Re-positioning Greece as a global maritime capital

EY
Building a better working world

The shipping industry is by far the most extrovert sector of the national economy, a leading global player and a major source of income, wealth and prestige for Greece. In a challenging global environment, the Greek shipping community is heavily investing and expanding its global footprint.

In this report, we examine the role of Greece as a global shipping center and explore how this role can be strengthened in the face of increasing international competition and shifting world trade patterns from West to East. We look at what makes a country an attractive shipping center, what are the strengths and weaknesses of Greece and each of its two major ports, and what can be done to establish Greece as a maritime capital of the world. The report explores how Greece can best service the shipping industry and, in doing so, maximize the positive impact, both direct and indirect, on the economy. We argue that, although the presence of substantial local ship ownership is a major competitive advantage, it appears that it cannot lead by itself in the establishment of Greece as a global maritime capital.

The report includes an academic analysis of the structure of the Piraeus and Thessaloniki shipping clusters and a detailed analysis of Greek fleet metrics. It also draws on the insights of the shipping community, through a survey of the views of leading representatives of Greek shipping companies on the competitive advantages and disadvantages of Greece as a base for ship-management functions and of the Greek flag.

At EY, we are proud that we have over the years succeeded in standing at the forefront of the Global and Greek Shipping Industry. We have heavily invested in developing a wide range of auditing, advisory and other services for the shipping sector. This report is part of our contribution to exploring ways to address the challenges facing the industry in a continuously changing global environment.

Yannis Pierros
Partner
Automotive & Transportation Sector Leader
EY Central & Southeast Europe

Thanos Mavros
Partner
Head Supply Chain & Operations
EY Central & Southeast Europe

Contents

Executive Summary

Over the last decades, the global shipping industry has been one of the major factors of the globalization process. At the same time, the shipping industry is itself being transformed by growing international trade, market integration and the shifting balance of economic power from developed economies to rapidly growing lower wage economies. As shipping-related economic activities are also becoming more globalized, cities and states have to compete to attract international maritime companies. Traditional shipping clusters in Europe are being successfully challenged by countries and cities in the developing world, primarily in Asia.

As a result of the recent global economic turmoil, the decline in global growth rates and the drop in demand for both consumer and industrial products, accompanied by the deliveries of the new-built vessels, have had a negative impact on the shipping industry, leading to substantial tonnage overcapacity, and a dramatic decline of freight and charter rates.

The Greek shipping industry has weathered the storm and the Greek-owned fleet, with over than 5,272 vessels and a value approaching USD 86 billion, remains the largest in the world, in terms of tonnage capacity, and has enhanced its dominant position in terms of value, in many of the sector's segments. The shipping industry is by far the most extrovert sector of the Greek economy. The inflows from shipping activities account for approximately 6.5% of Greek GDP and also have a substantial indirect multiplier effect on the Greek economy through cross-industry organizations gathering all or part of the maritime subsectors.

The multiplier effect is channeled into the economy primarily through shipping clusters, consisting of all related and downstream industries and associated institutions, which advance the competitiveness and increase the value input of shipping in the economy of a country. Some of the shipping clusters, such as Singapore, were nurtured with government support, while others, like Piraeus, have developed on an ad hoc basis with limited government support, developed mainly by the shipping industry entrepreneurs.

The shipping clusters constitute a key tool in the effort of Greece to increase its attractiveness for the global shipping community and strengthen its role as a global shipping center. The Athens-Piraeus maritime center is all important in this context, with Thessaloniki playing a minor, more specialized role, primarily due to the importance of its port as a gateway to Southeast Europe and the prospects created by the privatization of the port.

Four main factors are the main contributors to the attractiveness of a city or region as a global maritime center:

- **a.** The presence of substantial local ship-ownership and ship-management activity
- **b.** Well established financial, legal and other sophisticated business services
- **c.** The existence of significant port and logistics infrastructures
- **d.** A tradition of maritime technology associated with R&D, innovation, education and availability of talent

In addition, the overall business environment, the stability of the regulatory framework, tax regime and political institutions, transparency of the legal system and the willingness of local government to support the industry are vital in securing the attractiveness of a maritime center.

Over the coming years, competition among the major global maritime centers will intensify. As the shift of global trade towards the Far East continues, it is very likely that, in the next twenty years, none of the top maritime capitals of the world will be located in Europe. London, Hamburg, Oslo and Rotterdam, each with its own strong competitive advantages, are struggling to emerge as the leading maritime center within Europe. Greece (Piraeus) will need to work hard if it is to retain or strengthen its standing as a maritime capital in the world.

Our survey among leading members of the Greek shipping community sheds light on the shipping industry's perceptions of the competitive advantages and disadvantages of Greece as a basis for ship-management functions, the attractiveness of competitive maritime centers and the ways in which the competitiveness of the Greek maritime cluster could be improved. The related issue of the perceived advantages and disadvantages of the Greek flag is also examined.

Our survey revealed that human capital, the seamanship, along with geographic location and, obviously, ship-ownership, are the main competitive advantages of Greece as a ship-management center, while the lack of a stable regulatory environment governing the cluster, lack of access to financial institutions, poor infrastructures and tax issues are the main disadvantages. As a result, more than half of the respondents would consider a potential relocation of their ship-management function outside Greece, with Singapore, London and Dubai identified as the most attractive alternative destinations. Three out of four respondents singled out Singapore as the likeliest leading maritime center within the next ten years. Cyprus is also emerging as a close by to Greece, competitive maritime cluster.

In spite of the perceived disadvantages of Piraeus and the growing attractiveness of competing maritime centers, the Greek shipping community remains confident about the role of Greece as maritime center in the coming years and believes that its enhancement would strengthen their business. Our survey, and the in-depth analysis of the maritime clusters of Piraeus and Thessaloniki, that was performed with the contribution of Professors A.A. Pallis and G.K. Vaggelas, highlights four main areas where concerted effort could potentially improve the competitiveness of Greece as a whole, as a maritime center.

1. **Education:** Marine and maritime educational institutions need to be strengthened, while young Greeks need to be encouraged to consider the option of a career in the shipping industry.
2. **Regulation:** A more business-friendly regulatory environment which will facilitate establishing and operating a shipping-related business in Greece is urgently needed.
3. **Infrastructures** need to be upgraded in order to improve the ports' accessibility and connectivity.
4. **A closer coordination** of private sector initiatives aimed at establishing a competitive Greek shipping cluster will also help in promoting its image globally.

1 Clusters' Overview

A cluster of economic activities is the population of geographically concentrated and mutually related business units, associations and public (-private) organizations centred around a distinctive economic specialization. Clustering is a form of formal, or even informal, cooperation between companies operating in the same or in related markets.

The key reasons leading to the formation of clusters include:

- An increase of the added value produced by the business networks developed by the involved business community
- The effective management of issues that might be resolved via collective actions, an illustrative example being the marketing-promotion of the products or services produced by the entities operating within the cluster
- The formation of a comprehensive business community able to provide holistic solutions-products-services to its clients/users
- An increase of the attractiveness of the specific area as a place to further develop business activities with reference to the particular sector covered by the cluster

With shipping being a global industry, the benefits of clustering allow regions to attract shipping and shipping-related activities. This is why shipping clusters are evident worldwide. The shipping cluster is a geographically proximate group of shipping companies, related firms, and associated institutions linked by commonalities and complementarities, benefiting by the features developed in all industrial clusters.

With modern shipping being part of broader maritime transportation supply chains, several types of clusters related with the shipping industry have emerged. Some develop having at their core a shipping financial center (City in London), others a more generic financial center (New York), while others evolved around a seaport (Rotterdam and Singapore).

A lot has been said about the Greek shipping cluster – yet, its precise nature remains to be identified. As this report reveals, in the Greek case, a shipping cluster seems to have developed in the Attica region, taking advantage of the size of the Greek-controlled merchant fleet. Evidently, this is a shipping cluster in essence, with the existence of the port of Piraeus playing a crucial role in enriching the business composition and increasing the attractiveness of the cluster.

In the case of the most important shipping and shipping-related clusters worldwide, a type of formal or informal cooperation between the business communities does exist. For example, in Rotterdam the "Dutch Maritime Network", a private initiative established in June 1997, legally administers the shipping cluster. Directed by an independent board of maritime industry leaders, this initiative has the financial support of trade organizations and the Dutch government. The same also applies to the UK: a non-for-profit organization named "Maritime London Cluster" (MLC) promotes clustering activities and London as a maritime center.

In the Greek case, the shipping cluster is not associated with formal mechanisms, whereas some private informal governance structures and cooperation initiatives between companies standing at the periphery of the cluster have started to emerge only recently.

Worldwide clusters jockey to upgrade the level of attractiveness and competitiveness, developing relevant policy or strategy measures. To name a few, a simplified business environment, tax incentives, a stable business framework, are among the tools that clusters are using in order to attract new companies and businesses in the respective cluster.

On the contrary, and despite the fact that the Greek cluster relies on a significant number of shipping companies, relevant policy measures are still found wanted. Meanwhile, competition from other clusters that target to attract the Greek shipping companies increases. A most recent example are the consistent efforts of Cyprus to upgrade its very own shipping cluster by adopting specific measures, tailored to specific needs and weaknesses.

In terms of organizational structures, governance and cooperation schemes, the Greek shipping cluster stands at the crossroads of a premature phase. The Hellenic Chamber of Shipping, the Union of Greek ship-owners and the Piraeus Chamber of Commerce & Industry in early 2017 launched an initiative to identify and monitor the Greek shipping cluster. Also, some companies offering shipping-related services and products have recently developed "Hellenic Marine Equipment Manufacturers and Exporters" (HEMEXPO) Association, a collaborative initiative towards clustering of their activities.

Given the fact that the core of the shipping cluster in Greece maintains by default some unique competitive advantages – the number of the shipping companies and the quality of the Greek-owned ones that have led par excellence worldwide shipping – and consists of a comprehensive nexus of shipping-related activities and companies, the potential of the Greek shipping cluster is indisputable and the calls for its upgrade are becoming more frequent. Identifying its composition and developing a meaningful collaborative strategy, are the conditions for generating added value by its presence and further growth.

2 Global Shipping trends

During the past two decades, against a background of growing globalization, world GDP increased by 73% in real terms. Over the same period, world seaborne trade increased by 112%, with the value of world trade carried by sea today accounting for 90% of the total, according to the IMO.

The shipping industry has been one of the major factors determining the pace of globalization. Operational and technological developments in the industry, which have dramatically reduced transportation costs, have been a major driver of market integration and the growth of international trade. International containerized trade has trebled since 1995, prompting some analysts to argue that containerization has been more important for globalization than freer trade. At the same time, the shipping industry has also been hugely influenced by growing international trade and market integration. The shifting balance of economic power as the advanced economies' share of world GDP dropped from 80% to 60%, and that of developing economies grew from 20% to 40%, has also left its mark on the shipping industry. In the 1970s and 80s, developing economies mainly exported raw materials and imported high-value but low-volume manufactured goods. Today, developing economies are part of a globalized production network, importing raw materials and exporting an increasing share of finished products. Maritime trade is today part of this globalized production network, involving more trade in intermediate goods, more intra-company trade, and more door-to-door services.

Against the background of this thriving market, the world fleet grew in terms of number of vessels, as well as gross tonnage. The growth of trade, the need to address new trade patterns and logistical needs, combined with the pursuit of innovation, led to the development of new size categories and a trend towards bigger ships, thus to a drastic increase in new orders.

These megatrends were abruptly interrupted by the economic downturn of 2008-2009 and the subsequent decline in global growth rates and the drop in demand for both consumer and industrial products. The ensuing surge in new deliveries resulted in a dramatic correction of freight and charter rates and asset values, as the market entered a new era of tonnage oversupply, affecting all major sectors.

The dry bulk sector had experienced a thriving market between 2007 and 2008, in the aftermath of the Chinese economic boom. Today, any potential growth of global seaborne trade for dry bulk cargoes (iron, ore, coal, grain etc.) is likely to be more than offset by the rise in the world fleet capacity, as the orderbook rate at 23% of the existing fleet remains alarmingly high. This will result in prolonging the present overcapacity problem and the ensuing depressed market conditions.

The tanker sector has demonstrated a relative stability. On the supply side, the world tanker fleet has experienced a less dramatic surge in DWT capacity compared to the dry bulk fleet. On the demand side, the growing middle class, particularly in the emerging economies of Asia and Africa, will have a positive impact on energy needs. The drop in oil prices, if sustained, will further strengthen demand and prompt electricity producers to convert coal or gas-fired power plants to oil. Moreover, the shift in refinery capacity towards the Middle East and Far East is expected to generate new transport patterns and increase ton-mile demand for product tankers.

Companies operating LNG fleets globally seem well positioned to benefit from the positive long-term sector fundamentals.

Container trade is increasingly relying on exports from the Far East, with the Far East-North America and the Far East-Europe itineraries today dominating container transport. For the near future, we can expect that the seaborne container trade will increase further, with the Far East retaining its dominant position.

The shipping industry has responded to the prolonged downturn primarily through slow steaming, vessel idling and cost-cutting. As the prospects of a sustained recovery remain distant, the trend has also been towards industry consolidation operationally, through alliances, and financially, through mergers and acquisitions.

Maritime transport: a globalised industry

Against this background, the shipping industry is becoming more integrated and globalised, while, at the same time, shipping-related economic activities are increasingly concentrated in specific countries and geographical regions around the globe. Traditional players who had dominated the industry for decades can no more take their leading positions for granted, as they are being challenged by new entrants from developing, low-wage economies enjoying significant competitive and locational advantages.

Nationals of Greece and Japan continue to own just below 30% of the global fleet. However, more than 40% of vessels are registered in Panama, Liberia and the Marshall Islands. Korea and China account for approximately 70% of shipbuilding, while more than 90% of scrapping takes place in India, Bangladesh, China and Pakistan. Operation is largely conducted from Denmark and Switzerland[1], while the UK and Scandinavian countries are the main providers of financial and other services. Hong Kong, the Netherlands, Singapore, and the UAE[1] account for close to 30% of container terminal operators. Finally, a significant share of seafarers today originate from the Philippines and Indonesia.

It is well documented that the shipping industry has a significant impact on the economies of host countries. Apart from the direct impact of freight services etc., this includes:

- An indirect impact from port services, shipping-related financial, legal and insurance services, shipbuilding and repairs, etc.
- An induced impact from spending on consumer goods, recreation services, real estate, etc.

This leads to a substantial multiplier effect for national or regional economies. It is estimated that for the European Union, for every €1 million the shipping industry contributes to GDP itself, it creates another €1.6 million elsewhere in the economy, while, for every direct job it creates, another 2.8 are created elsewhere in the EU economy. For Greece specifically, an in-depth study published from a credible source, estimated that attracting more ship-management activities to Greece could create an added value of €25.9 billion and create up to 550.000 jobs[2].

It comes as no surprise, therefore, that countries and individual cities are competing to attract shipping companies and emerge as the leading maritime clusters of the world. As companies are becoming more mobile and increasingly prepared to split up their value chains and move activities to the most attractive locations, this competition is intensifying.

1. Jan Hoffmann (2016), "10 key long term trends in the maritime business", Genova/Paris
2. Foundation for Economic and Industrial Research (2013), "The Contribution of Ocean-going Shipping to the Greek Economy study"

The share of the world's population living in cities now exceeds 50% and will continue to rise, while virtually all economic growth in the coming decades will come from urban areas. Consequently, in this race to secure a place among the leading maritime clusters of the world, it is increasingly cities rather than states that are competing. This is a race to attract shipping companies, but even more so to retain and attract shipping activities and create autonomous and complete shipping clusters. It involves building infrastructures, attracting specialised knowledge-based services and creating a business-friendly tax framework and regulatory environment.

The winners of the future will be the ones that will be able to attract:

- Science and education
- Owners and headquarters
- R&D
- Leading maritime finance and law services

Each of the leading maritime clusters today draws its strength from a competitive advantage in one or more of the above areas, though, in a rapidly changing global environment, very few can be confident of retaining those competitive advantages.

Greece and Piraeus specifically, is home to a large ship-owning community with a historical tradition. Large fleets are also based in Tokyo, Hamburg, Oslo and, to a lesser extent, Singapore, which also hosts a large number of ship-management companies.

London, New York and Oslo have traditionally been considered the leading maritime financial cities, with New York hosting the most important maritime stock exchange. The role of London is further strengthened by the predominance of English law in the industry and its strong marine insurance services. All three, however, are being challenged by Singapore and Shanghai, especially after the strengthening of the latter's stock exchange.

Singapore is by far the most important cluster in terms of port services and logistics, though its predominance in Southeast Asia is being challenged by Shanghai because of the dramatic rise of Chinese exports. Rotterdam is the largest port in Europe, while Hamburg is the gateway of the largest European economy and leading exporter. Dubai is emerging as a major regional logistics hub. The privatisation of the port of Piraeus with the involvement of Cosco, as well as the recent privatisation of the port of Thessaloniki, raise hopes that the country's role as a gateway for Southeast Europe may be strengthened in the coming years.

Maritime technology encompasses a series of criteria on the basis of which different cities hold leading positions. Hamburg and Oslo share a tradition in maritime R&D and maritime equipment. The importance of Oslo has been boosted over the past decades by its strong offshore sector. It also hosts major shipbuilding industries, as do Busan and Tokyo in Asia. London, Tokyo, Shanghai and Oslo are home to the world's leading classification societies. Two of Athens' traditional competitive advantages in the maritime technology category have largely receded over the past decades: its once strong shipbuilding industry has collapsed, while there are major concerns that maritime education is no longer able to provide the industry with the necessary human capital, let alone attract foreign talent.

