

PORT INVESTMENTS STUDY 2024

THE INVESTMENT PIPELINE AND CHALLENGES OF EUROPEAN PORTS



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the European Sea Port
Organisation (ESPO),
in cooperation with
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RECOMMENDATIONS OF THE EUROPEAN SEA PORTS ORGANISATION TO EUROPE'S POLICY MAKERS

- Ports in Europe do more than before. From being multimodal hubs in the supply chain linking the sea with the hinterland, ports are developing into hubs and facilitators of sustainable energies, clusters of industry and circular economy, as well as important pillars of geo-political and geo-economic resilience. The new functions of ports are coming on top of their traditional roles. **The investment pipeline of Europe's ports reflects this changing and multidimensional role.**
- Next to investments in developing basic port infrastructure and keeping it state-of-the-art, port managing bodies are more and more investing to take up strategic and societal responsibilities and achieving Europe's ambitions. This often implies **projects with a high societal value, yet slow, low and risky returns on investment.** The EU's port managing bodies are fully committed, but need European support to turn all goals and ambitions into a success.
- **The energy transition is changing the port landscape.** New energy sources and related commodities are being handled in Europe's ports. These come with specific transport needs, infrastructure adaptations and new connectivities (both maritime and to the hinterland), storage requirements and new supply chains. To be able to turn into hubs of energy, Europe's ports require large investments.
- This study reveals that **the investment needs of European port managing bodies amount to €80 billion for the next 10 years** (up to 2034). It also shows how investments in the sustainability and energy transition are becoming the second most important investment category for port authorities.
- **Europe's ports more than ever need access to sufficient public funding.** They must be able to rely on **dedicated port envelopes within the different EU funding instruments**, in the first place through the Connecting Europe Facility, but also through the Innovation Fund, the Just Transition and the Modernisation Fund.
- **European funding should be simple.** EU funding instruments must be accessible and **project applications must be based on their EU added value** to contribute to achieving the prescribed goals, even if there is no national co-funding available. Rules and conditions to submit projects for financing should be further streamlined, simplified and matched with the realities of Europe's ports. EU calls for proposals must be designed in such a way to deliver upon the ambitions and avoid unnecessary bottlenecks and administrative burdens. Europe must foster a stable and attractive investment climate and must make sure investors continue to be willing to invest in European ports.

1 INTRODUCTION

The European Sea Ports Organisation (ESPO) launched this study on the investment pipeline and investment challenges of European ports, as an update of the ESPO study on investment needs of the EU ports of 2018. As in 2018, the study is largely based on a survey among European Port Managing Bodies (PMBs). An update is relevant in view of the changing landscape in which ports operate, with greater attention to the transition to sustainable energy as well as geopolitical considerations in port development. This study provides insight in the planned investment projects of the Europe's PMBs and addresses the PMBs' changing service provision and investment drivers, as well as sheds light on the existing investment barriers.

The managing bodies of all EU core and comprehensive ports were asked to provide data¹. The number of responding PMBs is provided in table 1.

**TABLE 1:
SUMMARY OF RESPONSES TO THE SURVEY**

| Respondent type | Number of respondents |
|---|-----------------------|
| A TEN-T core port | 35 |
| Multiple ports in a single port system, including core and/or comprehensive ports | 18 |
| A TEN-T comprehensive port | 19 |
| A port or a single port system that is not included in the EU TEN-T network as core or comprehensive port | 12 |
| Total number of responding PMBs | 84 |

Source: Port investments survey

The total number of responding PMBs was 84, which is higher than in 2018, when 60 PMBs participated. It is noteworthy that 18 responding PMBs are responsible for multiple ports in one port system, which involves an increase compared to 2018. This model is particularly common in Italy, where 6 of the 9 responding PMBs are responsible for multiple ports in a single port system, as well as in France and Belgium.

¹ In addition, ports that are neither core nor comprehensive ports were approached if included in the mailing lists of ESPO or associated national port associations.

Port managing bodies developing multiple ports in a single port system: increasingly common

Over the last decade, national port reforms and mergers have led to an increased importance of PMBs that develop and manage multiple ports. For instance, in Italy a national port reform has led to the establishment of PMBs that manage several ports in the same region. In Sweden, Denmark and Finland mergers have led to (cross-border) regionally operating PMBs, for instance in Kvarkenhamnar, HaminaKotka and Copenhagen Malmö Port. A similar development can be observed in Portugal (Lisbon and Setubal) and Belgium (Port of Antwerp-Bruges).

As an illustration, the merger of the ports of Antwerp and Zeebrugge was formalised in April 2022 by the two cities signing the shareholders' agreement of the unified port company, in which the shares are held by the municipalities of Antwerp (80.2%) and Bruges (19.8%). The supervisory board consists of six members representing the city of Antwerp, three members representing Bruges and four independent members.

The Port of Antwerp-Bruges merger project is the result of a shared conviction that a unified port will strengthen the position of both port platforms within the global logistics chain. The merger allows the port to ensure a solid financial performance and the sustainable growth of both port areas. In addition, the unified port is better equipped to meet the challenges of the future, particularly in the area of energy and the transition to a carbon-neutral economy.

The complementarity of the two port platforms has been crucial to the success of the merger. By working more closely together, growth of the combined market share can be achieved. Investments in inter-port connectivity, pipelines for sustainable energy commodities and projects to improve the port's connectivity via rail and estuary shipping are high priorities.

The survey results cover 54 EU core ports, 46 EU comprehensive ports and dozens of ports not designated as either core or comprehensive ports².

Since many of the PMBs of the largest ports participated, the responding ports cover more than 70% of the total cargo throughput in the EU³. Given this high response rate, the survey results can be considered representative of the total EU ports industry.

The responses of the PMBs to the survey were provided during the period December 2023 — February 2024 (hereafter referred to as the 'Port investments survey'). The European ports were requested to provide data on a maximum of 10 investment projects they foresee in the period 2024–2034. A database has been created containing the available information on a total of 467 investment projects identified in the survey. The number of projects is higher than the 396 projects included in the 2018 survey, to which the current investment pipeline is compared. The (average) number of projects submitted per PMB was more than five, which is very similar to the 2018 study. This report does not provide data on individual ports. However, the report shows the results in an aggregated manner as well as broken down into core and comprehensive ports.

² The number of comprehensive ports may be higher due to differences in port names between PMBs within the EU.
³ The total volume of the ports that provided inputs is more than 2.5 billion tonnes, while the EU as a whole handles around 3.5 billion tonnes. ESPO acknowledges that there are relatively small differences in the Eurostat data and the data provided by the ports due to different methods used.

PMBs' investments go hand in hand with investments of private companies in ports

The investment pipeline of the PMBs as discussed in this report does not provide a full picture of the total investments taking place in European ports. Most PMBs operate according to a 'landlord' business model. In this model, private companies invest in assets such as terminal equipment, warehouses, plants and bunker facilities. Such investments by private companies are very significant. Data from the Netherlands and Belgium show that such private port investments are often higher than those of the PMBs. For instance, in the Netherlands, for four consecutive years up to 2021 (the last year for which data was available) the total private investments in the port industrial complexes exceeded €5 billion per year (Erasmus UPT, 2024). The majority of these private investments concerned investments in industrial activities. In comparison, these €5 billion private investments per year are much higher than the total investments of the Dutch PMBs (which were around half a billion euro per year). Data for Belgium (National Bank of Belgium, 2024) show a similar picture, which is not surprising given the similar importance of industrial activities in ports in both countries.

2 THE INVESTMENT PIPELINE OF EUROPEAN PORT MANAGING BODIES

This section analyses the investment pipeline of European PMBs. It provides a detailed overview of the investment priorities of European PMBs⁴. For the vast majority of the 467 investment projects (84%), the PMB is the developer of the project. This is because PMBs were instructed not to include investments by specialised private companies (e.g. in terminal equipment or processing plants). Only third party investment projects that contribute to the overall development of the port are included. This could be, for instance, investments by governments in landside infrastructure (e.g. rail & roads) in the port, or investments by private companies where these companies invest in port infrastructure (usually on the basis of a concession agreement).

In addition, the survey is focused on investments (capital expenditure), and does not provide detailed insights with regard to the 'operational expenses' that PMBs have. Such operational expenses are often substantial, since PMBs maintain already existing facilities, such as quay walls and port basins. Such maintenance projects are not included in the analysis that follows.

