA, GIFT, INWAPO and DAHAR, and to – in cooperation with the ports participating in the project from the three involved countries – define those indicators that can actually measure the quality and state of development of a cargo port.

The proposed KPIs will be discussed with port operators from Hungary, Romania and Croatia, then will be finalized and converted to an Excel-based system.

As a result of such indicator system it would be possible to measure the performance of the ports along the Danube which would generate the development of cargo ports and the growth of freight water transport along the Danube.

2 RESUMÉ OF THE OBSERVED PROJECTS

The science based projects which we had analyzed during the project were WANDA, CO-WANDA, GIFT, INWAPO and DAHAR. Below you find a short résumé of all observed projects.

	Name of the project	Duration	Geographical coverage	Partner countries	Main objectives	Main results
1.	**WANDA**	2009-2012	South East Europe	Austria Slovakia Hungary Romania Bulgaria Croatia Serbia	1. Fostering the preservation of ecosystem of Danube and protecting it from pollution 2. Finding solutions for a sustainable, environmentally sound and cross-border coordinated approach to waste management for cargo vessels	1. Environmental protection and sustainable socio-economic development turned out to be a Good Practice 2. National ship waste concepts were elaborated 3. A new financial model was initiated for the coverage of waste disposal costs 4. A prefeasibility study on RIS was elaborated. 5. Successful pilot actions were implemented
2.	**CO-WANDA**	2012-2014	South East Europe	Austria Slovakia Hungary Romania Bulgaria	1. Protection of the Danube River from pollution of ship waste 2. Support of inland navigation as an environmentally friendly transport mode on the Danube	1. Advancement of the existing waste management systems 2. Development of an International Ship Waste Convention on the Danube

	Name of the project	Duration	Geographical coverage	Partner countries	Main objectives	Main results
				Croatia Serbia Moldova Ukraine	3. Development of a harmonized cross-border ship waste management system in order to prepare a Convention for ship waste management	3. Successful pilot actions were implemented in order to collect data, test new applications and offer advanced services
3.	**DaHar**	2011-2014	South East Europe	Austria Belgium Bulgaria Hungary Romania Slovakia Croatia Serbia	1. To harmonise the logistic development of cities and small and medium sized ports of Danube on the long run 2. To contribute to the expansion of ports	1. Careful analysis of multi-modal cargo transport development 2. An intensive exchange of other partners' expertise in formulating the development potentials of individual ports 3. Synthesizing the accumulated knowledge through stakeholder participation 4. Drawing up an integrated strategy for the functional specialization of ports in the logistic chain 5. Developing concrete action plans for individual ports based on the common strategy

	Name of the project	Duration	Geographical coverage	Partner countries	Main objectives	Main results
4.	**GIFT**	2012-2014	South East Europe	Italy Slovakia Hungary Serbia Romania	1. To analyze and evaluate the status of the freight transport sector in South East Europe Regions 2. Propose new policies and strategies in infrastructure, processes, assets, ICT, legislation, norms and harmonization issues 3. To create innovative green intermodal freight transport corridors	1. The state of the ports and the best practices were examined and proposals were drawn up concerning the development of ports in the Corridors. Policy makers, industry players and institutions had the opportunity to exchange views and support the cooperation between key transport players 2. Proposals were made for further development of the 3 PECs that GIFT project investigated 3. Various innovative tools for the dissemination and communication activities of the project were developed to support green intermodal transport, including: an innovative web tool (green observatory), benchmarking and assessment tools for the evaluation of selected corridors

	Name of the project	Duration	Geographical coverage	Partner countries	Main objectives	Main results
5.	**INWAPO**	2011-2014	South East Europe	Italy Austria Czech Republic Hungary Poland Slovakia Slovenia	1. Supporting the implementation of investments in intermodal infrastructures and the activation of new intermodal transport services 2. Promoting better connections of Central European (CE) ports with their hinterlands, with focus on the links between inland ports and maritime ports 3. Promoting better integration of different transport modes in the CE area, with specific attention on investments in intermodal solutions and ICT applications for inland and sea ports 4. Ensuring the development of tri-modal transport hubs of the CE area and the balanced development of road, rail, maritime and inland waterway transport	1. Market studies on the potential waterborne transport: ports capacity and demand for new freight transport services 2. Needs assessment for tri-modality in ports and investment plans 3. Feasibility and activation of new links along the Danube

2.1 WANDA

The project WANDA – ***Waste management for inland Navigation on the Danube*** – was supported by the South East Europe Transitional Programme (SEE) of the European Union in order to contribute to the protection of the Danube from pollution and to preserve its ecosystem. It lasted from 2009 to 2012 and affected the SEE-countries. The focus of WANDA was on finding solutions for a sustainable, environmentally sound and cross-border coordinated approach to waste management for cargo vessels along the Danube.

