

**European Port Industry
Sustainability Report
2016**



**Rapid Exchange System +
PPRISM
Governance Fact Finding Study**





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INTRODUCTION

This report serves as the first Sustainability Report at the level of the European Port Industry.

Following the projects on the development of European wide port performance indicators, such as PPRISM (see pprism.espo.be) and PORTOPIA (see www.portopia.eu), it consolidates both the relevant outputs and insights of these projects, but at the same time aims to be much more than that, integrating data and insights from other sources such as, among others, UNCTAD, OECD, World Bank, Eurostat, PortEconomics.eu, selected academics and selected private data suppliers.

It is set-up along 6 dimensions, in line with the principles of integrated reporting:

- Market Trends and Structure indicators
- Socio-Economic indicators
- Environmental and Occupational Health, Safety and Security indicators
- Logistics Chain and Operational Performance indicators
- Governance indicators
- User Perceptions on Port Quality indicators

Currently, the report focuses on leveraging existing datasets present within the European Seaports Organisation (ESPO – the leading trade association for European ports), such as the Rapid Exchange System for traffic figures, and the ECOPORTS project. The Market Trends and Structure as well as the Environmental section of the report are thus currently the most developed sections. For the other categories, we currently refer to other sources, or highlight the developments underway in the PORTOPIA project.

Finally, we believe the report can grow substantially, integrating insights from the other stakeholders present within the European port industry such as the trade associations of terminal operators, the pilots, the tugowners, the boatmen, and other related associations such as the AIVP/IACP (International Association of Cities and Ports).

We hope the report can serve stakeholders within and outside the industry to better understand the major tendencies within the industry, stimulating discussion among stakeholders and leading to strategic alignment between stakeholders to further enhance the competitiveness of the European port industry, and keep it in its leading position on a global level.

For more information and background on the various sections of the report, please contact the PORTOPIA project coordinator (michael.dooms@vub.ac.be) or the following experts:

- Market Trends and Structure indicators (indra.vonck@uantwerpen.be, theo.notteboom@uantwerpen.be)
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- Environmental and Occupational Health, Safety and Security indicators (rm.dabra@upc.edu, antonis.michail@espo.be)
- Logistics Chain and Operational Performance indicators (peter@pl-advisory.com)
- Governance indicators (martina@espo.be)
- User Perceptions on Port Quality indicators (g.vaggelas@stt.aegean.gr)

SECTION 1: MARKET TRENDS AND STRUCTURE

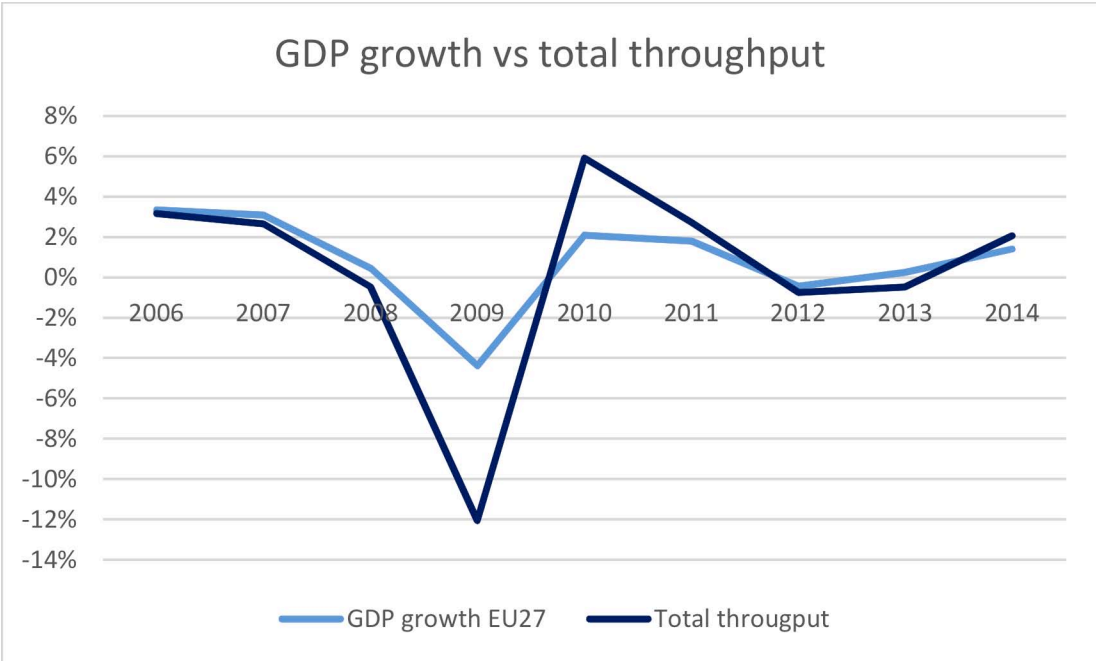
INDICATORS

The market trends and indicators were developed based on the results of work package one of the Portopia project. The following section presents these main results, which were extracted from a myriad of data sources like ESPO RES+, the Portopia datacentre, Eurostat, World Bank, renowned academic authors, etc..

Information can roughly be grouped into four subsections. First, we discuss the macro indicators, GDP, main traffic evolutions, the impact of China and international trade,... Second, we discuss specific trade patterns within the European port system. Third, we zoom in on the changing surrounding landscape, including the evolution of container alliances and the growing importance of traders. Finally, we discuss some modal split evolutions in the main European ports.



LINKING GDP TO EU PORT TRAFFIC

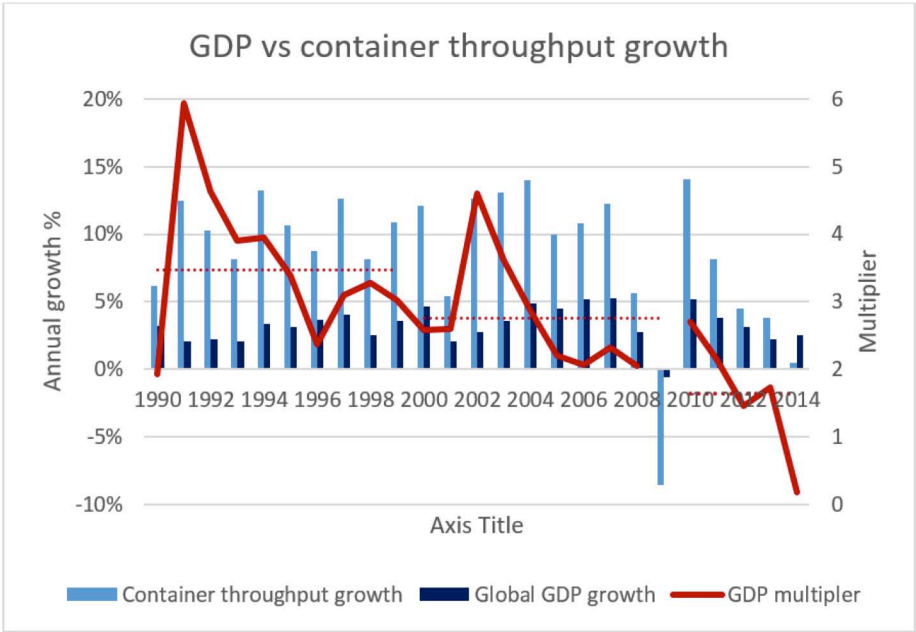


Difficult post-crisis years might be over.

With a total throughput estimated at 3.85 billion tonnes in 2014, the European port system still ranks among the busiest port systems in the world. Strongest growth figures were obtained pre 2008, partly driven by fast growing container throughput, i.e. an average annual growth rate of 10.5% in the period 2005-2008 and 7.7% in the period 2000-2005. Because of the crisis, European ports decreased 12.2% in 2009, and somewhat bounced back in 2010 to 3.84 billion tons (+4.5% compared to 2009), but over the past few years sustained growth remained difficult, with a strong 2011 at +3%, a relapse in 2012 at -1% and almost no growth in 2013, 0%. Figures for the last available year looked more promising with a global rise of 2%, once again passing the GDP growth.

Source: Portopia calculation based on Eurostat and World Bank

THE EVOLUTION OF THE GDP MULTIPLIER

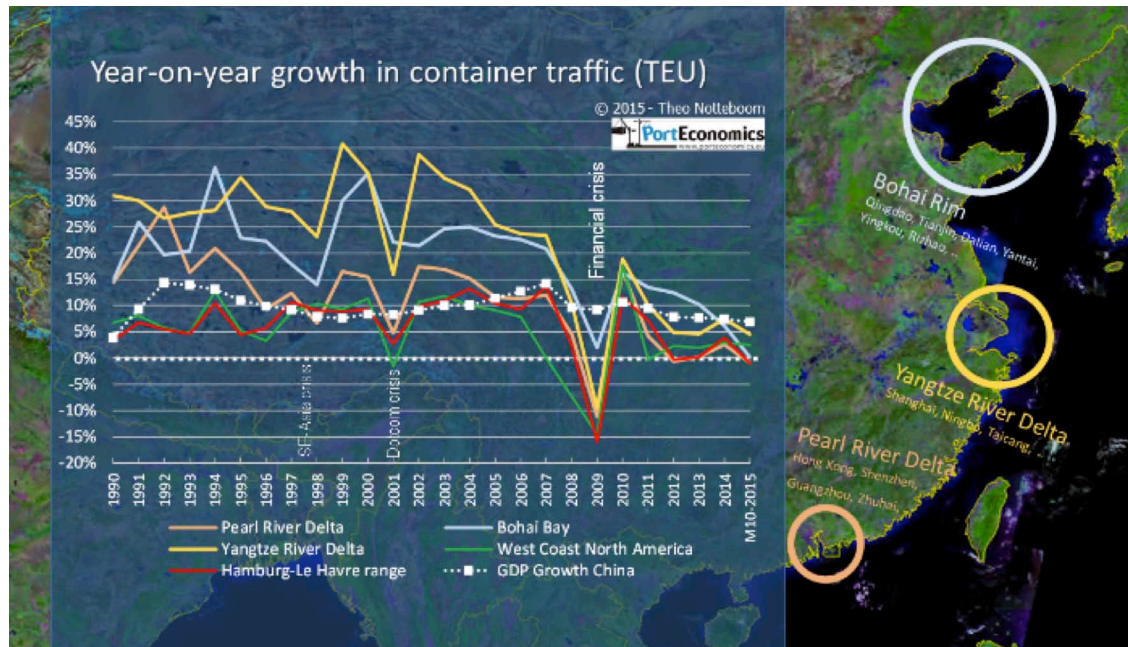


Container market nearing maturity as multiplier stabilizes

Traditionally, GDP forecasts form one of the pillars in many port traffic forecasts. Back in 2012, Alphaliner argued that the global GDP multiplier, i.e. the ratio between world TEU growth and world GDP growth, is no longer stable. After revisiting this conclusion we found this to be true, with average multiplier values dwindling to 1.64 from 2010 till 2014. this could indicate that the global container market is nearing maturity after an aggressive growth phase.

Source: Portopia calculation based on Eurostat and World Bank

THE IMPACT OF CHINA

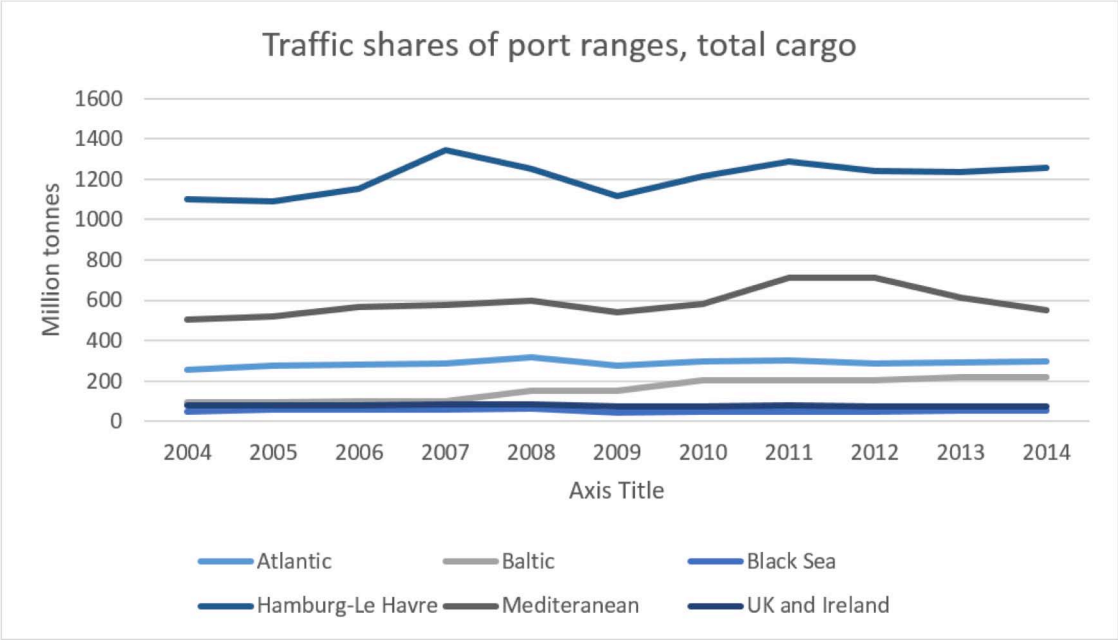


Container growth dwindling and competition increasing.

The total volume of the top 15 ports saw a small traffic decline of 1.6% compared to 2014, or one of the worst y-o-y growth figures in Europe's container history. Quite a few ports in Northern Europe with a weak or even negative growth (such as Hamburg and Le Havre) argue that gateway cargo recorded growth, while the vulnerable transshipment flows to the Baltic and the UK saw a strong decline. The first signs for 2016 do not point to a traffic revival in the short-term. This opens the door for more intense port competition in Europe, but also for meaningful inter-port cooperation schemes. Hence, ports are challenged to design commercial and port planning strategies that can help them to reduce their exposure to a high vulnerability and volatility brought by the macro-economic environment, but also by the fast changing landscape in liner shipping.

Source: Notteboom (2015)

RANGE TRAFFIC TOTAL EVOLUTION



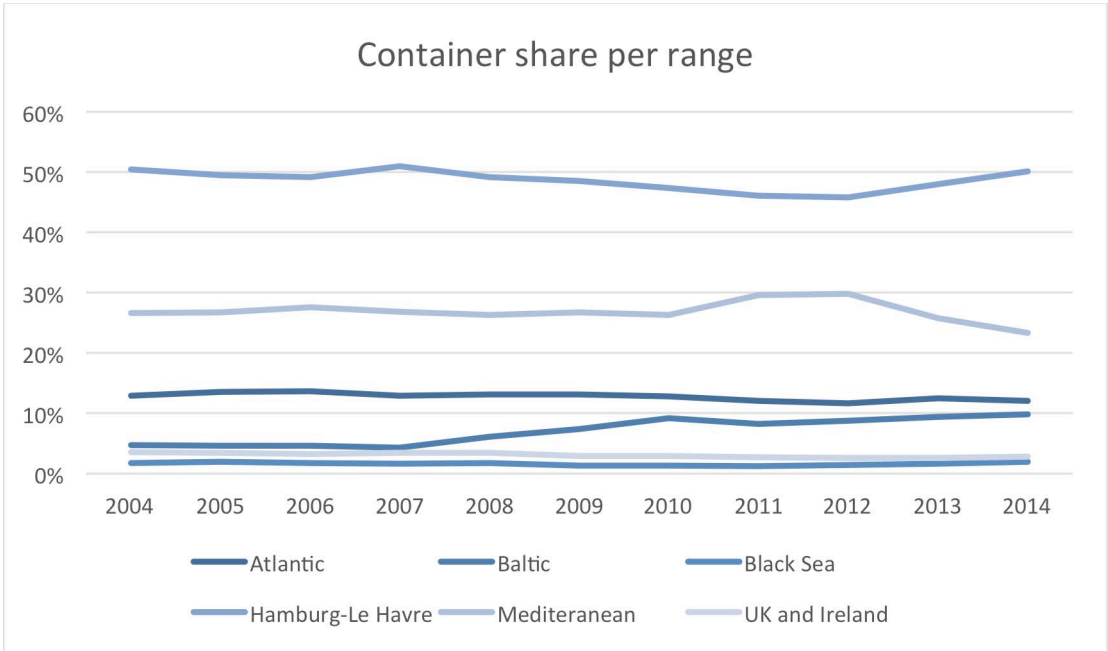
HLH remains dominant, Med slight decline.

The largest range in total cargo throughput remains the Hamburg - Le Havre range, which shows a stable evolution since 2012. The Mediterranean range is faced with a slight decline, whilst all the other ranges show a stable 2013-2014 transition*.

Source: Portopia calculation based on RES+ system

* Note: at the time of production (March 2015), not all validated figures of 2015 port traffic were available in the system

RANGE TRAFFIC SHARE EVOLUTION



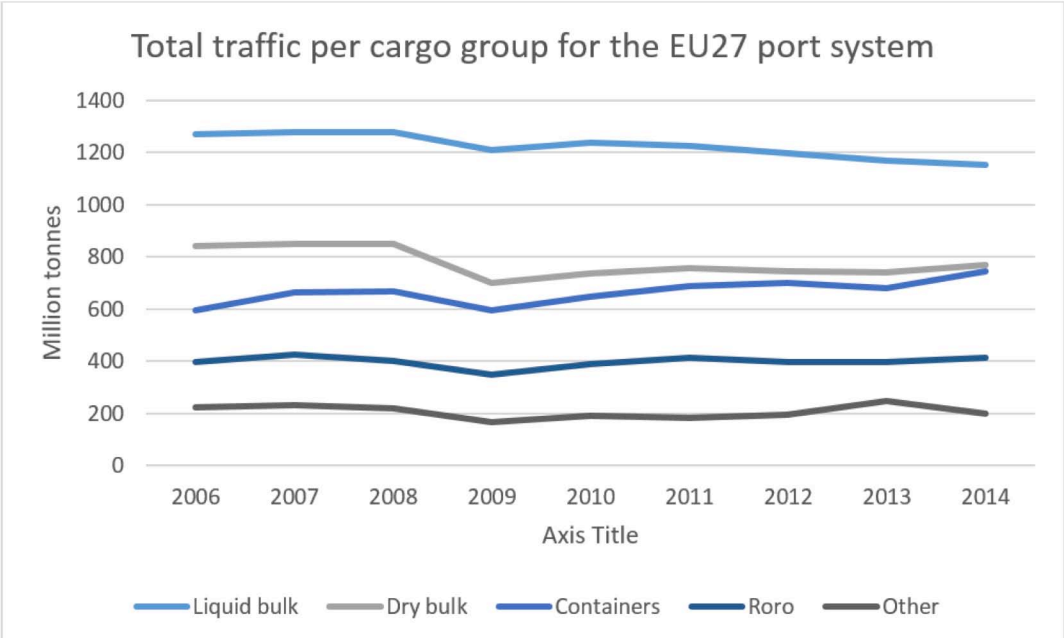
Stable container shares with Baltic on the rise.

At present, the container ports in the Hamburg-Le Havre range (which includes all ports along the coastline between Le Havre in France and Hamburg in Germany) handle about half of the total European container throughput. The position of the Baltic range gradually improved, while the Med ports and the UK port system lost ground. In 2014*, the HLH range grew relatively speaking by 2%, Atlantic by 1%, UK and Black Sea remained stable and the Med range lost 3% to the other ranges.

Source: Portopia calculation based on RES+ system

* Note: at the time of production (March 2015), not all validated figures of 2015 port traffic were available in the system

TRAFFIC EVOLUTION PER TYPE IN EUROPE (TOTAL)

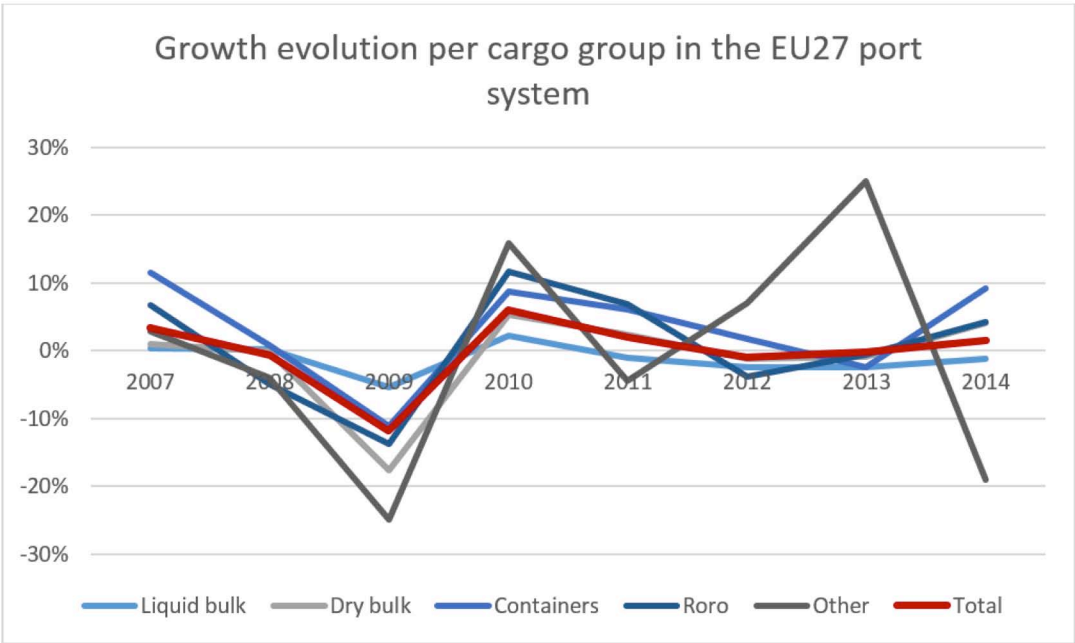


2014 vast improvement over 2013.

