

# Environmental Management Systems on Port Areas:

## Ecoports project

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APAT

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## 1) The history

The port sector has proved its commitment to environmental improvement by publishing its first **European Environmental Code of Practice** in 1994 and by undertaking a number of European environment-focused projects.

Developing a **Code of Practice** was one of the first tasks taken on by **ESPO** (European Sea Ports Organization) following its creation in 1993. This was the very first time that European port administrations had expressed a collective view and approach. The Code was intended to be a clear expression of their collective commitment to environmental improvement.

It therefore made a series of important recommendations about the integration of environmental protection policies into all aspects of their operations. The Code stimulated a new awareness of environmental rules and their implications. **It spreads the message that environmental effectiveness meant cost-efficiency.**

Even during the relative short period since the first **ESPO Code** was published, concern about the environment and the development of sustainable policies has increased, bringing about advances in policy and legislation.

In the light of such changes **ESPO** published an **Environmental Review** in 2001, reviewing the progress that had been made and the action taken since the publication of the Code. It further set out a series of highly innovative recommendations for future action:

- Ports should prepare a **publicly available environmental policy** setting out their strategies and methods of achieving them
- **Plans should be reviewed regularly** to take account of legislative and other changes
- Ports should produce a **publicly available annual environmental review**

- Ports should consider what **environmental monitoring** is required to assess their environmental progress
- Ports should establish a number of relevant **environmental indicators** with targets to measure progress
- Ports should consult adequately the **local community** on its environmental programme

Further to its commitment, through the **ESPO Code** and **Environmental Review** to environmentally friendly behaviour, the EU port sector undertook several projects aimed at improving the environmental performance of its activities.

The **Soil Recycling project** (1995-1996) developed a guideline for port management in relation to contaminated soil and demonstrated the practical benefits of sharing knowledge on technological and procedural solutions for re-use of contaminated port sites.

The **ECO-Information project** (1997-1999) developed a dedicated set of environmental management tools for the port administrations: an audit tool (Self Diagnosis Methodology - SDM98), an information engine (Database and Methodological Guide) and a communication platform. More importantly, the project developed an extended network of port administrations; more than 60 European port administrations participated in the test-run of these tools.

The **EcoPorts Foundation (EPF)** has been established in 1999 by a group of 8 big European Ports, as a non-profit organization to provide a networked platform for the continuation into the future of the products and services developed through the ECO-Information project and other European cooperation projects on sustainability in ports.

In 2002 port administrations took one more step by starting **ECOPOINTS**, a 3-year cooperation project on ‘information exchange and impact assessment for enhanced environmental conscious operations in European ports and terminals’. The main goal is to harmonise the environmental management approach of port administrations in Europe, to exchange experiences and implement best practices in respect of port-related environmental issues.

Since the end of **ECOPOINTS** project (June 2005) **EcoPorts Foundation** continues the "**ECOPOINTS**" approach, providing the platform for the continuation of the products and services developed through the **ECOPOINTS** project. The Foundation also plays an important role being a partner in other European cooperation projects and acting as a focal point for port environmental managers to exchange environmental best practice experiences.

## PORTS CONTRIBUTING TO ECOPORTS

### SPAIN

Algeciras  
 Avilés  
 Baleares  
 Bahía de Cádiz  
 Barcelona  
 Bilbao  
 Castellón  
 Cartagena  
 Huelva  
 Gijón  
 Las Palmas  
 Málaga  
 Sevilla  
 Santander  
 Tarragona  
 Tenerife  
 Valencia

### ITALY

Ancona  
 Genova  
 Livorno  
 Civitavecchia  
 La Spezia  
 Ravenna  
 Salerno  
 Trieste  
 Venezia  
 Cagliari  
 Carrara





**PORTS CONTRIBUTING TO ECOPORTS**
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 Balears  
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 Barcelona  
 Bilbao  
 Castellón  
 Cartagena  
 Huelva  
 Gijón  
 Las Palmas  
 Pasajes  
 Sevilla  
 Santander  
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 Jersey  
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 Littlehampton  
 Liverpool  
 London  
 Lymington  
 Newport  
 Milford  
 Poole  
 Rye  
 Scapa Flow  
 Sunderland  
 Swansea  
 Talbot  
 Tisbury London  
 Tuzhny  
 Truro  
 Tyne  
 Wintertford  
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 Wilhelmshaven

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Koper

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 Rochefort Saintonge  
 Strasbourg

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 Thessaloniki  
 Piraeus  
 Volos

**CYPRUS**

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 Larnaca  
 Ypsona

**MALTA**

Marsaxlokk  
 Valetta

## 2) Structure

EcoPorts Foundation consists of a number of players who work together and contribute to the achievement of the goals of EPF. Many members of the team have been associated with EPF during the ECOPORTS project, a fact that provides important continuity.

