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1 Objective and description of report

For the last few decades, the focus of the port sector has been very much on technological advances that make productivity less dependent on human effort, knowledge and skills. But recent years have witnessed a growing acknowledgement by the port industry that appropriate attention must also turn to performance improvement through skilled and motivated people. Ports should be seen as “socio-technical” systems because, in practice, operations in port terminals are carried out by a partnership between human beings and technology. This partnership, however, can only be successful if appropriate emphasis is given to human resource management and particularly the training component, an often overlooked area that can have a significant impact on port performance. For this reason activity 4.3 – “Human Resources Development” of the DAPhNE project will focus on stimulating capacity building for the ports resulting in a set of guidelines to ensure that the right people are working in the ports of the future.

This report should give a brief overview of the current situation regarding the port employees in the Danube region (education level, age & gender distribution, employers, etc.). Results in this report are based on a survey conducted in Austria, Hungary, Romania, Bulgaria and Croatia. Port authorities and companies located at port areas were included in this survey to guarantee a good overview of human resources in the port area in general. This output will contribute to solving the shortage of qualified personnel in inland navigation in the Danube region by 2020, thus meeting one of the targets of EUSDR Priority area 1.A.

2 Research Methodology

Data for this report was gathered by using the following research methodology:

Table 1 - Research methodology

Characteristic	Survey specific expression
survey design	quantitative and qualitative survey
period of research	01.02.2018-15.03.2018
research tool	standardized questionnaire
population	Austria, Hungary, Romania, Bulgaria and Croatia
target group	port authorities important companies situated at ports
observation object	current situation regarding port employees in ports
evaluation method	evaluation of completed questionnaires (quantitative) and content analysis (qualitative)
number of interviews conducted/filled questionnaires	Port authorities: 11 Port users/companies: 13

Table 2 - Survey specific expression

Concerning the target group, project partners were advised to survey the three **most important ports** (in terms of e.g. transshipped volume) in each country. Questionnaires had to be completed by the port authority of these ports. In addition, the 5 most important companies (if available) located at each of these port have been contacted for this survey.

3 General Overview

The report gives an overview of the status-quo of employees in a selected number of ports in the following Danube riparian countries:

- Austria
- Hungary
- Romania
- Bulgaria
- Croatia.

Both, port authorities and companies situated in the port area of the respected ports are included in the survey to give a good overview of the status-quo of port employees in Danube ports. Project partners involved in the DAPhNE project, located in the different countries were responsible for conducting the survey in the different countries.

It emerged from the survey that the results within the countries are often similar (especially with regard to the offered trainings) and that there are hardly any country-specific differences. Above all, the increasing age of the employees causes more problems in the future in all countries (e.g. shortage of qualified personnel). In addition, it was often mentioned that it is increasingly difficult to find qualified employees for the jobs in the different management levels. An interesting result was that respondents are hardly aware of funding sources for HR in the different countries or on European level. However, a desktop research conducted in parallel to this status-quo report showed that there are some funding sources on national and European level, which can be used by stakeholders.

4 Austria

In the following chapter, the results from the survey conducted in Austria are presented. In the beginning, the demographic characteristics of Austrian ports included in the survey are presented. Afterwards, the results from the survey – conducted with port authorities and companies located at the respected ports – are presented.

4.1 Demographic description

The three considered Ports in Austria are located in Enns, Linz (both located in the province of Upper Austria) and in Vienna.

Linz is the third-largest city of Austria and capital of the state of Upper Austria, with 203.012 inhabitants (as of: January 2017). In the past years, Linz successfully maintained its outstanding position among comparable European economic centers. Different companies concerning sizes and sectors form a sustainable economic structure with a practice-oriented research-based university and an open-minded city administration for the concerns of companies. Today Linz forms Austria's second largest economic area with about 6,200 companies from different business areas and almost 207,000 jobs. In this case, the city - as the only one in Austria- has more jobs to offer than the amount of inhabitants.¹

¹URL: <http://www.linz.gv.at/wirtschaft/3524.asp> [10.04.2018]

Enns is a town in the Austrian state of Upper Austria on the river Enns, with 11,816 inhabitants (as of: January 2017). The location of Enns serves as a central terminal and is located on the Upper Danube. The economic area in which Enns is located is of outstanding importance when it comes to the professional loading and unloading of inland waterway vessels. Concerning the unemployment rate Upper Austria, which includes Linz and Enns, has the lowest unemployment rate in Austria only 4.7% from the entire population are unemployed (as of: April. 2018).²

Vienna is the capital and the largest city of Austria with 1,867,582 inhabitants (as of: January 2017). The unemployment rate in Vienna is 12% (as of: April 2018). The economic area of Vienna extends beyond the city boundaries, because of its close integration of the European economy. Furthermore the neighboring regions of Vienna and Austria in general (Czech Republic, Slovakia and Hungary) are also becoming more integrated which has a positive effect due to the Austrian economy. Around six and a half million people live and work in this region.³

4.2 Port Authorities

In Austria, the following three ports were considered in more detail for this survey, due to their economic importance for Austria.

- **Port of Linz**

The most cargo in Austria was transshipped waterside in the port of Linz in 2016 – including cargo transshipped in the company port of voestalpine and in the port owned by Linz AG. The port of Linz is the largest port in Austria and is located on the Upper Danube. In the port area around 3.5 million tonnes of goods are handled annually. The Port of Linz is a central and internationally important logistics center, which offers numerous advantages for a professional handling of goods: container terminal, trading and refueling port with all necessary handling facilities, warehouses and general cargo and special warehouses for frozen and dangerous goods.⁴

- **Ennshafen port**

For Western Austria, the Ennshafen port can be named as an important trimodal hub and it is also the largest connected industrial area on the Upper Danube.⁵ Ennshafen port is one of two TEN-T-core ports (Rhine-Danube corridor waterway) in Austria and is located on river km 2112 in the mouth of river Enns to the Danube at the border between the federal states of Upper Austria and Lower Austria. It is a combination of business park areas and port area. The Ennshafen port offers optimal trimodal transportation logistics for export and connects the entire region with an international transportation network. Around 55 companies with about 2,300 employees are working in the business park of Ennshafen port. The port area is in total 352 ha thereof

²URL: <https://de.statista.com/statistik/daten/studie/289501/umfrage/arbeitslosenquote-in-oesterreich-nach-bundeslaendern/>[14.05.2018]

³URL: <http://standort-wien.at/en/vienna-at-a-glance/economic-area/> [10.04.2018]

⁴URL: https://www.linzag.at/portal/de/businesskunden/logistik/hafen_1[10.04.2018]

⁵ Source: DAPhNE Report on Port infrastructure & industrial development (2017) p.33ff (for further information please contact s.jovanovic@ic-group.org)

110 ha are owned by the port authorities (Ennshafen OÖ GmbH und Ennshafen NÖ GmbH) and 242 ha are owned by other private companies. The cargo handling capacity at Ennshafen port is higher than 1 mio tonnes/year (up to now no capacity limit has been reached). The port has 7 terminals, 16 berths, 2 basins and several kilometers of quay walls along the river side. The whole port area has 6 road entrances, each with double lines and two main rail entrances access the total area from two different sides. Within the area there is a wide system of internal rail network with many different users and owners (in total about 17 km rail tracks).

Concerning transshipped goods the main types of goods handled in the Ennshafen port are fertilizers, animal feed stuff, grains, agricultural products, wood, salt, ores, iron and steel, scrap metal, high and heavy pieces, waste materials, gas (LPG) and all kind of cargo in containers (content is confidential).⁶

- **Port of Vienna**

The port of Vienna can be seen as an important logistics location for Eastern Austria since it is also the largest trimodal hub in Austria.⁷ In the non-private port sector, the port of Vienna can be named as the largest port on the Danube in Eastern Europe with a total area of 3,000,000 m² and 6 terminals in three cargo locations. The port of Vienna is located 2,000 km from the Black Sea and 1,500 km from the North Sea. It has the great advantage of being the largest trimodal logistics centre in Austria – connected via road, rail and waterway - making it the ideal location for the transshipment of goods and for container storage, trade and management. Even though only 1 million tons of cargo were transshipped waterside in the port of Vienna, in total 6.8 million tons of cargo were totally transshipped in 2016. This means, that only around 10% of the total cargo transshipped at the port of Vienna was transshipped waterside, the rest belongs to land-to-land transshipment.

Wiener Hafen, GmbH & Co KG is a member of a public company Wien Holding which has 95% of ownership of Wiener Hafen, while the Vienna Economic Chamber (Wirtschaftskammer Wien) has a 5 percent share in the company. Wiener Hafen, GmbH & Co KG is the owner of the port facilities comprising real estate, buildings and wharf equipment and operates the harbours in Freudenu, Albern and Lobau, the number of berths in all three ports is up to 80.

The Port of Vienna is especially successful with the services container stuffing and stripping as well as with its car terminal.

Concerning container stuffing and stripping the port of Vienna has a specialized team in this segment, which has been responsible for this area for about 10 years. 200

⁶ Source: EHG Ennshafen GmbH, 2017, Fact Sheet Ennshafen Port. Available under http://www.enyshafen.at/files/facts_ennshafen-aktuell-e.pdf [15.11.2017]

⁷ Source: DAPhNE Report on Port infrastructure & industrial development (2017) p.33ff (for further information please contact s.jovanovic@ic-group.org)

containers per year are stuffed in the port of Vienna. The most common goods, which are stuffed, are high quality industrial machinery, raw materials and cars.

Regarding to the car terminal in 2016, the port of Vienna handled 72,000 vehicles. In 2017, the storage space was expanded up to 10,000 parking lots. In addition, a covered storage area in the form of a parking garage is offered.⁸

4.2.1 Human Resources

The port of Linz and the port of Vienna identified themselves as a medium-sized enterprise, which means that the total amount of employees in the port is between 50 – 249. In contrast to the port of Linz the Ennshafen port only employs 8 people which means that the company is a microenterprise (up to 9 employees).

Table 3 - Human Resources in Austrian port authorities – overview

criteria	Linz	Enns	Vienna
number of employees	75	8	116
human resources department	no	no	no
money spent for HR (in 2016)	4.000€	<5.000€	45.000€
students are employed	no	no	yes

Demographic characteristics of employees

The following tables provide an overview of the demographic characteristics of employees at port authorities in Austria.

Table 4 - Demographic characteristics of employees Austria – port authorities (gender)

criteria	Linz	Enns	Vienna
gender	68 male employees/ 7 female employees	2 male employees/ 6 female employees	78 male employees/ 38 female employees

Table 5 - Demographic characteristics of employees Austria - port authorities (level of education)

	Linz	Enns	Vienna
academic degree	5	1	12
higher education	1	3	18
school-leaving qualification	69	4	56
no occupational training			25

⁸ Source: DAPhNE Report on Port infrastructure & industrial development (2017) p.33ff (for further information please contact s.jovanovic@ic-group.org)

Table 6 - Demographic characteristics of employees Austria - port authorities (age distribution)

	Linz	Enns	Vienna
up to 20 years	1	-	4
between 21 and 35 years	18	2	34
between 36 and 50 years	24	4	33
older than 50 years	32	2	45

Hierarchical Level

In the Port of Linz most people employed in lower management (38) and operational positions (34). In the lower management as well as in the operational departments there are major differences regarding female and male employees. In the lower management, only 7 out of 38 employees are female and in the operational department, there are no women employed. The same situation can be seen in the general (one male)- and middle (two male) management there are also no females employed.

From the 8 people employed in the Ennshafen port, one male is employed in the general management whereas the other 7 employees work in the lower management (one male and 6 female). In contrast to the port of Linz there are more women employed in the port sector in the Ennshafen port.

The port of Vienna employs 78 men and 38 women, which are divided as following: In the general management, there are 2 people employed, thereof one man and one woman. Regarding the middle management there are 7 male employees and 3 female, and in the lower management there are 3 male employees and 1 female employee.

Educational institutions

The port of Linz mentioned no educational institutions, which are relevant for this survey. For the Ennshafen port universities, universities of applied sciences, secondary schools and vocational schools are important educational institutions from which employees may graduate. The port of Vienna mentioned in the survey that the university of applied sciences BFI Vienna in an important educational institution for them.

4.2.2 Training and Education

Trainings offered

In the following table, the topics on which training is offered at the port authorities are shown. Ennshafen port provides no specific training on the different topics due to its port management model (landlord) and the limited number of employees.

Table 7 - Trainings offered by Austrian port authorities

	Linz	Enns	Vienna
logistics (e.g. operation of logistical equipment)	yes	no	yes
administrative (e.g. IT training, accounting etc.)	yes	no	yes
social skills (e.g. communication skills, intercultural skills)	yes	no	yes
safety (e.g. safety training when using logistical equipment)	yes	no	yes
sustainability (e.g. trainings to learn about new environmental certificates or regulations)	no	no	yes
law (e.g. what are relevant topics concerning the legal situation)	no	no	yes

Hiring new employees

The port of Linz indicated that they have problems concerning finding qualified employees, especially in the area of handling reach stacker and cranes. To make the port more attractive as a workplace the port of Linz suggested changing the port into a safe workplace with a balanced relation between work and wages. When the port of Linz is hiring new employees the following process is applied for operative employees:

Safety briefing → personal briefed practice on reach stacker/cranes → guidance on stuffing/stripping. The average duration of staff training depends on the hierarchical level. Employees hired for the management have an average training duration of 0.5 – 1 month. On the operational level, the training takes less time, about 0.5 month. However, at the moment the port of Linz doesn't organize trainings in the field of operational task, due to the fact that there are currently no new employees. In case that there are new employees, the port of Linz organizes trainings on the topic of port operational tasks individual and in the port area. These trainings are held either annual, when required or, as mentioned above, when new employees are hired. The port of Linz also mentioned that there is no need for adaption or expanding the current training program, because now there is no change expected in the used technology.

The Ennshafen port has currently no problems by finding new qualified employees. Ennshafen port does not organize any trainings on the topic of port operational tasks, and there is no standardized training process by hiring new employees.