The traffic evolution for five cargo groups: liquid bulk (mainly oil and oil products), dry bulk (major bulks such as iron ore, coal and grain, but also minor bulks such as minerals and fertilizers), containers, roll-on/roll-off cargo and conventional general cargo (steel, forest products, heavy lift, etc.) show quite similar paths. After a stable 2013, with some minor declines in container and liquid bulk, we saw a stronger 2014 with growths in dry bulk and roro of over 4%, and the container segment rising over 9% (for investigated ports).

Source: Portopia calculation based on Eurostat

TRAFFIC EVOLUTION PER TYPE IN EUROPE (GROWTH)

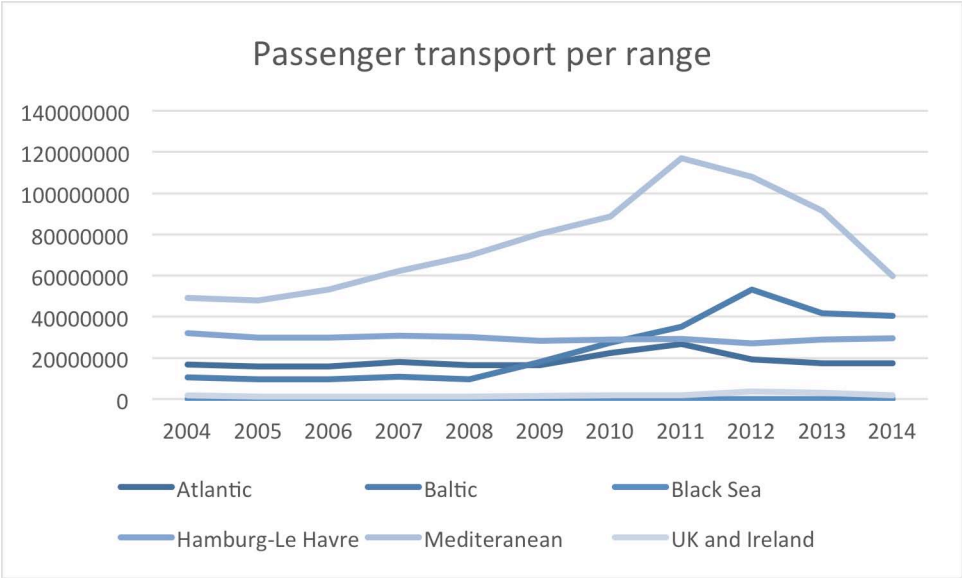


Cargo streams fickle, but overall outlook positive.

It must be mentioned that past growth figures are very fickle depending on the chosen set of ports and on the investigated cargo group, as can be seen in the graph above. The ‘other’ cargo segment e.g., sometimes referred to as general cargo depending on the dataset, is a good example. Here, the RES+ system of Portopia might prove to be a great added value with consistent figures throughout a sustained period of time, which will significantly speed up the analyses and allow researchers to develop meaningful, consistent conclusions on the EU port system evolution.

Source: Portopia calculation based on Eurostat

TRAFFIC EVOLUTION PER TYPE IN EUROPE (PASSENGERS)

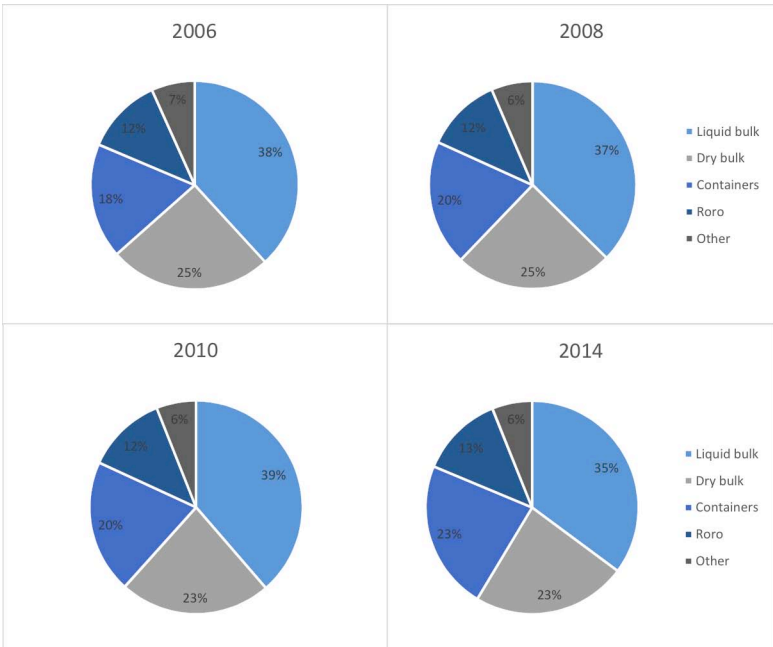


Med and Baltic strongest growers in passengers.

Passenger transport in Europe has come under some pressure post-2011, mostly in the Med range and Baltic range. The other ranges show stable evolutions.

Source: Portopia calculation based on RES

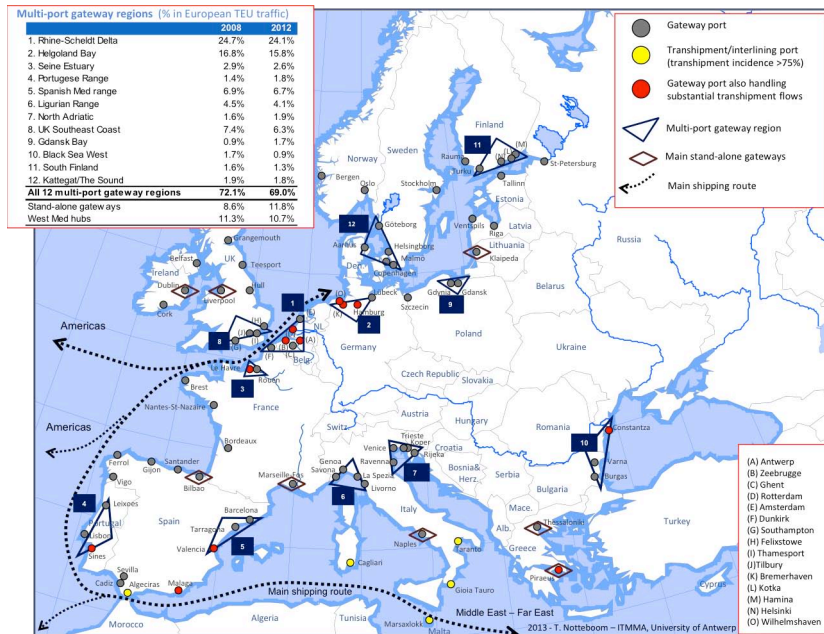
DISTRIBUTION OF CARGO FLOWS OVER TIME



Container segment strongest grower overall.

The share of the respective cargo groups has evolved slightly over the past few years. Liquid bulk lost some of its market share from 38% to 35%. Also, the dry bulk and general cargo segments lost quite a bit to the other cargo groups. Containers remain the biggest winners with over 5%, followed by the Roro segment which showed a growth of 1% over the respective time frame compared to its peer cargo groups.

PORT SYSTEM

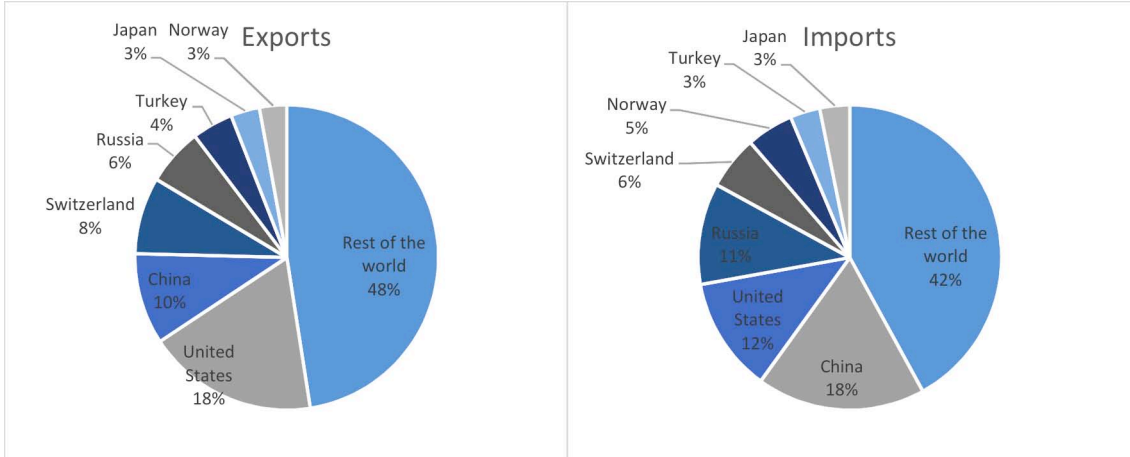


Each gateway, a different growth and strategic focus.

When we group seaports within the same gateway region together to form so-called multi-port gateway regions some interesting intra- and inter-regional dynamics can be unveiled. The Rhine-Scheldt Delta and the Helgoland Bay ports, represent some 40% of the total European container throughput. The North-German ports welcomed newcomer Wilhelmshaven in 2012 when the JadeWeserPort was opened for business. The Seine Estuary pursues a new hinterland strategy aimed at closer cooperation between Le Havre, Rouen and the inland port of Paris, under the Haropa cooperation. Several shipping lines (such as MSC) and shippers have committed new volumes to this port area. In the Spanish Med ports, MSC’s choice to use the ports as a hub for the region, boosted transshipment volumes.

Source: Portopia analysis based on Notteboom (2009)

TOP EU27 TRADE PARTNERS 2014

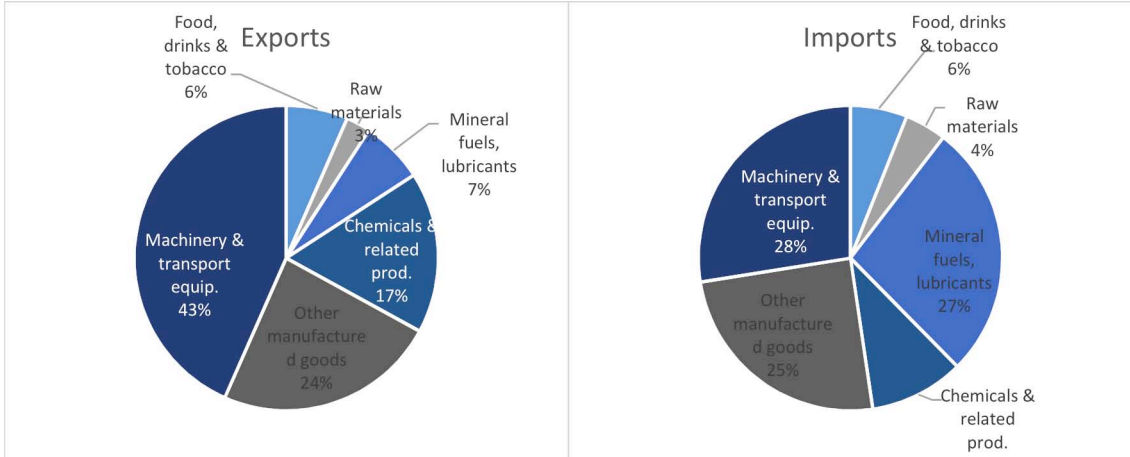


China and the US remain most important business partners.

The top trade partners in 2014 are for export, the United States with 18%, China, 10%, followed by Switzerland, Russia, Turkey, Japan, and Norway. For Imports, we see China with 18% followed by the US with 12% and Russia with 11%. This situation mirrors the most frequented container loops and once again draws attention to the large dependence on large economies for the maritime world trade, and by extent the health of the European ports.

Source: Portopia calculation based on Eurostat

EU-28 MERCHANDISE TRADE (2014)

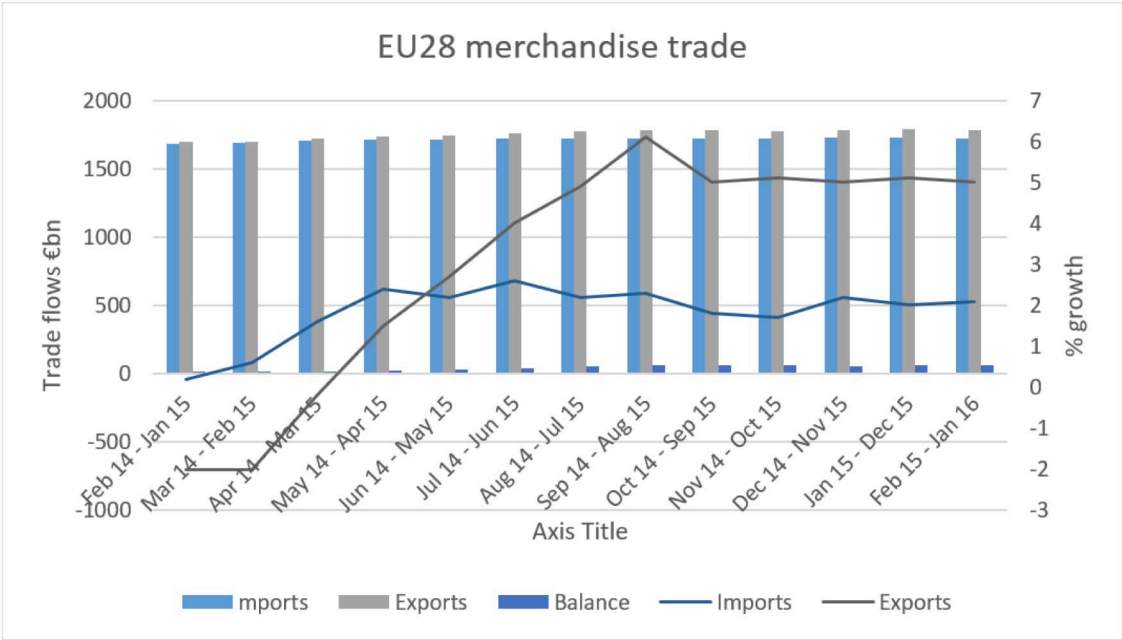


Machinery & transport equipment dominate exports and imports.

Focusing on the sectorial split, three categories dominate exports: “machinery and transport equipment” (43%), “chemicals and related products” (17%) and “manufactured goods” (24%). The import segment is a little more fragmented, however machinery, manufactured goods and mineral fuels account for 80% of all imports, followed by chemicals.

Source: Portopia calculation based on Eurostat

EU28 MERCHANDISE TRADE EVOLUTION

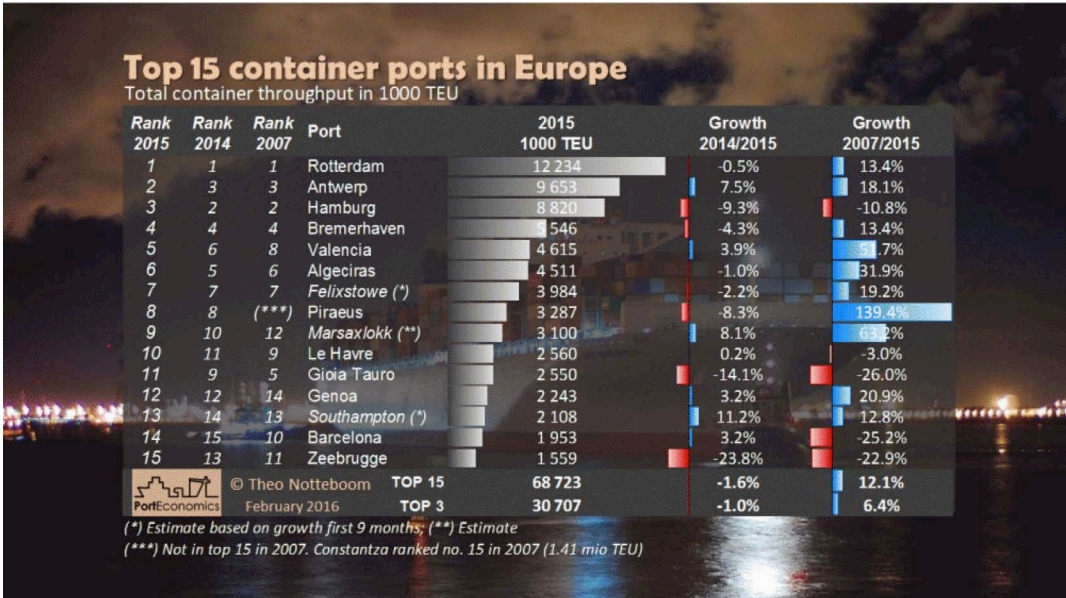


Exports more dominant than imports, trade balance growing.

In the last year, the over-performance of exports against imports continued and grew slightly, increasing the positive trade balance. The positive trend of exports against imports is expected to reasonably carry on in the next years. This shift in the morphology of EU trade flows with other economies should provoke several adjustments in the volumes and the types of merchandises transiting within European ports.

Source: Portopia calculation based on Eurostat

THE TOP 15 CONTAINER PORTS

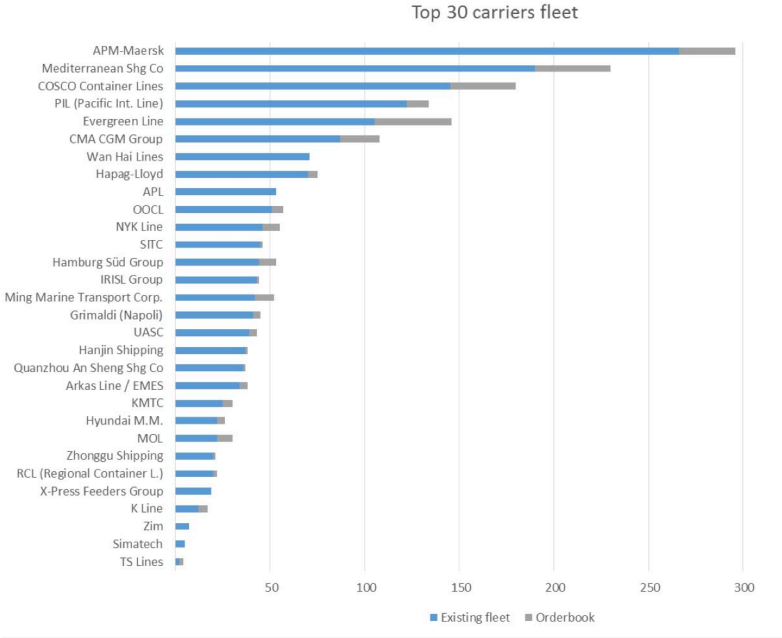


China causes slowdown in all port regions.

Recent reports suggest that Chinese container ports are feeling the full impact of the Chinese economic slowdown and the weak global economic situation. Due to the Chinese slowdown, 2015 promises to become a weak year in the container port industry. Contrary to the temporary slowdowns observed during the Southeast Asian crisis (1997-1998), the Dotcom crisis (2001) and even the financial crisis (late 2008-2009), the volume slowdown of the past five years is visible in all port regions considered and seems to be of a more structural nature. The resulting intensified port competition is leading to stronger growth differences between adjacent ports, as can be observed in port regions in Europe, the US and China.

Source: Notteboom (2015)

FLEET CAPACITY OF TOP 30 CARRIERS

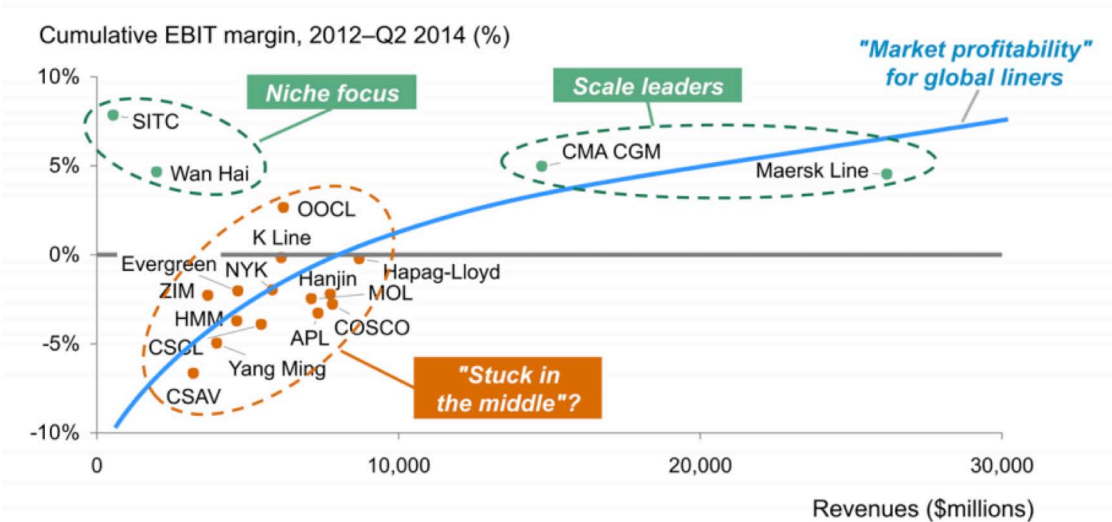


Exports more dominant than imports, trade balance growing.

The liner shipping sector is traditionally characterized by a profound inclination to cooperation. This trend has been accelerating in recent years and has been leading to the stipulation of new partnerships among carriers as well as to the reshuffling of (even larger) existing alliances, which demonstrates the instability of the industry. The container shipping industry, as in many other service industries, has increasingly introduced cooperative schemes into its organisation, thus resulting in a growing market concentration (Lorange, 2001); for instance, six major ocean carriers (Maersk, MSC, CMA CGM, Evergreen Line, and COSCO) now operate about 45% of the cellular fleet.

