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10 (business) challenges
shaping the future of ports

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Introduction

Ports play a central role in the economic and social development of cities, countries and geographies.

Ports handle more than 80 percent of global trade, but the maritime landscape is changing, and so is the business of ports. Global trade is being influenced by demographics, technology, sustainability and geopolitics that are shaping important trends.

Ports face challenges due to divergent population growth rates, fast technological advancements, the shift towards net-zero energy, and increasing protectionism. It is also clear that the port industry is well placed to positively influence social, environmental, and economic development by creating a healthy, regenerative ecosystem that considers people, planet, and industry.

We highlight 10 (business) challenges that show the indispensable value of the port industry. Each of these challenges will have an impact on the future of ports around the globe.

- 01 Unstable powers**
- 02 Protectionism**
- 03 Ecosystem thinking**
- 04 Digitization of ports landscape**
- 05 Resilient infrastructure**
- 06 Climate change**
- 07 Decarbonization**
- 08 E-commerce**
- 09 Consolidation**
- 10 Diverging demographics**

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01 Unstable powers

The global balance of power is being challenged by divergence in demographic, economic, technological and geopolitical developments. World powers are securing their position in the future's global trade networks, impacting current trade patterns.

- Different demographic and economic growth and (geopolitical) interests cause more tensions among countries and geopolitical alliances like WTO, G7, NATO and BRICS. The objectives of strategic (maritime) infrastructure investment programs like China's Belt & Road Initiative (BRI), are shifting from collaborative (improving cooperation on transcontinental scale) to defensive (securing a position in global trade networks).
- Ports will need to plan for strategic infrastructure development, and carefully assess foreign investments in (maritime) infrastructure based on their goals and potential geopolitical impacts.

02 Protectionism

Protectionism is rising driven by growing inequalities, (regional) conflicts and shifts in global power balances leading to global trade being affected by trade distortions. This may result in the reshoring of industries, negatively affecting trade and increasing process complexity.

- As protectionism grows, states will move supply chains closer to their own markets to ensure critical supplies. This may lead to industries moving closer to home (reshoring, nearshoring and friend-shoring), increasing the need for raw materials and impacting the demand for shipping services.
- Ports will have to deal with the search for optionality in supply chains with delivery time and costs expected to increase. To prepare for this situation, the maritime industry will need to make investments, and develop plans how they will facilitate this new situation.

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03 Ecosystem thinking

Driven by client demands, technological developments, regulations and pressure on margins, the maritime cluster is **increasing collaboration**. Cities with maritime clusters that invest in collaboration across industries can fully realize their innovation potential.

- Port activities and typical urban business activities such as maritime services, insurance, banking, (commodity) trading are increasingly considered to be synergetic. Players in the maritime industry have increased collaboration within the industry, both horizontal (e.g. carrier alliances, DCSA, port authority mergers) and vertical (e.g. designated terminals, port community systems).
- Ports can collaborate with regional businesses to create strong and innovative port-city ecosystems. Ports can use maritime innovation district development to promote innovation and urban regeneration, and become a leading port-city.



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04 Digitization of ports landscape

Tight labor markets, increased collaboration and pressure on margins are driving **automation and digitization in the maritime industry**. Different levels of digital readiness in ports affect trade and need to be addressed for cybersecurity.

- Technological advancements result in more automatic, digitalized and connected supply chains where less physical labor force is needed. It helps the port become a more effective and collaborative part of the global trade network. Increased transparency of performance KPIs will also drive healthy competition amongst peer ports.
- It also increases the vulnerability to cyber attacks. Ports are important for global trade and can be targeted by criminals, terrorists, or enemy nations through cyber attacks, which could shut down critical maritime transportation systems. Ports need to invest in digital capabilities and cyber security to prevent shut-downs and data losses as digital investments increase.

05 Resilient infrastructure

Infrastructure (and operational) resilience is becoming critical with ports being exposed to an ever-increasing wide array of potential disruptions that could inflict economic and social damage on a global scale.

- We need to build ports that can withstand crises like climate change, pandemics, human errors, and wars like in Ukraine. A resilient port can absorb disruptions, adapt to shocks and can quickly recover to a level that is at least similar to a baseline while continuing to develop and transform.
- Ports must recognize that having a resilient port infrastructure is a crucial competitive advantage. This infrastructure extends beyond the physical boundaries of the port and includes both hinterland connections and digital resilience. Port authorities should play an important role in coordinating the supply chain and developing a plan for investing in infrastructure that can withstand challenges.