As well as the Ennshafen port – port of Vienna has currently no problems by finding new qualified employees. By hiring a new employee the port of Vienna has standardized processes, these processes are depending on the position the employee is hired for.

The average timeframe for such training processes is 6 months in the management level and 3 months for operational workers.

Currently the port of Vienna is in the same situation as the port of Linz and Ennshafen and does not organize trainings in the field of operational task, but the port of Vienna is planning to adapt and expand trainings in the next years. However, when trainings are required by employees or when new employees are hired the port of Vienna organizes them in groups, individual and in the port area.

Future development of training and education

Concerning the development of trainings in the future, the port of Linz would like to organize more trainings in the area of safety. For future trainings, the port of Linz prefers online learning materials, online courses and workshops by training companies. For educational purposes, the preferred types are any kind of print media and all relevant online sources.

In the next years, the port of Linz is planning to hire 4 employees in the lower management and 6 for operational tasks. For the port of Linz the highest demand, by hiring new employees, concerning the educational level are school-leaving qualification/secondary education followed by people with a special certificate for operational activities.

The effect of the trends on the training of employees involved in operational tasks is evaluated by the port of Linz as following:

- new multimodal transport concepts – relatively low effect (“4”);
- technological developments – medium effect (“3”);
- digitalization – medium effect (“3”);
- internationalization of transport - relatively low effect (“4”);
- new business models - relatively low effect (“4”);
- sustainability – relatively high effect (“2”);
- increasing importance of safety - high effect (“1”).

The port of Linz does not see any significant increases in future times regarding water transshipment business, and the port does not agree that the competitiveness of inland ports and inland waterway transport on the Danube would improve when standardized trainings in inland ports and in companies situated in the port area in Europe would apply. To be a competitive logistic hub the port of Linz sees improvements by implementing one stop shops for logistic services.

In the future Ennshafen port would like to organize trainings for their employees in the administrative area (e.g. IT training, accounting, management, etc.). For this training, the Ennshafen port prefers online learning materials and workshops, which could be moderated by training companies. Additional to the trainings the Ennshafen port prefers online sources and workshops with trainers on a specific top (e.g. sustainable transport).

The Ennshafen port mentioned that the port sector is a very small logistic part, so standardized trainings in inland ports and in companies situated in the port area in Europe would not have an increase on the competitiveness of inland ports and inland waterway

transport on the Danube. Furthermore, there will be no great amount of workplaces that will be developed in future, because the biggest challenge to be competitive in future is pricing. Concerning the future trainings of employees, the port of Vienna will investigate more effort in all areas – operational, administrative, social skills, safety, sustainability, and law. These trainings should be organized and supported with online learning materials, online courses, field-trips to other companies, workshops moderated by training companies, modularly built workshops and specified courses at universities, schools or other educational institutions. The port of Vienna prefers print media, online sources, internal know-how and workshops with trainers on a specific topic for these educational purposes.

The effect of the trends on the training of employees involved in operational tasks is evaluated by the port of Vienna as following:

- new multimodal transport concepts – relatively high effect (“2”);
- technological developments – relatively high effect (“2”);
- digitalization – relatively high effect (“2”);
- internationalization of transport - relatively high effect (“2”);
- new business models - relatively high effect (“2”);
- sustainability – relatively high effect (“2”);
- increasing importance of safety - relatively high effect (“2”).

The personal beliefs of the port of Vienna regarding future developments of Danube ports as a workplace are “that ports have to turn to other businesses besides logistics to finance the maintenance of the very expansive infra- and superstructure. Just in that case, ports will become even more interesting work places. A port is an institution and should be preserved in its bi- or trimodality.”

The port of Vienna mentioned several challenges in the survey, a port has to cope with in future times to be a competitive logistic hub:

- combine traditional, historically grown logistics infra- and suprastructure with modern logistic trends – logistic 4.0, physical internet.
- Ports have to change their services and should also focus on other industries.
- Regulations and interventions in inland navigation.
- Cooperation between Seaports and Hinterland Ports.
- The new Silk Road (New Businesses, New traffic routes).
- City Logistics – Ports as city logistics hubs.
- Fulfillment of the EU Regulations 2030 + 2050.

4.3 Companies

Questionnaires were distributed to companies within the same three port areas (port of Linz, Ennshafen port and port of Vienna). Within the Ennshafen port, one company participated in the survey and one company from port of Vienna.

4.3.1 Human Resources

The company from Ennshafen port is a small enterprise (10 to 49 employees) as well as the company which is located at the surrounding area of the port of Vienna.

Table 8 - Human Resources in Austrian companies - overview

criteria	Enns	Vienna
number of employees	10-49	12
human resources department	no	yes
money spent for HR (in 2016)	-	10.000€
students are employed	no	no

Demographic characteristics of employees

The following tables summarize the demographic characteristics of employees at the companies which completed the survey.

Table 9 - Demographic characteristics of employees Austria – companies (gender)

criteria	Enns	Vienna
gender	89% male employees/ 11% female employees	12 male employees/ 0 female employees

Table 10 - Demographic characteristics of employees Austria - companies (level of education)

	Enns	Vienna
academic degree	1	1
higher education	1	-
school-leaving qualification	-	11
no occupational training	-	-

Table 11 - Demographic characteristics of employees Austria - companies (age distribution)

	Enns	Vienna
up to 20 years	-	-
between 21 and 35 years	-	1
between 36 and 50 years	-	4
older than 50 years	-	7

Hierarchical Level

The division of employees by the company from Ennshafen port regarding management level and gender is divided as following: 1 employee in general management, 1 employee in middle management, 2 employees in lower management and 5 operational employees, while in general management and in middle management there are 2 male employees, in lower management there are 2 employees one female and one male, while in operational there are only males employed (5). The company from port of Vienna employs 12 people these 12 people are divided as following (all occupied by male employees):

- 1 middle management
- 5 lower management
- 6 operational level

4.3.2 Training and Education

Trainings offered

Currently the company from Ennshafen port does not offer any trainings concerning the topics related in the survey. The company from port of Vienna currently offers trainings in the area of logistics, administrative and safety. These trainings are held by colleagues and by the use of company equipment in a setting of a 6-month hands-on training for operational workers. For the management level the company from port of Vienna organize a 3 month training. The company also organize trainings on the topic of port operational tasks, because it is required from the company. The organization of such trainings occupies one month, two trainings were organized in the past 3 years. On the topic of logistics the company from port of Vienna organize individual trainings for employees (only when they are required or when new employees are hired). However, the trainings will not be adapted or expand in the next years, because standard procedures are implemented.

Table 12 - Trainings offered by Austrian companies

	Enns	Vienna
logistics (e.g. operation of logistical equipment)	no	yes
administrative (e.g. IT training, accounting etc.)	no	yes
social skills (e.g. communication skills, inter-cultural skills)	no	no
safety (e.g. safety training when using logistical equipment)	no	yes
sustainability (e.g. trainings to learn about new environmental certificates or regulations)	no	no
law (e.g. what are relevant topics concerning the legal situation)	no	no

Hiring new employees

The company from Ennshafen port indicated that they have problems concerning finding qualified employees, especially in the area of locksmith and production. In contrast, the company from port of Vienna mentioned in the survey that they do not have any problems by finding new qualified stuff.

Future development of training and education

For future development of training and education the company from Ennshafen port would like to organize trainings concerning administrative and law topics, these trainings should be supported with workshops/trainers on a specific topic.

The company from port of Vienna indicated in the survey that the company would like to organize more trainings in the field of safety (increasing importance of safety in the future) and sustainability, these trainings should be done with the help of online learning material.

Furthermore, print media and workshops with trainers on a specific topic should support the success of these trainings.

The company from port of Vienna does not agree that the competitiveness of inland ports and inland waterway transport on the Danube would improve when standardized trainings in inland ports and in companies situated in the port area in Europe would apply, because training costs are low compared with import price differentials (supply margin). To be a competitive logistic hub the port of Linz see improvements by implementing one-stop-shops for logistics services. In general, the company from port of Vienna mentioned in the survey that the development of Danube port as work places will depend on the development of cost relation between rail and ship transport. The company from port of Vienna also mentioned two challenges for Danube ports to be a competitive logistic hub:

- discharge capacities of ports
- transport politics (cost truth of all modes of transport, real emission control).

5 Hungary

In the following chapter, the results from the survey conducted in Hungary are presented. In the beginning, the demographic characteristics of Hungarian ports included in the survey are presented. Afterwards, the results from the survey – conducted with port authorities and companies located at the respected ports – are presented.

5.1 Demographic description

For Hungary, 3 important port authorities and 5 important companies were taken into consideration from which two are located in Budapest, three in Baja, one in Dunaújváros, one in Adony and one in Fadd-Dombori. All of the involved companies are located in one of the ports and are port operators or logistics service providers.

Budapest has about 1 750 000 inhabitants⁹, the nearest big cities are Érd, Gödöllő, Dunakeszi and Székesfehérvár. Dunaújváros has about 46 100 inhabitants and has a very good geographical location for multimodal transport. Baja has 36 573 inhabitants which is 0,37% of the Hungarian population. Nearest cities to Baja are Pécs (146 000 people, 57 km distance), Dunaújváros (88 km distance, 46 100 people) Szekszárd (27 km distance 33 000 inhabitants) and Mohács (19000 people) from which Dunaújváros and Mohács also have a port. Adony is a smaller city with 3 813 inhabitants which is 0,04% of the Hungarian population.

Unemployment rates have had a decreasing tendency in the last few years in Hungary. In Budapest, the unemployment rate is 4,9%. Baja, the percentage of unemployed people is 4,2%¹⁰ which is the lowest in the county where the average rate is 6,5%.

⁹Source of the data of inhabitants: Hungarian Central Statistical Office, 2015

¹⁰ Source: Labour Market Situation in the county of Bács-Kiskun 2017 October, Bács-Kiskun County Governmental Office Labour Department

The unemployment rate in Adony is low, it is under 5% as well, and salaries are relatively high in county comparisons, however, the unused development potential of the city can be considered high in geographic and infrastructure situation¹¹.

5.2 Port Authorities

In Hungary, so-called Port Authorities do not really exist, more precisely, the Ministry and the relevant legislative authorities are called Port Authorities. However, there are some port owners and public ports, which can be considered as “port authorities” which are owners or port managers of the National Public Ports or owners of other ports (with no ‘National Public Port’ title), three of these were involved in the survey, namely Port of Budapest, Port of Baja and Port of Adony.

5.2.1 Human Resources

All considered port authorities are micro size or small organisations and none of them has a human resources department. Only one of them employs students temporarily, usually in the summertime, for a 2-4 weeks practice. The amount of money spent by the port authorities on HR such as trainings is up to 6.000 €, details can be found in the following table.

Table 13 - Human Resources in Hungarian port authorities - overview

criteria	port 1	port 2	port 3
number of employees	up to 9	10 to 49	10 to 49
human resources department	no	no	no
money spent for HR (in 2016)	2.000 €	6.000 €	0 €
students are employed	yes, summer practice (2-4 weeks)	no	no

Trainings to be held are usually like the compulsory trainings for crane, forklift or loading berth operators, and two of the above-mentioned port authorities delegated one of their employees from the management level to the one and only management level training for port managers organized by the Hungarian Federation of Danube Ports.

Demographic characteristics of employees

In the port sector in Hungary, in most cases the number of male employees is dominant. However, port authorities offer more positions for female employees than port operator companies in general, mainly in management and administrative positions.

¹¹ Source: City Development Concept of Adony,

Table 14 - Demographic characteristics of employees Hungary - port authorities (gender)

criteria	port 1	port 2	port 3
gender	25% male employees/ 75% female employees	74% male employees/ 26% female employees	62% male employees/ 38 % female employees

The most frequent education level is the school-leaving qualification and occupational training amongst port employees at the port authorities. The employees on management level have mostly higher education or academic degree.

Table 15 - Demographic characteristics of employees Hungary - port authorities (level of education)

	port 1	port 2	port 3
academic degree	-	-	7
higher education	4	5	3
school-leaving qualification	-	20	3
no occupational training	-	5	0
other: occupational training	-	17	0

There are no people employed at age 20 or less years, and most of the employees are between 21 and 35 years old.

Table 16 - Demographic characteristics of employees Hungary - port authorities (age distribution)

	port 1	port 2	port 3
up to 20 years	0	0	0
between 21 and 35 years	1	32	1
between 36 and 50 years	2	12	6
older than 50 years	1	3	6

Hierarchical Level

Port1: There is one-person (male employee) in the general management, one (female) employee in the middle management and two (female) employees in the operation. Total number of employees is 4.

Port2: There is 2 people (1 male employee and 1 female employee) in the general management, 3 (male) employees in the middle management, 12 (female) employees in the lower management and 30 employees (28 male, 2 female) in the operation. Total number of employees is 47.

Port3: There is one (male) person in the general management, 6 employees (4 male, 2 female) in the middle management and 2 in the lower management (1 male, 1 female). At operational level they employ 4 people (3 male, 1 female). Total number of employees is 13.

Educational institutions

In the port industry it is very hard to get accurate and comprehensive training. There is however one training offered in Hungary on management level, which is an accredited Port management course organised by the Hungarian Federation of Danube Ports in cooperation with the University of Dunaújváros. Besides of that, National University of Public Service in Baja, University of Dunaújváros and Türr István Economic Grammar School in Baja offer relevant training for port workers, mainly in logistics and public services.

5.2.2 Training and Education

Trainings offered

The trainings offered by port authorities in Hungary are focusing on logistics, administrative issues, safety and sustainability. The ports do not provide trainings such as social skills or law.

