# WORLD PORTS SUSTAINABILITY REPORT 2020



## WPSP
### WORLD PORTS SUSTAINABILITY PROGRAM

www.sustainableworldports.org

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# Foreword

**By Patrick Verhoeven**
**Managing Director - International Association of Ports and Harbors**
**Coordinator - World Ports Sustainability Program**

When we launched the World Ports Sustainability Program two years ago, our prime objectives were to create an online portfolio of port sustainability projects and to set up a platform that would also offer a think-tank and breeding ground for new sustainability initiatives. We have delivered on these objectives. With 120 projects from 71 ports, covering 38 countries and five continents, the WPSP Portfolio is becoming a global treasure trove on sustainable port development. The WPSP Platform on the other hand can boast a growing range of ongoing collaborative projects developed with our partners and has proved to be instrumental in generating new content over the past two years.

We also had another objective in mind when we set up WPSP and that was to regularly report on the sustainability performance of the global ports sector. With this 'World Ports Sustainability Report' we present our first deliverable.

It was a daunting task, as the port sector – and the maritime sector in general – is notorious for its lack of (comparable) data. Rather than striving for a perfect picture, we decided to dive in pragmatically. This report therefore presents a mixture of analysis and descriptive snapshots. We do not claim academic rigor but would like this report to mark the start of a global reporting process.

The report follows the thematic structure of the World Ports Sustainability Program and provides information on how ports are investing in resilient infrastructure, climate and energy, community outreach and port-city dialogue, safety and security and governance and ethics. Each chapter starts with an analysis of the projects that entered the WPSP Portfolio during the past two years. This is then followed by updates and insights derived from initiatives that are promoted under the WPSP Platform.

We can gather some principal conclusions from this first World Ports Sustainability Report. It shows that community outreach and port-city dialogue are on top of ports' agendas worldwide. This is hardly surprising, given that ports are granted and maintain their license to operate and grow by their local communities. Climate and energy and resilient infrastructure also score relatively high, no doubt driven by societal, political and commercial pressures to embrace decarbonization and digitalization. Governance and ethics and safety and security would appear to be underdeveloped areas in need of more attention.

The other main conclusion is also a call to action. The WPSP Portfolio and Platform are dominated by European projects and initiatives, followed at some distance by Asia and America. On the other hand, Oceania is punching above its weight, but Africa is hardly present at all. Overall, there are still almost one hundred IAPH member ports out there who have not submitted a single project to the WPSP Portfolio. There is therefore an urgent need to bring all ports up to speed. That is not just a matter of outreach and communication, but above all of training and coaching. That is clearly the next step for us to take if we are serious about our ambition to develop global leadership of the ports industry in contributing to the Sustainable Development Goals of the United Nations.

I hope you will enjoy reading this first World Ports Sustainability Report. I wholeheartedly thank the WPSP team, Antonis Michail, Victor Shieh and Fabienne Van Loo, for having transformed WPSP from an aspirational initiative to a thriving programme that delivers added value to the global ports' community. I also thank the Board of IAPH for providing the necessary funding and support as well as all project leaders and partners for their contributions. After its first two years, the World Ports Sustainability Program is now ready to take on the next level and achieve its 'coming of age'!

*"With 120 projects from 71 ports, covering 38 countries and five continents, the WPSP Portfolio is becoming a global treasure trove on sustainable port development."*

# Introduction

## 1.1 The World Ports Sustainability Program

The World Ports Sustainability Program (WPSP) was launched in 2018 to contribute to the sustainable development of world ports in line with the United Nations (UN) Sustainability Agenda and its 17 Sustainable Development Goals (SDGs). The International Association of Ports and Harbors (IAPH) is leading the Program in partnership with some of the world's major port industry-related organizations.

Partner organizations include:



WPSP's mission is to demonstrate global leadership of ports in contributing to the Sustainable Development Goals of the United Nations. The program aims to empower port community actors worldwide to engage with business, governmental and societal stakeholders in creating sustainable added value for the local communities and wider regions in which their ports are embedded.

On 1 January 2016, the 17 Sustainable Development Goals (SDGs) of the 2030 Agenda for Sustainable Development - adopted by world leaders in September 2015 at a historic UN Summit - officially came into force. The 17 Goals are all interconnected, universally apply to all and are the blueprint to achieve a better and more sustainable future. They address the global challenges humanity faces, including those related to poverty, inequality, climate change, environmental degradation, peace and justice.



In line with its mission, WPSP:

a. Maintains a growing portfolio of best practices by ports around the globe.

b. Provides a platform for projects and initiatives by partnering organizations.

c. Functions as a think-tank and breeding ground for new collaborative projects.

d. Reports regularly about the sustainability performance of the global ports sector.

Considering the different roles, responsibilities and competences of ports and port community actors, the World Ports Sustainability Program considers the 17 UN Sustainable Development Goals as a single and indivisible orientation for the sustainable development of ports. WPSP implements the UN SDGs along five themes, each of them covering a non-exhaustive list of potential topics.

**RESILIENT INFRASTRUCTURE**

**CLIMATE AND ENERGY**

**COMMUNITY OUTREACH & PORT CITY DIALOGUE**

**SAFETY AND SECURITY**

**GOVERNANCE AND ETHICS**

*WPSP's mission is to demonstrate global leadership of ports in contributing to the Sustainable Development Goals of the United Nations.*

## 1.2  WPSP Portfolio

Since its launch in March 2018, the World Ports Sustainability Program has accumulated the most coherent and up-to-date global database of port-related projects on sustainable development.

The practical examples given by each project can serve as inspiration for ports seeking to integrate the UN Sustainability Development Goals into their strategy and day-to-day business.

Through the WPSP portfolio, ports and WPSP partner organizations can raise awareness on their ongoing work on sustainability, share their experiences and provide inspiration.

The number of port projects that were submitted to WPSP more than doubled in 2019 with 84 project submissions in comparison to the 36 projects submitted in 2018. The WPSP

Portfolio currently accounts for 120 projects developed by 71 ports from 38 countries all over the globe. In terms of geographical representation, European port projects dominate with 72 entries,

followed by Asia (32), America (22), Oceania (15) and Africa (1). Some ports have several different projects submitted, whilst some collaborative projects involve multiple ports, frequently from different continents.

The WPSP Project Portfolio is classifiable by the five areas of interest and/or by the SDGs they relate to. The analysis of this content of the Portfolio provides a useful insight into the way ports prioritize each area of interest as well as individual SDGs.

As the table demonstrates, 'Community Outreach and Port City Dialogue' has the highest level of activity followed by 'Climate and Energy' and 'Resilient Infrastructure'. Projects targeting 'Governance and Ethics' and 'Safety and Security' are lower in number.
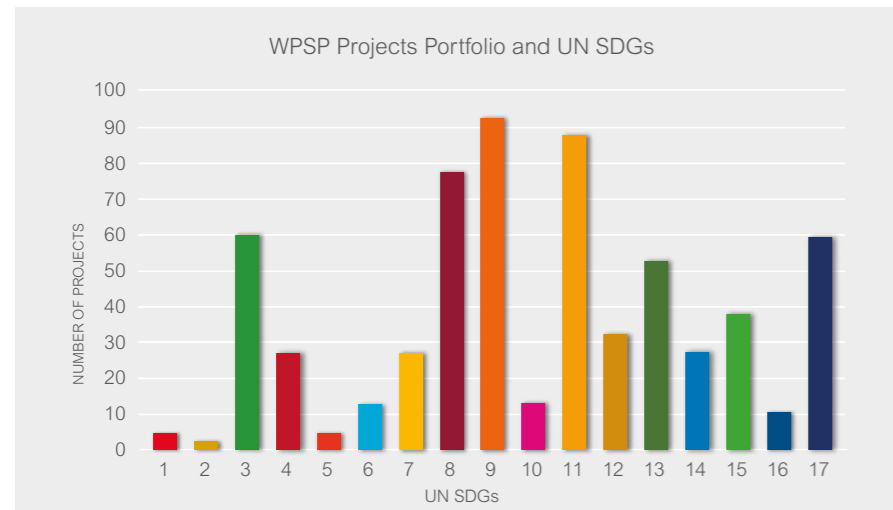
The table also highlights the significant increase in the number of projects submitted in all categories.

Many of the projects relate to - and are classified under - multiple areas of interest.

*Number of projects per area of interest and evolution*

| | 2018 | 2019 | TOTAL |
|---|---|---|---|
| Resilient Infrastructure | 7 | 31 | 38 |
| Climate and Energy | 15 | 28 | 43 |
| Community outreach and Port city dialogue | 24 | 44 | 68 |
| Safety and Security | 3 | 8 | 11 |
| Governance and Ethics | 8 | 11 | 19 |

*The graph below highlights the SDG priorities of ports from an analysis conducted of the 120 projects in the WPSP Portfolio.*



WPSP Projects Portfolio and UN SDGs

*Based on this analysis, the UN SDGs can be classified in five groups, reflecting priorities given by ports.*



This classification serves as a snapshot of the SDGs where ports feel more inclined to demonstrate actions and progress. The World Ports Sustainability Program aims at encouraging the global port sector to continue sharing their experiences on given SDGs. At the same time the Program also actively seeks out projects where concrete contributions by ports in achieving less-commonly addressed SDGs can provide inspiration to others.

The WPSP portfolio offers a wealth of practical information. In line with the WPSP commitment to maintain its content comprehensive and up to date, IAPH has linked its annual Sustainability Awards to the WPSP Portfolio. This means that all projects submitted by IAPH member ports to the WPSP Portfolio during a given year automatically qualify as candidates for the World Ports Sustainability Awards.

These awards are built around the WPSP areas of interest and are presented on a yearly basis during the World Ports Conference. The participation in these Awards provides an extra incentive for ports to share their best practices.

Projects as well as awards can be found on *https://sustainableworldports.org*

## 1.3 WPSP Platform

The WPSP Platform groups together all the existing projects and initiatives with a strong IAPH leadership role. Furthermore, the Platform serves as a think-tank and breeding ground for new collaborative projects. Hence, the Platform includes initiatives that have already been running successfully for many years. The Environmental Ship Index (ESI) Working group is one such example, having been first launched in 2011. It also includes work by WPSP think-tank members with global partners to assist the global port community in integrating the UN SDGs into the business strategies and governance of port authorities.

The table below provides an overview of the main initiatives under the WPSP Platform and maps their relevance to the five WPSP areas of interest.

| Project Partners | Resilient Infrastructure | Climate and Energy | Community Outreach and Port-City Dialogue | Safety and Security | Governance and Ethics |
|---|---|---|---|---|---|
| IAPH / WPSP Cruise Project | | ● | ● | | ● |
| SDGs and Port Governance | ● | ● | ● | ● | ● |
| Environmental Ship Index | | ● | ● | | ● |
| PortXL Accelerator | ● | ● | ● | ● | ● |
| World Ports Climate Action Program | | ● | ● | | ● |
| Clean Marine Fuels | | ● | ● | ● | |
| Womens' Forum | | | | | ● |
| GloMEEP | | ● | ● | | |
| Navigating a Changing Climate | ● | ● | | | |
| Port Call Optimization | ● | ● | ● | | |
| Maritime anti-corruption Network | | | | | ● |

*The Platform serves as a think-tank and breeding ground for new collaborative projects.*

## 1.4 Integration of the UN SDGs in port governance and practice

In line with its mission to demonstrate global leadership of ports in contributing to the UN SDGs, and with the support of the UNCTAD, WPSP organised a dedicated workshop in March 2019 on the way ports can apply SDGs in practice. It took place at the UNCTAD Headquarters in Geneva, gathering over 30 delegates from IAPH member ports, the Trade and Logistics branch of UNCTAD, UN Global Compact, the University of Antwerp, Antwerp Management School as well as representatives from banking and shipping. The group defined and prioritized potential port authority actions per UN Sustainable Development Goal and agreed on a roadmap forward.

### Three approaches to the Sustainable Development Goals

Organizations usually apply one of the following approaches to the UN Sustainable Development Goals. What matters in the end is that a systematic view is pursued, which focuses on the synergies between the 17 SDGs.

**Philanthropic:** Initiatives that involve the contribution of money, employee time and products or services in-kind that are not expected to generate commercial returns.

**Commercial:** Initiatives related to a company's core business, including innovation around products, services or business models that generate positive sustainable development impact.

**Hybrid:** Initiatives that align philanthropic capital with core business operations or competencies. This might involve better leveraging the wider skills and assets of a company beyond cash.

*Sources: Wayne Visser (2019), Business Fights Poverty & Harvard Kennedy School (2015)*

As a follow-up to the Geneva workshop, the World Ports Sustainability Program has developed a practical framework on how ports can implement each of the 17 UN SDGs in practice as outlined on pages 11 -12.