In addition to these four largely objective and measurable sets of criteria, the attractiveness of maritime clusters is greatly influenced by their overall business environment, the stability of the regulatory framework, the tax regime and political institutions, the transparency of the legal system and the willingness of local government to support the industry. These are areas on which governments will need increasingly to focus and are likely to determine the winners among today's leading maritime clusters.

3 Greek shipping metrics

Despite the many domestic and market challenges facing the Greek ship-owning community, Greece has continued to strengthen its position as the largest ship-owning nation in recent years. Greek owners continue to lead the table of ship-owning nations with 202,6 m.GT, accounting for approximately 16% of the global market share, followed by Japan (13%), China (11%) and Germany (7%), as indicated in the table below:

Top 10 Owned fleets by nationality[1]

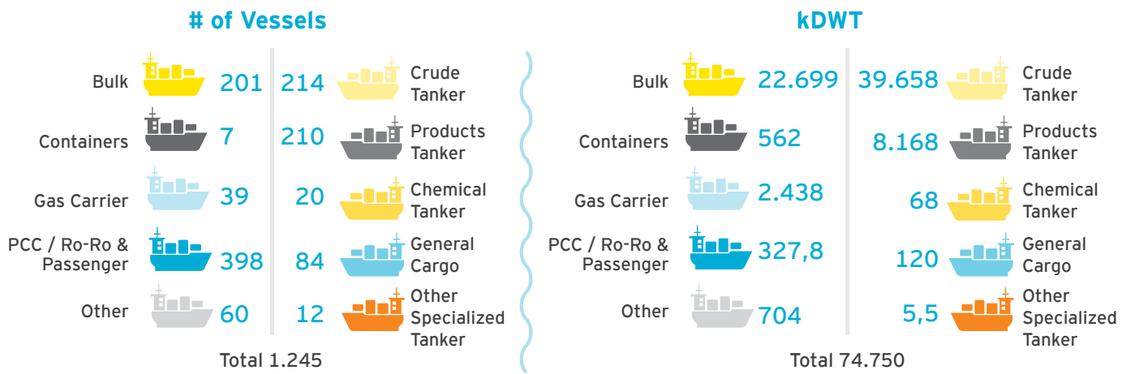
Country	Current fleet, number							
	Oil Tanker	Bulk-carrier	Gen. Cargo	Specia-lised	Non Cargo	Total	m.GT	Sbn.
1. Greece	1.210	2.109	743	447	663	5.272	202,6	85,5
2. Japan	950	1.928	2.476	1.516	1.734	8.604	163,1	89,0
3. China P.R.	712	2.058	1.933	658	1.614	6.975	139,2	77,9
4. Germany	235	444	2.300	224	434	3.673	86,6	37,2
5. U.S.	296	245	343	161	4.183	5.228	63,4	116,7
6. S. Corea	337	418	719	570	802	2.846	55,5	22,7
7. Norway	207	313	519	602	1.218	2.859	54,3	65,2
8. Singapore	749	232	492	374	1.967	3.814	42,0	35,1
9. Italy	269	201	422	142	972	2.006	40,1	29,7
10. Taiwan	110	381	407	89	169	1.156	31,1	10,7

1. Clarksons World Fleet Monitor, January 2017

Greek Flag Fleet – Current Status

Greek shipping remains an industry of utter importance, while playing a critical role in the sustenance of the Greek economy during the economic crisis, due to the continuous support of Greek owners in flying Greek flags, the creation of added value for numerous productive sectors, as well as the generation of employment on vessels, shipping offices and shipping-related businesses.

Overall Greek Flag Statistics

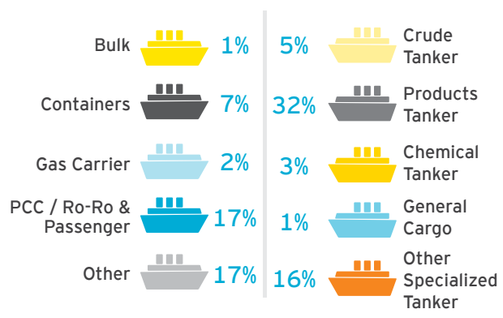


Type of vessel: Source, Clarksons International Database, February 2017

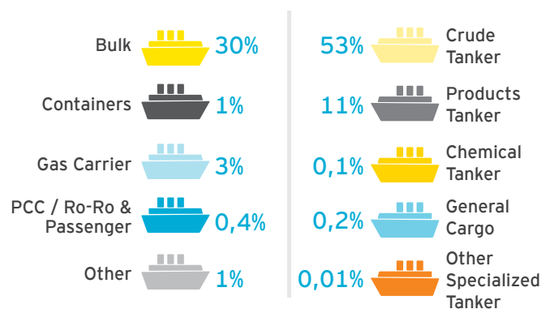
The category "Other" can be further analyzed in the following vessel categories:	Number of vessels	DWT (Ktns)
AHTS / PSV / Utility Support	12	6,7
Construction Vessels/Platforms	1	2,9
Cruise	7	0,8
Logistics Units	2	313
Multipurpose	1	3,1
Offshore Drilling / Production / Support Units	27	331
Rescue & Salvage Vessels	2	1,5
Survey Units	4	0,1

- The dominance of tankers and bulkers in the Greek fleet is evident, with tankers of all types making up 40% of Greek vessel flags, as well as 64% of the total DWT; while bulkers amount to 16% and 30% respectively.
- The percentage of bulkers registered under Greek flag accounts only for around 10,5% of the total bulker fleet owned by Greek ship-owners.

of Vessels per type under Greek flag



DWT per type under Greek flag



In terms of total number of vessels, Greek fleet flag is ranked 18th on a global scale, while it ranks 9th in terms of DWT. The Panamanian flag still remains the largest globally in both numerical and tonnage terms[1].

Flag	Total DWT (000s)	Rank
Panama	355.155	1
Marshall Islands	231.293	2
Liberia	224.323	3
Hong Kong	176.560	4
Singapore	130.434	5
Malta	103.107	6
Bahamas	102.620	7
Peoples' Republic of China	81.644	8
Greece	**74.750**	**9**
Japan	36.702	10

Flag	Total Vessels	Rank
Panama	8.521	1
Indonesia	4.489	2
Peoples' Republic of China	4.435	3
Japan	4.336	4
Singapore	3.630	5
Liberia	3.399	6
United States	2.784	7
Hong Kong	2.564	8
Malta	2.221	9
Marshall Islands	2.204	10
Greece	**1.245**	**18**

More information and breakdown analysis of the ranking of the Greek flag fleet per vessel category (based on both DWT and number of vessels) can be found in the Appendix 3.

1. Clarksons International Database, February 2017

4 Clusters' background

Piraeus and Thessaloniki

Why are shipping clusters so important?

A cluster of economic activities is the population of geographically-concentrated and mutually-related business units, associations and public (-private) organizations centered around a distinctive economic specialization. As a unit of analysis, it provides a concrete and comprehensive approach regarding the performance of firms that operate in it, as well as of their potential:

- Defining the number/volume/population of firms that are located in a specific region and have a common reference point regarding business scope and operation, allows mapping a process or an economic activity and detailing the participating companies and stakeholders
- Analysing a cluster - the core of which is the common base activity among the various players in the market (in our case, shipping companies) - provides added value to an economy: it allows a better coordination of activities, or the launch of collective actions and initiatives that advance the prospects of all business entities linked with the cluster
- Taking into account the interactions between the various firms operating in the same market or region, provides the opportunity for developing policies or regulations with a wider scope and applicability

A shipping cluster is a geographical concentration of companies dealing with shipping and shipping-related industries, sharing common challenges, opportunities and threats. Shipping and ship-management companies are key elements of a shipping cluster. For Greece specifically, they are the core elements comprising the cluster. These companies are joined by suppliers of inputs, components, financing, machinery and services; they are linked with firms in related and downstream industries and specialised port and maritime infrastructure providers; in many cases they are supported by government or local authorities; they are facilitated by institutions providing marine and maritime education, specialised research, development and innovation (RDI), technical support and training, and quality standards certification bodies.

The development of shipping and shipping-related economic activities in "clusters" has emerged to a mainstream model of advancing the competitiveness and the consequent value input of shipping in the economy of a country. The presence of a shipping cluster provides a broad range of benefits to the local, and broader, economy. These benefits span to include the presence and employment of specialized labour, targeted training, connections with R&D institutes, and strategic cooperation with interrelated maritime activities.

Even in a seamless economy, the presence of an advanced cluster provides incentives for shipping companies to select the specific geographical region as the best location for operating and developing their activities.

Maritime firms' concentration improves the quality of the microeconomic environment for shipping, whereas it acts as job generator. All related corporate entities benefit by the easiness of collaboration and smooth networks development. The latter facilitates innovation and the sophistication of operations and strategy, increasing the performance – and magnitude - of the maritime industry.

Governance of the shipping cluster

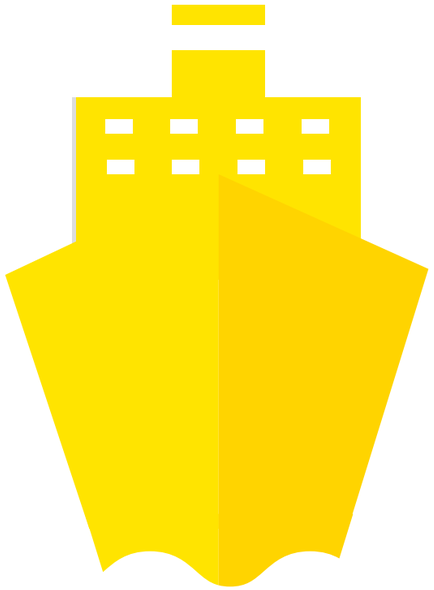
With shipping clusters being so important for shipping companies and for the local economy, it is important to secure the effective management of a shipping cluster. Cluster management can coordinate business units and set up common practices and policies through a defined and widely accepted strategy.

Governance influences the structure of the cluster and vice versa. Whether applied via informal networks and/or via formal institutions, this is a tool to influence how business units inside the cluster interact so as to extract as many benefits as possible. Business units that are part of an existing cluster, need to be aware of its existence in order to develop those initiatives that would allow them to multiply and extract all related benefits.

Informal and/or formal cluster governance mechanisms based on business initiatives are not rare. The Dutch maritime cluster provides a good example of how the clustering of shipping and maritime businesses might develop and contribute significantly to the economy of a country. This is one of the largest and most advanced clusters and is mostly comprised of shipbuilding and ship-operation related firms. The concentration of activities that are strongly related with them, such as port services, maritime services, and ship suppliers, are also key components of the Dutch maritime cluster.

An example of good cluster governance is that of the Maritime London Cluster (MLC) in the UK. Founded in 2000, with the support and assistance of the Corporation of the City of London, MLC is a formal cluster governance structure aiming at maintaining and enhancing London's leading maritime position, promoting the UK maritime services sector, and attracting new maritime-related business to London and the UK.

Attracted by such positive examples and realising the potential benefits of shipping cluster development, several countries attempt to develop shipping or maritime clusters. One such case is Cyprus, where neither formal nor informal cluster governance framework exists, despite the fact that the country has a flourishing shipping and maritime industry, and despite the presence of a major port in the Southeast Mediterranean (Limassol). Conversely, the maritime cluster in Cyprus remains fragmented, with limited initiatives towards collective actions, promoting it or extracting benefits of its presence. It is for this reason that the Cyprus government has recently decided to promote initiatives that would allow the shipping cluster to develop.



Identifying shipping clusters in Greece

This report applied a four steps approach in order to identify and record the configurations in terms of structure and geographical distribution of the two major shipping clusters in Greece: the shipping cluster of Piraeus and the shipping cluster of Thessaloniki, respectively.

Selecting shipping as the economic sector to be analysed was the first step. This is an industry with strong presence and long tradition in Greece. Shipping holds a significant part of the country's GDP, maintaining tens of thousands of jobs. Shipping-related activities, contribute further at micro, meso and macro level.

The second step was to identify the economic activities that take place in relation to the shipping sector. The European Commission listing of the important and traditional maritime sectors in Europe[1] provided the categorization of the relevant maritime sectors that was adopted and applied in the Greek case.

Thirdly, we selected the regions for examination. These are the Piraeus and Athens region and Thessaloniki (former Thessaloniki prefecture region).

The Piraeus and Athens region is the cluster of the Greek shipping industry. The majority of shipping and shipping-related activities are concentrated in Piraeus, which is the biggest Greek port and one of the biggest in the Mediterranean Sea. Despite Piraeus' importance, or perhaps because of it, over the last decade shipping and shipping-related companies relocated to other areas in the Attica region, leading to a necessity for expanding the analysis beyond Piraeus.

Thessaloniki is the second biggest Greek city, hosting the second biggest Greek port. The region is an important cluster of shipping and shipping-related activities for North Greece as well as for the Southern Balkan countries.

The final step has been the identification of the cluster population and its breakdown per activity and per number of firms. Towards this end, the report benefited from the database provided by Greek Shipping Publications[2], a most comprehensive listing of shipping and shipping-related companies in Greece. For example, data for shipping and shipping-related companies were also extracted from the website of the Hellenic Chamber of Shipping, as well as from the members' database of Piraeus Chamber of Commerce and Industry.

Greek Shipping Cluster: A Database

The evaluation and recording of sources produced a preliminary database containing a total of 4.300 maritime and shipping-related companies, located all over the country.

The first filtering led to the exclusion of companies and industries that were out of the scope of the analysis. Two categories of criteria were used for this database refinement. The first category was locational; only companies established within the geographical area of the Attica region were selected for the formation of the Piraeus shipping cluster, while only companies belonging to the geographical area of Thessaloniki were selected for the formation of the Thessaloniki shipping cluster. The second one was industry relativity: only shipping and shipping-related companies were considered.

A total of 3.391 maritime and shipping-related companies were identified as part of one of the two shipping clusters in question.

A further fine-tuning enabled to identify the type of companies that are active within the shipping cluster in Greece. This exercise concluded with the formation of a total of 28 main categories and several sub-categories that allow depicting in detail the structure of each shipping cluster under examination.

1. European Commission (2009), DG Fisheries and Maritime Affairs studies: "Employment trends in all sectors related to the sea or using sea resources" and "Employment in the fisheries sector", Brussels.
2. Greek Shipping Publications (2016), "Marine online database". Available at: http://greekshipping.gr/onlinedatabase. Accessed 25th of November 2016.

Categorisation of companies belonging to the shipping cluster

1. Agents

2. Bunker Services
- ✓Bunker Suppliers
- ✓Bunker Surveyors

3. Chambers

4. Crew Manning

5. Environment, Safety, Security
- ✓Maritime Security
- ✓Environment Protection
- ✓Systems Waste Management

6. Finance, Banking, Accounting
- ✓Accountants
- ✓Banks
- ✓Finance/ Investments

7. Forwarding & Marine Logistics
- ✓Forwarding / Transport Agents/ Marine Logistics

8. ICT & Telecommuni-cations
- ✓Mar. Training / Opticoac. Systems
- ✓Marine/Maritime Information Services
- ✓Marine Tele-communications

9. Legal Services

10. Marine Engineering & Naval Architects
- ✓Naval Architects
- ✓Marine Engineering

11. Marine Insurance
- ✓Average Adjusters
- ✓Marine Insurance Underwriters

12. Marine - maritime Consultants

13. Maritime Education
- ✓Maritime Education, Institutes, Universities

14. Maritime Organizations, Institutions, Ministries, Representations

15. Other Marine Services
- ✓General Marines Enterprises
- ✓Stevedores

16. P&I Club Representatives

17. Press & Publications
- ✓Publishers
- ✓Newspapers

18. Ship Registration & Classification
- ✓Classification Societies & Ships Registration

19. Shipbrokers, Charterers

20. Shipbuilding & Breaking
- ✓Shipbreakers
- ✓Shipbuilders, Repairers

21. Ship-managers & Operators

22. Spare Parts & Marine Equipment
- ✓Fire Fighting Equipment
- ✓Marine Engines
- ✓Marine Spare Parts
- ✓Marine Equipment Manufacturers
- ✓Marine Chemicals
- ✓Marine Oils - Lubricants
- ✓Marine Paints - Coatings
- ✓Shipsuppliers - Spare Parts
- ✓Turbochargers
- ✓Marine Electronics / Navig. Aids
- ✓Refrigeration

23. Technical Services
- ✓Electrical Works
- ✓Insulations
- ✓Fumigations
- ✓Pipe Filters
- ✓Sand Blasting
- ✓Ship Cleaning
- ✓Underwater Works/ Diving
- ✓Marine Surveyors
- ✓Technical Services
- ✓Marine Inspections