Source: Alphaliner 2016

PERFORMANCE OF CONTAINER LINES



Freight rates at the root of alliances.

The alliances were mostly caused by the pressure on the freight rates, reducing EBIT margins and forcing scale increase. As can be observed, CMA CGM and Maersk Line are the scale leaders, allowing for the best revenues and optimal utilization of economies of scale. SITC and Wan Hai are niche players, generating large margins but lower revenues. The remainder is ‘stuck in the middle’ and is faced with an up or out scenario

Source: BCG analysis based on annual reports

OVERVIEW OF MERGERS IN THE CONTAINER BUSINESS

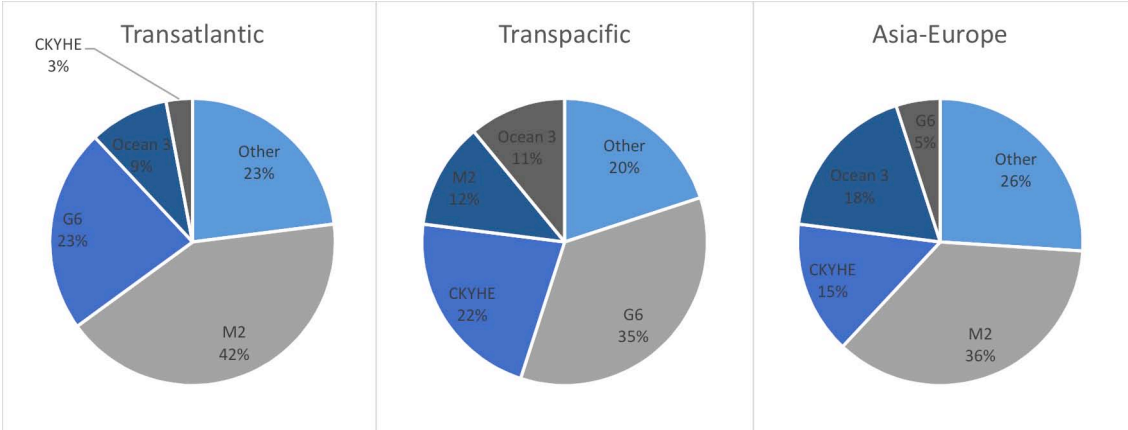
		G6		CKYHE		Ocean Three		M2	
		Planned	In place	Planned	In place	Planned	In place	Planned	In place
Operations	<ul style="list-style-type: none"> Ad hoc coordination Operation committee Operation centers 	✓	✓	✓	✓	✓	-	✓	-
Procurements	<ul style="list-style-type: none"> Bunker Terminal Feeder Rail/truck Joint depots 	✓	✓	✓	✓	✓	-	-	-
Data	<ul style="list-style-type: none"> Confidential data exchange 	✓	✓	✓	-	✓	-	-	-
Potential synergies									

Synergies strongly dependent on level of integration and alliance.

While alliances are manifold and dynamic, the degree of integration within alliances when it comes to actual collaboration varies a lot, and influences the performance.

Source: Portopia analysis based on BCG and alliance documents

ALLIANCE MARKET SHARE ON LOOPS

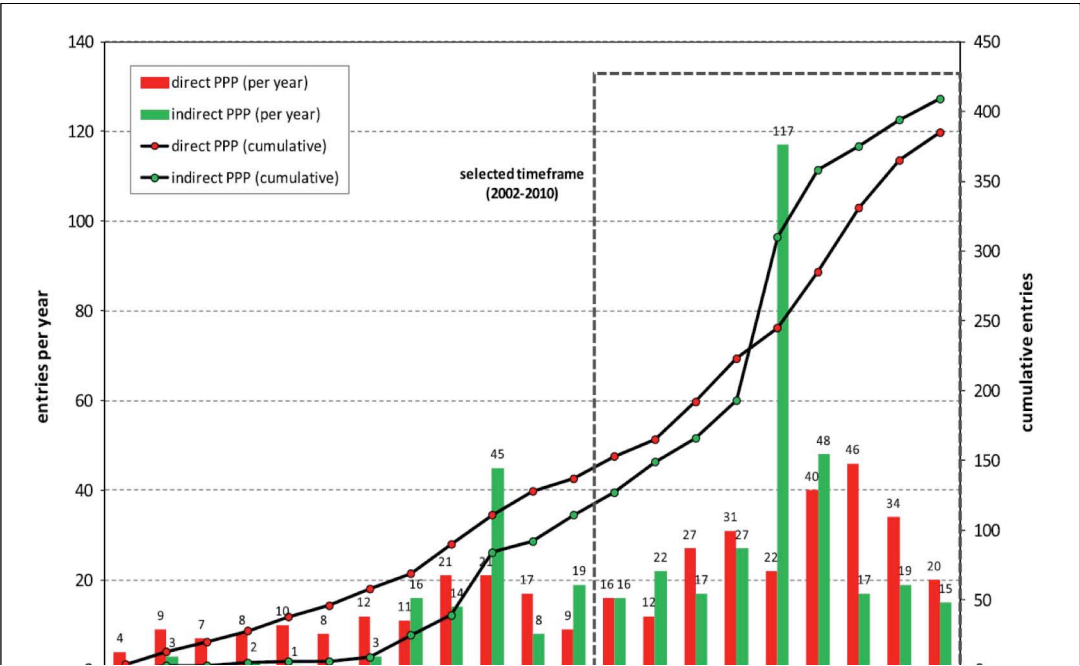


M2 market leader Transatlantic & Asia-Europe, G6 Transpacific.

The mergers will result in a market cap dominated on the Transatlantic and Asia-Europe by M2 (Maersk, MSC). The Transpacific route is now mostly in hands of the G6 and CKYHE alliances. The Ocean 3 network is present in all three routes, with 9%, 10% and 18% for the respective Transatlantic, Transpacific and Asia-Europe routes.

Source: Portopia calculation based on Lloyds (2016)

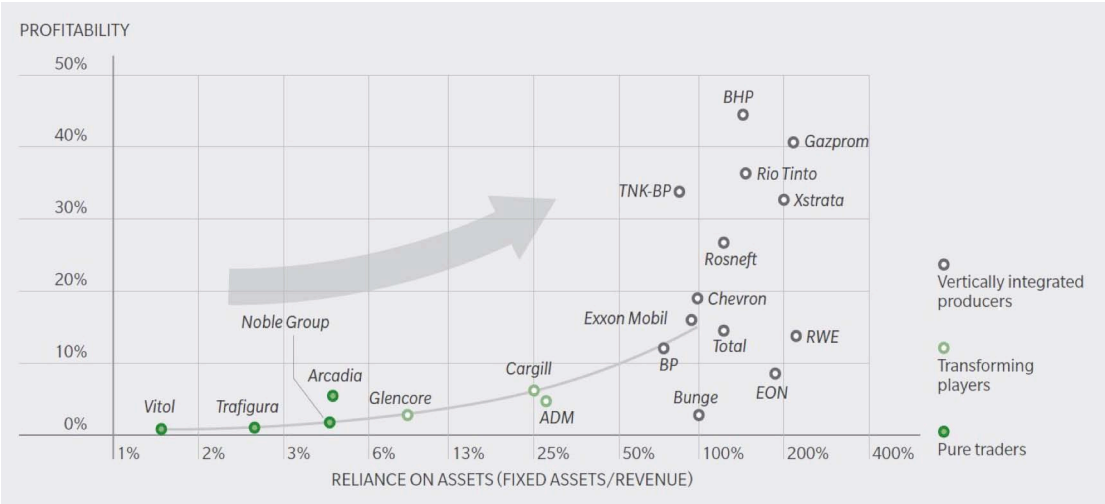
THE EVOLUTION OF PPP FOREIGN ENTRY STRATEGIES



Land side terminals gaining market power through expansion.

As widely acknowledged by scholars and practitioners, international terminal operators (ITOs) have profoundly accelerated their process of overseas expansion in many geographic regions. As a result, a handful of players take the lead of this market, provoking an increasing consolidation from the supply side. Currently, the top 5 ITOs approximately control over the 40% of the overall port throughput worldwide. The graph above depicts the relative importance and evolution of the two PPP foreign entry strategies in the container port industry during the 1990–2010 periods.

PROFITABILITY AND RELIANCE ON ASSETS FOR TRADERS

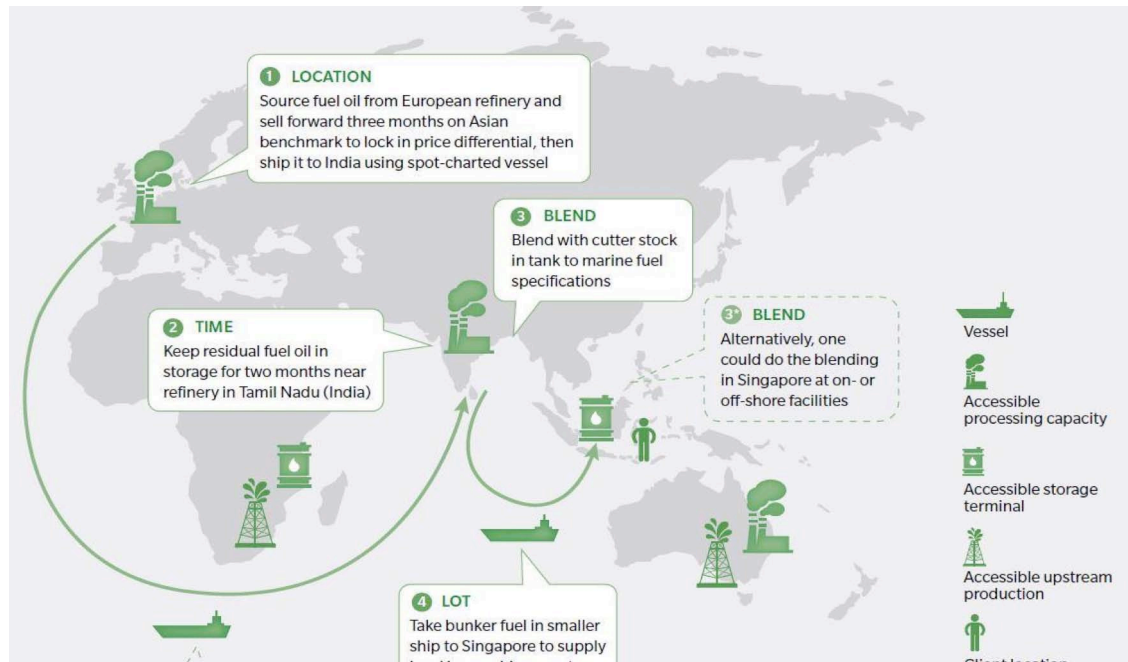


Traders gaining market power via vertical integration.

The commodity trading landscape has changed extensively over the past years. After World War 2, large trading companies, which used to dominate primary commodity trade throughout the 20th century, have undergone vast structural changes. The mutation of largely single-line commodity traders into multi-commodity traders now span the entire spectrum of commodities that enter world trade. Today, growing global profit pools, rising profiles of industry leaders and lower entry barriers have attracted a large number of players to the commodity trading market. The graph above presents an overview of the reliance on assets of some of the most important traders: while there is still a significant group of pure traders, quite a few traders have vertically integrated their activities and became asset-based, even controlling key storage facilities and assets.

Source: Meersman, Rechtsteiner and Sharp (2013)

THE STRATEGIC ROLE OF TRADERS

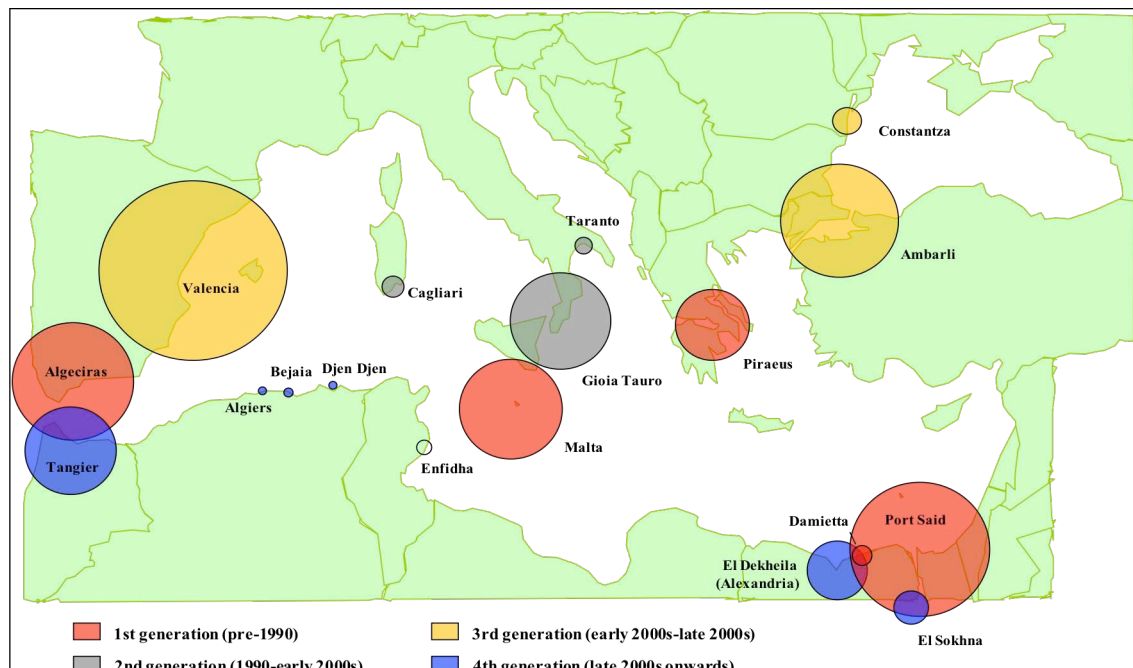


Growing strategic role of traders in cargo and port routing (oil).

Traders are playing a key role in all the stages of the process, which relate to the entire liquid bulk supply chain. They manage the highest crude and clean petroleum products. Gunvor Glencore, Trafigura, Vitol, Mercuria, and investment banks such as Morgan Stanley, JP Morgan have shares or hire storage farms. Also minor traders have quotas in storages. The impact of the traders in the flows of oil products through EU ports surely will depend on the internal oil demand and if the EU will overcome the crisis. If the EU won't recover, the EU flows will be small and maybe tank storages will remain in overcapacity.

Source: Meersman, Rechtsteiner and Sharp (2013)

THE GENERATION OF MED HUBS

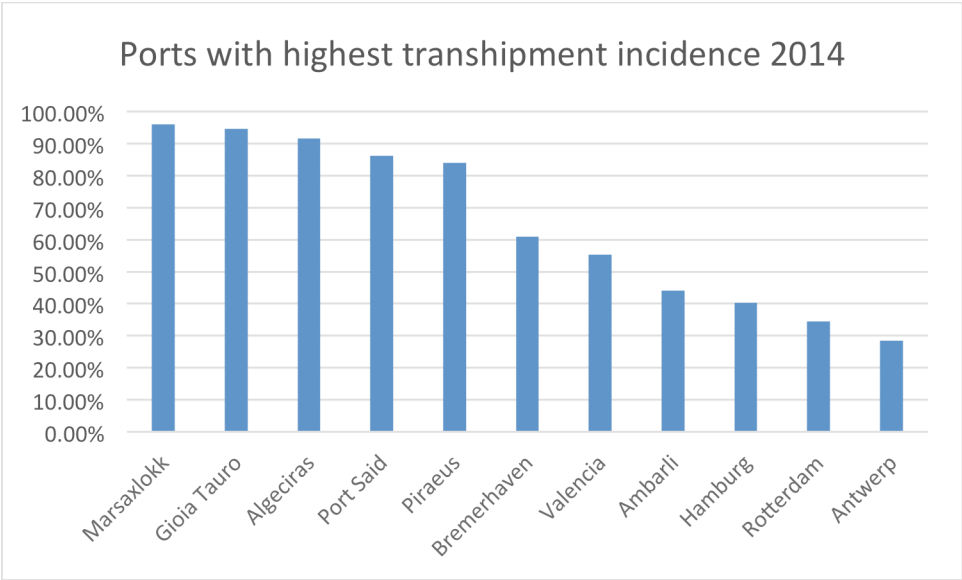


North African ports put pressure on Med range.

The Mediterranean ports are experiencing the fierce competition of newcomers located in North Africa, which find their competitive advantage in the following factors: a) cost advantages (lower cost of space and very low wages); b) “legislative” advantages (simplified administrative procedures for FDI, governmental incentives, etc.); c) geographical position advantages (lower diversion distance respect to the trunk route Suez/Gibraltar); d) physical advantages (deep-water terminals with large backyard spaces).

Source: Parola (2013)

TRANSHIPMENT INCIDENCE 2014

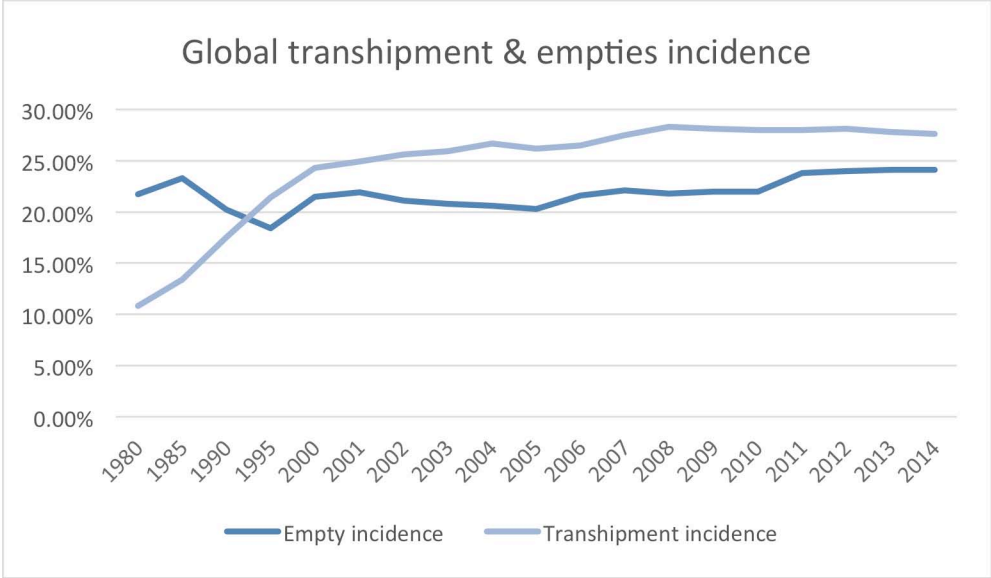


Med ports still largest transshipment hubs.

In 2013, the Med transshipment ports gained a substantial amount on their Northern counterparts. This comes as container shipping lines have been rationalising their service networks and replacing direct services to and from West Africa with transshipment from ever larger east-west mother ships passing through the Mediterranean. Gioia Tauro, Marsaxlokk and Algeciras have more than 90% transshipment. The Northern ports of Hamburg, Rotterdam and Antwerp are all below the 40% mark.

Source: Portopia calculation based on Drewry (2014)

TRANSHIPMENT AND EMPTIES INCIDENCE EVOLUTION

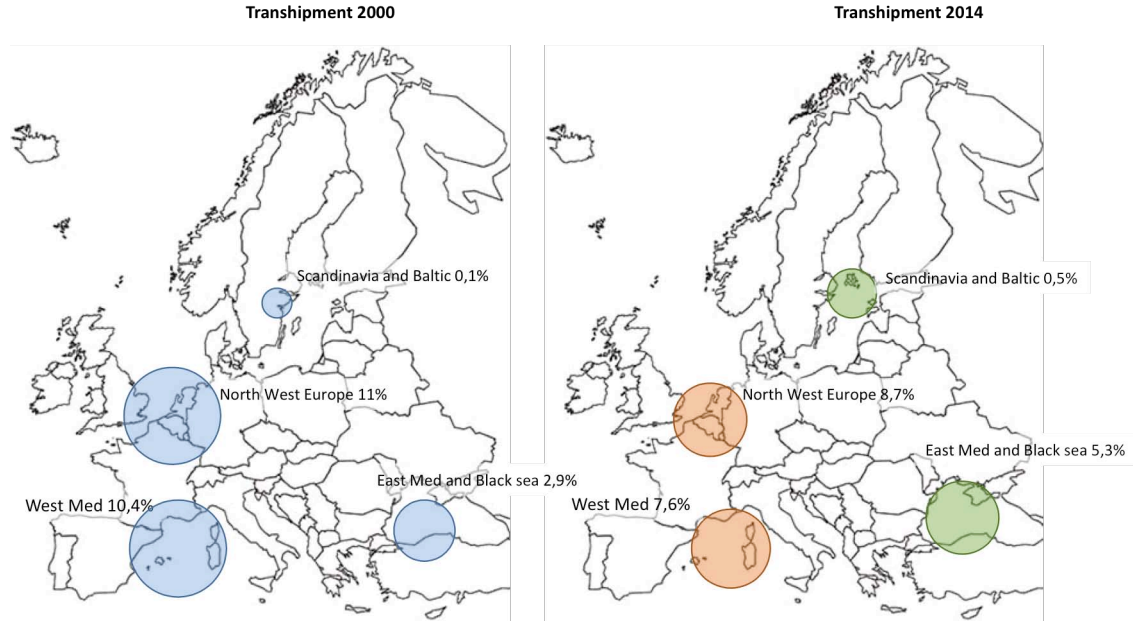


Global transhipment on the rise, empties remains stable.

