ESPO ENVIRONMENTAL REPORT 2018

EcoPortsinSights 2018

ESPO ENVIRONMENTAL REPORT 2018

EcoPortsinSights 2018

INTRODUCTION

Over the course of the last three years, the UN countries concluded and ratified the Paris Agreement, the IMO decided to introduce the global 0.5% sulphur cap on marine fuels in 2020 and agreed on a target to reduce CO_2 emissions from shipping at least by 50% by 2050. In parallel, a new EU regulation on air quality has been adopted and European authorities are taking more initiatives to enforce the existing ones.

European ports are at the frontline taking initiatives to protect the environment, improve public health and address the challenges of climate change. Air pollution and energy efficiency are already their top two environmental priorities since 2016 with climate change in the Top 10 for the second year in a row. The findings also indicate the readiness of the sector to address marine litter with waste the top priority monitoring issue since 2013.

This report presents the environmental performance results of European ports for 2018 and is based on the data of those ports that are members of the **EcoPorts Network**.

A set of environmental performance indicators have been analysed and the results are shown and discussed in this document. The data for this report was obtained from the responses of 90 EU ports to the EcoPorts Self Diagnosis Method (SDM), a tool developed for identifying and monitoring environmental risk and establishing priorities for action and compliance (www.ecoports.com). The SDM is updated by EcoPorts' members every two years.

The **structure of the report** is as follows:
The **findings** on the performance of EU ports are presented related to a set of selected categories of environmental performance indicators, namely those of:

a) Environmental management
b) Environmental monitoring
c) Top 10 environmental priorities and
d) Green services to shipping

The 2018 results are then compared with those from 2017, 2016, 2013, and variations and trends over time are highlighted. Finally, some conclusions are drawn. The **Annex** presents **the sample of the respondent ports** by country, their geographical location, their size and status in the TEN-T network.

The environmental performance indicators included in this report feed into **PortinSights**, which is ESPO's new tool for European ports to collect, share, compare and analyse their data. The digital platform includes throughput data, environmental data (EcoPorts) and governance data (www.portinsights.eu).

Environmental performance of European Ports

A *Environmental management indicators*

These indicators provide information about the management efforts that influence the environmental performance of the port. Figure 1, below, shows the percentage of positive responses to each of these indicators in the review of 2018 compared to the results obtained in 2013, 2016, 2017, in order to analyse the variations over time.

FIGURE 1 PERCENTAGE OF POSITIVE RESPONSES TO THE ENVIRONMENT AL MANAGEMENT INDICATORS

	Indicators	2013	2016	2017	2018	CHANGE 2013 – 2018
A	Existence of a Certified Environmental Management System –EMS (ISO, EMAS, PERS)	54	70	70	73	19%
B	Existence of an Environmental Policy	90	92	97	96	6%
C	Environmental Policy makes reference to ESPO's guideline documents	38	34	35	36	-2%
D	Existence of an inventory of relevant environmental legislation	90	90	93	97	7%
E	Existence of an inventory of Significant Environmental Aspects (SEA)	84	89	93	93	9%
F	Definition of objectives and targets for environmental improvement	84	89	93	93	9%
G	Existence of an environmental training programme for port employees	66	55	68	58	-8%
H	Existence of an environmental monitoring programme	79	82	89	89	10%
I	Environmental responsibilities of key personnel are documented	71	85	86	86	15%
J	Publicly available environmental report	62	66	68	68	6%

As it can be seen in Figure 1, the existence of an inventory of relevant environmental legislation (a requirement of all, major, quality EMS standards) is the indicator that has a highest percentage of positive response (97%). This means that practically all the participant ports are technically aware of the legislation that applies to them and may be assessed as positive in terms of potential compliance. The second highest percentage is the existence of an Environmental Policy showing the degree of commitment of the European ports to improve their environmental performance. The introduction of port's environmental policy may be a first significant step towards a certified Environmental Management System (EMS).