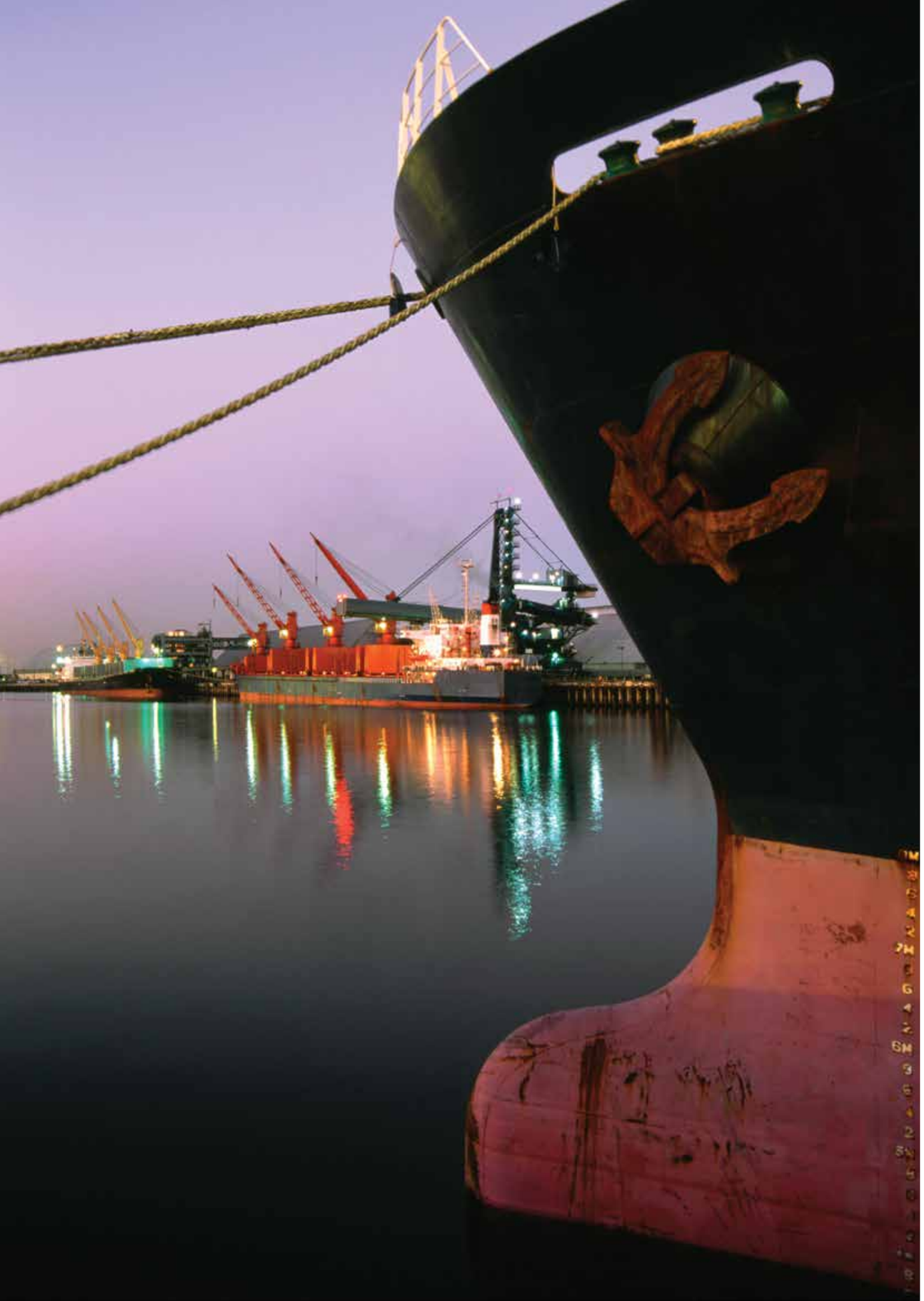
24. Towing - Salvage

25. Trade Related Services
- ✓Trading Companies
- ✓Importers-Exporters

26. Travel Agents

27. Unions, Associations, Clubs

28. Yachts



Piraeus and Thessaloniki shipping clusters in aggregate

The constructed and refined database revealed the aggregate configurations detailed in the tables and schemes that follow. The most dominant industry in both clusters, in other words the industry segment with the highest cluster share is Group (21)- Ship-managers & Operators, that counts 998 companies in total, followed by the Group (22) Spare Parts & Marine Equipment, that counts 624 companies in total.

Index Classification (short)	Number of companies
1. Agents	302
2. Bunker Services	64
3. Chambers	2
4. Crew Manning	24
5. Environment/Safety/Security	31
6. Finance/Banking/Accounting	27
7. Forwarding & Marine Logistics	63
8. ICT & Telecommunications	33
9. Lawyers & Solicitors	117
10. Marine Engineering & Naval Architects	40
11. Marine Insurance	97
12. Marine/Maritime Consultants	96
13. Maritime Education	25
14. Maritime Organisations/ Institutions/ Ministries/ Representations	47
15. Other Marine Services	26
16. P&I Club Representatives	21
17. Press & Publications	16
18. Ship Registration & Classification	37
19. Shipbrokers/ Charterers	221
20. Shipbuilding and Breaking	194
21. Ship-managers & Operators	998
22. Spare Parts & Marine Equipment	624
23. Technical Services	123
24. Towing - Salvage	20
25. Trade-Related Services	38
26. Travel Agents	33
27. Unions/Associations/Clubs	55
28. Yachts	17
TOTAL	**3.391**

Source: Own elaboration

The Piraeus Shipping Cluster

The Piraeus shipping cluster expands across the wider geographical area of the Attica region, having a geographical core around the port of Piraeus. Being the home-city of the Greek shipping industry, the port is playing a vital role for the formation of the shipping cluster. This is a shipping cluster, which has shipping companies as its core and an international major port playing a significant secondary role for its development.

The Poles of the Cluster: Shipping Companies

The main element stimulating the Piraeus maritime cluster and the core of the cluster are the shipping companies operating in the Athens and Piraeus region. The strong presence of shipping companies, marked by their competitiveness, and their dominant position of Greek-owned fleet in the global maritime world, along with the international port of Piraeus, acting as a multiplier of the cluster, are the cornerstones of the shipping cluster, both in terms of location and economic activities. The existence of shipping and shipping-related companies allow the presence of a comprehensive shipping cluster.

The size and the structures of the shipping companies have been extensively detailed in previous section of the report.

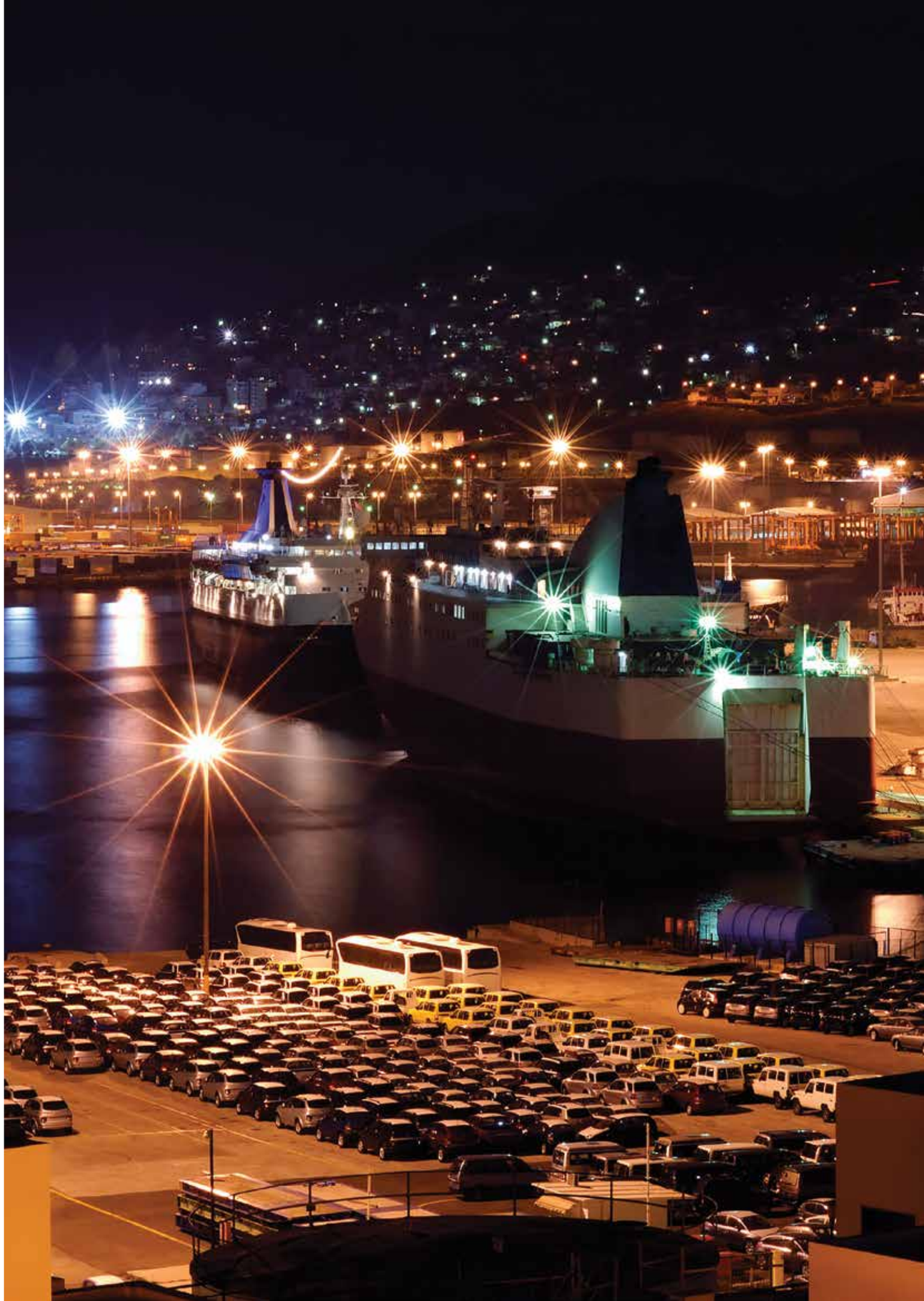
The Poles of the Cluster: Piraeus port

Due to its importance in trade facilitation, as well as the port's value as a transhipment hub in the Mediterranean Sea for container trade, the port of Piraeus is one of the two poles of the Piraeus shipping cluster.

This is one of the biggest ports in Europe regarding cargo throughput and passenger movements. In 2015, Piraeus port was the 8th top European container port[1], among the top 50 ports globally in terms of containers (holding the 45th place)[2], and the eighth most popular Mediterranean cruise port[3]. The port of Piraeus dominates the Greek market, as regards container throughput and vehicle traffic, and is the backbone of the Greek coastal system.

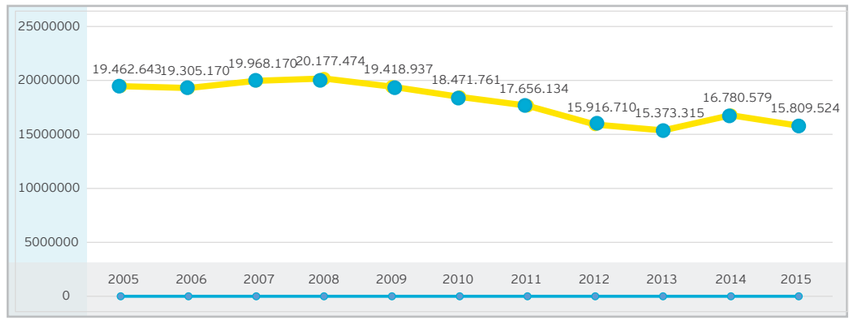
Over the last decade, the port of Piraeus has undergone significant reform changes. In 2009, Piraeus Port Authority S.A. privatised the right to operate the Pier II container terminal of the port to Piraeus Container Terminal (PCT) S.A., a subsidiary company of COSCO Pacific. Since then, the provision of process reorganization services and significant investments by PCT S.A. to upgrade Pier II terminal - and construct the Pier III terminal - have contributed to an impressive market growth. Within the six years period 2010-2015, the private terminal operator managed to increase the capacity of the terminal Pier II and attract significant container volumes, serving mostly the transhipment market[4]. Piraeus port "climbed" 49 positions in the world ranking of the biggest container ports in terms of number of TEUs handled, reaching in 2015 a position among the 50 biggest container ports (44th) and emerging as the fourth biggest Mediterranean port – following only Valencia, Algeciras and Port Said. In August 2016, the Greek State sold the majority of the shares of Piraeus Port Authority S.A. (51% + 16% in the next five years) to a private company, the China COSCO Shipping Corporation Limited.

The diagrams[5] in the next page detail the significant volume of container and passenger traffic for the major markets that Piraeus port facilitated in recent years. In 2015, the port of Piraeus facilitated more than 3.3 million TEUs handled at the port's container terminals, more than 16.8 million passengers used the coastal terminal of the port, and more than 1 million cruise passenger movements were recorded at the cruise port.

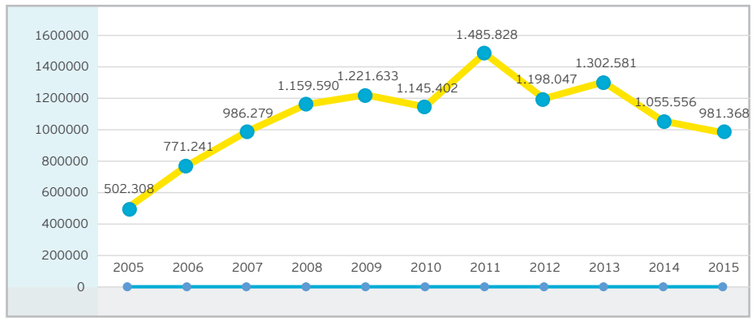


1. http://www.porteconomics.eu/2017/02/16/portgraphic-top-15-container-ports-in-europe-in-2016-has-teu-growth-resumed/
2. http://www.worldshipping.org/about-the-industry/global-trade/top-50-world-container-ports.
3. MedCruise, (2016). "Cruise Activities in MedCruise ports: Statistics 2015", Piraeus, Greece.
4. Vaggelas G.K. and Pallis A.A. (2016). "GREPORT 2016: Report on Greek Ports", P&S Advisory, Piraeus
5. For a detailed analysis of the throughput volumes of Piraeus port see: Vaggelas G.K. and Pallis A.A. (2016). "GREPORT 2016: Report on Greek Ports", P&S Advisory, Piraeus

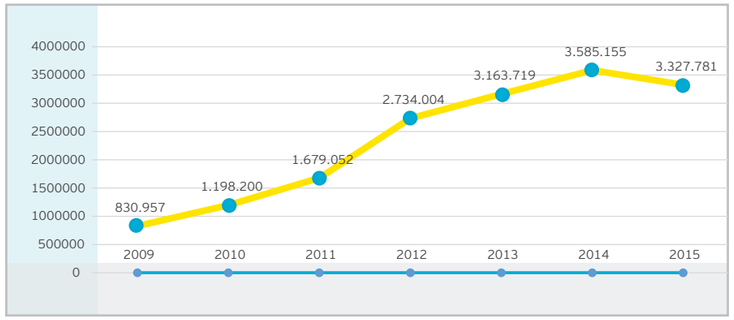
Coastal Shipping (passengers)



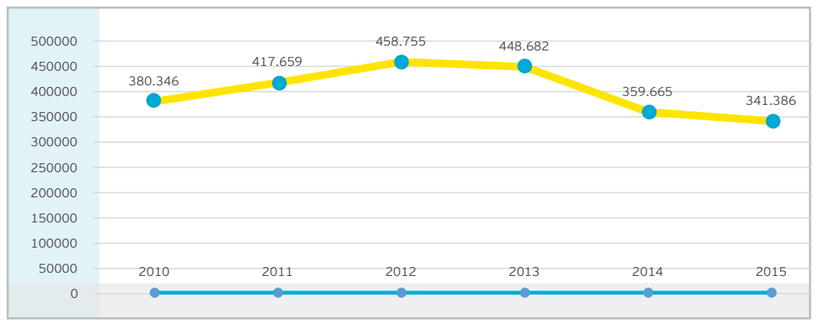
Cruise Shipping (passengers)



Containers



Car terminal (No. of cars)



A geographically expanding cluster

While the shipping cluster has grown around the port of Piraeus, today it is traced in various locations of the prefecture of Attica: shipping companies operate their headquarters from locations, approximately 20 kilometres away from the port of Piraeus.

Piraeus has attracted the core industries of the shipping cluster (shipping companies, shipyards, ports, shipyard subcontractors, companies related to shipping companies, port operators and other port companies). This enabled the presence of relevant companies and institutions in related areas, such as public sector administration, education, research and development, financing, insurance and classification societies. The Piraeus shipping cluster counts a total of 3.273 enterprises that operate in the shipping-related business sectors and operate across distinctive geographical areas of the Athens and Piraeus region.

The operational configuration of the cluster is characterized by diversity in terms of participating enterprises in general, but also by a relative concentration in certain business sectors. This is the larger shipping cluster of the country and quite dominant in terms of business participation.

Configuration of the Piraeus shipping cluster

A total of 3.273 firms are active in one of the 28 identified market segments of a shipping cluster, contributing to the strength of the Piraeus shipping cluster. Every potential category of a shipping cluster is populated, with cluster "actors", varying from service oriented companies, to more technical works-oriented, as well as institutions, universities, associations, organisations, ministries, travel agents, port-related services and many more.

The most dominant cluster group, with the participation of 974 companies, are "Ship-managers and Operators". The dominant presence of ship-managers and ship-operators is not surprising, since most shipping companies of Greek interests are located at the wider area of Attica and most of them hold their premises around the port of Piraeus. Also, a number of these enterprises are globally well-known for their influential presence and leverage. These two characteristics contribute to the cluster's strength, along with the high number of participants.

Another highly populated group of activities (i.e. many firms are active), is that of "Spare Parts & Marine Equipment" that counts approximately 600 active firms. This group is high in "depth", since it includes 11 sub-categories of activities and is mostly oriented in works and services of a more technical nature.

