ESPO

ENVIRONMENTAL REVIEW

European Sea Ports Organisation asbl
Organisation des Ports Maritimes Européens asbl

ESPO ENVIRONMENTAL REVIEW

&

Follow-up to the ESPO Code of Practice

Published in 2001

ESPO
ENVIRONMENTAL REVIEW

Contents

INTRODUCTION

We hope that everyone who has an interest in maritime transport and the environment will find ESPO's first environmental review a helpful and interesting account of the action it has taken since the publication of its Environmental Code of Practice in 1994. ESPO was set up in 1993 and one of its first actions was to publish the Code of Practice. This was a very significant stage and the first time that the European port sector had been able to express a collective view and approach.

The "spin-offs" from the Code have included heightened awareness of the environment and a significant increase in environmental reporting. Just as important has been new environmental research. The "Eco-information" project, completed in the Autumn of 1999, has provided a major forum for industry collaboration. Plans are now underway for a new project, "Ecoports".

Since the Code was published, there have been major advances in policy and legislation, the latest examples being concern about gas emissions and their effect on climate change. Shipping can clearly make a contribution to the problems that are occurring across Europe and the environmental advantages of shipping will continue to be complemented by sound environmental practice in ports.

We believe that the direction set by ESPO and the determination of the port sector to achieve continual improvement in its environmental performance will make a significant contribution.

Herman Journée

Chairman, ESPO Environment Committee

ESPO
ENVIRONMENTAL REVIEW

1. AIMS OF THE REVIEW

This review looks at the progress ESPO has made and the action it has taken since the publication of its first Environmental Code of Practice in December 1994.

Publishing a Code of Practice was one of the first tasks taken on by ESPO following its formation in 1993. The Code was designed to meet a number of objectives. First and foremost it was intended to be a clear expression of the port sector's collective commitment to environmental improvement. The Code recognised that this could be best achieved by identifying a port's various impacts on the environment and framing realistic policies to reduce and, where possible, eradicate them. The Code therefore makes a series of important recommendations about the integration of environmental protection policies into all aspects of port operations.

The Code represents the beginning of a process to which ESPO remains strongly committed. This has included a survey of ESPO's membership on the main environmental issues they confront and the development through further research of systems to help with the implementation of the Code.

Because of the importance of involving the port communities as extensively as possible in environmental issues, a discussion will be started with FEPORT (Federation of European Private Port Operators) based upon this environmental review about the possibilities of creating a common view.

2. ENVIRONMENTAL AWARENESS

Even during the relatively short period since the ESPO Code was published, concern about the environment and the development of sustainable policies has increased. For example, the European Commission's transport policies are now expressed largely in terms of their potential impact on the environment and expected levels of pollution. The limits set by the Kyoto Protocol on emissions and

the call at the Helsinki Ministerial Conference in December 1999 for full integration of the environment into all policy areas are two especially significant developments which are driving change across the transport and industrial sectors.

A study carried out by the European Commission in 1999 based on the views of representative samples of the population in each of the 15 member states has thrown further light on the attitudes of the general public towards the environment. It found that:

- 8 out of 10 Europeans believe they live on 'a planet in danger';

- 5 out of 10 believe that it is necessary to 'fundamentally change our way of life and development if we want to halt the deterioration of the environment' and that 'making regulations stricter' is the best means of delivering this change.

But

- 8 out of 10 believe that an environmental protection policy must take into account 'social and economic effects'.

It also found that industry spokesmen are the least trusted on matters of the environment (environmental protection organisations are the most trusted). It is against the background of these and similar concerns that ESPO has prepared this Review.

3. ENVIRONMENTAL IMPACT OF PORTS

Port activity has a range of impacts on the environment, although the diversity of the sector means that these are as varied as the ports themselves. Ports require coastal and estuarial land and usually need to dredge to keep navigational channels open; dredging material is normally disposed of at sea but controls are extensive; in some member states disposal on land, sometimes as part of a reclamation scheme, is the only option.

Most ports operate on a 24-hour a day basis. The impacts of noise, dust, intensive lighting and emissions from ships and the transport modes converging on the port are important factors. Other potential sources of pollution are from cargo spillage, bunkering activity, reception of ships wastes, vessel

and equipment repair and maintenance.

However, all activity has an environmental consequence. For example, an office block in which 1000 people work generates approximately 6000 tonnes of carbon dioxide emissions a year, equivalent to driving 1300 petrol cars around the world; the average office worker produces up to 400 kg of waste a year. In other words, environmental problems such as global warming are not solely the result of transport and industrial activity.