Table 17 - Trainings offered by Hungarian port authority

	port 1	port 2	port 3
logistics (e.g. operation of logistical equipment)	no	yes	no
administrative (e.g. IT training, accounting etc.)	yes	no	no
social skills (e.g. communication skills, intercultural skills)	no	no	no
safety (e.g. safety training when using logistical equipment)	no	yes	yes
sustainability (e.g. trainings to learn about new environmental certificates or regulations)	no	yes	yes
law (e.g. what are relevant topics concerning the legal situation)	no	no	no

Landlord-type of port authorities usually do not organise trainings on port operational tasks, because port operators chose their employees and provide trainings for them themselves. Port of Adony offers such training because they find it necessary as there are not enough candidates coming from the port industry. These are not formal courses, rather in-house trainings.

The answering port authorities plan to expand their current training repertoire in order to increase the efficiency of work. Trainings at ports are organised annually or when it is required by employees or when new employees are hired.

Currently, there are no funding sources in Hungary which would support trainings in the port sector. More financial support would be needed for trainings in port operation, port management (incl. port strategy, lean management), as well as crane, forklift, frontloader, truck driver. Also, development of IT and language skills would be relevant topics to be funded.

Hiring new employees

The hiring processes at port authorities are different, each port has its own hiring procedures and training offers for their new employees.

Port of Baja recently do not have problems concerning finding qualified employees, and they do not find any changes necessary to turn the port into a more attractive workplace. There are 4 employees there and they do not plan to hire more people in the next year. When hiring a new employee, the Port of Baja offers logistic training course for the new colleagues, which takes 3 months at both management and operational levels.

Port of Adony faces more challenges in finding new employees, even for unskilled positions, especially in the following areas: entry level jobs – logistics assistants, crane operator, weighing bridge operator, forklift operator. In their opinion, competitive wages and education could turn the port into a more attractive workplace, and cooperation between educational institutions and the industry would be also desirable. A typical training process for new employees in Adony is as follows: 1. The employee's manager shows the employee around and explains the port rules. 2. Employee receives safety instructions. 3. Usually a mentor has been appointed who trains the new employee for the job. 4. In need of formal qualification (training) the facility manager organizes accordingly. The training usually takes one month at both management and operational level. Adony plans to hire 7 more employees, 2 on lower management level, 5 on operational level.

Port of Budapest has no problem with hiring new employees, and there are no changes defined to be necessary to make the port a more attractive workplace. The new employees usually receive a training on the Quality management system, which contains all local specifics; and local introductions. The other processes depend on the position (traffic of the port/technical field, etc.) The trainings take 2 months on both management and operational level. The trainings are to be held on individual level when required by employees, when new employees are hired.

Expanding the number of employees in the next year is only relevant in Adony.

The demand of employees based on educational level: employees with no occupational training have the highest demand on the labour market in the port industry, but also people with relevant academic degrees and proper language knowledge are missing from the management level.

Future development of training and education

There are further needs have been shown for trainings in operational, administrative and social skills areas. Amongst the **preferred types of trainings** in the future, simulators (2x), online learning material (1x) field-trips to other ports or companies (3x), workshops

moderated by training companies (2x) and specified courses at universities (2x) were mentioned. More trainings are planned to offer by the port authorities administrative topics, safety and law in the future.

As **preferred media for educational purposes**, print media (1x), online sources (1x) internal know-how (2x), workshops (1x), key notes from experts (2x) and specialised courses at educational institutes (1x) were mentioned.

The following topics were mentioned in the answers to the question **“How do you evaluate the effect of the following trends on the training of logistics employees at your company?”**

Very high effect: technological developments of logistics equipment and means of transport (2x) digitalization (2x), High effect: new business models (1x), internationalization of transport (1x) sustainability (1x).

Based on the questionnaires, port authorities in Hungary found that standardized training in inland ports and in companies situated in the port area in Europe would increase the competitiveness of inland ports and inland waterway transport in the future and find this training important.

One of the answer was as follows: *“The one and only goal is to serve our customers by using our resources in an efficient and effective way that generates profit while taking into consideration all safety and environment measures. In order to do so we need not only standardize trainings but also the business processes and let the digital transformation take place in our industry as well. We need smart ports with smart employees.”*

As **key development area** for Danube ports as workplaces in the future, technical development and infrastructure, automation, digitalization and turnaround management were mentioned as key areas. A flexible, mobile, communicative, environmentally friendly Danube port could be an attractive workplace.

Amongst the **challenges to be faced**, the following issues were mentioned:

- price efficiency;
- marketing;
- safety;
- navigable Danube, therefore those few plants who receives raw materials and ships finished good or by products may use IWW 365 days/year;
- the conventional way of operating inland ports requires a substantial number of skilled workers, but they are not available;
- automated processes and digital documents and special education;
- infrastructure, modernization, developing;
- sustainability and to be green.

5.3 Companies

5 companies were involved in the research in Hungary: Centroport Ltd. (Dunaújváros), Ferroport Ltd. (Budapest), RWA Hungary Ltd. (Baja), Áti Depo Zrt. (Baja), Concordia Közraktár Zrt. Business Unit in Fadd-Dombori (Fadd-Dombori). All of these companies are port operators or logistics service providers operating in a port.

5.3.1 Human Resources

Most of the involved companies are microenterprises with less than 9 employees, and there are one small enterprise and one medium-sized company involved in the research. Only two of the five companies have HR department. The amount of money spent by these companies on HR such as trainings is up to 50.000€ in 2016, details can be found in the following table. None of the answering ports employ students.

Table 18 - Human Resources in Hungarian ports (companies) - overview

criteria	company 1	company 2	company 3	company 4	company 5
number of employees	up to 9	50 to 249	10 to 49	up to 9	up to 9
human resources department	no	no	no	yes	yes
money spent for HR (in 2016)	1.200 €	50.000 €	4.000 €	n/a	400 €
students are employed	no	no	no	no	no

Demographic characteristics of employees

The rate of male employees at the answering companies are between 80% and 100%, which is relatively higher than the rate at the port authorities.

Table 19 - Demographic characteristics of employees Hungary - companies (level of education)

criteria	company 1	company 2	company 3	company 4	company 5
gender	100% male employees/ 0% female employees	80% male employees/ 20% female employees	91% male employees/ 9% female employees	80% male employees/ 20% female employees	100% male employees/ 0% female employees

The most frequent education level that the employees at port operator companies have is school-leaving qualification and the second one is higher education. Only 5% of all mentioned employees has academic degree.

Table 20 - Demographic characteristics of employees Hungary - companies (level of education)

	company 1	company 2	company 3	company 4	company 5
academic degree	0	5	0	0	0
higher education	2	10	3	1	1
school-leaving qualification	2	37	23	2	2
no occupational training	0	0	7	2	0

Most of the employees (55%) at the involved port operator companies are between age 36 and 50, also there are quite a lot of employees (33%) older than 50 years and only one employee of all is equal or less than 20 years old.

Table 21 - Demographic characteristics of employees Hungary - companies (age distribution)

	company 1	company 2	company 3	company 4	company 5
up to 20 years	0	1	0	0	0
between 21 and 35 years	1	6	3	0	0
between 36 and 50 years	2	29	17	5	1
older than 50 years	1	16	13	0	2

Hierarchical Level

Company 1: There is 1 person in the general management, 1 person in the middle and lower management and 2 people in operation. Total number of employees is 4, all of them are male.

Company 2: There are 2 people in the general management and 2 in the middle management (all 4 are male), from the 13 employees at lower management level 6 is male and 7 is female. At operational level (technical employees) 30 people works from which 100% is male. Total number of the employees is 52.

Company 3: There is one (male) person in the general management, 3 people (1 male, 2 female) in the middle management, 2 people (male and female) in the lower management and all others (male) in the operation. Total number of the employees is 33.

Company 4: There is one person in the middle management, one (female) in the lower management and 3 (male) employees on operational level. Total number of the employees is 5.

Company 5: There is one person in the middle management and two in the operation, all of them are male. Total number of the employees is 3.

5.3.2 Training and Education

Trainings offered

When hiring new people, Centroport Ltd. offers training in the topic of safety, technology and port management; the training takes 12 months on both management and operational level. People are trained at the company's equipment through colleagues. Centroport does not organise trainings on operational tasks (loading/unloading etc.); They plan logistics training to be held on organisational level (all employees) and they plan to expand their training offers in the future.

At Ferroport Ltd, trainings are organised by the company, but these are not classes or courses, these are trainings, mostly on EHS, or when new equipment is bought, to learn going live with that. They organize trainings on both group and individual level, and they do not plan to extend their training offer in the future. In most cases, people are trained at the company's equipment through colleagues or people are trained by specialized training companies or people are trained by manufacturers of special equipment (e.g. reach stackers). The trainings take from one week up to twelve months, depending the topic and the type of training.

At RWA, new people are trained at the company's equipment through colleagues and trainings usually take 1 month on management level and 1 week on operational level. The company currently does not organize trainings on the topic of port operational tasks (transshipment, loading/unloading), when offering training, it is on organizational or group level, and it is annual (e.g. safety). They do not plan to expand the trainings on operational level but would like to organise more trainings in the field of logistics, administrative issues and safety.

At Áti Depo Zrt, there are trainings on environment and work safety for new employees, plus they currently organize new trainings, because they are going to set up a new company management system; to organise a new training for them takes about one month. The trainings are usually held on group level; annually or when it is required by employees and when new employees are hired. They have no plans to expand their trainings on operational level.

In Fadd-Dombori, new people are trained at the company's equipment through colleagues or people are trained by manufacturers of a special equipment. Trainings are organized on port area level annually or when new employees are hired. Existing trainings are organized by APEC and HFIP. The company does not organize trainings on the topic of port operational tasks, because there are no vacancies for new workers. They do not plan to expand their training portfolio on operational level.

All companies offer trainings on safety to their employees, which is an annual training and it is not just necessary but also obligatory in the port operation.

Table 22 - Trainings offered by Hungarian companies

	company 1	company 2	company 3	company 4	company 5
logistics (e.g. operation of logistical equipment)	no	yes	no	no	yes
administrative (e.g. IT training, accounting etc.)	no	yes	no	no	no
social skills (e.g. communication skills, inter-cultural skills)	no	no	no	no	no
safety (e.g. safety training when using logistical equipment)	yes	yes	yes	yes	yes
sustainability (e.g. trainings to learn about new environmental certificates or regulations)	no	yes	no	no	no
law (e.g. what are relevant topics concerning the legal situation)	no	no	no	no	no

In Hungary, there is currently one EU source (GINOP-6.1.5-17) available for trainings for large companies, but only a few of the port operators could be potential beneficiaries because of their company size. There are no other sources relevant for ports for trainings, and if there is any, to fulfil the requirements is usually very hard. In many financing constructions, in case of using such source, the company would need to commit to keep either the trained employee for several years, or the number of their employees for several years or they would have to increase their turnover for several years, and as service providers and with their business reflected to the Danube (high/low water, not regulated and guaranteed water level) companies could not take such risk.

However, there would be many topics to be relevant to be funded, such as port management, port logistics, marketing, language skills and any kinds of port-specific staff trainings.

Hiring new employees

Centroport has no problem with finding qualified employees expect in the field of “driver for material handling machine”. The suggested change to turn the port to a more attractive workplace is buying a mobile port machine. New employees get training on safety, technology and port management, the trainings take 12 months on both management an operational level. Centorport do not plan to hire new people in the next year.

Ferroport indicated that they had problems with hiring new people, for example in the following areas: crane drivers, forklift drivers. Their suggestion is to turn the port to a more

attractive workplace is to create better infrastructure for **social areas** like restaurants for lunch, and **recreation areas are needed** like parks or sport possibilities. Their hiring process consists of the following steps: asking about the candidate's licenses, making some trial work with the equipment they are licensed to, which is followed by discussions about the details of the job. The training for the new employees takes about 2-3 month on management level, and maximum 1 year on operational level. Ferroport plans to hire 14 new people in the future: 1 top management level, 1 middle management level, 2 lower management level, 10 operational level.

Áti Depo faces problems in finding blue collar workers, and they think a port as workplace could be made more attractive by higher wages and Cafeteria. They train the new employees in the topics of environment and work safety, trainings usually take 2 months on management level and one month on operational level. The company plans to hire 4 new people in the next year on operational level.

RWA Hungary indicated that they also had problems in hiring new employees, but no specific areas were mentioned in the questionnaire. They do not plan to hire new employees in the next year.

Business Unit of Concordia in Fadd-Dombori indicated that they have problem in finding new employee in the field of quality controlling. Their suggested way to turn ports to more attractive workplaces is initiating educational programs countrywide concerning port issues. The hiring process in Fadd-Dombori consists of the following steps: accident prevention and fire protection training, description and presentation of the workplace, the new employee can work only together with a well-trained colleague under continuous control until the end of his/her trial period, then comes a final check and examination how to work alone. Trainings take 3 months on operational level, on management level it is not relevant. They do not plan to hire new employees in the next year.

Concerning the demand for employees, based on the questionnaires, the most prioritized qualification is "no occupational training", then comes "school-leaving examination" and then higher education. Only two of the companies mentioned academic degree but not on the first place.

Future development of training and education

Based on the answers, more trainings should be offered in the topics of port management, port logistics and marketing, as well as IWT in the logistical chain. The topics in which the answering companies would like to organize more trainings for their employees are logistics, safety, sustainability, administrative (IT, accounting) and social skills.

Amongst **preferred types of training**, simulators (1x), online learning materials (2x), online courses, workshops moderated by trainers (4x), modularly built workshops (1x), field-trips (3x) and specified courses at universities (3x) were mentioned.

Preferred media to be used for educational purposes: print media (2x), online sources (3x), workshops with trainers (3x), specialized courses at educational institutes (2x) other: field trips, no theoretical staff (1x), internal know-how (1x), key notes (experts) (1x)

To the question “**How do you evaluate the effect of the following trends on the training of logistics employees at your company?**” answers were diverse.

The following effects were considered very high:

- increasing importance of safety (2x)

The following effects were considered high:

- technological developments (3x)
- digitalization (3x)
- sustainability (3x)
- new business models (2x)
- increasing importance of safety (2x)
- internationalization of transport (1x)

Most of the involved companies confirmed that standardized training in inland ports and in companies situated in the port area would increase the competitiveness of inland ports and inland waterway transport in the future. However, one of them found that it would not, because every country had different economy and environment.

