ESPO ENVIRONMENTAL REPORT 2019

EcoPortsinSights 2019

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INTRODUCTION

This 4th Environmental Report presents this year's environmental performance of European sea ports based on selected benchmark indicators. The data was obtained from 94 ESPO-member EU/EEA ports' responses to the EcoPorts SelfDiagnosis Method (SDM) (http://www.ecoports.com). Aiming to increase the transparency and accountability of the European port sector and to further enhance the relationship of ports with their local communities, ESPO decided to publish an environmental report annually as from 2016. This decision follows a tradition of periodical publication of ESPO environmental surveys in 1996, 2004, 2009 and 2013.

The overall profile of the port sample is given in the Annex and includes the number of ports by country, geographical location, size as well as TEN-T status. The sample of the ports is balanced in terms of geographical and tonnage characteristics and, importantly, 84% of the ports are part of the EU TEN-T network. This is relevant since a lot of EU measures are only applicable to TEN-T ports, and others only to core TEN-T ports alone.

The structure of the report follows the established pattern of recent years to allow identification of trends. Where possible, the 2019 results are compared with those of 2018, 2017, 2016 and 2013 so that developments and any significant variations may be identified. The categories are:

A Environmental management indicators
B Environmental monitoring indicators
C Top environmental priorities
D Services to shipping
E Annex: Sample of ports

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).

The report presents more than 60 different indicators. Among the main indicators are the existence of an inventory of environmental legislation (96% of the ports), the existence of an environmental policy (95%) and the number of certified environmental management systems (54% with ISO 14001 and 27% with EcoPorts' PERS). 82% of ports have set up an environmental monitoring program, waste being the most monitored issue.

Air quality continues as the top environmental priority, followed by energy consumption. Interestingly, climate change, included in the Top 10 of the environmental priorities for the first time two years ago, is the third top priority after air quality and energy consumption this year.

Transparency has also been a high priority with 87% of the ports communicating their environmental policy to the stakeholders and 82% of them making it publicly available on their website.

With regard to the services to shipping, more than half of the ports are offering on shore power supply (OPS) and one third of them has made LNG bunkering available. In parallel, an increasing number of ports (56%) provide differentiated dues for ships that go beyond regulatory standards, with air emissions, waste and climate change being the main targets of these discounts.

In general, trends over the years have shown a clear improvement of the environmental port performance. However, one of the reasons why some indicators did not improve or slightly decreased this year compared to 2018 might be the annual variation of the sample of the ports. The report relies on the answers of ports participating in EcoPorts where new members are accepted every year. As long as the sample becomes larger (94 ports increased by 4.4% compared to 2018), it is likely that it better reflects the environmental performance of the sector.

A Environmental management indicators

These are the results of a set of selected environmental management indicators that are included in the EcoPorts' SDM. **TABLE 1** presents **10 INDICATORS** that provide information about the management efforts that influence the environmental performance of the port. It includes the percentage of positive responses to these indicators for the current year as well as for 2013, 2016, 2017 and 2018 in order to be able to analyse the variations over time.

TABLE 1
PERCENTAGE OF POSITIVE RESPONSES TO THE ENVIRONMENTAL MANAGEMENT INDICATORS

	Indicators	2013	2016	2017	2018	2019	CHANGE 2013 – 2019
A	Existence of a Certified Environmental Management System –EMS (ISO, EMAS, PERS)	54	70	70	73	71	+17%
B	Existence of an Environmental Policy	90	92	97	96	95	+5%
C	Environmental Policy makes reference to ESPO's guideline documents	38	34	35	36	38	–
D	Existence of an inventory of relevant environmental legislation	90	90	93	97	96	+6%
E	Existence of an inventory of Significant Environmental Aspects (SEA)	84	89	93	93	89	+5%
F	Definition of objectives and targets for environmental improvement	84	89	93	93	90	+6%
G	Existence of an environmental training programme for port employees	66	55	68	58	53	-13%
H	Existence of an environmental monitoring programme	79	82	89	89	82	+3%
I	Environmental responsibilities of key personnel are documented	71	85	86	86	85	+14%
J	Publicly available environmental report	62	66	68	68	65	+3%

Over the last two years, the existence of an inventory of relevant environmental legislation has been the indicator with the higher percentage of positive responses. These results demonstrate the awareness of ports about the requirement to comply with legislation. The indicator on the existence of an Environmental Policy (95%) follows in second position, giving a sign of port environmental commitment.

The definition of objectives and targets as well as the existence of an inventory of Significant Environmental Aspects (SEA) are elements that are present in most of the ports (around 90%). These two indicators are the required first steps to start the implementation of any Environmental Management System (EMS). Related to this, the indicator on the existence of a certified EMS, i.e. ISO 14001, EcoPorts' PERS or EMAS has increased by 17% since 2013. This shows that ports not only implement EMS but also make efforts to comply with the standards and obtain a certification.