Ports are successfully tackling many of these areas and building up expertise in doing so.

4. LEGISLATIVE AND POLICY DEVELOPMENTS

Below is a brief round up of some of the main environmental policy and legislative developments which have occurred since the publication of the ESPO Code. As EU and member state transport policies increasingly reflect environmental concerns, these are also summarised.

4.1. ENVIRONMENTAL POLICY

The European Commission has just adopted its sixth environmental action programme to underpin an EU sustainable development strategy. In addition new proposals on integrated coastal zone management have been adopted, following the completion of the demonstration projects. The work programme for 2001 and beyond will include new proposals on the promotion of renewable energy resources, on air quality, bathing water quality, noise and civil liability for environmental damage. Policy has been directed towards the integration of environmental considerations into all aspects of commercial and social activity, a theme which runs strongly through ESPO's Code.

New proposals largely based on the Åarhus Convention on public access to environmental information represent a major new initiative. Organizations with statutory responsibilities such as ports will be required, when requested, to make available information about their environmental plans and general environmental status.

Proposals and changes specific to ports have included a strengthening of the MARPOL regulations, which deal with reception of ships' waste, and the introduction of differential charging in ports to support, for example, the use of oil tankers with segregated ballast tanks.

There are two particular pieces of legislation which will continue to have a marked impact on the ports sector. These are:-

- The Environmental Impact Assessment Directive: this Directive creates the framework whereby all large development projects and an extensive range of smaller projects are subject to individual assessment, measuring their potential impact on the environment. Following recent amendments, the evaluation process has been opened up so that more information is now available from the authorities on the reasons for decisions.

- The Habitats Directive: this Directive identifies a range of sites throughout the EU which qualify as part of the Natura 2000 network and therefore require a high level of protection. Altogether, almost 10,000 sites are identified, a significant number of which are marine sites. A further 2,500 sites are identified for special protection measures under the Birds Directive. Many ports are actively involved in site management and in ensuring that site protection and commercial operations can successfully coexist.

In the future, it is clear that ports will become more and more involved in coastal management and in the management of areas designated for special protection. This will require extensive cooperation with a range of agencies and organizations.

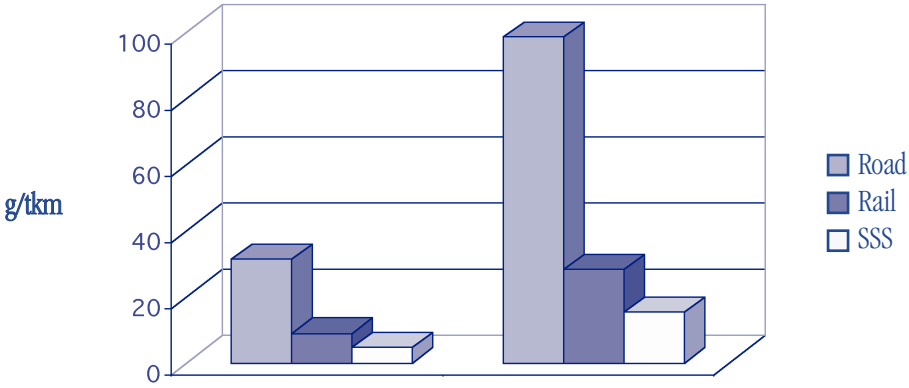
4.2. TRANSPORT POLICY

A principal 'driver' of transport policy is the need to meet the emission reduction targets set out in the Kyoto Agreement. The Transport Commissioner recently identified three trends giving cause for concern, namely the growth in fossil fuel consumption, increasing energy import dependency and growth in transport demand. The figures below compare road, rail and sea in terms of energy usage.

The contribution that can be made to environmental improvement by increasing the usage of shipping and by taking measures to reduce the impact of other modes is clear. Increasing the volume of freight handled by coastal shipping relies on making changes in a number of areas and is not solely related to environmental initiatives. Yet as the Commission has just presented its revision of the Common Transport Policy, ways will need to be developed to ensure that the full potential of shipping can be exploited.

The illustrations below show the relative environmental efficiency of the three main freight transport modes. Some industries are showing an interest in developing 'green transport chains', to show that the product has been transported using the least damaging systems. The importance of shipping to this concept is well demonstrated.