Some reasons why they found it a satisfactory solution:

- more skills of each would port would lead to more competition;
- a port could operate in a much more effective way with well trained staff, and value-added operations are always increase competitiveness.

The following **development suggestions for Danube ports as workplaces** have been collected from the questionnaires:

- intention to increase the modal shift of IWT from 2% up to 10%;
- changing of cargo: less bulk cargo to more finished customer products with new transport and transshipment methods, but all together more and higher classified work is required;
- navigable river all year;
- trained workers;
- cooperative and harmonized communication with the partners in the logistics chain.

Amongst the **challenges for Danube ports to be competitive logistics hubs**, the following issues were mentioned:

- it is subject to the water level (water regulation);
- navigable river all year;

- because of environmental issues the fluvial transport should get more political protection, so more cargo should be transported by fluvial transport mode e.g. new companies with heavy or big industrial products should be settled down in ports with the help of each state; on the other hand, by moving towards finished customer goods these goods are usually worthful and because of that they need fast transportation modes like trucks or maybe rail. That takes away cargo like wheat or corn from the fluvial transport mode;
- workforce;
- multimodal operation;
- well trained staff;
- conform to the market changes;
- sustainability.

6 Romania

In the following chapter, the results from the survey conducted in Romania are presented. In the beginning, the demographic characteristics of Romanian ports included in the survey are presented. Afterwards, the results from the survey – conducted with port authorities and companies located at the respected ports – are presented.

6.1 Demographic description



Constanta County is located in the southeastern part of Romania and has an area of 7071 km² (3% of the total area of the country), being the eighth largest in the country's counties. On 31 December 2017, the administrative organization of the territory of this county was as follows: 9 cities and 3 municipalities, 58 communes and 189 villages. The county seat is Constanța. It is bordered to the north by Tulcea County, to the east by the Black Sea, to the south by Bulgaria, and to the west by the Danube river, which forms a natural border with the Calarasi and Ialomita counties. As relief forms, the plateau structure (Podișul Dobrogei) is predominantly of low altitude. In the eastern part of the country there is the seaside of the Black Sea, exploited touristy. Constanta, the sixth most powerful county in the country as a business enterprise, recorded a 63% increase in gross in-house product (GDP) over 2012-2017, compared to 45% in the national average. Constanta is the most powerful county as the GDP of the South-East region, including Brăila, Buzău, Galati, Tulcea and Vrancea, with a total GDP of 90 billion lei. By comparison, the Constanta generates a GDP almost three times higher than the second largest county in the region, Galati. On July 1, 2017, the population by residence was 768,170 people, for Constanta County. The urban and the feminine population are majority (69.4% and 51.4% respectively).

largest county in the region, Galati. On July 1, 2017, the population by residence was 768,170 people, for Constanta County. The urban and the feminine population are majority (69.4% and 51.4% respectively).

On July 1, 2017, the urban population was 532,864, down slightly from July 1, 2016 (by 0.4%). The rural population is slightly up on July 1, 2017 as against July 1, 2016 (0.4%). The male population on July 1, 2017 was 373,011, slightly lower than that observed in the female population (0.2% vs. 0.1%), compared to the same period of the previous year.

6.2 Port Authorities

NC Maritime Ports Administration SA Constanta is a National Company to which the Ministry of Transport leased, under a concession contract, the maritime transport infrastructure belonging to the public domain of the state for administration purposes. It manages and acts as port authority in the ports of **Constanta, Midia, Mangalia, Basarabi, and Tomis**. All these ports were taken into account for the present analysis, and MPAC has the role of port authority for all them.

Constanta is both a maritime and a river port. From its position, it aims to offer a developed transport infrastructure, as well as security, safety and environmental port conditions. Only the port operators are involved in transshipment, loading/unloading and other operations related to goods. MPAC assures training services to its staff, in every domain (financial, commercial, legal, administrative, technical, human resources a.s.o.), being aware about the importance of well-trained staff which leads to higher performance level for the entire port and city.

6.2.1 Human Resources

The following section provides an overview of the demographic characteristics of employees at MPAC.

Table 23 - Human Resources in Romanian port authority - overview

criteria	port 1
number of employees	911
human resources department	yes
money spent for HR (in 2016)	Approx. 15.000.000 € total cost (including professional training - 75.000 €)
students are employed	yes

Demographic characteristics of employees

Table 24 - Demographic characteristics of employees Romania - port authorities (gender)

criteria	port 1
gender	667 male employees/ 244 female employees

Table 25 - Demographic characteristics of employees Romania - port authorities (level of education)

	port 1
academic degree	120
higher education	310
school-leaving qualification	466
no occupational training	15

Table 26 - Demographic characteristics of employees Romania - port authorities (age distribution)

	port 1
up to 20 years	0
between 21 and 35 years	80
between 36 and 50 years	464
older than 50 years	367

Hierarchical Level

According to the company chart below, MPAC has a Board of Administration consisting of seven people. The CEO of MPAC is also a member on the Board of Administration. He is employed directly in the company, by the selection procedure foreseen by Government Ordinance no.109/2011. The rest of the Board members are appointed by the General Assembly of Stakeholders (Ministry of Transport and Property Fund) and usually have other employers. The managerial structure consist of 6 directors: Deputy Director, and one director for each directorate: economic, commercial, exploitation, technic and coordination of subsidiaries. Every directorate has under coordination three or more specialized departments, which in turn, have one or more offices subordinated.

Table 27 - Hierarchical Level of employees in Romanian port authorities

	Number of employees	Male employees	Female employees
general management (employees with executive functions; e.g. board of directors)	9	6	3
middle management (employees with managerial responsibility; e.g. head of department)	45	24	21
lower management (employees with administrative tasks, e.g. accountant)	361	183	179
operational (technical employees; e.g. warehouse worker)	496	455	41

Educational institutions

The following educational institutions in Romania also focus on ports:

- **"Academia Navală Mircea cel Bătrân" - Naval Academy Mircea cel Bătrân:** Polytechnical higher education establishment in Constanta; Provides education and training programmes both for military cadets/midshipmen/officers of the Romanian Navy / Coast Guard but also for civilian engineering specialists for the Merchant Marine sector (bachelor and master degree) in maritime transportation and naval and port logistics; Research & Development and innovation in the field of naval engineering, marine engineering, naval logistics and management.
- **"Universitatea Maritimă din Constanța" - Constanta Maritime University** is a higher education and research institution which trains engineers in navigation and river and maritime transport in accordance with the national standards set by the Ministry of Education, Research, Youth and Sports, as well as the IMO international standards.
- **"Universitatea Ovidius din Constanța" - Ovidius University of Constanta** is a public higher education institution which consists 16 faculties: Faculty of Letters, Faculty of Theology, Faculty of History and Political Sciences, Faculty of Law and Administrative Sciences, Faculty of Natural Sciences, Faculty of Physical Education and Sport, Faculty of Applied Sciences and Engineering, Faculty of Mathematics and Informatics, Faculty of Economics, Faculty of Medicine, Faculty of Dental Medicine, Faculty of Pharmacy, Faculty of Mechanical, Industrial and Maritime Engineering, Faculty of Constructions, Faculty of Arts, Faculty of Psychology and Education Sciences,
- **"Universitatea din București" - The University of Bucharest** offers several study programmes, on all levels and means of university education: there are 93 bachelor programmes, 208 master programmes and 21 doctoral programmes. All of these are accredited or authorised. The University of Bucharest also holds the TIFFIN EMBA master programme.
- **"Universitatea Politehnică din București" - University POLITEHNICA of Bucharest** is the largest and the oldest technical university in the country and among the most prestigious universities in Romania.
- **"Fundația Școala Portuară" - Port School Foundation** is the oldest provider of port-based training in port-specific jobs.

6.2.2 Training and Education

Trainings offered

MPAC does not encounter problems in finding qualified employees. When it comes to its employees, MPAC currently organizes trainings in many areas, described below:

Table 28 - Trainings offered by Romanian port authority

	port 1
logistics (e.g. operation of logistical equipment)	yes
administrative (e.g. IT training, accounting etc.)	yes
social skills (e.g. communication skills, inter-cultural skills)	yes
safety (e.g. safety training when using logistical equipment)	yes
sustainability (e.g. trainings to learn about new environmental certificates or regulations)	yes
law (e.g. what are relevant topics concerning the legal situation)	yes

Hiring new employees

The hiring process in the company is carried out in accordance with the internal procedures and the Romanian legislation, through a recruiting and selection procedure. All cover letters and CVs submitted to the company's registry or uploaded to the company's portal are placed in a database for a period of 12 months. At the time of a new employment we consult the database. Individuals which fulfill the minimum requirements of the respective job are called upon to pass an examination (practical / written), as well as to sustain an interview. The employment is based on the results of the candidates at the recruitment and selection process. When hiring a new employee in the operational department of one of the ports administrated by MPAC, **the typical training process** for a new employee consists in a training process, in accordance with the national and international legal regulations specific to the activity they will carry out, and with our intern norms/procedures. Currently, within MPAC, there is a port operations directorate, which coordinates the entire port surveillance and safety activity, in which operations such as transshipment and loading/unloading do not take place.

The training of new employees take on average two months – in the operational as well as in the management level.

MPAC is not currently organizing trainings on the topic of port operational tasks (e.g. transshipment, loading/unloading), because these are not fields of activities that MPAC is in charge with.

The training period of an employee and the opportunity of such training varies from annual (MBA) to periodical, when required by employees or when a new employee is hired.

As regarding **the planning policy for the next year**, MPAC has no intention to adapt or expand the current training on the topic of port operational tasks (e.g. transshipment, loading/unloading) for employees, because there are not in the area of MPAC regulations. The interest paid to the **hiring port employees next year** is high for the middle and lower management. In figures, that means MPAC will plan to hire 8 and 16 new employees for each segment of that management.

The demand for employees depending on their educational level is as follows:

Table 29 - Importance of employees depending on educational level in Romanian port authority

	ranking
academic degree	4
higher education	2
school-leaving qualification/secondary education	1
special certificate for operational activities (e.g. crane operator)	3
no occupational training	5

Future development of training and education

In terms of future development of training and education:

- MPAC prepares an annual training programme, based on the needs of the company and on the proposals of the functional structures
- MPAC organizes team building sessions and various internal training courses
- employees have free access to various online learning materials, including the legal ones (updated).
- depending on the need for training, MPAC sends employees to courses organized by external suppliers
- MPAC authorizes staff according to the legal provisions

Regarding employments, they will be based on the staff movements of that year. Amongst preferred types of training, online learning materials, online courses, workshops moderated by trainers and specified courses at universities are preferred.

Regarding the media to be used for educational purposes: online sources, internal know-how, workshops with trainers and specialized courses at educational institutes are the most wanted types of media preferred for educational purposes.

To the question “How do you evaluate the effect of the following trends on the training of logistics employees at your company?” MPAC considers safety of great importance, followed by technological developments, digitalization, sustainability, new business models, internalization of transport.

The standardized training in inland ports and in companies situated in the port, in our opinion would not increase the competitiveness of inland ports and inland waterway transport in the future, because every country had different economy and environment, different people, that

means equal chances to start, as a prerequisite for achieving the objectives of growth, employment and social cohesion, but less results in practice.

For the developments of Danube ports as work places in the future, the economic and tourist potential of the Danube could be an engine for the development of the Romanian port cities. If there was no variation in the flow, which is the biggest problem, the river could be Romania's main route to Europe. In the localities on the banks of the Romanian Danube sector, there must be developed tourist industries, some of them specialized in very different fields (folkloric traditions, gastronomy, historical reconstructions, cultural and historical heritage, thermal tourism), which bring incomes to local communities.

As challenges for Danube ports to be competitive logistics hubs in the future, we see the compliance with EU Strategy for the Danube Region regarding the navigability on the Danube and the collaboration with Bulgarian ports regarding dredging operations.

Under the conditions that hold 47% of the total waterway sector and several river and maritime ports, the Danube should be taken as a priority. The EU Strategy for the Danube Region aims to interconnect and increase prosperity in the Danube region, which must also be transposed at national level by modernizing the infrastructure and changing the approach. In addition to port cities, it is necessary to set up a defined network of small and medium-sized ports to be accessible by road and rail. Only in this way can shipping be considered a real alternative within logistics.

In Romania, the problem of the shortage of labor market specialists has been hardly overtaken by companies last year, but this year is much more difficult. Millions of Romanians have gone abroad, mostly well-trained, active and intrepid people, which conduct to a crisis in the labor force in Romania.

6.3 Companies

In the following section, the results from the survey conducted with companies located at the above-respected Romanian ports are presented.

6.3.1 Human Resources

MPAC selected few representative stakeholders: UMEX S.A.(www.umex.ro), SOCEP S.A.(www.socep.ro), COMVEX S.A.(www.comvex.ro), CHIMPEX S.A.(www.chimpex.ro), TTS Company S.A.(www.tts-group.ro) and ITS LOGISTICS SRL, to answer the questionnaire on HR. The questionnaires were only completed by the follow two companies: UMEX S.A, COMVEX S.A.. Both companies are located at the port of Constanta.

Table 30 - Human Resources in Romania ports (companies) - overview

criteria	company 1	company 2
number of employees	232	238
human resources department	yes	yes
money spent for HR (in 2016)	11.000€	6.156€
students are employed	yes	no

Demographic characteristics of employees

As can be seen in the following tables, most of the employees in the companies, which replied to this survey, are men (see

Table 31). In addition, most of the employees have a school-leaving qualification followed by a higher education. Only a limited number of employees of the company have an academic degree (see Table 32). Concerning age, most employees are between 36 and 50 years old. The majority of employees is older than 36 years (see Table 33).