The following main activities were set up by WANDA:

1. Preparation of coordinated ship waste management concepts at national level;
2. Development of pilot activities for the collection and disposal of hazardous and non-hazardous ship waste;
3. Creation of a basis for the elaboration and implementation of an international financing model for oily and greasy ship waste;
4. Promotion of cross border communication and knowledge transfer through the harmonisation of activities.

The achievements and outputs of WANDA:

1. Environmental protection and sustainable socio-economic development turned out to be a Good Practice;
2. National ship waste concepts were elaborated;
3. A new financial model was initiated for the coverage of waste disposal costs at international level;
4. A pre-feasibility study on RIS (River Information Services) was elaborated;
5. Successful pilot actions were implemented as follows:
    a. On the Upper Danube stretch, a mobile vessel for the collection of bilge water, waste oil and other types of oily and greasy ship borne waste operated in Austria and Hungary. All in all approx. 400 m³ of bilge water, 69 m³ of waste oils and more than two tons of solid oily and greasy ship borne waste were collected.
    b. A Green Terminal opened in Baja (Hungary) offering the collection and handling of hazardous and non-hazardous ship waste.
    c. Pilot actions for other types of ship waste were also implemented offering a free onshore collection service at 3 selected locations along the Austrian Danube stretch for 7 days. The collection included other types of ship waste, such as batteries, oily and greasy solids, paints and solvents from vessels. In total 145kg of waste were collected.

2.2 CO-WANDA

After project WANDA had been implemented it was found that a legally binding and international treaty was indispensable in order to achieve cross-border cooperation in ship waste management and to avoid the negative effects that rise through illegal discharge and dumping. This was the reason why an experienced consortium of waterway and port administrations, research centres and expert bodies initiated the CO-WANDA Project - ***Convention for Waste Management for Inland Navigation on the Danube*** **–** which started in 2012 by 11 partners and finished in 2014. Nine countries participated in the project (Austria, Slovakia, Hungary, Romania, Bulgaria, Croatia, Serbia, Moldova and Ukraine) and examined how to develop a sustainable system by sharing their experiences and knowledge related to inland navigation, environmental protection and maintenance, the administration of the ports, traffic engineering, telematics, regional development and foreign affairs.

Building on the conclusions of WANDA, main goals of the project were set up as follows:

1. Protection of the Danube river from pollution of ship waste;
2. Support of inland navigation as an environmentally friendly transport mode on the Danube;
3. Development of a harmonised cross-border ship waste management system in order to prepare a Convention for ship waste management.

The following three key activities were identified:

1. Advancement of the existing waste management systems;
2. Implementation of practical tests and pilot activities;
3. Development of an International Ship Waste Convention on the Danube.

As the results of CO-WANDA, the following pilot actions were implemented which fostered to collect important information, tested new applications and offered advanced services. Besides they contributed to the establishment of a harmonised and more environmentally friendly ship waste management:

1. Vignette pilot combined with the collection of oily and greasy ship waste

An Electronic Vignette System (EVS) were introduced and implemented in Austria, Slovakia, Hungary, Croatia, Bulgaria and Romania from June 2013 until August 2014. Vessels affected by the CO-WANDA pilot actions were equipped with electronic vignettes free of charge, giving them the warranty for the disposal of their oily and greasy ship waste at predefined waste collection points without further payment. More than 185 ships participated in the project originating from 20 different nationalities. Different collection systems (suction trucks, stationary facilities, mobile collection vessels) were used collecting over 540 m³ of bilge water, 36 m³ of waste oil and 2.6 tons of other solid oil and grease. By testing the collection systems, valuable experiences and data were collected and analyzed for future actions.

2. River Information Services (RIS) pilots

A pilot was carried out concerning the feasibility of River Information Services (RIS) in supporting ship-borne waste management procedures in Hungary and Romania. RIS could provide necessary information to plan, execute and monitor the reception of ship waste besides it could support the administrative procedures connected to waste disposal procedures. After the implementation of the RIS pilots in Hungary and Romania a know-how transfer workshop was organized in order to discuss the way of integration of RIS into IDSWC (International Danube Ship Waste Convention) based on the gained technical experiences.

3. Pilots on the Maritime Danube stretch performed by APDM (Romania)

In Romanian Maritime Danube Ports, inland-waterway as well as sea-going vessels had the opportunity to dispose their ship waste in the ports of Tulcea and Galati (RO). Besides a web application was developed in order to make online booking of waste reception services, simulation of ship waste reception costs and electronic processing of data available. As the result of the pilot project, they could test the current charging system applied by APDM (port dues) and improve the ship waste collection process.