Also, over 90% of ports have an inventory of Significant Environmental Aspects (SEA) and have defined objectives and targets for environmental improvement. These two issues have increased by 9% since 2013.

It is significant that ports with a certified EMS have increased from 54% in 2013 to 73% in 2018, which indicates ports' readiness to establish an organised system to manage their environmental issues.

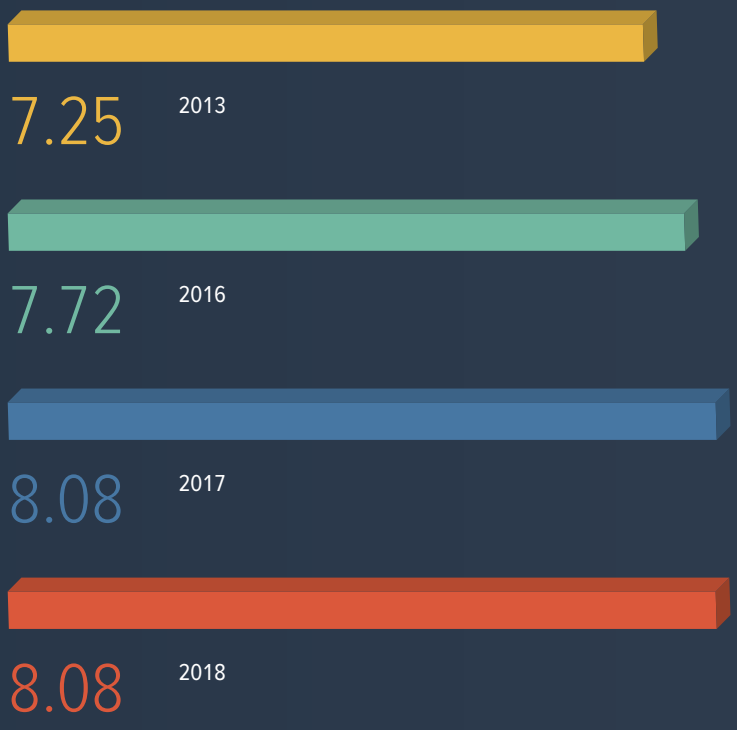
The trends of performance of most of the indicators have improved relative to 2013, particularly in the cases of documentation of environmental responsibilities of the key personnel (+15%) and the existence of an environmental monitoring program (+10%). However, the existence of a training programme for port employees has slightly decreased.

On the basis of the ten indicators present in Figure 1, an Environmental Management Index is calculated as seen below. The Environmental Management Index is calculated by multiplying the weightings associated with each environmental management indicator to the percentage of positive responses. The final score is calculated by applying the following formula:

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

The numerical value of each letter is the percentage of positive response divided by 100 (e.g. A is 0.73 in the results of 2018 as shown in Figure 1). The resulting index for the performance of the port sector in 2013, 2016, 2017 and in 2018 is provided in Figure 2.