Table 31 - Demographic characteristics of employees Romania - companies (gender)

criteria	company 1	company 2
gender	84 % male employees/ 16 % female employees	89 % male employees/ 11 % female employees

Table 32 - Demographic characteristics of employees Romania - companies (level of education)

	company 1	company 2
academic degree	25	2
higher education	86	56
school-leaving qualification	121	177
no occupational training	-	-

Table 33 - Demographic characteristics of employees Romania - companies (age distribution)

	company 1	company 2
up to 20 years	-	-
between 21 and 35 years	51	32
between 36 and 50 years	105	104
older than 50 years	76	99

Hierarchical Level

As can be seen in Table 34, the majority of port employees can be found in the operational segment. Followed by the lower management. In addition, in the operational sector most of the employees are men. In respect of gender, female employees can especially be found in the lower management, which includes employees with administrative tasks.

Table 34 - Hierarchical Level of employees in Romanian companies

	company 1		company 2	
	total	male/female	total	male/female
general management (employees with executive functions; e.g. board of directors)	7	6 men/ 1 woman	8	7 men/ 1 woman
middle management (employees with	7	5 men/ 2 women	14	8 men/ 6 women

managerial responsibility; e.g. head of department)				
lower management (employees with administrative tasks, e.g. accountant)	76	39 men/ 37 women	37	27 men/ 10 women
operational (technical employees; e.g. warehouse worker)	142	142 men	156	154 men/ 2 women
other: not indicated	-	-	20	16 men/ 4 women

6.3.2 Training and Education

Trainings offered

In the following table, the trainings offered by the companies are summarized.

Table 35 - Trainings offered by Romanian companies

	company 1	company 2
logistics (e.g. operation of logistical equipment)	yes	yes
administrative (e.g. IT training, accounting etc.)	yes	no
social skills (e.g. communication skills, intercultural skills)	yes	no
safety (e.g. safety training when using logistical equipment)	yes	yes
sustainability (e.g. trainings to learn about new environmental certificates or regulations)	yes	no
law (e.g. what are relevant topics concerning the legal situation)	yes	no

Hiring new employees

The hiring process of new employees was not described in detail by respondents. However, both companies mentioned that the training period of new employees is around 3 months for management and operational level (slightly shorter for management level). In addition, one company mentioned that trainings are offered when new employees are hired

Future development of training and education

Concerning the future development of training and education, respondents mentioned that they would prefer to use field-trips to other ports or companies as a training offer as well as workshops or specified courses at universities or other educational institutions in the future. The preferred media for educational purposes are internal documents (e.g. shared via

intranet) or workshops with experts on specific topics. One company indicated that they are planning to hire around 100 new employees in the next year since they want to expand their business. The other company mentioned, that they are hiring based on the needs in the following business year. Concerning the level of education of new employees, both companies indicated that they think that employees with school-leaving qualification are the most important employees followed by employees with higher education. It was also mentioned that current and future trends (e.g. digitalization, sustainability, new multimodal concepts) should be included in future training but for the relevant management level.

7 Bulgaria

In the following chapter, the results from the survey conducted in Bulgaria are presented. In the beginning, the demographic characteristics of Bulgarian ports included in the survey are presented. Afterwards, the results from the survey – conducted with port authorities and companies located at the respected ports – are presented.

7.1 Demographic description

The scope of the current report includes the activity of **the two major river ports in Bulgaria – Ruse and Lom**. The demographic characteristics of the regions where the cities are located are as follows: The city of Lom is the second largest city in Montana district, in the north-western part of Bulgaria. The total population of Montana district is almost 135 thousand people in 2016, while it was 144 thousand people in 2012. There is obvious negative demographic tendency for this region.

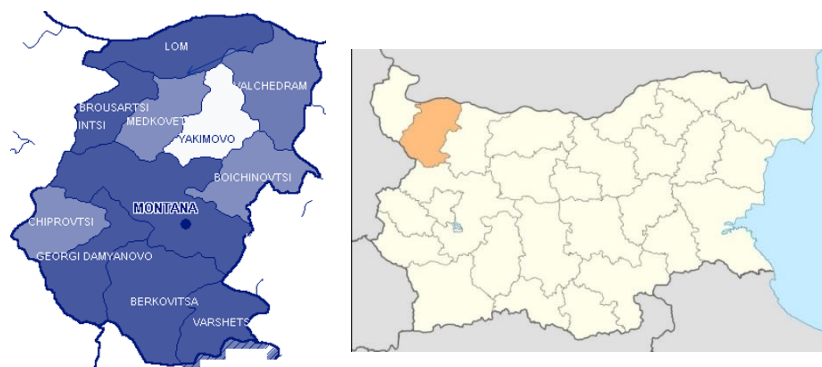


Figure 1 - Demographic description of Bulgaria 1 (Source: <http://bg.guide-bulgaria.com/nw/montana>)

As of February 1, 2011 the population of the Montana district is 148,098 which represents about 2.0% of the total population of the country. By population, the Montana region ranks 18th among the districts in Bulgaria.

Data from the last census show that the Montana district is one of the three areas most affected by depopulation (just before Vratsa and Vidin).

In the period between the two censuses 2001-2011, the population of the Montana District decreased by 34,160, which represents an average annual rate of decline of 1.75%. For the country the average annual rate of decrease for this period is 0.7%.

More than half of the population decline (57.8%) is due to negative natural growth (more deaths from births). The other half is due to internal and external migration, with internal migration /migration of the population from Montana to Sofia and the other big cities / almost twice / 1.7 times / higher than the external one.¹²

Unemployment coefficient for the district varies between 14.9% (2012), 16.7% (2013), 16.3 (2014) 8.2% (2015) and 5.6% according to preliminary data for 2016. The population of Lom takes about 24 – 25 % from the district population. Ruse could be defined as the biggest river city and is the largest one in the Ruse district.

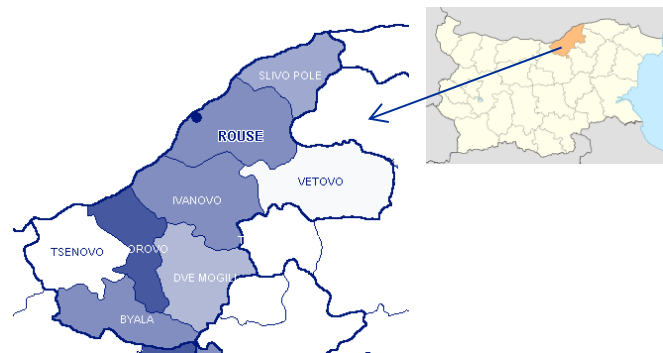


Figure 2 - Demographic description of Bulgaria 2
(Source: <http://bg.guide-bulgaria.com/nw/montana>)

The city is located in Ruse district, which has a population of 223 thousand people in 2016.¹³

The total number of the population in the Ruse district as of 31.12.2011 is 233,767 people (3.2% of the population of the Republic of Bulgaria), of which 179,565 were in the cities of the area, and 54,202 - in the villages. Ruse District is the second largest in the North Central region region, after Veliko Tarnovo region. When tracking demographic dynamics development of the area is obvious that there is a sustainable tendency towards a common population decline, which is also characteristic of demographic processes in the national scale. Towards the end of 2011 Ruse District has the highest population density per km² in the North Central Region - 83.4 people / sq. km, which is significantly higher than the country average (66.1 people / square km).¹⁴

According to the official data of the national statistical institute, the unemployment rate for Ruse district has fallen in recent years (12.9% (2012) – 6.9% (2016)).¹⁵

The newest data about unemployment rate on a national scale show that the annual indicator for 2017 is 6.2% and has fallen by 1.4% according to the previous year.

¹²URL:<http://oblastmontana.org/>

¹³URL: www.nsi.bg

¹⁴Source: <http://ruse.bg>

¹⁵ Source: <http://www.kmeta.bg/nsi-samo-6-grad-a-s-naselenie-nad-100-hilyadi-dushi>

7.2 Port Authorities

The survey of Bulgarian ports was fulfilled in February 2018. The questionnaire prepared for this report was translated in Bulgarian language and sent to the port operators of the ports with national importance. Three port authorities are within the scope of this report:

1. Being a port operator itself, the **Bulgarian Ports Infrastructure Company (BPI Co.)** gave data about the river port under its management – Port terminal **Ruse-west**. BPI Co. is also the port operator of **Ferryboat terminal Silistra**.
2. A completed questionnaire was received from **Port Invest Ltd.** – private operator and concessionaire of **Port terminal Lom** and
3. **Port Complex Ruse JSCo.** – port operator with 100% state property, taking care about the activity of the cargo terminals **Ruse-east and Tutrakan**. Data received are related mainly for Ruse-east, as Tutrakan terminal does not have regular port activity.

The three authorities answer that there up to 10 companies located within the port area. Usually port terminals in Bulgaria are designated for handling and storage of cargo and do not have production or other companies in the port area.

All of the above terminals offer services with the workforce of the port operator and include: loading/ unloading vessels, automobiles, wagons; storage of cargo in open and covered warehouses, including under customs regime; administrative and technical services related to cargo handling; packaging, sorting, etc. The most often used way of handling is river – automobile/ railway. Common cargo types are dry bulk (coal, coke, grain, fertilizers, inert materials, etc), general (countable) cargo - ro-ro cargo (self-driven vehicles); agricultural, construction and other machinery, metal products, etc.

7.2.1 Human Resources

Two respondents state that the total number of employees in the port is between 50 – 249 people (middle sized enterprise) and one state they are 10 – 49 people (BPI Co. – data for the specialized department).

Table 36 - Human Resources in Bulgarian port authorities - overview

criteria	Port Lom (Port Invest)	Ruse-west (BPI Co.; Department Operation and exploitation of port terminals)	Ruse-east (Port Complex Ruse)
number of employees	134	37	134
human resources department	no	no (HR dept. is for the entire BPI Co.)	yes
money spent for HR (in 2016)	0 €	500 €	2950 €
students are employed	no	yes	yes

Demographic characteristics of employees

A total of 235 male and 70 female employees are working in the three port authorities under survey.

Table 37 - Demographic characteristics of employees Bulgaria - port authorities (gender)

criteria	Lom	Ruse-west	Ruse-east
gender	107 male employees/ 27 female employees	28 male employees/ 9 female employees	100 male employees/ 34 female employees

Gender share in the total number of employees of port terminals Lom, Ruse-west and Ruse-east

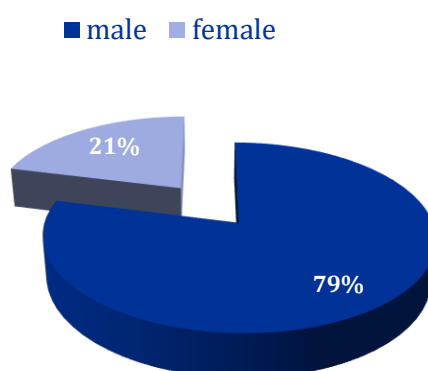


Figure 3 - Gender distribution in Bulgarian port authorities

Table 38 - Demographic characteristics of employees Romania - port authorities (level of education)

	Lom	Ruse-west	Ruse-east
academic degree	-	-	-
higher education	13 /bachelors, masters/	11 /bachelors, masters/	35 /bachelors, masters/
school-leaving qualification	121/primary and secondary education/	26/primary and secondary education/	99 /primary and secondary education/
no occupational training	-	-	-

Table 39 - Demographic characteristics of employees Romania - port authorities (age distribution)

	Lom	Ruse-west	Ruse-east	Total
up to 20 years	0	0	0	0

between 21 and 35 years	12	8	14	34
between 36 and 50 years	51	15	54	120
older than 50 years	71	14	66	151

Hierarchical Level

The authorities pointed out that there are 1 or 2 persons in the top management. For Lom there are two directors that represent the company, for Ruse-west – it is the head of the specialised department within BPI Co. and for Ruse-east – there is one executive director. Port complex Ruse has a board of directors consisted of three people, but only the director is employed directly in the company. The other two members of the Board of directors are appointed by the Minister of transport and usually have other employment. BPI Co. has also managing committee of 3 people, one of which is the General manager of the Company. The reply from the questionnaire includes only information about the department as it is the “head” of the port terminals. Port of Lom is owned by the Bulgarian River Shipping Company and therefore it has higher management. Answers are focused only for the port terminal.

Table 40 - Hierarchical Level Bulgarian port authorities

Number of employees	Lom	Ruse-west	Ruse-east
general management (employees with executive functions; e.g. board of directors)	2 men	1 man	3 men
middle management (employees with managerial responsibility; e.g. head of department)	8 (62% men; 38% women)	2 (50% men/ 50%women)	9 (67% men; 33% women)
lower management (employees with administrative tasks, e.g. accountant)	7 (71% men; 29% women)	5 (80% men; 20% women)	30 (67% men; 33% women)
operational (technical employees; e.g. warehouse worker)	28	29	94
other	91		

Educational institutions

BPI Co. and Port Complex Ruse JCo. are aware the following main educational institutions in the field of port operation in Bulgaria:

- Nikola Vaptsarov Naval Academy (<http://www.naval-acad.bg>) in Varna;
- Technical university in Varna (<http://www2.tu-varna.bg/tu-varna>);
- Vocational High School in River Shipbuilding and Navigation (<http://pgrkk-ruse.bg.net/>), Ruse;

- Vocational Transport High School (<http://www.pgtransport-ruse.com/>) in Ruse.

Problems are identified by authorities in hiring crane operators, forklift drivers, fitters and welders. On the question for the suggested changes in order to turn the port into an attractive work place the following answers were received:

Port Complex Ruse JSCo. even now is a relatively attractive place for job-seekers within Ruse. Of course, there is always more to be desired. From the point of view of the working atmosphere, we give opportunities for improvement of qualification and social benefits, we try to be competitive in the market environment, to cover through these social benefits the different spheres of the life of our employees. A good effect for the company as a whole would be achieved if, considering the importance of people as a resource, we focus on motivational factors, creating even better working conditions and an atmosphere where employees feel like an important part of the company and the team.