Another indicator that has significantly risen since 2013 is the documentation of the environmental responsibilities of key personnel. This is an evidence that ports are getting more organised concerning the distribution of environmental tasks among their employees.

In general, most of the indicators have improved their percentage of positive responses in comparison to 2013. However, the existence of a training program for port employees has decreased by 5% since 2018 and there has been a clear decline since 2017. For ports interested in or committed to an international standard of EMS, it should be noted that in order to comply with the requirements of PERS, ISO 14001 and EMAS:

A All employees should be aware of the importance of compliance with the port's environmental policy;
B All employees should be aware of the potential environmental impacts of their work activities.

An appropriate training program is a practicable method of ensuring such awareness and is indeed a requirement of ISO and EMAS. ESPO actively encourages the exchange of knowledge and experience in implementing good practices of training and development of EMS, and the SDM itself acts as a checklist of key components. Other examples of downward trends from 2018 include:

A Existence of an environmental monitoring program (-7%) – a requirement of PERS, ISO and EMAS;
B Publication of an Environmental Report (-3%) – a requirement of PERS and EMAS.

This decrease in the performance of some indicators, with respect to 2018, can also be observed in **TABLE 2** where the **ENVIRONMENTAL MANAGEMENT INDEX (EMI)** is presented. EMI is a formula that measures the whole environmental performance of the port by compiling the ten environmental indicators of Table 1. A varying weighting is applied depending on the significance of these key environmental components. EMI is calculated by multiplying the weighting of each indicator (see Table 1 and formula below) to the percentage of positive responses. In other words, 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 0.71 in the results of 2019 as shown in Table 1). EMI for the performance of the port sector in 2013, 2016, 2017, 2018 and 2019 is provided in Table 2. As can be seen, the value has increased year on year until 2018 and this year has slightly decreased, achieving a steady value of 7.84 out of 10. The main reason for this decrease is the reduction of ports having an environmental monitoring program, an inventory of SEAs and an environmental training program for port employees.

TABLE 2
EVOLUTION OF THE ENVIRONMENTAL MANAGEMENT INDEX OVER THE YEARS

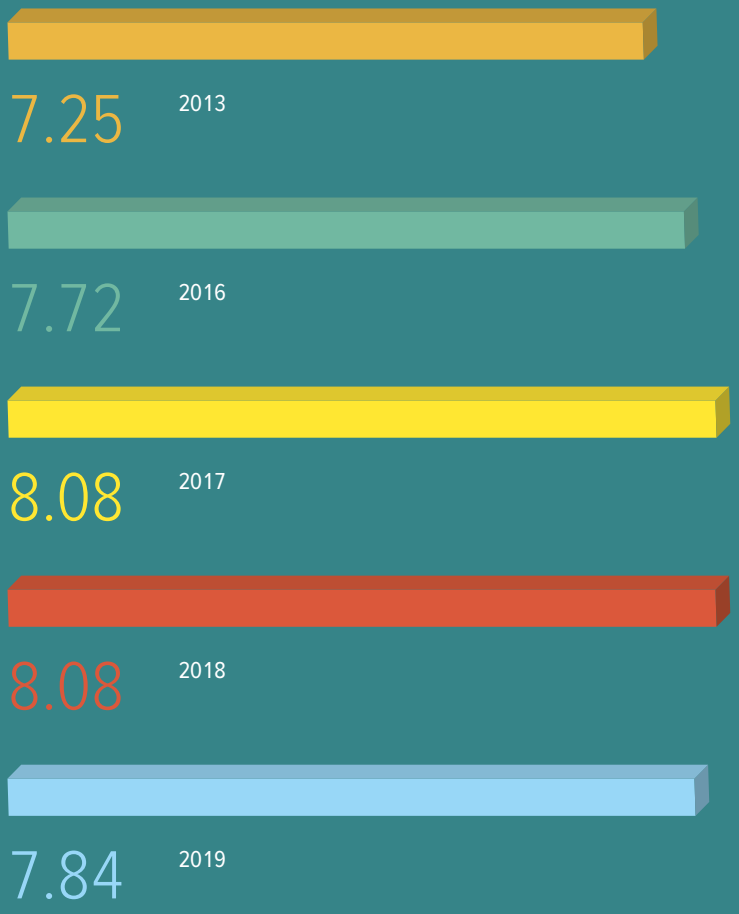


TABLE 3 shows the number of ports that are certified with an **INTERNATIONALLY RECOGNISED ENVIRONMENTAL STANDARD** (Environmental Management System-EMS). Out of the 71% of ports with a certified EMS, more than half have opted for ISO 14001 (53.7%) and almost one third of them for EcoPorts' PERS (26.9% - Table 15), making ISO and PERS the most popular standards in the sector. Additionally, there are ports certified with more than one standard such as ports with ISO and EcoPorts' PERS (10.4%), followed by ports with all three certificates (4.5%) and ports certified with ISO and EMAS (3%). Another 1.5% of the ports is only certified with EMAS.