Piraeus shipping cluster per activity

	Market Segment	No of companies per market segment	Segment as % of cluster (number of companies)
1	Agents	245	7,49%
2	Bunker Services	64	1,96%
3	Chambers	2	0,06%
4	Crew Manning	24	0,73%
5	Environment/Safety/Security	30	0,92%
6	Finance/Banking/Accounting	26	0,79%
7	Forwarding & Marine Logistics	58	1,77%
8	ICT & Telecommunications	33	1,01%
9	Legal Services	115	3,51%
10	Marine Engineering & Naval Architects	39	1,19%
11	Marine Insurance	94	2,87%
12	Marine/Maritime Consultants	95	2,90%
13	Maritime Education	25	0,76%
14	Maritime Organisations/Institutions /Ministries/Representations	47	1,44%
15	Other Marine Services	26	0,79%
16	P&I Club Representatives	21	0,64%
17	Press & Publications	16	0,49%
18	Ship Registration & Classification	36	1,10%
19	Shipbrokers/Charterers	217	6,63%
20	Shipbuilding and Breaking	193	5,90%
21	Ship-managers & Operators	974	29,76%
22	Spare Parts & Marine Equipment	612	18,70%
23	Technical Services	123	3,76%
24	Towing - Salvage	18	0,55%
25	Trade-Related Services	38	1,16%
26	Travel Agents	31	0,95%
27	Unions/Associations/Clubs	54	1,65%
28	Yachts	17	0,52%
	Total	**3.273**	

Source: Own elaboration

Analysis per geographical location

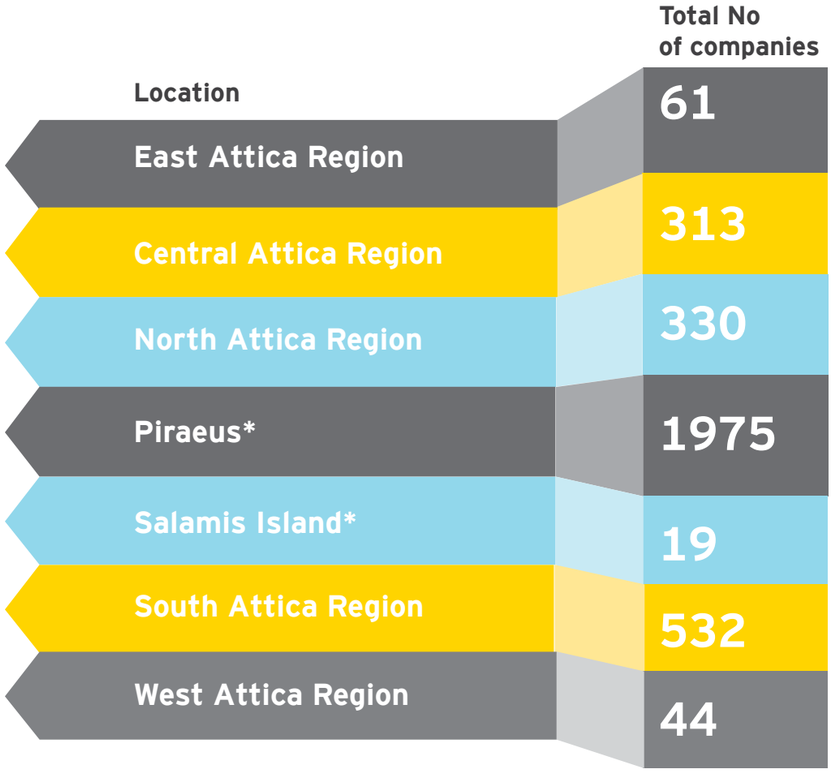
As the Piraeus shipping cluster has considerably expanded across the wider geographical area of the vast Athens and Piraeus region, a further breakdown allows understanding its geographical breakdown, the distribution and the levels of concentration at the seven sub-regions that the vast Athens and Piraeus region is formally divided. These regions are:

1. East Attica Region
2. Central Attica Region
3. North Attica Region
4. Piraeus*
5. Salamis island*
6. South Attica Region
7. West Attica Region

** The "Piraeus" and "Salamis island" areas have been added for a further more detailed view of the analysis and do not belong to the official categorisation in regions.*

The table below details the locational spreading of the companies that are part of the Piraeus shipping cluster. The vast majority of companies are found in the region of Piraeus: more than half of the total number of companies considered as part of the shipping cluster operates from this area. The South Attica region (which is proximate to Piraeus), the North Attica region and the Central Attica region are the other areas hosting comparatively large numbers of relevant companies, whereas very few firms are present in the rest of the Attica regions.

Piraeus shipping cluster: Geographical distribution per sub-region



An evaluation of the Piraeus shipping cluster

Despite its size and importance for the local and national economy, the Piraeus shipping cluster has not been subject to any official or unofficial governance scheme. On these grounds, it is interesting to proceed to an evaluation of the strengths, weaknesses, opportunities and threats (SWOT analysis) for the Piraeus shipping cluster. The analysis is detailed as follows:

Strengths

- Presence of a large volume of strong ship-owning and ship-management companies, forms a pure shipping cluster
- Presence of a deep (in terms of cluster's mix) and strong (in terms of volume) cluster
- A significant part of the world merchant fleet is concentrated in Greece
- Presence of an important international port active in all shipping markets, which is operated by a well-known terminal operator
- Piraeus is a shipping center with international reputation
- Various shipping-related organizations are located in Piraeus
- Availability of high-skilled personnel and of seafarers
- A contemporary regulatory environment that encompasses EU and international initiatives, regulations and laws
- Flag and ship-management quality and reputation
- Geographical location for global trade and as a gateway to Central & Southeast Europe

Weaknesses

- Lack of collective coordination from the participants of the cluster (governance) through a formal or informal structure
- Lack of regulative framework able to facilitate the development of the cluster's operational potential
- Lack of a cluster mentality from the State and the cluster's participants
- Lack of advanced shipping financial services in Piraeus
- Lack of advanced logistics infrastructure and services in Piraeus
- Low shipbuilding and ship-repairing activity in the shipyards around Piraeus area
- Unstable legal and tax framework
- Lack of advanced maritime law services

Opportunities

- The formation of cooperating schemes between companies operating in the same market. For example, the "Hellenic Marine Equipment Manufacturers and Exporters" (HEMEXPO) Association, can be the starting point towards a structured governance scheme for the Piraeus shipping cluster
- The acquisition of the Port Authority by a private operator might provide several opportunities in terms of investments, as well as in terms of throughput growth, enriching the shipping cluster in terms of both volume and specialization
- Associations, organisations, universities and institutes that already exist can provide new knowledge, advance know-how and possibly create (mostly in the case of associations) corrections and functionality regarding its operational performance
- The implementation of the non-domicile initiative by the UK, as well as Brexit, might force several Greek-owned shipping companies to relocate from London to Piraeus
- The investments in the Piraeus ship repair zone planned by the new owner of Piraeus Port Authority S.A.
- The privatization of TRAINOSE and the liberalization of the Greek rail market create opportunities for the development of logistics and especially around the port of Piraeus
- Piraeus is part of the "Maritime Silk Road"

Threats

- Fierce competition between maritime centers: according to the field research results, the biggest competitors of the Piraeus shipping cluster (as per the respondents' evaluation) are Singapore, London and Dubai
- Economic crisis that produces uncertainties but also constant changes in the regulative framework of companies, creates a non-competitive environment for shipping and shipping-related companies. With reference to the economic crisis, as per the field research results, the majority of the respondents in the study agree that this factor is one of the threats for their business
- The recent initiatives taken by other countries (for example Cyprus, Singapore) in order to increase their competitiveness in the shipping industry, might result in a relocation of shipping companies from Piraeus
- The relocation of many production units from Greece to other countries has a direct impact on the country's port throughput and, thus, poses a threat for the development of the cluster
- The tax regime for shipping companies located in Greece
- The continuation of the national economic crisis fuels uncertainty which has a negative effect on the perceived sustainability of the operational and legislative framework for the operation of shipping companies in Greece
- Shift of world trade from West to East
- Government complacency and lack of political commitment
- Absence of a clear promotion strategy

Increasing the performance of the Piraeus shipping cluster

Based on the outcomes of the SWOT analysis, specific initiatives might increase the performance of the Piraeus shipping cluster. A first step is the initiation of a dialogue among the cluster participants in order to understand the cluster's perspective, aiming at developing initiatives towards the leverage of the benefits that a cluster can bring to the Greek shipping community.

Based on the dialogue's results the next step is the formation of a regulatory framework that would aim to advance/secure the operational excellence of the cluster and provide incentives for best practices. The core of this framework should be the development of a governance scheme for the shipping cluster able to move into initiatives, actions and proposals for the cluster's issues that require a collective action from the cluster members.

The formation and implementation of a more competitive business environment for shipping and shipping-related companies could attract a significant number of shipping companies to Piraeus, resulting in the strengthening of the configuration of the specific shipping cluster.

Piraeus port can also play a significant role in fostering cluster formation and enriching the cluster's mix. The leverage of the port's ship-repairing zone by the new port operator can bring extra activities and participants in the cluster, while it will further strengthen the ship-repairing activity which currently plays a secondary role in the cluster.

Of course, this business environment must be accompanied by a stable economic environment in the country, which is a prerequisite for any business and development activities. The uncertainty that the current economic environment creates is an obstacle for any private initiative towards investments, cooperative schemes and synergies in the shipping and shipping-related sectors specifically, as well as for business in general.

Finally, the revision of the regulatory framework, through fewer laws and rules and the improvement of the implementation of the existing regulations could increase the operational flexibility of the cluster's companies. In addition, it is crucial for the cluster competitiveness that the State makes use of the new technology opportunities in order to ease the transactions between State authorities and the companies through the use of internet and ICT.

The Thessaloniki Shipping Cluster

The Thessaloniki shipping cluster develops around the wider geographical area of the city, having at its core the port of Thessaloniki. The cluster is small in size and not very diverse in terms of activities, as it spreads in 16 market segments out of the potential 28. The cluster counts a relatively small number of companies, with a total of 118 companies related to the maritime/shipping industry, active in the region. These companies are located in a narrow geographical area, proximate to the port.

Contrary to the case of the Piraeus shipping cluster, which has shipping companies as its core and the port plays a significant yet secondary role, in the case of the Thessaloniki shipping cluster, the port is the core of the shipping cluster and all the companies belonging to it are directly or indirectly related to the port operation.

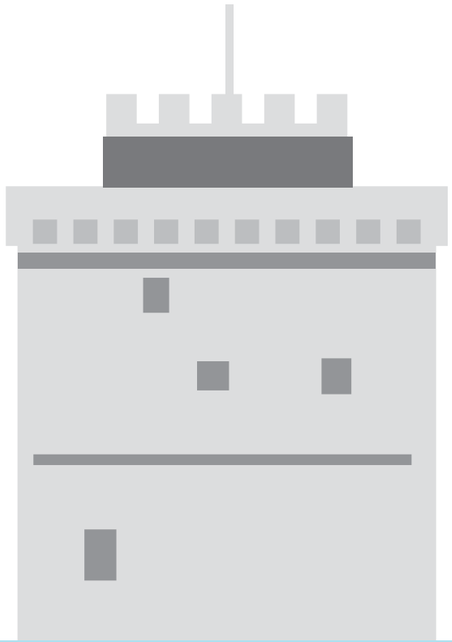
The core of the cluster: Thessaloniki port

The port of Thessaloniki is a multipurpose international port that handles all kinds of cargo traffic and hosts all types of passenger movements.

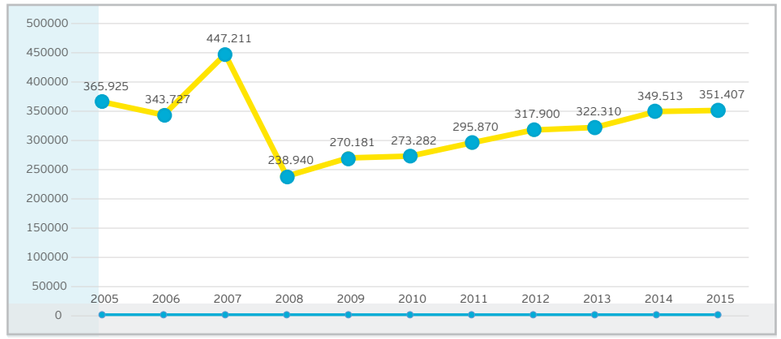
This is the second biggest port in Greece in terms of total throughput, while it is the major port as regards the dry bulk cargoes. Apart from facilitating the trade flows of North Greece, the port of Thessaloniki acts as a gateway port for the neighbouring Southern Balkan countries taking advantage of its proximity to these countries, as well as of the road and rail network that connects the port with the hinterland. The port serves a significant volume of transit cargoes with major parts of the dry bulk and general cargoes throughput destined to F.Y.R.O.M. and Bulgaria, or originated from these countries.

Graphs in the following page present the port throughput for various cargo and passenger traffic categories. Following a period of turbulence and industrial actions against private sector involvement in the port industry in 2008-2009, that affected the entire Greek port industry, the port of Thessaloniki managed to regain part of the cargo volumes that had been lost during that period. Container traffic has been on the rise every year since 2010. The volumes of the bulk cargoes have been quite stable. As regards passenger movements, the port of Thessaloniki experiences a continuous decrease in coastal passenger traffic. This is due to several reasons, with the major one being the long-lasting economic crisis and the consequent reform of strategies by coastal shipping companies, including the reduction of the coastal fleet. Cruise movements had a peak in 2008. Since then and up to 2012, when some recovery was recorded, cruise activities in Thessaloniki experienced a significant drop.

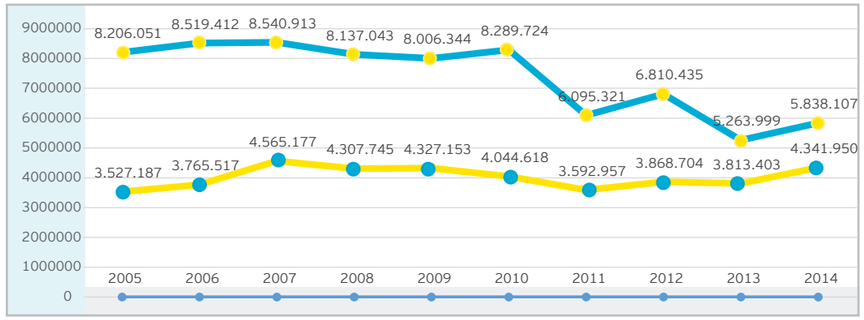
The final stage of the process for the sale of a majority stake in the Thessaloniki Port Authority (OLTH) S.A. has been completed, with the consortium consisting of Deutsche Invest Equity Partners GmbH - Termina l Link SAS – Belterra Investments Ltd. emerging as the highest bidder. The Greek government, which owns OLTH through the Hellenic Republic's Asset Development Fund (TAIPED), has completed the tender for the disposal (sale) of 67% of OLTH shares. The sale (of 67% of the shares) is expected to alter the current trends, via the expansion of activities and the commitment of the buyer to substantial investments and, thus, contribute to the growth of the current, heavily port-related Thessaloniki port cluster.



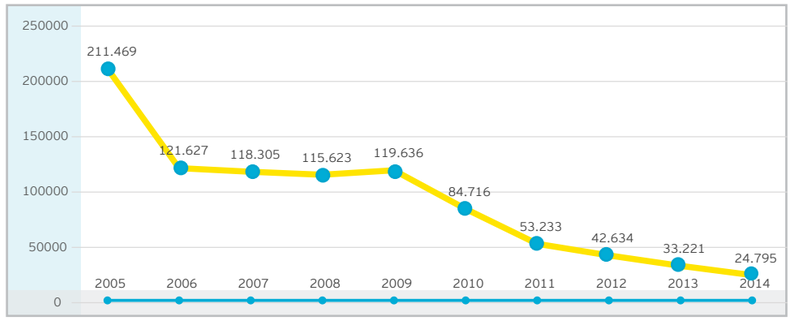
Containers



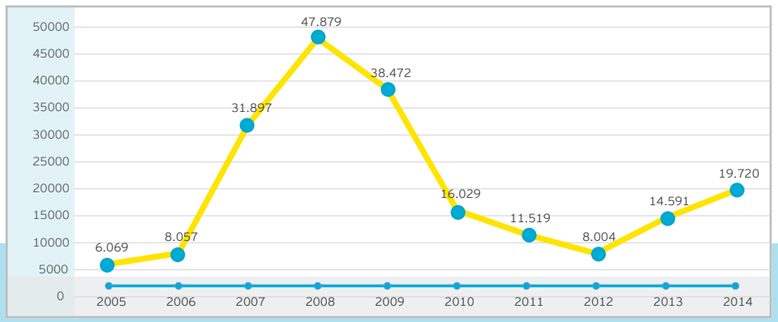
Bulk Cargo



Coastal Shipping (passengers)



Cruise Shipping (passengers)



Configuration of the Thessaloniki shipping cluster

The 118 shipping and shipping-related companies that are part of the Thessaloniki shipping cluster spread along 16 categories of activities.

The structure of the cluster reveals a very interesting configuration. This is a seemingly diverse cluster that spreads in several, yet not all of the potential market segments. Still, cluster participants cover a total of 16 groups of industries. A more refined view (table below) indicates the following: The cluster is actually concentrated in three groups of market segments, namely (1) Agents (57 companies), (11) Ship-managers & Operators (24 companies) and (12) Spare Parts & Marine Equipment (12 companies).