BPI Co.: Investment is needed for improvement of working conditions, including modernization of the port superstructure (machinery, facilities, equipment, etc.). Measures have to be taken for the aim of qualification enhancement and the system for social benefits must be kept and upgraded.

7.2.2 Training and Education

Trainings offered

In the following table, the trainings offered by the different port authorities in Bulgaria are summarized.

Table 41 - Trainings offered by Bulgarian port authorities

	Lom	Ruse-west	Ruse-east
logistics (e.g. operation of logistical equipment)	yes	yes	yes
administrative (e.g. IT training, accounting etc.)	no	yes	yes
social skills (e.g. communication skills, inter-cultural skills)	no	no	no
safety (e.g. safety training when using logistical equipment)	yes	yes	yes
sustainability (e.g. trainings to learn about new environmental certificates or regulations)	no	no	no
law (e.g. what are relevant topics concerning the legal situation)	no	no	yes

Hiring new employees

Port Complex Ruse: Upon hiring, the person receives a job description for the basic duties. An employee from the Administrative-legal / HR sector acquaints him/her with the main internal regulations - Internal Labor Code and Code of Ethics. He/ she is instructed on safety and health

working conditions. The direct supervisor of the employee introduces him/her to the workplace, to the workers in the organizational unit, and appoints a mentor for training. Within 10 days, the person is trained to learn about different cargo handling technologies, ways of hanging, and so on. Training ends with an exam and when successful result is achieved, the person is involved in the work process.

Port Invest Ltd.: 1. The person receives overall initial instruction; 2. The person is trained by a supervisor according to approved program. 3. A test is accomplished.

BPI Co.: Upon receipt, the employee is given a job description about the main job responsibilities. A Port Administration employee introduces him the main internal regulations including the Integrated Quality Management System and Code of Ethics. Safety and health instructions are also done by a health and safety specialist. The direct supervisor of the employee introduces him to the workplace, to the workers in the organizational unit, and appoints a mentor for training. Within 10 days, the person is trained to learn about cargo handling technology. Training ends with a successful exam and the person is involved in the work process.

The period of training has the following characteristics:

Table 42 – Training period in Bulgarian port authorities

	Lom	Ruse-west	Ruse-east
management (employees with administrative tasks, e.g. accountant)	6 months	1 month	1 month
operational (technical employees; e.g. warehouse worker)	6 months	14 days	10 days

Trainings on the topic of port operational tasks (e.g. transshipment, loading/unloading) are done upon development of new handling technologies, when new machinery is delivered in the port, when new cargo types are handled. Apart from that, annual courses are organized as per the requirements of the Ordinance on the safe operation and technical surveillance of lifting equipment, as well as for new employees.

Approximately one month is needed for organization of the above trainings and above 50 courses have been organized in the last three years. Most common level of training is done for groups of employees and individual, only for one person. Annual courses are most often carried out.

Port complex Ruse plans to expand the current training on the topic of port operational tasks because the increase of the professional qualification and competence of the employees of the company is one of our priorities in the sphere of human resources. The risk of "human factor" exists and if we are unable to provide and maintain a good level of competence of the staff, this would hamper the overall process and the fulfillment of the contractual commitments, as well as impair the operating results and the financial condition of the company.

As sources for financing in the sphere of HR, respondents point out Operational program Human resources development 2014-2020.

Future development of training and education

More training for port employees is desired mainly in the fields of port operation (handling technologies, loading, unloading, etc) and safety. Administrative, social and sustainable development courses are also preferred by BPI Co. and Port Complex Ruse.

Types of training courses with preference would be online training materials, workshops and specialized courses on certain issues. Port Invest points out simulators and module courses as good form of training. Preferred media types are internal know-how, workshops on a specific theme, specialized courses, and online sources.

On the question “**How many port employees are you planning to hire in the next year**” ports state that higher education and special certificates for the employee’s qualification are important. Port Complex Ruse states total of 5 people (1 middle management, 2 administrative and 2 operational employees). Three of them have to have higher education degree and two with special training certificate. BPI Co. states 1 administrative and 1 operational employee. Similar to Port Invest, BPI Co. think that higher education and certificates are of biggest importance.

The effect of the trends on the training of employees involved in operational tasks is evaluated as follows:

- new multimodal transport concepts – relatively low effect (1 answer “3” and 2 answers “4”);
- technological developments – medium effect (3 answers “3”);
- digitalization – relatively high effect (two answers “2” and one “3”);
- internationalization of transport - medium effect (3 answers “3”);
- new business models - relatively high effect (two answers “2” and one “3”);
- sustainability – high effect (one answer “1” and two “2”);
- increasing importance of safety - high effect (one answer “1” and two “2”);

On the question about standardized training in inland ports and in companies situated in the port area, there are **two negative opinions and one positive answer** whether there will be an increase in the competitiveness of inland ports and inland waterway transport. Negative statements conclude that standardized training does not take into account national peculiarities on a port level and on the country level. The positive opinion points out that the quality of port services would increase and competition would be based on the logistics and technical abilities of the port.

Other comments on the questionnaire are that ports will keep their reputation of reliable and correct employers. One of the respondents states that a challenge for Danube ports to be competitive logistics hubs in the future is improvement of the navigation route and maintaining the needed river depths.

7.3 Companies

Over 10 companies were contacted for the current survey on the human resources. Three of them agreed to give data and to participate in the research. Independent of the small number it may be assumed that they represent the overall picture of the HR in the forwarding and ship agent companies.

Questionnaires were received from one ship agent, one company forwarder, ship agent and ship owner, working in almost all river ports in Bulgaria and one forwarder, working also in the field of automobile transport. All companies have head offices in Ruse.

Companies are working mainly in Ruse-east. The biggest company that filled in the questionnaire works also in port of Lom and Svishtov. Employees cover all the ports without strictly focusing on one specific port.

Companies accept automobile and river transport as the most important modes used by them. Two of the companies have offices outside Ruse also, but are located only in the country. None of the companies is a production company. They offer services, such as:

- Danube river transportation with own and chartered vessels
- Danube – Main – Rhine, sea and river-sea chartering
- Combined transportation from cargo-seller's warehouse to the cargo buyer's warehouse
- Ship agency services at all Bulgarian Danube ports
- Forwarding services at all Bulgarian Danube ports
- Transshipment and storage services
- Automobile and railway transport

With regard to the logistical equipment, companies gave answers about the facilities they use. **The facilities are property of port operators (defined as port authorities in this report).** Used machinery is: portal cranes, mobile cranes, bunkers, ro-ro ramps.

7.3.1 Human Resources

One of the researched companies is middle sized enterprise with 50 – 249 employees; one is a small company with up to 9 people and one with 10 – 49.

Table 43 - Human Resources in Bulgaria (companies) - overview

criteria	Company 1	Company 2	Company 3
number of employees	73	8	30
human resources department	no	no	no
money spent for HR (in 2016)	5000 €	500 €	2000 €
students are employed	yes	no	yes

Demographic characteristics of employees

A total of 111 people work for the three companies, 79% of which are men.

Table 44 - Demographic characteristics of employees Bulgaria - companies (gender)

criteria	Company 1	Company 2	Company 3
gender	58 male employees/ 15 female employees	5 male employees/ 3 female employees	25 male employees/ 5 female employees

Table 45 - Demographic characteristics of employees Bulgaria - companies (level of education)

	Company 1	Company 2	Company 3
academic degree	-	-	-
higher education (bachelors, masters or similar)	36	3	12
school-leaving qualification	37	5	18
no occupational training			

Table 46 - Demographic characteristics of employees Bulgaria - companies (age distribution)

	Company 1	Company 2	Company 3
up to 20 years	1	0	0
between 21 and 35 years	24	3	5
between 36 and 50 years	18	3	20
older than 50 years	30	2	5

Hierarchical Level

Table 47 - Hierarchical level of employees in Bulgarian companies

	Number of employees		
	Company 1	Company 2	Company 3
general management (employees with executive functions; e.g. board of directors)	1 man	1 man	2 (1man, 1 woman)
middle management (employees with managerial responsibility; e.g. head of department)	22 (19 men, 3 women)	1 man	3 (men)
lower management (employees with administrative tasks, e.g. accountant)	50 (37 men, 13 women)		5 (3 men; 2 women)
operational (technical employees; e.g. warehouse worker)		6 (men)	20 (18 men, 2 women)

Problems are identified in hiring specialists in the field of technical repairing activity, shipping (ships' staff), ship agents. Companies enumerate the same educational institutions as described above by the port authorities.

7.3.2 Training and Education

Trainings offered

Table 48 - Trainings offered by Bulgarian companies

	Company 1	Company 2	Company 3
logistics (e.g. operation of logistical equipment)	no	no	no
administrative (e.g. IT training, accounting etc.)	no	no	no
social skills (e.g. communication skills, inter-cultural skills)	no	no	no
safety (e.g. safety training when using logistical equipment)	no	no	no
sustainability (e.g. trainings to learn about new environmental certificates or regulations)	no	yes	no
law (e.g. what are relevant topics concerning the legal situation)	no	yes	no

The employees of the interviewed companies **do not work with logistical (loading/unloading) equipment** and no training is foreseen in this field.

Hiring new employees

One of the companies did not give a description of the hiring process. The other gave the following explanations:

- The new employee is supervised by a senior and experienced employee until the skills for the specific job are obtained to a level when the employee could work by himself.
- Training is carried out about main activities of the company. Specific duties of the new employee are described in detail – on theory and with visual training also.

Training period is given as follows:

Table 49 - Training period in Bulgarian companies

	Company 1	Company 2	Company 3
management (employees with administrative tasks, e.g. accountant)	2 months	3 months	3 months
operational (technical employees; e.g. warehouse worker)	1 month	6 months	1 month

Trainings are organized according to the specific needs and usually each year.

One of the companies comments that new employees will not be hired and the new topics are few. Another company states that the level of training in the company is very good and does need current improvement.

Future development of training and education

Administrative and legal training would be of higher benefit for future trainings according to one of the companies. Two companies did not answer.

Types of training offers companies would use in the future are: online training materials, workshops moderated by training companies and on-site visits. All three companies gave their opinion.

Preferred media for educational purposes is: workshops with trainers on a specific topic, specialized courses and online sources.

Neither one stated how many (port) employees plans to hire in the next year. May be one of the reasons is that port employees are exclusively employees of the port operator. Companies that work with the port **do not have port employees** as specific job position. Two companies evaluate the primary and secondary education as most important, one company states that higher education is more important.

The effect of the trends on the training of employees involved in operational tasks is evaluated as follows:

- new multimodal transport concepts – strong to medium effect (1 answer “1” and 1 answer “3” and one answer “4”);
- technological developments – relatively low effect (evaluations 4, 5 and 3 received);
- digitalization – medium to strong effect (evaluations 1, 4 and 3 received)
- internationalization of transport - medium effect (3 answers “3”);
- new business models - relatively medium effect (one answers “2,” one “3” and one “4”);
- sustainability – relatively medium effect (one answers “2,” one “3” and one “4”);
- increasing importance of safety – relatively high effect (one answer “1”, one “2”, one “4”);

With regard to the **standardized training**, there are **three positive** opinions. Companies comment that the current tendency is towards change in the personnel and new professionals have to be created in the field of port logistics. Another argument is that there would be unification of the processes.

Personal beliefs of the respondents include key words as: professionalism, dynamics, competitiveness, modernization of facilities, staff qualification. Serious investment in infrastructure is needed according to one of the companies.

Challenges enumerated are: new standards, technical innovations. The lack of sufficient investment in new services is also seen as a challenge.

8 Croatia

In the following chapter, the results from the survey conducted in Croatia are presented. In the beginning, the demographic characteristics of Croatian ports included in the survey are presented. Afterwards, the results from the survey – conducted with port authorities and companies located at the respected ports – are presented.

8.1 Demographic description

Danube River in Croatia is 137,5 rkm long. Port of Vukovar is situated on 1335+000 rkm of the Danube River, on the right bank, near to mouth of the Vuka river (tributary to Danube) in the city of Vukovar.

Vukovar Port is the biggest river port on Croatian waterways and the only cargo port on Croatian part of Danube River. The port stretches towards the East and West and it is 1700 meters long and 45 meters wide. The port is well situated on the Danube, which enables an accessibility during the entire year regardless of the water level, even during periods with the lowest water levels.

City of Vukovar is located in the Eastern part of the Republic of Croatia and is the centre of the Vukovar-Srijem County. It lies at the border of historical provinces Eastern Slavonia and Western Srijem. Vukovar is the seat of Vukovar-Srijem County. The city's registered population was 26,468 in the 2011 census, with a total of 27,683 in the municipality.

Vukovar-Srijem County lies in the far northeastern part of Croatia, in the regions of eastern Slavonia and west Srijem. Total area of the county is 2,454 km². Two major rivers run through the county, the Danube and the Sava, and two smaller rivers, the Bosut and the Vuka. The Bosut is a tributary of the Sava river, while the Vuka is a tributary of the Danube. The population of Vukovar-Srijem County in the 2011 census was 179,521 inhabitants; which makes this county the 7th most populous county of Croatia.

According to the last report from Croatian Employment Office in January 2018 11.953 unemployed persons were registered, what makes 439 persons more than in the previous month and 2.313 persons less than in January 2017. Therefore, in January 2018, unemployment increased as compared to the previous month by 3,8 per cent and decreased by 16,2 per cent, as compared to 2017.

In January 2018, the persons with the 1 to 3 – year vocational secondary school background and school for skilled and highly skilled workers had major share in the educational structure of the unemployed (4.011 persons/33,6 %). This category has been followed by persons with basic school background (3.198 persons/26,8 %), the 4 (or more)- year secondary school background (3.075 persons/25,7 %), persons with non-university degree (598 persons/5,0 %), persons with university level and postgraduate degrees (479 persons/4,0 %), persons with no schooling background and uncompleted basic school (301 persons/2,5 %) and persons with grammar school background (291 persons/2,4 %).