Maintenance expenses of PMBs: often substantial

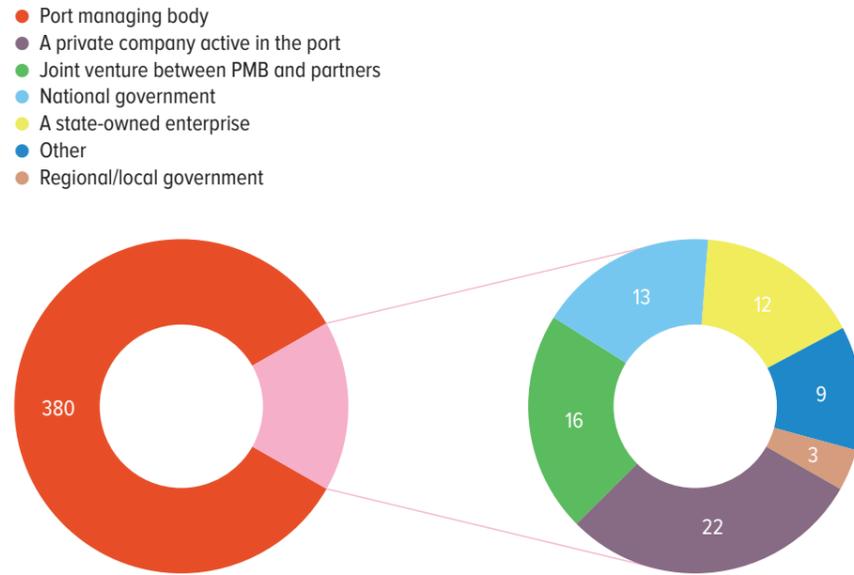
Maintenance expenses are not included in the current analysis of port investments, yet they are important expenditures for PMBs. For instance, the Port Network Authority of the Eastern Adriatic Sea (the ports of Monfalcone and Trieste) have spent more than 10 million euros per year over the last two years and expect continued substantial maintenance expenditure for the next three years (in total over 40 million euros). Examples of maintenance expenses include the maintenance of the electricity grid in the port, roads and buildings in the ports as well as quays. This figure excludes maintenance dredging costs, as these are not yet estimated. Figures for another example, North Sea Port, are similar. North Sea Port has had an average maintenance expenditure of around 14 million euros per year for the last two years, which is slightly more than 10% of their total revenue. The expectation is that their maintenance costs – mainly dredging and quay maintenance – will be higher in the coming years.

Maintenance costs can become a challenge, as they are 'inelastic' to the volumes handled in the port. For instance, in the case of the Port of Klaipeda, cargo volume has fallen by almost a third, due to vanishing trade with Russia and Belarus after the sanctions. This has a huge impact on the port's revenues, while costs (especially depreciation and maintenance costs) are fairly fixed.

Figure 1 shows the developers of the port projects that are included in the analysis.

⁴ This report does not aim to provide a complete overview of all (potential) investment projects in all European ports, as this is both practically impossible (all 330+ ports would have to provide data) and it would suggest that investments can be perfectly planned for all ports, while in reality investments emerge in response to new market dynamics.

**FIGURE 1:
THE DEVELOPERS OF THE PROJECTS INCLUDED IN THE ANALYSIS**



Source: Port investments survey

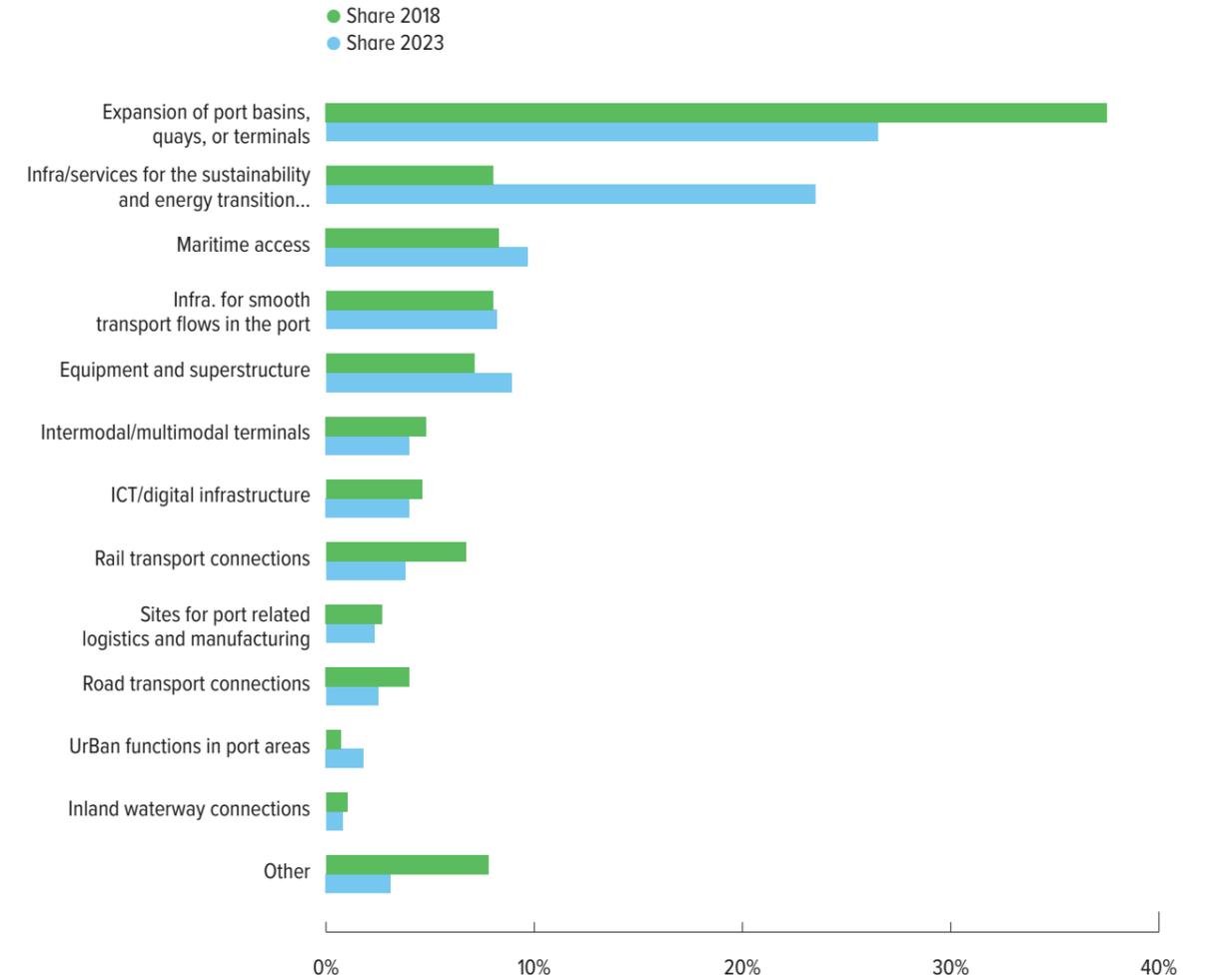
In case the PMB is not the main developer, the project may be developed by a private company, a joint venture with the PMB as a partner, or a government or state-owned enterprise (SOE).

The share of projects where the PMB is not the main developer is relatively high for four investment categories: inland waterways (50%), road connections (42%), rail connections (33%) and infrastructure and services related to the energy transition (33%). In all other categories, the PMB is the developer in the vast majority of projects⁵.

Figure 2 shows the distribution in 'types' of investments included in the database, with a distinction between 13 investment categories. A comparison is made with the distribution of investment projects in 2018, when similar categories were used.

⁵ The share of projects where the PMB is the developer is slightly higher (84%) in the survey of 2023s than in the survey of 2018 (83%).