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06 Climate change

Located along coasts or in low-lying estuaries and deltas, ports are vulnerable to changing weather patterns, rising sea levels and extreme weather events because of **climate change**. Global cargo trade and passenger transport can be affected.

- Extreme weather can damage port infrastructure, disrupt supply chains and cause terminal and / or port shut-downs. The maritime industry is increasingly focused on adopting UNCLOS and conserving marine biodiversity beyond national borders. Port authorities must invest in sustainable operations and adapt and invest in resilience measures to mitigate possible impacts and ensure continued operation.
- Global warming may make it easier to use the Northern Sea Route and the Transpolar Passage for shipping and accessing natural resources in the Arctic. The impact on the maritime economy is complex and multifaceted. There are benefits and challenges to consider when pursuing economic growth.

07 Decarbonization

Decarbonization has become a global imperative and a priority for the maritime industry being the backbone of global trade. There's agreement that we need to do more to reach net-zero by 2050, and the IMO acted on it.

- The maritime industry will need to adapt and transform their operations to become more sustainable and environmentally friendly. It should not only reduce its own carbon emissions, but also help reduce global emissions by developing infrastructure and assets, promoting offshore energy, and transporting low-carbon fuels.
- Port authorities will need to explore the future role of the port – both from a transport and industrial perspective. Investing in infrastructure to shift from fossil fuels to low-carbon alternatives will benefit ports in the long run by reducing emissions, improving air quality, and increasing competitiveness in the global transportation industry. Ports infrastructure developments for handling methanol, blue hydrogen, etc. are being actively pursued globally already.

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08 E-commerce

Consumer **spending on e-commerce** platforms is growing with double-digit rates and has profoundly impacted the maritime industry. The increase in containerized cargo has led to the need for modernizing and expanding port infrastructure and operations.

- Increased e-commerce platforms spending boost the shipping business. Shipping companies now think differently about their business because B2B shipment is no longer the only type of shipment. B2C and C2C shipments also exist. E-commerce demands a focus on efficiency, sustainability, and security in an increasingly digital and interconnected world. Standardized invoicing, onboarding electronic Bill of Lading (eBL) technology platforms, etc. are streamlining the contracting documentations.
- The whole supply chain, including the maritime system, must simplify their processes to stay competitive and efficient. Port authorities can help by facilitating customs and trade, improving supply chain visibility, supporting transportation, and ensuring physical and digital security.



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09 Consolidation

Driven by shipping volumes, transport efficiency and port expansion, the maritime industry has seen a **consolidation in ports, terminals and shipping**. Shipping companies, logistics providers and terminal operators have become global.

- Some companies in the maritime industry became powerful and had a strong position to negotiate, which led to the streamlining of the supply chain. This requires a focus on maritime cluster / supply chain performance. Ports can optimize processes by real-time data processing and predictive information management. This enables them to improve performance, save costs and add value to the maritime service proposition.
- Ports must assess their workforce as they transition from a landlord port to a cluster authority with a new digital skillset. Privatization and corporatization can help in arresting cost leakages, whilst Strategic port partnerships can help capture economies of scale and improve efficiency, competitive position and market power. Ports holding on to traditional clusters, industries and capabilities are at risk.

10 Diverging demographics

Northern Hemisphere countries need to use automation and digitalization to address **workforce challenges** in the aging maritime industry. Meanwhile, Africa's **growing population** is leading to significant investments in port infrastructure, making African ports important players in global trade.

- Countries in the Northern Hemisphere are grappling with a shrinking workforce in the maritime sector because of ageing populations. Embracing automation and digitalization is not a choice but a necessity to ensure the continued efficiency of port operations. To future-proof the maritime economy, substantial capital investments are indispensable to sustain the current operational output in these regions.
- On the other hand, Africa's rapidly growing population is a catalyst for transformative developments for the maritime economy. The population growth is driving substantial investments in port infrastructure and expansion projects. Ports are rapidly modernizing and increasing their capacity. This surge in investments is positioning African ports as critical hubs for regional and international trade, which will further attract both domestic and foreign investments to the continent.

Contact details

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