2.3 DaHar

The DaHar project was also financed by the South East Europe Transitional Programme (SEE). It started in 2011 and ended in 2014. The project had 23 partners from 6 EU (Austria, Belgium, Bulgaria, Hungary, Romania and Slovakia) and 2 Non-EU countries (Croatia, Serbia). The lead partner of the partnership was the Municipality of Dunaújváros.

The project was based on the prediction that inland waterway transport is a comprehensive system and the participants (companies, ports, municipalities etc.) strongly depend on each other. Furthermore the ports have an increasingly multifunctional role. The main purpose of the project was to harmonise the logistic development of cities and small and medium sized ports of Danube on the long run.

DaHar placed emphasis on the cooperation of the participants concerned; besides it aimed to contribute to the economic development of the affected region through development of ports and infrastructural plans as well. As the consequence of the mentioned harmonisation, DaHar partners could utilize the logistical and multi-modal development capacities of their ports and port areas; moreover, they could implement the development of their ports in a harmonised manner. The project could help facilitate the ports in finding their position in the waterway cargo transport. That way, stakeholders receive support to specialize and divert their logistic and multi-modal functions in the logistical network of the Danube River.

<u>The main activities of the project were the followings:</u>

1. Careful analysis of multi-modal cargo transport development;

2. An intensive exchange of other partners' expertise in formulating the development potentials of individual ports;
3. Synthesizing the accumulated knowledge through stakeholder participation;
4. Drawing up an integrated strategy for the functional specialization of ports in the logistic chain;
5. Developing concrete action plans for individual ports based on the common strategy.

Five thematic groups of the strategy were determined by the project:

1. Logistical infrastructure of ports and port operation models;
2. Enhancing hinterland connections related to transport linkages between inland waterways and road & rail;
3. Integration of small and medium-sized cities ports in the development of the Danube container and Ro-Ro liner services;
4. Implementation of RIS (River Information System) related to cargo transport management;
5. Navigability and environmental protection.

The goal of the analytical and data gathering activities in the DaHar project was to prepare and contribute to the eventual development and expansion of ports. Thus in the possession of the necessary data, the partners were able to determine the most suitable development directions.

Core outputs of the project were the followings:

1. Creation of an integrated strategy for functional specialization in the Danube logistic chain;
2. Implementation of Local Action Plans based on this strategy with concrete feasibility elements;
3. Made policy recommendations with mainstreaming guidelines for inland waterway transport (IWT) development with the aim of presenting specific investment opportunities as well as financial and policy frameworks to achieve these.
4. Dunaújváros as the lead partner of DaHar – such as the other ports affected –, prepared development plan for the next phase, in DaHar II. According to the development plans there are two viable options: the first is the building of an entire new port, the second features the complete overhaul and expansion of the existing one.
5. Specialists of the DaHar project established a very informative Geographic Information System (GIS database) in order to analyze the industry and agriculture of regions connected to the Danube regarding logistics opportunities. The study and its accompanying maps collected the data of 11 countries in order to evaluate the performances and shares of economic sectors – with the focus on industries producing heavy goods suitable for water cargo transport, agriculture and heavy industry - located near the navigable lines of the Danube and its subsidiaries.

2.4 GIFT

The Green Intermodal Freight Transport (GIFT) project is also one of the projects of the South East Europe Transitional Programme (2012-2014) which aimed to analyze and evaluate the status of the transport sector in the GIFT transport network and proposed new policies and strategies in infrastructure, processes, assets, ICT, legislation, norms and harmonization issues. All of these factors facilitated to create innovative green intermodal freight transport corridors.

The rationale of the project was that the road freight transport was extensively used in goods movement across the EU because it was a cost-effective and flexible mode; however, road transport had significant weaknesses increasing the CO^2 emissions, accidents, the noise level, road congestion and wear.

GIFT project covered three Pan-European Transport Corridors (PEC Corridors), namely IV, V and VII (included the Adriatic, the Danube, the Black Sea regions and the Balkans).

The assessment activity included the measurement of critical KPIs which were categorised as follows: service efficiency, service quality, environmental sustainability, information and communications technology (ICT), infrastructure and transport business players/transport market. The assessment identified the strengths and weaknesses of the Corridors covered by the project and proposed actions in order to improve their operational status and facilitated the transformation to Green Corridors.