It is worth mentioning that there is a single "participant" in the group (15) Unions, Associations, Clubs, the "Shipping Agents Association of Thessaloniki", a phenomenon that emphasises further the high concentration of the cluster in intermediate type of shipping-related business, such as agents.

The population in the case of all the other groups of activities counts one to a maximum of four companies.

Thus, in terms of number of firms, there is a concentration of the cluster around the three dominant market segments. (1) Agents represent a cluster share of 48,3%, (11) Ship-managers & Operators represent 20,3%, (12) Spare Parts & Marine Equipment a 10,2% share, and all the rest of the industry segments represent 21,2% of the firms of the cluster.

These details unveil the important role that the port of Thessaloniki plays in the formation of the cluster. Almost half of the companies are "agents", an activity that is directly related to port operations, and the cluster categories whose main scope deals with port and port-related services reach 61% of the firms of the cluster. This underlines the different orientation of the two major Greek shipping clusters: the Piraeus cluster is a shipping-oriented one, and that of Thessaloniki is a port-oriented cluster.

Thessaloniki cluster configuration

	Market Segment	No of companies per market segment	Segment as % of cluster (number of companies)
1	Agents	57	48,31%
2	Environment/Safety/Security	1	0,85%
3	Finance/Banking/Accounting	1	0,85%
4	Forwarding & Marine Logistics	5	4,24%
5	Marine Engineering & Naval Architects	1	0,85%
6	Marine Insurance	3	2,54%
7	Marine/Maritime Consultants	1	0,85%
8	Ship Registration & Classification	1	0,85%
9	Shipbrokers/Charterers	4	3,39%
10	Shipbuilding & Breaking	1	0,85%
11	Ship-managers & Operators	24	20,34%
12	Spare Parts & Marine Equipment	12	10,17%
13	Towing - Salvage	2	1,69%
14	Travel Agents	2	1,69%
15	Unions/Associations/Clubs	1	0,85%
16	Legal Services	2	1,69%
	Grand Total	**118**	

Source: Own elaboration

Analysis per geographical location

As the scope of activities undertaken by the companies that are part of the Thessaloniki shipping cluster indicates, the geographical spread of the particular cluster is quite limited. The port orientation of the cluster results in a situation where the majority of the cluster companies are located in the most proximate location to the port of Thessaloniki.

While we apply a geographical concentration of the cluster, taking into account the orientation of the Thessaloniki port cluster, it is worth noting that the results of our analysis would be possibly different, if emphasis was placed on the associated logistics and shore transportation companies.

A number of such companies are located near the port or in nearby regions, serving cargoes that are transported via the port.

An evaluation of the Thessaloniki shipping cluster

Based on the findings as regards the size of the Thessaloniki shipping cluster and the types of shipping and shipping-related activities that develop in the region, we present an evaluation of the strengths, weaknesses, opportunities and threats (SWOT analysis) for the Thessaloniki shipping cluster. The analysis is detailed as follows:

Strengths

- A highly specialised port cluster, clearly focused on intermediate services
- Geographical concentration of the cluster
- The port of Thessaloniki is the main gateway port for the Southern Balkan countries

Weaknesses

- Lack of collective coordination among the participants of the cluster
- Lack of any regulative framework aiming at the enhancement of the cluster's operational potential
- Lack of educational institutions and institutes that would allow growth of the cluster
- It is mainly a port cluster, rather than a shipping cluster
- Absence of a significant number of shipping companies
- Distant from the country's administrative cluster
- Lack of associations that would foster cooperation among cluster companies
- Lack of maritime tradition and shipping culture
- Minimum added value, as the cluster companies mainly act as intermediaries between the port and the port users

Opportunities

- As the cluster is port-oriented, the change in the ownership structure of the port will create a new potential for the development of a stronger port cluster
- Geographical proximity to the Eastern Balkans, along with the constant shift of "Blue Banana" towards East Central Europe, is an opportunity to reach new markets

Threats

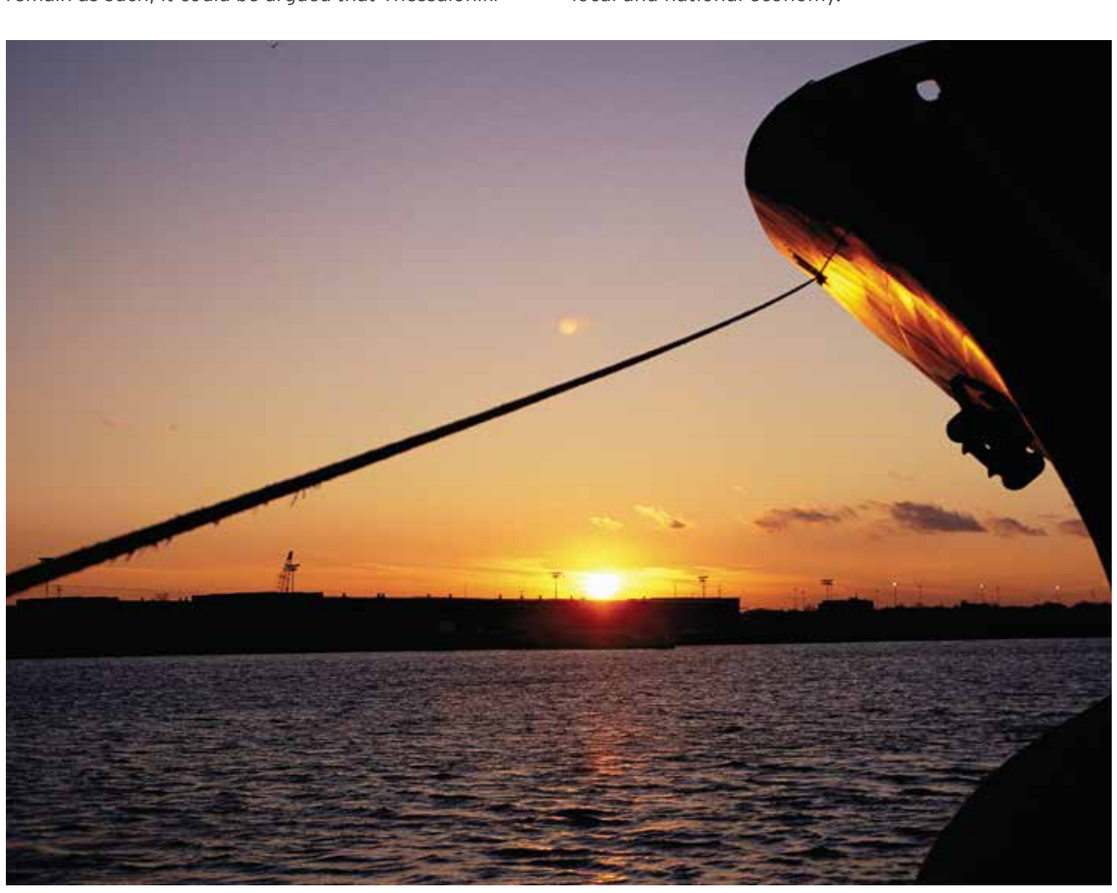
- Fierce competition, as more regions/governments/decision makers attempt to develop local shipping clusters
- The continuation of the national economic crisis sustains uncertainty and implies the lack of a sustainable framework for the operation of firms in Greece
- The relocation of many factories from Greece to other countries has a direct impact on port throughput and economic activities in the country and, thus, a negative impact on the development of the cluster
- Volatility of the shipping/maritime market
- Fluctuations of the volumes of world trade

Increasing the performance of the Thessaloniki shipping cluster

The Thessaloniki shipping cluster is totally different from the shipping cluster in Piraeus, yet some common ground exists as regards actions to enhance the cluster performance. As in the case of Piraeus, the shipping cluster of Thessaloniki needs to further enhance cooperation among the cluster's companies. In doing so, the development of a regulatory framework regarding the cluster's governance scheme is needed. Such a development will allow the formation of a governance body for the Thessaloniki shipping cluster that will undertake initiatives towards operational excellence of the shipping cluster, dissemination of good practices among the cluster, as well as the settlement of issues that need a collective action from the cluster's participants. The formation of a regulatory framework and of a governance structure would advance the competitiveness of Thessaloniki's shipping cluster.

In the case of Thessaloniki, the existing cluster is closely related with the port of Thessaloniki, as the majority of the companies in the cluster are dealing with port and port-related businesses. Taking for granted that Piraeus is the cluster of the shipping industry in Greece and will remain as such, it could be argued that Thessaloniki should focus on the development of a strong port cluster, aiming to be a diversified cluster from Piraeus. This will enable the formation of two distinctive clusters with different business orientations that could cooperate instead of competing, aiming at increasing the value added for the Greek economy. The completion of the concession process for the port of Thessaloniki and the establishment of a private operator in the port will increase the attractiveness of Thessaloniki for companies dealing with port and port-related activities. This will increase the number and strengthen the composition of the cluster, allowing the formation of a pure port cluster in the area.

Despite the fact that Thessaloniki hosts several educational institutes, none of these has a clear relation with shipping and port business, and as such, there is no cooperation between the cluster companies and the educational institutes. The development of shipping and port educational programs and a strategy towards synergies between educational and research institutions, and the firms that offer shipping and shipping-related activities, can increase the knowledge base of the cluster, as well as the value added in the local and national economy.



5 Survey findings

Greece as a shipping cluster: Advantages and disadvantages

Our survey among leading members of the Greek shipping community sheds light on the industry's perceptions of the comparative advantages and disadvantages of Greece as a basis for ship-management functions, the attractiveness of competitive maritime centers and the ways in which the competitiveness of the Greek maritime center could be improved. The related issue of the perceived advantages and disadvantages of the Greek flag is also examined.

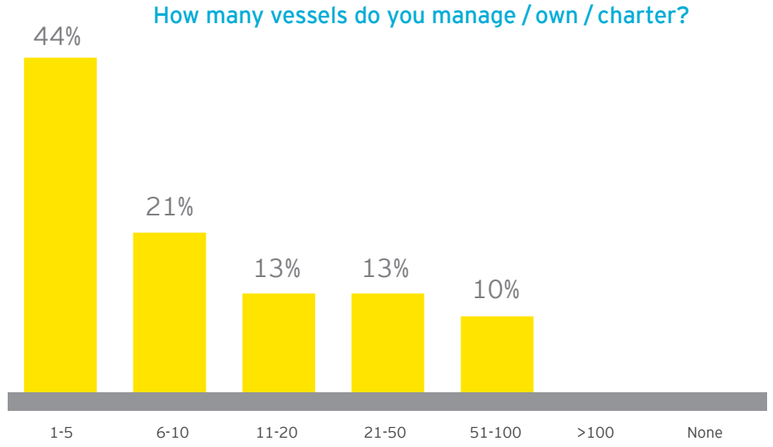
In order to better understand the Greek shipping community's perceptions of the comparative advantages and disadvantages of Greece as a basis for ship-management functions, the attractiveness of competitive maritime centers and the ways in which the competitiveness of the Greek maritime center could be improved, we collected the views of a representative sample of leading representatives of the industry.

Composition of the sample

Our findings are based on the responses of ship-owners, managing directors and top executives of Greek shipping companies. Our sample represents a characteristic cross section of the Greek shipping industry in terms of size and age of the company, types of vessels owned or managed and executive positions held within the company.

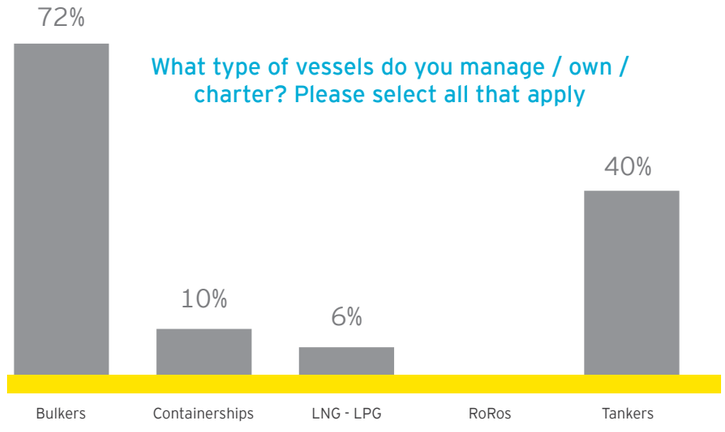
44% of respondents represented companies owning up to five vessels, 34% between six and 20, 13% between 21 and 50 and 10% between 51 and 100.

How many vessels do you manage / own / charter?



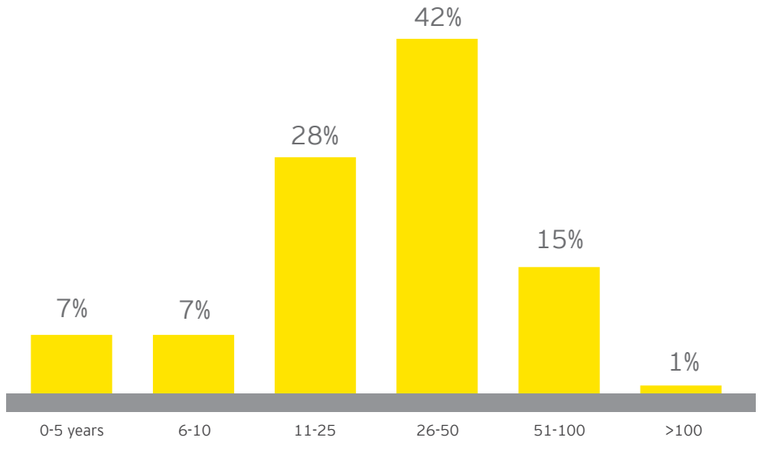
The vast majority of respondents (72%) own or manage bulkers, followed by tankers (40%), while 16% own or manage containerships and LNG-LPGs.

What type of vessels do you manage / own / charter? Please select all that apply

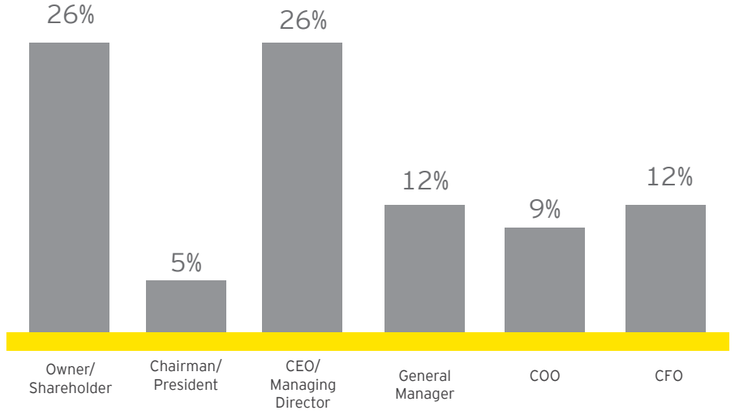


Most of the respondents (42%) represent companies which have been in operation for 26-50 years. Fourteen percent are relatively new entrants with up to ten years in operation, while 1% spoke on behalf of companies with more than 100 years in the business.

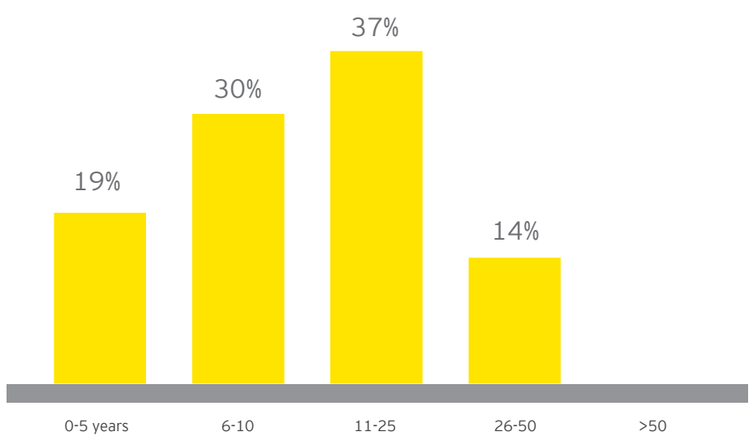
When did your company commence operations?



What is your current job title?



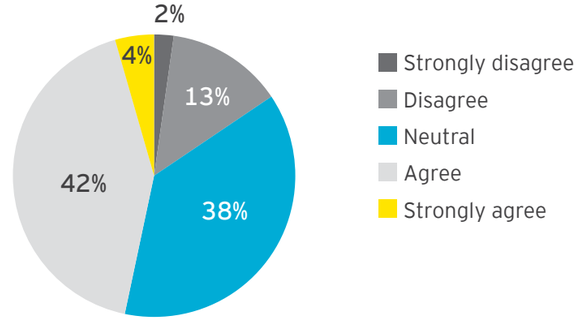
How many years have you been in this role?



The Greek flag

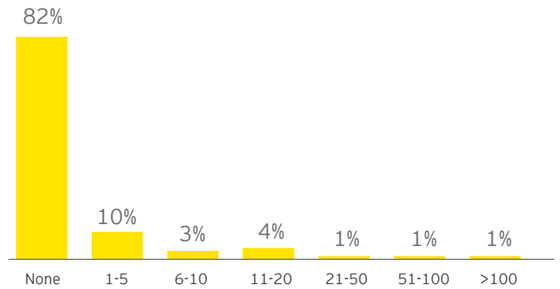
Participants in our survey have a relatively positive view of the standards of the Greek flag: almost half (46%) report they have a strong perception of the standards of the Greek flag, while only 15% do not.