TABLE 3
BREAKDOWN OF THE EMS CERTIFICATES

53.7% ISO

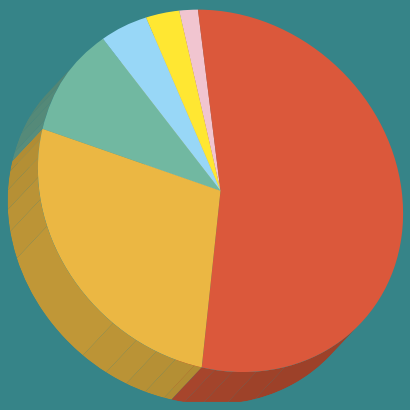
26.9% EcoPorts' PERS

10.4% ISO & EcoPorts' PERS

4.5% ISO, EcoPorts' PERS & EMAS

3% ISO & EMAS

1.5% EMAS



Since 2013, the number of ports that are certified with EMS has significantly increased. This is a clear indication that an increasing number of ports are willing to obtain an independent assessment of their performance. It is also another manifestation of the willingness of the sector to contribute to greening the supply chain. Furthermore, major insurance companies indicate that a port's environmental performance is "factored-in" to calculations of premiums and that environmental standards are recognised components of a responsible approach.

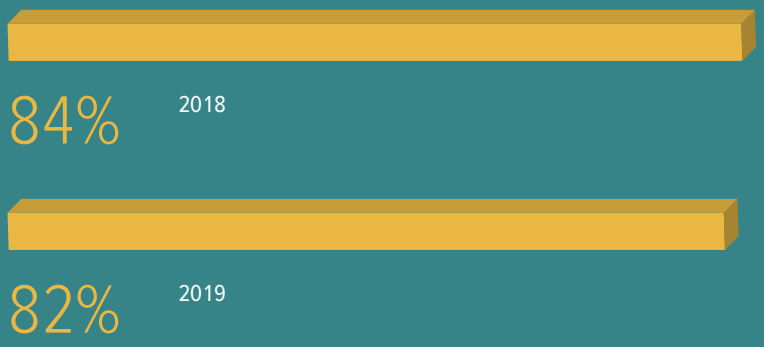
Importantly PERS, which is the EcoPorts' environmental standard and the only port sector-specific environmental standard available, has become well recognised and preferred by the sector. EcoPorts' PERS is currently listed in a source of Good International Industry Practices (GIIP) in the World Bank Group Environmental, Health and Safety Guidelines for Ports, Harbors and Terminals and is recognised by several other port organisations and associations including the American Association of Port Authorities (AAPA), the Taiwan International Port Corporation (TIPC), the Port Management Association of West and Central Africa (PMAWCA) and the Arab Sea Ports Federation (ASPF).

Since last year, this report has also analysed indicators on **COMMUNICATION**. As shown in **TABLE 4**, most of the ports communicate their policy to the relevant stakeholders and make it also public on their website. This is a very positive trend and another evidence that relationship with the local community and other stakeholders is a high priority.

TABLE 4
PERCENTAGE OF POSITIVE RESPONSES TO COMMUNICATION INDICATORS

IS THE POLICY COMMUNICATED TO ALL RELEVANT STAKEHOLDERS?

IS THE POLICY PUBLICLY AVAILABLE ON THE PORT'S WEBSITE?



B Environmental monitoring indicators

In this section, a set of indicators related to the **ENVIRONMENTAL MONITORING PROGRAMS** of European ports are analysed. They provide information on the percentage of ports that monitor selected environmental issues. **TABLE 5** presents the percentages of positive responses listed in descending order based on the results obtained in 2019. The results obtained in 2013, 2016, 2017 and 2018 are also provided in the table below:

TABLE 5
PERCENTAGE OF POSITIVE RESPONSES TO ENVIRONMENTAL MONITORING INDICATORS

Indicators	2013	2016	2017	2018	2019	CHANGE 2013 – 2019
Waste	67	79	88	84	79	+12
Energy consumption	65	73	80	80	76	+11
Water quality	56	70	75	76	71	+15
Water consumption	58	62	71	72	68	+10
Air quality	52	65	69	67	62	+10
Noise	52	57	64	68	57	+5
Sediment quality	56	63	65	58	54	-2
Carbon Footprint	48	47	49	47	49	+1
Marine ecosystems	35	36	44	40	40	+5
Terrestrial habitats	38	30	37	38	37	-1
Soil quality	42	44	48	38	32	-10

Since 2016, the three environmental issues regularly monitored by ports have remained the same. Following this trend, this year waste was the most monitored indicator (79%), followed by energy consumption (76%) and water quality (71%). Water quality has increased the most over the last six years (+15%).

