

# European port trends in environmental issues

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## Abstract

This paper presents the current environmental performance of the European Port Sector, based on the 2018 results of a wide representation of EcoPorts members (90 ports).

All the information presented in this research comes from aggregate data of the Self-Diagnosis Method (SDM), a concise checklist against which ports can self-assess their environmental management and compare it to the performance of the EU port sector. The SDM tool is currently managed by the European Sea Ports Organisation (ESPO), which is the responsible body for this study.

A set of environmental performance indicators have been analysed and their results have been discussed in this research. These key environmental indicators are categorized in: i) Environmental Management Indicators summarized in the Environmental Management Index; ii) Environmental Monitoring Indicators; iii) Top 10 Environmental Priorities for the port, and iv) Indicators on Services to Shipping offered by the port authority in order to facilitate a greener shipping. In addition to these indicators, selected benchmark performance elements are also introduced on additional topics, such as environmental communication, training or emergency planning. Moreover, the 2018 results have been compared with data on previous years, allowing the analysis of trends over time of the European port sector environmental performance.

**Keywords:** Environmental Performance, Environmental Management, Sustainable Development, Port Management

## 1. Introduction

Although ports contribute to the economic development of countries, they also may generate important environmental impacts on air, soil, water and ecosystems (Dinwoodie et al, 2012). In the last decades, ports have started to work to achieve a sustainable development of their activities.

In this direction, ESPO has regularly conducted surveys to analyze the environmental performance in European ports since 1996. To do so, port authorities have progressively needed to use performance indicators to reveal trends and progress from initial baseline data (Puig

et al, 2015). The results of this study provide data on a total number of 54 indicators.

## 2. Methodology

### 2.1. Data source

The data gathered for establishing this 2018 European Environmental Port Benchmark come from the Self Diagnosis Method (SDM) questionnaire (Darbra et al. 2004). This tool was developed within the ECOPORTS project (2002-2005) and it has been used since then to assess the environmental situation of ports, not only in Europe through ESPO ([www.espo.be](http://www.espo.be)) but also around the world through EcoSLC Foundation ([www.ecoslc.eu](http://www.ecoslc.eu)).

### 2.2. Characteristics of the sample

90 ports participated in this assessment from 19 different countries, all them being ESPO members. These include the European Union countries plus Norway. Spain and the United Kingdom are the countries that have more ports represented (around 12% each one), followed by France and Germany with 10% of ports.

Concerning the tonnage handled in the participant ports of the sample [Σ1], most of them ports are small (<5 million tons, 39%) and medium (5-15 million tons, 36%) sized, and close or within an urban area.

## 3. Results

Concerning the status and trends on Environmental Management Indicators, table 1 shows the main results since 2013. These indicators provide representative information about the management efforts that influence the environmental performance of the port.

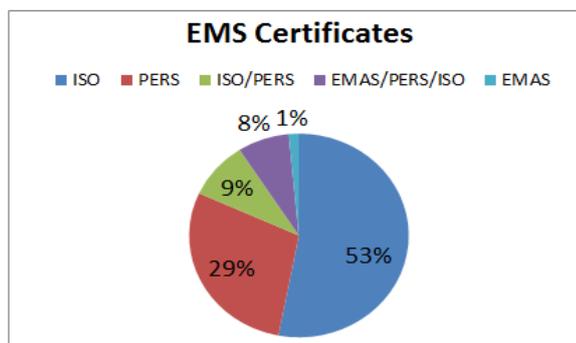
The existence of an inventory of environmental legislation is the indicator with the highest implementation in the European ports (96.7 %), followed by the existence of an environmental policy (95.7 %).

**Table 1.** Percentages of positive responses to the environmental management indicators. Source: ESPO, 2018

Indicators	2013 (%)	2016 (%)	2017 (%)	2018 (%)	% change 2013-2018
A Existence of an Environmental Management System (EMS)	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 program for port employees	66	55	68	58	-8
H Existence of an environmental monitoring program	79	82	89	89	+10
I Environmental responsibilities of key personnel are documented	71	85	86	86	+15
J Publication of a publicly available environmental report	62	66	68	68	+6

On the basis of the ten indicators present in Table 1, an Environmental Management Index can be obtained. This is calculated on the basis of a specific weighting applied to the significance of these key environmental management components. This indicator goes from 1 to 10, being in 2013 equal to 7.23 and in 2018 equal to 8.08.

A total of 73% of participant ports have certified their Environmental Management System (EMS) to an internationally recognized standard. Figure 1 shows that more than a half of the certified ports (53%) are ISO 14001 certified. This 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%). There is a minority of ports that are only EMAS certificated (1.5%). The positive significant trend for the sector is that increasingly more port authorities are openly demonstrating their environmental credentials and transparency of action through independent, third-party review and audit.



**Figure 1.** Distribution of the EMS certificates in European Ports

With reference to Environmental Monitoring efforts of the European ports, waste is the environmental issue that is being more monitored by ports (84%), followed by Energy consumption (80%) and Water quality (76%).

Concerning the top 10 environmental priorities for the port sector, as it can be seen in table 1, Air quality

continues as the top environmental priority since 2013. Energy consumption and noise occupy the second and third position respectively since 2013. It is interesting to highlight the growing awareness of Climate change among ports as well as the relationship with the community.

**Table 2.** Top 10 environmental priorities of the port sector over years. Source: ESPO, 2018

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

Finally, analyzing the indicators on services to shipping, it is interesting to highlight the increasing implementation of green initiatives in ports. On-shore Power Supply (OPS) and differentiated fees for greener vessels are available in more than half of the ports. One third of the ports is offering Liquefied Natural Gas (LNG) bunkering for ships.

#### 4. Conclusions

Year-on-year EU ports are continuing to demonstrate their commitment and progress in terms of environmental protection and their sustainable development. The priority rankings of key issues confirms the significance of science-based evidence and the importance of appropriate technology to facilitate adequate monitoring and reporting.

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

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