**FIGURE 2:
PLANNED INVESTMENTS OF THE PMBs BY TYPE**



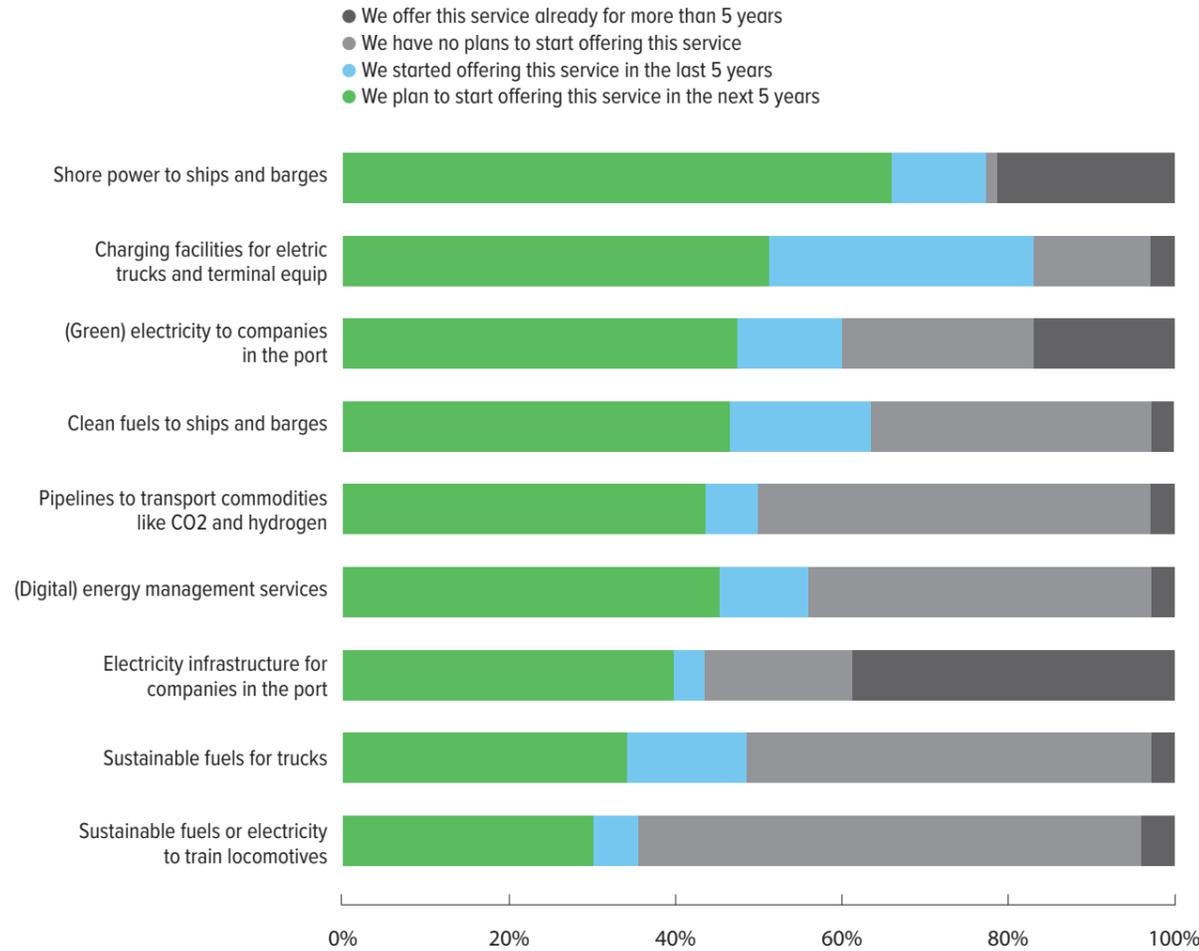
Source: Port investments survey

Figure 2 clearly shows the increasing share of investments related to the energy transition and the transition of ports and shipping towards sustainability. While this category accounted for less than 10% in 2018, the share has increased to almost 25% in 2023.

A closer look at the different types of investments within this category reveals that a large portion involves investments in 'infrastructure and services related to the energy transition of the economy' (55 projects in total), another large share consists of investments in 'infrastructure and facilities for reducing the environmental footprint of shipping' (54 projects), while a smaller share concerns 'investments in reducing the environmental footprint of port operations' (8 projects).

The increase in investments in projects that promote the energy and sustainability transition is related to the changing services provided by PMBs (see Figure 3).

**FIGURE 3:
THE CHANGING SERVICE PROVISION OF PMBS**

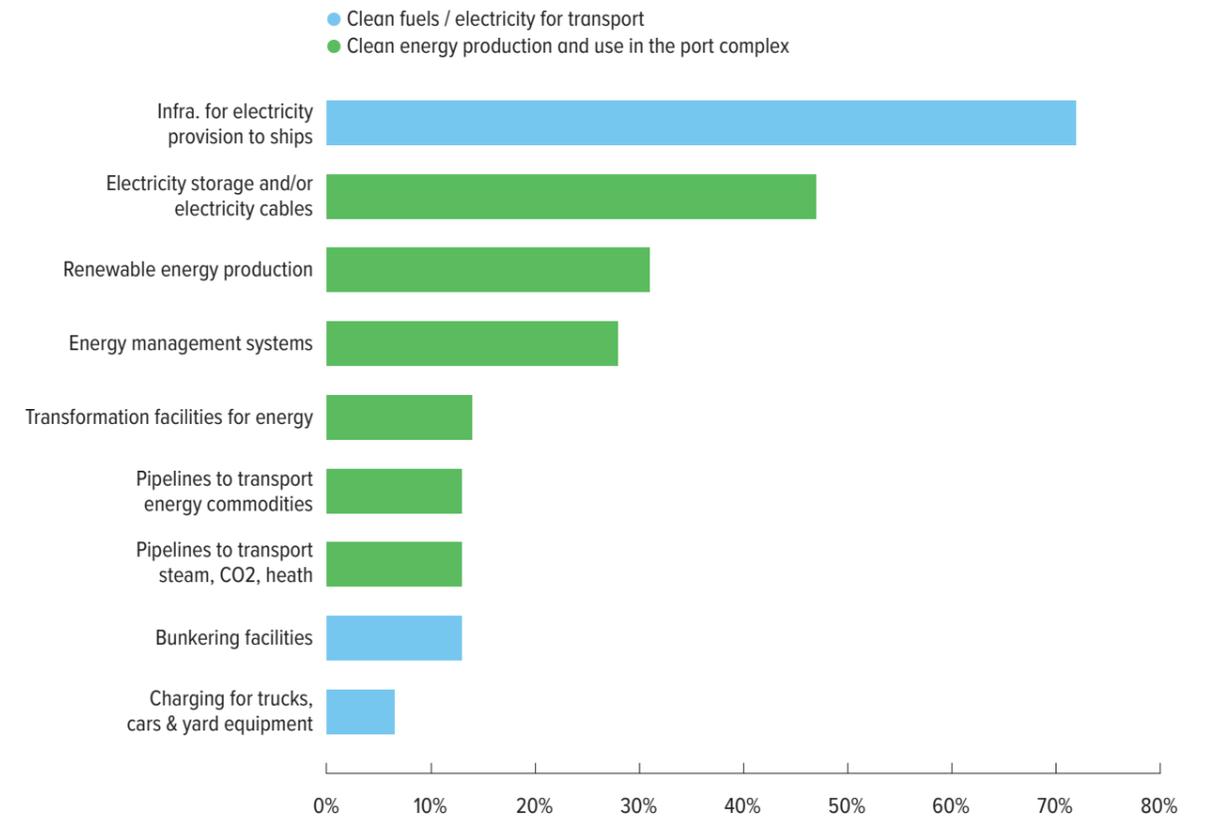


Source: Port investments survey

Almost two-thirds of all PMBs plan to start offering shore power to ships and barges, while the remaining PMBs (with a few exceptions) currently already provide such services. PMBs also aim to provide other services, such as charging facilities for trucks, (green) energy provision to companies operating in the port, clean fuels for ships and barges, pipelines and (digital) energy management services. For the services mentioned in Figure 3, the plans for service introduction in the next five years are much more ambitious: the number of newly introduced services would triple compared to what was realized in the last 5 years. than the actual introduction of new services by the PMBs.

The investments specifically aimed at advancing the energy and sustainability transition can be further divided into different categories (see Figure 4).

**FIGURE 4:
TYPES OF INVESTMENTS TO ADVANCE THE ENERGY AND SUSTAINABILITY
TRANSITION**



Source: Port investments survey

With regards to the clean energy and decarbonisation investments, the most common investment project is the provision of electricity to ships (OPS). More than 70% of all ports that provided data on their investment projects plan to invest in OPS. In addition, facilities to transport and/or to store electricity are also regularly planned, by around half of all responding PMBs. Around a third of all PMBs also plan to invest in renewable energy production and around 30% of them plan investments in energy management systems.

