



GREEN GUIDE



Towards excellence
in port environmental management
and sustainability

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Executive summary

The “**ESPO Green Guide**; Towards excellence in port environmental management and sustainability” was formally adopted by the Executive Committee of ESPO in June 2012. The Green Guide revises and replaces the Environmental Code of Practice of 2003. It consists of three main parts as seen in figure 1.

Green Guide - Structure and Content outline

Part A – Information to stakeholders and general public

1. Vision towards sustainability in port areas

- » Aims of the Guide
- » Environmental policy code
- » Commitment to transparency

2. Setting the scene

- » Port diversities
- » Evolution of priorities and environmental management
- » Evidence of progress achieved by the sector
- » Common instruments for implementing environmental ambitions

Part B – Guidance to port authorities

3. Guide to systematic environmental management

- » Rationale and components of EMS
- » Assisting tools and methodologies
- » Recommendations

4. Common approach for responding to environmental challenges

- » Common response framework
- » Applying the common response framework to selected priority issues; air quality management, energy conservation and climate change, noise management, waste management, and water management

Part C – Supporting online annexes

5. Annexes (available online through www.espo.be, provision of regular updates)

- » Good practice examples supporting chapter 4
- » Environmental legislation influencing European ports

Figure 1: Structure and content of the Green Guide

Within Part A the vision of European port authorities towards sustainability in port areas is defined. The European port authorities re-establish their environmental policy code and commit themselves to continuously work towards improving their environmental performance through focused action under 5 Es; Exemplify, Enable, Encourage, Engage and Enforce. Background information is then provided to stakeholders and the general public on the challenges of port environmental management, the efforts by European port authorities and the evidence-based progress that can be demonstrated over time. In this way, the first part of the Guide sets the scene on which port authorities operate and address their environmental responsibilities.

Part B of the ESPO Green Guide is focused towards providing guidance to the members of ESPO on how they can work towards fulfilling the environmental objectives and commitments that are defined in Part A. First, guidance is provided on how to approach environmental management in a systematic way through the establishment of an environmental management framework or system. Assisting tools and methodologies towards that direction are highlighted. Chapter 4 of the Green Guide is a core chapter that guides ports through the common framework for port authorities to respond to their environmental challenges under the 5 Es. This is achieved by applying the 5 Es framework while demonstrating response options that address five selected environmental issues, namely air quality, energy conservation and climate change, noise management, waste management, and water (both consumption and quality) management.

The third part of the Guide comes in the form of two online annexes. Annex 1 consists of exemplary response options and good practices that are in place in European ports. The good practice examples support further chapter 4 and demonstrate evidence and application of the theoretical framework in practical terms. The second online annex summarises the most significant European legislation that influences the environmental management of port areas. Both annexes are dynamic and as such subject to continuous review by the Sustainable Development Committee of ESPO. The Annexes are available through www.espo.be and www.ecoport.com and will be updated over time to reflect on both forthcoming rules and response options.



Foreword by the European Commission

This third edition of the ESPO GREEN GUIDE comes at a crucial moment. The Commission welcomes the positive attitude shown by the port sector towards further enhancing the environmental performance of the European ports. This is an important signal that demonstrates its active and continuous commitment to sustainable operations. It is very good to see ESPO setting this example, thereby encouraging Europe's port authorities to integrate the environmental objectives and challenges into their daily operations and management practices. This may even inspire port authorities across the world.

The Commission recently published guidelines on implementing the Birds and Habitats Directives in estuaries and coastal zones, with a particular focus on port development, dredging and recommendations for striking a better balance between environmental protection and port development. The ESPO Green guide continues and builds upon the Commission guidelines by extending them to other environmental challenges like noise, water management, air quality and climate change.

A stronger integration of environmental objectives and requirements into port activities and planning will bring benefits for our wider society and also involve building new partnerships between all parties involved across the often complex logistic chains. This will require ensuring their active participation and commitment as they adapt to ever changing circumstances, a process to which ESPO and the European port authorities are committed. The application of the 5 Es (Exemplify, Enable, Encourage, Engage and Enforce) is showing the way towards a comprehensive and integrated approach. The Commission appreciates ESPO's approach in assisting ports to implement the relevant EU rules rigorously and is following this initiative with great interest.

Siim Kallas
Vice-President of the European Commission
In charge of Transport



Introduction by the Chairman of ESPO

I am delighted to present the new Green Guide of ESPO, which fully revises and updates our last Environmental Code of Practice that was produced almost ten years ago.

My thanks go first of all to the ESPO Sustainable Development Committee and the Secretariat for all their hard work in drawing up this important new Guide.

The environment has always been a major priority for our organisation. We have made a firm link between effective environmental management and effective port management, which go hand in hand. If we are to secure the 'license to operate' and the 'license to grow' of our ports, we must ensure that operations and new investments are undertaken in a sustainable manner. Port authorities therefore have both an economic and public interest in serving the need of their local communities for a clean environment.