# Application of the 17 UN SDGs in ports

## 1 NO POVERTY

- Setting a good minimum wage for the port employees and encouraging similar practices in the port community
- Taking responsibility for the application of ethical standards throughout the supply chain (e.g. working conditions and human rights in developing countries)
- Including sustainability requirements (e.g. Fairtrade label) in procurement
- Supporting local communities in need through social projects targeting sustainable growth
- Supporting local social institutions (e.g. schools, orphanages, NGOs)

## 2 ZERO HUNGER

- Supporting local projects targeting the provision of food to families/communities in need
- Encouraging the transfer of food surpluses out of the warehouses in the port to charities, food banks and community organizations
- Supporting the trade/storage of Fairtrade and other ethically-produced agricultural products in cooperation with NGOs and community organizations
- Sourcing Fairtrade food products for own catering

## 3 GOOD HEALTH AND WELL-BEING

- Improving health and safety awareness of employees and local communities through training and transparent communication on health and safety risks
- Minimizing environmental externalities (e.g. air pollution, water pollution, noise) of port operations and greening of the port and urban areas
- Initiatives on sustainable / safe mobility and projects targeting congestion
- Enhancing port safety and security and minimizing risks
- Awareness raising and actions against the use of addictive substances (e.g. tobacco, alcohol, drugs)
- Protecting habitats and biodiversity in and around the port area

## 4 QUALITY EDUCATION

- Competence and talent policy for port employees
- Enhance life-long learning for the port employees
- Cooperating with local schools, universities and research centres in educational programs, internships and port visits.
- Offering training to port professionals through dedicated institutions
- Creating synergies with universities in port research and development projects
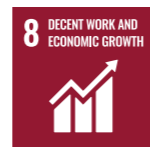
## 5 GENDER EQUALITY

- Gender-neutral hiring and remuneration policies
- Promoting women to leadership roles; training and hiring more women for port operational positions (e.g. crane operators)
- Leveling the male/female ratio of port employees for operational and managerial positions
- Taking measures that make the port working environment more attractive to women (e.g. separate toilets, promotional campaigns, family-friendly HR-policy)

## 6 CLEAN WATER AND SANITATION

- Providing drinking water and clean sanitation facilities for port employees and visitors (e.g. vessels' crew, truck drivers)
- Minimizing/optimizing water consumption in the port area
- Harvesting rainwater for port use
- Protecting water-related ecosystems (e.g. estuaries, wetlands, mangroves) in and around the port area
- Projects protecting freshwater resources (e.g. wastewater and stormwater treatment)

## 7 AFFORDABLE AND CLEAN ENERGY

- Locally producing and/or sourcing renewable energy
- Supporting research and development on clean energy technology
- Producing and/or recovering energy from industrial waste streams
- Investing in energy-efficient port equipment (stationary and mobile material handling equipment, lighting and technology)
- Encouraging clean energy initiatives from third parties (vessels, tenants and operators) through appropriate instruments (incentives, clauses in lease/concession agreements)
- Providing Onshore Power Supply from renewable sources
- Providing cleaner (marine) fuels in a safe and efficient manner
- Optimizing port operations and processes (logistics, port calls)

## 8 DECENT WORK AND ECONOMIC GROWTH

- Achieving economic growth through diversification, innovation and technological modernization
- Generating economic growth in an environmentally sustainable manner
- Ensuring that economic growth positively impacts local communities economically and socially.
- Promoting employment, including opportunities for disadvantaged groups and young people
- Striving for a healthy and safe working environment for all: specific actions related to safety and ergonomics, and creating a good work/life balance
- Generating a sustainable model for cruise tourism
- Taking responsibility for applying ethical standards throughout the end-to-end supply chain (e.g. working conditions and human rights in developing countries)

## 9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

- Devising sustainable port development policies supported by relevant key performance indicators
- Digitally optimizing infrastructure and port operations/processes/services
- Piloting, testing and implementing innovative IT and digital technologies in the port for public and private use
- Foreseeing the adaptation of port infrastructure to withstand climate change
- Adapting port infrastructure and processes to meet market demands (such as increasing ship size)
- Sustainable port development projects
- Investing in infrastructure for all transport modes to enable a balanced modal split
- Minimizing environmental impact of the port activities

## 10 REDUCED INEQUALITIES

- Achieving equality within the port independent of gender, origin, belief, conviction etc.
- Port community initiatives being all-inclusive irrespective of socio-economic background (e.g. supporting sensitive social groups)
- Social background-neutral hiring and renumeration policies
- Taking responsibility for the application of ethical standards throughout the supply chain (e.g. working conditions and human rights in third world countries)
- Financial support to local communities in need and social projects targeting sustainable growth of neighboring communities
- Ethical investment and banking

## 11 SUSTAINABLE CITIES AND COMMUNITIES

- Improving sustainable mobility and reducing congestion for both employees and goods
- Restoring ecosystems and making the port accessible and attractive for people in neighboring urban areas
- Minimizing environmental externalities of port operations (e.g. air pollution, water pollution, noise)
- Disaster recovery planning
- Community engagement programs and initiatives
- Supporting local communities in need through social projects targeting decent living and working opportunities that generate sustainable growth of neighboring communities
- Supporting local social institutions (e.g. schools, orphanages, NGOs)

## 12 RESPONSIBLE CONSUMPTION AND PRODUCTION

- Sustainably managing natural resources, chemicals and waste
- Implementing responsible procurement and sustainable investments in port area management and development as well as the end-to-end supply chain etc.
- Encouraging circular economy and industrial reuse and mutually beneficial use of resources in the port community
- Optimizing port operations/processes/services
- Reducing food wastage and food loss in the production / supply chain (e.g. connecting the cruise industry with an NGO addressing poverty in your city or region)

## 13 CLIMATE ACTION

- Improving energy efficiency of port operations, processes and services
- Enabling the reduction of carbon and greenhouse gas emissions within the port area
- Adapting port infrastructure and port-related operations to Climate Change
- Providing services to reduce greenhouse gas emissions at sea and on the waterways, as well as the hinterland part of the supply chain
- Producing and/or sourcing renewable energy
- Encouraging third parties (vessels, tenants and operators) to take clean energy initiatives, by providing incentives and integrating clauses in lease and concession agreements

## 14 LIFE BELOW WATER

- Taking measures to prevent waste from ending up in the oceans (e.g. port reception facilities, fishing for litter, clean-up actions)
- Promoting sustainable fishing activities
- Supporting research regarding sustainable use of maritime resources
- Reducing the emission of $CO_2$, $SO_2$, $NO_x$, $NH_3$ from port- related activities to avoid acidification of the oceans
- Minimizing water pollution through adequate wastewater treatment facilities
- Protecting coastal and estuarine ecosystems
- Minimizing disturbing factors such as underwater noise for marine mammals

## 15 LIFE ON LAND

- Supporting local projects regarding nature development and biodiversity
- Recovering and protecting nature and biodiversity in the port surroundings
- Preventing deforestation through the usage/procurement of sustainably-certified wood and paper
- Offering nature and environmental education programs to employees
- Port area development in balance with ecosystems
- Minimising environmental externalities of port operations (e.g. air pollution, noise)

## 16 PEACE, JUSTICE AND STRONG INSTITUTIONS

- Constructive dialogue between employer and employees
- Good governance (a clear policy statement, stakeholder analysis, defined measurements, consistent reporting ..)
- Peace initiatives (e.g. peace education on the work floor, prevention of illegal arms trafficking)
- Addressing security: cyber security measures, commercial and operational data protection, improving the careful use and protection of personal data
- Open dialogue and collaboration with all stakeholders (including emergency services, customs and armed forces) and availability of a hotline for complaints and questions
- Transparent internal and external communication

## 17 PARTNERSHIPS FOR THE GOALS

- Partnerships with local communities for port-city relation initiatives
- Partnering with other ports and parties in the logistics chain in joint projects of common interest
- Public-private partnerships for funding and implementing sustainability projects
- Establishing supply chain partnerships for ensuring CSR values throughout the chain
- Cooperating with other ports for educational/training purposes (e.g. joint port training programs and centers)
- Joint research and development projects involving port stakeholders, academia, industry and authorities

To build further on this framework, WPSP is preparing an innovative gaming concept designed to bring the UN Sustainable Development Goals (SDGs) to life for ports around the world. Based on the data gathered as to how ports apply SDGs in practice, the gaming concept is designed to train and increase awareness of people employed in ports, port users and their communities on their roles in achieving the UN-adopted 2030 Agenda for Sustainable Development. Named 'Port Endeavor', the game provides practical guidance on how to deal with the environmental, social and economic challenges faced by all parties when addressing the 17 UN SDGs.

The game will be officially released, played and tested for the first time during the IAPH 2020 World Ports Conference, held in Antwerp on 17-19 March.

Playing cards from the Port Endeavor game



# 2. RESILIENT INFRASTRUCTURE

## 2.1 WPSP Overview

The theme 'Resilient Infrastructure' aims at anticipating, both physically and digitally, demands of maritime transport and landside logistics, at being resilient to changes in climate and weather conditions whilst at the same time developing in harmony with local communities, nature and heritage.

### Interest of ports
Number of projects on Resilient Infrastructure / total projects in the WPSP Portfolio

**38/120**

### Main relevant SDGs

**8 DECENT WORK AND ECONOMIC GROWTH**

**9 INDUSTRY, INNOVATION AND INFRASTRUCTURE**

**13 CLIMATE ACTION**

**14 LIFE BELOW WATER**

### Main focus areas

1. IT-assisted optimization of port operations (12/38)
2. IT assisted optimization of the supply chain (14/38)
3. Adaptation of infrastructure and ecosystems management for responding to climate change effects (6/38)
4. Port planning and development to accommodate market demands and stakeholders' interests (6/38)

Almost one third of the port projects in the WPSP Portfolio relates to 'Resilient Infrastructure'. Two thirds of these projects apply digital solutions in order to optimize the sustainability of both port operations and processes as well as of the logistics and supply chain. Port community systems and data exchange systems between various stakeholders are dominant here, while other digital solutions focus on environmental monitoring and management of operations.

Fewer projects work on the adaptation of port infrastructure and the management of ecosystems for responding to the effects of climate change, such as extreme weather events, or rise in sea level. Regardless of the well-established mitigation efforts by ports, climate change adaptation is of utmost significance. WPSP actively encourages ports to also focus their efforts in this field and share their experiences through the WPSP Portfolio.

Finally, a relatively small number of projects under the Resilient Infrastructure theme address port planning and development work to accommodate for market trends and demands such as larger vessels as well as stakeholder interests.

**Winner of IAPH 2019 Award: Abu Dhabi Ports - mPCS Single Window System to the World**

Technology enabling efficient data exchange between all port community players is vital to ensure streamlined processes and port operations.

The Abu Dhabi Ports Single Window Portal (mPCS) was first developed in 2014 and is now operated and enhanced by Abu Dhabi Ports subsidiary MAQTA Gateway LLC. The portal is currently operational in five ports and 54 private jetties. Integrated with twenty shipping lines, it covers more than hundred services from seaside to hinterland. It is the first solution in the Middle East to achieve PCS-to-PCS integration, and is connected with three single windows, and eleven ports in China, Belgium and Spain.

By the end of 2018, the platform was estimated to have saved the entire community a total of 76,800 man-days, 3.75 million physical trips, 27.3 tons of CO2 emissions, and AED 421.6 million (USD $115 million).

## 2.2 Selective initiatives and data insights

Resilient infrastructure in the WPSP context encompasses both digital and physical port infrastructure which can adapt to changes and demands and ensure the long-term sustainability of a port and its operations.

### 2.2.1 Digitalization

Digitalization can assist ports to enhance the efficiency of processes and operations, ensuring that they become more environmentally sustainable, economically efficient and capable of handling increased port traffic. Advances in automation and new innovative technologies, including Artificial Intelligence (AI), big data, Internet of Things (IoT) and blockchain, offer great opportunities for ports. In this context the 'Smart Port' concept has emerged. Smart Ports use technology solutions to increase efficiency and improve security.

### ChainPORT

ChainPORT is an international partnership between the world's leading ports. Members share knowledge, learn from one another, co-develop innovations and highlight common topics of interest. The aim, through solid debate on the effects of the digital revolution, is to optimally apply technology using existing infrastructure, and ensure future investments secure long-term payback. The ports of Hamburg and Los Angeles spearhead ChainPORT in close cooperation with partnering ports of

Antwerp, Barcelona, Busan, Felixstowe, Indonesia, Montreal, Panama, Rotterdam, Shanghai, Shenzhen and Singapore. The initiative is supported by the Global Institute of Logistics.


*Courtesy PORT XCHANGE*

Digitalization also serves trade facilitation, removing administrative burden and simplifying data exchange between parties in the supply chain.

In line with the provisions of the World Trade Organisation (WTO) Trade Facilitation Agreement and the IMO's Convention on Facilitation of International Maritime Traffic (FAL Convention), Member States are implementing Single Window systems. Trade-related information and documentation should only be submitted once at a single-entry point using a Single Window. By expediting and simplifying information flows between trade and government, all parties involved in cross-border trade stand to gain.

In parallel, developing Single Windows systems push ports to look closer at Business-to-Business information exchange in the port community and the logistics chain. This drives the development of Port Community Systems (PCS).

### A Port Community System (PCS):

- is a neutral and open electronic platform enabling intelligent and secure exchange of information between public and private stakeholders in order to improve the competitive position of the sea and air ports' communities.

- optimizes, manages and automates port and logistics processes through a single submission of data and connecting transport and logistics chains.

The core PCS benefits for all parties involved are higher efficiency and speed regarding port processes, particularly through automation and the reduction of paperwork. In this way, PCSs contribute to sustainable transport logistics and support the ambitions to meet global carbon reduction requirements.

*Source: International Port Community Systems Association (IPCSA)*


*Courtesy Port of Brisbane*

### 2.2.2 Climate proof infrastructure

The effects of climate change such as sea level rise and increase in the frequency and magnitude of extreme weather events have a direct impact on port operations and infrastructure. It is vital for ports to act to strengthen resilience and adapt their infrastructure and relevant operations to the changing climate.