Energy consumption, air quality and water consumption are monitoring issues that have increased by around 10% since 2013. However, comparing the results with those of 2018, a reduction trend can be observed. Monitoring of soil quality has relatively decreased since 2017, though such monitoring is often associated with specific port development projects and may therefore be periodic in significance. Carbon footprint monitoring has slightly increased since last year.

For the last two years of reporting, three new indicators related to **CLIMATE CHANGE** have been included in the report. The results are shown in **TABLE 6**. Since last year there has been an increase in the number of ports reporting operational challenges due to climate change from 41 to 47%. The same trend is observed with the percentage of ports that are taking steps to strengthen the resilience of its existing infrastructure to adapt themselves to climate change (62%). Finally, most of the ports are taking climate change into consideration for the development of their future infrastructure projects (75%). This is clear evidence that climate change and making infrastructure climate-proof is becoming a high priority. It should be noted that such considerations are requirements of EcoPorts' PERS, ISO 14001 and EMAS.

TABLE 6
PERCENTAGE OF POSITIVE RESPONSES TO INDICATORS RELATED TO CLIMATE CHANGE

DOES YOUR PORT EXPERIENCE OPERATIONAL CHALLENGES THAT COULD BE RELATED TO CLIMATE CHANGE (E.G. MORE FREQUENT STORMS, FLOODING, CHANGES IN WIND OR WAVE CONDITIONS)?

41% 2018

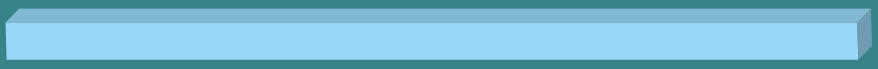
47% 2019

DOES YOUR PORT TAKE STEPS TO STRENGTHEN THE RESILIENCE OF ITS EXISTING INFRASTRUCTURE IN ORDER TO ADAPT TO CLIMATE CHANGE?

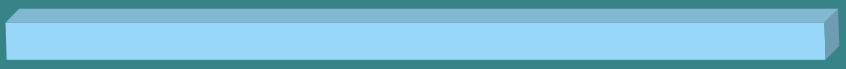
59% 2018

62% 2019

DOES YOUR PORT CONSIDER CLIMATE CHANGE ADAPTATION AS PART OF NEW INFRASTRUCTURE DEVELOPMENT PROJECTS?



78% 2018



75% 2019

C Top 10 Environmental priorities

The third section provides an update of the **TOP 10 ENVIRONMENTAL PRIORITIES** of the European ports' managing bodies for 2019. This year's results complement those of the previous ESPO/EcoPorts surveys that were initiated back in 1996. **TABLE 7** shows the current issues that are at stake for the port sector and their evolution. This data is important as it identifies the high priority environmental issues on which port managing bodies are working and sets the framework for guidance and initiatives to be taken by ESPO. The issues that appear consistently year on year are tabulated with the same colour in order to assist identification.

The total set of Top 10 environmental priorities has been the same over the last three years (2017, 2018 and 2019). However, their relative positions have varied, with climate change rising from position ten to position three for instance. Air quality and energy consumption have occupied the first and second position since 2013 and 2016 respectively. These two environmental issues are of high relevance for European ports.

AIR QUALITY has been the first priority due to new legislation introduced over time. At the same time, air quality has increasingly been a priority 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. Air quality has become a key determinant of public "acceptance" of port activity in the years to come. With more than 90% of European ports being urban ports, it goes without saying that port managing bodies have this concern high on their agendas.

In addition, EU regulations aiming to address air pollution include 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 Tier III requirements for vessels built from 1-1-2021 onwards operating in the North and the Baltic Seas (NECAs).

ENERGY CONSUMPTION has come second and has also remained in the same position. Improvement of efficiency, reduction of energy costs and the carbon footprint and climate change explain this stable position.

Interestingly, **CLIMATE CHANGE** appeared in the Top 10 list for the first time in 2017 in the last position and it has risen up to the third position this year. This increasing trend shows that complying with climate regulations, reducing carbon emissions and making infrastructure climate-proof are high priorities for European ports. In particular, many ports host industrial clusters in the port area and aim to organise their transition to a low carbon economy and become carbon neutral. In addition, cities and regions often set emission reduction targets that go beyond national targets committing ports as well. The relationship with the local community may be another reason for this rise as climate change has increasingly been a concern for the citizens living in port areas.

NOISE follows in fourth position and **RELATIONSHIP WITH THE LOCAL COMMUNITY** in fifth position. Although noise drops down one position compared to the three previous years, it remains an important issue, especially for ports very close to residences. It may be suggested that relationship with the local community is becoming increasingly significant to ports in terms of quality of the environment, standard of living, and the all-important component of port development.