Based on the analysis, the results indicated the following in relation to the critical KPI-s:

1. Service efficiency - The corridors IV, V and VII had similar efficiency KPI values with the exception of the transport times of Corridor VII (the lowest) and the frequency of rail services of Corridor V (the highest).
2. Service quality - Delay risk of rail mode was very high mainly related to Corridor V (as a consequence, the rail time precision is the lowest). On the contrary cargo damage & loss were higher for road mode for corridors IV and V as well.
3. Environmental Sustainability - The values for this category were in average comparable except for Corridor VII. Along the Danube the highest values of noise pollution/emission and also the highest values of SO^2 emissions were recorded.
4. Information and Communication Technologies (ICT) – Track & trace services were provided by all rail operators. In addition telematics services (i.e. fleet management) were used by many road operators. Tracking facilities were also observed in hubs, thus the status of the cargo can also be monitored during the trans-shipment process.
5. Infrastructure – The highest costs belonged to road mode of Corridor V; the lowest costs belonged to rail mode of Corridor V. Even if there were not road charges in Corridor IV, it had the lowest fuel stations density. The safest mode of all was the river mode. The number of serious accidents was higher along Corridor

IV. The opposite happened for not serious accidents. Corridors V and VII presented the highest values of land use. All three corridors, for all transport modes, had a medium-low value of capacity utilization that showed the partial use of these corridors.

6. Corridor Freight Market – The KPI-s market values of the rail and river freight operators were similar. Because of the lack of necessary data, it was not possible to make a comparison for the road case.

GIFT project significantly contributed to define efficient green transport corridors through the SEE region. Due to the assessment activities, the state of the ports and the best practices were examined and proposals were drawn up concerning the development of ports in the Corridors. Policy makers, industry players and institutions had the opportunity to exchange views and support the cooperation between key transport players. A major output of the discussion platforms was the generation of proposals for further development of the 3 PECs that GIFT project investigated. Furthermore, GIFT project developed innovative tools to support Green intermodal transports, including: an innovative web tool (green observatory), benchmarking and assessment tools for the evaluation of selected corridors; various tools for the dissemination and communication activities of the project were developed.

2.5 INWAPO

INWAPO Project, lead by the Venice Port Authority, was set up in 2011 (finished in 2014) in order to promote a better coordination between policy actors and stakeholders interested to increase the competitiveness of the alternatives to road transport. INWAPO project – co-financed by the European Regional Development Fund – aimed to upgrade the Inland Waterway and Sea Ports within the Central Europe Programme providing financial support for the elaboration of a set of benchmarks and performance indicators. In the last few years there has been a growing tendency in the demands and requirements from the customers' side (e.g. ship turn-round time, storage capacity, opening hours) besides in relation to the investments it is very important to use unexploited potentials and realize new transport solutions nowadays. Furthermore, the increasing complexity plays an important role in multimodal transport flows including pre- and post haulage, buffering, storage, value-added services and streamlining transshipment processes.

The INWAPO project included three different main waterway systems, the Northern Adriatic Ports (Venice, Trieste and Koper), the Danube river ports (Vienna, Budapest, Bratislava and Komarno) and the Czech and Polish inland waterways (Elbe, Vistula and Oder systems), with an extension towards the Baltic ports. Through the contribution by this European Territorial Cooperation Programme, Venice Port Authority and other 12 European partners, including seven different nationalities, increased the cooperation in

the last years to support intermodal transport, and contributed to the investments for the efficiency and the competitiveness of inland and sea ports.

Eight INWAPO project partners were involved in the Danube Region Strategy: Port of Vienna, Viadonau, Ministry of Transport of the Check Republic, Regional Development Agency of Usti Region, General Directorate of Water Management (Hungary), Freeport of Budapest Logistics, Slovak Shipping and Ports (Slovakia) and Public Ports (Slovakia). The priority 1a – To improve mobility and intermodality of inland waterways – of the Danube Strategy is definitely harmonising with the goals of INWAPO project.

The project tended to focus on the following general objectives:

1. Supporting the implementation of investments in intermodal infrastructures and the activation of new intermodal transport services
2. Promoting better connections of Central European (CE) ports with their hinterlands, with focus on the links between inland ports and maritime ports
3. Promoting better integration of different transport modes in the CE area, with specific attention on investments in intermodal solutions and ICT applications for inland and sea ports
4. Ensuring the development of tri-modal transport hubs of the CE area and the balanced development of road, rail, maritime and inland waterway transport

During the implementation of the project, the results were achieved concerning the following three fields:

1. Market studies on the potential waterborne transport: ports capacity and demand for new freight transport services
2. Needs assessment for tri-modality in ports and investment plans
3. Feasibility and activation of new links along the Danube

Besides a benchmark definition matrix was created by the collection of 41 indicators in four categories: infrastructure, superstructure, operation and macro-economic effects.