### Navigating a Changing Climate and survey on extreme weather events

Navigating a Changing Climate (NaCC) is an initiative launched in 2015 by the World Association for Waterborne Transport Infrastructure (PIANC). NaCC brings together a multi-stakeholder coalition of nine associations with interests in waterborne transport infrastructure.



The partners of the Navigating a Changing Climate (NaCC) initiative are committed to work together to support the inland and maritime navigation infrastructure sector as they respond to climate change. NaCC furthers
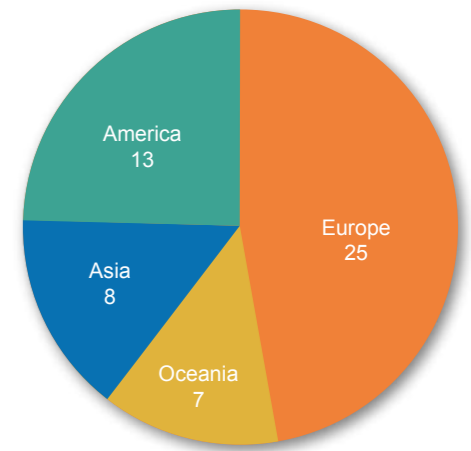
understanding, provides technical support, and builds capacity on climate change. It encourages owners, operators and users of waterborne transport infrastructure to reduce operational greenhouse gas emissions, strengthen resilience and improve preparedness to adapt to the changing climate.



The NaCC partners identified that a lack of data on the consequences of inaction is a potential barrier to justifying investments in improving climate-resilience. Therefore, in May 2019 NaCC devised and launched a survey in order to gauge just how much impact extreme weather and oceanographic events are having on ports around the world. The survey also considered wider issues, for example the role of warning systems and contingency plans.

The survey has been developed to gather aggregate, high-level data on extreme weather and oceanographic events experienced by ports. Furthermore it focused on costs and consequences in terms of damage, clean-up and additional maintenance costs, as well as those associated with closures, downtime and delays. The full results of the survey will be presented during the IAPH 2020 World Ports Conference in Antwerp and the publication of a full report by the NaCC partners will follow later in 2020. Some key preliminary findings are outlined in this section.
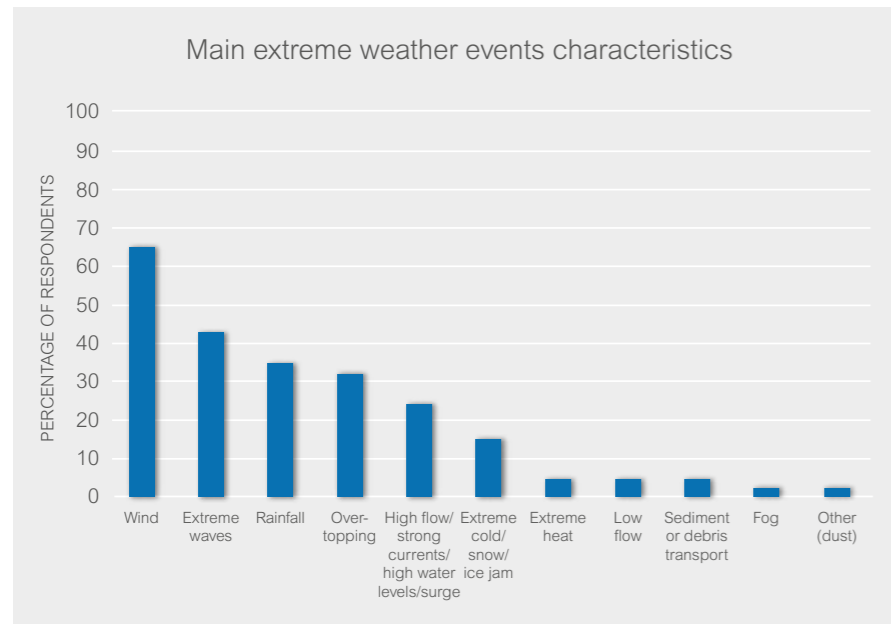
A total of 53 ports responded to the survey with half of the responses coming from European ports.
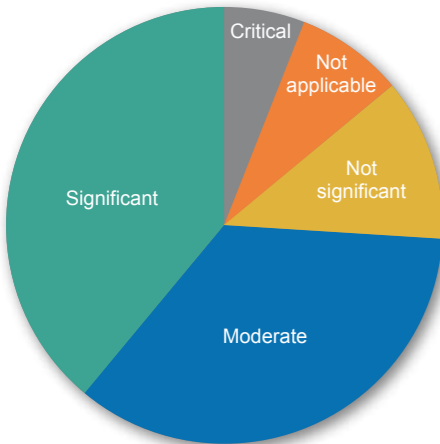


49 extreme weather events were reported in detail. The most dominant characteristics of the reported events included extreme wind, followed by extreme waves, rainfall and overtopping incidents.

*It is vital for ports to act to strengthen resilience and adapt their infrastructure and relevant operations to the changing climate.*
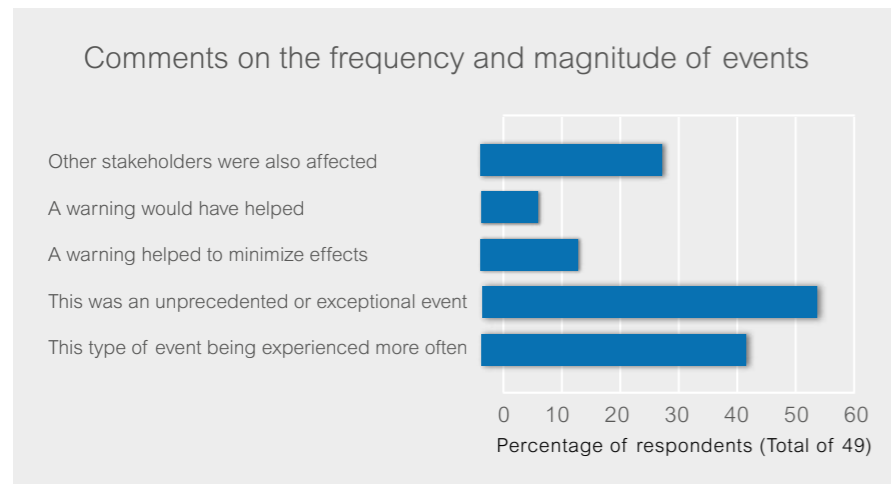
*Courtesy Port of Brisbane*

## Main extreme weather events characteristics



45% of the reported events were considered to have a "significant or critical" effect in terms of port closure or downtime.



In terms of the frequency and magnitude of the experienced events, 41% of respondents indicated that the event was "unprecedented". In addition, more than half of the respondents indicated that this type of event is being experienced more frequently.

Only 15% respondents have an extreme weather risk assessment, contingency plan and warning system in place. Nearly a quarter of respondents have no formal procedures in place to deal with extreme events.

## Warning and response systems in place (53 responses)



## Comments on the frequency and magnitude of events



### PIANC Report - Climate Change Adaptation Planning for Ports and Inland Waterways

Early 2020, PIANC released its 'Climate Change Adaptation Planning for Ports and Inland Waterways' guide. The guide, prepared by international experts of PIANC's Working Group 178, introduces the potential consequences of climate change and some of the challenges to be addressed if ports and waterways are to adapt effectively. It then introduces a four-stage methodological framework to help port and waterway owners and operators plan for improved resilience.

- Stage 1 facilitates understanding of how assets, operations and systems could be impacted and who should be involved in identifying climate change adaptation requirements.

- Stage 2 identifies the type of climate-related information needed to prepare an adaptation strategy, and explains how reference to climate change scenarios can assist in understanding the range of possible future changes.

- Stage 3 describes how the vulnerability of waterborne transport infrastructure assets, operations and systems can be assessed and a risk analysis undertaken.

- Stage 4 presents a portfolio of potential measures (structural, operational and institutional) to be considered when developing an adaptation pathway.
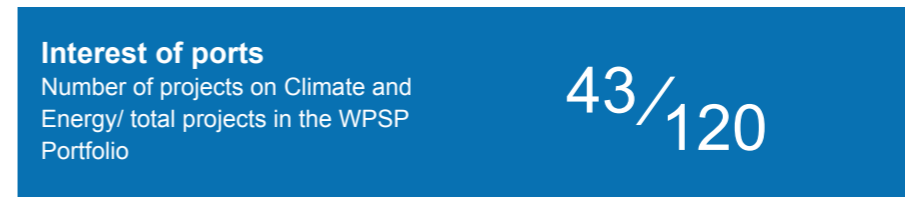
Sixteen international good practice case studies are appended to the guidance, along with various templates to be used for data collection and record keeping.

The guide also provides support to the recent PIANC Declaration on Climate Change. It enables PIANC members and the wider navigation infrastructure community to take timely action to strengthen resilience and adapt port and waterway infrastructure and operations to the effects of climate change. Finally, the guide fulfils the part of the NaCC Action Plan, which is to develop and deliver technical guidance on climate change adaptation.

## 3. CLIMATE AND ENERGY

### 3.1 WPSP Overview

Ports subscribe to the Paris Climate Agreement goal which aims to keep the increase in global average temperature to well below 2 °C above pre-industrial levels. Port community actors can collaborate in refining and developing tools to facilitate reduction of $CO_2$ and other greenhouse gas emissions from shipping, port and landside operations. In addition, they can take initiatives to enable energy transition, improve energy efficiency and stimulate circular economy.

**Interest of ports**
Number of projects on Climate and Energy/ total projects in the WPSP Portfolio

$43/120$

**Main relevant SDGs**



**Main focus areas**

1. Initiatives to reduce GHG emissions from ships (16/43)
2. Increasing the efficiency of port operations (11/43)
3. Clean and renewable energy production, demonstration and implementation projects (9/43)
4. Ecosystems management for carbon capture and adaptation to climate change (4/43)
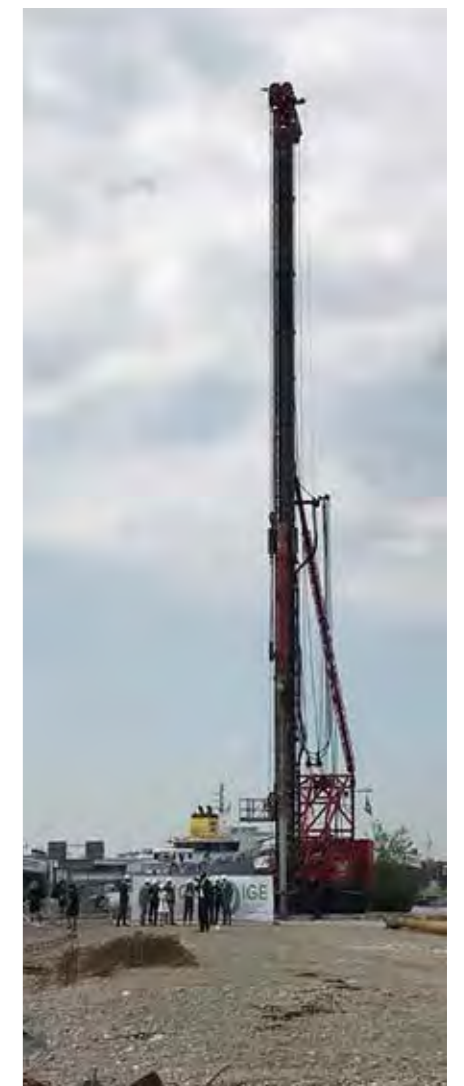5. Circular economy (3/43)

More than one third of the port projects in the WPSP Portfolio address the Climate and Energy area of interest. GHG emission reduction from ships is the highest priority in this category. Initiatives include providing onshore power supply, incentivising best-performing vessels, investing in infrastructure to supply low carbon fuels and port call optimization. This is in line with the international policy developments at the level of the International Maritime Organization and its Initial Strategy on GHG emission reduction, which aims at least halving emissions from international shipping by 2050, compared to 2008 levels.

The second priority is improving energy efficiency of operations in the port area. This is being achieved through innovative processes and technologies addressing the production, demonstration and implementation of clean and renewable energy in ports. So far, few of the submitted projects address the issues around circular economy and the management of ecosystems for carbon capture and adaptation to climate change.

### Winner of IAPH 2019 Award: Port of Amsterdam – Integrated Green Energy Solutions

In developing circular economy initiatives, port authorities work together with their industrial clusters to generate their own energy and give new economic purpose to waste products.

One highly innovative example can be found with the construction of a plant in the Port of Amsterdam transforming plastic to diesel, with the aim of processing 35,000 tons of plastic into 30 million liters of fuel annually. This has the potential to result in a reduction of approximately 57,270 tons of $CO_2$ emissions, as the fuel produced emits 80% less $CO_2$ compared to regular diesel.

## 3.2 Selected initiatives and data insights

### The IMO GHG strategy and the Ports Resolution

In April 2018, IMO's Marine Environment Protection Committee (MEPC) adopted an Initial Strategy on the reduction of greenhouse gas emissions from ships, setting out a vision to reduce GHG emissions from international shipping and to eventually phase them out, as soon as possible within this century. More specifically, the Initial Strategy envisages a reduction in total GHG emissions from international shipping by at least 50% by 2050 compared to 2008, while pursuing efforts to phase them out entirely.