SHIP WASTE follows in sixth position and **GARBAGE/PORT WASTE** in seventh position. The implementation of the new EU Directive on Port Reception Facilities for ship waste will be among the priorities of ports for the next few years. This priority is also related to waste being the most monitored indicator for more than five years (see Table 5). Moreover, it is a clear evidence of ports' readiness to contribute to addressing marine litter which is becoming a great concern for local communities and civil society.

PORT DEVELOPMENT (land related) and **WATER QUALITY** have decreased in priority whilst dredging operations has remained in the same position. **DREDGING OPERATIONS** along with port development (land related) have been in the Top 10 rankings since 1996.

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

	1996	2004	2009	2013	2016	2017	2018	2019
1	Port development (water)	Garbage/ Port waste	Noise	Air quality	Air quality	Air quality	Air quality	Air quality
2	Water quality	Dredging operations	Air quality	Garbage/ Port waste	Energy consumption	Energy consumption	Energy consumption	Energy consumption
3	Dredging disposal	Dredging disposal	Garbage/ Port waste	Energy consumption	Noise	Noise	Noise	Climate Change
4	Dredging operations	Dust	Dredging operations	Noise	Relationship with the local community	Water quality	Relationship with the local community	Noise
5	Dust	Noise	Dredging disposal	Ship waste	Garbage/ Port waste	Dredging operations	Ship waste	Relationship with the local community
6	Port development (land related)	Air quality	Relationship with the local community	Relationship with the local community	Ship waste	Garbage/ Port waste	Port development (land related)	Ship waste
7	Contaminated land	Hazardous cargo	Energy consumption	Dredging operations	Port development (land related)	Port development (land related)	Climate Change	Garbage/ Port waste
8	Habitat loss/ degradation	Bunkering	Dust	Dust	Water quality	Relationship with the local community	Water quality	Port development (land related)
9	Traffic volume	Port development (land related)	Port development (water)	Port development (land related)	Dust	Ship waste	Dredging: operations	Dredging: operations
10	Industrial effluent	Ship discharge (bilge)	Port development (land related)	Water quality	Dredging: operations	Climate Change	Garbage/ Port waste	Water quality

D Green services to shipping

This section presents the share of ports that provide **GREEN SERVICES TO SHIPPING**. It comprises three categories of indicators on the efforts made by the port managing bodies in order to contribute to greener shipping. These are the provision of **ONSHORE POWER SUPPLY (OPS)**, the provision of **LIQUEFIED NATURAL GAS (LNG)** bunkering facilities and **ENVIRONMENTALLY DIFFERENTIATED PORT FEES** aiming to reward front-runners in the market and ships going beyond regulatory standards.

The EcoPorts SDM was updated in 2016 to enable the monitoring of the status and evolution of the green services that ports may choose to provide to their stakeholders. The results are benchmarked and presented in **TABLES 8, 9 AND 10** and cover the period from 2016 until 2019. It should also be noted that the sample of the ports providing data for these three indicators was much smaller in the first year (2016) when the indicators were first introduced.

As shown in **TABLE 8**, more than half of the **PORTS PROVIDE OPS AT THEIR BERTHS**. In absolute figures, the ports offering OPS have increased from 32 (2016) to 50 ports (2019). Low voltage OPS, with some exceptions, mainly relate to inland and domestic vessels as well as auxiliary vessels (e.g. tugs and/or other port authority vessels). In principle, the high voltage OPS figure is more relevant for commercial seagoing vessels. The availability of high voltage OPS has increased by 10% since 2016. In 96% of the OPS equipped ports, electricity is provided through fixed installations and in 16% of them through mobile installations. It should be noted that some ports opt for both fixed and mobile installations. Interestingly, 29% of the ports are planning to provide OPS in the next two years.

These results offer encouraging perspectives and a degree of optimism for the future. However, the price differential between electricity and marine fuel and increased investment costs are the most significant barriers for the uptake of OPS. A recent evaluation paper of the European Commission on the Energy Taxation Directive (ETD) identified the problematic situation on OPS and recognised that "the ETD does not provide for EU-wide preferential tax treatment of shore-side electricity and as a result, shore-side electricity is disadvantaged compared to on-board generation".

Currently, electricity produced from the combustion of marine fuel on board of ships is tax exempt. However, when ships at berth connect with the shore-side electricity system, they have to pay the energy tax applied to electricity. A limited number of EU Member States such as Sweden, Germany, Denmark and Spain have applied for and have been provided a temporary permit by the EU to apply a reduced rate of taxation to shore-side electricity for ships. This tax exemption is time-limited though and Member States first have to go through a long administrative process at EU level in order to obtain it.

ESPO surveyed ports that currently provide OPS and found that levies applied to the electricity price is another significant barrier. Interestingly, in some cases the price differential remains high even after a tax exemption is provided by the EU, due to other national levies applied to the electricity price.