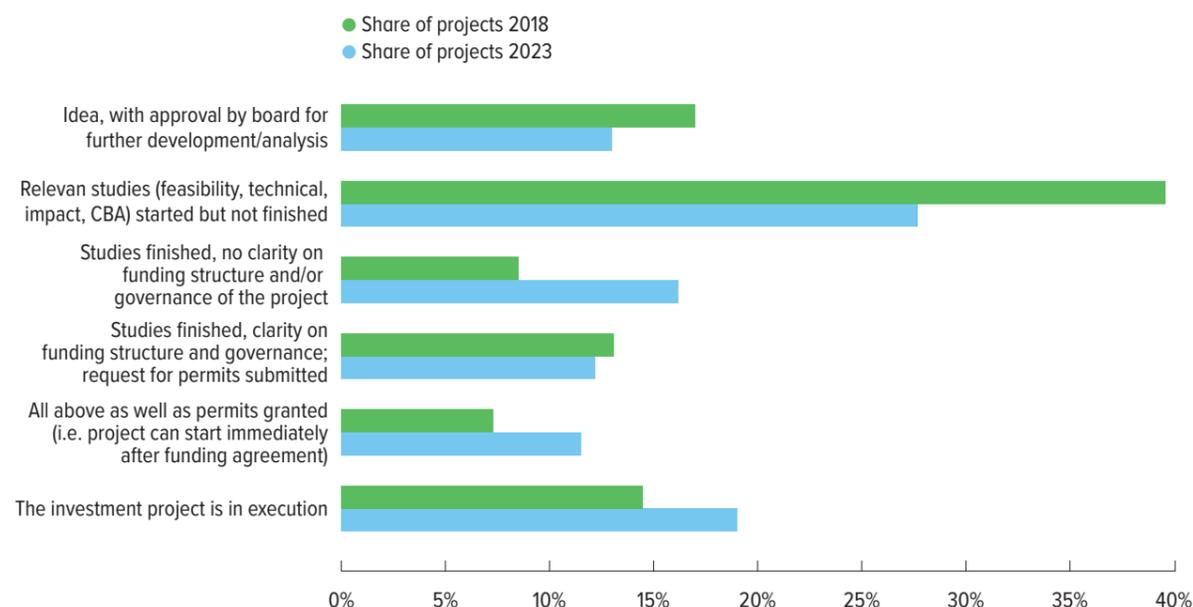
Investments in 'energy management': the case of Port of Rotterdam

One example of a port investing in energy management is the Port of Rotterdam. The Port of Rotterdam has initiated a new venture, which has moved from idea to 'start-up' and is currently in the 'scale-up' phase. In June 2023, the electricity trading platform Distro Energy was launched. This platform accelerates the energy transition with a new market model to offer more favorable prices locally for locally generated sustainable electricity. This ensures more local consumption of renewable energy, lowers costs for users, reduces congestion on the electricity grid and secures better returns for parties that generate and/or store renewable energy. The ambition for this marketplace is to grow in the coming years with users in Rotterdam's port industrial cluster. Such users include buyers, producers, and also energy suppliers and grid operators.

The planning stage of projects

The investment projects included in the database are in different stages of maturity, as shown in Figure 5.

**FIGURE 5:
PLANNING STAGE OF THE PROJECTS IN THE PIPELINE**



Source: Port investments survey

Figure 5 shows a mix of investment projects with projects in (partial), others ready for execution, as well as projects in the study and idea phase. Compared to 2018, the PMBs have more projects close to or in execution. In 2018 more than half (57%) of all projects were ideas or plans without completed studies. In 2024, this share was lower, at 40%. In addition, compared to 2018, more projects (around 20%) are in the execution stage in 2024.

Segments for which port expansion investments are made

Figure 5 shows that the investment category 'Expansion of port basins, quays, and terminal sites' remains the largest category, with 123 projects. Table 2 below shows the segments for which such investments in expansion are made, distinguishing between core and comprehensive ports.

**TABLE 2:
SEGMENTS FOR WHICH EXPANSION INVESTMENTS ARE MADE**

| | Containers | RoRo cargo | Passengers (ferries) | Cruise | Dry bulk | Liquid bulk | Breakbulk and general cargo (e.g. wind blades) |
|---------------|------------|------------|----------------------|--------|----------|-------------|--|
| Core | 35% | 32% | 11% | 10% | 26% | 14% | 30% |
| Comprehensive | 15% | 24% | 12% | 0% | 30% | 15% | 45% |

Source: Port investments survey

Table 2 shows that breakbulk and general cargo is an important segment for port expansion projects. This is particularly the case for comprehensive ports. In several cases, this directly relates to expansion projects for offshore wind cargoes, which often fall into the breakbulk segment.

Port expansion for new energy commodities: the case of Port of Raahé

The green transition of the energy sector brings enormous new opportunities for many ports. One example is the Port of Raahé (Finland). The Port of Raahé is the third busiest general cargo port in Finland (~6 million ton annually), and one of the northernmost sea ports in Europe. The port's future investments promote the green transition by providing a modern operating environment in a strategic location for offshore wind energy, the green hydrogen economy and related value chains.

The SSAB's Raahé steel mill is currently the most important port user. SSAB plans to switch to fossil-free production by around 2030. This transition requires new facilities in the port, such as a new all-weather terminal (AWT) for 10 000 dwt vessels and terminals for SSAB steel products. In addition, this transition is a driver for green hydrogen production in Raahé, for fossil-free steel as well as has a variety of other uses, such as marine fuels.

The Finnish marine areas have a large potential for wind energy production, which is important for achieving national sustainable energy goals. The offshore wind capacity in the Raahé region is approximately 23 GW (1500 turbines), with 5,8 GW (500 turbines) in the pipeline. Proactive and timely investments in port infrastructure are essential to enable the construction and operation of wind energy production. All these investments are aimed at turning the Port of Raahé into a hub for the green transition, where companies will produce in a sustainable way and ship products to end markets.

While the container segment remains to be an important segment for port expansion, it shows less importance in 2023 compared to 2018. This is in line with the indicated investment drivers (see chapter 5), where general trade growth is a less important driver in 2023 and the energy transition is a more important driver.

Furthermore, in the Port investments survey an additional question was asked to better understand the different types of investment in rail connections (27 projects in total). The most common type of rail investment is the extension or modification of existing rail connections. In some cases, investment plans concern the development of new rail connections. Investments in electrification or safety systems were hardly included in the investment pipeline, most likely because these investments are less critical for the port's operations and are often the responsibility of a rail infrastructure company.

Overall, the data presented in this section shows that the PMBs in the EU have a well-developed investment pipeline. Given the changing landscape in which the Europe's ports operate, with more attention to clean fuels, clean energy, energy independence and port resilience, the types of PMBs' investments are different compared to the situation in 2018. This is clearly illustrated by the case of Valencia (see box below).

Past and future investments: the case of Port of Valencia

The Port Authority of Valencia (PAV) manages three ports in the Spanish Mediterranean coast: Sagunto, Valencia and Gandía. The Port of Valencia holds a core status within Europe's TEN-T network, whilst Sagunto is a comprehensive port.

Port investment has been evolving in the last decade, adapting to the changing environment and the new role of ports. In the five years from 2018 to 2023, investments were mainly focused on the development of new maritime infrastructure and improving the port's connectivity. For example, between 2018 and 2023 around €90 million was invested in improving the rail connectivity of the port, with a major investment in adapting the railway network in Valencia to the TEN-T standards, implementing a double-use (standard and Iberian) gauge.

In the upcoming period from 2024 to 2033, new needs regarding decarbonisation of port operations and of maritime related activities, along with the provision of renewable energy, are redefining the port's investment landscape. The main investment will be focused on developing a new state-of-the-art container terminal in the Northern Expansion area of the port (in a PPP scheme with a PAV contribution of around €560 million). At the same time, new investments concerning the upgrade of the port grid and new onshore power supply (OPS) facilities will amount to around €180 million, while the investment supporting the renewable energy generation is expected to amount up to €74 million.