In October 2018, IMO approved a follow-up program, intended for use as a planning tool in meeting these timelines. It broadly identified candidate short-term and medium/long-term measures needing further examination.

In May 2019, MEPC 74 adopted Resolution MEPC.323(74), which invites Member States to encourage voluntary cooperation between the port and shipping sectors to contribute to reducing GHG emissions from ships. The Resolution promotes regulatory, technical, operational and economic actions in the port sector, such as the provision of onshore power supply (preferably from renewable sources); safe and efficient bunkering of alternative low-carbon and zero-carbon fuels; incentives promoting sustainable low-carbon and zero-carbon shipping; and support for the optimization of port calls including facilitation of just-in-time arrival of ships. The Resolution was initiated by the Canadian government and IAPH and was co-sponsored by several other Member States and NGOs.

In line with the focus areas of the Resolution, IAPH is committed to concrete initiatives on port call optimization, port incentives for energy-efficient vessels, clean marine fuels, and onshore power supply as highlighted in the sections below. Furthermore, and following the cooperative spirit of the resolution, IAPH works closely with the International Chamber of Shipping (ICS) in further and jointly achieving progress in all these four fields.

### Global Maritime Energy Efficiency Partnerships (GloMEEP)

IAPH, in collaboration with the IMO, identified a need for technical guidance on emissions and energy efficiency to support port operators and developers in their planning as part of their operational management and investment in future projects. This practical guidance materialized within the framework of the GEF-UNDP-IMO GloMEEP project.

Emissions toolkits (three for ships and two for ports) have been developed within the framework of GloMEEP to enable countries to understand the nature of emissions from ships at sea and in ports, and to formulate strategies to reduce them. Alongside these toolkits, additional studies have been made on emissions detection, control and the potential use of alternative fuels. Furthermore, a series of workshops was held in several port locations. These helped to raise awareness, training participants on how to conduct emissions inventories and develop emission reduction strategies in the port area.

### Port Call Optimization and Just-In-Time arrival of vessels

Port call optimization helps reducing greenhouse gas emissions from shipping, next to producing efficiency and safety gains. The International Harbor Masters Association (IHMA) and IAPH endorse and promote the work of the International Taskforce on Port Call Optimization, which aims at improving quality and availability of master and event data which will deliver benefits to ports, shipping lines, terminals, service providers and society. The aim is for lower costs, cleaner environment, more reliability and safety for shipping, terminals and ports.

The Taskforce has mapped out a complete definition of the port call process from a physical, technical, legal and data exchange perspective. This is the result of five years of research and cooperation between the industry partners to a point where the next step will involve agreeing on a standard data format for information exchange. Once this important milestone is achieved, the aim is to incorporate port call optimization as an industry standard with global recognition.

The Taskforce has provided input to the IMO Global Industry Alliance (GIA) to Support Low Carbon Shipping, which is a public-private partnership initiative under the framework of the IMO GloMEEP project. This aims to bring together maritime industry leaders to support an energy-efficient and low-carbon maritime transport system. One of the focus areas of the Alliance is Just-In-Time (JIT) arrival of ships. The Alliance is holding JIT trials and has developed a practical guide to support implementation of JIT.

Until now, the Global Industry Alliance has operated under the IMO GloMEEP program, and is connected to the work of the International Taskforce on Port Call Optimization. Moving ahead, further work on port call optimization will become part of the IMO's GreenVoyage-2050 project in collaboration with the government of Norway.


*Courtesy Port of Helsinki*

equipped to use available onshore power, and which demonstrate fuel efficiency improvements over time, reducing carbon dioxide ($CO_2$) and particulate matter (PM) emissions. ESI scores range from zero that indicates ship's legal compliance to hundred that indicates close to zero exhaust emissions. As such, the ESI score is a perfect indicator of the exhaust emissions' performance of ocean-going vessels and assists in identifying cleaner ships that proactively go beyond legal compliance.
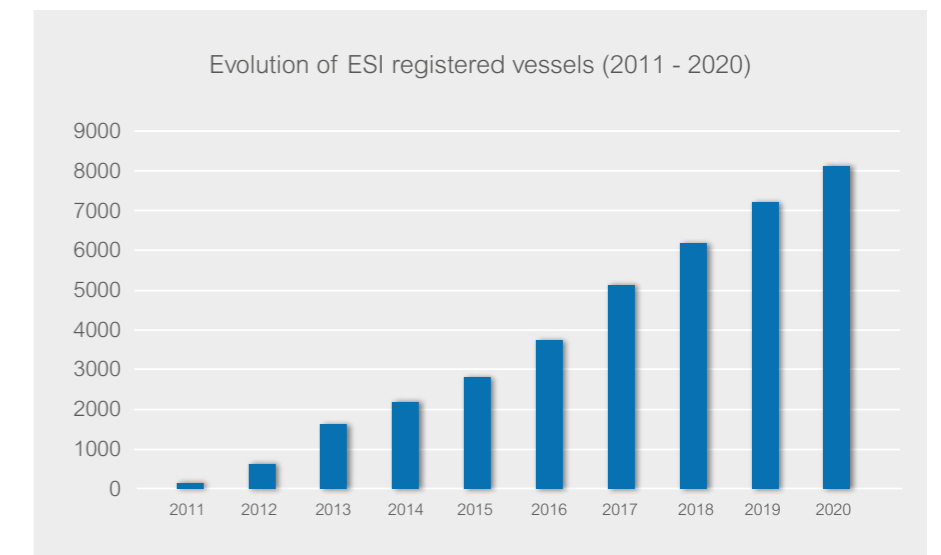
ESI operates on a purely voluntary basis. Through ESI, ports and other interested parties can promote ships to use cleaner engines and fuels and with preferential treatment offered either through discounts on port dues, bonuses or other benefits commensurate with the level of cleanliness.
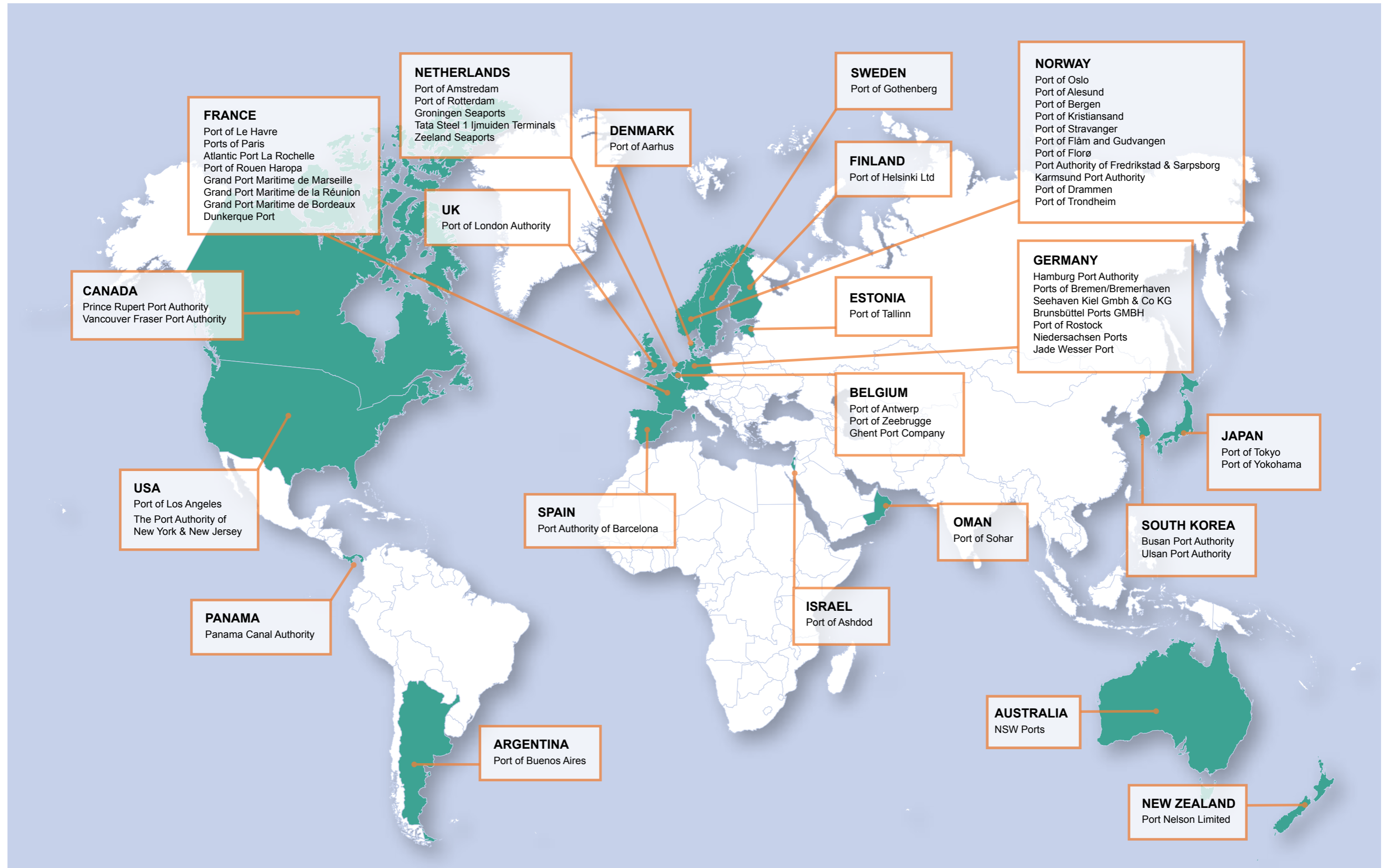
The ESI vessel register now accounts for over 8,000 oceangoing vessels, with 58 incentive providers having signed up since its foundation nine years ago. The Index contains over half of the world's container vessels, with tankers (gas, chemical and oil) accounting for 28% of the total ships registered. Since its inception in 2011, the number of ESI-registered vessels, incentive providers and improved ESI average scores demonstrate the overall success of the scheme.
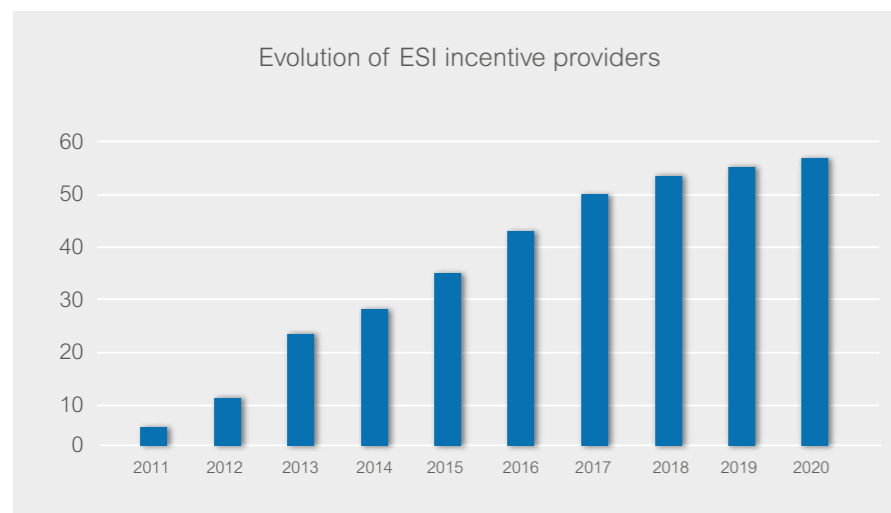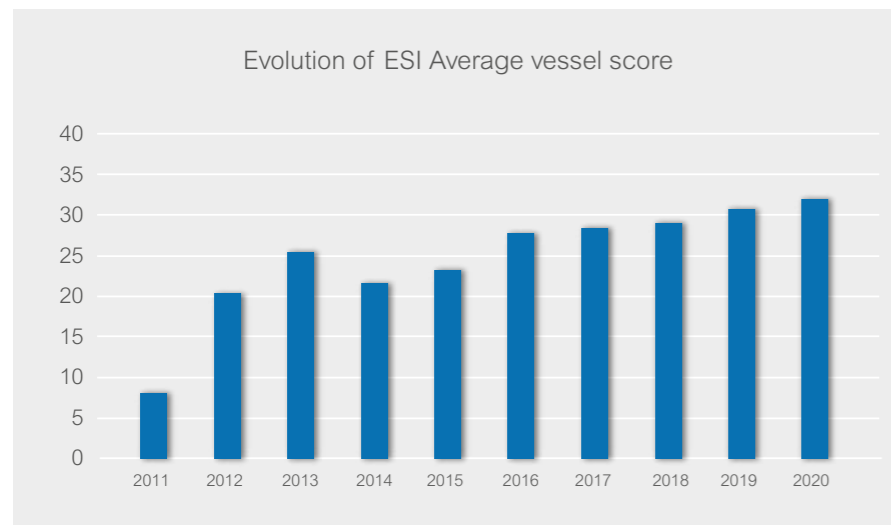
The map on the following pages highlights the ports that are currently providing incentives based on the ESI index.

### Incentive schemes - Environmental Ship Index (ESI)

Ports can encourage vessels to become more environmentally friendly by applying incentives to best-performing vessels. Established by IAPH back in 2011, the Environmental Ship Index (ESI) is the main global index for the provision of port incentives to cleaner vessels.

ESI identifies seagoing ships that perform better in reducing air emissions than required by the current emission standards of the International Maritime Organization.