In addition, technical challenges such as the frequency difference and additional investments for connection with the grid often prevent the uptake of OPS. In principle, ocean-going ships are 60Hz equipped and ports need to invest in frequency and high voltage converters to address the frequency difference between the electricity from the grid (50Hz) and the ship's equipment (60 Hz). Electricity shortage at city or regional level may be an additional barrier.

Aiming to address these challenges, the Energy Taxation Directive should be reviewed to provide a permanent EU-wide tax exemption for OPS. That would take away the disadvantage compared to electricity generated on-board of the vessel which enjoys a tax exemption.

In addition, investments in shore-side electricity remain high-risk investments since there is no guarantee or requirements whatsoever for the use of the available installations once provided. EU funding or co-funding of these investments by the users could contribute to sharing this risk. Policy measures on the port side such as the mandate for OPS under the Alternative Fuels Infrastructure Directive should be accompanied by corresponding measures for the port users.

TABLE 8
ON-SHORE POWER SUPPLY (OPS)

53%
IN 2019

IS ON-SHORE POWER SUPPLY (OPS) AVAILABLE AT ONE OR MORE BERTHS?

2016	2017	2018	2019
53%	48%	51%	53%

29%
IN 2019

DOES THE PORT PLAN TO OFFER OPS DURING THE NEXT 2 YEARS?

2016	2017	2018	2019
–	–	27%	29%

AMONG OPS-EQUIPPED PORTS

48%
IN 2019

HIGH VOLTAGE

2016	2017	2018	2019
38%	40%	47%	48%

86%
IN 2019

LOW VOLTAGE

2016	2017	2018	2019
90%	84%	82%	86%

96%
IN 2019

BY FIXED INSTALLATION

2016	2017	2018	2019
–	–	96%	96%

16%
IN 2019

BY MOBILE INSTALLATION

2016	2017	2018	2019
–	–	13%	16%

TABLE 9 shows that the **AVAILABILITY OF LNG BUNKERING** in the port continues to increase. This is a positive sign for the implementation of the Alternative Fuels Infrastructure Directive with regard to the provision by TEN-T core network ports of LNG bunkering facilities by 2025. Nowadays, one third of the ports offer this service to ships. This represents an increase of 10% since 2016. Interestingly, LNG is mainly provided by trucks (90%) and by barges (20%). Only 13% of the ports that provide LNG bunkering facilities have opted for non-mobile installation. It should be noted that some ports opt for more than one type of bunkering facilities. 24% of the ports mentioned the existence of ongoing projects to install LNG bunkering. This indicator was only added last year, hence there is no data for 2016 and 2017.

TABLE 9
LIQUEFIED NATURAL GAS (LNG)

32%
IN 2019

24%
IN 2019

IS LIQUEFIED NATURAL GAS (LNG) BUNKERING AVAILABLE IN THE PORT TODAY?

2016	2017	2018	2019
22%	22%	30%	32%

ARE THERE CURRENTLY ONGOING LNG BUNKERING INFRASTRUCTURE PROJECTS IN THE PORT?

2016	2017	2018	2019
–	–	24%	24%

AMONG PORTS WITH LNG BUNKERING FACILITIES

13%
IN 2019

90%
IN 2019

BY NON-MOBILE INSTALLATION

2016	2017	2018	2019
–	–	7%	13%

BY TRUCK

2016	2017	2018	2019
–	–	85%	90%

20%
IN 2019

BY BARGE

2016	2017	2018	2019
–	–	19%	20%

TABLE 10
DIFFERENTIATE DUES FOR "GREENER VESSELS"

56%
IN 2019

DOES THE PORT OFFER DIFFERENTIATE DUES FOR "GREENER" VESSELS?

2016	2017	2018	2019
62%	51%	54%	56%

28%
IN 2019

DOES THE PORT PLAN TO INTRODUCE ENVIRONMENTALLY DIFFERENTIATED PORT DUES DURING THE NEXT 2 YEARS?

2016	2017	2018	2019
–	–	–	28%

AMONG PORTS WITH DIFFERENTIATED DUES

45%
IN 2019

WASTE MANAGEMENT/ SEGREGATION

2016	2017	2018	2019
–	–	–	45%

50%
IN 2019

AIR EMISSIONS (NOX, SOX, PM)

2016	2017	2018	2019
–	–	–	50%

34%
IN 2019

GHG EMISSIONS

2016	2017	2018	2019
–	–	–	34%

15%
IN 2019

NOISE

2016	2017	2018	2019
–	–	–	15%

42%
IN 2019

ENVIRONMENTAL CERTIFICATION

2016	2017	2018	2019
–	–	–	42%

As shown in **TABLE 10, ENVIRONMENTALLY DIFFERENTIATED PORT FEES** for ships that go beyond regulatory standards are set up in 56% of the ports. ESPO has been promoting this type of initiatives in its Green Guide (2012). However, it should be noted that, in principle, port fees make up a small part of the total port costs for ships and even smaller part of the total cost of a ship's journey. Thus, they do not aim to change investment decisions of shipowners but rather to reward and enhance the market reputation of the front-runners contributing to the greening of the supply chain as a whole.