The 1980 till 2000 saw a sharp rise in transhipment incidence, mostly due to the rise of the pure transhipment hubs like the West Med ports. Post 2000, a stabilization occurred with slower growth margins and a transhipment incidence levelling around 25-28%. The global transhipment incidence factor in 2014 registered 27.6% and has steadily retreated from a peak of 28.3% in 2008. The empties incidence, denoting the amount of empty containers has remained between 20% and 25% for the past 25 years.

Source: Portopia calculation based on Drewry (2014)

TRANSHIPMENT INCIDENCE PER REGION

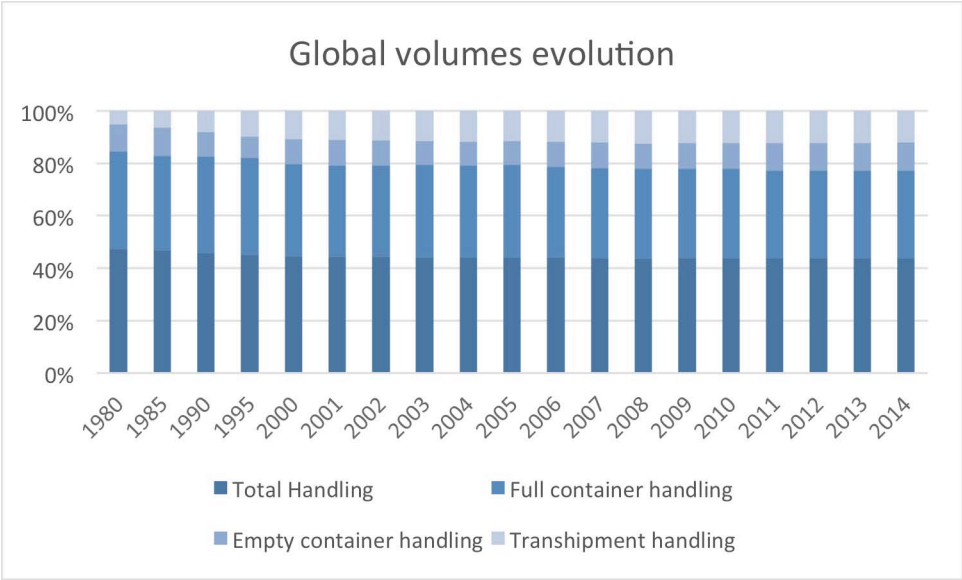


East regions gain transshipment, West regions lose transshipment.

The transshipment evolutions are strongly region dependent. As we can see from the figure above, the Western regions were faced with a small decline in transshipment: North West Europe -2.3%, West Med -2.8%. Their counterparts to the East outperformed them slightly, with growths in the Baltic region of 0.4% and the Black Sea region of 2.6%.

Source: Portopia calculation based on Drewry (2014)

GLOBAL CONTAINER HANDLING VOLUMES

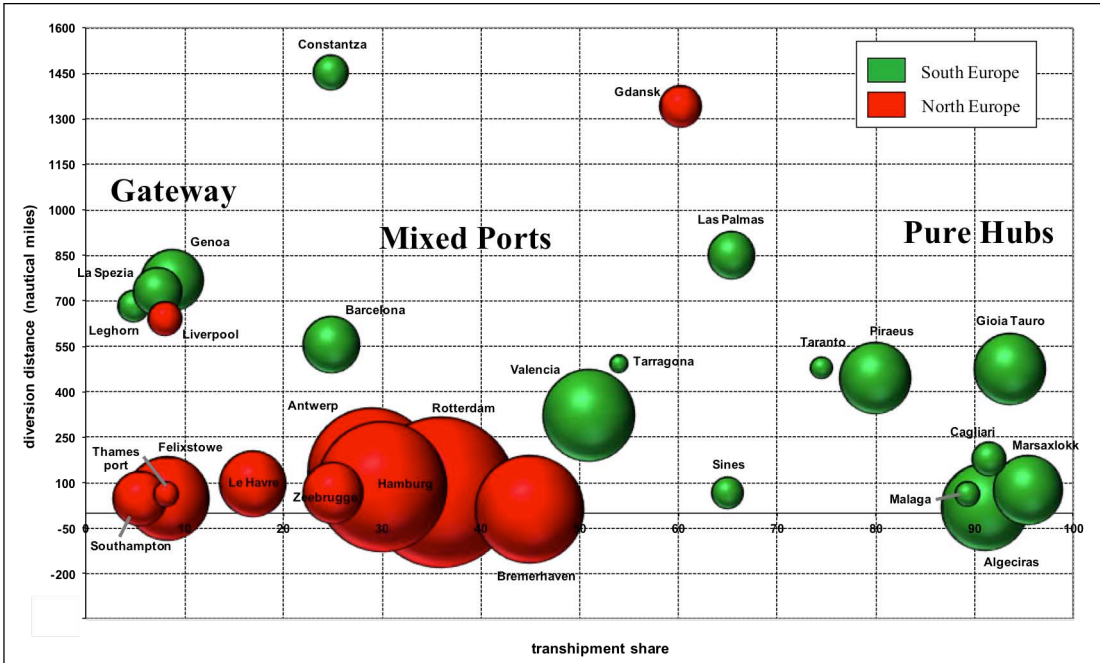


Stable evolution with small transshipment rise.

Absolute global volumes of container handling grew steadily over the past 10 years. If we compare 2004 to 2014, we find total handling +87%, full handling +79%, empty handling +118%, transshipment +93%. In relative amounts, transshipment grew faster than the other groups pre-2000, whilst stabilizing in the last two decades.

Source: Portopia calculation based on Drewry (2014)

CONTAINER PORT PROFILES IN EUROPE

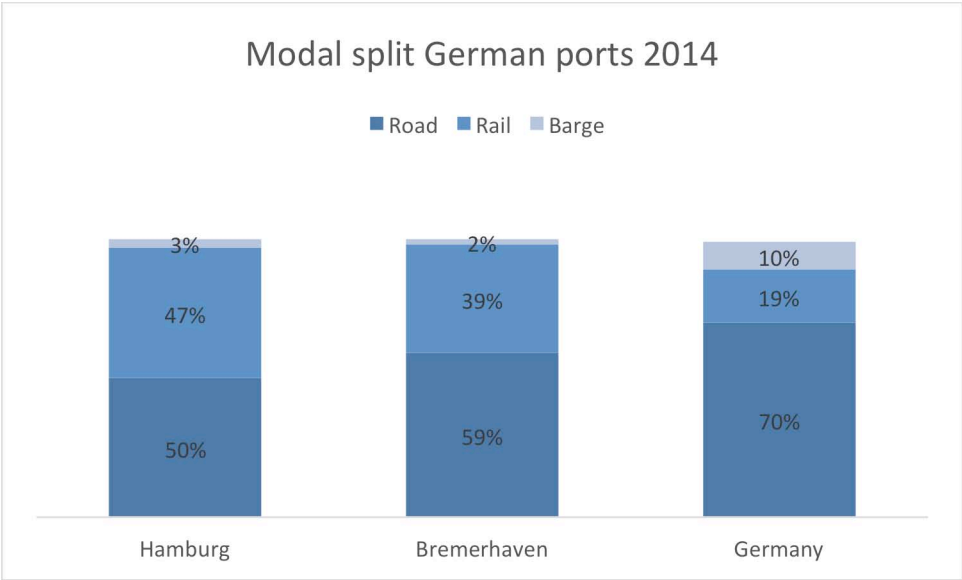


East regions gain transhipment, West regions lose transhipment.

North Italian ports and UK ports are predominantly involved in gateway functions. The load centres are situated in the Hamburg-Le Havre range; Barcelona and Valencia act as mixed ports. For these nodes, traditional gateway functions did not exclude the development of transhipment activities, which provide further business opportunities for increasing total throughput volumes and provide bundled services (combining gateway handling with transhipment) to main customers. A longitudinal analysis shows that the ports protagonist of transhipment in Europe remain the same within the overall period.

Source: Portopia calculation based on Drewry (2013)

MODAL SPLIT FOR GERMANY

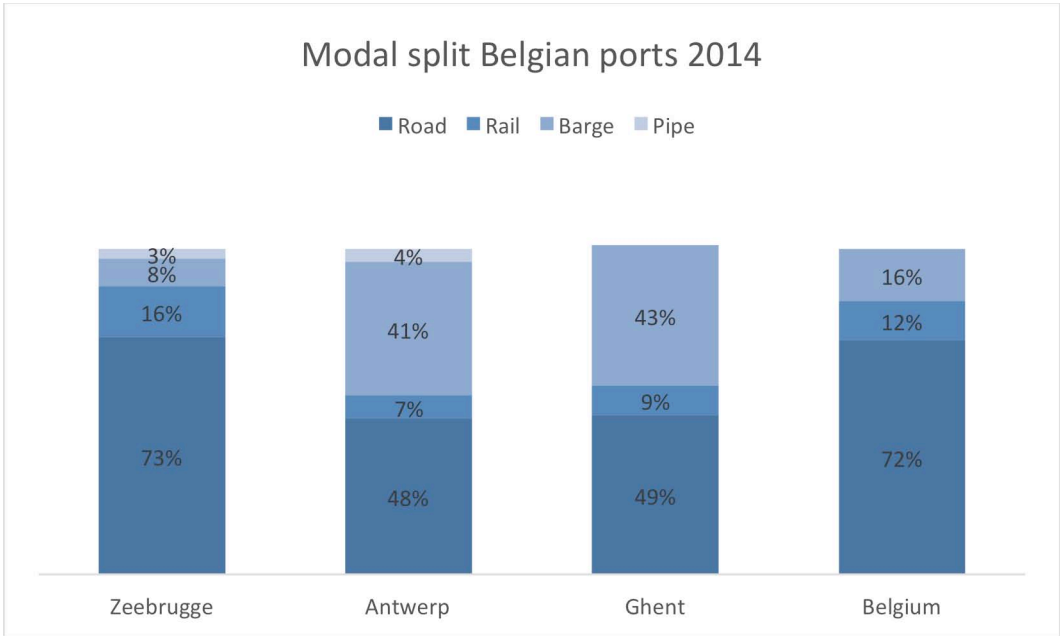


German ports strong in rail.

The German ports have a strong presence in rail transport. If we compare the levels of intermodal rail cargo to the remainder of Germany, we see that Hamburg and Bremerhaven both outperform their surroundings with 20% and 28%. The levels of road transport are also lower than the national averages indicating a positive modal split. Due to the limited barge connections, barge figures are a bit lower than in the German mainland.

Source: Portopia calculation based on Port Authority data

MODAL SPLIT FOR BELGIUM

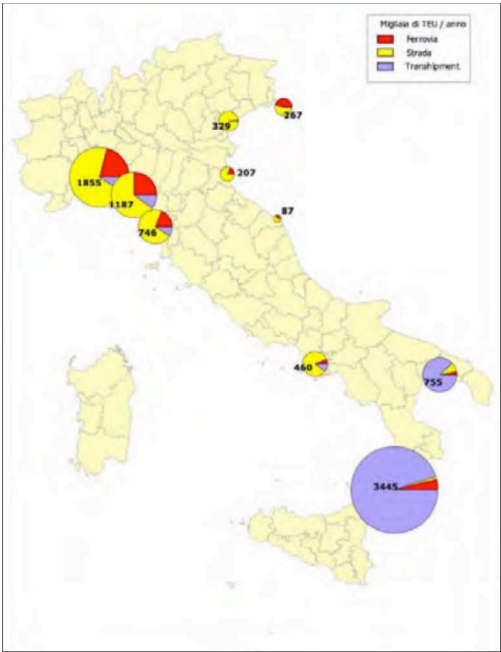


Belgian ports strong in barge.

The Belgian ports are strongly focussed on intermodal barge transport. Of the three main seaports Zeebrugge has the lowest barge level due to restricted canal access. The other ports boast impressive barge figures of 41% and 43% outperforming the Belgian average of 16%. As for rail transport, Zeebrugge is the only port outperforming the Belgian mainland.

Source: Portopia calculation based on Port Authority data

MODAL SPLIT FOR ITALY

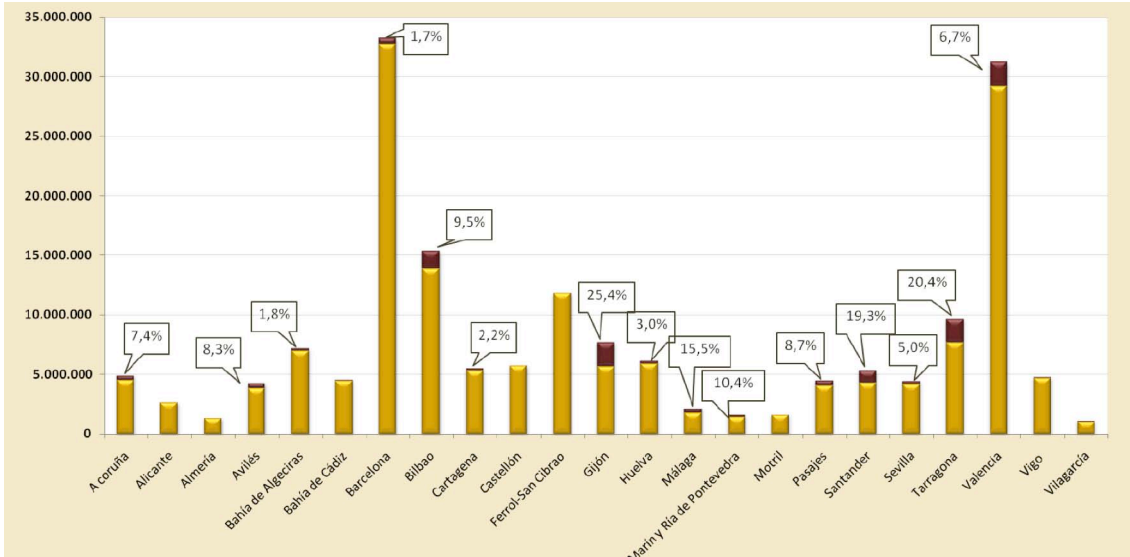


Italian modal split: rail under pressure.

In Italy, the rail sector is experiencing a new period of crisis. Basically, this is due to the difficulty in adopting effective incentives for shifting cargo from road to rail as well as to the growing interest awarded to passenger high-speed services by the managers of the Italian Railway group. Moreover, the liberalization process in Italy encountered some problems of persisting “entry barriers”, which still relate, among others, to the scarce transparency of the awarding procedure concerning the licence to operate for new entrants. As a result, the weak traffic volumes and the difficulties in entering the market, made the Italian rail sector not so attractive for domestic and foreign newcomers.

Source: National Transport Plan, 2012; data year 2007

MODAL SPLIT FOR SPAIN

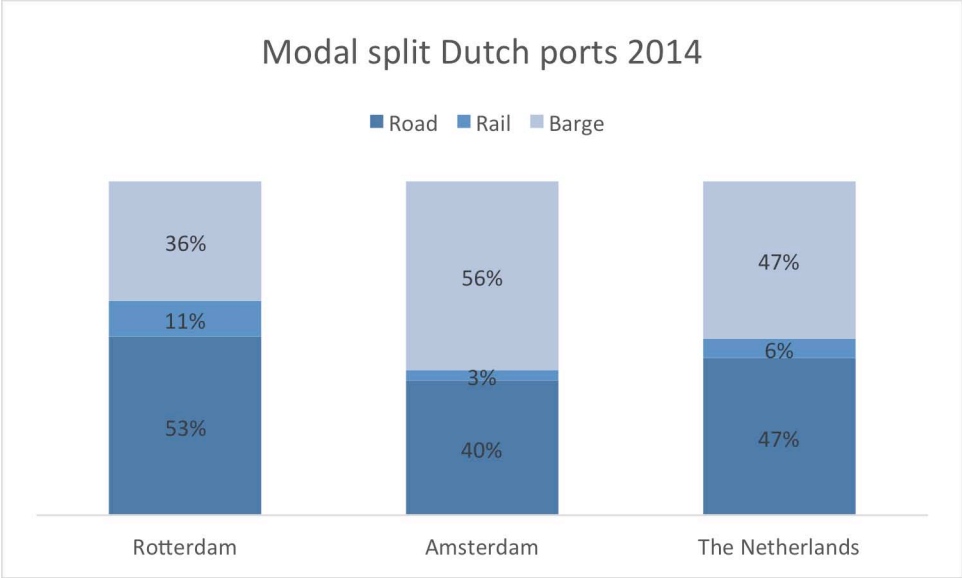


Rail transport: towards a revival in Spain?

In Spain the rail freight levels declined significantly in favour of the road over the last years. In Spain, this decrease was more prominent than in most EU countries. As a matter of fact, road has experienced the highest growth in volume and market share of inland freight transport. Between 2003 and 2008, road transport has increased by 28%. On the contrary, railways’ market share has experienced a continuous decline, from 10.3% in 1997 to 4.1% in 2008 (tonnes-km). Over the last 15 years, however, consistent with the initiatives of the European Union, which launched some strategies for revitalizing rail freight transport (e.g., market opening, interoperability, TEN-T programmes, etc.), the Spanish Government tried to promote rail freight transport, for reducing external costs and improving the competitiveness of the Spanish economy.

Source: Puertos del Estado.

MODAL SPLIT FOR THE NETHERLANDS

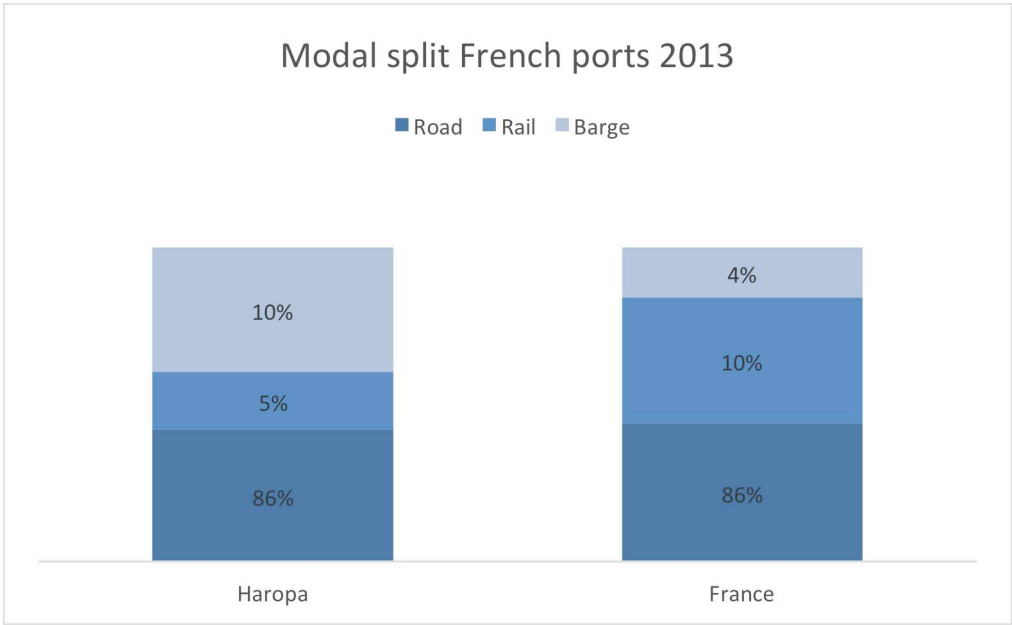


Dutch ports are divided in modal split focus.

The largest ports of The Netherlands have a slightly higher road share than the national average. This is mainly due to the high amount of barge traffic on the Dutch mainland. Even though the barge figures of Rotterdam are slightly lower, the rail figures outperform national averages by 5%. Amsterdam shows the opposite situation with barge figure outperforming national averages by 9% but rail figures lagging behind by 1%.

Source: Portopia calculation based on Port Authority data

MODAL SPLIT FOR FRANCE



Haropa strong in barge.

The joint port entity of Haropa outperforms national averages for barge traffic by 6%, as for rail the port is slightly behind with a 5% lag. Road traffic is level with national averages for the year 2013.

Source: Portopia calculation based on Port Authority data

SECTION 2: SOCIO-ECONOMIC INDICATORS

From a historical perspective, socio-economic impact indicators such as, inter alia, employment and value added have been important criteria to justify and show the economic contribution of port development to local communities as well as different levels of government. Whereas the communication of these impacts to local communities principally serves the creation of societal acceptance of port activity, the studies on which this communication is based on play a more important role as the competent governments use the outcomes as criteria for budget allocation of public infrastructure funds as well as the granting of permits allowing the port authority and the port firms to operate. In other words, port performance in terms of creation of employment and value added are important indicators to convince stakeholders of the necessity of port development and operations in their region or country.

Out of PPRISM, two relevant socio-economic indicators were identified by European ports: direct employment and direct added value, to show the contribution of ports to the European economy. Moreover, the need for further harmonization was identified as well as the fact that only a few ports report on employment and added value at a structural basis. At present, only ca. 10 individual ports (Belgium, Netherlands, Germany) are able to present annually updated, and reliable figures on the employment and gross added value created within the area they manage, in some cases these data are managed externally. As a result, in order to provide aggregated figures on the EU-level, short-cut extrapolations are needed.