The ESI formula evaluates the amount of nitrogen oxide (NOx) and sulphur oxide (SOx) that is emitted by a ship. The calculation also rewards vessels



*Patrick Verhoeven (IAPH), Caroline Kroes (Port of Rotterdam), Sakura Kuma (Yokohama Kawasaki Port) and Lisa Wunder (Port of Los Angeles) presenting port initiatives to decarbonise shipping at IMO MEPC 73.*

**Evolution of ESI registered vessels (2011 - 2020)**

# Map of ESI Ports

**FRANCE**
Port of Le Havre
Ports of Paris
Atlantic Port La Rochelle
Port of Rouen Haropa
Grand Port Maritime de Marseille
Grand Port Maritime de la Réunion
Grand Port Maritime de Bordeaux
Dunkerque Port

**NETHERLANDS**
Port of Amstredam
Port of Rotterdam
Groningen Seaports
Tata Steel 1 Ijmuiden Terminals
Zeeland Seaports

**DENMARK**
Port of Aarhus

**SWEDEN**
Port of Gothenberg

**NORWAY**
Port of Oslo
Port of Alesund
Port of Bergen
Port of Kristiansand
Port of Stravanger
Port of Flåm and Gudvangen
Port of Florø
Port Authority of Fredrikstad & Sarpsborg
Karmsund Port Authority
Port of Drammen
Port of Trondheim

**FINLAND**
Port of Helsinki Ltd

**UK**
Port of London Authority

**GERMANY**
Hamburg Port Authority
Ports of Bremen/Bremerhaven
Seehaven Kiel Gmbh & Co KG
Brunsbüttel Ports GMBH
Port of Rostock
Niedersachsen Ports
Jade Wesser Port

**ESTONIA**
Port of Tallinn

**CANADA**
Prince Rupert Port Authority
Vancouver Fraser Port Authority

**BELGIUM**
Port of Antwerp
Port of Zeebrugge
Ghent Port Company

**JAPAN**
Port of Tokyo
Port of Yokohama

**USA**
Port of Los Angeles
The Port Authority of
New York & New Jersey

**SPAIN**
Port Authority of Barcelona

**OMAN**
Port of Sohar

**SOUTH KOREA**
Busan Port Authority
Ulsan Port Authority

**PANAMA**
Panama Canal Authority

**ISRAEL**
Port of Ashdod

**AUSTRALIA**
NSW Ports

**ARGENTINA**
Port of Buenos Aires

**NEW ZEALAND**
Port Nelson Limited

**Evolution of ESI Average vessel score**



**Evolution of ESI incentive providers**

The ESI Working Group works in close cooperation with other existing incentive schemes such as Green Award and the Clean Shipping Index (CSI).




*Courtesy Port of Rotterdam*

**Clean Marine Fuels**

The IAPH Clean Marine Fuels (CMF) Working Group aims to assist ports to establish safe and efficient bunker operations as they migrate towards clean marine fuel provision. The goal is to support the transition of the shipping industry towards decarbonization and improve air quality.

The Working Group aims to simultaneously tackle climate change and improve air quality by focusing on safe bunker operations for new fuels, which can ultimately contribute to both objectives 'from well to propeller'. Through an open, data-sharing information platform, the Working Group is building a knowledge base that will enable ports to supply and transfer clean marine fuels to ships.

CMF embeds and builds on the previous work of IAPH on the safe bunkering of Liquefied Natural Gas (LNG) as marine fuel and aims to transfer the lessons learned and experience acquired to all alternative fuels that the shipping industry will be selecting to use on its pathway towards de-carbonization.

**Onshore Power Supply**

The provision of onshore power supply (OPS) to ships at berth, for them to connect to the grid and turn-off their engines, has long been identified as an effective solution to reduce air pollution in ports and overall GHG emissions from vessels. Back in 2009, IAPH established a working group on OPS that developed a website with all relevant technical and
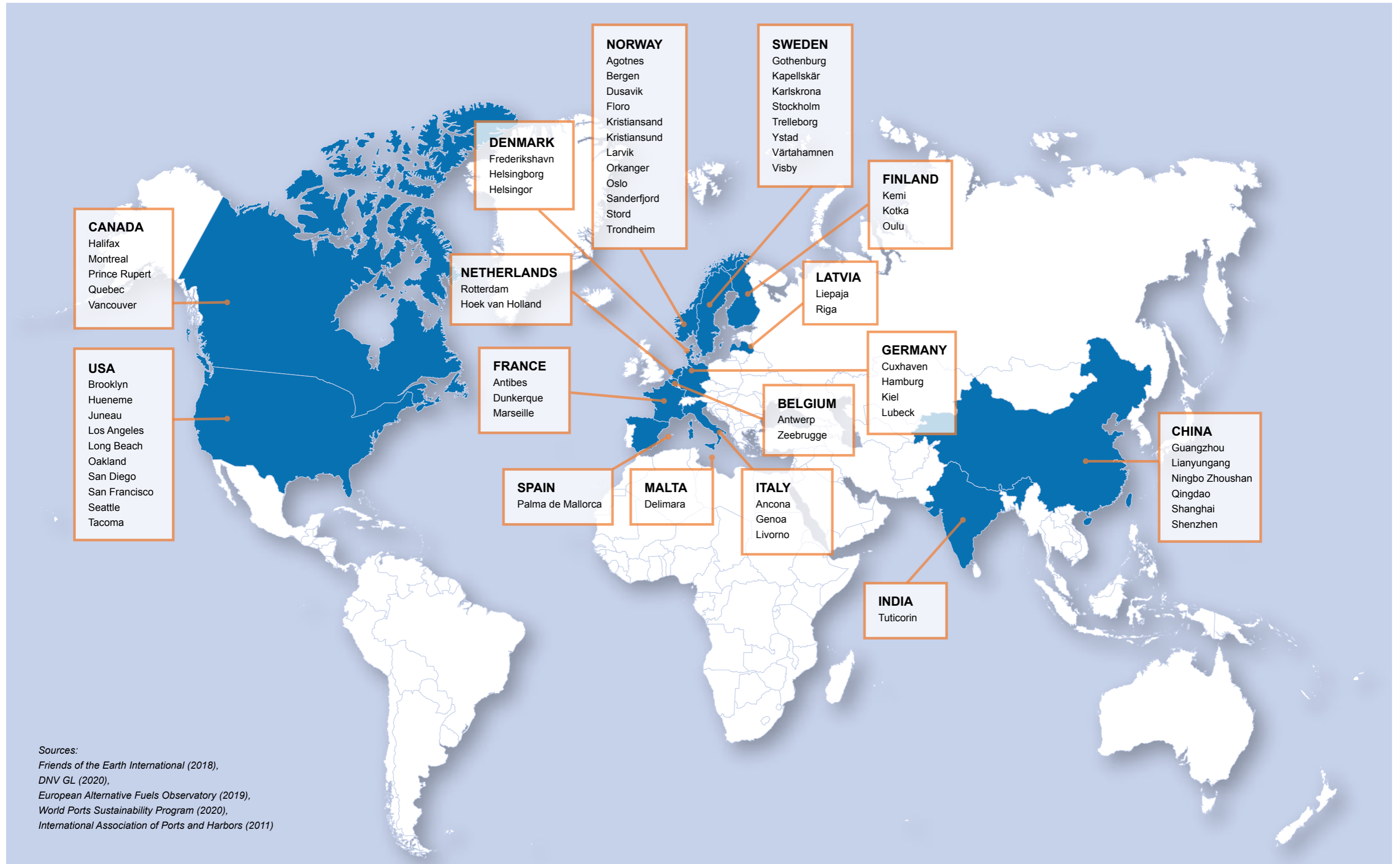
operational information to promote OPS installations in ports.

The map on the following page highlights the 66 ports in sixteen countries that currently provide high voltage OPS for sea-going vessels.

It is interesting to note that back in 2011 when IAPH produced its overview of ports providing OPS, there were sixteen ports with high voltage connections. Nowadays 66 ports provide high voltage OPS.

Current developments overall demonstrate that OPS is gaining momentum with an increasing number of ports working on implementation projects.

**Map of high voltage OPS facilities**

**NORWAY**
Agotnes
Bergen
Dusavik
Floro
Kristiansand
Kristiansund
Larvik
Orkanger
Oslo
Sanderfjord
Stord
Trondheim

**SWEDEN**
Gothenburg
Kapellskär
Karlskrona
Stockholm
Trelleborg
Ystad
Värtahamnen
Visby

**DENMARK**
Frederikshavn
Helsingborg
Helsingor

**FINLAND**
Kemi
Kotka
Oulu

**CANADA**
Halifax
Montreal
Prince Rupert
Quebec
Vancouver

**NETHERLANDS**
Rotterdam
Hoek van Holland

**LATVIA**
Liepaja
Riga

**GERMANY**
Cuxhaven
Hamburg
Kiel
Lubeck

**USA**
Brooklyn
Hueneme
Juneau
Los Angeles
Long Beach
Oakland
San Diego
San Francisco
Seattle
Tacoma

**FRANCE**
Antibes
Dunkerque
Marseille

**BELGIUM**
Antwerp
Zeebrugge

**CHINA**
Guangzhou
Lianyungang
Ningbo Zhoushan
Qingdao
Shanghai
Shenzhen

**SPAIN**
Palma de Mallorca

**MALTA**
Delimara

**ITALY**
Ancona
Genoa
Livorno

**INDIA**
Tuticorin

*Sources:*
*Friends of the Earth International (2018),*
*DNV GL (2020),*
*European Alternative Fuels Observatory (2019),*
*World Ports Sustainability Program (2020),*
*International Association of Ports and Harbors (2011)*

## Getting to Zero Coalition

The Getting to Zero Coalition is a powerful alliance of more than 100 companies within the maritime, energy, infrastructure and finance sectors, supported by key governments and international non-governmental organizations, including IAPH. The Coalition was launched during the UN Climate Action Summit in New York in September 2019 and is committed to getting commercially viable deep sea zero-emission vessels powered by zero-emission fuels into operation by 2030.



To reach the IMO GHG emission reduction goals and to make the transition to full decarbonization possible, commercially viable zero-emission vessels must start entering the global fleet by 2030, with their numbers to be radically scaled up through the 2030s and 2040s. This will require both developing the vessels as well as the future fuel supply chain, which can only be done through close collaboration and deliberate collective action between the maritime industry, the energy sector, the financial sector, and governments and non-governmental organizations.

The Getting to Zero Coalition is an initiative of the Global Maritime Forum, with project partners including the World Economic Forum and Friends of Ocean Action.

## World Ports Climate Action Program

The World Ports Climate Action Program (WPCAP) is an international initiative by leading ports around the world that have committed to cooperate in taking climate action. The participating ports include: Port of Rotterdam, Port of Los Angeles, Port of Long Beach, Vancouver Fraser Port Authority, Port of Hamburg, Port of Antwerp, Port of Barcelona, Port of Gothenburg, Port Authority of New York & New Jersey, Port of Amsterdam and HAROPA Port of Le Havre.



WPCAP focuses on five main areas: efficiency of supply chains, common and ambitious policy, power-to-ship solutions, low carbon fuels and decarbonization of cargo handling.

WPSP works closely with WPCAP and the WPSP Platform will be hosting the outcomes of the various WPCAP working groups, disseminating knowledge acquired and progress achieved.



*Courtesy Port of Helsinki*

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### 4.1 WPSP Overview

Ports are granted and maintain their license to operate and to grow by their local communities. Sustainable ports effectively address the social and environmental impact of port operations and strive towards continuously improving the way they work. Sustainable port development projects need port community stakeholder involvement right from the start and until completion. Furthermore, port community actors can actively engage urban stakeholders by offering them innovative, mutually-beneficial projects that help make their city more attractive and resilient.

**Interest of ports**
Number of projects on Community Outreach / total projects in the WPSP Portfolio

**68/120**

**Main relevant SDGs**

| 3 GOOD HEALTH AND WELL-BEING | 6 CLEAN WATER AND SANITATION | 11 SUSTAINABLE CITIES AND COMMUNITIES | 14 LIFE BELOW WATER | 15 LIFE ON LAND |

**Main focus areas**

1. Initiatives that address environmental externalities (such as air and water pollution, noise, waste) (31/68)
2. Initiatives addressing societal needs and demands (e.g. recreation, green spaces, education, culture, heritage and local economy) (20/68)
3. Protection of ecosystems and biodiversity and ecological recovery projects (10/68)
4. Sustainable port management, planning and development (9/68)

Community Outreach and Port City Dialogue is the most popular WPSP area of interest in terms of port projects, counting for more than half of the total. This is a very broad category, grouping together all initiatives addressing the environmental impact of port operations as well as all those targeting societal integration.



*Courtesy Port of Busan*

## Winners IAPH 2019 Awards

In line with the high number of projects and their diversified focus, two sub-categories were defined for the 2019 IAPH Sustainability Awards competition - 'Port Development and License to Operate' and one addressing 'Externalities of Port Operations'.

### Winner 'Port Development and License to Operate': Port of Busan – Reinventing unused port space project

The Port of Busan in South Korea embarked on an ambitious fifteen-year renovation project of unused waterfront space which was citizen-led by an advisory committee using the website valueforbusan.com to brainstorm ways of best using the space for the community. It has resulted in the creation of a 7,400 square meter swimming pool complex, an 8,900 square meter campsite and a free outdoor foot spa, which provides low price access and free events to low-income families and has generated local employment for youth and older community members.