**EPF Network Partners and end users:** The network of EPF Partners and end users is the heart of EcoPorts and it's critical that they feel connected to the EPF Team. This is supported through the tools, the Regional and National Workshops, the EPF Conference and through the EcoPorts Web-Site.

**EPF Board:** The Board has 8 members representing major ports in Europe (Amsterdam, Antwerp, Barcelona, Genoa, Gothenburg, Hamburg, Rotterdam, British Port Association). The Board members are an important part of the EPF team, supporting not only the Governance of the Foundation but contributing important input to meet the EPF objectives.

- **EPF Secretariat:** The Secretariat is responsible for the day to day management and decision making of the Foundation.
- **EPF Advisory Team:** This team provides a vital support to the EPF Secretariat. Meeting approximately 6 times a year, this team together with the Secretariat discuss progress and future plans, assess the continuing relevance and freshness of the EcoPorts tool-kit and make recommendations for changes and additional developments.

### 3) EcoPorts and ESPO

The need for the EPF work in sharing initiatives and knowledge on how Environmental Laws and EU Directives are implemented in practice, is an important complement to the ESPO concentration on the policy and rules governing seaports in the sustainability sphere.

The EcoPorts approach is therefore strongly supported by ESPO. This is confirmed through a **joint statement** from ESPO and EcoPorts Foundation.

EcoPorts is always presented at the annual ESPO Conference and the EPF Secretariat works closely together with the ESPO Environmental Committee.

Last but not least, several of the EPF tools are recommended in the Environmental Code of Practice of ESPO.

## 4) EcoPorts and the European Commission

After the very successful finalisation of the ECOPORTS project, funded by European Commission, it is widely acknowledged that the project not only has complemented the European Commission's policies but also provided a vital resource for the ports sector and had significant impacts both locally and internationally.

EcoPorts Foundation now continues the ECOPORTS approach, providing the platform for the continuation of the products and services developed through the ECOPORTS project.

Therefore EPF plays an important role being a partner in other European cooperation projects.

The European Commission acknowledges this role of the Foundation, therefore has approved a Grant for the year 2006 to support EPF to become an independent professional organisation for Port Environmental Managers around Europe.

## 5) EcoPorts outside Europe

The EcoPorts Foundation has developed several tools that are now seen as a European standard. It is suggested that the further development of EPF tools will be assisted by consideration of some **international aspects**. Activities involving international partners would allow information flow and data exchange, development of best practice and collaboration on future international projects.

One of the most important steps is to validate the products, services and tools of EPF against the **international benchmarks** associated with Environmental Management Systems (EMS), training programmes, information systems and support services.

Direct comparisons with products and activities with other international initiatives would 1) act as a form of quality control, 2) assist in the development of specification of future EPF products and 3) identify subjects that could be best dealt with by collaboration outside Europe.

## 5) EcoPorts outside Europe

For the next period EPF aims at:

- Presentations at international port-related conferences (to promulgate EPF concept, experience and capabilities)
- Identify opportunities for collaborations outside Europe where this will be beneficial to the aim of continuous improvement of environmental standards
- Direct links with selected organizations outside Europe in order to identify common approaches, projects for joint development and mechanism for information exchange
- Development of an international capability to provide environmental support services for ports outside Europe, where such activities would assist with the recognition of EU policies and standards

## 5) EcoPorts outside Europe

EcoPorts Foundation already has enquiries of interest from North and South America, China, Canada, Australia and South East Asia.

Currently, EcoPorts Foundation is providing scientific support for the following project: "Establishing scientific support for environmental management for ports in Vietnam and Cambodia", funded by the European Commission.