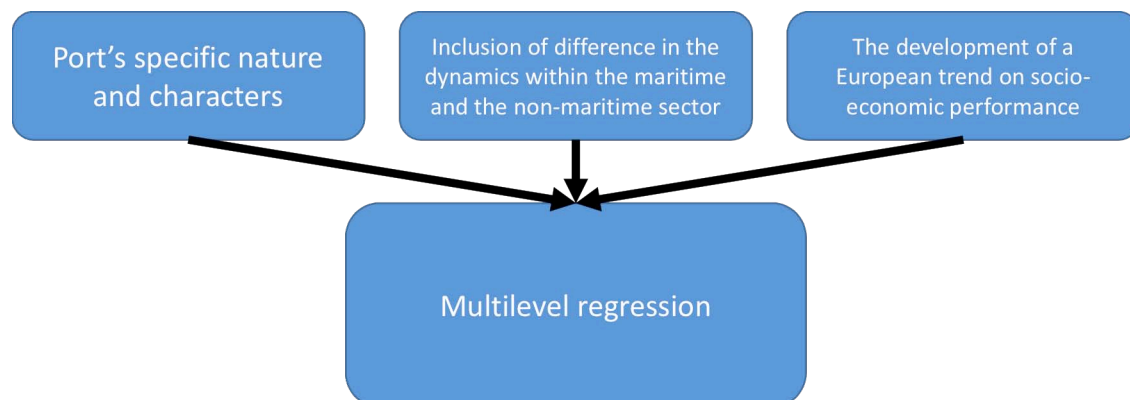
For employment, based on PPRISM data and updates of the sample, we extrapolated in 2014 that direct employment in port areas amounts to approx. 1,1 million full-time equivalents (FTE). This figure comprises both cargo handling and other activities in the port area such as industry, trade, logistics, land transport services.

Within these 1,1 million FTE, based on our data in Belgium and The Netherlands, around 40% is linked to cargo handling activities (as well as related activity taking place in the port, such as agents, tugs, repair, shipbuilding etc) - this is also considered the "maritime cluster".

Based on the above and accounting also the indirect employment (i.e. supply of products and services to directly concerned firms in the port area), leading to a total impact of 2,5 million FTE (direct plus indirect), we could state that 1 FTE in the maritime cluster - or jobs related directly to the transfer of cargo (i.e. total of 400.000 to 450.000 FTEs) - supports at least 4 other jobs in the wider region (approx. the remaining 2 million FTE) either in the port area i.e. the industry / distribution / logistics / land transport, or outside the port area e.g. suppliers of maintenance services etc. not located in the port area.

Within this area of performance, the aim of the PORTOPIA project is to provide ports with a direct employment and direct gross added value estimation tool, allowing more ports to report on these indicators based on a scientifically valid method, based on proxy indicators related to the amount of cargo (for maritime related employment) and the land use (for non-maritime related employment).

PORTOPIA'S MODEL FOR SOCIO-ECONOMIC INDICATORS



Estimation models need to take into account port specificities

An estimation model developed based on 'smart proxies' can overcome the issue of data shortages, and provide a solution to the need for these figures. Leveraging the extensive datasets from two best practices, i.e. the historically exhaustive datasets on 8 core TEN-T ports from Belgium and the Netherlands, general multipliers for port related activities were identified.

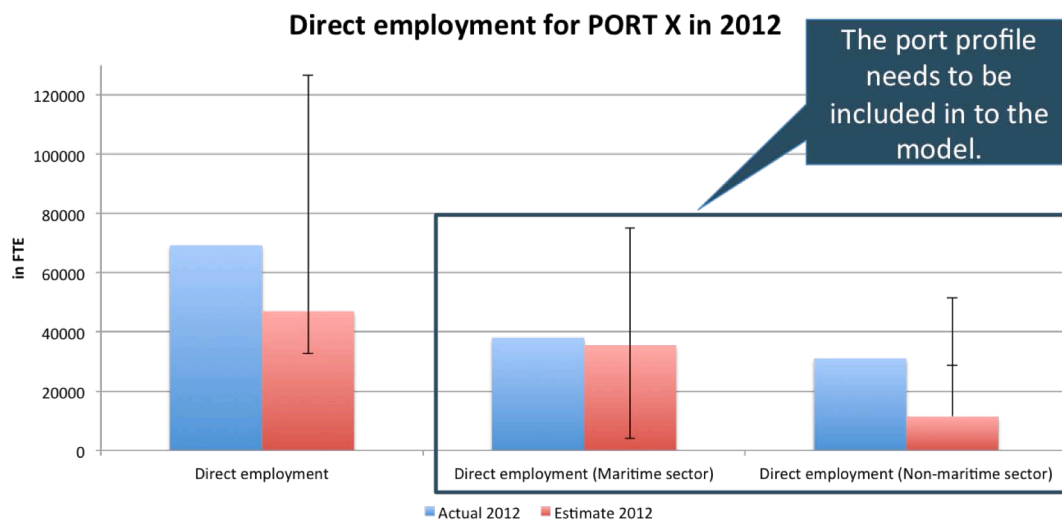
For these best practices, see:

<http://havenmonitor.nl> (in Dutch, version 2015)

<https://www.nbb.be/doc/ts/publications/wp/wp283en.pdf> (in English, report June 2015 on the year 2013)

Source: Portopia deliverables

SIMULATION EXAMPLE



Final steps in rendering the estimation model are underway

While the research on the estimation model has shown good fits with the direct employment for the maritime cluster, larger differences between the estimation and actual employment reported has been observed for the non-maritime cluster (e.g. petrochemical industry, energy, associated logistics, etc.). Additional work will be done:

- Inclusion of dry ports that are located close by the port (e.g. Italian example).
- The estimates can be improved through the inclusion of port profile variables. The research team is looking into the potential indicators for further implementation.
- The model estimates quite well the node function related employment (i.e. the maritime/transport cluster), based on the traffic related variables. For the location function related employment (such as industry), we still look for correlating variables. Currently we look at land use as proxy. Over the next period in time the data for land use for the Dutch and Belgian ports will be collected, after which we will statistically test the method for applicability to other ports in Europe.

Source: Portopia deliverables

SECTION 3: ENVIRONMENT, HEALTH, SAFETY AND SECURITY

This section presents the ongoing PORTOPIA work and available results in the fields of Environment, Health, Safety and Security. A worldwide research was carried out in order to define a set of indicators to be applied in port areas on the topics of Occupational Health, Safety, and Security (OHSS). The techniques used to identify and select the indicators involved two different approaches: i) a bottom-up method, where an extended and in-depth analysis was performed in order to assess the current indicators applied by ports and, ii) a top-down approach, mainly based on legislation and regulations as well as the feedback from stakeholders of the port and shipping industry. The bottom-up approach analysed a total number of 526 ports, allowing the identification of the most frequent indicators used by them. The top-down approach collected valuable opinions and suggestions from the port community members.

The PORTOPIA work on environmental performance indicators is at a more advanced state. The selected environmental indicators are fully integrated in EcoPorts and relevant data collection is continuous through the EcoPorts Self Diagnosis Method (SDM) checklist. Periodically, data is transferred from EcoPorts to PORTOPIA for the calculation and development of environmental performance benchmark data and dashboards. The latest data for 2016 is presented below and it is also compared with the one from 2013.

This section then provides the 2016 benchmark performance on the PORTOPIA set of environmental indicators. The data on these indicators are obtained from the responses of 91 EU ports to the EcoPorts SDM, a tool developed for identifying environmental risk and establishing priorities for action and compliance (<http://www.ecoport.com/>).



Environment

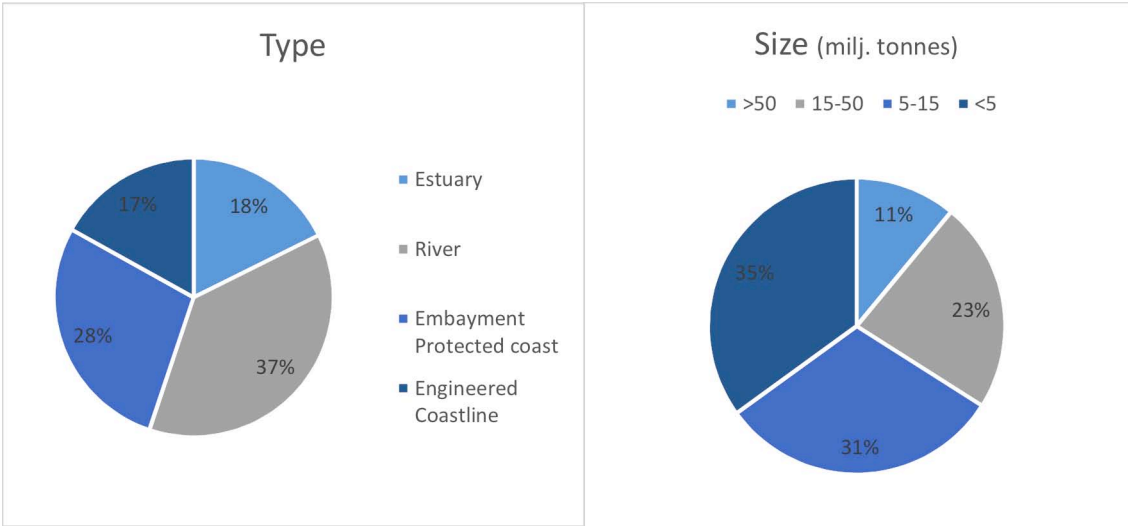


Health



Safety

A WIDE RANGE OF RESPONDENTS



A well balanced sample throughout.

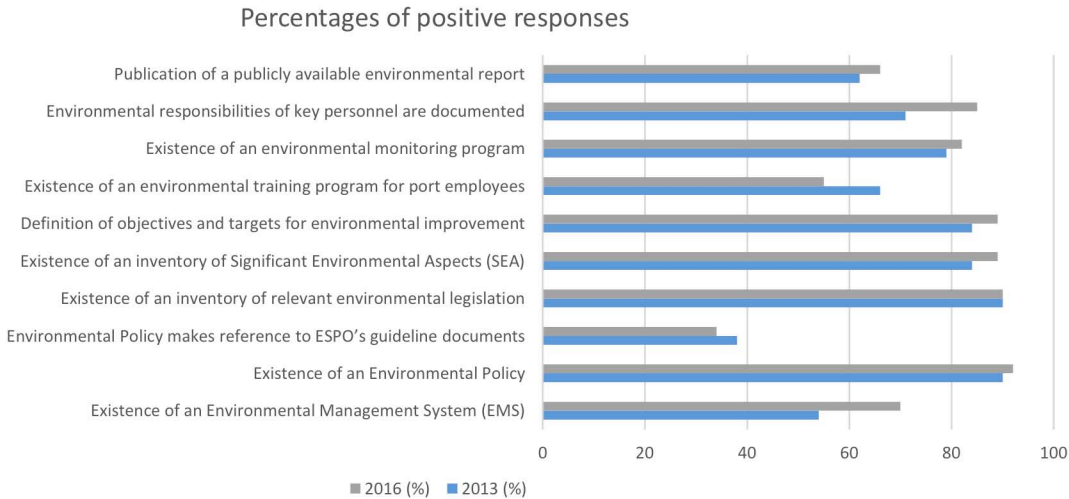
The sample is reasonably well balanced concerning the location of the ports. Another characteristic of the sample that is studied is the tonnage of the contributing ports, in terms of millions tons handled per year. The figure demonstrates that most of the ports are small (<5 million tons) and medium (5<15 million tons) sized.

91 ports from 20 different European Maritime States (out of 23) participated in this assessment. Spain and the United Kingdom are the countries that have more ports represented, 12 each one, followed by France with 10 ports.

Source: PORTOPIA based on ECOPORTS, 2016

ENVIRONMENTAL MANAGEMENT INDICATORS

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Higher adoption of environmental management indicators.

The results demonstrate that the existence of an Environmental Policy is the indicator that has a higher percentage of positive response. More than 9 ports out of 10 have defined an Environmental Policy. This percentage of positive response has increased +2% since 2013. The second highest percentage is the existence of an inventory of relevant environmental legislation, with 90% of positive response. Comparing to the results of the previous exercise in 2013 it maintains the same percentage of ports, since complying legislation is a must for any port. The following indicators are the existence of an inventory of Significant Environmental Aspects (SEA) and the definition of objectives and targets for environmental improvement, both with an impressive 89%. These two indicators increased 5% compared to the results published in 2013. The ranking is followed by the indicator of documenting the environmental responsibilities of key personnel and the existence of an environmental monitoring program. It is also interesting to point out that the indicator on the existence of an EMS has increased from 54% in 2013 to a 70% in 2016.

-

Source: PORTOPIA based on ECOPORTS, 2016



THE ENVIRONMENTAL MANAGEMENT INDEX

	2013	2016
Environmental Management Index	7.25	7.72

Environmental Management Index on the rise.

On the basis of the ten Environmental Management indicators, PORTOPIA has developed the so called Environmental Management Index. This is calculated on the basis of a specific weighting applied to the significance of these key environmental management components. It is argued that this index is particularly appropriate since it is a measure of competence and capability to deliver the environmental imperatives. The Environmental Management Index is calculated by multiplying the weightings associated to each environmental management indicator (see formula below) to the percentage of positive responses. In other words, the final score is calculated by applying the following formula:

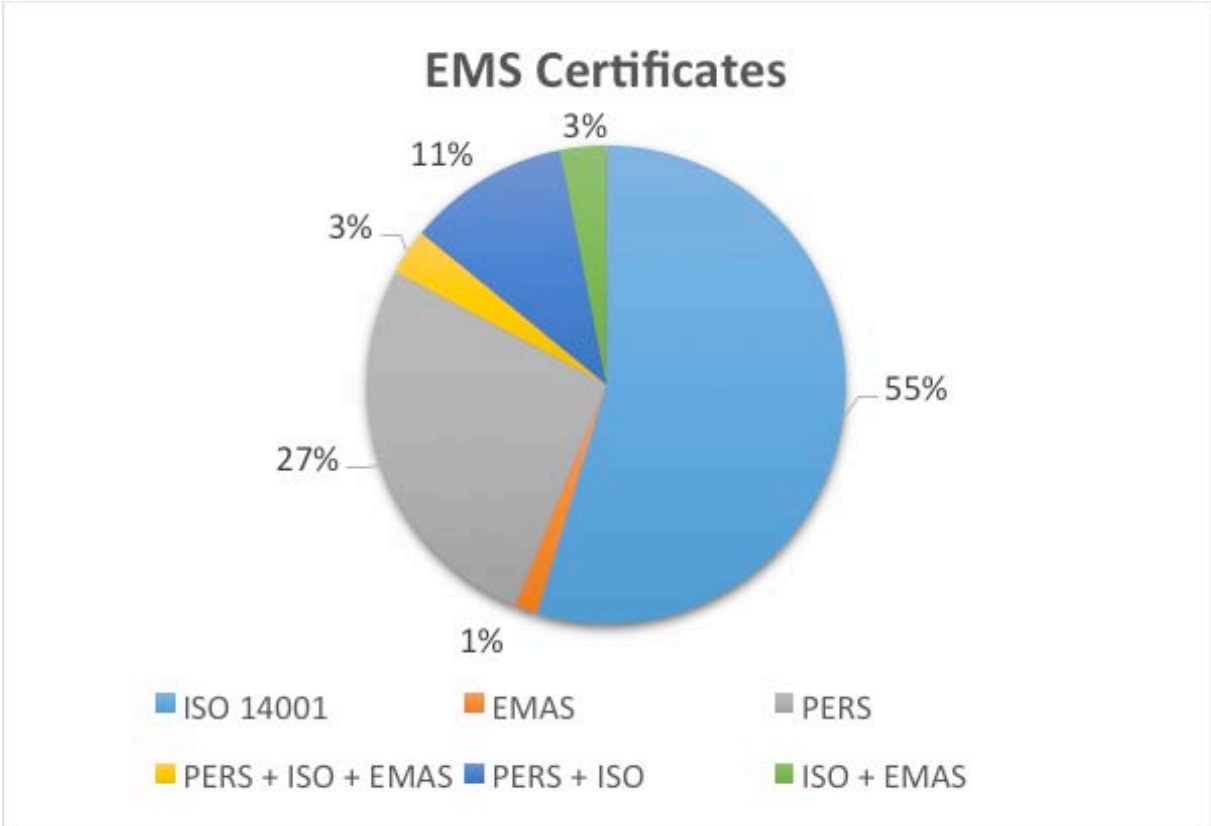
$$\text{Environmental Management Index} = A*1.5 + B*1.25 + C*0.75 + D*1 + E*1 + F*1 + G*0.75 + H*1 + I*1 + J*0.75.$$

Where the value of each letter is the percentage of positive response divided by 100 (e.g. A is 0.7 in the results of 2016).

It is also possible to develop the Index per port, per country, per range, thus allowing relevant benchmarking levels.

Source: PORTOPIA based on ECOPORTS, 2016

EMS CERTIFICATION 2016



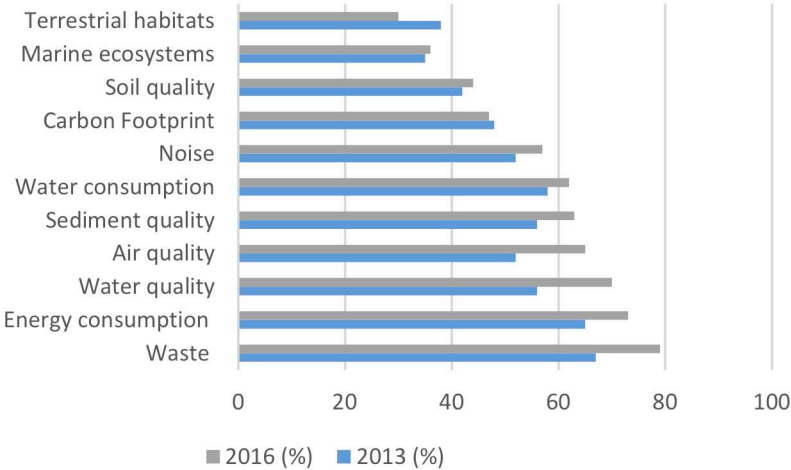
EMS certification, growing in popularity.

A total number of 64 ports out of the 91 are EMS certified, being 46 of them under ISO 14001, 5 under EMAS, and 26 ports have achieved the PERS certificate. The total amount adds up to more than 64 since some ports are certified under more than one system.

Source: PORTOPIA based on ECOPORTS, 2016

ENVIRONMENTAL MONITORING INDICATORS

Percentage of positive responses



Higher adoption of environmental monitoring indicators.

In 2016, waste has been pointed out as the most monitored issue, just as in 2013. There has been an increase from 67% to 79% of ports monitoring this aspect. It is followed by energy consumption (that increased +8% since 2013), water quality (rising +14%) and air quality (+13% since 2013).

Marine ecosystems and terrestrial habitats are the issues that have a lowest percentage of ports monitoring them.

Source: PORTOPIA based on ECOPORTS, 2016

TOP 10 ENVIRONMENTAL PRIORITIES OF THE PORTS

	1996	2004	2009	2013	2016
1	Port Development (water)	Garbage / Port waste	Noise	Air quality	Air quality
2	Water quality	Dredging: operations	Air quality	Garbage/ Port waste	Energy Consumption
3	Dredging disposal	Dredging disposal	Garbage / Port waste	Energy Consumption	Noise
4	Dredging: operations	Dust	Dredging: operations	Noise	Relationship with local community
5	Dust	Noise	Dredging: disposal	Ship waste	Garbage/ Port waste
6	Port Development (land)	Air quality	Relationship with local community	Relationship with local community	Ship waste
7	Contaminated land	Hazardous cargo	Energy consumption	Dredging: operations	Port development (land related)
8	Habitat loss / degradation	Bunkering	Dust	Dust	Water quality
9	Traffic volume	Port Development (land)	Port Development (water)	Port development (land)	Dust
10	Industrial effluent	Ship discharge (bilge)	Port Development (land)	Water quality	Dredging: operations

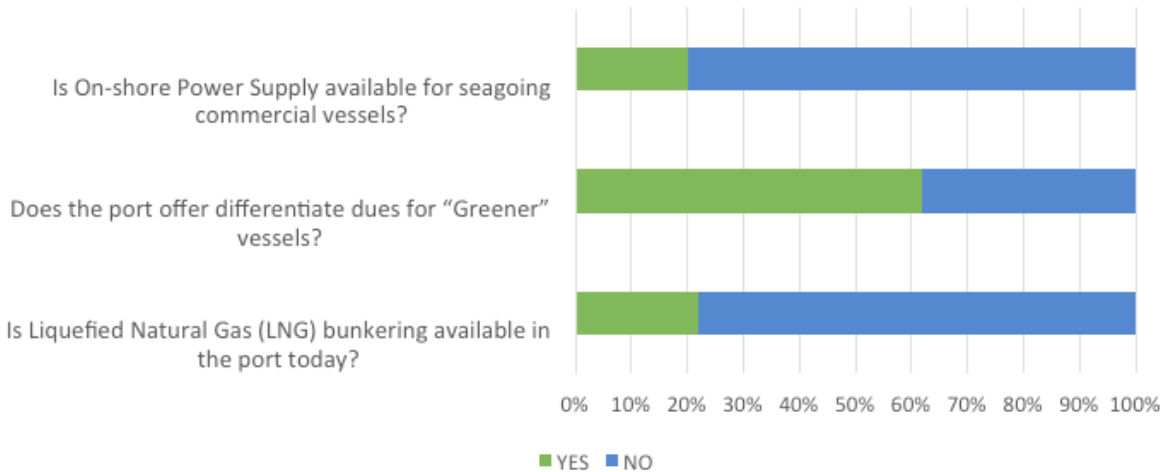
Priorities remain similar, but relative importance changes

The first remark to be made is that all the priorities of the 2013 top-10 remain in the top-10 of 2016. There are just some variations in the ordering of the priority items. The *relationship with the local community*, *port development* and *water quality* primarily appear to be gaining importance. On the other hand, the handling of *port waste*, and *dredging* appear to move down the top-10 scale. *Air quality* remains the number one priority of the European ports, as in 2013. This is fully in line with the maintenance of air quality as a top priority also of the EU policy agenda and the various ongoing policy initiatives that include the implementation of the Sulphur Directive and the ongoing political process on the air quality package. *Energy consumption* becomes the second priority issue of the European ports. Since 2009, the importance of energy consumption has raised year over year as. One of the reasons for this increase is, of course, the direct link between energy consumption, and the carbon footprint of the ports and Climate Change. *Noise* is the third concern by priority and its importance has also grown smoothly since 2004. The *relationship with local community* climbs at the number four of priorities as the ports grant their license to operate and to grow from their local communities. Another interesting fact is that there are three issues that have appeared consistently in the priority list of the port sector over the last 20 years, although they are not in the top positions of the table. These issues are *port development (land)*, *dredging operations*, and *dust*.