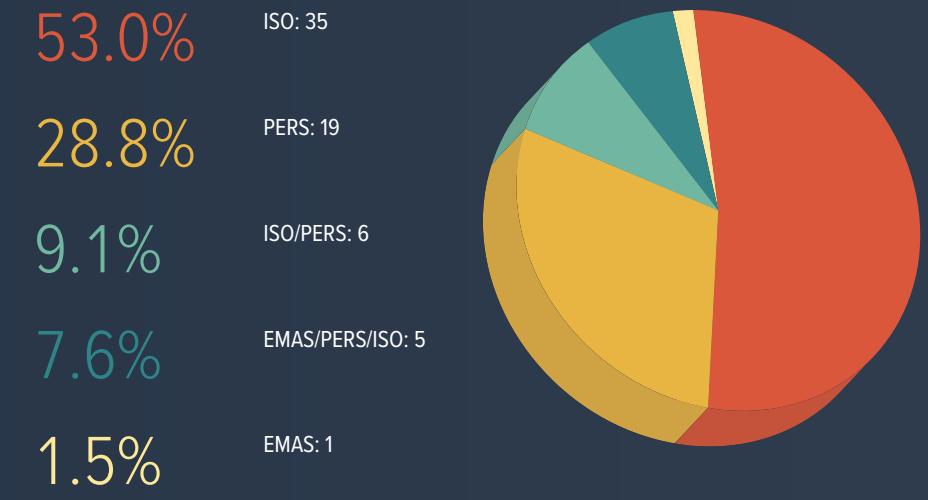
FIGURE 2 PROGRESS OF THE ENVIRONMENTAL MANAGEMENT INDEX OVER THE YEARS



As it can be seen in the previous Figure, the index value has increased year on year achieving a steady value of 8.08 out of 10 in the last two years.

Another significant point to highlight is the number of ports that are EMS certified to an internationally recognised standard. A total number of 66 ports out of the 90 are EMS certified, 46 of them under ISO 14001, 6 under EMAS, and 30 ports under the EcoPorts' standard, the Port Environmental Review System (PERS). The total number of certifications is in fact more than 66 because some ports are certified under more than one standard. Figure 3 presents the results of the EMS certificates broken down into categories.

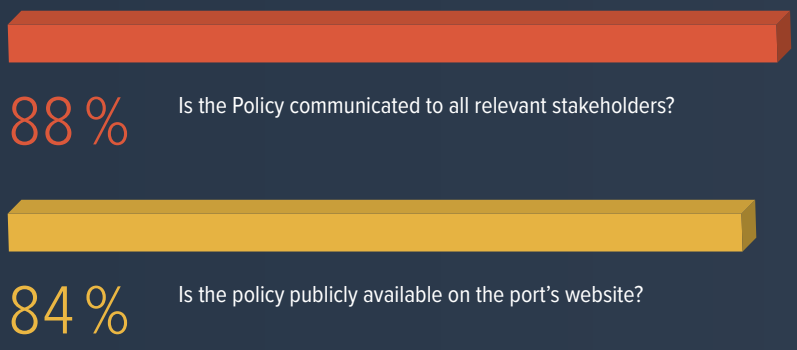
FIGURE 3
DISTRIBUTION OF THE EMS CERTIFICATES



The Figure shows that more than a half of the certified ports (53%) are ISO 14001 certified. It is followed by more than a quarter of ports (28.8%) that are PERS certified. It continues then with the ports that are certified by both PERS and ISO 14001 (9.1%), and with the three EMS certificates (7.6%). 1.5% of the ports are certified under EMAS. The positive and significant trend for the sector is that increasingly more ports are openly demonstrating their environmental credentials and transparency of action through independent, third-party review and audit.

A set of new indicators on communication have also been studied. As it can be seen in Figure 4, most of the ports communicate their policy to their relevant stakeholders and also make it public on their websites. More than half of the ports publish an environmental report with their activities.

FIGURE 4
PERCENTAGE OF POSITIVE RESPONSES TO THESE COMMUNICATION INDICATORS



B Environmental monitoring indicators

The second category of indicators is focused on the environmental monitoring programmes of European ports. These indicators provide the percentage of ports that monitor selected environmental issues. The percentages of positive responses are given in Figure 5, listed in descending order based on the results obtained in 2018. The results obtained in 2013, 2016 and 2017 are also provided in the Figure below:

FIGURE 5
PERCENTAGE OF POSITIVE RESPONSES TO ENVIRONMENTAL MONITORING INDICATORS

Indicators	2013	2016	2017	2018	CHANGE 2013 – 2018
Waste	67	79	88	84	17%
Energy consumption	65	73	80	80	15%
Water quality	56	70	75	76	20%
Water consumption	58	62	71	72	14%
Noise	52	57	64	68	16%
Air quality	52	65	69	67	15%
Sediment quality	56	63	65	58	2%
Carbon Footprint	48	47	49	47	-1%
Marine ecosystems	35	36	44	40	5%
Soil quality	42	44	48	38	-4%
Terrestrial habitats	38	30	37	38	0%