## 6) EcoPorts and Universities

EcoPorts Foundation is connected to 5 European Universities. The Universities provide scientific support to various EPF projects, and EPF involves as many researchers as possible in its activities. EPF's objective is to be connected with at least 1 major University from every European country.

The Universities currently connected to EPF are:

- Cardiff University of Wales (UK)
- University of Amsterdam (NL)
- Universitat Politècnica de Catalunya (Spain)
- World Maritime University (Sweden)
- Gdansk University of Technology (Poland)

## 7) The Top-10 Port Environmental issues

Periodically ESPO and EPF undertake a survey of European Ports to evaluate the progress made in environmental management, and to identify the Top Ten sustainable management issues. The mission of EPF is to provide cost effective solutions for the Top-10 Environmental Issues in European Ports.

1. Port Waste Management
2. Dredging
3. Dredging Disposal
4. Dust
5. Noise
6. Air Quality
7. Bunkering
8. Hazardous cargo
9. Port Development (land related)
10. Ship discharge (bilge)

## Port Waste Management

Waste can be defined as any substance or object that the holder intends to or is required to discard. This includes oil and oily waters; noxious liquids; special, controlled and hazardous wastes; sewage and garbage.

The production of waste is an aspect related to most of the activities carried out in a Port (e.g. shipping, storage, maintenance, waste management); for this reason if its management is not suitable it can be considered as a **significant** aspect. Recent regulations introduce the concept of “duty of care” that require that wastes should be followed (documented) from “cradle (origin) to grave (disposal)”.

## Dust

Dust is considered a set of particles emitted to air and can constitute visual, physical, chemical, or health hazards for employees or the public. The most common sources of dust are open storage, handling (e.g. grabs) and spillages of dry bulk cargoes. Fine particles require little wind to create dust.

## Noise

Noise can be defined as **unwanted sound**. The generation of noise is related to most mechanical or industrial activities carried out in a port and this aspect creates an important impact on the employees, wildlife and the public. Noise can interfere with sleep, communication and privacy, aggravate stress, result in irritability and reduce working efficiency. High levels of noise can lead to hearing loss. Therefore, noise can constitute an occupational hazard, result in complaints and be considered a public nuisance under the law.

## Air quality

Air emissions include substances (gaseous or solid), material and energy escaping to the atmosphere through stockpiles, windows, transport and materials handling. The presence of these products in the atmosphere and their interaction can create air pollution affecting the local climate, the building structure, the weather, health (human and wildlife) and the global environment (global warming, depletion of ozone layer).

## Bunkering

Bunkering is defined as the action or process of **supplying a ship with fuel**. This operation, also known as refuelling, is a very normal activity taking place in ports and can originate oil spills in this area. This kind of pollution and its fate and distribution can create potential harmful effects on the environment (water quality and sediments quality), health (human and wildlife), fisheries and recreational pursuits. The persistent toxic constituents of fuel, such as heavy metals, can become stored in the sediments and taken up into the food chain affecting the whole ecosystem.

## Hazardous cargo

Storage of hazardous and dangerous cargo may result in specific environmental risks dependant on the physical- chemical characteristics of the chemicals stored, the method of storage, the location, size and management of the storage site. Dangerous cargo, their properties, stowage and storage requirements are given in the 'International Maritime Dangerous Goods Code' (IMDG).

## **Port Development (land related)**

The lack of space and the increasing number of industries located in the Port area can create a necessity for expansion towards the surroundings. This occupation of the terrestrial space may generate several consequences

- Destruction of some natural areas close to the Port (wetlands, dune systems)
- Disturbance of the flora and fauna which live in the area affected for the new expansion
- Relocation of some installations which can generate social conflicts
- Landscape impact due to the very existence of the port. For instance, the port infrastructure, the land-based traffic and the lighting used during night operations give the Port the appearance of a busy industrialized district.

## **Ship discharge (bilge)**

This kind of discharge is referred to the water collected and stagnated in the bilge of a ship, this is, the lowest inner part of a ship's hull. Bilge water can be found aboard every vessel, but its composition is always unique. Because the bilge wells receive fluids from many parts of the ship, bilge water can contain water, oil, dispersants, detergents, solvents, chemicals, particles and more. If this water is released to the port, it can mean a potential threat to the water quality.