Estimated average fuel consumption and CO2 emissions by mode (Source: Eurostat)

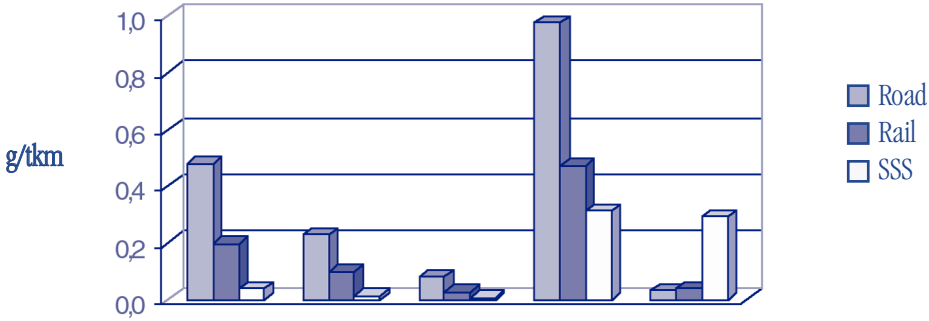


	Fuel consumption	CO2
Road	31,330	98,301
Rail	8,911	28,338
SSS	4,828	15,450

The graph below details a breakdown of the average emissions by mode in grammes per tonne-kilometre. Short sea shipping has significantly higher levels of SO2 emissions when compared with road and rail. However, if the total of average emissions by each mode are measured against an index of 100 for road, then rail is rated at 46 and short sea shipping at 37.

Estimated average emissions by mode

(Source: Eurostat)

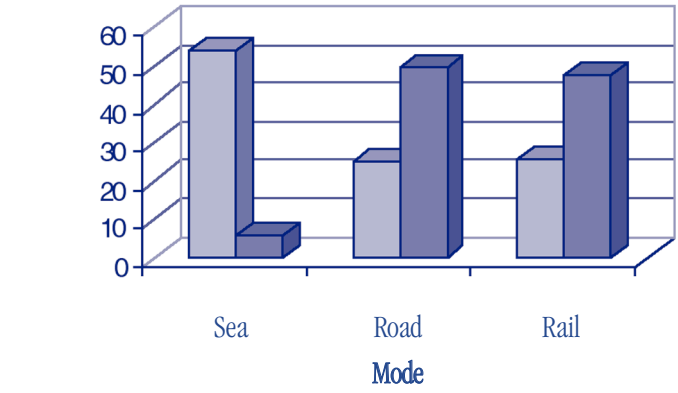


	CO	HC	Particulate	NOx	SO2
Road	0,479	0,227	0,078	0,978	0,031
Rail	0,196	0,098	0,027	0,472	0,036
SSS	0,036	0,012	0,006	0,311	0,290

Further research recently carried out by Friends of the Earth assigned "external" or indirect costs to each mode used to transport a mixture of vehicles, containers, wood and iron totalling 14,500 tonnes between Southampton and Livorno. These costs accounted for the impact of transport on climatic change, traffic congestion, noise, accidents and atmospheric pollution. In total, external costs were highest for road at 49.7 mEuro/tkm, followed by rail at 48.6 mEuro/tkm, with sea transport accounting for a fraction of the others at 5.9 mEuro/tkm. Total external costs in Euros were four times higher for road and rail when compared to sea, despite the distance by sea being more than twice that of the other modes.

Transport costs by mode

(Source: Friends of the Earth 1999)



5. CHARACTERISTICS OF THE PORT SECTOR

EU ports handle 90% of European trade with the rest of the world and 35% of intra EU-trade. Over 2bn tonnes of cargo pass through member state ports each year. The commodities handled range from bulk raw materials to all kinds of manufactured goods; increasingly the trend is towards container and ro-ro traffic.

The figures below are taken from a study of a representative sample of ports carried out by ESPO:

Types of Traffic Handled

Category	Percentage of ports
Dry bulk	90%
Petroleum/petroleum products	63%
Passengers	60%
Ro-ro	57%
Containers	57%

Ports also attract processing and manufacturing industry. They attract industrial investment and can often be key local economic generators.

Although most ports exist to transfer goods and passengers between ships and inland transport and vice versa, many exist to support marine based industries such as the off-shore energy, fishing and the leisure industries. Although ports are remarkably diverse in terms of type of operation and size, the environmental problems each faces are often similar.