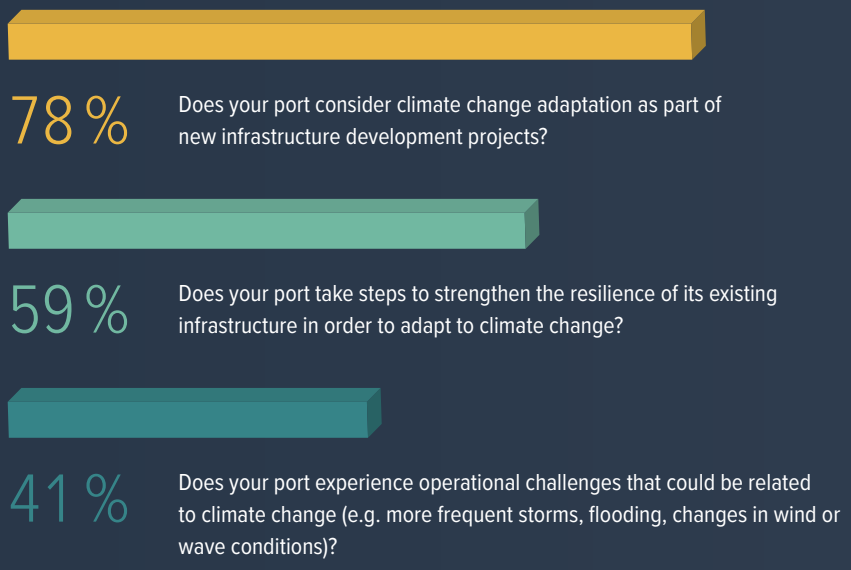
In 2018, waste has emerged as the most monitored issue, becoming the top priority monitoring issue since 2013. There has been an increase of 17% of ports monitoring waste in the last 5 years. This is followed by climate related energy consumption that increased +15% since 2013 and water quality and consumption (+20% and +14% respectively) followed by noise and air quality which went up by 16% and 15% respectively.

Climate related carbon footprint has been stable in the last 5 years with almost half of the ports measuring it. Soil quality and terrestrial habitats are the issues with the lowest percentage of ports monitoring them.

Within this monitoring section, new indicators related to climate change have been included in the report. In Figure 6, the results of positive responses from ports are presented. Almost eight out of ten European ports take into consideration climate change when they develop new infrastructure projects. This indicates that climate change is becoming of high relevance for European ports.

Positive answers to the next two questions confirm this conclusion as 59% of ports are taking steps to strengthen the resilience of existing infrastructure to adapt to climate change; and already 41% of ports have dealt with operational challenges due to the effects of climate change such as more frequent storms, flooding, changes in wind or wave conditions.

FIGURE 6
MONITORING INDICATORS RELATED TO CLIMATE CHANGE



C Top 10 Environmental priorities

The third section provides an update of the Top 10 environmental priorities of the European ports' managing bodies for 2018. This is a significant summary because it shows the priority status ascribed by port professionals to current issues that are assessed as being important and noteworthy in terms of the port's environmental management programme. This data is important because it identifies the high priority environmental issues on which ports are working and sets the framework for guidance and initiatives to be taken by ESPO. The 2018 results complement the results of the previous ESPO/EcoPorts surveys that were initiated back in 1996. The issues that appear consistently year over year are indicated with the same colour in order to assist identification of trends.

FIGURE 7
TOP 10 ENVIRONMENTAL PRIORITIES OF THE PORT SECTOR OVER YEARS

All the priorities of the 2017 Top 10 are again represented in 2018 although in a different order. The first 3 priorities have been the same since 2016, while air quality has remained the number one priority of the European ports since 2013. This may be read together with the advance of the relationship with local community in position 4 of the list as air quality has been increasingly a concern for citizens of port cities and urban areas in general. Every year, air pollution causes about 400,000 premature deaths in the EU and hundreds of billions of euros in health-related external costs.