### Winner 'Externalities of Port Operations': CIVITAS PORTIS

Civitas Portis is a collaborative project testing innovative and sustainable mobility solutions in the port cities of Aberdeen, Antwerp, Constanta, Klaipéda and Trieste. The project is coordinated by the city of Antwerp and involves the city of Ningbo as an observer.



These cities work together on innovative and sustainable solutions to improve access to their cities and ports. The participating cities serve as living labs and implement integrated mobility measures, such as introducing low–emission waterborne passenger services, building safe bike lane networks and migrating public transport services from carbon fuels to electric power.

## 4.2 Selected initiatives and data insights

### 4.2.1 Addressing environmental externalities

Local air quality is a top environmental priority for ports worldwide. When focusing on ship exhaust emissions as a means to improving air quality, most of the initiatives that were described under the Climate and Energy section such as the GloMEEP project, Onshore Power Supply, the Environmental Ship Index and the Clean Marine Fuels Working Groups are equally important and relevant.

### IAPH Cruise project

In October 2019, IAPH launched a project dedicated to the environmental performance of cruise vessels. While the cruise industry offers substantial economic and social benefits to their destinations, public focus is also growing on the environmental impact of the air and noise emissions at ports. Aside from adopting IMO Regulations and Guidelines to reduce air emissions, some authorities and cruise destinations are starting to take local actions in isolation with potentially undesirable consequences as the industry moves to new levels of compliance.

The cruise industry needs a coordinated, global approach from ports to comply with global regulations. For this reason, IAPH recognized the need to improve transparency and clarity in the way cruise shipowners and operators provide ports with data on ship emissions and launched a dedicated project to address this.



*Courtesy Port of Amsterdam*

### NEPTUNES project

WPSP supported and promoted the collaborative project NEPTUNES (Noise Exploration Program To Understand Noise Emitted by Seagoing ships), inspired by the god of the sea in Roman religion (Neptunus).



Complaints about noise from sea-going vessels at berth are increasingly becoming an environmental issue. Building on sustainable port development and operation, it is necessary to investigate the origin and characteristics of the noise emitted by ships at berth and how to reduce it. Eleven ports from Europe, Australia, and Canada joined forces to research the causes and characteristics of noise generated by moored seagoing vessels and how to mitigate it.

NEPTUNES developed a universal noise measurement protocol applicable for various sea-vessel types in every seaport. To classify and compare vessels based on their noise performance, the project team developed guidelines for a vessels' noise labelling scheme. WPSP adopted this labelling scheme and it will be integrated in the Environmental Ship Index (ESI) formula as a separate,

voluntary module during 2020. Ports that wish to do so will be able to use the NEPTUNES-based ESI noise module to assess and reward vessel noise performance.

Furthermore, NEPTUNES developed a Best Practice Guide with a wide variety of measures for the control of noise generated by seagoing ships at berth.

### ECOPORTS



EcoPorts is a key environmental management initiative of the European port sector. It was initiated by a number of ports in 1997 and has been fully integrated into the European Sea Ports Organisation (ESPO) since 2011. The overarching aim of EcoPorts is to raise awareness on environmental protection by cooperating and sharing knowledge between ports and improving environmental management.

EcoPorts offers two main tools for port environmental management: The Self Diagnosis Methodology (SDM) and the Port Environmental Review System (PERS). The EcoPorts Self Diagnosis Methodology (SDM) provides the means for ports to self-evaluate their environmental management and allows them to compare their performance against the sector benchmark. The EcoPorts Port Environmental Review System (PERS) is the only port sector-specific environmental management standard and is independently certified.

ESPO fully operates EcoPorts and its tools in Europe, while EcoPorts is also available outside Europe through the ECO Sustainable Logistics Chain Foundation (ECOSLC), acting as an ESPO-approved contact organization for non-European ports.

There are currently 136 ports worldwide in the EcoPorts network, 106 of which are European. In addition, 49 ports worldwide are PERS certified, including 27 in Europe.

### 4.2.2 Societal Integration of ports

### AIVP Agenda 2030

In 2018 the International Association of Cities and Ports (AIVP) launched the AIVP Agenda 2030 in line with the United Nations (UN) 2030 Sustainability Agenda and its 17 Sustainable Development Goals (SDGs). The AIVP Agenda 2030 translates the global governance SDGs into the context of port-cities, helping port and urban stakeholders prepare projects and plans that contribute to sustainable development and port-city relationships.

Port cities are at the front line of challenges facing sustainable development. Coastal regions suffer some of the worst consequences of climate change. However, port cities are also best placed for testing innovative solutions for energy transition, mobility and cultural development. The AIVP Agenda 2030 has ten goals in terms of the main

challenges for sustainable port cities, with 46 measures for action. Each AIVP goal connects to several SDGs, with the aim of inspiring port and city actors to act following the AIVP Agenda 2030, and to maximize their investment and resources.

### ESPO Award on Societal integration

In 2009, the European Sea Ports Organisation (ESPO) established the annual ESPO Award on Societal Integration of Ports.

The Award promotes efforts made by different European ports to enhance the port-city relations through innovative projects. An independent jury of international experts selects a winner on an annual basis. More than 160 port projects have been submitted to compete for the ESPO Award on societal integration of ports since it was established in 2009.

Following the two first editions, ESPO decided to focus every year on one specific aspect of social integration. The themes addressed so far include: creative strategies to communicate the port to the wider public (2011), youth (2012), heritage (2013), innovative environmental projects (2014), relationship with schools and universities (2015), nature in ports (2016), the arts and cultural involvement of the port (2017) and ports as a good working environment for everyone (2018).

The 2019 theme was 'Transparency and the role of social media in reaching out to the local community'. Port of Dover was awarded the ESPO Award 2019 in recognition of its successful strategy to reach out to the local community and to directly communicate with its port citizens.



*Courtesy Port of Huelva*



*Courtesy Port of Montreal*



*Courtesy Port of Vigo*

| 01 CLIMATE CHANGE ADAPTION Preparing city ports for the consequences of climate change | 02 ENERGY TRANSITION & CIRCULAR ECONOMY Innovative sustainable energy and industry for city port territories |
|---|---|
| 03 SUSTAINABLE MOBILITY Finging new mobility connecting city and port | 04 RENEWED GOVERNANCE Using innovative governance for sustainable port cities |
| 05 INVESTING IN HUMAN CAPITAL Human capital for port and social development | 06 PORT CULTURE & IDENTITY Local port identity as a key asset for sustainable relationship |
| 07 QUALITY FOOD FOR ALL City ports are crucial for sustainable food distribution | 08 PORT CITY INTERFACE Port city interface is a resource to mix different programs |
| 09 HRALTH & LIFE QUALITY Having good living conditions a priority for the city port | 10 PROTECTING BIODIVERSITY City ports biodiversity must be preserved and protected |



*Courtesy Port of Huelva*

### 5.1 WPSP Overview

A mixture of regulatory duties and responsibilities exists when it comes to ensuring safety and security of ship and cargo operations within the port as well as the enforcement of applicable laws and regulations in these fields. With the advance of global terrorism, cross-border criminality and the rise of digitalization, security problems have obtained an entirely new dimension.

**Interest of ports**
(Number of projects on Safety and Security / total projects in the WPSP Portfolio)

**11/120**

**Main relevant SDGs**

3 GOOD HEALTH AND WELL-BEING

4 QUALITY EDUCATION

8 DECENT WORK AND ECONOMIC GROWTH

16 PEACE, JUSTICE AND STRONG INSTITUTIONS

**Main focus areas**

1. Health and safety emergency preparedness and response (4/11)
2. Port area security (4/11)
3. Cybersecurity (3/11)

One out of ten projects in the WPSP Portfolio addresses 'Safety and Security', making this the category with the least number of projects in the portfolio. Nonetheless, the ones that are in the database include inspiring projects covering health and safety, emergency preparedness and response, overall port area security and cybersecurity.

**Winner IAPH 2019 Award: Port of Antwerp - PIN Project**

As a fine example of community response to security threats, the Port Information Network (PIN) Project has brought companies located and working within the port area of 130 km² together to jointly report on any suspicious activities.

Coordinated by the Port Authority, PIN enables member companies to report situations quickly and simultaneously, sharing and receiving selected messages in real time about events in their immediate vicinity. Joining PIN is free of charge and more than 450 port companies joined PIN from its inception.

### 5.2 Selected initiatives and data insights

**LNG Bunker Supplier Accreditation Model and bunkering checklists**

The IAPH Clean Marine Fuels (CMF) Working Group has developed an LNG bunker suppliers' accreditation model which ports can use as a base for their own accreditation systems. Ports can adapt the details of the eight-stage checklist taking national and local requirements into account. The accreditation model aims to


*Courtesy Port of Los Angeles*

impose safe operations and makes LNG bunker suppliers comply with each port's qualification criteria in order to attain a license for performing LNG bunker operations. With the IAPH tool, a port can license a bunkering company in its area, based on an equal system. The benefit of the tool is that neither individual ports nor bunkering companies need to reinvent the wheel in terms of establishing and then going through the entire audit process.

Another CMF WG contribution to safe LNG bunkering is the creation of harmonized LNG bunker checklists for known LNG bunkering scenarios. These checklists reflect the extra requirements of ports regarding LNG bunkering operations in or near their port environment. By using bunker checklists, a high level of quality and responsibility of the LNG bunker operators can be obtained. Implementing harmonized bunker checklists in ports also benefits vessels (and their crew) when bunkering LNG in various ports as it reduces potential confusion caused by having to comply with different rules and regulations in different ports. The CMF Working Group has developed three bunkering

checklists for implementation in ports: Truck-to-Ship, Ship-to-Ship and Bunker Station-to-Ship.

The CMF Working Group embeds and builds on previous work of IAPH on the safe bunkering of Liquefied Natural Gas (LNG) as a marine fuel and aims to transfer the lessons learned and experience acquired to all alternative fuels that the shipping industry will be selecting to use on its pathway towards de-carbonization.

**Cyber-security**

Cyber-security remains a sensitive issue in the port community, with few ports and operators willing to speak about it or share information. However, the topic is far too important to be left untouched.

In September 2019, delegations of IAPH and the International Cargo Handling Coordination Association (ICHCA) met in London to informally discuss how the industry could take the subject further. It was agreed that, as a first step, an information paper on 'Port Community Cyber-security' would be produced that could serve as the basis of a broader awareness campaign.

The paper will highlight why cyber-security is such a vital subject for port communities and will address the importance of using a common language for this issue in the context of port communities, cyber-defense and cyber-security incidents. It will also address the main building blocks that are essential for a resilient port community policy on cyber-security. The relationship with the security agenda of IMO and the ISPS code will also be highlighted. The paper will be introduced at the IAPH 2020 World Ports Conference in Antwerp.

**Stowage and safe securing of steel cargo on board ships**

IAPH has also joined ICHCA in endorsing a set of best practice guidelines for proper stowage and safe securing of steel cargo on board ships to ensure port workers' safety and to enhance terminal operations' efficiency. IAPH and ICHCA joint member Jurong-Port of Singapore has produced the guidelines with a guide scheduled for publishing in September. As a follow-up, ICHCA and IAPH will collaborate in seeking support of Member States to bring the issue to the attention of the IMO Maritime Safety Committee (MSC).

## 6.1 WPSP Overview

Several port authorities are actively integrating principles of good corporate governance, regardless of their ownership or business model. Depicted in port strategic policies and visions, such principles often extend beyond traditional port responsibilities to addressing key community needs, including social and gender equality, education and health, and the port's contribution to global issues such as carbon neutrality and circular economy. Furthermore, ports are aiming to raise the bar of ethics and transparency as well as committing to structured reporting on sustainability.

**Interest of ports**
Number of projects on Governance and Ethics/ total projects in the WPSP Portfolio

19/120

**Main relevant SDGs**

| 1 NO POVERTY | 2 ZERO HUNGER | 4 QUALITY EDUCATION | 5 GENDER EQUALITY | 10 REDUCED INEQUALITIES | 16 PEACE, JUSTICE AND STRONG INSTITUTIONS |

**Main focus areas**

1. Corporate Social Responsibility initiatives (9/19)
2. Sustainability policy, planning and reporting (4/19)
3. Fostering innovation (4/19)
4. Gender equality initiatives (2/19)

One sixth of the total number of WPSP projects relate to Governance and Ethics. Half of them are Corporate Social Responsibility initiatives where ports proactively address local community and broader social considerations. There are also projects focusing on transparently communicating and reporting on the port's vision and its sustainability approach. Projects fostering innovation through green and blue economy incubators are also grouped under Governance and Ethics. There are also a couple of inspiring projects on improving gender balance and empowering women in the port industry.

### Winners IAPH 2019 Awards

Two projects obtained an equal score and were declared joint winners:

### Kenya Ports Authority – Tunahusika Corporate Social Investment program

In Africa, the Kenya Ports Authority has allocated a percentage of its net earnings to its Tunashusika Corporate Social Investment Program. This program aims at funding and supporting school infrastructure in the many surrounding coastal communities where its present and future employees come from. The fund also works with local counties in the construction of healthcare facilities and hosting onsite medical camps.