3 THE VALUE CREATION OF THE INVESTMENTS OF PORT MANAGING BODIES

The value creation of the investments in the pipeline of Europe's PMB is very similar to the value creation of the investments in their pipeline in 2018⁶. PMBs focus on creating value for current and future port users (shippers, shipping lines and companies operating in the port), and the vast majority of projects create value in this respect. In addition, in line with their mission (see the text box above), PMBs create 'value for society' by reducing the environmental footprint of the activities in the port and wider logistics chain, and by facilitating the energy transition. PMBs also create value for local communities through reduced local negative externalities and (mixed) waterfront redevelopment projects. In addition, PMBs create value from a 'European perspective' by contributing to a reduction of Europe's energy dependency and increased geopolitical resilience.

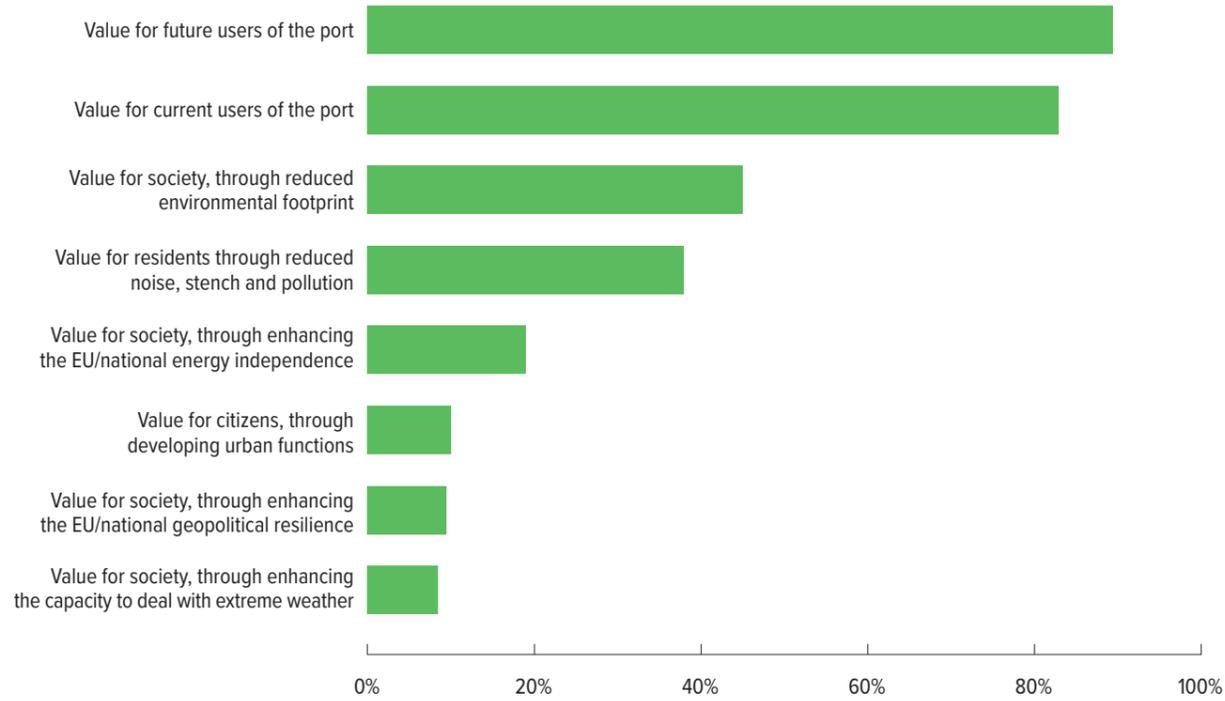
Port governance in the EU: a focus on 'value for society'

ESPO's 2022 Trends in EU Ports' Governance report discusses the current trends in port governance in European ports, based on a survey. The findings show that in 2022, the vast majority of PMBs in Europe (93%) are publicly owned and established as public limited companies. The PMBs are financially self-sustaining and generally aim to create value not only for port users, but also for the wider port community. The top 3 'societal' objectives of PMBs from ESPO's 2022 survey on port governance are 'social and economic growth of the region' (mentioned by 90% of respondents), 'facilitating trade and business' (89%) and 'ensuring that port activity is sustainable in the long run' (87%). This clearly shows that PMBs work towards balancing the economic, social and environmental impacts of the port activities.

Source: Trends in EU Ports' Governance 2022, available at www.espo.be

⁶ Slightly more projects in 2023 are aimed at current users, in addition to future users, and slightly more projects are aimed at improving conditions for nearby residents, by reducing externalities such as noise, stench/odour and pollution.

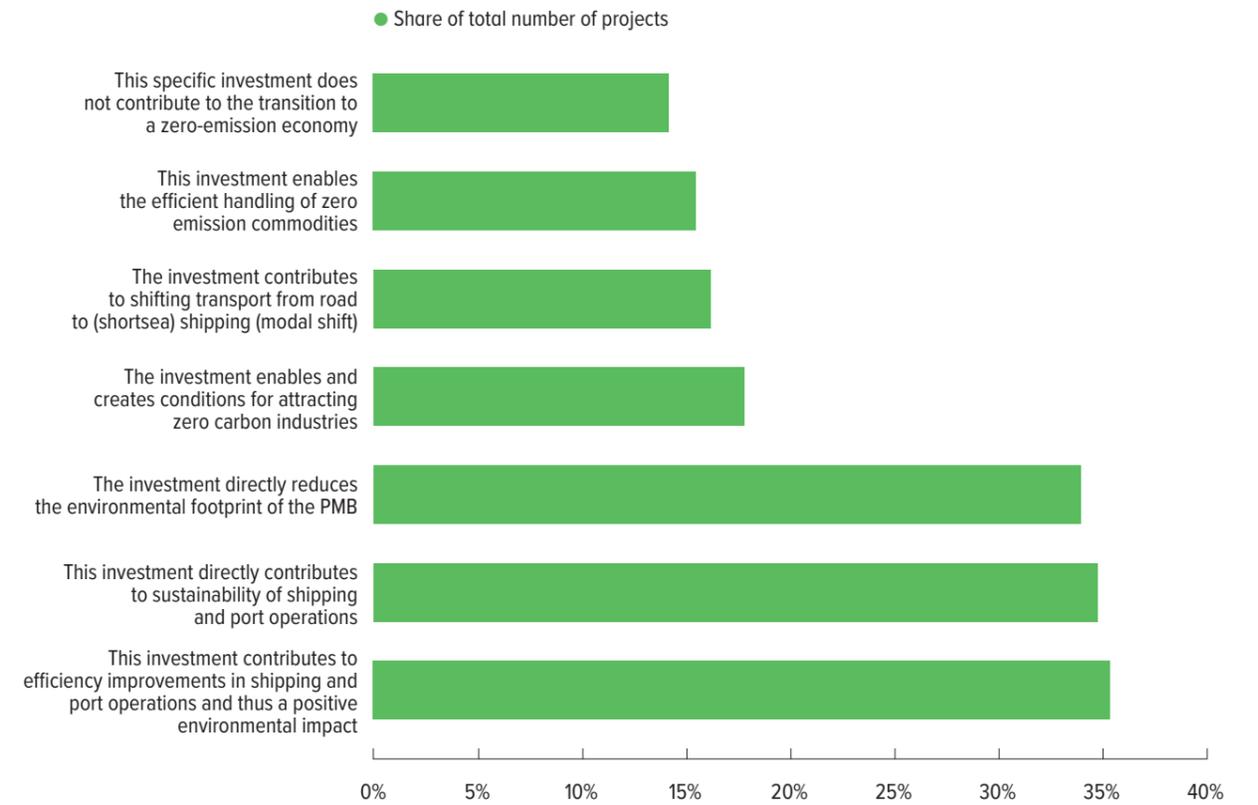
**FIGURE 6:
THE VALUE CREATION OF PORTS' INVESTMENT PROJECTS**



Source: Port investments survey

Given the need to decarbonise shipping and the economy as a whole, a more detailed analysis is made of whether and, if so, how PMBs' investment projects contribute to this core objective. Figure 7 shows the results⁷.