## 8) Other interesting environmental issues in ports

Next to the Top-10 environmental issues identified by the joint survey of EcoPorts and ESPO, there are some more environmental issues, often met in port operations. These are:

1. Discharges to water
2. Emissions to soil
3. Emissions to sediments
4. Changes in terrestrial habitats
5. Changes in marine ecosystems
6. Odour
7. Resource consumption
8. “Port development (sea)” aspects



## **Discharges to water**

Water discharges refer to any kind of release to the port waters. The typical activities that can generate water pollution are the spillage of products during cargo handling or storage, the discharge of ballast water, the discharge of residual waters, etc. This kind of pollution and its fate and distribution can create potential harmful effects on health (human and wildlife), the environment, fisheries and recreational pursuits.

Numerous regulations on water quality have resulted from International concern about marine pollution, contaminated fishery resources, microbial health risks, loss of wildlife and eutrophication of coastal waters and small seas (e.g. Baltic).

## Emissions to soil

This aspect is referred to the emissions carried out by current or past industrial activities released to the soil, ground or land. Contaminants can include liquid releases to soil, disposal of solid bulk, residues, wastes, etc. The most common sources could be underground storage tanks, chemical drums, heavy metals, scrap metals, discarded machinery, organic chemicals or pathogens.

The impacts related to this aspect can be the contamination of surrounding land, ground water or water courses due to leaching. Land contamination may reduce land value, prevent future development and be an environmental or health hazard.

## **Emissions to sediments**

This aspect involves any kind of release (e.g. fuel) or solid product (e.g. waste) reaching the bottom of the sea. The presence of these substances in sediments can produce negative effects on the benthic community and as a consequence on the whole food chain, due to the fact that some animals feed on benthic organisms.

There are several activities that can produce emissions to the bottom of the sea, but the most common ones are dredging, bunkering, shipping and navigation.

Dredging is one of the most common activities carried out in a port to maintain navigation channels and access. It can have significant impacts because some dredged material is contaminated by heavy metals or other pollutants remaining from past industrial activities. This disturbance can re-release contaminants into the food chain, starting the process of bioaccumulation.

## **Changes in terrestrial habitats**

The coastal ecosystem provides an extraordinary biodiversity of plants and animals. For this reason the surrounding areas of some ports may become conservation or protected areas (e.g. woodlands, wildlife corridors, Natura 2000 sites).

The activities of the ports can disturb the habitat of these species and their natural behaviour. For this reason the Habitat EU Directive places increasingly stringent controls on development or activities that may significantly impact this kind of habitats.

## **Changes in marine ecosystems**

Marine ecosystems are also noted for their diversity of flora and fauna. There are several port activities which may interfere with the marine ecosystem such as dredging, shipping and navigation, bunkering, etc. As a result of these activities these habitats can be damaged producing a range of impacts from disturbance to potentially fatal damage to the organisms living there. The Habitat Directive has also established some regulations for the conservation of important marine sites, as well as species.

## **Odour**

The odour can be defined as any kind of release of substances which produce unpleasant smell. It can come from different activities carried out in a Port like fisheries, waste management, chemical plants, etc.

Although odours can be considered as an emission to the air, they have been separated from this aspect due to the peculiarity of this problem in the ports. Moreover the different nature of this aspect in comparison to other kinds of emissions to the air like gas or particles requires such a distinction.

## **Resource consumption**

This aspect includes the consumption of non-renewable energy sources like electricity, heat from incinerators, fuels (coal, gas and oil) and of other natural resources (e.g. water).

The consumption of fossil fuels means a release of carbon dioxide, nitrogen and sulphur oxides and other pollutants. This pollution can create several impacts like trans-boundary pollution (acid rain), global warming, the depletion of non-renewable resources, etc. Improved energy efficiency may help to reduce air emissions and save money

## “Port development (sea)” aspects

The increase in the maritime transport around the world has contributed to the expansion of Ports (e.g. new docks, new facilities) in order to provide maximum surface to the port users. This can entail greater use of sea space, or reclaiming land from the sea which may cause different effects:

a) Alteration of the coastal hydrography causing:

- Changes in currents.
- Water stagnation which can lead to eutrophication processes and waste accumulation.
- Erosion or accrual of some coastal areas.

b) Interaction with the marine ecosystems, disturbing the benthic habitat, increasing turbidity over a wide area and re-suspending contaminants.