### Port of Vancouver – Sustainability Governance

A fine example of integrated governance can be found with the Vancouver Fraser Port Authority. They engaged with stakeholders over a two-year period to identify the long-term future vision of the port. It is now actively integrating sustainability throughout the port's business and processes with strong supporting measurement tools to ensure ambitions to deliver the vision are met. These are apparent in the governance structure as well as in its detailed annual reports. Practical monitoring tools are also available to the public online such as the port dashboard covering all aspects of the supply chain and live monitoring of the environment in and around the port.

## 6.2 Selected initiatives and data insights

### IAPH Women's Forum Mentoring Program

In 2012, IAPH established a Women's Forum to advance and empower women in the ports industry. The Forum's objectives include discussing women's issues in the maritime industry, finding ways of attracting women to join the industry and retaining and developing female talent. The Forum also visibly promotes training programs, enabling women to better compete for positions at all levels, including those previously not open to women.

In addition to its scholarship programs, the Women's Forum has recently launched an innovative Mentoring Program. The pilot project, which works via the online Mentorloop software platform, offers twenty women marine pilots, harbour masters or VTS operators the chance to connect to twenty mentors (both women and men) who have good experience in similar roles in a more senior position, across other ports around the world for a period of one year.

The pilot is currently measured for effectiveness with the plan to increase the number of participants on the platform in a second phase. The ambition is to increase competences over a wide level of disciplines, including autonomous vessel operations, smart shipping technology platforms and operational roles which are usually occupied by men.
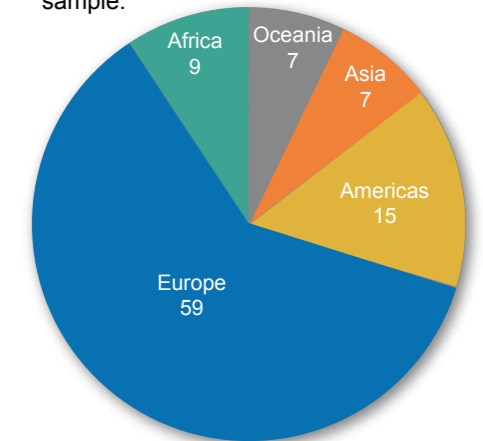
### Sustainability reporting by international seaport authorities

In May 2019, the Vrije Universiteit Brussel (VUB) launched a survey to investigate sustainability reporting practices of world ports. IAPH endorsed the survey and facilitated dissemination and data collection. The survey gained insights about ports' rationale behind sustainability reporting and identified the main benefits and barriers. The ultimate aim, in line with the WPSP commitment to transparency, is to promote further sustainability reporting in the port sector.
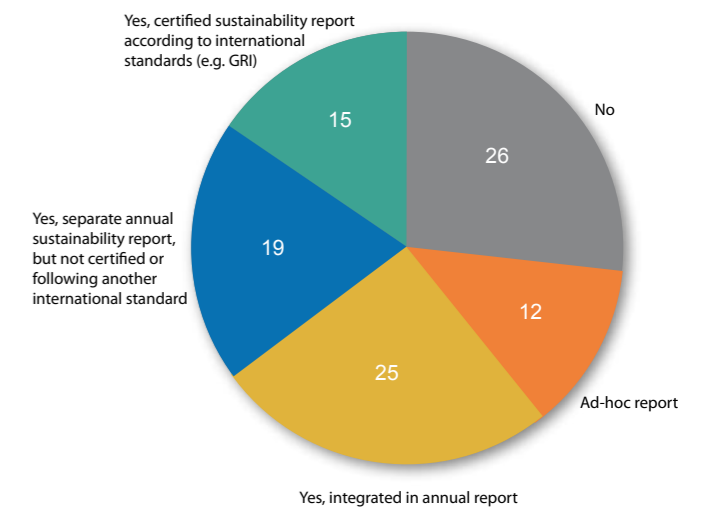
Some of the key outcomes of the survey are presented in this section. Analytical outcomes will be part of a VUB PHD research paper to be published in 2020. Furthermore, IAPH and the VUB research team Magali Geerts and professor Michaël Dooms will consider further ways of disseminating the full outcomes, including recommendations for sustainability reporting in ports.

*Courtesy Dutch Seaports*

The survey gathered a total of 97 responses from ports around the world, with European ports dominating the sample.

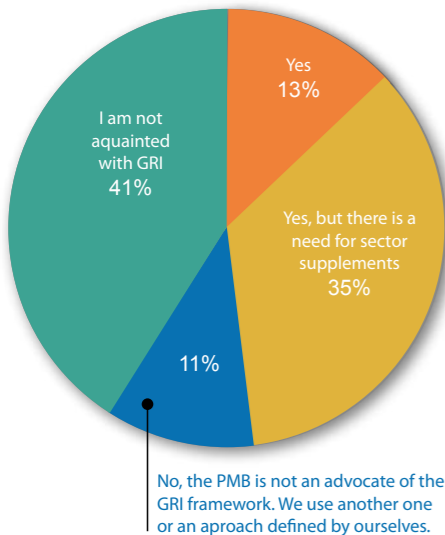Africa 9 | Oceania 7 | Asia 7 | Americas 15 | Europe 59

The findings indicate that more than one third of the ports report separately and regularly on sustainability following a structured approach. One out of four ports integrates information on sustainability in its annual report while one out of ten ports only reports on an ad-hoc basis. It is interesting to note however, that one quarter of the responding ports do not actually report on sustainability at all.

*Does your port report on sustainability?*

Yes, certified sustainability report according to international standards (e.g. GRI) 15
No 26
Yes, separate annual sustainability report, but not certified or following another international standard 19
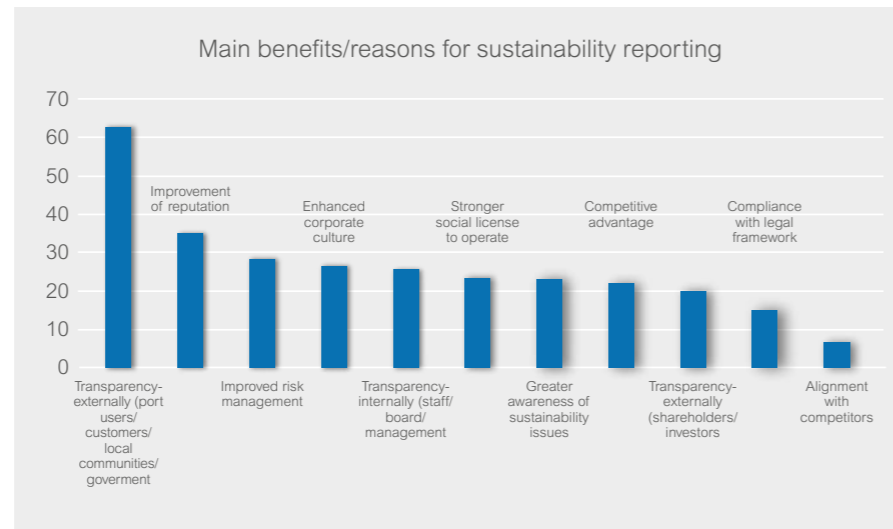Ad-hoc report 12
Yes, integrated in annual report 25

The Global Reporting Initiative (GRI) is the cross-sectoral global standard for sustainability reporting. There is a debate however on whether the overall GRI approach can be fully applied to the port sector or whether sectoral guidance for ports is needed. The respondents to the survey appear to strengthen the latter view with only one out of ten ports suggesting that the GRI indicators are sufficient for the port sector.
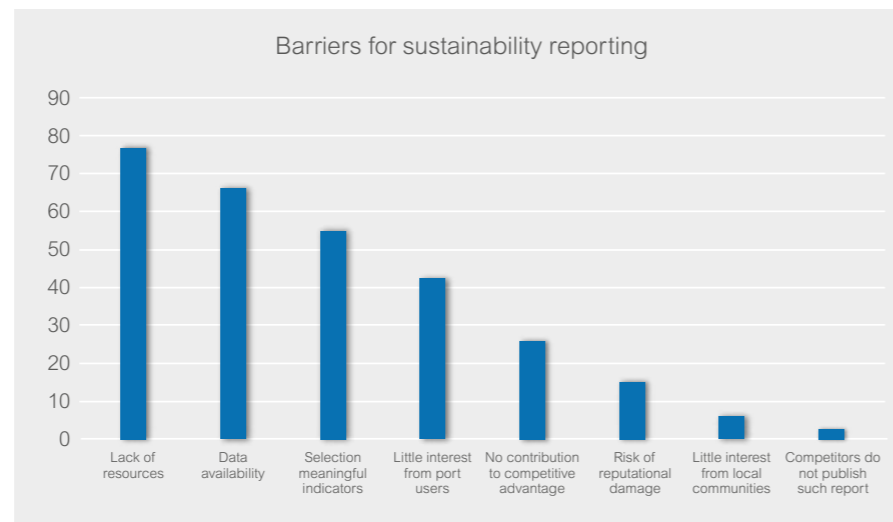
*Do you believe the indicators defined by the Global Reporting Initiative (GRI) are sufficient to cover the full concept of sustainability in the port sector?*



Pie chart segments:
- I am not aquainted with GRI 41%
- Yes 13%
- Yes, but there is a need for sector supplements 35%
- 11%
- No, the PMB is not an advocate of the GRI framework. We use another one or an aproach defined by ourselves.

The main reported benefit of sustainability reporting is increasing transparency towards the ports' stakeholders such as port users, customers, local community and governments. This is followed by improvement of reputation, improved risk management and enhanced corporate culture.



Main benefits/reasons for sustainability reporting

When it comes to reported barriers for sustainability reporting, the lack of resources is identified as the main issue. This highlights the point that sustainability reporting requires resources in terms of time, personnel, data collection, analysis and financing. Data availability, the challenge to select meaningful indicators, and limited engagement from some port users are the other identified significant barriers.



Barriers for sustainability reporting

The survey also offers insight in terms of ports' preferences for environmental management standards and certification. More than half of the respondent ports are certified under the cross-sectoral ISO 14001 environmental management standard. The port sector specific EcoPorts Port Environmental Review System is chosen by one out of five ports. However, one third of respondent ports do not opt for environmental management certification.



Environmental management standards in place

## Global Survey on Port Governance

A global survey on port governance was launched at the end of 2019, with the ambition to analyse current structures and functions of port governance around the globe and to lay the foundations for discussions of future port governance models. The study has been developed by professors Thanos Pallis and Gordon Wilmsmeier along with a research team at the Universidad de Los Andes, Colombia and University of the Aegean, Greece. It is endorsed by PortEconomics, a web-based academic initiative aimed at generating knowledge about seaports, and IAPH.
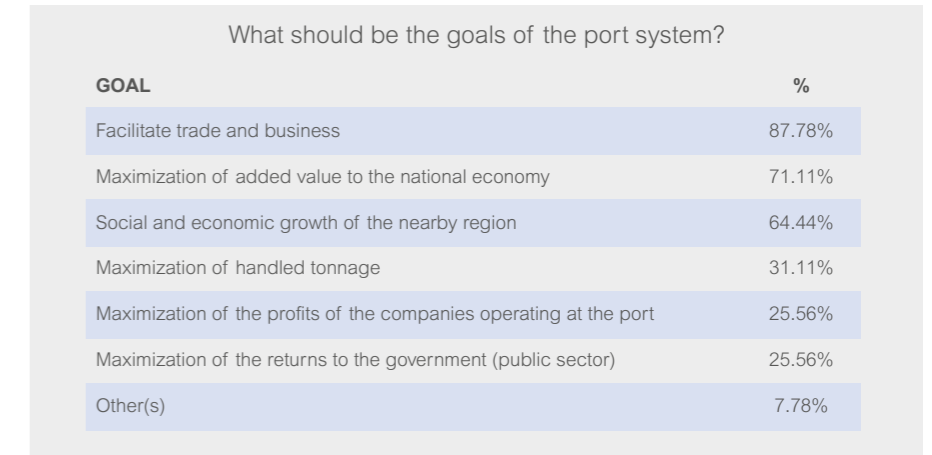
Following a consultation process with various ports and experts around the world, the researchers detailed the different tasks of port governance, and divided them in different categories: port policy responsibilities, regulatory responsibilities, technical management of the port area, market and port regulation, management of concession agreements, and management of trends in the maritime and port sector.

Port professionals, port users and stakeholders are invited to express their understanding on the present state of port governance (i.e. which institution, public or private entity currently performs each task), and their preferences as to who should assume responsibility for each of these functions in an optimal scenario. Respondents are also asked to identify the major scope that ports should serve.
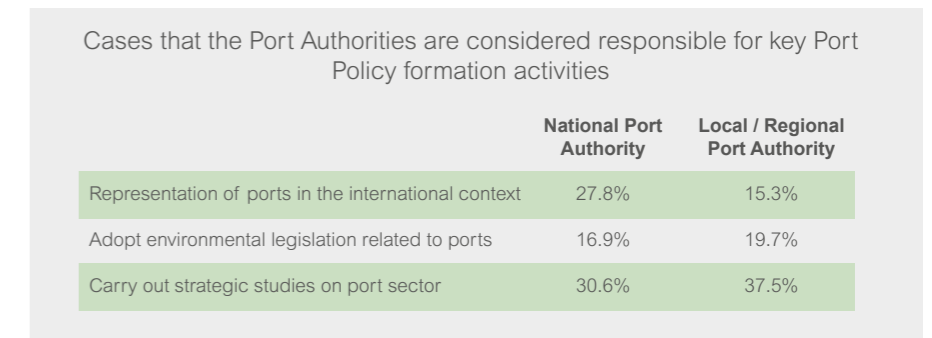
The preliminary outcomes have resulted from a total of 346 responses from port and port related professionals, with 28% being ports and port service providers. Replies have also been received by port users (6%) governmental agents (27%) and other stakeholders (39%).