The chart below shows the relative proportions of different port sizes:

Annual Tonnage for all Commodities

Annual Tonnage	Percentage of ports
Less than 5m tonnes	71%
5m-20m tonnes	17%
More than 20m tonnes	11%

The ownership structure of ports varies markedly from country to country. In the majority a distinction can be made between the port authority, which is responsible for conservancy aspects such as pilotage and dredging, and those organisations which carry out cargo handling and other commercial services within the port area. Ports are the centres of a great range of activity. There can be port related industrial activity such as oil refining and chemical manufacture, ship repair and ship building. Normally the port authority has little or no direct control over these activities yet has the role of adviser and co-ordinator. This differs from most other commercial concerns where a company will have direct control over all or at least the great majority of the activities connected with it. It is a complicating factor in applying environmental policies. The table below shows the most common commercial activities carried out within the port area.

Main Land-based Activities

Activity	Percentage of ports
Storage and packing	79%
Ship repair and marine engineering	46%
Fish market/processing	34%
General manufacturing	29%
Aggregates sorting and blending	25%

As intermodal terminals, ports are also subject to the pollution created by the transport modes which converge there. The port has no, or at best, little influence over the environmental effects of these modes, including the shipping which uses the port. Ports are obliged to accept all ships, unless they present a clear threat to the safety of the port. Even so, marine transport by comparison with other modes is the most environmentally benign form of transport.

6. ESPO CODE OF PRACTICE

The ESPO Code of Practice was the first European ports Code of Practice of its kind. Published at the end of 1994, the Code sets out the basic principles of environmental management applicable to all types of ports. Above all the intention of the Code was to encourage ports to write their own environmental plan tailored to their individual needs. As a result the Code does not go into the details of port operations but instead creates a framework within which ESPO members can tackle the main issues.

The main recommendations of the Code were to:

1. Comply with the letter and spirit of environmental legislation and abide by internationally agreed conventions, directives and resolutions intended to protect the environment.

2. Initiate steps to consider the potential for the improvement of environmental standards beyond those currently required under legislation.

3. Nominate representatives from senior management positions to take responsibility for co-ordinating policy and action on the environment within the port's sphere of competence.

4. Establish management systems which encourage environmental protection as an integral part of business and management practice.

The Code described the role of management in promoting sustainable development. This was followed by a number of operational recommendations covering environmental monitoring, waste management, port planning and development, hazardous cargo and port preparedness and response plans. Having produced the Code, ESPO set about the task of assessing whether it was being properly used and implemented. It therefore launched a port study in 1996 which analysed the port response and gathered further information about the sector.

Of special significance was the information gathered about the main environmental problems. The tables on next page reproduce some of the responses.

In answer to the question "What are the major environmental issues within a port area?", the replies were:

Issue	Percentage of ports
Dust	57%
Dredgings disposal	49%
Port development (land related)	46%
Dredging	45%
Fisheries waste (land)	43%
Port development (water related)	42%
Noise	41%
Water quality	39%
Traffic volume	37%
Hazardous cargo	36%

Each port was then asked to place the issues in priority order and the result is reproduced in the table below. Identification of priority issues is especially important in a diverse industry.

Issue
Port development (water related)
Water quality
Dredgings disposal
Dredging
Dust
Port development (land related)
Contaminated land
Habitat loss/degradation (water related)
Traffic volume
Industrial effluent

7. ACTION TAKEN FOLLOWING THE CODE OF PRACTICE

ESPO's Environment Committee considered ways in which ESPO member ports could be assisted in implementing the Code. A number of tasks were identified. Firstly, ports needed to be able to communicate more easily with each other using standardised ways of collecting and presenting environmental information. Secondly, ports needed to know the extent to which they were meeting the objectives of the Code and achieving targets.

To address these needs, the Eco-Information project was set up in mid-1997. This resulted in two main end-products, namely the setting up of a website – www.ecoports.com and a system of environmental assessment (the Self Diagnosis Methodology [SDM]) by which ports could carry out an audit of their environmental strengths and weaknesses.

Information for the website was collected through standard Solution forms (a sample completed Solution form is attached as Annex 1). Each form allows the port to record details of its size and type and then further information about successful environmental techniques which have a general application. Contact numbers of those who have been involved in the work and information about costs are also included. This detailed information is kept on the database but is only available to participating ports through the use of a password although general information about Eco-Information is available to all who visit the site.

The success of the database is entirely dependent on the willingness of ports to offer information; so far the response has been excellent and on priority issues such as dredging or waste management, information has been collected centrally which was previously held at a number of different locations; the information has an extra value because it concerns techniques which have actually been tested in the port.