2.6 INDICATORS SUGGESTED IN THE OBSERVED PROJECTS

INDICATOR	UNIT
GIFT / INWAPO	
Infrastructure of ports	
Length of river wall	m
Number of boat stations (loading berths)	pcs
Maximum draught(s) of boats	m
Intermodality – road	yes/no
Intermodality – railway	yes/no
Area of the port	m2
Free space	m2
Infrastructure – storage capacity	
Storage – total capacity	m2
Storage – total capacity	TEU
Storage of dangerous goods – total capacity	m2
Cold storage facilities	m2
Infrastructure – equipments	
Number of fork-lift trucks, other works trucks	pcs
Number of crane	pcs
Number of gantry crane	pcs
Number of mobile crane	pcs
Others	pcs
Infrastructure - Annual energy consumption of ports	
Electricity	kWh
Diesel oil	l
Gas	m3
Renewable energy sources	yes/no
Infrastructure - ICT services	
Service efficiency	
Relative unit cost	€/ton-km
Transport time	h/100 km
Frequency of service	no. of services/ week

Service quality	
Delay risk	min/ 100 km
Cargo loss	1-5 scale
Cargo damage	1-5 scale
Reliability	%
Vessel traffic	
Total vessel traffic	t/year
Vessel traffic	>1000 t
Traffic of intermodal transport	
Annual freight traffic volume - Type of goods	
Container	TEU
Ro-ro	pcs
Piece goods	pcs
Bulk products	t/year
Liquids	t/year
Frozen goods	t/year
Dangerous goods	t/year
Annual freight traffic volume - Type of goods (NST 2007 classification)	
Products of agriculture, hunting, and forestry; fish and other fishing products	t/year
Coal and lignite; crude petroleum and natural gas	t/year
Metal ores and other mining and quarrying products; peat; uranium and thorium	t/year
Food products, beverages and tobacco	t/year
Textiles and textile products; leather and leather products	t/year
Wood and products of wood and cork (except furniture); articles of straw and plaiting materials; pulp, paper and paper products; printed matter and recorded media	t/year
Coke and refined petroleum products	t/year
Chemicals, chemical products, and man-made fibers; rubber and plastic products; nuclear fuel	t/year
Other non-metallic mineral products	t/year
Basic metals; fabricated metal products, except machinery and equipment	t/year
Machinery and equipment n.e.c.; office machinery and computers; electrical machinery and apparatus n.e.c.; radio, television and	t/year

communication equipment and apparatus; medical, precision and optical instruments; watches and clocks	
Transport equipment	t/year
Furniture; other manufactured goods n.e.c.	t/year
Secondary raw materials; municipal wastes and other wastes	t/year
Mail, parcels	t/year
Equipment and material utilized in the transport of goods	t/year
Goods moved in the course of household and office removals; baggage and articles accompanying travellers; motor vehicles being moved for repair; other non market goods n.e.c.	t/year
Grouped goods: a mixture of types of goods which are transported together	t/year
Unidentifiable goods: goods which for any reason cannot be identified and therefore cannot be assigned to groups 01-16	t/year
Further indicators	
Average loading time	h/t or h/TEU
Average waiting time	h/t or h/TEU
Loading costs	EUR
Storage costs	EUR
Lost product	%
Damaged products/parts	%
Loading of higher added value and of higher quality for bulk cargo	t/year
Container terminal, container moving	pcs/year
Availability of waterway-road intermodal connections	pcs/rkm
High value added goods storage possibilities	t/year
Fuelling services (costs)	EUR
Availability of waterway-rail intermodal connections	km
Bilge drainage	EUR
environmental friendly services (costs)	EUR
DaHar	
Reduction of logistical work (ignore redundant movements, transshipments)	yes/no
Reduction of lead time	min or h
Rundown of inventories	yes/no
Cost savings	EUR
Increase of value-add activities	pcs or EUR

Growth of inland navigation performance	t/yrs
Invoicing accuracy	yes/no
Number of accidents	pcs
ICT applications – The presence and degree of sophistication of applications of information and communication technology	yes/no
Carbon footprint	
Inspection costs – Cost/transport unit incurred for inspection of the goods by authorities while being transported	EUR
Flexible service – Possibility to have custom made departure times	yes/no
Ability to adapt changes in volume / size / time schedule – If a company wants to change – is it possible in the port	yes/no
Proof of delivery – time it takes to send a confirmation of delivery of the goods sent.	min or h
Reefer service	yes/no
Container repair service	yes/no
Container cleaning possibility	yes/no
Catering	yes/no
WANDA	
Quantity of waste	t/year

During the interviews, ports were asked if they had known about these indicators and/or had used them, but most of the interviewees did not have any information about the results of the above mentioned projects. Based on their reply, some of these indicators could be used for performance measurement, such as infrastructure (number of loading berths, storage capacity and equipments), average loading time, loading costs, storage costs or annual freight traffic volume. However, as it turned out, there are other relevant factors for performance measurement to be considered.