Interestingly, half of the ports that provide green discounts aim to encourage the reduction of air emissions, 45% of them to encourage better waste management and another 34% to encourage the reduction of GHG emissions. Environmental certification of ships is rewarded by 42% of them. Furthermore, 28% of them are planning to introduce environmentally differentiated port dues over the next two years.

Conclusions

This report provides the latest trends of European sea ports concerning environmental issues. The data presented were obtained from 94 ESPO-member EU/EEA ports, which completed the online EcoPorts' Self-Diagnosis Method (SDM). A set of environmental indicators were selected from the SDM to assess the environmental performance of EU ports. The SDM tool is also part of the EcoPorts pathway towards achievement of the port sector's own environmental standards, the EcoPorts' PERS. Benchmark performance and trends over several years were also analysed.

This SDM has to be renewed every two years to make sure that the results are up-to-date. New members join over the years making the sample larger and more representative. The larger sample might be one of the reasons why the performance of some indicators has decreased this year. It should be noted though that the sample consists of the same countries and is quite similar in all other aspects (TENT- status etc.) to the 2018 sample. It is therefore advisable to monitor the progress of these indicators in the next years to take action if the decreasing trend continues. In general, most of the EU ports are actively working to protect the environment with the aim of achieving sustainable development. There has been a positive evolution of most of the indicators since 2013. However, some of them have slightly decreased in the last year.

Concerning the first category of indicators analysed in this report, the environmental management ones, it should be noted that almost all ports have an inventory of relevant environmental legislation and an Environmental Policy. This assists with the aims of legal compliance and commitment to port environmental policies. An indicator that has achieved a significant rise in performance is the documentation of environmental responsibilities within the port authority – this may be considered as a key element for the functional organisation of an effective environmental program in terms of day-to-day management aimed at prevention, and is critically important in the event of an accident or incident when chain of command and decision-making are vital components.

However, it may be considered timely and topical for training issues to be further addressed since there has been a reduction over the years in the number of ports with an environmental training program. In addition, it is important to encourage more ports to produce an environmental report as such a document is recommended by ESPO and is a requirement of the EcoPorts' PERS. Stakeholders and other interested bodies often search the port's website for such a report in order to check on the port's environmental policies, credentials, evidence of good practice. Making an environmental report publicly available is becoming an expectation and a standard communication tool in its own right.

The performance relative to some other indicators has decreased with respect to 2018, and as a consequence the Environmental Management Index (EMI) has suffered a relative decrease. However, from a wider perspective, taking into account the scores over the last six years, EMI is positive. The percentage of certified Environmental Management Systems has increased since 2013, with ISO 14001 and PERS being the port's most selected standards.

With reference to monitoring of environmental issues, waste, energy consumption and water quality remain in the top priority positions as for the last four years. In general, there is a reduction trend with respect to the percentages of 2018. One of the reasons why some indicators did not improve or slightly decreased this year is the annual variation of the sample of the ports.

Concerning the Top 10 priorities, the two main environmental priorities of the European port sector have remained the same for the last four years, being air quality and energy consumption. However, the third position is for climate change, an issue that only appeared in the priority list two years ago. Climate change is closely linked with the top-two issues and the relationship with the local community and has significantly risen in terms of priority. This priority is directly related to the increasing number of ports taking steps to adapt their infrastructure to climate change or considering the new operational challenges that this aspect can create. It is a marker that ESPO ports are both aware of, and pro-actively involved in the debate and actions related to the high-profile issue of climate change.

The increasing importance of green services in ports has led to deeper investigation of the three indicators. Concerning OPS, there has been a rise in the number of ports offering high voltage OPS which in most of the cases is done through fixed installations. In almost a third of the contributing ports, there are also plans to increase the OPS installations in the future. However, the price deferential between the electricity and the marine fuel prices deters the uptake of OPS. LNG bunkering is available today in around one third of the ports, with an increasing trend of future LNG installations. In most cases, LNG is supplied by trucks. Finally, more than half of the ports offer the option of differentiated fees for ships going beyond regulatory standards. Discounts for ships that reduce their air emissions beyond law limits are the most common ones followed by conducting enhanced waste management on board.

To conclude, it could be stated that, in general, EU ports continue to improve their environmental performance. The progress over the years is evident, however, future trends need to be carefully observed to assess whether the decline of some indicators reflects a trend. It is worth noting, even if it might not come as a surprise, that all indicators related to climate change feature a positive trend.