**FIGURE 7:
THE CONTRIBUTION OF INVESTMENTS TO DECARBONISING SHIPPING AND THE ECONOMY AT LARGE**



Source: Port investments survey

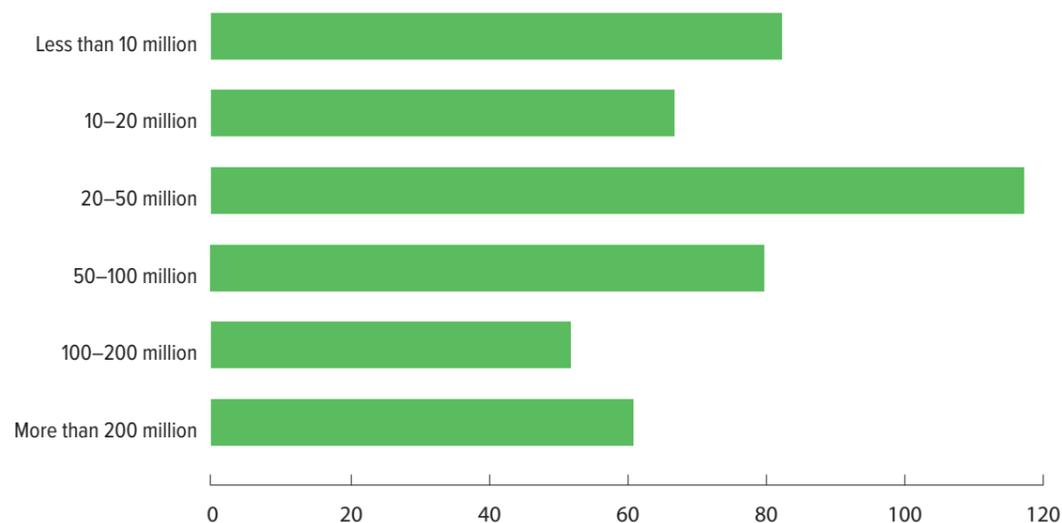
More than 85% of all PMBs' projects have a positive environmental impact. About a third of the investment projects contribute to improved efficiency in shipping and port operations and thus make a positive impact. Almost the same share of projects directly reduces the footprint of port and shipping operations, for instance by providing OPS. Another third of projects reduce the footprint of the port managing body. Other impacts include making the port attractive to zero-carbon industries, such as the production of sustainable fuels, and shifting cargo to more sustainable modes of transport, including inland waterways or rail.

⁷ Please note that, since investment can contribute to the decarbonisation in multiple ways, PMBs could mark multiple options

4 THE INVESTMENT SIZE OF PROJECTS AND THE TOTAL PIPELINE

The PMBs provided broad ranges of the expected investment size of their planned investment projects. Figure 8 shows the number of investment projects in each of the investment ranges.

**FIGURE 8:
NUMBER OF PROJECTS PER INVESTMENT RANGE**



Source: Port investments survey

The estimated size of the investment pipeline of the responding PMBs is around €45 billion by 2034. This amount excludes the investments by private companies in the port, yet includes the investment projects where either a joint venture of the PMB and partners or a government (owned company) is the developer of the project. This number of €45 billion⁸ is higher than the 2018 estimate, partly because a different method was used to estimate the size of the investments above €200 million (based on additional information provided by the ports), and partly because the ports were asked to provide their investment plans for the next 10 years (as opposed to 2018, where they were asked to provide their plans for the next 7 years).

The investment pipeline of the PMBs is very large. An analysis of the investments reported by core and comprehensive ports yields the results provided in Table 3.

⁸ The estimated total investment sum of the 467 projects is more than €52 billion. More than €6 billion is excluded, since in this case a private operator, not the PMB, is making the investments.

**TABLE 3:
INVESTMENTS AND CARGO HANDLING VOLUMES OF CORE AND COMPREHENSIVE PORTS**

| | Core ports | Comprehensive ports |
|---|------------|---------------------|
| Average volume (million ton) | 37 | 7 |
| Average total investment volume (million) | 780 | 425 |
| Average investment per ton (eur/ton) | 21 | 65 |

Source: Port investments survey

The planned investment pipeline expressed in € per tonne of cargo is higher for comprehensive ports (with on average relatively small cargo volumes, of around 7 million tonnes per year) than for core ports. This is intuitive, as in general the comprehensive ports are less focused on handling 'high volume commodities', such as container, dry and liquid bulk, and are often more focused on commodities such as breakbulk and RoRo.

Comprehensive ports with large investment pipelines: the case of Groningen Seaports

Many comprehensive ports have relatively large investment pipelines. One good example is Groningen Seaports (the Netherlands). Groningen Seaports has planned investments in land, quays, accessibility and utilities, mainly aimed at attracting new energy-related activities (offshore wind, hydrogen, sustainable aviation fuels). A large potential investment in additional port land is planned, as there is a significant demand for land in the port area. Timely development of these sites is desirable to ensure land availability and to attract new investments by current and future customers.

A key challenge is to strike a balance between making investments ahead of signed contracts on the one hand, and making investments once contracts are signed with secured revenues for the PMB on the other hand. This applies to the construction of new quays, new land and other infrastructure.

Specifically for the provision of utilities, the major challenge is to match supply and demand in terms of timing and locations where utilities are needed. The financing challenge is directly linked to the uncertainty for all parties involved. This uncertainty may lead to delays in investments and suboptimal (stand-alone) solutions that have a negative impact on the overall business ecosystem and the sustainability goals.

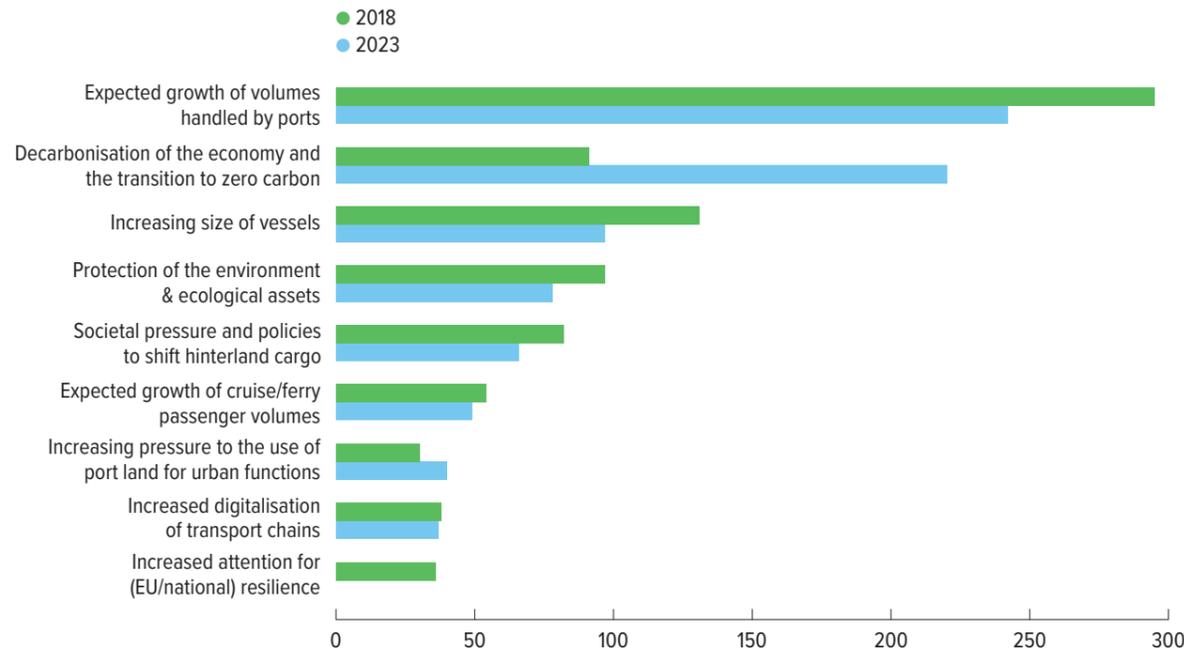
As the survey response covers about 72% of the EU throughput, a conservative rough estimate of the total investment volume of EU's ports can be made based on the volume handled in the EU. **This estimate suggests that the total investment pipeline of PMBs in the EU amounts to around €80 billion for the period 2024–2034⁹.** In addition to these investments by the PMBs, private companies operating in the port will also continue to invest heavily in new facilities, such as terminals, warehouses and industrial plants, for instance for the production of clean energy commodities, such as hydrogen, ammonia and biofuels. As highlighted in the first section of this report, for the European port sector as a whole, these private investments are likely to be significantly higher than those of the PMBs.