This is reflected in particular in European Commission's efforts to enforce the existing legislation and the opening of infringement procedures against a number of Member States for exceeding the limits of key air pollutants such as nitrogen dioxide (NO_2) and particulate matter (PM_{10}). In parallel, national authorities are taking further measures to improve air quality and comply with the EU limits and targets.

Furthermore, different pieces of legislation applied to ports concerning emissions are being introduced, such as the implementation of the Sulphur Directive, the new National Emission Ceiling Directive, the introduction of the global 0.5% sulphur cap on marine fuels in 2020 and the IMO NOx requirements for vessels built from 1-1-2021 onwards operating in the North and the Baltic sea (NECAs).

Energy consumption, which is also emissions related, remains the second priority issue of the European ports. Since 2013, energy consumption has been placed in the top 3 issue for EU ports. One of the reasons for this may well be the direct link between energy consumption, and the carbon footprint of the ports and climate change. Mitigation and adaptation to climate change appeared in the Top 10 for the first time in 2017 in the last position and has climbed to the position 7 in 2018. As it has been seen in Figure 6, climate change effects are already considered seriously by the contributing ports, which are starting to act to adapt to its effect and to fulfil the objectives of the Paris Agreement.

Noise remains the third priority and its importance has also grown since 2004. This is also related to the next priority, the relationship with the local community. Port-city issues are remaining of high relevance for European ports and this is reflected in the development of the Top 10 in the last years.

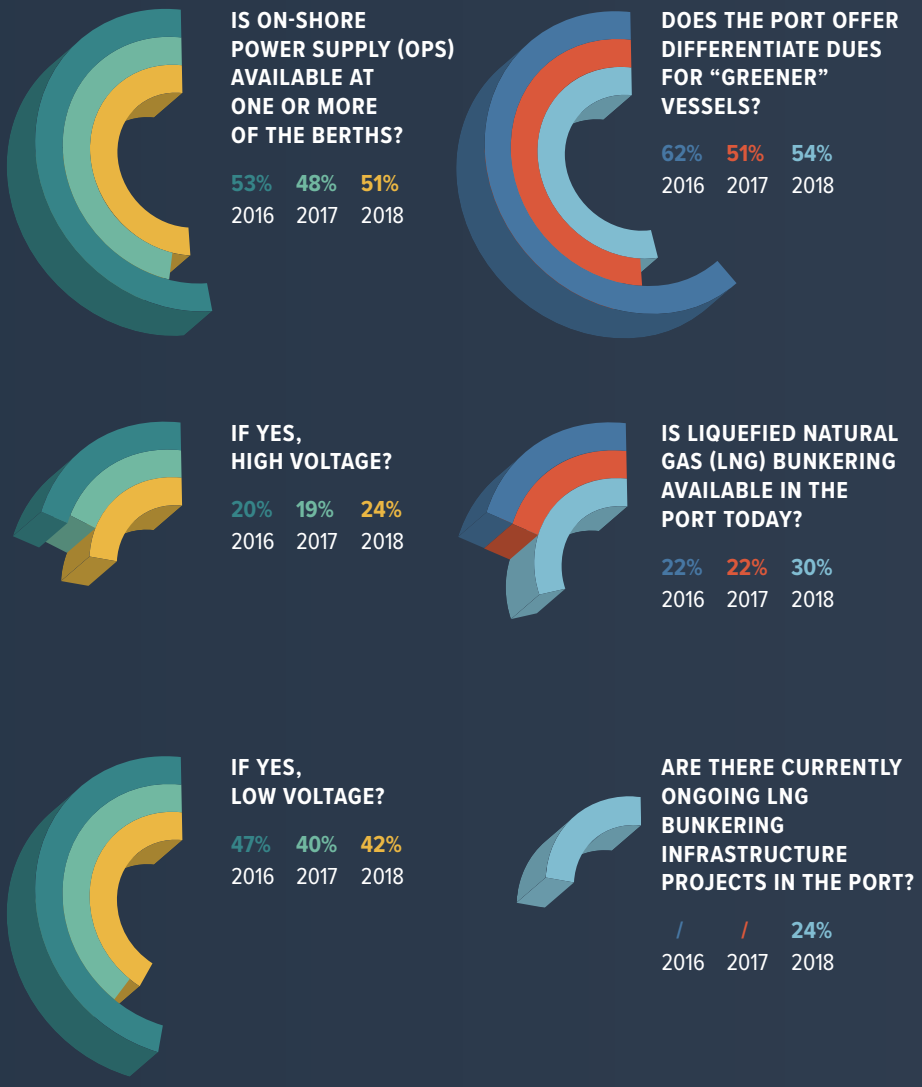
Ship waste went also higher in the top 10 list of environmental priorities compared to last year probably due to the introduction of the new EU Directive on Port Reception Facilities for ship waste which will be probably adopted in the next months. In addition, it is important to point out that waste has been reported as the highest priority monitoring issue by ports since 2013 (Figure 5), which indicates the readiness of ports to contribute to addressing the issue of marine litter which is becoming a great concern for local communities and civil society.