The SDM is the result of work largely carried out by the Universities of Catalonia, Cardiff and Amsterdam who have produced a standardised self-assessment format. Annex 2 provides a sample of the questions used in SDM along with a sample of the analysis summarising a port's response. In total, the SDM consists of over 500 questions covering every aspect of port environmental activity. For each subject area, the questions follow the same pattern. The entire SDM takes approximately five hours to complete and each port is recommended to carry out the assessment once a year. The results of the SDM are treated in strict confidentiality and only the port itself is allowed to see the results. Where a port agrees, the results can be presented anonymously and this is used to assess a sector's

overall progress on, for example, the extent to which ports have drawn up individual plans or the extent to which monitoring is being carried out. Information can also be provided on more general issues such as the cost of compliance with legislation.

Progress has been substantial and the research has provided a focal point for ports stimulating meetings and exchange of information which would otherwise not have taken place. This is especially important in the context of an industry which is very diverse and with very few examples of common ownership. As a result, there are limited opportunities to spread good practice and it is only schemes such as Eco-Information which can fulfil this role in a detailed way.

However, Eco-Information is not the only scheme and system available. There have been other excellent industry- led initiatives such as METESPO, originally developed in Sweden, and the ECOPORT project in Spain. There are many examples of good practice, including the setting up of special wildlife sites, funded by the port, to compensate for land which has been used for port development.

All this work has led to other possibilities. Two examples are the growth in interest in environmental monitoring and methods of reporting, both of which are natural extensions of Eco-Information. Any port wishing to have a more indepth knowledge of its environmental situation will normally need to establish easily measurable environmental indicators to trace progress. Similarly most ports will wish to provide an annual report on progress for general dissemination. It is ESPO's policy to recommend to every port that preparing a plan, setting targets, monitoring progress and providing annual reports should be the basis of the sector's approach to the environment.

8. ESPO'S FUTURE PROGRAMME

ESPO wishes to maintain the momentum of the Code of Practice and the work arising from it. Dealing with the environment is a dynamic process. The volume of traffic is increasing, yet knowledge is increasing about the measures required to limit their impact. In a diverse sector, information needs to be shared and common targets need to be agreed.

Bearing all these points in mind and with the need for the port sector to set itself meaningful and challenging targets, ESPO recommends that all its members take action on the following fronts. All action should take into account the availability of resources and the extent of the environmental impact of the port.

ESPO recommends:

- Ports should prepare a publicly available environment 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 within the local community on its environmental programme.

ANNEX 1 – SAMPLE COMPLETED SOLUTION FORM

The example shows a practical solution to a port environmental problem extracted from the Eco-information database.

Issue specific Environmental Solutions
Details of: Port of Falmouth

CONCERN

ISSUES

Key Item:	Detail:	Further Detail:
Water Quality	Anti-fouling paints	
Waste	Disposal	Hazardous waste
Water Quality	Industrial	Effluent
Activities		
Port Industry	Shipping	Marine engineering/repair
Port Industry	Shipping	Waste Reception Facilities

MOTIVATION

Motivation:	Legislation. Integrated Pollution Control Regulations
Other motive:	Local conditions/concerns/pressures
Description:	Tributyltin compounds are red list substances which should not be discharged into water under national legislation enforcing European Directive.

SOLUTION DESCRIPTION	
Chosen solution:	Technical and Procedural
Description:	All contaminated process water is collected and passed through a treatment plant before discharge. Treatment based on absorption onto a natural product.
Details:	
Supporting documentations:	A paper presented at the Ship Repair Conference in September '98 is available on request.
Alternative solutions:	Treatments are available based on: 1. Carbon absorption. 2. Reverse osmosis. 3. Solvent extraction.
Alternatives failed because:	1. Efficiency: the natural absorber has approximately 4 times the capacity of carbon.
	2. Capital and running costs high - CAPEX ratio approximately double. 3. Capital cost high (approx. double than chosen option). Running costs slightly higher and not all teething problems solved. In fact, after evaluation the granulated carbon option was selected as the efficiency of the natural absorber was not confirmed.

IMPLEMENTATION	
Start date:	Late 1997
End date:	1/1/99 - ongoing - final stage mid summer 2000
Monitoring:	Some vessels are custom built with 8-10 week delivery. Assembly on site is about 3 weeks. Our start date includes development time which is no longer relevant. We would recommend a visit to a working plant to discuss issues.

EFFECTS/EFFECTIVENESS
The solution has been effective. Discharges have been reduced to less than 100 ng/l tbt, from greater than 1,000,000 ng/l in effluent. Waste disposal of absorbent had to be finalised, but calorific value suggested that incineration was viable.