⁹ Such an estimate is imperfect because it is unclear whether the sample is representative for the ports that have not provided data. We take a conservative approach by linking the estimate for the non-responding PMBs to the 'missing volume' of about 1 billion tonnes (the responding ports handle about 2.5 billion tonnes, the total EU throughput is about 3.5 billion tonnes) and not by looking at the number of non-responding PMBs. Thus, an estimate is made of the planned investments per tonne or cargo handled. Given the fact that the a much higher share of PMBs of EU core ports responded than comprehensive ports, the 'lower bound' of the range is set at the weighted average of investments per tonne for the whole sample, while the 'upper bound' is set at the unweighted average of the investments per tonne for the core and comprehensive ports.

5 DRIVERS AND BOTTLENECKS FOR PORT INVESTMENTS

The survey provides insights into the drivers of the investment projects as developed by the PMBs. Figure 9 shows the most relevant drivers and compares 2023 with 2018. The main difference that can be observed is that the decarbonisation of the economy is a much more important driver in 2023 than in 2018.

FIGURE 9:
RELEVANCE OF DRIVERS OF INVESTMENT PROJECTS IN 2023 AND 2018

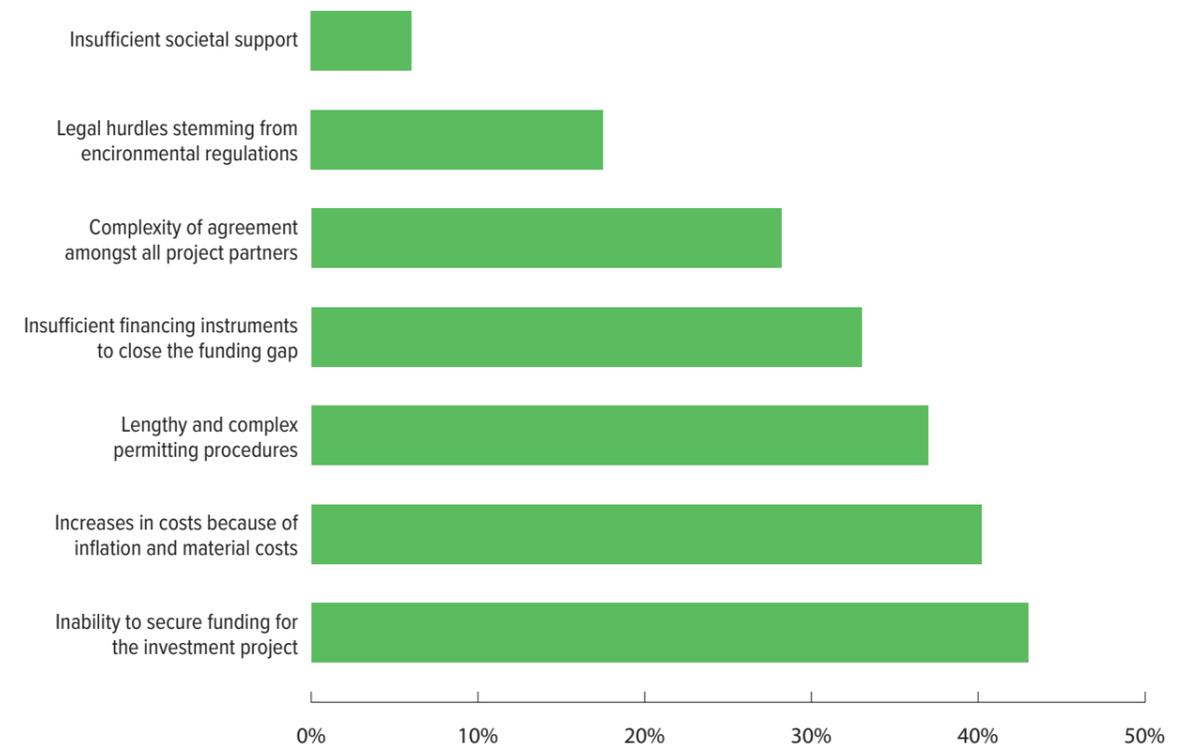


Source: Port investments survey

The expected increase in trade flows remains an important driver of investment needs. This expectation is in line with the forecasts of UNCTAD and a number of advisory firms¹⁰, which point to growth in trade and trade volumes.

In addition to the drivers, the survey identifies bottlenecks of the planned investments by PMBs. The relevance of 7 potential bottlenecks is shown in Figure 10.

FIGURE 10:
THE RELEVANCE OF 7 POTENTIAL BOTTLENECKS



Source: Port investments survey

The results clearly show that 'financial' bottlenecks remain very relevant. The inability to secure funding is a serious bottleneck, which in all likelihood is aggravated by a second bottleneck: the project cost increases due to higher construction costs. The third related bottleneck, that also is relevant to a significant number of projects, is the lack of adequate mechanisms to bridge the 'funding gap'.

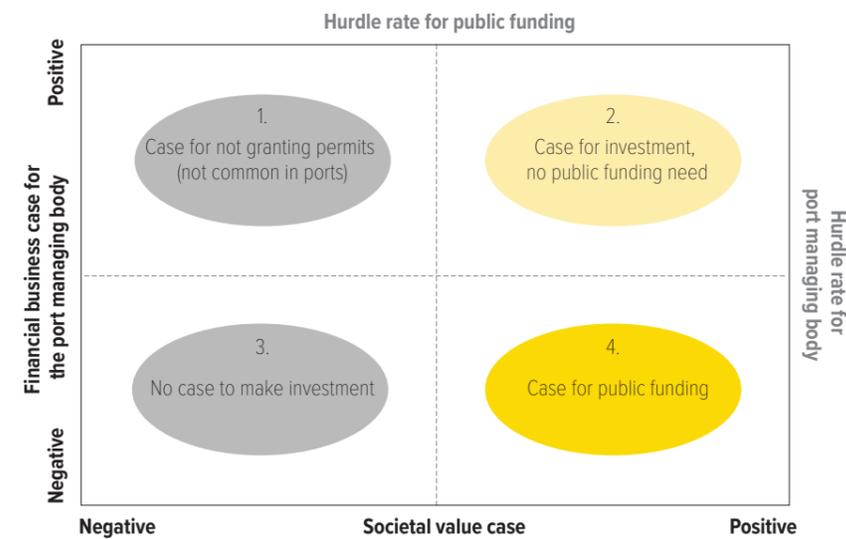
This finding is consistent with data collected with regard to the investments of the PMBs in 2022. This data was collected from more than 40 PMBs, which account for over 1.5 billion tonnes of cargo. The total amount of investments of these PMBs for 2022 was more than €1.5 billion, hence this group of PMBs invested approximately 1 euro per tonne in 2022. That is a considerable investment level, demonstrating the investment capacity of the PMBs. However, this investment capacity is insufficient to finance all the projects in the investment pipeline.

¹⁰ See UNCTAD's Review of Maritime Transport 2023, which includes an overview of forecasts of advisory firms at page XV.

6 THE FINANCING CHALLENGES OF INVESTMENTS IN PORT DEVELOPMENT

As discussed in the 2018 Port Investments Study, investments that are expected to deliver a high value (benefitting both users and society at large) relative to their costs are of importance from a societal perspective. However, not all of these projects generate the necessary financial return to make them commercially viable, because the PMBs cannot convert the societal value creation (which is often substantial) into financial revenue. These are the 'type 4' investment projects in Figure 11. There is a strong rationale for public funding of 'type 4' investments of PMBs¹¹. Policies at the national and European level also reflect this reality by providing financial support to PMBs in the form of loans or grants.