I highly perceive the standards of the Greek flag

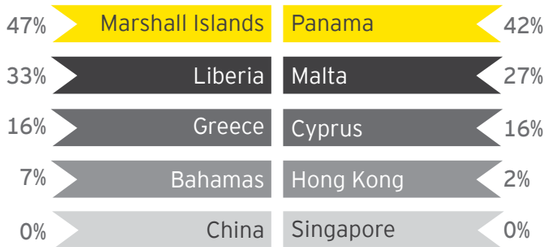


However, the vast majority (82%) own no ships flying the Greek flag, with the Marshall Islands, Panama, Liberia and Malta being the most widely used flags.

Among the vessels you own/manage/charter, how many fly the Greek flag?

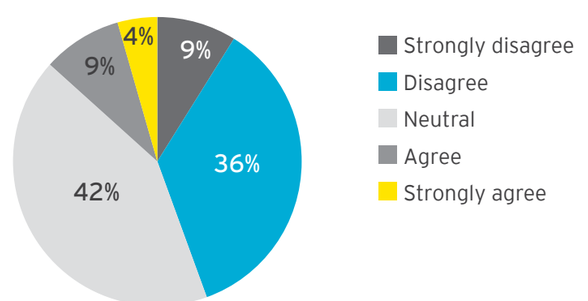


Please select all the flags that you currently use for your fleet



It comes, therefore, as no surprise that respondents did not attribute great value to the advantages of the Greek flag. Only 13% of our sample believes that it provides significant competitive advantages, while 45% disagree or strongly disagree with this statement.

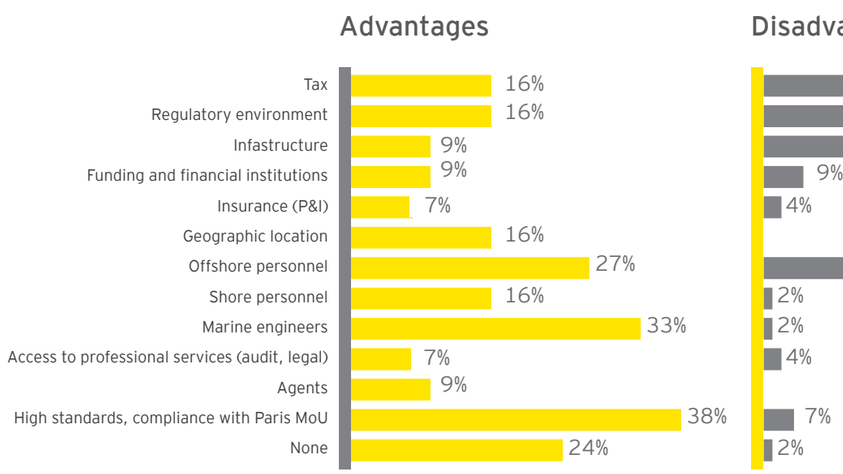
I believe that the Greek flag provides significant competitive advantages



Almost one in four respondents found no competitive advantage in flying the Greek flag, while none of the perceived advantages were considered significant by more than 40%. The high standards of compliance with the Paris Memorandum of Understanding-MoU (38%) and the existence of marine engineers (33%) and offshore personnel (27%) were the most frequently mentioned advantages. (It is worth noting that most of the perceived advantages are actually more closely related to having a ship-management office in Greece, as opposed to flying the Greek flag). International reputation was also spontaneously mentioned as an advantage.

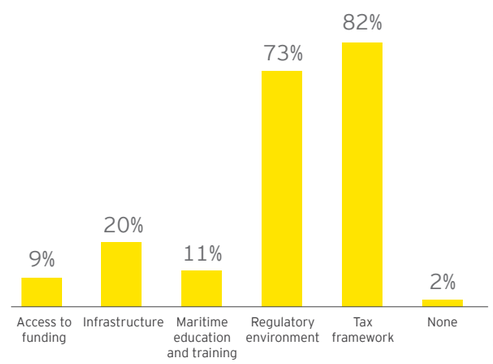
With regard to disadvantages, the regulatory environment (69%) and tax (62%) were found to be by far the most critical negative factors associated with the Greek flag. Spontaneous responses as regards disadvantages included various restrictions concerning the seas going personnel and the high social security and payroll cost of Greek personnel compared to other nationalities.

Which are the competitive advantages and disadvantages of the Greek flag? Please select all that apply

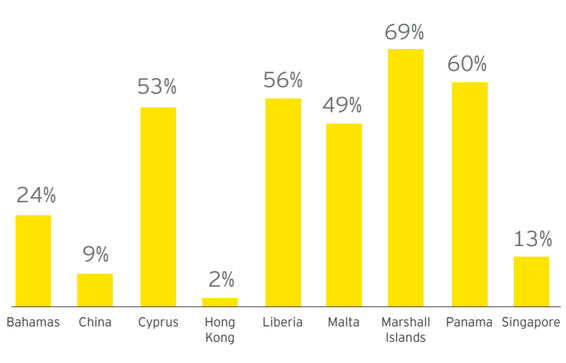


When asked to identify the biggest competitive threats to Greece from a flag point of view, the jurisdictions most frequently mentioned were the Marshall Islands, Panama, Liberia, Cyprus and Malta. The regulatory environment and tax framework were once again considered as the main competitive advantages of those alternative flags.

What are the competitive advantages of those other flags compared to the Greek flag? Please select all that apply



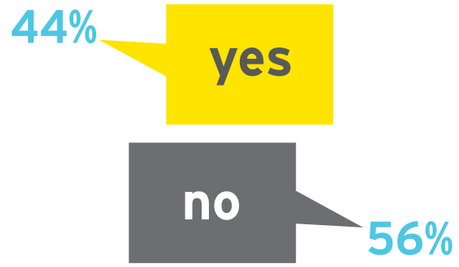
Which country/ies do you consider the biggest competitive threat to Greece from a flag point of view? Please select all that apply



Greece as a base for ship-management functions

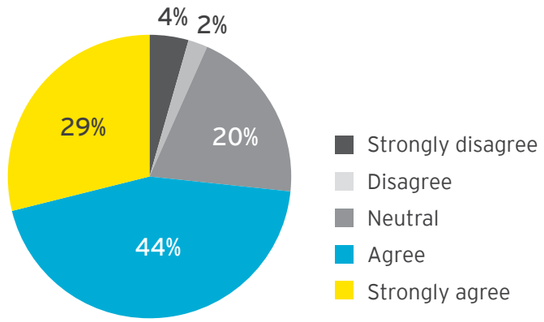
Although a majority of participants in our survey do not fly the Greek flag on their ships, a full 97% reported that they perform at least some of their ship-management functions in Greece, of which 56% perform all such functions in Greece and 44% perform some functions outside Greece.

Are any of your ship-management functions performed outside Greece?

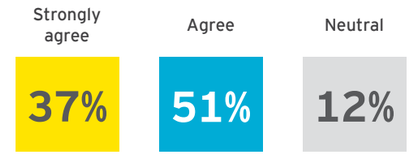


In itself, this is a clear indication that Greece as a maritime center, rather than a jurisdiction, offers some considerable advantages. Indeed, this is recognized by a clear majority of respondents, with 73% reporting that they agree or strongly agree that having a ship-management office in Greece provides them with competitive advantages, with only 6% disagreeing with this statement. This is in clear contrast with the perception of the competitive advantages of flying the Greek flag.

I believe that having a ship-management office in Greece provides me with competitive advantages

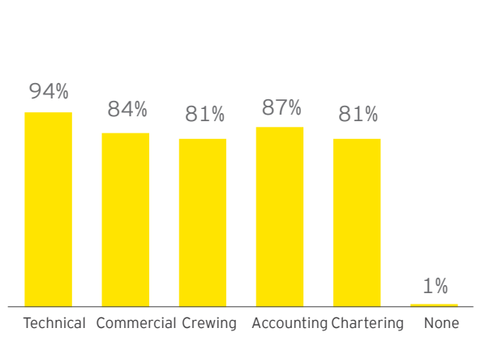


Moreover, a full 88% of our sample believe that a potential enlargement of the Greek maritime center would be an opportunity for their business.

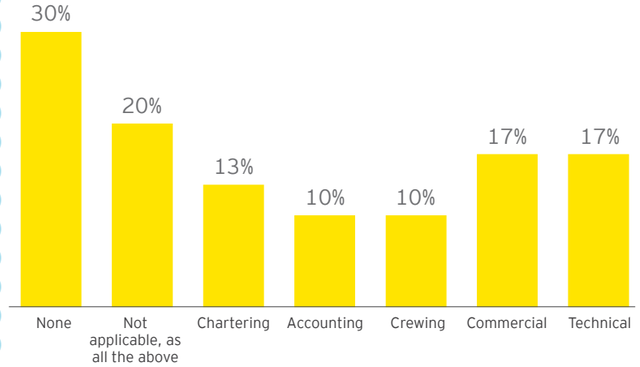


When asked which specific functions they perform in Greece, the most frequent responses were technical functions (94%), accounting (87%), commercial (84%) and crewing and chartering (81% each). Asked whether, and in which areas, they would consider expanding their management function in Greece, one in three (30%) replied they would not. Seventeen percent mentioned technical and commercial functions, 13% chartering and 10% each crewing and accounting.

Of the following ship-management functions, which ones do you perfom in Greece? Please select all that apply

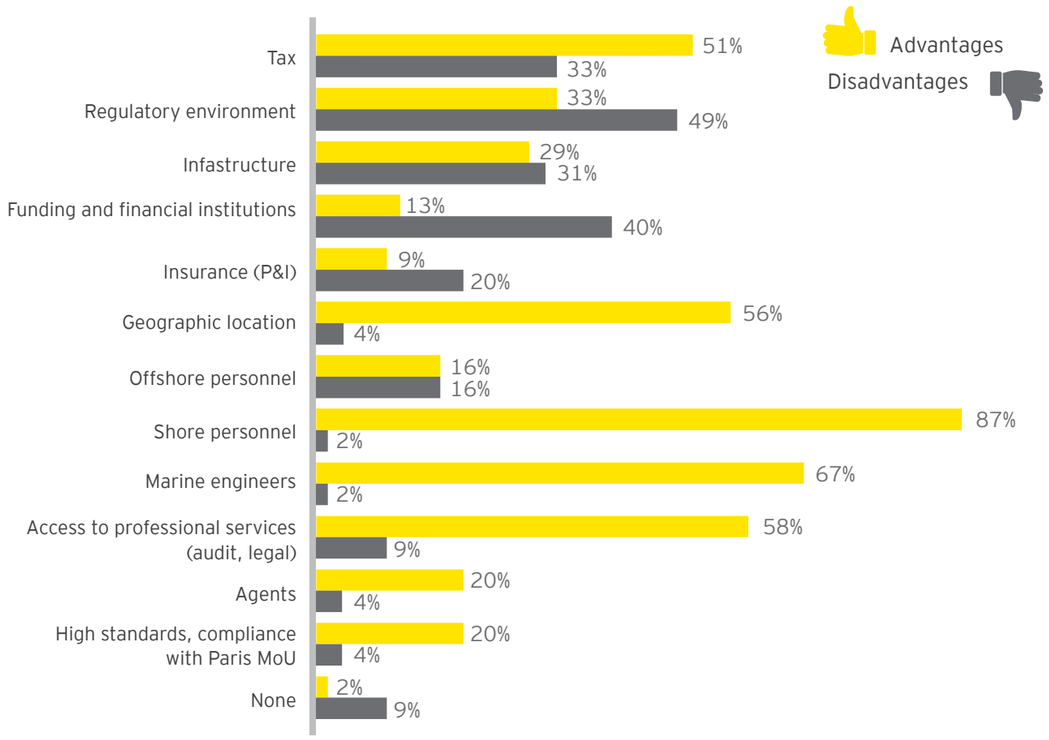


In which areas would you consider to expand your management function in Greece? Please select all that apply

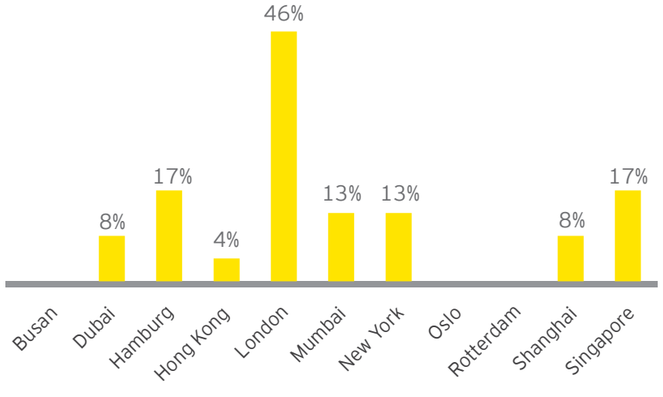


When asked to identify the main competitive advantages of Greece as a maritime center, shore personnel (87%) and marine engineers (67%) were by far the most popular answers. More than half of the respondents also mentioned access to professional services (58%), geographic location (56%) and tax (51%), while the regulatory environment, infrastructures, agents and high standards of compliance with the Paris MoU also emerge as significant advantages. Significantly, the regulatory environment (49%), tax (33%) and infrastructures (31%) were also mentioned as major disadvantages, along with funding and financial institutions (40%).

Which are the competitive advantages and the disadvantages of having a ship-management office in Greece? Please select all that apply



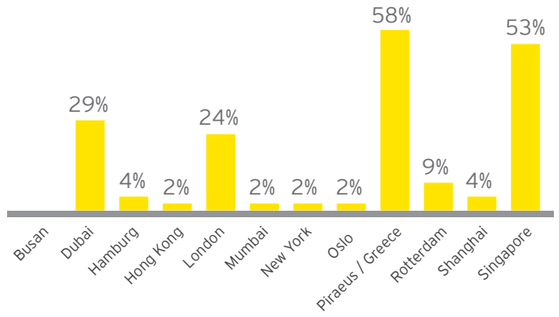
Where are your other ship-management functions performed? Please select all that apply



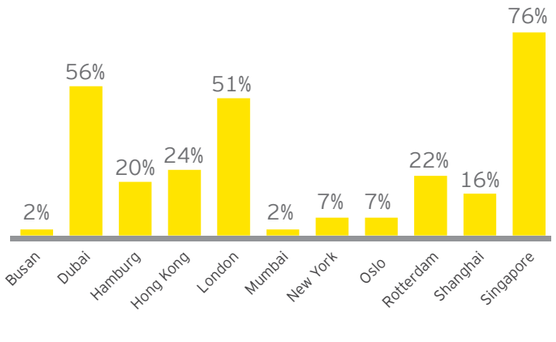
Participants in our survey who reported that they perform at least some functions outside Greece, were asked to specify the location. Almost half (46%) mentioned London, followed by Singapore and Hamburg (17% each), New York and Mumbai (13% each) Shanghai and Dubai (8%), and Hong Kong (4%). Other ports mentioned in spontaneous responses, included Copenhagen, Limassol, Antwerp, Chennai, Nantes, Manila and Odessa.

Asked to name which maritime centers currently offer the single most attractive and complete maritime environment for locating their ship-management office, more than half (58%) mentioned Piraeus, with 53% identifying Singapore, 29% Dubai and 24% London. Singapore, Dubai and London were also identified as the biggest competitive threats to Greece from a maritime cluster perspective.

Which maritime centre/s offer currently the single most attractive and complete maritime environment for locating your ship-management office?

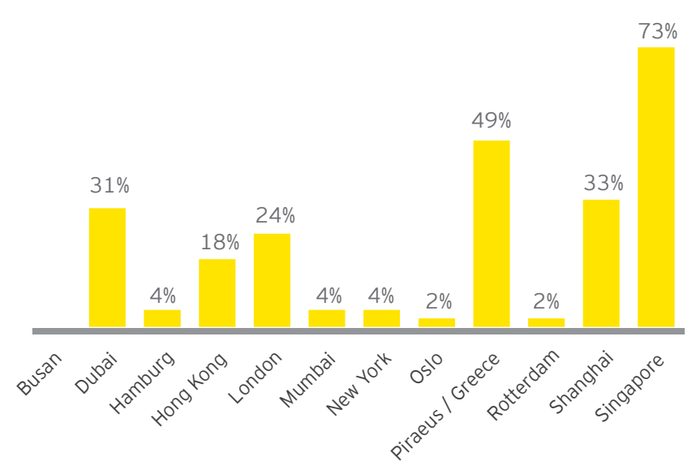


Which maritime centre/s do you consider the biggest competitive threat to Greece from a maritime cluster perspective? Please select all that apply



Within the next 10 years, which maritime centre/s do you believe will be the leading ones globally?

Asked to predict which would be the leading maritime centers within the next ten years, Singapore was by far their port of choice (73%), followed by Piraeus (49%), Shanghai (33%), Dubai, London and Hong Kong.