Source: PORTOPIA based on ECOPORTS data, 2016

SERVICES TO SHIPPING

Services to shipping snapshot 2016



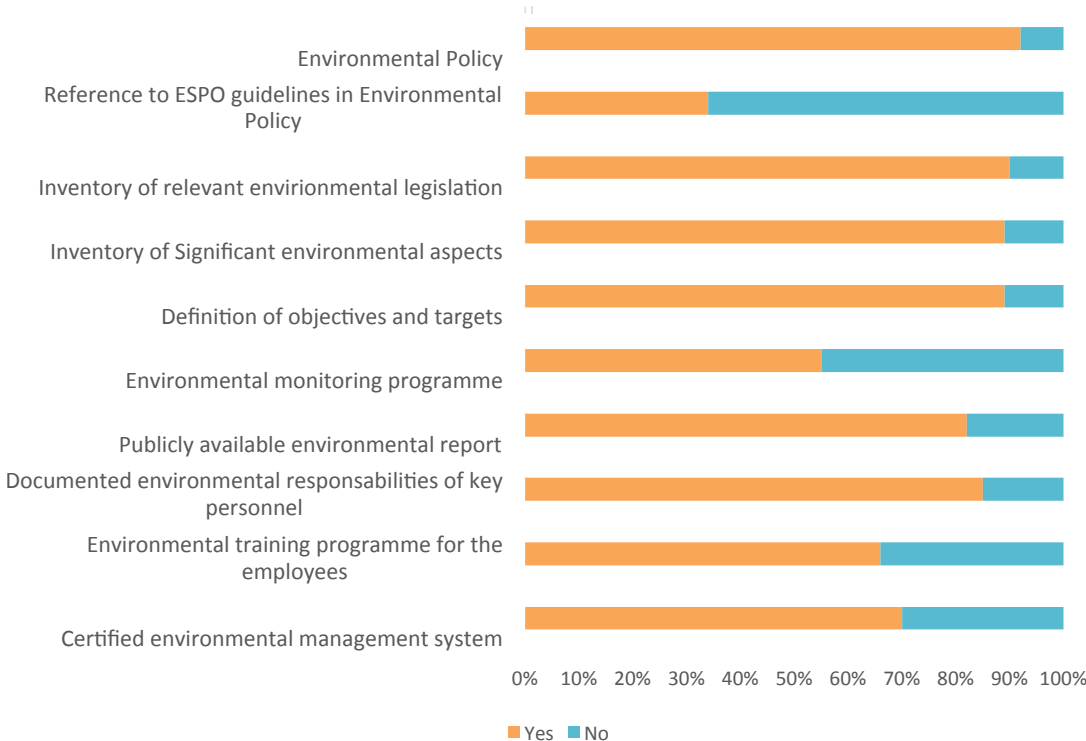
Baseline for future analysis has been developed.

The results confirm that offering differentiated port charges to reward greener vessels is an already established practice in the majority of the respondent ports (62%). This is a voluntary practise by port authorities that choose to go further than controlling their own environmental impact and encourage a positive change of behaviour on the vessels performance side. Environmentally differentiated port charges are encouraged and promoted through the ESPO “Green Guide; towards excellence in port environmental management and sustainability”. The results regarding the provision of Onshore Power Supply (OPS) require a careful interpretation. The overarching question “do you provide OPS?” encompasses both the provision of high and low voltage installations. In reality, in the big majority of cases, high voltage OPS is required in order to be used by commercial seagoing vessels. There are however few exceptions (e.g. ports of Stockholm and Helsinki) where low voltage OPS is also used by commercial ROPAX vessels. Despite therefore the surprising 53% of respondent ports that provide OPS in their port (either high or low voltage), the appropriate figure to be used in order to set the 2016 baseline for the provision of OPS for commercial vessels is the one that describes the provision of high voltage OPS. One out of five of the 61 respondent ports have high voltage OPS installations. The low voltage figures mainly relate to inland and domestics vessels as well as auxiliary vessels (e.g. tugs and/or other port authority vessels). The outcomes regarding LNG show that one out of five respondent ports can already provide LNG bunkering regularly or upon request. It is interesting to follow the evolution of this baseline figure in the years to come also in relation to fulfilling the requirements of the directive on alternative fuels infrastructure that would oblige a number of ports to provide LNG bunkering by 2025.

Source: PORTOPIA, 2016

EU DASHBOARD 2016

Environmental management snapshot 2016



EU Environmental Management Index 2016 = 7.72

This section gives more insight towards the current and future implementation of environmental performance dashboards in PORTOPIA. The actual 2016 environmental performance dashboard for the whole of European ports based on the above data will be presented in the following graphical format.

Furthermore, PORTOPIA in cooperation with ESPO will be looking on regional and national data analysis to order to produce similar dashboards at regional and national level.

Source: PORTOPIA based on ECOPORTS data, 2016

OCCUPATIONAL HEALTH, SAFETY AND SECURITY (OHSS) RESEARCH

Category	Indicator	Definition
Occupational Health	Days Lost	The days lost corresponds to the number of full calendar days' where the victim is unfit for work due to an accident at work. The indicator is normalized by dividing it by the Full Time Equivalent value.
	Fatal work accidents	This indicator assesses the number of fatalities due to occupational accidents over a period of time. The indicator is normalized by dividing it by the Full Time Equivalent value.
	Work related accidents	It assesses the number of work related accidents over a period of time. The indicator is normalized by dividing it by the Full Time Equivalent value.
Safety	Nautical accidents	This indicator assesses the number of nautical accidents in port areas over a period of time. The indicator is normalized by dividing it by the number of port calls.
Security	Port security incidents	This indicator assesses the number of Port Security Incidents over a period of time.
	Investment in protection	This indicator evaluates the percentage of investment in protection divided by the overall investment of the port over a period of time.

A worldwide research was carried out in order to define a set of indicators to be applied in port areas on the topics of Occupational Health, Safety, and Security (OHSS). The techniques used to identify and select the indicators involved two different approaches: i) a bottom-up method, where an extended and in-depth analysis was performed in order to assess the current indicators applied by ports and, ii) a top-down approach, mainly based on legislation and regulations as well as the feedback from stakeholders of the port and shipping industry. The bottom-up approach analysed a total number of 526 ports, allowing the identification of the most frequent indicators used by them. The top-down approach collected valuable opinions and suggestions from the port community members. The defined set of OHSS performance indicators is being further discussed with stakeholders on its acceptability while challenges related to data collection and availability are being addressed. In that sense, the indicators are still under development and there is no available data to be reported at this stage.

Source: PORTOPIA, 2015

CONCLUSION ENVIRONMENT AND OHSS

This part of the PORTOPIA Sustainability Report summarizes the ongoing work and results to date on occupational health, safety, security and environmental indicators. Concerning the OHSS indicators, the outcomes of a worldwide research conducted to 526 ports have been presented.

With reference to the environmental indicators, this report demonstrates that a majority of EU ports are working actively to protect the environment and to guarantee the sustainable development of European ports and harbours.

The results demonstrate that there has been an impressive increase of the positive performance of the sector regarding in terms of existence of environmental management components and in terms of monitoring environmental issues. The raise of the number of ports implementing an EMS, the increase of the Management Index and the investments in conducting more monitoring in aspects such as waste are good example of this.

The update of the top-10 environmental issues is an important exercise because it identifies the high priority common areas on which ports are working and sets the framework for guidance and initiatives to be taken by ESPO. Air quality remains at the top of the issues together with Energy consumption, Noise and Relationships with the local community.

Finally, the development of the first benchmark performance of the services to shipping indicators is positive in order to know in which position is the sector located on those issues and it will allow to draw future trends on those issues in future surveys.

References

Puig, M., Wooldridge, C., Michail, A., Darbra, R.M. Current status and trends of the environmental performance in European ports. *European Science and Policy*, 48, pp. 57-66.

SECTION 4: LOGISTIC CHAIN AND OPERATIONAL PERFORMANCE INDICATORS

The research by the PORTOPIA project builds further upon PPRISM and has developed following indicators, of which the concepts have been tested, but are lacking a structural supply of data to become permanently available. This is due to (1) raw data controlled by private parties, and not freely or 'open' available (2) the high and unreasonable cost to manually compile the datasets. In sum, the implementation of these indicators, while very relevant, necessitates the set – up of partnership with external data suppliers.

More particularly, the following indicators were targeted, of which currently only the THC index had led to satisfactory results (in terms of implementation):

Connectivity indicators:

- Ro-Ro Connectivity Indicator
- Maritime Connectivity Indicator
- Intermodal Connectivity Indicator

Cost indicators (under the form of indices):

- Port Dues
- Terminal Handling Charges (THC)

Congestion indicators:

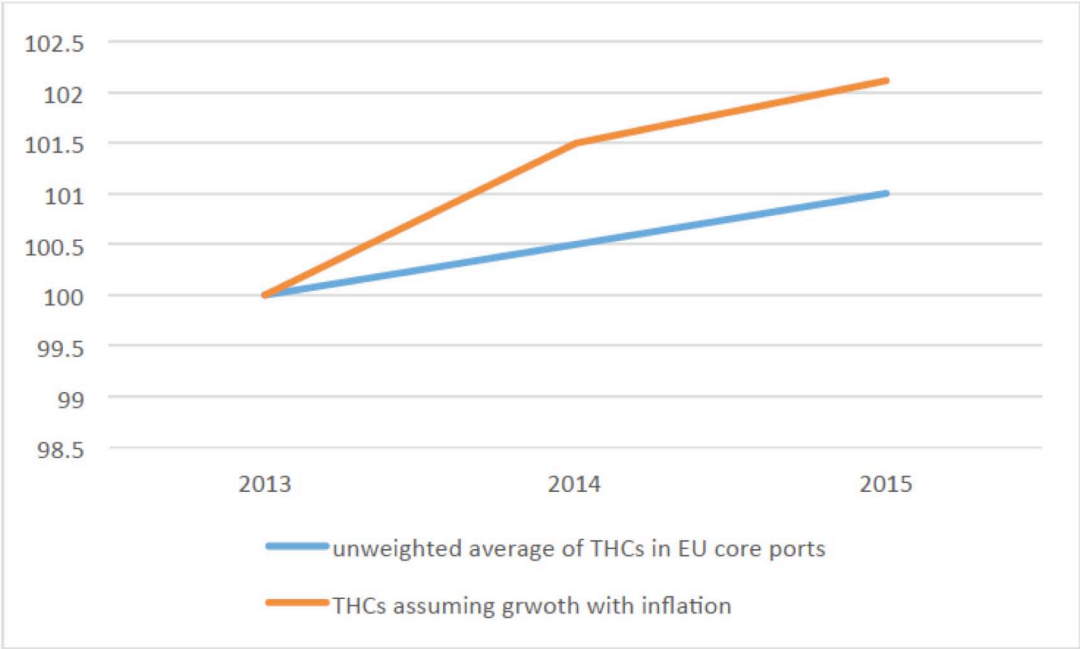
- Maritime Fluidity: tested within 2 ports based on AIS data provided by MarineTraffic
- Road congestion

Currently, further work is ongoing on the development of a port productivity indicator.

The full results of the research and development phase of these indicators are available on www.portopia.eu (or by contacting directly the PORTOPIA contact persons, see the introduction).



TERMINAL HANDLING CHARGES EVOLUTION

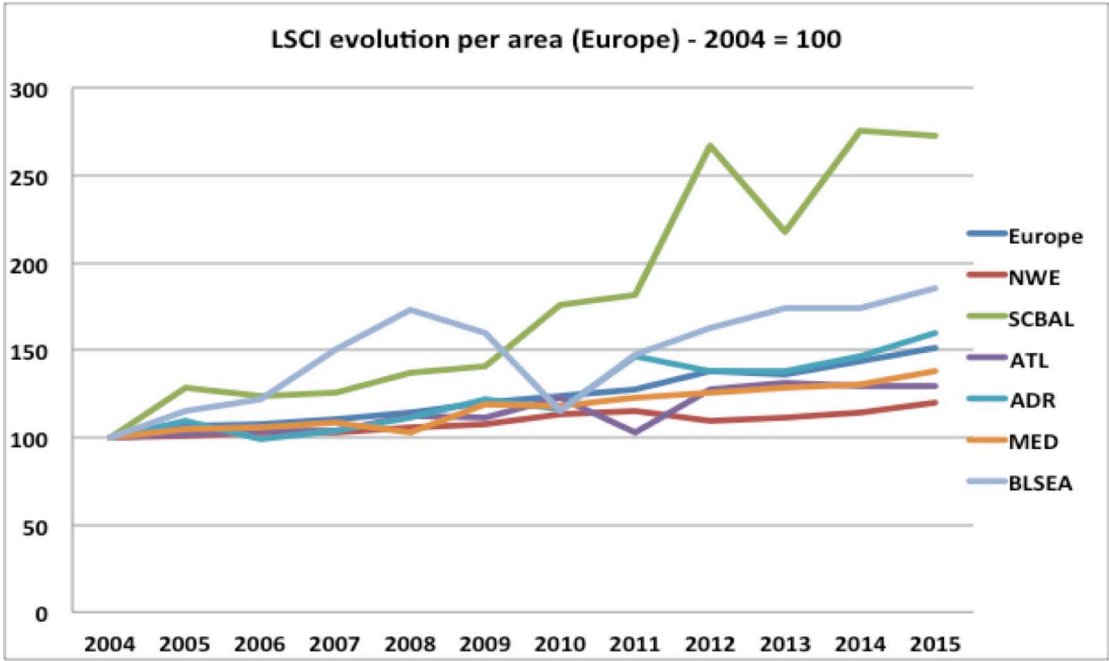


THC are growing less than inflation.

The figure shows that THCs are growing less than inflation. This is a signal that terminal operators are reducing costs and that these benefits (cost reductions) are passed on to the port user.

Source: PORTOPIA, 2015, based on 98 TEN-T ports and data from 17 major shipping lines

LSCI EVOLUTION (EU)

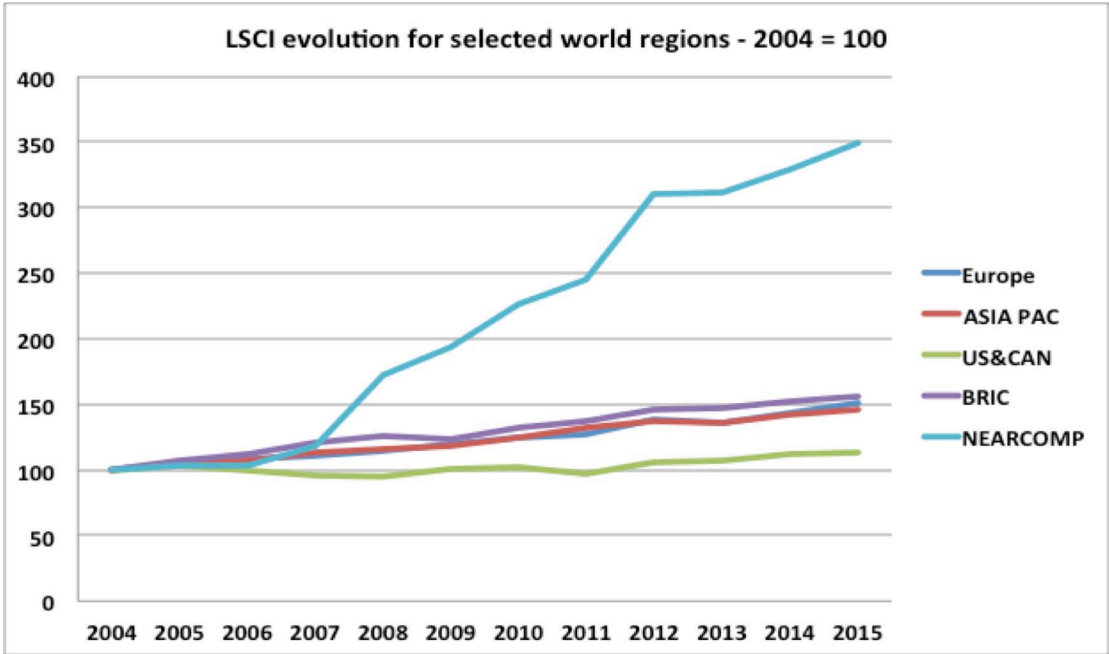


Larger container ships and volumes in Baltic, Black sea and Adriatic.

Europe’s LSCI has relatively improved by 50%. Regions outperforming the European average are Scandinavia and the Baltic countries, the Black Sea countries, and the Adriatic countries. This evolution shows the increasing volumes and ship sizes calling these regions. While the North-West European countries have the highest LSCI in absolute terms (see [http://unctad.org/en/pages/publications/Review-of-Maritime-Transport-\(Series\).aspx](http://unctad.org/en/pages/publications/Review-of-Maritime-Transport-(Series).aspx)), they were still able to improve liner shipping connectivity, but at a slower pace given the maturity of their ports.

Source: PORTOPIA, 2016, based on UNCTAD data

LSCI EVOLUTION (WORLD)



EU outperforming US and Canada, following pace of BRICs.

While Europe’s evolution is similar as the BRICs and the Asia Pacific countries over the long term, it is better than the evolution of the US and Canadian ports. This might be due to the scale increases of vessels, which poses issues for a number of North-American ports, as well as the “double-dip” crisis of 2008/2011. The “Nearest Competitor” group is composed of Morocco, Turkey and the Russian Federation and are considered fierce competitors to Europe’s peripheral regions such as the Black Sea and East Med, the Iberian Peninsula and the Baltic, as evidenced elsewhere in this report. We see very significant growth for this group, and while the previous figure also showed considerable growth in Europe’s peripheral regions such as the Baltic and the Black Sea, this might raise further competitive challenges in the future, e.g. in the West Med due to the presence of development in North Africa (Tangier Med, others).

Source: PORTOPIA, 2016, based on UNCTAD data

SECTION 5: GOVERNANCE INDICATORS

Information on port governance in Europe is historically gathered through a 5-yearly survey, conducted by the European Seaports Organisation, the so-called “Fact Finding Study”.

The previous full public version of the Fact Finding Study can be retrieved at the following link:

<http://www.espo.be/media/espopublications/espofactfindingreport2010.pdf>

The previous report was published in 2010/2011, and thus an update will be made available during 2016. This update will be presented at the ESPO conference in June 2016 (Dublin, Ireland).

Ad-hoc studies in the context of governance also are performed, e.g. a 2008 study on the awarding of concessions. This study and the indicators resulting from it are available at:

<http://www.espo.be/media/espopublications/ITMMASurveyontheAwardingofSeaportTerminalsinEurope2008.pdf>

The most recent advance on governance indicators was developed within the PPRISM project, during 2011/2012. Three governance indicators under the form of indices were calculated, and reported in the 2012 European Port Performance Dashboard:

Reporting of Corporate Social Responsibility (RCSR);

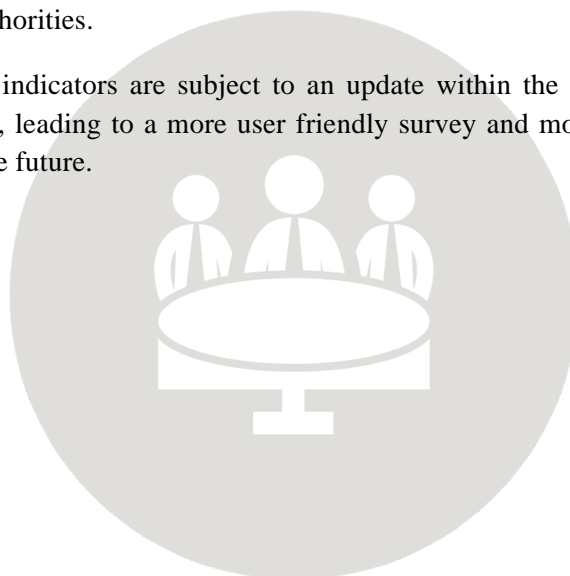
Integration of the Port Cluster (IPC);

Autonomous Management (AM)

http://www.espo.be/media/espopublications/espo_dashboard_2012.pdf

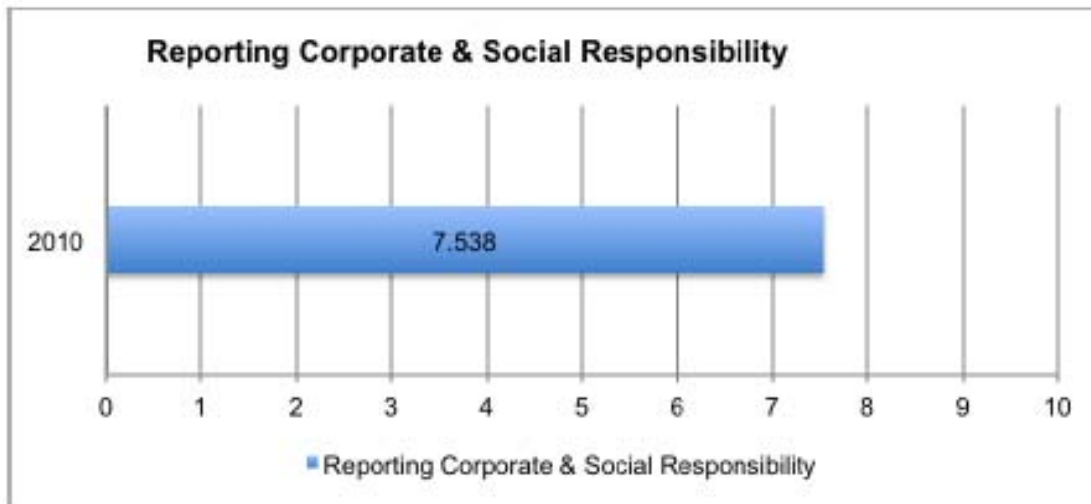
Below we provide the results on these three main indicators, from the PPRISM survey, that was responded to by 54 port authorities.