The 2019 analysis of the responses to the EcoPorts' SDM indicates that EU ports are continuing to maintain and, in several cases, to further enhance the declared policies of compliance, risk reduction, environmental protection and sustainable development. The individual performances of port authorities have a value-added component in the instances where good practices, knowledge and experience are actively exchanged through ESPO's programs of collaboration, conference presentations and dedicated workshops.

E Annex: Sample of ports

This year, **94 PORTS** (compared to 90 ports in 2018) **FROM 19 DIFFERENT COUNTRIES WHICH ARE ESPO MEMBERS**, have participated in this assessment. These include the European Union countries plus Norway which is a member of the European Economic Area. The sample only includes ESPO members, i.e. EU/EEA members, as in principle EU policies and regulations are applied to these countries[1]. **TABLE 11** provides the list of countries represented, the number of participating ports of each country and the percentage. The same countries are represented as in 2018. United Kingdom is the country with the highest percentage of participant ports (13.8%), followed by Spain (12.8%). After that, France and Germany are both occupying the third position with an equal percentage (11.7%).

TABLE 11
LIST OF COUNTRIES REPRESENTED IN THE SAMPLE AND NUMBER OF PARTICIPATING PORTS

Country	Number of ports	Percentage
United Kingdom	13	13.8
Spain	12	12.8
France	11	11.7
Germany	11	11.7
Netherlands	8	8.5
Greece	7	7.4
Denmark	7	7.4
Sweden	5	5.3
Finland	5	5.3
Norway	3	3.2
Ireland	3	3.2
Italy	2	2.1
Croatia	1	1.1
Portugal	1	1.1
Lithuania	1	1.1
Latvia	1	1.1
Estonia	1	1.1
Romania	1	1.1
Poland	1	1.1

As shown in **TABLE 12**, the geographical location of the participant ports is quite diverse. The embayment, protected coast and marine inlet are the most common geographic settings of the contributing ports (34.1%). The estuaries and the engineered coastline ports occupy the second and third position. Finally, the inland ports are represented with 15%.

1. Ports from Ukraine (observer member of ESPO), Albania, Azerbaijan, Jordan, Morocco and Turkey are also members of the EcoPorts network.

TABLE 12
GEOGRAPHICAL CHARACTERISTICS OF THE SAMPLE

34.1% Embayment, Protected Coast, Marine Inlet

27% Estuary

23.8% Engineered Coastline

15.1% River

With reference to the size of the contributing ports, small ports (<5 million tons/year) are by far the ones with a higher percentage of participation (40.9%). They are followed by medium (5<15 million tons/year) sized ports with 22.7%. Just around 15% of the ports handle more than 50 million tons per year. This is a similar breakdown as in 2018.

TABLE 13
TONNAGE CHARACTERISTICS OF THE SAMPLE

40.9% <5

22.7% 5<15

21.6% 15<50

14.8% >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 47.9% of the participating ports are part of the Core Network and 36.1% of them are part of the Comprehensive Network; a similar percentage to 2018.

TABLE 14
PERCENTAGE OF PORTS IN TEN-T NETWORK

84% TEN-T Network

47.9% Core Network

36.1% Comprehensive Network

TABLE 15
LIST OF ESPO-MEMBER PORTS CERTIFIED WITH ECOPORTS' PERS

Port	Country
Port of Pori Ltd	Finland
Port de Commerce de Lorient	France
Port of Le Havre Authority	France
Grand Port Maritime de Dunkerque	France
Ports of Bremen/Bremerhaven	Germany
JadeWeserPort Realisierungs GmbH & Co. KG	Germany
Niedersachsen Ports GmbH & Co. KG, Cuxhaven Branch	Germany
Niedersachsen Ports GmbH & Co. KG, Brake Branch	Germany
Niedersachsen Ports GmbH & Co. KG	Germany
Piraeus Port Authority SA	Greece
Dublin Port Company	Ireland
Shannon Foynes Port Company	Ireland
NV Port of Harlingen	Netherlands
Groningen Seaports	Netherlands
Port of Moerdijk	Netherlands
Port of Rotterdam Authority	Netherlands
Port of Den Helder	Netherlands
Port of Den Oever-Hollands Kroon	Netherlands
Autoridad Portuaria De Valencia	Spain
Autoridad Portuaria De Castellón	Spain
Port Of Barcelona	Spain
Port Of Vigo	Spain
Port Of Cartagena	Spain
Authority Port Of Algeciras Bay	Spain
Port Authority Of Huelva	Spain
Autoridad Portuaria De Melilla	Spain
Ceuta/Autoridad Portuaria De Ceuta	Spain
Peterhead Port Authority	United Kingdom
Shoreham Port Authority	United Kingdom

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EDITING

Sotiris Raptis and
Hélène Vancompernolle

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EUROPEAN SEA PORTS ORGANISATION
Treurenberg 6
B – 1000 Brussel / Bruxelles
T +32 (0)2 736 34 63
E mail@espo.be