8.2 Port Authorities

The Port Authority Vukovar is a public institution founded by the Republic of Croatia in 2001 for management and development of the Vukovar Port and all wharfs of public interest on Danube River in Croatia. Port Authority is responsible for the port management and the functionality of the port and the mostly whole land within the port area is state owned. In the Port of Vukovar four port operators have concession for providing port services, granted by the Port Authority Vukovar.

In Port of Vukovar port operators are directly involved in transshipment activities, storage and manipulation of the cargo. Personnel of port operators involved in the port operations include employees from marketing and commercial staff, stevedores, drivers of reach-stackers or other vehicles, crane operators, as well as people involved in handling of ships. Up to 10 companies are located in the port area, and they provide port services related to

transshipment, storage and manipulation of cargo. As regards ranking of usage different transport modes it is rank as follow 1 for inland waterway, 2 for rail and 3 for road, the most used combination of transport modes is inland waterway in combination with rail. Port provide transshipment of high and heavy cargo, bray bulk, liquid bulk and dangerous cargo, and mentioned cargo are transshipped on the waterside. Apart from providing transshipment of bulk cargo, the port also provide storage/warehousing services, as well as custom services.

Activities of Port authority:

- Organization and supervision of vessel berthing and maneuvering in the port,
- Control of port traffic, entry and exit of means of transport and cargo to/from the port,
- Maintenance of common port facilities in the port area,
- Maintaining order, high level of safety and environmental protection in the port,
- Construction and modernization of port facilities on behalf of the Republic of Croatia,
- Managing the free zone in the port area established by Decision of the Government of the Republic of Croatia pursuant to regulations governing free zones,
- Carrying out professional tasks in connection with granting of concessions,
- Supervision of the concessionaire's work and performance of obligations under the concession contract,
- Marketing and promotion of the port route in the transport market,
- Promotion of investment on ports based on public-private partnership model,
- Ensuring general interest services providing or services which are not of economic interest for other economic operators,
- Preparation of plans for inland port system development,
- Technical assistance for local self-government bodies on inland ports and wharfs development area,

8.2.1 Human Resources

Port Authority Vukovar is a public institution and according to the received answers it present a microenterprise with 8 employees and has a Human Resource department. The Organization didn't have experience with employing students which are still attending a school or university.

Table 50 - Human Resources in Croatian port authorities - overview

criteria	Port of Vukovar
number of employees	8
human resources department	yes
money spent for HR (in 2016)	4.400,00
students are employed	no

Demographic characteristics of employees

Regarding to the distribution per age in organization 4 of them are between 21 and 35 years, while the other 4 are between 36 and 50 years. Distribution of employees per gender are also divided on 4 males and 4 females. Furthermore, categorization of employees according to level

of education are divided on 5 with an academic degree, while 3 employees are with higher education.

Table 51 - Demographic characteristics of employees Croatia- port authorities (gender)

Criteria	Port of Vukovar
Gender	4 x male employees/ 4 x female employees

Table 52 - Demographic characteristics of employees Croatia- port authorities (level of education)

	Port of Vukovar
academic degree	5
higher education	3
school-leaving qualification	0
no occupational training	0

Table 53 - Demographic characteristics of employees Croatia- port authorities (age distribution)

	Port of Vukovar
up to 20 years	0
between 21 and 35 years	4
between 36 and 50 years	4
older than 50 years	0

Hierarchical Level

According to the management level and gender distribution there are 2 employees in the area of general management and 6 employees in the lower management, while in general management there are 1 male and 1 female, and in lower management there are 3 male and 3 female employees.

Educational institutions

In Croatia, there are various education institution which are relevant for authorities in the field for public procurement, accounting tasks as well as for project management.

8.2.2 Training and Education

Trainings offered

Port Authority Vukovar as a public institution isn't in charge to offer trainings, and activities of Port Authority Vukovar are defined in the chapter 8.2. of this report. Organization also isn't

familiar with founding sources which are relevant for public institutions in the field of inland waterway on national, as well as on the European level.

Table 54 - Trainings offered by Croatian port authority

	Port of Vukovar
logistics (e.g. operation of logistical equipment)	no
administrative (e.g. IT training, accounting etc.)	no
social skills (e.g. communication skills, inter-cultural skills)	no
safety (e.g. safety training when using logistical equipment)	no
sustainability (e.g. trainings to learn about new environmental certificates or regulations)	no
law (e.g. what are relevant topics concerning the legal situation)	no

Hiring new employees

The organization doesn't have problems concerning finding qualified employees, and in order to turn the port into an attractive work place suggestion are pointed in increasing of transshipment in the port what at the end results with a better satisfaction of all employees, as well as appropriate salary for all employees.

In all departments employees are being hired based on the public tender. Training of new employees with academic degree takes about 6 months. The way employees passing through the training process is by being introduced with the most important activities related to the department. Some employees attend courses that are important for their future work (public procurement etc.).

Future development of training and education

Regarding the type of training course that organization would use for education of employees in the future field-trips to other ports are pointed out, as well as workshops moderated by training companies. Furthermore, preferred type of media to be used for education purposes are workshops with trainers on a specific topic, as well as key notes from international of national expert.

Next year the organization is planning to employ one person in lower management in commercial department at working place for senior advisor. Based on education level the organization ranked demands for employees as follow from most important to less important, academic degree, then higher education and at the end secondary education. The other level of educations mentioned in the questionnaire aren't mentioned in this report because they aren't included in the internal document which regulates workplaces in the organization.



Figure 4 - Evaluated effect of the following trends on training of employees in operational tasks at port (from 1 as very high to 5 as very low)

Furthermore, standardized training in inland ports and in companies situated in the port area in Europe would increase the competitiveness of inland ports and inland waterway transport on the Danube in the future, because all participants in inland waterways will be educated on the equal level.

Development of Danube ports as workplace in future, besides of influence on the economic growth in the field of transport, also represents a key element in rising awareness of environmental sustainability in Danube region due to the fact that the transport mode is identified as an environmental user-friendly mode of transport.

8.3 Companies

Survey was conducted on two port operators in port of Vukovar. One port operator is Luka Vukovar d.o.o., and the other one is VUPIK d.d.

Luka Vukovar d.o.o. is a port operator with concession for providing port services on the bulk cargo terminal, general cargo terminal, multipurpose cargo terminal and palletized cargo terminal. On the afore mentioned terminals the port operator provides the following port services: nautical, transport and port agency services, where nautical services include mooring and unmooring of vessel and port towing service, while transport service includes cargo loading, unloading, transshipment and cargo stowage. Concession was given for the period of the 20 years in 2006 and shall expire in 2026 year.

Based on the frequency of usage off different transport modes, Luka Vukovar d.o.o. ranked inland waterways and rail with 1 and with 2 road. Company doesn't have other business locations on a national or European level. The company deals with logistics services and provide port services related to transshipment of bulk cargo and storage/warehousing of cargo. The company disposes with gantry/portal cranes and mobile crane.

VUPIK d.d. is a port operator dealing with agricultural products and has concession for providing port services on the grains cargo terminal. On the terminal the port operator provides services of cargo loading, unloading, transshipment and cargo stowage. Concession was given for the period of 10 years and has expired in 2017. Concession has been prolonged

until the new concession tender procedure is finished that is new concession is granted. Concession shall be for the next 12 years.

Based on the frequency of usage different transport modes, VUPIK d.d. ranked road with 1, inland waterway with 2 and with 3 rail. Company has other business locations on a national level, but not on European level. The company deals with productions of agriculture products, as well as with logistics services and provide port services related to transshipment of bulk cargo and storage/warehousing of cargo. Company disposes with pneumatic equipment for grains transshipment.

8.3.1 Human Resources

Luka Vukovar d.o.o. is a medium-sized microenterprise with 68 employees and doesn't have a Human Resource department. The organization didn't have experience with employing students which are still attending a school or university. The company spent 3.000 EUR for Human Resource measures in 2016.

VUPIK d.d. is a large enterprise with 550 employees and has a Human Resource department. The organization didn't have experience with employing students which are still attending a school or university. In 2016 the company spent 13.000 EUR for Human Resource measures.

Table 55 - Human Resources in Croatia (companies) - overview

criteria	Luka Vukovar d.o.o.	VUPIK d.d.
number of employees	68	550
human resources department	No	Yes
money spent for HR (in 2016)	3.000,00	13.000,00
students are employed	No	No

Demographic characteristics of employees

Regarding age distribution in Luka Vukovar d.o.o. 40 employees are between 21 and 35 years, 15 employees are between 36 and 50 years, while 13 of them are older than 50 years. The gender distribution of employees is divided in 62 males and 6 females. Furthermore, categorization of employees according to level of education are as follow 5 with higher education, 54 with school-leaving qualification, while 8 employees are with no occupational training.

Distribution per age in VUPIK d.d. organization 1 employee is up to 20 years, 119 employees are between 21 and 35 years, 181 employees are between 36 and 50 years, while 149 of them are older than 50 years. The gender distribution of employees is divided in 348 males and 100 females. Furthermore, categorization of employees according to level of education are as follow 98 with academic degree, 114 with higher education, 260 with school-leaving qualification, while 78 employees are with no occupational training.

Table 56 - Demographic characteristics of employees Croatia- companies (gender)

criteria	Luka Vukovar d.o.o.	VUPIK d.d.
gender	62x male employees/ 6x female employees	348x male employees/ 100x female employees

Table 57 - Demographic characteristics of employees Croatia- companies (level of education)

	Luka Vukovar d.o.o.	VUPIK d.d.
academic degree	0	98
higher education	6	114
school-leaving qualification	54	260
no occupational training	8	78

Table 58 - Demographic characteristics of employees Croatia- companies (age distribution)

	Luka Vukovar d.o.o.	VUPIK d.d.
up to 20 years	0	1
between 21 and 35 years	40	119
between 36 and 50 years	15	181
older than 50 years	13	149

Hierarchical Level

According to the management level and gender aspects Luka Vukovar d.o.o. organization have 1 employee in general management, 3 employees in middle management, 3 employees in lower management and 61 operational employees, while in general management there is 1 male, in middle management there are 2 males and 1 female employees, in lower management there are 3 female employees, while in operational there are 59 males and 2 female employees.

Furthermore, concerning the point of view of VUPIK d.d. there are 11 employees in general management and 17 employees in middle management, while in general management there are 11 male and in middle management there are 14 males and 3 female employees. Information about lower management and operational data hasn't been provided.

8.3.2 Training and Education

Trainings offered

Luka Vukovar d.o.o. and Luka Vukovar d.o.o currently doesn't organize any training on the topic of port operational tasks because at this moment they don't need such trainings. Both organizations Luka Vukovar d.o.o. and VUPIK d.d. preferred to organize training on the topic of logistics at the group level. About offering frequency for trainings Luka Vukovar d.o.o. provides trainings on semi-annual basis, while VUPIK d.d. provides it when employees require and when new employees are hired. In the next year Luka Vukovar doesn't plan to expand current training on the topic of port employees, while VUPIK d.d. is planning because there are new possibilities for work.

Table 59 - Trainings offered by Croatian companies

	port of Vukovar
logistics (e.g. operation of logistical equipment)	No
administrative (e.g. IT training, accounting etc.)	No
social skills (e.g. communication skills, inter-cultural skills)	No
safety (e.g. safety training when using logistical equipment)	Yes
sustainability (e.g. trainings to learn about new environmental certificates or regulations)	No
law (e.g. what are relevant topics concerning the legal situation)	Yes

Hiring new employees

Luka Vukovar d.o.o. indicated that they have problems concerning finding qualified employees in the field of railroad jobs, and in order to turn the port into an attractive work place suggestion was pointed in attracting more business in the port. The organization didn't specify training process, but only indicated how long takes average training process of new employees, as follow 3 months for management, as well as operational jobs.

Organization VUPIK d.d. also indicated that they have problems concerning finding qualified employees, especially in the field of livestock farming. In order to turn the port into an attractive work place suggestion wasn't indicated. Organization described training process as an interview, and indicated that average training process of new employees takes 6 months for management and 1 months for operational jobs.

Future development of training and education

Luka Vukovar d.o.o. would like to organize more trainings for employees in the area of administrative, social skills, safety, sustainability and law, where emphasis was put on the social skills. Regarding the type of training that Luka Vukovar d.o.o. would like to use for education of employees in the future are workshops moderated by training companies are underlined. Furthermore, the preferred type of media to be used for education purposes is through workshops with trainers on a specific topic. In the next year the organization is planning to employ 5 new employees in the middle management, as well as 5 in operational jobs. Demands for employees bases on level of education are ranked as follow, 2 for academic degree, 3 for higher education and school-leaving qualification, and with 5 for no occupation training.



Figure 5 - Luka Vukovar d.o.o. - Evaluated effect of the following trends on training of employees in operational tasks at port (from 1 as very high to 5 as very low)

Furthermore, from the point of view of Luka Vukovar d.o.o. standardized training in inland ports and in companies situated in the port area in Europe would increase the competitiveness of inland ports and inland waterway transport on the Danube in the future, because every new experience is welcome. Regarding development of Danube ports as workplace in future a keyword pointed out is as a good opportunity because of low-costs of transport on the Danube. Port of Vukovar is a pointed out as a challenge for Danube ports in the future to be competitive logistics hubs.

VUPIK d.d. would like to organize more training for employees in the area of logistic, administrative, social skills, safety, sustainability and law. As regards type of training course that VUPIK d.d. would like to use for education of employees in the future are pointed in field-trips to other ports, as well as workshops moderated by training companies. Furthermore, preferred type of media to be used for education purposes are print media, online sources and workshops with trainers on a specific topic. In the next year organization doesn't plan to employ new employees.