3 SUMMARY OF THE INTERVIEWS

3.1 INTERVIEWEES

The main objective of this activity is to find out whether the methods and KPIs defined in the preceding projects reflect the real market needs of the inland waterway ports, whether they are able to put in practice and measure all aspects of port operation, and what the ports' practices and real needs are, regarding performance measurement.

In August, several interviews were made in Hungary, Romania and Croatia in order to get to know the Danube ports' opinion and practice in relation with performance management. The interviewees were mostly Danube ports, but in Hungary – in cooperation with the HFDP, we also asked shipping companies and clients of the ports.

The following interviewees were involved in the project analysis phase:

Hungary	▪ Freeport of Budapest Logistics Privately Held Share Company (Budapest, Csepel) ▪ Ferroport Ltd. (Budapest, Csepel) ▪ Baja Public Port (Baja) ▪ ÁTI DEPO Public Warehousing Zrt. (Baja) ▪ Centroport Ltd. (Dunaújváros) ▪ Sygnus Ltd. (Paks) ▪ Fluvius Ltd. (Budapest, shipping company) ▪ ADM Hungary Agro Trading LLC (Budaörs, grain trader company)
Romania	▪ SC Ameropa Grains SA – Măcin Reception Base – Working point of Ameropa Grains SA (Măcin) ▪ SC Hercules SA (Braila) ▪ SC Exploatare Portuara Drobeta SA (Orsova)
Croatia	▪ Luka Vukovar d.o.o (Vukovar) ▪ Terminal Dunav d.o.o (Vukovar) ▪ Vupik d.d. Vukovar, P.C. Reloading Port (Vukovar)

During the interviews, the same template questionnaire was used in all of the three countries. The interviews were made in person or via phone – depending on the possibilities and the availabilities of the interviewees.