ESPO is in a unique position to encourage best practice amongst its member ports and to set challenging targets. The new Green Guide is part of that process. Going a step further than previous editions, the Guide introduces a common framework for action under 5 Es; Exemplify, Enable, Encourage, Engage and Enforce. This action framework is applied to five selected environmental issues; air quality, energy conservation and climate change, noise management, waste management and water management. Other priorities, such as the optimisation of community stakeholder relations and aspects of port development and dredging, are intentionally not included in this Green Guide, as they are dealt with in specific Codes of Practice that ESPO published in recent years.

I am confident that the ambitious goals of the Green Guide will encourage our members to further improve their track record in environmental management and performance. Evidence based progress can already be demonstrated through a number of key environmental management indicators. These are now part of the European Port Performance Dashboard, which we established earlier this year with the help of the European Commission. Finally, we will continue to support our members through the services of EcoPorts which were fully integrated in the ESPO structure last year. The Port Environmental Certification Scheme (PERS) is the EcoPorts flagship product, which allows port authorities to excel in environmental management. We are committed to seeing the expansion of the scheme throughout the sector.

I wish the Green Guide to become an interactive reference document that will contribute to the sustainable growth of European ports.

Victor Schoenmakers
Chairman of ESPO



1. Vision towards sustainability in port areas

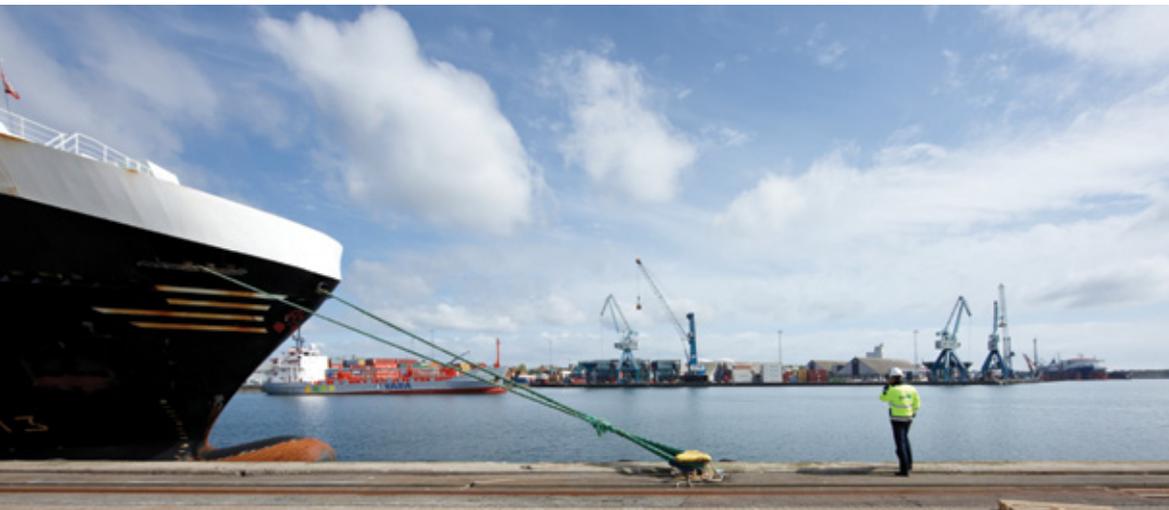
1.1 Aims of the Guide

The ESPO Environmental Code of Practice (1994) was the first official policy document that was ever published by ESPO, just one year after the establishment of the organisation. The Code was then updated in 2003 and the current version under the title “ESPO Green Guide; towards excellence in port environmental management and sustainability” is the third edition within which the sector defines its environmental ambitions. The main aim of the Green Guide is to trigger port authorities to be proactive and to commit to sustainable development and the continuous improvement of their environmental performance. With this focus, the Guide demonstrates options and approaches, without losing sight of the fact that port authorities find themselves with different challenges to face, have different financial and regulatory powers or capacities to act upon those challenges and finally, have a different track record and history of environmental management and performance. In other words, the Guide recognises that each port is unique.

While respecting the differences between ports, the Guide:

- » defines a common vision of the port sector on environmental sustainability,
- » promotes the efforts of European port authorities in the field of environmental management,
- » demonstrates evidence of the progress achieved by the sector over time,
- » provides guidance to ports in establishing and developing further their environmental management programmes,
- » highlights the main environmental challenges that ports face and demonstrates response options,
- » develops a common approach towards responsible action, while respecting the diversity of ports, their competences and their abilities.

From the above, it is clear that the Green Guide is not merely a promotional tool of the sector’s efforts and the evidence-based progress that has been achieved over time (see table 2, section 2.4). Inspired by the positive trends, ESPO wants to trigger through the Green Guide its member ports to evaluate further their environmental performance, to see where they stand, what they have already achieved and what would be the next steps towards further environmental improvement, given the challenges they face and making full use of the powers and capacities they have. Overall, the ESPO Green Guide favors a bottom up approach, in which port authorities are proactively taking responsibility and living up to the expectations of the community. It encourages ports to be responsible for their own initiatives, to benchmark their performance, and to deliver science-based evidence of achievements.