Currently, the governance indicators are subject to an update within the newly to be released Fact Finding Study (June 2016), leading to a more user friendly survey and more frequent updates of the governance indicators in the future.

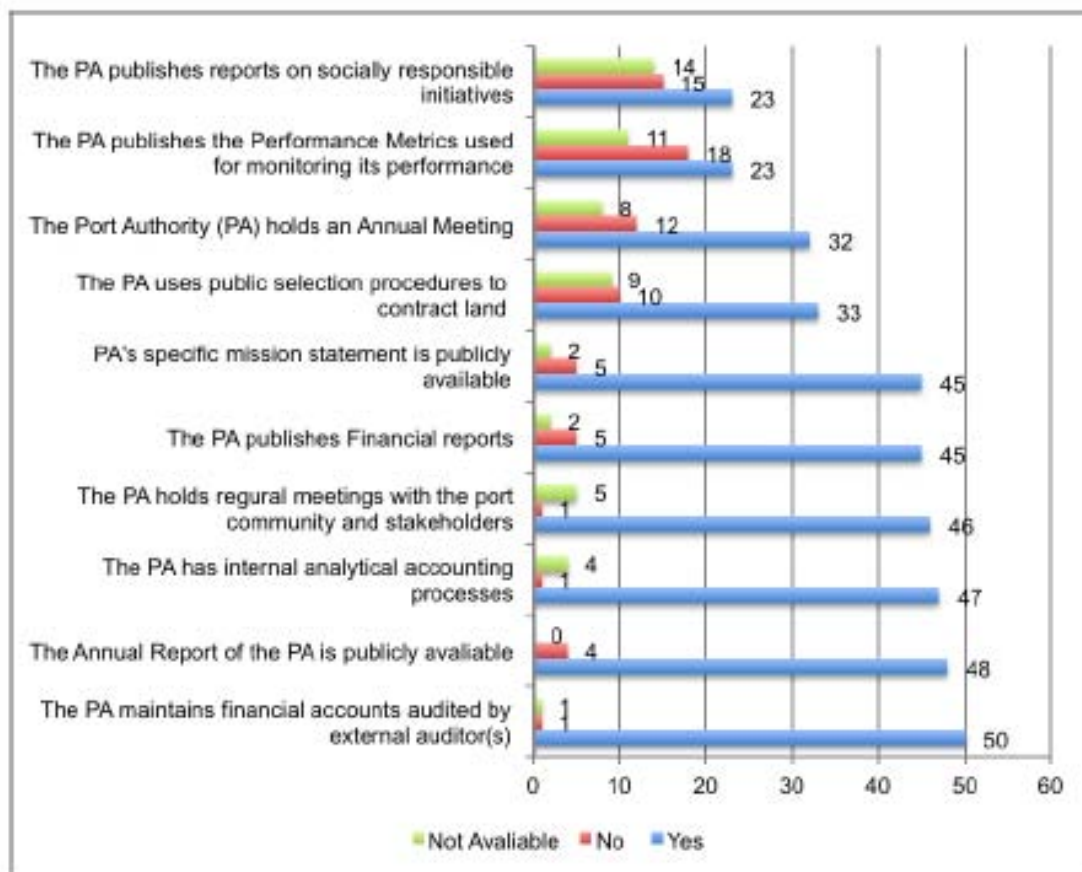


REPORTING CSR

Overall score of the index:



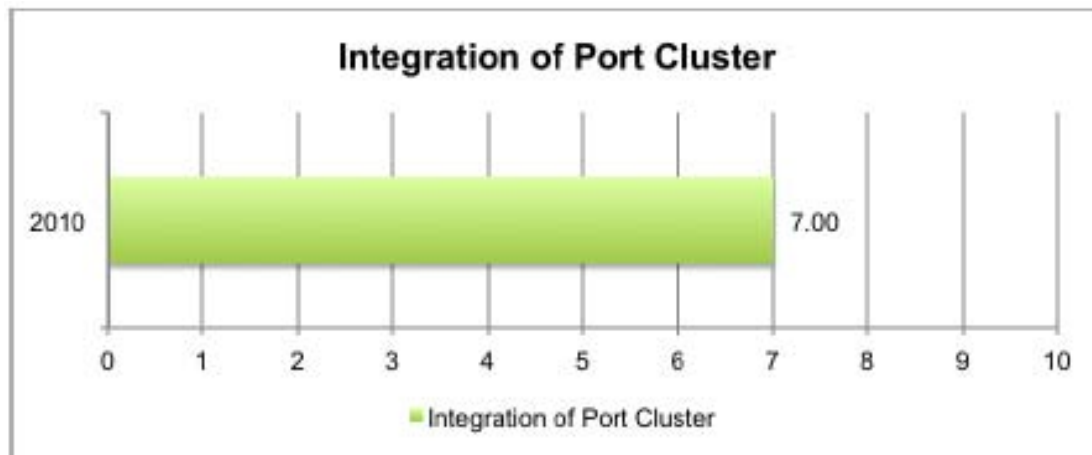
Criteria:



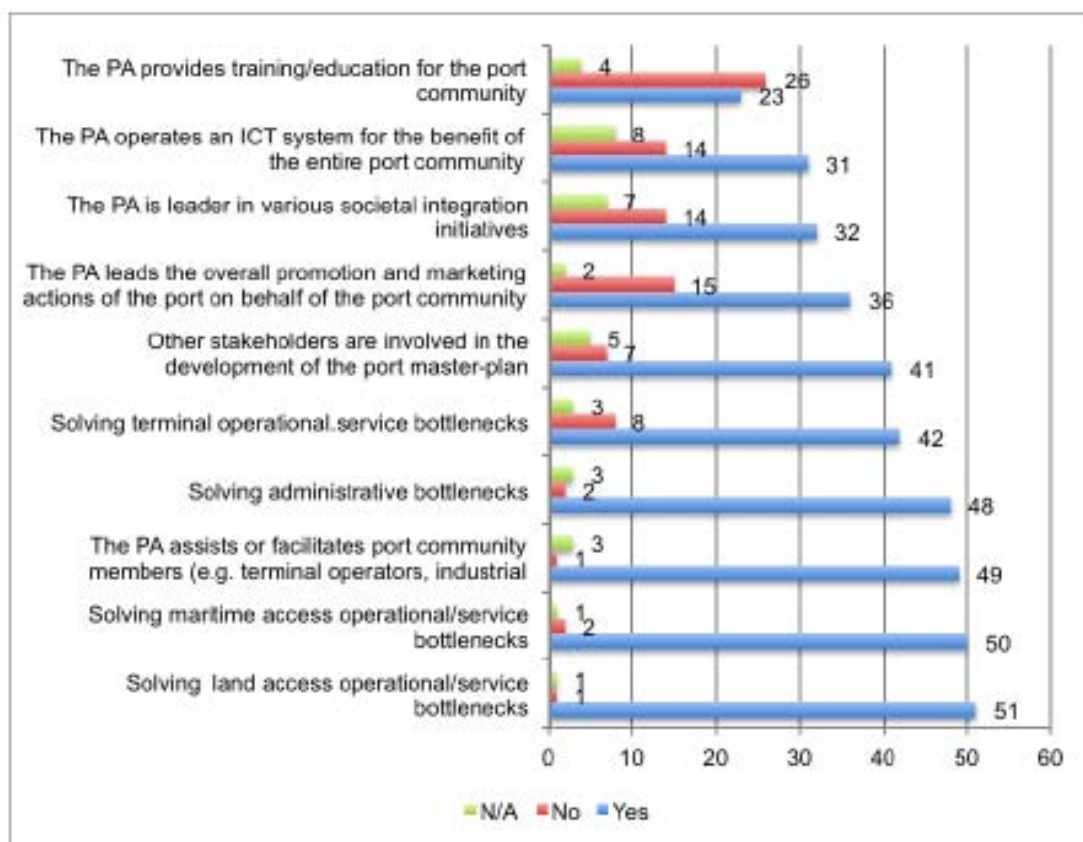
Source: <http://pprism.espo.be/ProjectResults.aspx> (WP3, Pilot Project), 2012

INTEGRATION OF THE PORT CLUSTER (IPC)

Overall score of the index:



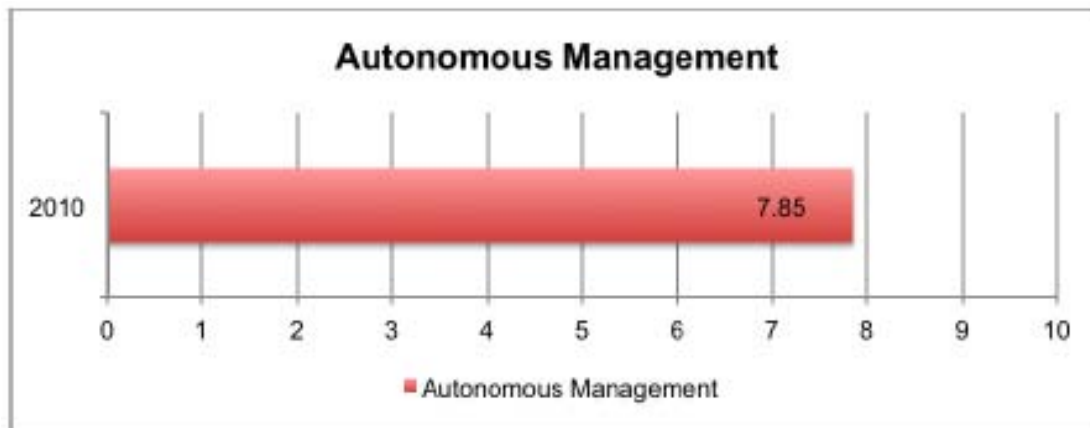
Criteria:



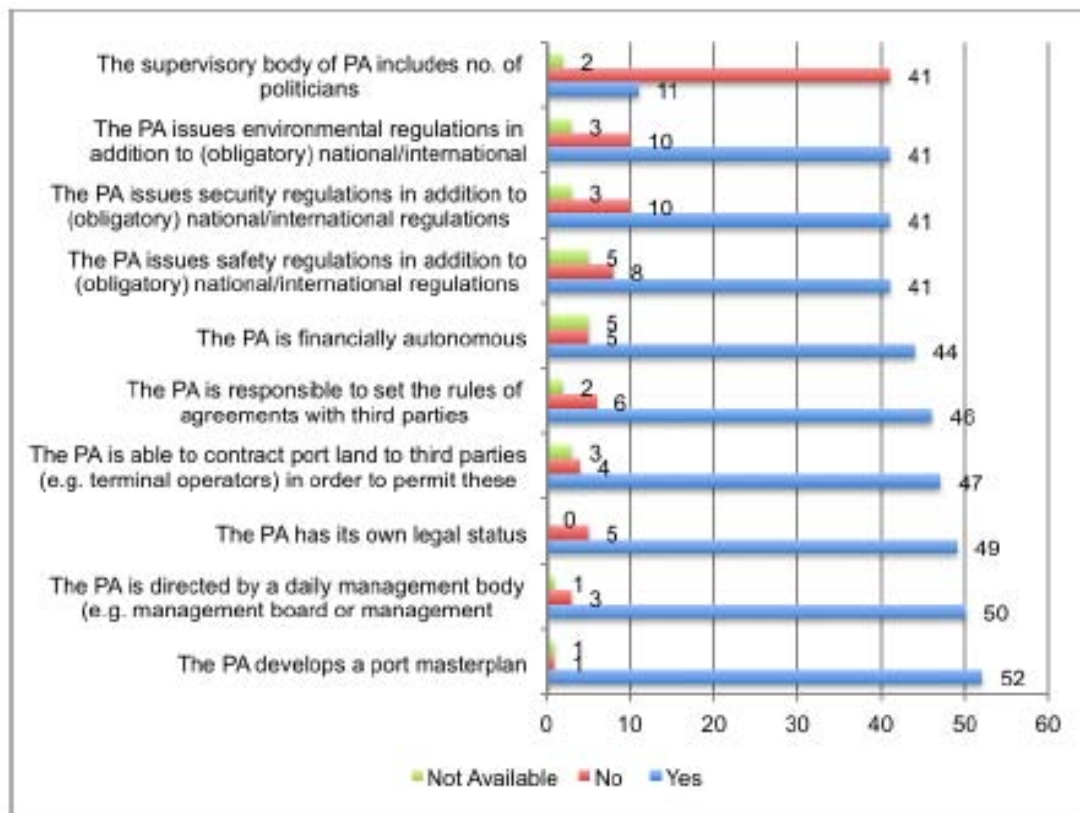
Source: <http://pprism.espo.be/ProjectResults.aspx> (WP3, Pilot Project), 2012

AUTONOMOUS MANAGEMENT (AM)

Overall score of the index:



Criteria:



Source: <http://pprism.espo.be/ProjectResults.aspx> (WP3, Pilot Project), 2012

SECTION 6: USER PERCEPTIONS OF PORT QUALITY

User or Customer Satisfaction surveys have received increased interest by port authorities and their stakeholders.

However, a very small sample of ports actually measures the user perceptions on port quality (infrastructure/services) on an annual basis, based on a variety of methodologies, and reports on it. E.g., based on the integrated reporting of the Port of Rotterdam, an overall study of user perceptions, (including the reporting of an overall user perception (or satisfaction) indicator) is executed once every 2/3 years by this large port (which is one of the few actually reporting the evolution of user perceptions).

Currently, the only annual data available on perception on quality are situated on the country level, and are provided by the Global Competitiveness Report (GCR), released annually by the World Economic Forum (WEF). Within a survey, experts are asked to rate the criterion 'Quality of Port Infrastructure' on a scale from 1 to 7. Also the EU Commission is using this currently as an indicator on the «EU Transport Scoreboard»: http://ec.europa.eu/transport/facts-fundings/scoreboard/index_en.htm

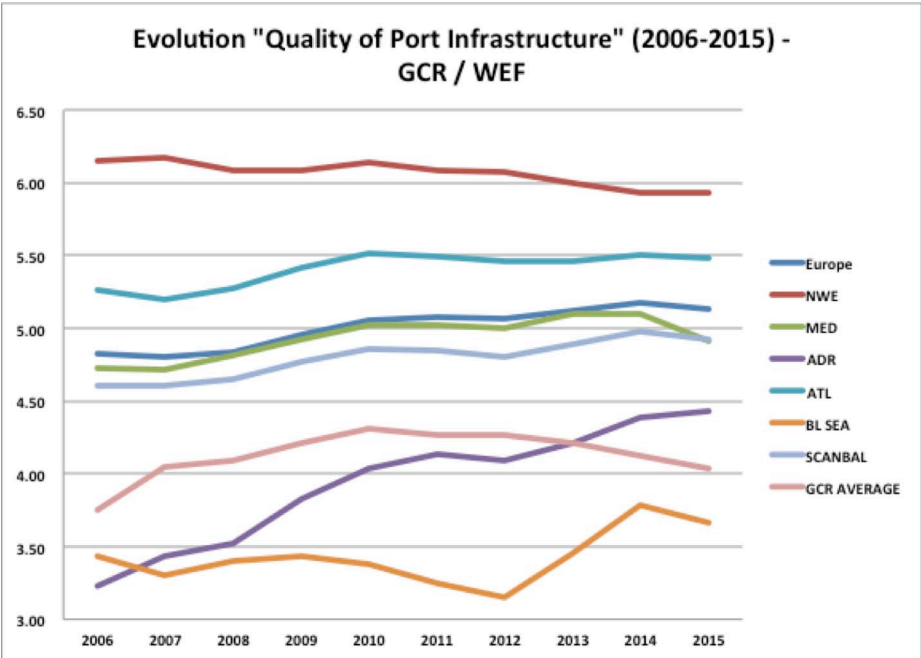
In this version of the report, we discuss the results on this indicator on the European and the Global level.

Furthermore, we believe the ports deserve better than what is actually provided!

Therefore, we provide an extensive insight into a highly practical data intelligence environment recently developed by the PORTOPIA consortium, which could lower considerably both the human and financial burden for port managing bodies to perform user perception surveys, and to move beyond the generic country approach, providing real value for individual port authorities (both large and small). The next 18 months, interested port managing bodies, and by extension, their user associations, are invited to contact the consortium for pilot testing of this data intelligence environment for port user perception measurement. The actual tool will be demonstrated at the ESPO conference in Dublin (June 2016).



QUALITY OF PORT INFRASTRUCTURE EVOLUTION (EU)



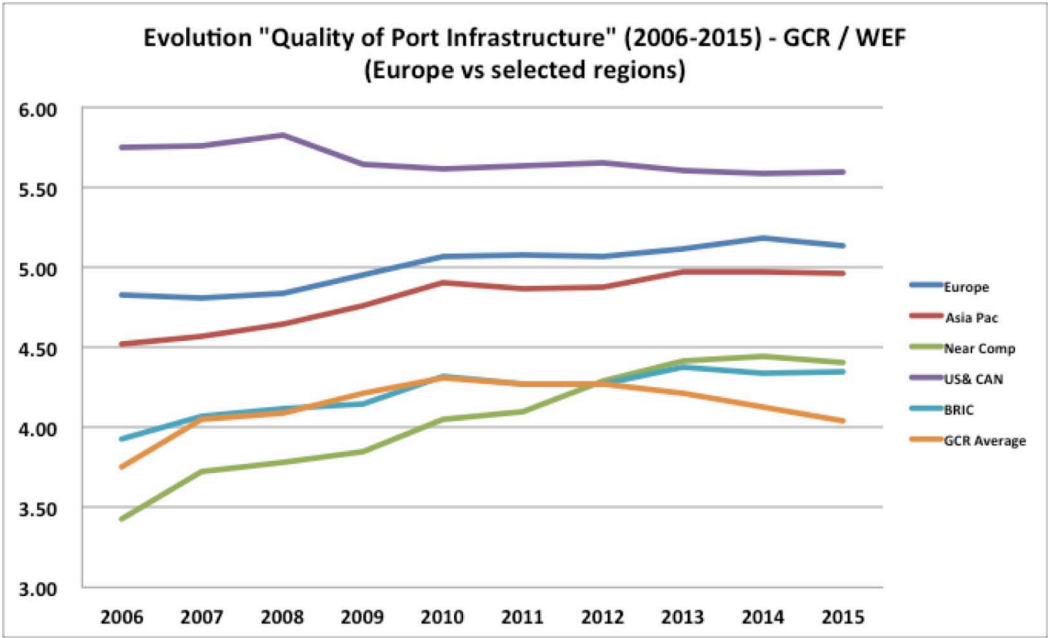
Overall decline of North-West Europe in QOPI indicator.

While progress has been made over the longer term, we observe an overall decline of North-West Europe, while the Adriatic and Scandinavia/Baltic have increased their competitiveness (cfr. also the LSCI evolutions elsewhere in this report).

Overall, the European average is steadily rising and significantly above the Global Average (which is decreasing since 2010), while however showing marked differences internally in the European subcontinent.

Source: PORTOPIA, 2016, based on WEF data

QUALITY OF PORT INFRASTRUCTURE EVOLUTION (WORLD)



Steady increase of Europe’s perceived competitiveness.

Here, the figure confirms the steady increase of Europe’s perceived competitiveness on the port infrastructure dimension over the long run, while the US and Canada show a decline, which has stabilized since 2010.

The evolutions of the world regions are quite similar to the LSCI observations, i.e. Europe, Asia Pacific and BRICs following a path of steady growth, with the largest increase at the level of Europe’s “nearest competitors” (Morocco, Turkey and Russian Federation).

Source: PORTOPIA, 2016, based on WEF data

PORTOPIA'S USER PERCEPTION MEASUREMENT TOOL

The PORTOPIA project: A pioneer tool that will benefit your Port!

The PORTOPIA project team proudly invites you to actively participate in a pioneer pilot exercise. Enjoy the understanding of the perspectives of your port's users when evaluating port performance.

Are you on track with what your port's users consider essential? Then voluntarily taking part in this exercise is a great opportunity for your port management team to enhance its understanding on port performance measurement.

This is a call to use an ICT tool that you might decide to integrate into your daily port management operations and strategic planning.

Tune with the PORTOPIA online tool and benefit your port management design and decisions!

What is PORTOPIA?

Designed by an international team of highly acclaimed academic, research and industrial partners, the PORTOPIA project aims at creating an integrated management system of port performance that will serve port authorities in improving their sustainability and competitiveness.

Which are the Objectives?

The main objective of the PORTOPIA project is to support the European Port Industry with **meaningful performance measurement tools that increase the performance of each individual port** and thus **advance a sustainable and competitive European Port System**.