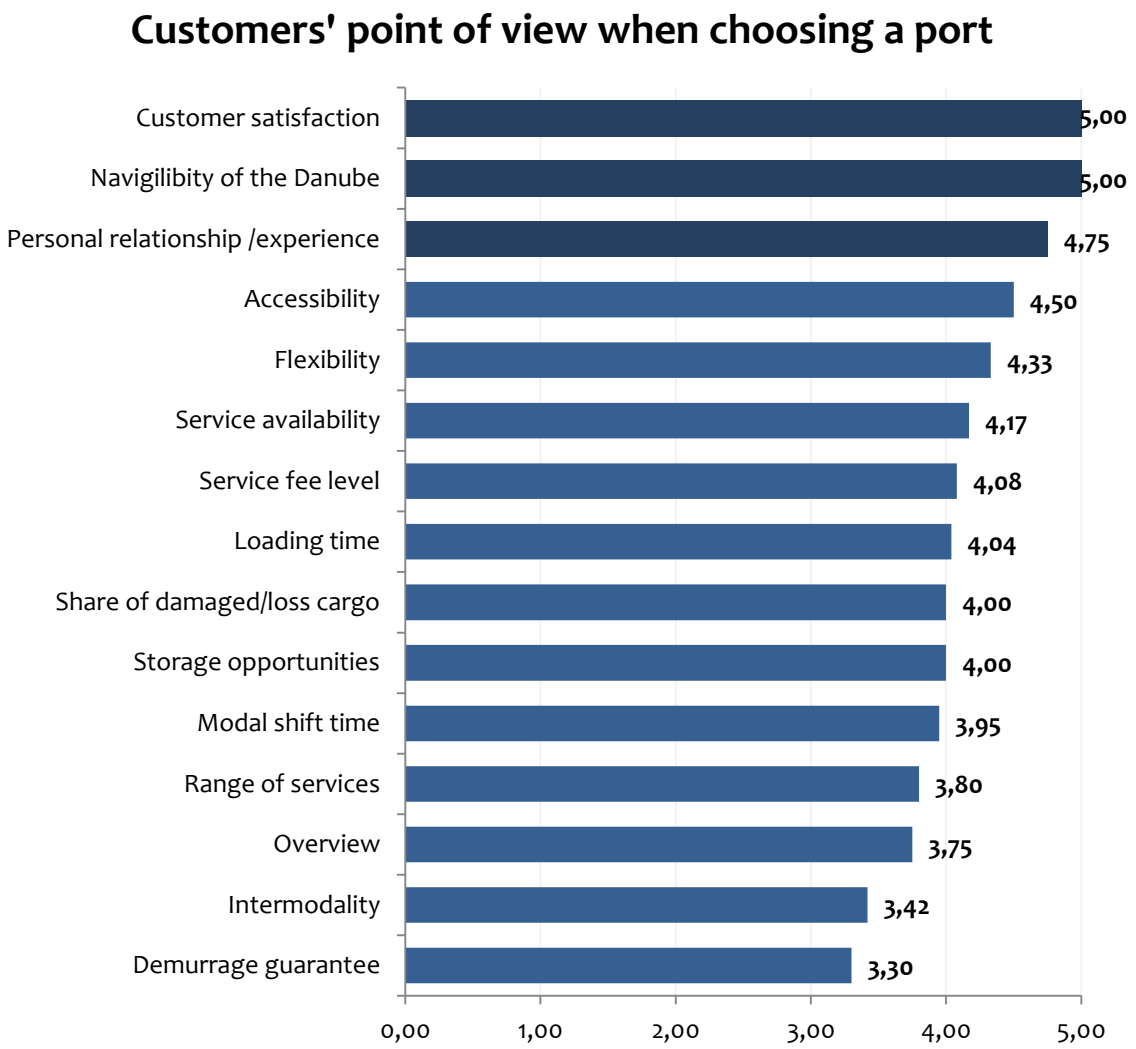
3.2 SUMMARY AND ANALYSIS

14 interviews were made in the first Activity of POPEI project, when ports and port operators were asked several questions related to their facilities, services, clients and performance measurement system.

From the data provided by the interviewees, the difference between certain ports is apparent. They have very different size, location, service profile and type of clients. Many of the interviewees said that ports could not be compared with each-other or it would not be easy. Even so, there are several factors which could be relevant for comparison, as essentially all ports perform similar activities.

Summary of customer-related questions:

The interviewees were asked about their opinion about certain features which their customers might consider before selecting a port. We asked them to rank the features' importance on a 1-5 scale (1=not important, 5=very important). The following graph summarises the result. The upper three rows with lighter colour show the features given by the interviewees as a plus.



As it shows up on the diagram, there are a lot of important factors to be considered, and the most important ones are the **accessibility, flexibility, service ability and service fee level**. Many of the ports found service fee levels the most important thing but it also turned out, that the importance of the price level very much depends on the location of the port. Among the ports close to each-other, the price competition is more intensive.

The **range of services** did not have a high score, which is because this factor has relative importance in the decision. It depends on the different needs of the different clients.

Loading time, share of damaged/lost cargo, storage opportunities have also quite high importance. Which was not really appeared as important feature is the intermodality and the demurrage guarantee.

Many of the interviewees mentioned the personal relationship, customer care, previous experience, references and customer satisfaction as choosing viewpoint. Having asked some customer (grain trader)'s opinion, it verified that for the customers all of these factors have quite high importance.

In most cases, the customer is the one who is in the decision-maker position. Customers can be cargo owners, traders, freight forwarders and (sometimes) manufacturers / producers.

Summary of service-related questions:

Related to the port's services, the interviewees were asked about their average loading time, the average damaged or loss cargo, working hours, etc. They were also asked about the competition, the characteristics of their competitors and their own USPs. More detailed information about their answers can be found int he attached interview reports.

Most of the interviewees confirmed that the competition on their market is very strong. Based on the given answers, ports can differ from their competitors in many different ways.

The most mentioned USPs by the interviewees are as follows:

- quality of service
- speed of service and the entire range of services required for the reception and dispatch of ships.
- possibility of transfer in tankers, rail and shipbuilding
- owning a silo for the storage of goods
- own railway track for loading wagons standard 1,000 tons / day.
- flexibility / "impossible does not exist"
- better price
- high quality of contact keeping / maximum level of service and customer care
- covered transhipment possibility
- covered storage of metallurgic product in warehouse equipped with different cranes
- larger storage capacity

- more loading berths
- staff
- technology
- optimal location
- the port is integrated into a logistic group (flexibility and better organisation, own ship)
- quality and afficiency of services
- attitude / approach

As it shows up, many of the mentioned USPs could be adaptable as performance indicators.

Summary of questions related to performance management:

To the question if the ports do any measurement on their performance, we got various answers. Many of the ports measure only the turnover, but many of them monitor the loading time and loading capacity, and some ports constantly ask their customers' opinion about their services. Some keep a monthly electronic tracking of the freight volumes and we compare monthly and annual volumes for the same period of last year. Based on the given answers, most ports do measurement of quantity but **only a few of them measure quality.**

For those who do not do not use any indicators, the reason is mainly lack of time (as performance measurement would need some more administration). On the other hand, they mentioned the diversity of products and the availability of transport equipment / staff as influential factors of their performance. However, **most of the interviewees found ports' performance measurement useful** and we even got some concrete suggestions for relevant KPIs. In an opinion, performance measurement could lead to a beneficial competition for both competitors.