In the case of Dredging operations and Water quality, relative importance has decreased in priority whilst Port development (land related) moved slightly up in the priority scale. This issue together with Dredging operations have been included in all Top 10 rankings since 1996.

D Green services to shipping

This section is comprised of three indicators which measure port services aiming to encourage greener shipping. These are: i) the provision of Onshore Power Supply (shore-side electricity) for ships at berth, ii) the provision of Liquefied Natural Gas (LNG) bunkering facilities and iii) the differentiation of port charges in order to reward greener vessels visiting the ports. Information on these issues started to be collected in 2016 when the EcoPorts SDM was updated and included these indicators for the first time. Hence, the benchmark is presented as from 2016 until 2018.

FIGURE 8
PERCENTAGE OF POSITIVE RESPONSES TO SERVICES TO SHIPPING INDICATORS



More than half of the participant ports are providing OPS stations. Arguably, the most significant result is the high voltage OPS, since in general this is the one required for the commercial seagoing vessels. However, it has to be noted that energy taxation on electricity has been a significant barrier for the uptake of shore-side electricity for ships, being often the reason why it does not make a strong business case. Currently, electricity produced from the combustion of marine fuel on board of ships is tax-exempt. However, when ships at berth plug into the shore-side electricity system, they have to pay taxes applied to electricity. Sweden, Germany and Denmark have been provided under the Energy Taxation

Directive with a permit to temporarily apply a reduced rate of taxation to shore-side electricity for ships.

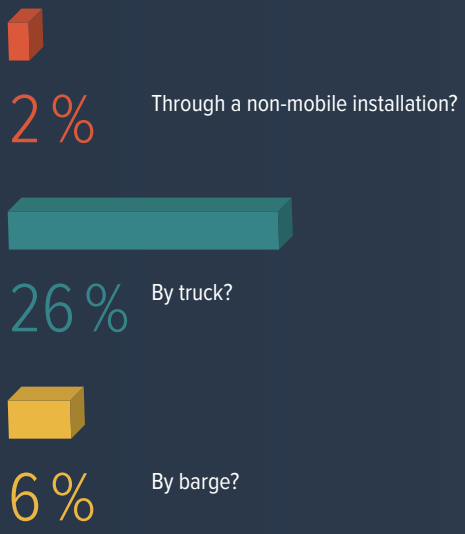
The low voltage figures, with some exceptions mainly relate to inland and domestic vessels as well as auxiliary vessels (e.g. tugs and/or other port authority vessels). The increase in the use of the high voltage OPS has increased up to 24% since 2016 in spite of the taxation barriers.

As it can be seen in Figure 8, offering differentiated port charges for greener vessels is a fairly widespread practice in EU ports with more than half of the participant ports doing so (54%). Environmentally differentiated fee schemes aim to reward operations of those vessels that may be deemed more sustainable according to a range of selected criteria ESPO promotes for this type of initiatives in its Green Guide (ESPO, 2012).