Do ports deliver what their users expect?

One of the core elements of the PORTOPIA project is to explore port users' perspectives when evaluating port performance.

To this end, a group of leading European universities, research institutes and industrial partners joined forces and developed an ICT tool that captures and evaluates these perceptions - providing ports with a tangible tool for an actual port performance management.

Benefits for Participant Port Authorities

Each port interacts with various and different users and frequently offers tailored combinations of services. It is important therefore to obtain a concrete understanding on what each group of end users considers essential.

PORTOPIA's dynamic platform can be accessed by the port community and offer a variety of tools and services designed to assist with performance and management.

Each participant port is able to administer its own "space" and choose the market it would like to see implemented.

- **Meaningful indicators for measuring the performance of your port**
- **Evaluation of your port performance**
- **A performance measurement tool for learning and self-improvement**

The Platform: Integrating Users' Perspectives in Port Performance Evaluation

The online tool consists of an **online survey** that reflects in a most concrete way the performance criteria that the users of your port services consider to use in order to measure their experience with the port.

Aiming to **encompass the diversity in port services**, the survey focuses on specific port markets, and might run in some or in all of them:

1. Containers | 2. Dry Bulk | 3. Liquid Bulk | 4. Break-bulk | 5. Ro-Ro | 6. Cruise

For each port market, a set of criteria has been developed. The criteria are grouped in key categories and follow a logical sequence based on the sea-port-hinterland concept. These criteria are related with:

**1. Availability | 2. Accessibility | 3. Connectivity | 4. Quality
5. Timeliness of services | 6. Adequacy | 7. Cost**

The online tool is designed to run in two phases. In Phase I the port management selects the appropriate criteria/market, and in Phase II the port sends the survey to the users of the port.

#Phase I: Participant ports customize the tool to meet their performance evaluation objectives

At **Phase I** your port is going to select those criteria that you believe to be of the most importance for your port users when they assess port performance.

The online survey tool is answered and completed by a delegated expert of your port – who also acts as the contact point for the PORTOPIA project.

The criteria selected by the port authority are going to be evaluated by the port users. This way you customize the exercise according to the characteristics and needs of your port safeguarding the full control of the exercise.

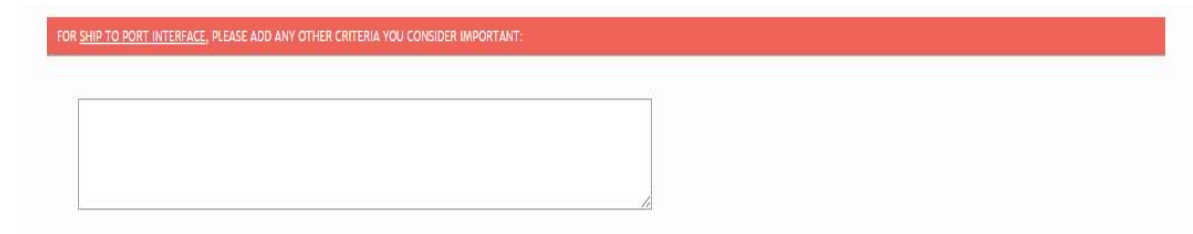
Your preferences will transform the final platform – the criteria that you believe that define your port’s performance will be “measured” at **Phase II** from your **defined users**. They are selected based on your feedback, making it a tailored tool for each participant port.

How does the online tool work for the participant Port Authorities?

- The survey asks you first to select the shipping markets facilitated by your port (dry bulk, liquid bulk, break-bulk, container, Ro-Ro and cruise).
- You are free to select as many criteria you think appropriate for each desirable market, but at least ten (10).

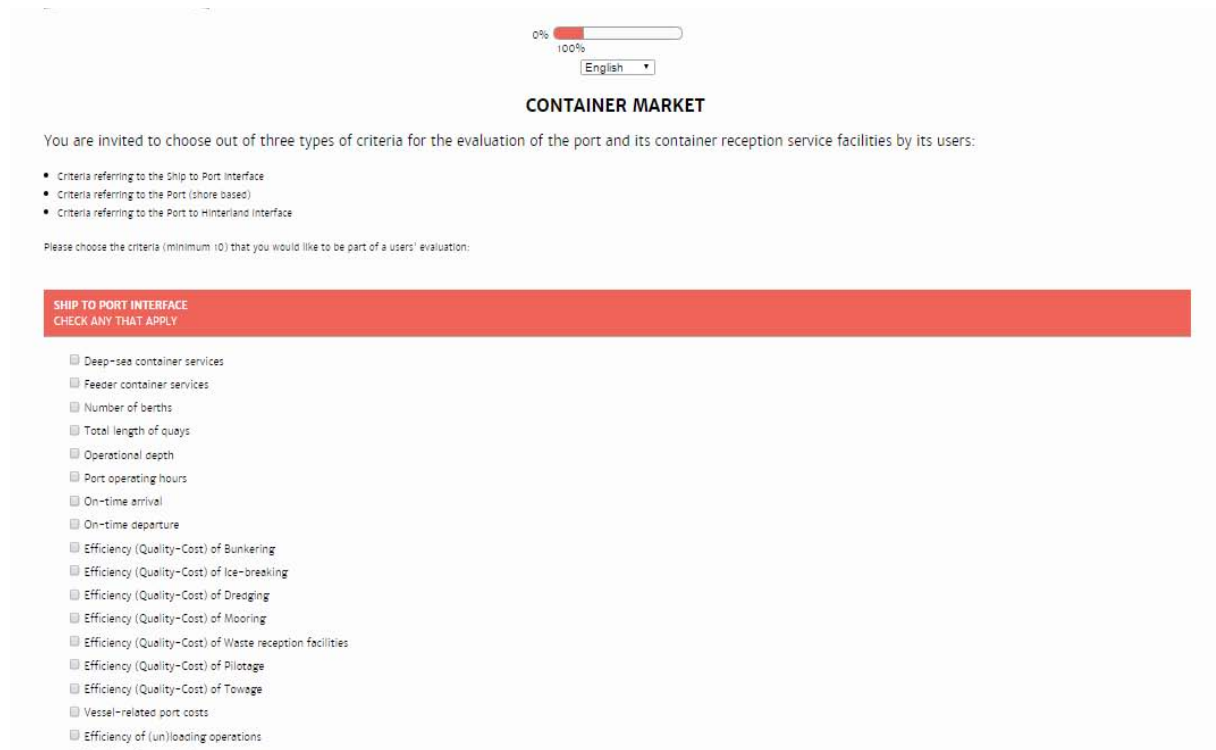


- You might add those criteria that you think they are missing.



The time required to complete the questionnaire is estimated at **about 10-20 minutes**, depending on the shipping markets that your port facilitates.

You may exit this survey and return to complete it later by clicking on the ' pause ' button at the end of the page or you can exit the survey without saving by clicking the ' X ' button at the end of the page.



0% 100%
English

CONTAINER MARKET

You are invited to choose out of three types of criteria for the evaluation of the port and its container reception service facilities by its users:

- Criteria referring to the Ship to Port Interface
- Criteria referring to the Port (shore based)
- Criteria referring to the Port to Hinterland Interface

Please choose the criteria (minimum 10) that you would like to be part of a users' evaluation:

SHIP TO PORT INTERFACE
CHECK ANY THAT APPLY

- Deep-sea container services
- Feeder container services
- Number of berths
- Total length of quays
- Operational depth
- Port operating hours
- On-time arrival
- On-time departure
- Efficiency (Quality-Cost) of Bunkering
- Efficiency (Quality-Cost) of Ice-breaking
- Efficiency (Quality-Cost) of Dredging
- Efficiency (Quality-Cost) of Mooring
- Efficiency (Quality-Cost) of Waste reception facilities
- Efficiency (Quality-Cost) of Pilotage
- Efficiency (Quality-Cost) of Towing
- Vessel-related port costs
- Efficiency of (un)loading operations

#Phase II: Measuring port users' perceptions

After the integration of your feedback during Phase I, the survey is now ready to be sent to your end users. In order to obtain robust and valuable insights, it goes without saying that the more the users that respond to the survey, the better the results.

The structure of the survey is similar to Phase I: Each port user will select the markets where he is involved. Then, each user will assess the criteria **that your port has selected in Phase I**, based on two aspects: **(a)** the importance of each criterion for them; and **(b)** the evaluation of each criterion based on their experience from your port.

#Confidentiality Matters – Your Data Remain Secure

The issue of confidentiality is of high importance to us. We wish, at this point, to assure you that PORTOPIA:

- Will keep your port data confidential, as only you will have access on them.
- All answers (provided by the port and the port users) will be aggregated prior to reporting and will not be attributable to you or your organization in any report.
- All your responses will remain anonymous and confidential.
- Any open-text responses to questions will only be used in unattributed form.

Data confidentiality in Phase II

PORTOPIA offers **two alternatives** for the distribution of the survey to your users:

Alternative 1: Port Management delegate inserts its clients' **emails** into Portopia cloud. A **customised Invitation** will be automatically produced, providing each port user **with a unique token** in order to complete the survey. The invitation is complemented with a **Cover Letter** that will be customised automatically!

Alternative 2: Port Management delegate asks Portopia for **the number of tokens needed**. Portopia generates **a unique URL for each port user**. You can copy and paste this url to your cover letters and send the emails from your offices.

#Survey Outputs to Improve Port Management

The outcome of the survey is the evaluation of your port by its users, based on criteria that you have chosen to be evaluated.

Based on the outcome, PORTOPIA project team will provide you with **a port specific report of performance!**

The outcome of the survey (Phase II) will be the evaluation of your port, based on the criteria that you have chosen.

Based on the outcome, PORTOPIA project team will be also available to provide you with a port specific report, available only to you.

The survey outcomes, along with the customized reports, **will help your port to identify possible gaps in performance, adjust strategies such as marketing and operational ones, and know the actual perceptions of your users.**

Your Port Authority will be able to log into the Portopia and decide on the three alternatives regarding the time window of the completion of the survey when sending this to their users.

Alternatives will be: 1,2,3 months, and the PA will have full control on that each time it initiates a new survey.

Survey Outputs: Demonstration [the visualisation below is an approximation]

1. Criteria selection / Market selection

You are here: Data Collection > User Perspectives

CREATE CAMPAIGN

STEP 01 SURVEY COVER STEP 02 **CRITERIA SELECTION** STEP 03 SURVEY PREVIEW

Please select the criteria to be assessed

- Ship to port interface
 - Number of berths
 - Vessel-related port costs
 - Break-bulk cargoes handling cost
- Efficiency of auxiliary services (Quality-Cost)
 - Bunkering
 - Ice-breaking
 - Dredging
- Total length of the quays
- Efficiency of (un)loading operations
- On-time departure
- Operational depth
- Number of operational cranes
- Mooring
- Waste reception facilities
- Pilotage
- Towing
- > Port
- > Port to hinterland interface

CANCEL SAVE & CLOSE BACK NEXT

You are here: Data Collection > User Perspectives

CREATE CAMPAIGN

STEP 01 SURVEY COVER STEP 02 SURVEY SELECTION STEP 03 **SAVE**

The following surveys are going to be included in the Campaign:

CONTAINER
General Container Survey - [Preview](#)

LIQUID BULK
General Liquid Bulk Survey - [Preview](#)

DRY BULK
General Dry Bulk Survey - [Preview](#)

CANCEL SAVE & CLOSE BACK NEXT

2. Monitor the progress of the survey

You are here: Data Collection > User Perspectives

USER PERCEPTION MONITORING

NEW CAMPAIGN
SURVEYS
CLOSE
CONTACTS

SURVEY NAME

SURVEY PERIOD

From / To /

MARKETS

Container

Break Bulk

Dry Bulk

RO-RO

Liquid Bulk

Cruise

FIND
CLEAN

GENERAL PERCEPTION CAMPAIGN

FROM

OUT

2014

TO

DEZ

2014

PROGRESS

3

OVERALL USER PERCEPTION

Created at: 4/02/2015

PERCEPTION CAMPAIGN

FROM

JUL

2014

TO

SET

2014

PROGRESS

70

OVERALL USER PERCEPTION

Created at: 4/10/2014

PERCEPTION CAMPAIGN

FROM

APR

2014

TO

JUN


2014

PROGRESS

140

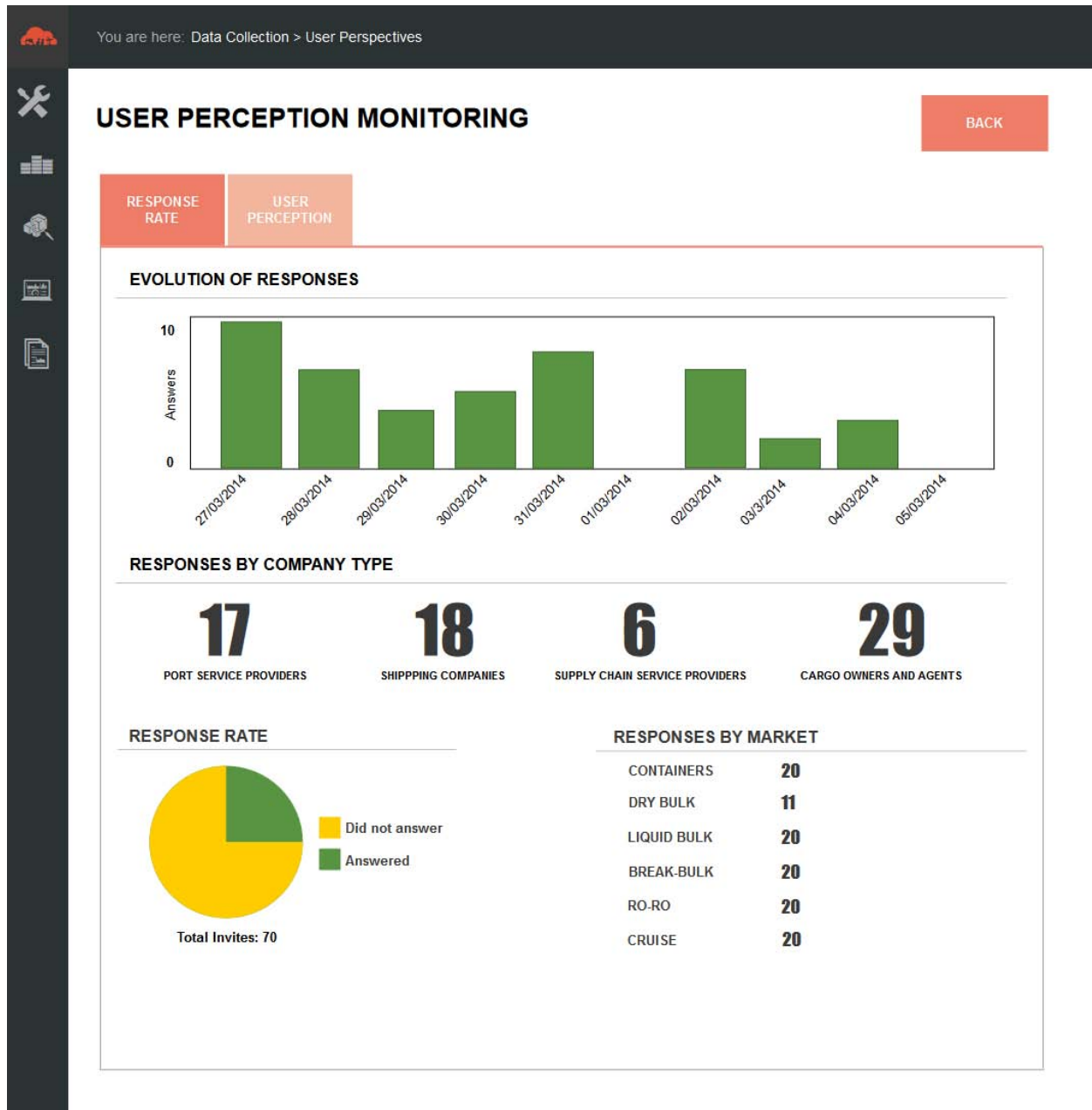
OVERALL USER PERCEPTION

Created at: 15/07/2014



71

3. Screen the response rates per market and per campaign date

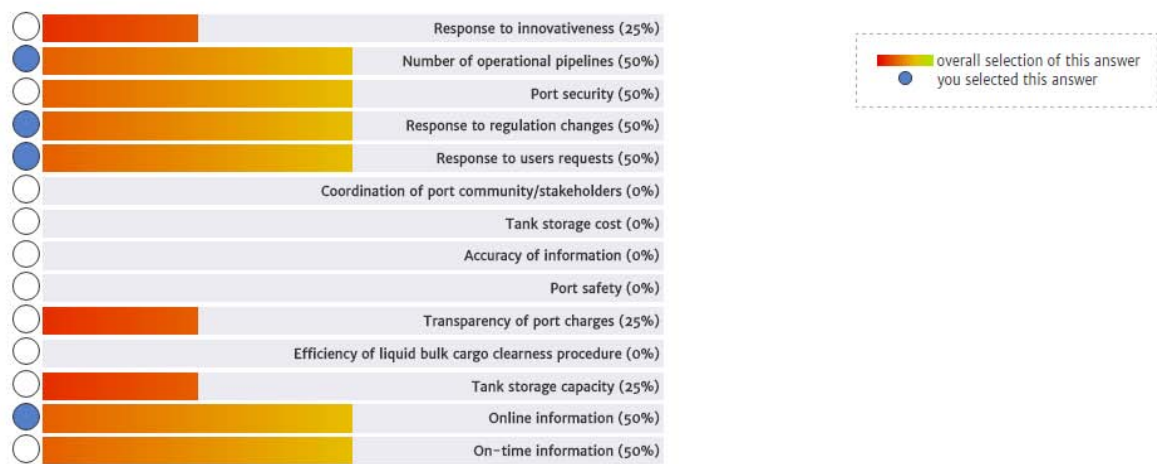


4. Analyze users' perceptions per market and per user category

USER PERCEPTIONS

Liquid Bulk Market	Container Market	Dry Bulk Market
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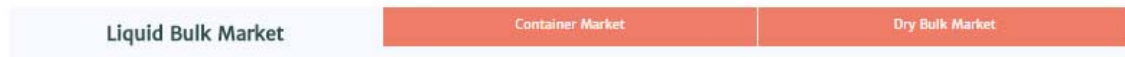
Port



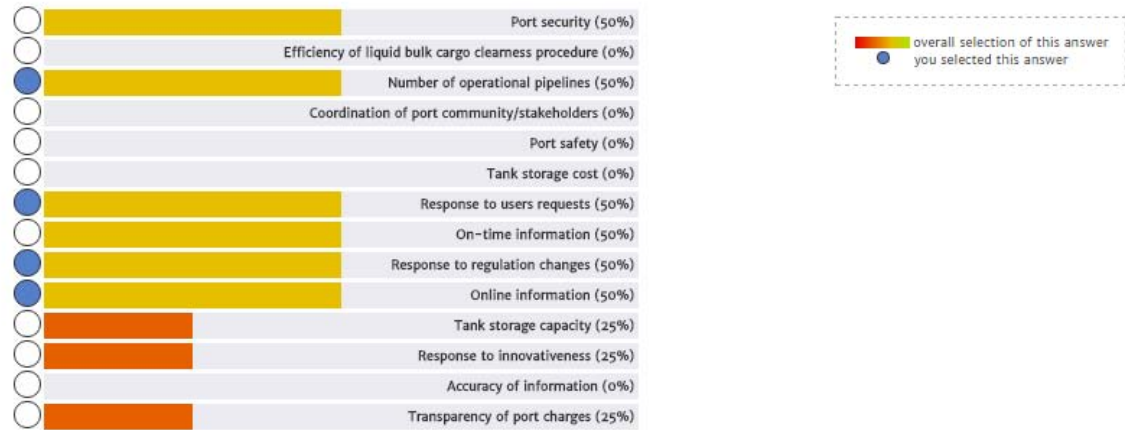
Ship to port interface



USER PERCEPTIONS



Port



Ship to port interface



-
-
-
-
-

USER PERCEPTION MONITORING

BACK

RESPONSE RATE
USER PERCEPTION

OVERALL USER PERCEPTION

●
●
●
●

USERS RATING

■ EXCELLENT
 ■ VERY GOOD
 ■ GOOD
 ■ AVERAGE
 ■ BELOW AVERAGE
 ■ POOR
 ■ VERY POOR

RATING BY MARKET

- CONTAINERS ●●●●●●●●
- DRY BULK ●●●●
- LIQUID BULK ●●●●●●●●
- BREAK-BULK ●●●●
- RO-RO ●●●●
- CRUISE ●●●●●●●●

RATING COMPANY TYPE

- PORT SERVICE PROVIDERS ●●●●
- SHIPPING COMPANIES ●●●●●●●●
- SUPPLY CHAIN SERVICE PROVIDERS ●●●●
- CARGO OWNERS AND AGENTS ●●●●●●●●

+
MORE DETAILS

5. Need of technical assistance? A special delegate will always be in touch with you!

If you experience any technical difficulty or have any question regarding the procedure when participating to the exercise, **a local contact person** will be attributed to you and will provide you with assistance in your local language!

Interested to Participate?

For more info, or to express your interest in participating in the pilot exercise, please contact the University of the Aegean Research Team that coordinates the exercise at:

Prof. Thanos Pallis
Jean Monnet Action in European Port Policy
Department of Shipping, Trade & Transport
University of the Aegean, Greece
apallis@aegean.gr or

Dr. George Vaggelas
Jean Monnet Action in European Port Policy
Department of Shipping, Trade & Transport
University of the Aegean, Greece
g.vaggelas@stt.aegean.gr

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