It is worth to highlight the best practice of those ports who regularly ask feedback from their customers through personal interviews. Customer satisfaction is one of those measurable service quality factors, which could be used as KPI at each port. As mostly customers are who make the decision of which port to choose, their satisfaction and opinion is very important for the ports.

Deep knowledge of projects WANDA, CO-WANDA, DaHar, GIFT, INWAPO and their indicators was not much representative among the interviewed ports. However it turned out that some of them are used or could be implemented as KPI.

In the next chapter you can find the list of the KPIs which we found the most relevant, based the interview and the document analisys.

4 KEY PERFORMANCE INDICATORS

The aim of POPEI project is to define key performance indicators that can actually measure the quality and state of development of a cargo port. I has turned out from the interviews that most of ports do not use any indicators for measuring the quality of their services, they mostly measure their performance in quantity. Therefore in this synthesis, we put the focus on the KPIs which support the measurement of quality. It does not mean that the final KPIs will conatin only these indicators. Measuring quantity is also important as well as taking into consideration the different characteristics of the ports when measuring ("ranking") them. Also very important that the KPIs should give objective results, so it couls matter who provides the data for the measurement system.

Based on the interviews and former experiences, we propose the following KPIs as port performance measurement indicators.

PROPOSED KPI	UNIT	Description
KPIs related to the quality of Service		
Attitude / approach	1-5 scale	cooperation, flexibility, customer-focus, problem solving
Availability of dispatcher service	yes / no	quality and frequency of information, availability of services quality factors / ranking can be used (e.g. 1-5 scale)
Availability of ICT services	yes / no	quality factors, ranking can be used additionally (e.g. 1-5 scale)
Delay risk	min/ 100 km	
Cargo loss	1-5 scale	
Cargo damage	1-5 scale	
Reliability	% or 1-5 scale	based on number of accidents, loss of cargo, delay risk, etc.
Customer satisfaction	1-5 scale	based on customer feedback, not only one factor can be evaluated
Punctuality	1-5 scale	precise information and documentation
Quality of prepared documents	1-5 scale	precision of the administration and the "level" of filling in the documents does matter

PROPOSED KPI	UNIT	Description
Quality of service	1-5 scale	based on customer feedback
Speed of service / loading rate	t / day	loading rate / equipment capacity 1-5 scale can be used based on customer feedback
Service complexity		e.g. a port is integrated to a logistic chain / has own ship / do shipping services, logistic services
KPIs related to Infrastructure and equipments of the port		
Covered transhipment possibility	yes / no	
Covered warehouse	yes / no	
Loading / unloading capacity	t / h, t / day	
Loading amount / crane / employees	t / pcs / pers	
Number of loading berth	pcs	
Quantity of transshipment of goods	t / year	
Service portfolio		list of available services
Standard transhipment		
Storage capacity	m2 / TEU	possibility of long-term
Service efficiency		
Relative unit cost	€/ton-km	
Transport time	h/100 km	
Frequency of service	no. of services/ week	
Annual freight traffic volume - Type of goods		
Container	TEU	
Ro-ro	pcs	
Piece goods	pcs	
Bulk products	t/year	
Liquids	t/year	
Frozen goods	t/year	
Dangerous goods	t/year	

PROPOSED KPI	UNIT	Description
Further indicators to be considered as KPIs		
Average loading time	h/t or h/TEU	
Average waiting time	h/t or h/TEU	
Loading costs	EUR	
Storage costs	EUR	
Container terminal, container moving	pcs/year	
Availability of waterway-road intermodal connections	pcs/rkm	
High value added goods storage possibilities	t/year	
Fuelling services (costs)	EUR	
Availability of waterway-rail intermodal connections	km	
Environmental friendly services (costs)	EUR	
Reduction of logistical work (ignore redundant movements, transshipments)	yes/no	
Cost savings	EUR	
ICT applications – The presence and degree of sophistication of applications of information and communication technology	yes/no	
Flexible service – Possibility to have custom made departure times	yes/no	
Ability to adapt changes in volume /size / time schedule	yes/no	If a company wants to change – is it possible in the port
Proof of delivery	min or h	time it takes to send a confirmation of delivery of the goods sent.
Reefer service	yes/no	
Container repair service	yes/no	
Container cleaning possibility	yes/no	
Catering	yes/no	