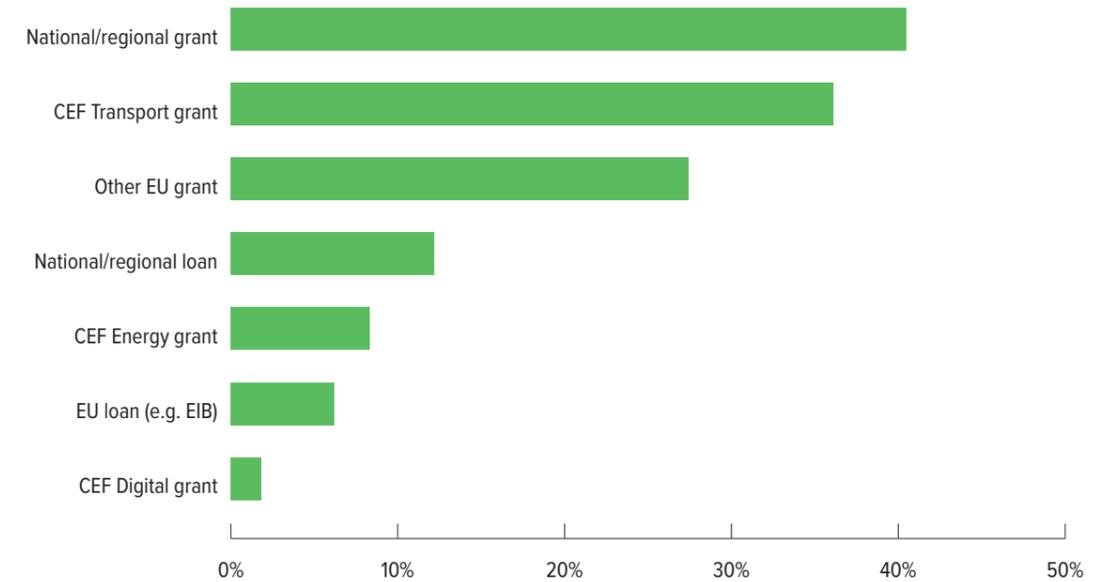
FIGURE 11:
THE CASE FOR PUBLIC FUNDING OF INVESTMENTS PROJECTS OF PMBs



Source: ESPO (2018) Port Investments Survey

Given the continuance of financial bottlenecks, PMBs largely seek to obtain funding from public entities in order to be able to carry out investment projects. Figure 12 shows the desired funding mix for the projects included in the sample.

FIGURE 12:
THE PMBs' DESIRED FUNDING MIX FOR PLANNED INVESTMENT PROJECTS



Source: Port investments survey

Around 40% of the projects seek national regional grants, while for one in three projects CEF grants are sought. EIB loans are sought only for a relatively small percentage of projects and are not as prominent in the desired funding mix as loans on the national and regional level.

Looking specifically at the projects in the implementation phase, i.e. where the funding has been secured, it is noteworthy that almost a third of them have received a CEF grant, while the number of projects receiving national funding is very limited. This suggests that the PMBs' prospects of state-level funding may only be achievable when states develop tailor-made funding mechanisms.

¹¹ The commercial feasibility differs across types of investments. For instance, investment projects to improve maritime access or road transport connections are often not commercially feasible. This is intuitive as it often is not possible to develop a revenue stream to generate additional revenue based on these investments. On the other hand, investments in terminal terminals, or 'energy services' are more often commercially feasible.

7 CONCLUSIONS

Based on the above analysis and the results of the survey of EU's port managing bodies, the following conclusions can be drawn.

First, Europe's ports have a very strong pipeline of planned investments. Overall, these projects are at a more advanced stage than in 2018. In total, EU ports plan to invest around €7-9 billion per year over the next decade.

Second, the transition to sustainable transport and clean energy is having a major impact on the investment pipeline of Europe's ports. Many more projects than in 2018 aim to enable this transition. A common investment of the PMBs is in onshore power supply (OPS), while a large number of them also plan to invest in transport and/or storage of (clean) electricity, clean energy generation, and energy management. Numerous PMBs aim to expand the role of ports as centres for sustainable fuel production and circular activities.

Third, PMBs are expanding their service provision, by adding services to facilitate the transition to sustainable transport and clean energy. Over the past 5 years, some PMBs have already started to offer new services, such as the provision of OPS, pipeline infrastructure, charging facilities and clean fuels, and many PMBs aim to offer such new services in the coming five years.

Fourth, the investments of the PMBs aim to create value for (future) port users and value for society. This focus on users and society at large is in line with the public ownership nature of the vast majority of Europe's PMBs. Compared to the value creation of the projects in the 2018 pipeline, the 2023 investment pipeline makes a stronger contribution to the transition to sustainable transport and clean energy. The vast majority of projects (84%) directly or indirectly contributes to this end.

Fifth, Europe's PMBs need public funding to be able to implement the planned projects. It is clear from the identified bottlenecks that those related to the financing of projects are the most critical. In addition, ports indicate that they are seeking public funding from various sources, at regional, national and EU level.

SHORT BIO OF PETER DE LANGEN



Dr. Peter de Langen is the owner and principal consultant of Ports & Logistics Advisory, based in Malaga, Spain. Peter also is part-time professor at Copenhagen Business School, Denmark and previously worked as corporate strategist at Port of Rotterdam Authority. Peter is co-director of the knowledge dissemination platform www.porteconomics.eu, develops training events and regularly speaks at industry conferences. He authored >50 academic articles and the book 'Towards a better Ports Industry'.

In 2013, Peter founded Ports & Logistics Advisory (PLA, see www.pl-advisory.com). PLA aims to provide high impact contributions to projects and organisations and is active in boardroom advisory, research and executive education in ports & logistics worldwide. PLA works for leading companies and governments in the ports industry, amongst other Port of Rotterdam, Port of Barcelona, the European Seaports Organisation, the World Bank, United Nations and the Panama Canal Authority.

APPENDIX: EUROPE'S LEGISLATIVE CONTEXT AND THE CHANGING ROLE OF PORTS

Europe's seaports today: the multidimensional role of ports

Ports in Europe are gateways to the world and are at the crossroads of global supply chains. They connect the maritime domain with the hinterland through various modes of transport. Ports are hubs of energy and play an instrumental role in safeguarding Europe's energy security. In fact, they are catalysts in realising Europe's energy and climate ambitions and must be seen as a crucial resource for the economy and the society. Many seaports in Europe are clustering industry and blue economy sectors. They are ensuring the mobility of people – citizens and travellers – and are the indispensable lifelines between Europe's mainland and its islands and peripheral regions.

Through all these roles, they are paramount in strengthening Europe's security, resilience and prosperity. More than ever, ports are strategic entities and enablers of Europe's ambitions and its sustainable, digital, competitive, strong and social future.

Europe's ambitions are the ports' ambitions

Europe aspires to be the first net-zero continent by 2050, wants to achieve 55% GHG emission reductions by 2030 and has set itself the target to raise the share of renewable energy in the EU's overall energy consumption to 42,5% by 2030. The European Union aims to both produce and import 10 million tonnes of clean hydrogen by 2030 and to increase its offshore wind capacity to 300 GW by 2050. Europe strives to become a resilient and strategically autonomous Union, safeguarding among others a secure and sustainable supply of critical raw materials and making sure 40% of the need of net-zero technologies is produced in the EU by 2030. These targets have been accompanied by a roll-out of different legislative initiatives, tools and rules.

EU legislative context: support ports as crucial partners in decarbonising and repowering Europe

The energy transition and the strengthening of Europe's energy independence and security cannot be realised without ports. The role ports will play in supplying Europe's economy and society with new energy sources is unprecedented and is reshaping the port landscape. This transformation requires a whole rethinking of the port ecosystem – both by the port and different stakeholders, and by the legislator.

Europe's new TEN-T Regulation very rightly recognises that ports cannot only be measured and prioritised on the basis of tonnes and TEUs. Their contribution to the diversification of EU energy supply and an accelerated roll-out of renewable energies must be considered as well. Yet, this is not enough: recognition must translate into adequate support.

Europe needs to support ports as crucial partners in turning its ambitions into reality. Europe's first priority should be to take stock of what has been agreed in the last years and focus on how to put into practice the different packages and policies in the best way to deliver the agreed ambitions. Europe should provide a policy environment which allows all players in the port ecosystem to progress as much as possible in becoming net-zero, resilient, secure and smart. Where incoherences, conflicting measures or unnecessary complexity appear during the implementation, adjustments should be made. Reaching the ambitions should remain the driving force.

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GLOSSARY

- CEF: Connecting Europe Facility
- EIB: European Investment Bank
- EIF: European Investment Fund
- ERDF: European Regional Development Fund
- ESPO: European Sea Ports Organisation
- PMB: Port Managing Body
- TEN-T: Trans-European Transport Network
- UNCTAD: United Nations Conference on Trade and Development



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