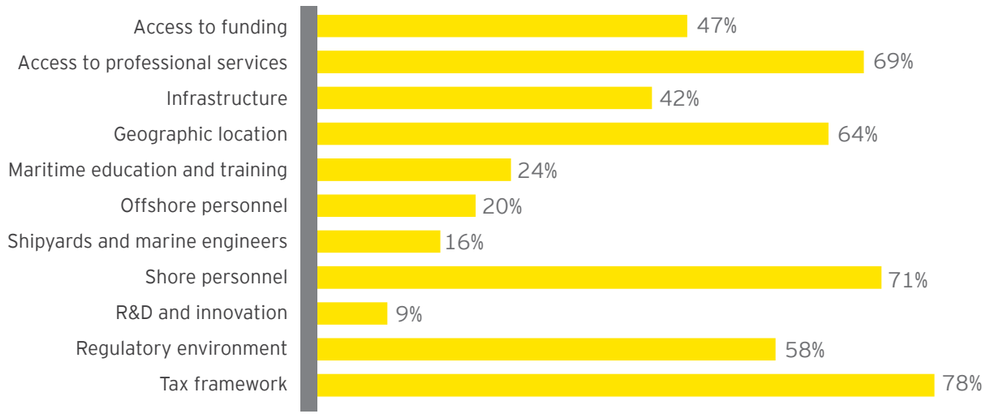


Four of the six top choices were in Asia, reflecting the shifting balance of economic activity towards Asia and the Pacific basin. Only two centers were in Europe and none in the rest of the Western part of the world.

Significantly, the percentage of respondents who believe Piraeus will be the leading maritime center in ten years (49%) is well below those who describe it as the most attractive option today (58%), indicating that they are well aware of the growing competition from both existing and emerging centers.

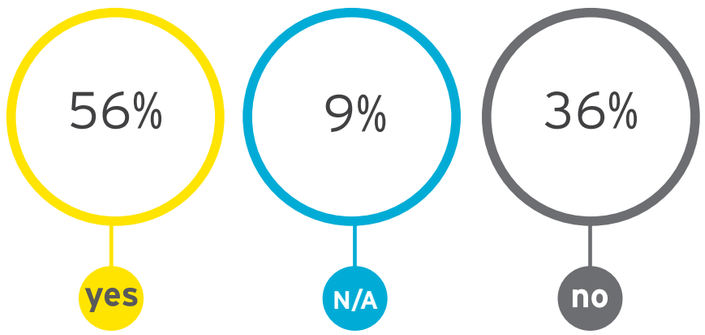
We also enquired on the basis of which criteria our respondents selected their maritime centers of preference. Several factors emerged, reflecting the key concerns of the Greek shipping community. The tax framework and regulatory environment were predictably among the key criteria. Shore personnel, geographic location and access to professional services were also high on the list, followed by access to funding and infrastructures. Maritime education and training, offshore personnel and shipyards and maritime engineers were also mentioned by several respondents.

Based on which of the following criteria, did you select the maritime centre/s of preference? Please select all that apply

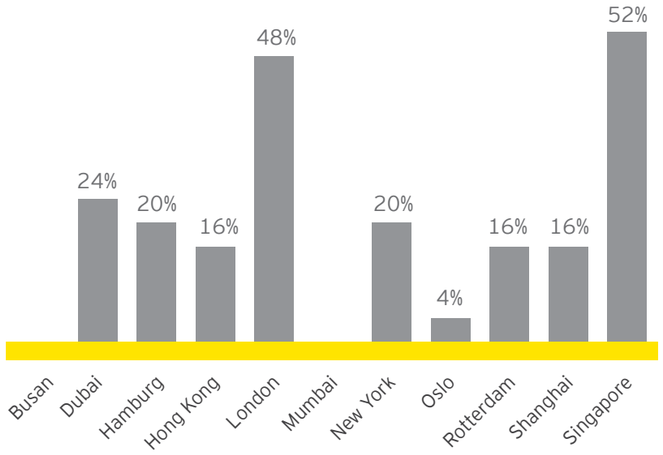


Given the balance of advantages and disadvantages of Piraeus, the shift of economic activity towards emerging economies in Asia and the growth of alternative maritime centers, 56% of participants in our survey state that they would consider a potential relocation of their ship-management function outside Greece, compared to 36% who would not.

I would consider a potential relocation of my ship-management function outside Greece

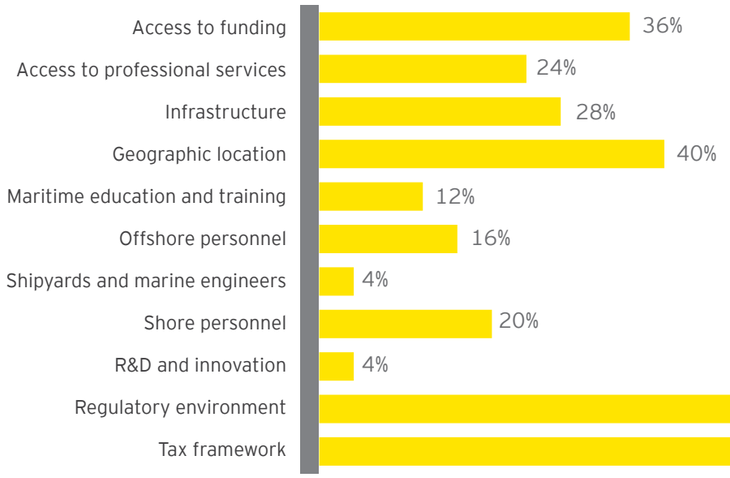


In which maritime centre/s would you go? Please select all that apply



52% among them would choose to move to Singapore, while 48% would opt for the more traditional alternative of London. Dubai, Hamburg, New York, Hong Kong, Shanghai and Rotterdam were among their other preferred destinations.

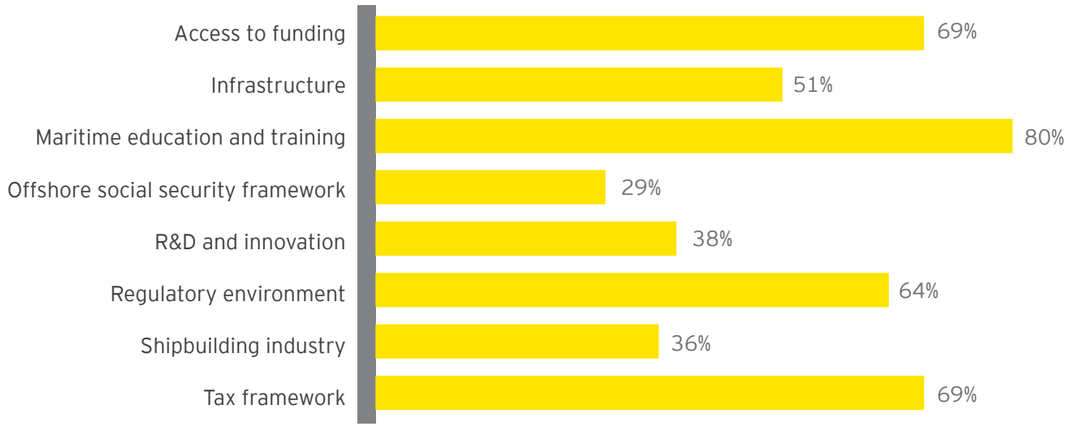
Why would you consider relocating outside Greece? Please select all that apply



The tax framework (84%) and the regulatory environment (64%) were once again the main reasons for considering relocation, followed by geographic location and access to funding. The absence of a stable economic and political environment and concerns about Grexit were also spontaneously mentioned.

In view of the concerns expressed about the future of the Greek maritime center, respondents were also asked to indicate ways in which the competitiveness of Greece as a maritime center could be improved. Significantly, the key field where efforts should be concentrated is maritime education and training, an area where traditionally, but also according to the findings of the survey, Greece has had a competitive advantage.

How do you believe that the competitiveness of the Greek maritime centre could be improved? Please select all that apply

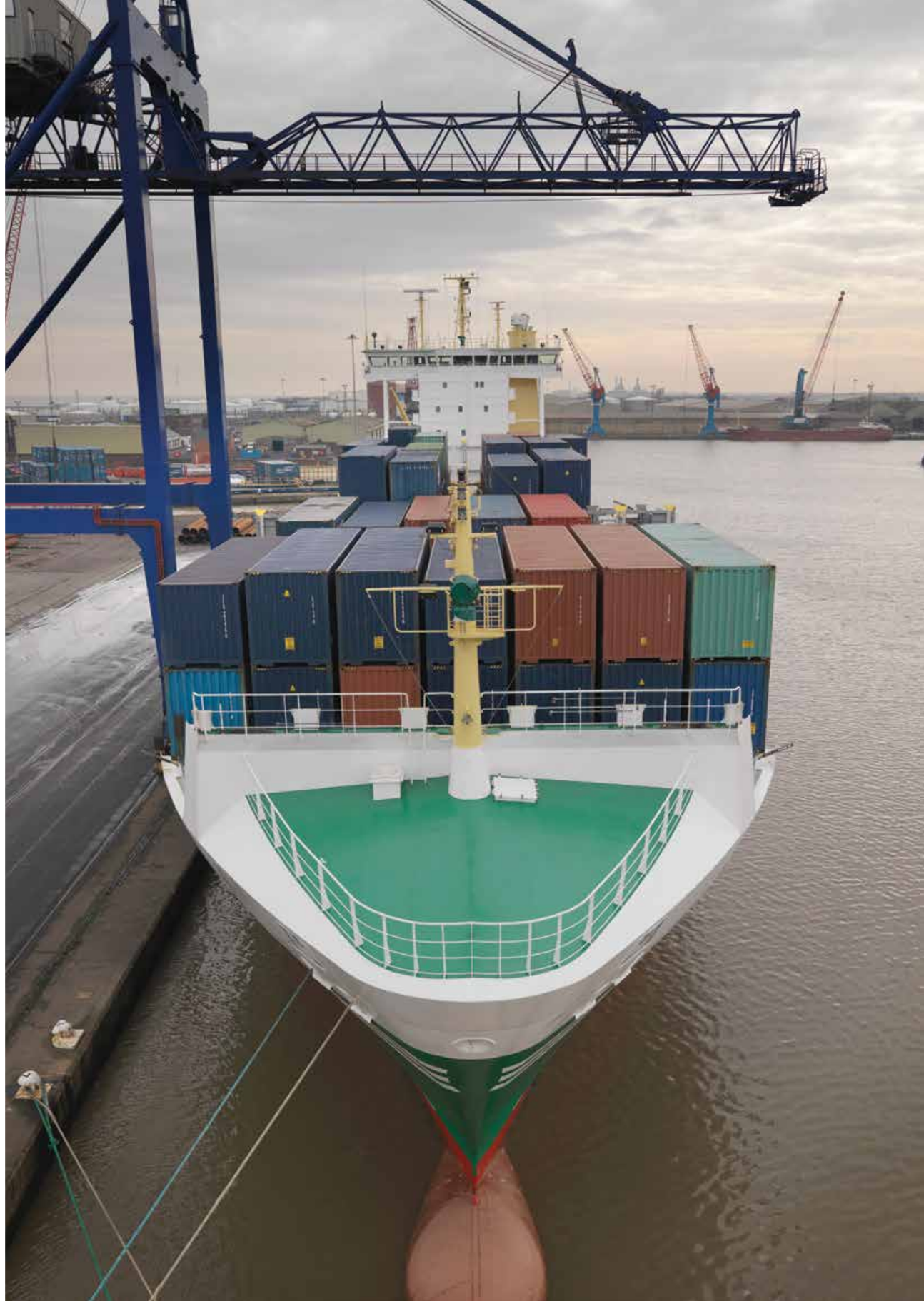


Securing more adequate access to funding is also considered a high priority by 69% of respondents, reflecting the comparative advantage in this area of centers including London, but also New York and Singapore. The same number of respondents identified tax issues as a main priority, reflecting the need for a stable tax framework. More specifically, concerns were raised about plans currently considered by the EU Commission to increase the tonnage tax, apply taxation on dividends and tax transfer or inheritance of shares.

Improving the regulatory environment was also identified as a key priority for facilitating maritime operations.

Infrastructures were the fifth area of potential improvement identified by 51% of respondents.

Strengthening of the shipbuilding industry, R&D and innovation and the offshore social security framework were also identified as priorities by several respondents.

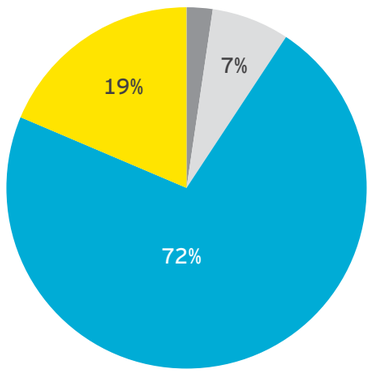


In conclusion, participants in our survey were asked to assess the importance of a series of factors with respect to building a leading maritime center. Not surprisingly, the existence of a managed fleet of substantial size and value, which is the main advantage of Piraeus compared to its main competitors, was found to be of major importance by 91% of respondents. Key services including legal, insurance, financing and brokering were also considered vital by 82%. Seventy-nine percent agreed that factors associated with maritime technology such as shipyards, R&D and education, classifications headquarters, IT services and maritime equipment are also relevant. Ports and logistics, as measured by port volume, port operators and logistics services, were a lesser consideration, with only 40% agreeing as to their relevance. Finally, 98% of participants agreed that the overall business environment was a major consideration.

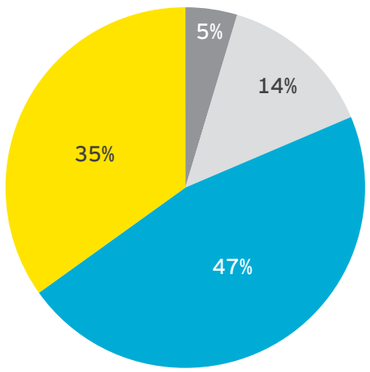
How would you rank the following factors with respect to their relevance / importance in building a leading maritime centre?

Strongly disagree
Disagree
Neutral
Agree
Strongly agree

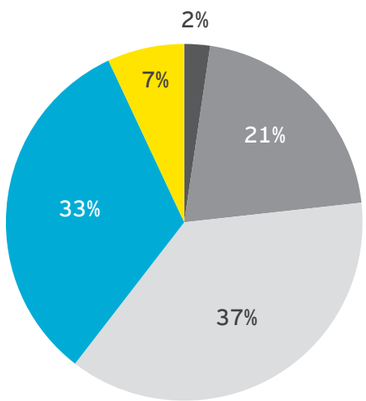
Shipping center (in terms of fleet size, fleet value, managed fleet)



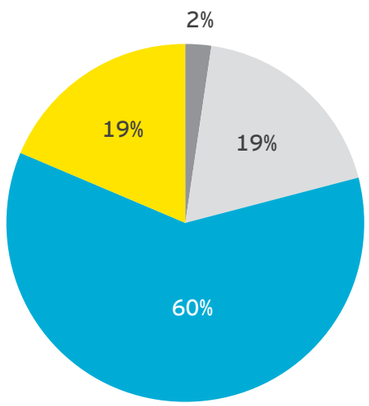
Finance and law (law, insurance, financing, brokering, market capitalization of listed stocks)



Ports and logistics (port volume, port operators, logistics services)



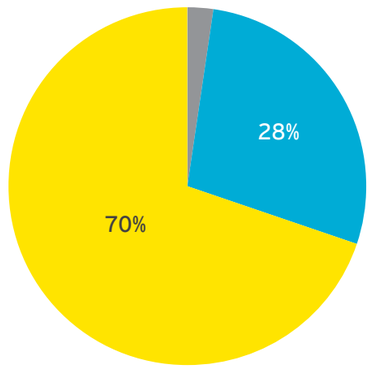
Maritime technology (shipyards, R&D and education, classification HQs, IT services, maritime equipment)



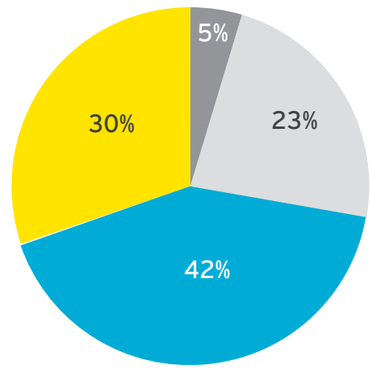
Asked to comment on their perception of the commitment of the Greek State towards the local maritime cluster, only 22% of respondents felt it is "very strong", while 44% said it is not. At the same time, a full 72% of respondents reported that they would participate in a campaign to promote the Greek maritime center globally.

However, as international experience shows, not all successful maritime centers grew and prospered under government support. Most developed on an ad hoc basis, with the help of private initiative. Several such initiatives exist in Greece today. What may be needed is a mechanism to better coordinate their activities.

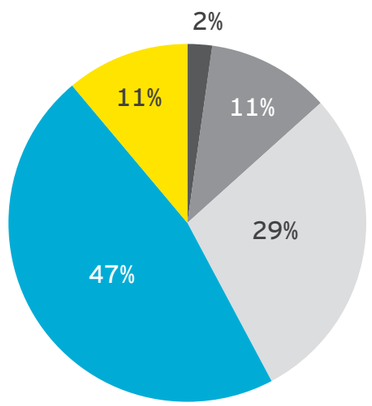
Attractiveness and competitiveness (overall business environment)



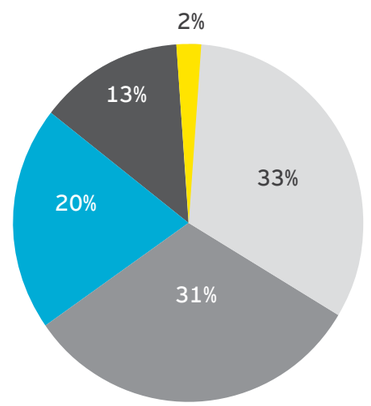
I would participate in an official campaign to promote the Greek maritime centre globally



I believe that the Greek State can do more to improve the perceived standards of the Greek flag



The commitment of the Greek State towards the local maritime cluster is very strong.