The outcome with the highest growing trend among those indicators is the availability of LNG bunkering at the port. One third of the ports are already providing this service to port users, a figure that has increased by 8% since 2016. It also indicates that ports are in the process of fulfilling the requirements of the Directive on Alternative Fuels Infrastructure as regards the provision by TEN-T core network ports of LNG bunkering facilities by 2025. As seen in Figure 8, an additional indicator on LNG projects has been added this year and this is the reason why there is no answer for 2016 and 2017. However, the result for 2018 sets a very encouraging benchmark with 24% of ports with ongoing projects to build LNG bunkering infrastructure.

With reference to the means used to supply LNG, as it can be seen in Figure 9, trucks are the most common one (26%) followed by barges (6%) and fixed installations (2%).

FIGURE 9
PERCENTAGE OF POSITIVE RESPONSES ACCORDING TO THE MEANS OF TRANSPORT USED FOR THE PROVISION OF LNG



Conclusions

Year on year European ports are continuing to demonstrate their commitment and progress in terms of environmental protection and their sustainable development. This 2018 review is based on the input of 90 ports that have demonstrated their environmental performance by completing the on-line EcoPorts/ESPO Self-Diagnosis Method, the voluntary and confidential check-list of good practice components available at www.ecoports.com. It may be suggested that more individual ports should be encouraged to join EcoPorts in order to improve their environmental performance, better communicate their environmental policy and broaden the sample of ports that feed into the annual benchmark performance of the sector.

The environmental performance of EU ports is constantly improving. The results demonstrate the status given to current environmental issues by port authorities, and their readiness to fulfil the associated regulatory, social and environmental liabilities and responsibilities.

Regarding the existence of environmental management components, ports have shown an increasing interest in having an inventory of relevant legislation and comply with it. The number of ports with certified EMS has increased, which is a good sign of standardisation of environmental procedures.

The continued increase in the number of ports with a recognised, certified quality Environmental Management System is a significant and positive trend that is strongly encouraged by ESPO's Green Guide towards excellence in environmental management and sustainability. The sector recognises that compliance is, of course, non-negotiable, but the increase in the numbers of ports with audited confirmation of the key components of a credible EMS (including the Inventories of Legislation and Significant Aspects) may be cited as demonstrable evidence of growing, good practice.

Further evidence of expanding good practice is the number of ports communicating with the local communities and their stakeholders, studied for the first time in this report. This is producing a more integrated approach to Environmental Management where the ports are influencing port-city and port-hinterland initiatives, and more ports are offering options to influence the greening of the shipping industry.

It may be suggested that more individual ports should be encouraged to produce an Environmental Report (the policy intention to do so is a requirement of EMS standards PERS and EMAS), and the same standards require a port to make publicly available an environmental report. Reviews also suggest that those Environmental Reports already produced may be enhanced further by the addition of science-based evidence derived from systematic monitoring programmes.

The apparent decrease in the number of ports providing an Environmental Training Programme for employees is noted for consideration (such programmes are a requirement of EMS standards ISO 14001 and EMAS).

In terms of monitoring environmental issues, waste and energy consumption remain in the top priority positions. The monitoring of noise has increased significantly over the last few years, probably related to growing importance of the port-city related issues.

Concerning the Top-10 issues, air quality remains the highest priority since 2013. However, climate change has climbed in the list to position 7 when it became a new entrance last year. Climate change, which relates to energy consumption in position 2 of the list, is becoming an aspect of high relevance for the sector. Ports are already taking into consideration its effects and impacts and are ready to contribute to the objectives of the Paris Agreement and the EU climate targets to keep the increase of the global temperature well below two degrees. They are also adapting their infrastructure to its effects. This makes clear the importance of this issue for EU ports, together with the relationship with the local community which now occupies position 4.