Pie chart:
- Ports and port service providers 28%
- Other stakeholders 39%
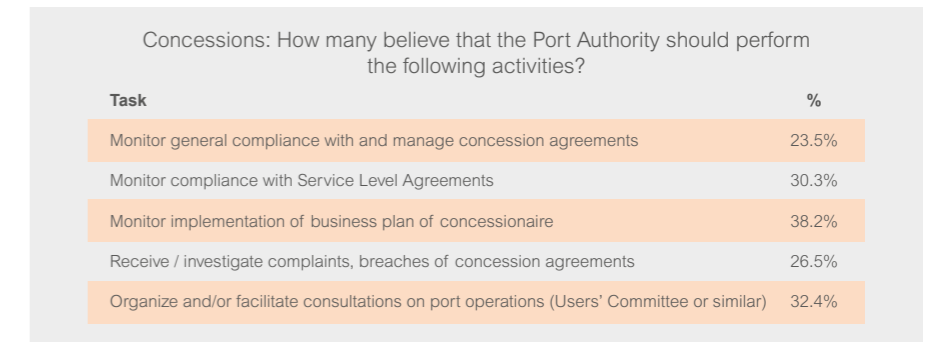- Port users 6%
- Governmental agents 27%

From these respondents, facilitating trade and business is viewed as the main goal for the port system, with the maximization of the added value to the national economy being the second most significant goal.

| What should be the goals of the port system? | |
| --- | --- |
| GOAL | % |
| Facilitate trade and business | 87.78% |
| Maximization of added value to the national economy | 71.11% |
| Social and economic growth of the nearby region | 64.44% |
| Maximization of handled tonnage | 31.11% |
| Maximization of the profits of the companies operating at the port | 25.56% |
| Maximization of the returns to the government (public sector) | 25.56% |
| Other(s) | 7.78% |

Contributors have indicated that there are different approaches in existing port governance formats in different countries. Port authorities may only have a secondary role in port policy formation activities, such as in the representation in an international context, where central government maintains a key role.

| Cases that the Port Authorities are considered responsible for key Port Policy formation activities | | |
| --- | --- | --- |
| | National Port Authority | Local / Regional Port Authority |
| Representation of ports in the international context | 27.8% | 15.3% |
| Adopt environmental legislation related to ports | 16.9% | 19.7% |
| Carry out strategic studies on port sector | 30.6% | 37.5% |

In terms of desired port governance formats such as concessions, survey participants point towards the importance of additional entities such as specialised regulatory authorities to maintain responsibilities and assist the optimal function of modern ports.

| Concessions: How many believe that the Port Authority should perform the following activities? | |
| --- | --- |
| Task | % |
| Monitor general compliance with and manage concession agreements | 23.5% |
| Monitor compliance with Service Level Agreements | 30.3% |
| Monitor implementation of business plan of concessionaire | 38.2% |
| Receive / investigate complaints, breaches of concession agreements | 26.5% |
| Organize and/or facilitate consultations on port operations (Users' Committee or similar) | 32.4% |

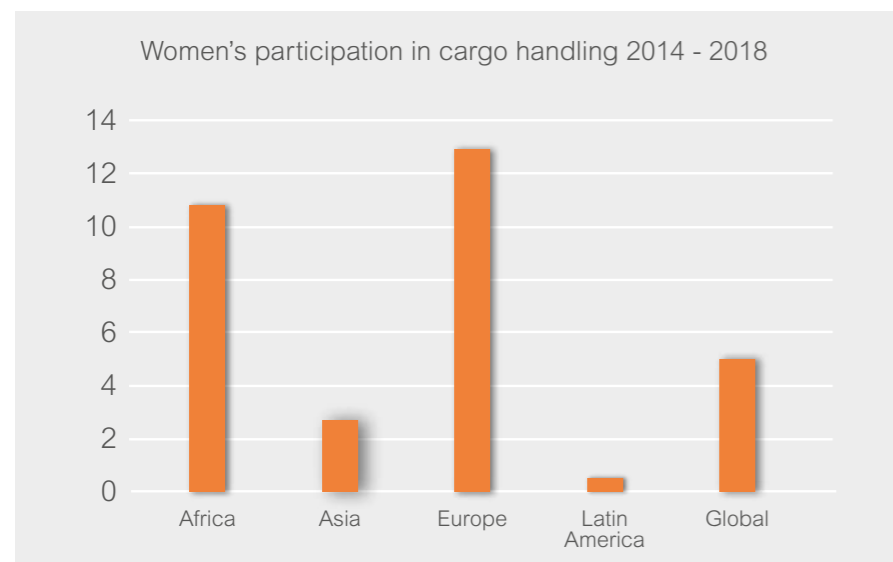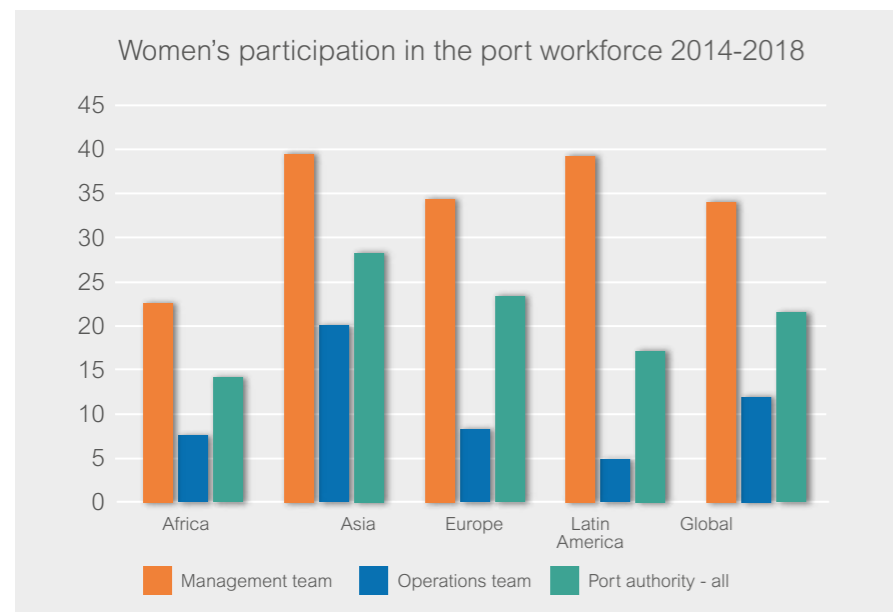The global survey on port governance will remain open until 31 March 2020.

## UNCTAD Train for Trade Port Management Program

Since 2013, the Train for Trade Port Management Program has been implementing knowledge networks in Africa, Asia, Europe, Latin America and the Caribbean, and capacity-building activities covering sixty countries since 1996. To monitor and measure the performance of its member ports over time, the Program has developed a port performance scorecard. The main objective is to provide members of the Programme with a useful tool that would benchmark performance and carry out port and regional comparisons.

The port performance scorecard identifies 26 indicators, collected and classified into six main categories; finance, human resources, gender, vessel operations, cargo operations and environment. In its 2019 publication 'Review of Maritime Transport (RMT)', the United Nations Conference for Trade and Development (UNCTAD) provides some very relevant port governance figures from the scorecard. This section provides a snapshot of selected data from RMT on gender, finance and human resources.

Regarding gender and the average rates of women participation in the port workforce, results remain low despite a more encouraging picture when it comes to management level. Data on cargo-handling operations show a recurrent low level of women's participation.

Women's participation in the port workforce 2014-2018



Women's participation in cargo handling 2014 - 2018



*Source: UNCTAD secretarial calculations, based on data from port entities members of the Port Management Program network.*

While examining the revenue mix of ports by region, port dues remain the largest revenue source for ports. The dominance of landlord port model remains in the governance of world ports, with concession fees constituting the second largest source of port revenue. The concessions' share is higher in the large container ports.

Revenue mix of ports by region 2014 - 2018



*Source: UNCTAD secretarial calculations, based on data from port entities members of the Port Management Program network.*

Analyzing labour costs as a proportion of total revenue, the port performance scorecard data show that the global average scored between 20 - 25 % for the period 2014–2018. The regional averages for Asia and Europe fall within this range, while Africa and Latin America are the relative outliers in this field.

Labor costs as a proportion of revenue 2014 - 2018



WPSP is grateful to work closely with UNCTAD in accomplishing the program's mission. The Train for Trade Port Management Program has been identified as a definite initiative for further close cooperation between UNCTAD and the world ports community.

## Maritime Anti-Corruption network

IAPH is one of the industry stakeholders of the Maritime Anti-Corruption Network (MACN), a global business network working towards the vision of a maritime industry free of corruption that enables fair trade to the benefit of society at large. Established in 2011 by a small group of committed maritime companies, MACN has grown to include over hundred members globally and has become one of the pre-eminent examples of collective action to tackle corruption.

To date, MACN has collected over 28,000 reports of corruption in ports. Through a recent partnership with the Ministry of Foreign Affairs of Denmark, MACN will be developing and launching the first ever Global Port Integrity Index to scale up its collective action activities in West Africa. The Global Port Integrity Index will provide an overview and comparison of illicit demands in ports around the world. It will be based on the unique first-hand data gathered from captains calling ports around the world through MACN's Anonymous Incident Reporting Mechanism.
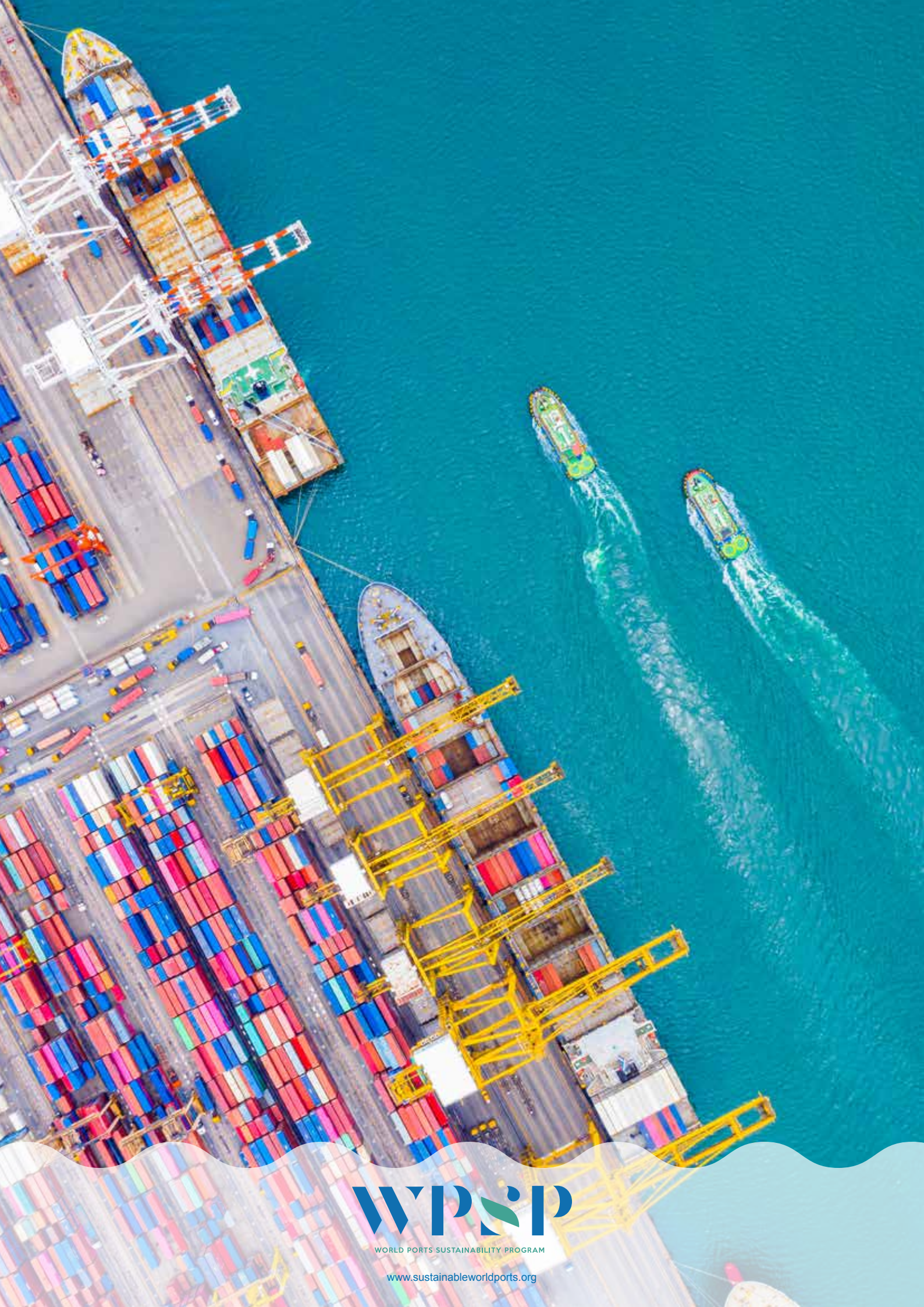
### Colophon