6 Summary of recommendations

International experience and best practices, combined with our analysis of the Piraeus cluster and the findings of our survey, which reflects the views of the Greek shipping community, suggest that there are four major areas where strategic measures and policy interventions will improve the prospects of Greece in its efforts to establish itself as a major global maritime center.

1. Maritime education and training is a field where Greece traditionally has enjoyed a competitive advantage. Significantly, 80% of respondents to our survey identified maritime education and training as a key factor that could improve the competitiveness of the Greek maritime center. Specialized knowledge-based services are considered the least mobile in the maritime industry, as they are closely connected to universities and are embedded in local tradition.

Today, however, two factors appear to be undermining this advantage: Firstly, as documented by an earlier study by EY[1], in spite of persistent high levels of unemployment, fewer young Greeks are today opting for a career in shipping. Secondly, there is widespread concern that marine education is being overlooked. Marine academies are grossly underfunded, while their curricula are rapidly becoming outdated. There is a need for the formulation of a national strategy on marine and maritime education, an increase of funding for marine academies and closer involvement of the shipping community in the formulation of curricula, in order to strengthen the supply of human capital in terms of both numbers and quality.

R&D is also a critical success factor for a global maritime center, as demonstrated by Oslo and Hamburg, which are recognized as the world's leading maritime technology hubs. Closer cooperation between Greek academic institutions, renowned researchers and companies with a strong R&D presence should become a key priority.

2. A stable, transparent and business-friendly regulatory, legal and tax framework is a key priority for facilitating maritime operations. Indeed, almost half (49%) of respondents to our survey identified the regulatory environment as a key disadvantage of Greece as a ship-management center, while one in three mentioned tax. Such a framework should encompass the International Maritime Organization (IMO)/ International Labour Organization (ILO) conventions and be globally oriented. Further, minimizing transaction costs by curtailing bureaucracy and red tape, modernizing the ship registry and tax authority for shipping through the use of new technologies, will greatly contribute to making Greece a more attractive base for the operation of shipping companies. Modernisation of IT infrastructures – or their introduction where they do not exist – is a key priority, together with the introduction of new tools and architectures, such as web portals, e-commerce capabilities and on-line connectivity across all maritime offices around the world.

Further, our experience indicates that emerging shipping centers which aim to play a global role as maritime capitals of the future, are characterized by their systematic focus on attracting primary ship-management activities through the introduction of attractive fiscal regimes for non-resident companies.

Introducing a single shipping point of contact to facilitate the establishment of companies in Greece will also be a major step forward. Today, tax authorities, labour offices, immigration and health inspectorates and customs are just a few of the agencies that shipping companies have to deal with. Ideally, the task of attracting major players and high ranking executives serving shipping could be assigned to specialised and service oriented "account officers", who would act as a single point of reference, address the "client's" issues and requests, coordinate all relevant resources and manage the relationship on a long-term basis. A similar approach has been successfully implemented by the Marshall Islands to promote its flag.

Addressing the legal framework and high payroll-related costs is also critical. Finally, maintaining a stable tax framework and establishing a favourable tax environment for the relocation of expatriates is crucial for strengthening the position of Greece compared to emerging shipping centers. The example of Singapore is instructive in this respect: Although its strategic location in the Asia-Pacific region was a key to its success, its legal framework, support for the industry and ease of doing business were also critical factors. Singapore's dedicated Maritime Sector Incentive (MSI) scheme, targeting both shipping and shipping-supporting companies, has played a major role in transforming the city-state into a business hub for the Asia-Pacific region.

3. Infrastructure is another critical area with great improvement potential. Several different factors can be included in this broad category, ranging from the need to connect the port of Piraeus by rail to the rest of Europe, to the difficulty of accessing Piraeus by car due to traffic congestion forcing several shipping companies to relocate to the north of Athens, to the fact that Athens has not become yet a major airline hub, which increases the accessibility for international crews. The exploiting of the port's ship-repairing zone by the new port operator can bring extra activities and participants in the cluster, while it will further strengthen the ship-repairing activity which currently is playing a secondary role in the cluster. The position of Rotterdam and Hamburg as the leading European ports will be hard to challenge, but Piraeus can certainly improve its prospects by leveraging its geographical position as a gateway to Southeast Europe. Dubai, which has included transportation and storage as one of the six building blocks for future growth in its 2007-2015 Strategic Plan, is also an interesting best practice.

4. Finally, **closer coordination** between the Piraeus cluster participants and the establishment of a governance scheme would strengthen initiatives to leverage synergies and advance the port's operational excellence. It will also provide a framework for more effective cooperation and coordination between the shipping industry, the government and other stakeholders and for promoting the image of the Greek maritime center globally, on the basis of an in-depth marketing analysis and a well thought out promotion plan. Significantly, a strong majority of participants in our survey indicated they would back a national promotion strategy.

Maritime UK, a non-profit organisation which brings together the UK's shipping, ports, marine and business services sectors to promote the UK as a world-class maritime center, could be a useful model for a similar Greek association. Maritime UK has minimal dedicated personnel, mostly for administrative work, and senior management drawn from the industry. The Singapore Maritime Institute (SMI) is a similar initiative, aiming mainly to develop strategies and programs related to the academic, policy and R&D aspects of the industry. By working closely with knowledge partners and attracting researchers and renowned academics, it seeks to prepare the next generation of talent and promote the R&D ecosystem.

The implementation of the above policy recommendations is a long-term project, which will need to be based on an ongoing inter-governmental dialogue with all stakeholders and will require a strong political commitment from all major political parties.

It goes without saying that a key prerequisite for establishing Greece as a global maritime capital is the existence of a stable political and economic environment. This will not only help in convincing Greek shipping companies to retain their base of operations in Greece, but will also help attract leading providers of financial, legal, insurance, technology and other knowledge-based services, as well as human capital, which are vital for the transformation of Greece into a one-stop shop for the shipping industry and, thus, a truly global maritime center.

The Thessaloniki cluster

As outlined in the relevant chapter, the Thessaloniki cluster is much smaller in size and narrower in scope compared to Piraeus, centered primarily on the city's port. It is not a global player, but it can aspire to compete successfully at a regional level, not least because of its potential role as a gateway to the dynamic markets of Central and Southeastern Europe. However, during the last few years, cargo, passenger and cruise volumes have declined from their 2008 peak, due to the drop in economic activity in Greece, as well as extended industrial action against private sector involvement in the port.

The privatisation process of the Thessaloniki Port Authority and the commitment of the new owner to substantial investments can be expected to reverse this downward trend and set the basis for the expansion of the port's activities in the medium term.

For Thessaloniki to realize its full potential as a maritime cluster, two more key weaknesses need to be addressed. The city must attract a larger number of shipping companies, as existing companies are mainly agents acting as intermediaries. Secondly, the city's educational institutions need to expand into the fields of marine and maritime education which are presently non-existent. This will strengthen the local cluster and help to gradually establish a shipping culture and tradition which the city currently lacks.

1. EY Greece's survey (2016), "A youth perspective on the Greek shipping industry"

Appendices

1. Methodology

The following paragraphs describe the procedure in terms of methodology that was followed in order to unfold the characteristics of the two shipping clusters in question. The methodology is based on four steps as depicted below:

Step 1

The economic sector selected was "shipping", an industry with strong presence and long tradition in Greece.

Shipping and shipping-related activities hold a significant part of the country's GDP, in addition to which sustains tens of thousands of jobs.

Step 2

The second step was to identify the economic activities that take place in the shipping sector.

The identification by the European Commission of the important and traditional maritime sectors in Europe provided an initial broad categorization of the relevant maritime sectors. This categorization was applied in the Piraeus and Thessaloniki cases and further analysed.

Step 3

In the third step, the regions for the analysis were selected; these being the Piraeus and Athens region and Thessaloniki (former Thessaloniki prefecture region), respectively:

- Piraeus and Athens region is the centre of the Greek shipping industry. The majority of shipping and shipping-related activities are concentrated in Piraeus, which is the biggest Greek port and one of the biggest in the Mediterranean Sea. Despite Piraeus' importance, or perhaps because of it, the last decade, shipping and shipping-related companies relocated in other areas in the Piraeus and Athens region, leading to a necessity for expanding the analysis beyond the Piraeus area boundaries.
- Thessaloniki is the second biggest Greek city, hosting the second biggest Greek port. The region is an important centre of shipping and shipping-related activities for Northern Greece, as well as for the Southern Balkan countries.

Step 4

Finally, for the last step, which was the identification of the cluster population and its breakdown, the study used the database provided by the Greek Shipping Publications Co. Ltd (2016), which is the most comprehensive database regarding shipping and shipping-related companies established in Greece.

2. Acknowledgements

Special thanks to Dr. Thanos Pallis and Dr. George K. Vaggelas, who contributed to making this study.

Dr. Thanos Pallis

Dr. Thanos Pallis is an Associate Professor and a scientific coordinator of the Jean Monnet Action European Port Policy, at the Department of Shipping, Trade and Transport, at the University of the Aegean, Greece. He serves as the co-director of the PortEconomics web-initiative and partner at Ports & Shipping (P&S) Advisory.

Thanos has worked in several projects shaping the port sector, including research on behalf of United Nations Trade and Development (UNCTAD), the Organisation for Economic Co-operation and Development (OECD), the Association of American Port Authorities (AAPA), European Seaports Association (ESPO), International Association of Port Cities (AIVP), national governments and European ports.

Thanos served as General Secretary for Ports & Port Policy of the Hellenic Republic. He is the General Secretary of MedCruise, the association of Mediterranean cruise ports, since 2013. He is also a Fulbright Scholar (Columbia, US) and Visiting Professor at the Centre for International Trade and Transportation, Dalhousie University, Halifax, Canada and Athens University of Economics and Business, Greece.

Dr. George K. Vaggelas

Dr. George K. Vaggelas is a maritime economist with vast experience in studying shipping and ports. The Managing Director and partner of Ports & Shipping (P&S) Advisory, and co-founder of the PortEconomics web-initiative, George is a Research Fellow at the University of the Aegean, involved in the Jean Monnet Action European Port Policy and teaching shipping economics and policy.

George has first hand expertise in managing ports, as he has served as Senior Advisor to the President and CEO of Thessaloniki Port Authority S.A., responsible, among others, for the strategic development of the port. He also served as a member of the Greek Regulatory Authority for Ports.

Extensively involved in European and contract research, he has led projects developing ports master plans, cruise ports business development, cost benefit analysis of port investments, reforms of port governance, and due diligence reports on behalf of international terminal operators.

3. Greek shipping metrics analysis

Comparison of Greek flag fleet against selected competitor flags, based on number of vessels and DWT per vessels categorization:

Type of Vessel	Greece		Malta		Cyprus		Liberia		Marshall islands		Panama	
Bulk	201	22.699	662	47.250	313	22.953	1.007	82.514	1.290	99.305	2.656	200.073
Containers	7	562	293	2.653	184	483	866	2.163	249	6.082	608	6.766
Gas Carrier	39	2.438	77	16.232	7	4.697	134	45.301	161	12.994	237	37.034
PCC / Ro-Ro & Passenger	398	327,8	154	19.301	63	2.009	84	56.139	92	50.776	768	50.908
Other	60	704	293	2.409	429	239	420	3.717	585	10.309	1.964	7.477
Crude Tanker	214	39.658	110	733	15	179	341	121	254	187	213	4.786
Products Tanker	210	8.168	228	3.442	42	2.923	396	11.624	535	18.697	604	23.120
Chemical Tanker	20	68	271	3	32	233	117	292	301	25	461	61
General Cargo	84	120	132	1.322	44	1.695	23	1.201	25	1.599	993	9.794
Other Specialized Tanker	12	5,5	1	9.762			11	21.249	1	31.319	17	15.135
Total	**1.245**	**74.750**	**2.221**	**103.107**	**1.129**	**35.411**	**3.399**	**224.323**	**3.494**	**231.293**	**8.521**	**355.155**

number of vessels DWT per vessels

Top 10 Flag rankings based on DWT for tankers:

Flag	Tankers DWT	Rank
Marshall Islands	88.202	1
Liberia	79.844	2
Panama	72.871	3
Greece	**47.900**	**4**
Hong Kong	41.229	5
Singapore	39.131	6
Bahamas	36.489	7
Malta	31.720	8
Peoples' Republic of China	13.937	9
Isle of Man	10.087	10

Top 10 Flag rankings based on number of vessels for tankers:

Flag	Tankers DWT	Rank
Panama	1.295	1
Japan	1.181	2
Marshall Islands	1.091	3
Singapore	908	4
Liberia	865	5
Peoples' Republic of China	704	6
Indonesia	670	7
Malta	610	8
Russia	535	9
Hong Kong	464	10
Greece	**456**	**11**

Top 10 Flag rankings based on number of vessels & DWT per Bulk category:

Flag	Bulk DWT	Rank
Panama	200.073	1
Marshall Islands	99.305	2
Hong Kong	97.642	3
Liberia	82.515	4
Singapore	52.361	5
Peoples' Republic of China	48.496	6
Malta	47.250	7
Cyprus	22.953	8
Greece	**22.699**	**9**
Bahamas	19.592	10

Flag	Bulk vessels	Rank
Panama	2.656	1
Marshall Islands	1.291	2
Hong Kong	1.153	3
Peoples' Republic of China	1.074	4
Liberia	1.007	5
Malta	662	6
Singapore	610	7
Bahamas	331	8
Cyprus	313	9
Greece	**201**	**10**

Top 10 Flag rankings based on number of vessels & DWT per Containerships:

Flag	Containers DWT	Rank
Liberia	45.301	1
Panama	37.034	2
Hong Kong	30.339	3
Singapore	25.251	4
Malta	16.232	5
Marshall Islands	12.994	6
Danish Int'l Register	11.431	7
Germany	9.267	8
Madeira	7.904	9
United Kingdom	7.742	10
Greece	**562**	**30**

Flag	Containers vessels	Rank
Liberia	976	1
Panama	799	2
Singapore	516	3
Hong Kong	472	4
Malta	301	5
Marshall Islands	298	6
Antigua & Barbuda	283	7
Peoples' Republic of China	272	8
Indonesia	219	9
Cyprus	202	10
Greece	**7**	**39**

Top 10 Flag rankings based on number of vessels & DWT per General Cargo ships:

Flag	General Cargo DWT	Rank
Panama	4.786	1
Indonesia	2.949	2
Vietnam	2.790	3
Japan	2.364	4
Peoples' Republic of China	1.931	5
Russia	1.812	6
United States	1.731	7
South Korea	1.246	8
Canada	1.187	9
India	1.085	10
Greece	**120**	**44**

Flag	General Cargo vessels	Rank
Indonesia	1.917	1
Japan	1.847	2
Panama	993	3
Russia	679	4
India	552	5
Philippines	527	6
Peoples' Republic of China	486	7
South Korea	350	8
Unknown	345	9
Belize	341	10
Greece	**84**	**30**

Top 10 Flag rankings based on number of vessels & DWT per Gas Carriers:

Flag	Gas Carier DWT	Rank
Marshall Islands	10.309	1
Panama	7.477	2
Bahamas	6.860	3
Bermuda	4.545	4
Liberia	3.717	5
Singapore	3.190	6
Norwegian Int'l Register	2.459	7
Greece	**2.438**	**8**
Malta	2.409	9
Malaysia	2.273	10

Flag	Gas Carier vessels	Rank
Panama	237	1
Marshall Islands	161	2
Japan	151	3
Liberia	134	4
Singapore	131	5
Bahamas	100	6
Peoples' Republic of China	90	7
Thailand	88	8
Malta	77	9
Isle of Man	66	10
Greece	**39**	**16**

Top 10 Flag rankings based on number of vessels & DWT per PCC / Ro-Ro & Passenger:

Flag	PCC / Ro-Ro & Passenger DWT	Rank
Panama	9.794	1
Bahamas	3.388	2
Japan	2.466	3
Italy	2.416	4
Singapore	2.283	5
Norwegian Int'l Register	1.718	6
Marshall Islands	1.599	7
Malta	1.322	8
Liberia	1.201	9
United Kingdom	1.135	10
Greece	**373**	**19**

Flag	PCC / Ro-Ro & Passenger vessels	Rank
Panama	768	1
Japan	722	2
Indonesia	643	3
Italy	541	4
Norway	441	5
Greece	**409**	**6**
Peoples' Republic of China	395	7
Philippines	335	8
United States	313	9
Turkey	306	10

Analysis provided is based on data from Clarksons International Database, February 2017.

Due to the rounding of the percentages throughout the survey, their sum might not be 100.

EY | Assurance | Tax | Transactions | Advisory

About EY

EY is a global leader in assurance, tax, transaction and advisory services. The insights and quality services we deliver help build trust and confidence in the capital markets and in economies the world over. We develop outstanding leaders who team to deliver on our promises to all of our stakeholders. In so doing, we play a critical role in building a better working world for our people, for our clients and for our communities.

EY refers to the global organization, and may refer to one or more, of the member firms of Ernst & Young Global Limited, each of which is a separate legal entity. Ernst & Young Global Limited, a UK company limited by guarantee, does not provide services to clients. For more information about our organization, please visit ey.com.

For more information, please contact the Shipping Group:
Tel: +30 210 288 6000, +30 210 288 6235

ey.com

@EY_Greece

EY