Since first surveyed in 2016, ports are continuing to encourage the greening of shipping by providing a range of options. 24% of the sample ports are offering high voltage on-shore power supply to their stakeholders and half of them offer the option of differentiated fees for green vessels. There is also a clear rise in the number of ports that have LNG bunkering available. In addition, the prospect of future LNG installations is growing among the EU ports.

On the basis of these results it may reasonably be concluded that the European port sector is able to provide substantive evidence that environmental performance of the sector is improving taking into account a wide range of issues such as air quality, climate change, and marine litter. ESPO's EcoPorts network and the environmental objectives of its members are well-placed to continue to set high quality standards, implement quality EMS, and to influence the port sector's global response to environmental issues through pro-active collaboration and a demonstrable track record of delivery of good practices.

Annex: The sample of respondent ports

As mentioned, 90 ports participated in this assessment from 19 different countries which all are ESPO members. These include the EU Member States plus Norway. Figure 10 below provides the list of countries represented, the number of participating ports of each country and the share of each country in the complete sample. Spain and the UK are the countries that have more ports represented around 12% each one, followed by France with 10% of ports. However, it should be noted that if the volumes of the different participating ports were taken into consideration, a different result could be revealed in representativeness of the country.

FIGURE 10
LIST OF COUNTRIES REPRESENTED IN THE SAMPLE AND THE NUMBER OF PARTICIPATING PORTS

Country	Number of ports	Percentage
Spain	11	12.2
United Kingdom	11	12.2
France	9	10.0
Germany	9	10.0
Netherlands	8	8.9
Greece	8	8.9
Denmark	6	6.7
Sweden	5	5.5
Finland	5	5.5
Croatia	3	3.3
Ireland	3	3.3
Norway	3	3.3
Italy	2	2.2
Portugal	2	2.2
Lithuania	1	1.1
Latvia	1	1.1
Estonia	1	1.1
Romania	1	1.1
Poland	1	1.1

As it can be seen in Figure 11, the embayment, protected coast and marine inlet are the most common geographic settings of the contributing ports. The estuaries and the engineered coastline ports share the same importance. In any case, the sample is quite diverse.

FIGURE 11 GEOGRAPHICAL CHARACTERISTICS OF THE SAMPLE

37.2% Embayment, Protected Coast, Marine Inlet

24.8% Estuary

24.8% Engineered Coastline

13.2% River

Also in volumes, the sample reflects the diversity of European ports, with a representation in each size category. As it can be seen in Figure 12, around 14% of the ports handle more than 50 million tons per year. However, most of the large European ports such as Port of Rotterdam, Port of Hamburg, Port of Amsterdam, Port of Barcelona and Port of Piraeus are part of the EcoPorts Network.

FIGURE 12 TONNAGE CHARACTERISTICS OF THE SAMPLE

39.1% <5

26.4% 5<15

20.7% 15<50

13.8% >50

Since the TEN-T status of a port (Core, Comprehensive or non-TEN-T) is often defining the scope of EU legislation applied to it, it is relevant to assess the sample in that respect as well. The sample shows that 51% of the participating ports are part of the Core Network and 32% of them are part of the Comprehensive Network.

FIGURE 13 PERCENTAGE OF PORTS IN TEN-T NETWORK

83% TEN-T Network

51% Core Network

32% Comprehensive Network

Acknowledgements

ESPO is grateful to all ports that contributed to the Environmental Report 2018. This report was developed by Associate Professor Rosa Mari Darbra and Dr Marti Puig from the Polytechnical University of Catalunya, Dr Chris Wooldridge, Honorary Research Fellow, Cardiff University, UK, together with Sotiris Raptis, ESPO's Senior Advisor for Environment and EcoPorts Coordinator.

EUROPEAN SEA
PORTS ORGANISATION
TREURENBERG 6
B – 1000 BRUSSEL / BRUXELLES
T +32 (0)2 736 34 63
F +32 (0)2 736 63 25
E MAIL@ESPO.BE