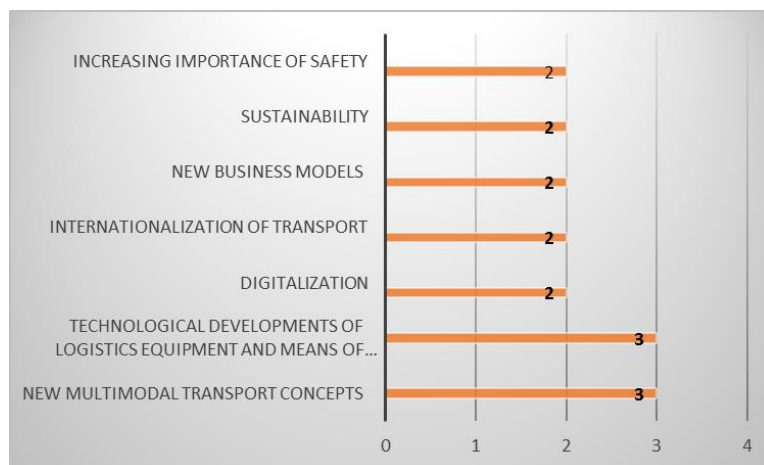


Figure 6 - VUPIK d.d. - Evaluated effect of the following trends on training of employees in operational tasks at port (from 1 as very high to 5 as very low)

From the point of view of VUPIK d.d. standardized training in inland ports and in companies situated in the port area in Europe would increase the competitiveness of inland ports and inland waterway transport on the Danube in the future.

9 Future Development

The effect of the following trends on training of port employees was also evaluated in the survey. These trends are currently relevant in the field of logistics in general and thus are also relevant for training of employees in ports, since ports can be seen as important hubs of logistical networks. In the following table, the results for

Table 60 - Effect of trends in field of logistics on training in ports

	Austria	Hungary	Romania	Bulgaria	Croatia
new multimodal transport concepts (e.g. Synchromodality, Physical Internet,...)	3	4	2.5	3.2	3.7
technological developments of logistics equipment and means of transport (e.g. alternative fuels,...)	2.5	4	3	3.5	3
digitalization	3	3	3.5	2.5	2.3
internationalization of transport	3	3	3.5	3	2.3
new business models (collaboration with competitors or other companies)	3	3	3.5	2.7	2.3
sustainability	2	4	3	2.3	2.3
increasing importance of safety (for human and transport)	1.3	4	3	1.8	2.3

As can be seen from the table, the impact of emerging trends has been evaluated almost identically by the involved countries. The only significant difference is in the field of increasing importance of safety.

Funding sources for training

Port authorities and companies were also asked if they are aware of any funding sources for training measures in ports. These funding sources are important to guarantee that financial resources are available to train the people in ports as required. The results are summarized in the following table. In addition, a desktop research was carried out by project partners to identify funding sources for port employees and also educational institutions which provide training on the topic of port management or a familiar topic (D.4.3.2 List of EU funding sources for HR). The results of the desktop research are also available on the project website.

Table 61 - Funding sources for training in ports

	funding sources	relevant topic
Austria	the survey revealed no results	the survey revealed no results
Hungary	the survey revealed no results	the survey revealed no results
Romania	Port School Foundation http://scoalaportuara.ro/	Supporting and organising professional training, to assist port workers, unemployed, trade union members and other applicants by organizing training courses in port-specific jobs, as well as in jobs not related to the port.
	Romanian Intermodal Association http://www.ria.org.ro/ria/index.php?option=com_contact&Itemid=83	Development and delivery of professional programs for personnel working in intermodal activities in order to promote new professional competencies; supporting and organising professional training, qualification and requalification directing the labour force for its members and for all categories of solicitors
	MPAC – own sources www.portofconstantza.com	Training programs, attending courses organized by the employer or by the providers of vocational training services; professional adaptation stages to job; internships and specializations; individualized training a.s.o. are performed with the purpose of adapting the employee to the requirements of the job, obtaining a professional qualification; updating the specific knowledge and skills of the post and the workplace and improving the vocational training for the basic occupation; acquiring advanced knowledge, modern methods and procedures necessary for carrying out professional activities etc.
Bulgaria	operational program “human resources management 2014-2020”	-
	own funding of port authorities/port operators/companies, etc.	-
Croatia	the survey revealed no results	the survey revealed no results

EU	<p>APEC is the port training centre of Antwerp and Flanders, that offers short-term seminars to professionals from all over the world.</p> <p>https://apecporttraining.com/</p>	<p>Port logistics Port environmental policy & technology Dredging technologies Port management Port business development & marketing etc.</p>
	<p>European Commission</p> <p>http://ec.europa.eu/regional_policy/en/atlas/programmes/2014-2020/romania/2014_ro16rfop001</p>	<p>Competitiveness Operational Programme (POC); Promoting investment in R&I, developing links and synergies between businesses, research and development centers and higher education: Action 1.1.4: Attracting staff with advanced skills from abroad to strengthen R&D capacity; Improve research and innovation (R&I) infrastructures and capacities to develop excellence in R&I and promote competence centers, especially those of European interest, by linking them to existing or emerging clustering structures that aim at innovation and economic development: Action 1.2.3: Knowledge Transfer Partnerships</p>
	<p>INTERREG</p> <p>http://www.interregrobg.eu/ro/</p>	<p>(Interreg V-A) Romania-Bulgaria Programme: The cooperation programme is structured across five priority axes: (1) A well-connected region; (2) A Green Region; (3) A Safe Region; (4) A region with qualified and inclusive people; (5) An efficient region. The priority “A region with qualified and inclusive people” addresses measures to encourage the integration of the cross-border area in terms of employment and labour mobility.</p>

In addition, respondents were asked for what type of training they would need more financial support from public funding sources. Respondents (companies and port authorities) mentioned that they would need funding for the exchange of experience in foreign institutions (e.g. to get funding for a study visit in another European country) and for specialised training on topics such as port logistics, port management, legal aspects in port operations, dredging technologies, port environment policy & technology or marketing. In addition, trainings on the topic of sustainability or other topics, which are very specific and which cannot be seen as core competences of ports, are required.

9.1 Future development of Danube ports

Respondents were also asked about their opinion concerning the future role and challenges of Danube ports and its effect on training of port employees.

For the future training of port employees, it is important to include currently and future relevant topics to make sure that employees are equipped with the required knowledge for the future. Possible next steps could be to initiate one-stop-shops for logistic services. One Austrian port authority mentioned that ports have to turn to other businesses besides logistics to finance the maintenance of the very expansive infra- and superstructure. Just in that case, ports will become even more interesting employers. A port is an institution and should be preserved in its bi- or trimodality.

The port of Vienna mentioned several challenges in the survey, a port has to cope with in future times to be a competitive logistic hub:

- Combine traditional, historically grown logistics infra- and superstructure with modern logistics trends – logistic 4.0, physical internet
- Can a port with the classic port business survive or should he turn to other industries?
- Regulations and interventions in inland navigation
- Cooperation between Seaports and Hinterland Ports
- The new Silk Road (New Businesses, New traffic routes)
- City Logistics – Ports as city logistics hubs
- Fulfillment of the EU Regulations in the future

In Romania, the development of the Danube Ports depends on ensuring constant navigability conditions of the Danube and the development of the integrated system of transport, by reducing the number of transshipment and choosing the most advantageous mode of transport, and ultimately an economic route. Increasing the efficiency of waterways can be done if they are assigned more functions. In addition to shipping requirements, waterways can also be used to meet the requirements of irrigation, water supply, drainage, power generation, flow regulation, tourism, etc.

In addition, next steps are that the navigability of the Danube on the Serbian/Romanian/Bulgarian sector must be increased, controlled and better administrated, and the investments on the lower sector of Danube must be completed.

In Hungary, companies mentioned that due the increasing importance of sustainability, inland waterway transport and thus ports as important transport hubs facilitating the use of this transport mode should be also politically promoted. Investments in infrastructure (e.g. to enable data exchange between different stakeholders) are necessary to guarantee competitiveness of inland ports in the future. In addition, further companies should be attracted to ports as economic centres, which can use inland waterways for transport. Trends such as digitalization are also affecting ports and the training required for future employees. Thus, specialized training should be offered for future employees. Another important issue, which should be addresses in the future, is to guarantee full navigability of the Danube river to make sure that inland vessels can operate fully loaded. As a result, also ports can be seen as important hubs in the transport networks.

9.2 Dissemination

The results of this survey were also presented at the SIGA2 Conference 2018 in Antwerp (conference website: <https://www.uantwerpen.be/en/conferences/siga2-2018-conference/>) in a session focusing on “Human Resources in Ports”. It was interesting that a study conducted in the port of Antwerp showed similar results to the results presented in this report, even though the port of Antwerp is a sea port. The port of Antwerp is also facing the challenge that employees are older than 35 years and that a majority of employees are men. In addition, the study conducted in the port of Antwerp also analyzed the income of port employees – this could also be an interesting area to analyze for the different ports in the Danube region. Another presentation in this session focused on the role of social innovation to increase the performance of ports through strategic human resources practices. Interviews in the port of Rotterdam were conducted to gain further insights in the workplace of the future. In this presentation, it was mentioned that flexible working roles (e.g. one person is responsible for different tasks of different jobs) and a shift to a lifelong learning environment are required to increase competitiveness of the port of Rotterdam in the future.

10 Conclusion and Next Steps

In the following section, the results of the survey are summarized and next steps which should be considered for future training of port employees.

10.1 Summary of results

A total of 11 ports participated in this survey, these 11 ports are located in 5 Danube riparian countries:

- Austria
 - Port of Linz
 - Enns-shafen port
 - Port of Vienna
- Hungary
 - Port of Budapest
 - Port of Baja
 - Port of Adony
- Romania
 - Constanza port and satellite ports Midia, Mangalia, Tomis and Basarabi
- Bulgaria
 - Ruse-west
 - Port Lom
 - Ruse-east
- Croatia
 - Vukovar Port

The number of employees in port authorities in the mentioned ports and countries surveyed varies between 8 (Austria) – 911 (Romania) employees. This may be explained by the

different port management models, which are applied to the different ports. For example a landlord port may not need as many employees as a public or private port.

The survey also indicates that there are still more male than female people employed in the area of ports. The received data also show that the age of employees working in the port area is relatively high - there are only a few people under the age of 20, but the majority of people over 50 years which are working in this business sector. This shows that the current workforce is getting older and in some years there will be problems due to retirement of employees and additional workforce will be necessary. For this reason, it is increasingly important to promote the location of a port for young people as an attractive workplace.

Another result of the survey shows that the majority of port employees have a school-leaving qualification, except in Croatia, in which case most of the staff have an academic degree. From this it can also be deduced that the training on port issues should be more included in schools and also advertising for jobs in ports should be made in schools. Furthermore, topics should also be addressed to make the job and training for women more attractive. In principle, it would also be desirable to standardize trainings for jobs in ports. Concerning the offered training, especially in Austria, Romania and Bulgaria, trainings for employees are offered in all areas or at least in almost all areas (mentioned in the survey). The port in Croatia, however, currently offers no trainings in the requested areas. Training and further education is handled very differently in all countries/companies, which took part in this survey (except for safety). Furthermore, there is currently no standardized procedure for continuing education. Although internal training program is not standardized and has not been clearly defined it becomes clear that every authority or company has certain practice established. Training courses are usually held upon request of the employees. With regard to funding sources, few specified funding sources are available for port employees.

The survey shows that a lot of different (differ not only in their size) companies conduct their business in the surrounding of the port area. The most companies which are located in the area of a port are specialized in logistics, trade, construction materials or fuels.

This is due to the fact that ports offer a wide range of services for example warehouse logistics, warehousing, bonded storage, multimodal cargo handling, car terminals and container terminals. In several ports the wide array of services is complemented by the development of new commercial sites, like passenger ports or project development offers. Most ports operate as multimodal hubs. In other words, cargo can be handled in combination by road, rail and water.

The companies situated in the port believe that the economy will provide them with new opportunities. Furthermore, companies situated in the port expect these developments to become increasingly important for their own business. Regarding the responding companies which are based at the port area or have a cooperation with one of the interviewed port, the following findings could be collected: The size of the companies, included in the survey, varies between 8-550 employees. These differences arise from the fact that not all companies located at ports are surveyed and only a limited number of companies were included.

One outcome was that the employees are mostly male, and the average age is between 36-50 or even over 50 years, for employees in port-based companies. Employees under the age of

20 or between 21 and 35 years are a rarity. Therefore, it will be increasingly important in the future to promote the port and the general logistics industry as an attractive workplace and to improve the image of the industry. The educational level of employees varies greatly among the companies which completed the survey. Regarding further training for employees, the conclusion can be drawn that these are hardly available in the companies. In Austria, Hungary Croatia and Bulgaria for example only a few of the listed trainings are offered - logistics, administrative and safety are the most mentioned trainings. Furthermore, respondents in the survey were hardly aware of funding sources for training of port employees.

10.2 Recommendations and next steps

Considering the results from the survey, the following next steps and recommendation can be derived in general for training of port employees:

- make all arrangements to be prepared for future retirement of a high number of employees in the port sector
- attractiveness of jobs in the port and port areas for young people and for lateral entrants should be guaranteed (dissemination)
- make the port an attractive location for the establishment of new businesses which could increase overall economic output
- dissemination in schools about job opportunities in ports (especially schools with logistics focus) to increase attractiveness of workplace
- standards in education and training in ports on European level
- offer dual training – theoretical courses with practical relevance
- organize transnational workshops/trainings with port employees to stimulate transnational training
- take measures to make working in a port/port area attractive to women
- make port authorities/companies located at ports aware of funding sources and help them to use them
- include ports in future projects on the topic of training in ports (e.g. get funding to elaborate learning materials, transnational training courses etc.)
- evaluate the impact of trends such as digitalization on Danube ports and its effect on training required

The results of this report will also be used to elaborate a set of guidelines to improve capacity building for the port sector. For this guidelines also funding sources for human resources in the port sector on national and European level will be analysed. In addition, three national workshops are organized to get better insights into workplace port of the future and to discuss the future needs for port employees with the industry and future potential employees.