COSTS	
Grade:	Medium: £200,000 original plant.
Detail:	
Benefits	
Grade:	Low: but high non-financial benefits – annual discharges to river reduced from 7.6kg TBT 1998 to just 2.9gms in 2000.
Detail:	

CONTACT	
Contact name:	Graham Hammond
Job title:	Environmental Manager
Department:	
Tel:	+0132(6)2121-00
Fax:	+0132(6)3194-33
E-mail:	Graham.Hammond@ap-falmouth.co.uk
Port of:	Falmouth Dock and Engineering Co.
Address:	The Docks, Falmouth, Cornwall TR 11 4NR
Country:	United Kingdom

ANNEX 2 - SAMPLE OF THE QUESTIONS USED IN SDM

The example shows extracts from the analysis summarising a port's environmental management performance

M1: Environmental Policy		EMS[1]		Code[2]	SWOT[3]
NO:	QUESTION	EMAS	ISO	X	ANALYSIS
1	**Has an Initial Environmental Review been conducted?**			YES	S
1,1	**Do you have an Environmental Policy?**			YES	S
1,21	Is the Policy signed by Chief Executive / Senior Management?			YES	
1,22	Is the Policy communicated to all relevant interest groups?			YES	
1,23	Is the Policy communicated to all Port Authority employees?			YES	
1,31	Does the Policy specify Qualitative objectives?			YES	
1,32	Does the Policy specify Quantitative objectives?			NO	O
	Does the Policy demonstrate commitment to:				
1,331	Publish an Environmental annual report?			YES	S
1,332	Continual improvement?			YES	
1,333	Train employees on environmental issues?			YES	S
1,334	Publish objectives and targets?			NO	O
1,335	Introduce an Environmental Management System?			YES	
1,336	Reduce resource consumption?			NO	W
1,337	Improve environmental standards beyond those required under legislation?			NO	O
1,338	Encourage improved environmental performance of Port users (including suppliers)?			YES	
	Scope of Environmental Policy:				
1401	Implementation of the ESPO Code of Practice?			YES	S
1402	All operations?			NO	O
1403	All substances?			NO	T
1404	All emissions / effluents?			NO	T
1405	All wastes?			YES	
1406	All cargoes?			YES	
1407	Premises and land?			NO	O
1408	Investment and expansion plans?			NO	O
1409	Energy use and energy conservation?			YES	
141	Public relations?			YES	

M4 : Environmental Training		EMS[1]		Code[2]	SWOT[3]
NO:	QUESTION	EMAS	ISO	X	ANALYSIS
4,01	Are all employees aware of the importance of compliance with environmental policy?			YES	S
4,02	Are all employees aware of the potential environmental effects of their work activities?			Partial	
4,03	Are all employees aware of their responsibility to conform to the environmental policy and management objectives?			YES	
4,04	Are all employees aware of consequences of non-compliance?			Partial	
4,05	Are all employees aware of the environmental benefits of improved performance?			YES	
4,06	Are all employees aware of the economic benefits of improved performance?			**Partial**	
4,1	**Have the environmental training requirements of employees been identified?**			**YES**	**S**
4,21	Are relevant Port personnel trained in standard environmental operating procedures?			Partial	
4,22	Are relevant Port personnel trained in pollution prevention and reduction equipment use?			**Partial**	
4,3	**Does the Port authority have an environmental training program for its employees?**			YES	S
4,4	**Do you maintain a full record of environmental training for each employee?**			NO	W
	Does this record include?				
4,51	Trainees name, location and job description?			NO	O
4,52	Nature and date of training course?			NO	O
4,53	Trainee feedback?			NO	O
4,54	Effectiveness of training?			NO	O

1) **EMS :** Environmental Management System. Gap analysis compare the current environmental management practices with the requirements of the 2 internationally recognised standards EMAS (European Commission's Eco-Management and Audit Scheme) and ISO (International Organisation for Standardisation, ISO 14001 Environmental Management Systems - Specifications with Guidance for Use)

2) **Code :** Allocated to ensure anonymity of the port.

3) **SWOT : A**nalysis identifies **S**trengths, **W**eaknesses, **O**pportunities and **T**hreats to support continual improvement.

For further information, please contact :
ESPO
Michelangelolaan 68 Avenue Michel-Ange
B - 1000 Brussel/Bruxelles

Tel: 32-2 736 34 63 – Fax: 32-2 736 63 25
E-mail: mail@espo.be
Website: http://www.espo.be

VANDEN BROELE | GRAPHIC GROUP