ESPO environmental policy code

This section outlines the vision of the members of ESPO towards sustainability in ports areas.

European port authorities believe in:

1. Achieving voluntary self-regulation that raises standards beyond regulations through a bottom-up approach
2. Cooperation and sharing of knowledge and experience between port authorities on environmental matters
3. Serving in parallel the interests of the business and the local communities aiming towards the sustainable operation of port areas
4. Applying a systematic approach to port environmental management through appropriate structures that enable continuous improvement of performance
5. Being transparent in communicating and reporting on the ports' efforts and environmental performance

In respect to the above principles, European port authorities aim to continuously work towards improving their environmental performance through focused action on:

1. **Exemplifying:** Setting a good example towards the wider port community by demonstrating excellence in managing the environmental performance of their own operations, equipment and assets
2. **Enabling:** Providing the operational and infrastructural conditions within the port area that facilitate port users and enhance improved environmental performance within the port area
3. **Encouraging:** Providing incentives to port users that encourage a change of behaviour and induce them to continuously improve their environmental performance
4. **Engaging:** with port users and/or competent authorities in sharing knowledge, means and skills towards joint projects targeting environmental improvement in the port area and the logistic chain
5. **Enforcing:** Making use of mechanisms that enforce good environmental practice by port users where applicable and ensuring compliance

It should be noticed that the enforcing element is seen by port authorities as a last resort instrument in line with their belief that a lot can be achieved through cooperation and common understanding in line with the principle of self-regulation.

1.3 ESPO commitment to transparency

ESPO has a clear commitment to increase transparency in the port sector. This is demonstrated through its long standing support for the EcoPorts monitoring and reporting mechanisms and, recently, through taking the initiative with the PPRISM project to further establish a monitoring and reporting culture. ESPO strongly encourages its member ports to systematically monitor and report environmental performance through EcoPorts, PPRISM, and individual port schemes.



The vision of **EcoPorts** has been to create a level playing field on port environmental management in Europe through the sharing of knowledge and experience between port professionals. EcoPorts serves the principle of “ports-helping-ports” and promotes continuous improvement of performance through voluntary self regulation. Since 2011, EcoPorts is fully integrated within ESPO and through www.ecoport.com, ESPO offers the opportunity to its member ports to use the well established tools, Self Diagnosis Method (SDM) and Port Environmental Review System (PERS).



With the **PPRISM** (Port Performance Indicators – Selection and Measurement) project, ESPO has taken a first step in establishing a culture of performance measurement in European ports. The two year project, co-funded by the European Commission, delivered a shortlist of indicators that form the basis of a European Port Performance Dashboard (<http://pprism.espo.be/>).

At the ESPO level, and in order to monitor the progress achieved towards reaching its environmental policy objectives, ESPO is committed to monitor and report over time on:

1. The number of ports within the EcoPorts network and the number of ports providing environmental management data through the completion of the Self Diagnosis Method (SDM) checklist.
2. The number of ports that implement a systematic environmental management approach and achieve/maintain certification under PERS, ISO 14001 or EMAS.
3. Trends regarding the evolution of port environmental management through summarised benchmark information from the SDM checklist and the PPRISM Environmental Management Index.
4. Annual trends regarding the evolution of performance for the European port system as a whole on selected environmental priority issues through the PPRISM structure and mechanism.
5. Good practice examples under the 5E framework for selected environmental priorities, as referenced in the dynamic online annex 1 of this Green Guide. ESPO is committed to also periodically review the chapter 4 of this Guide and its accompanying online annex in order to adapt it to emerging priority areas and potential response options.



2. Setting the scene; ports and the environment

2.1 Ports are diverse

The common saying that “when you have seen one port, you have seen one port” is obviously an exaggeration, but it does highlight the magnitude of diversity that exists between European ports. This is especially so where it concerns their governance. The recent ESPO ‘Fact Finding Report’ on European Port Governance¹ amply demonstrates this. Significant differences are observed in terms of objectives and functions of port authorities as well as their institutional frameworks and financial capabilities. Port authorities furthermore differ in terms of market power, but also in terms of knowledge, skills and competence they can rely on when it comes to take action. Most port authorities in Europe do have ambitions to go beyond a passive landlord role, but the diversity in governance frameworks can either limit or enable those ambitions.

In its 2012 ‘Manifesto on the Renaissance of Port Management and Policy’², ESPO pleads for a fundamental revision of the traditional role of port authorities, arguing that port authorities that confine their role to conserving port land and regulating nautical safety will be unable to make a difference. Though essential, these basic functions need to be developed pro-actively in a wider portfolio of tasks that add value to the wider port community, the logistics chain, business in general and the societal and environmental context in which ports operate. Port authorities essentially have to become dynamic port developers. This however implies that policy-makers need to give them the necessary means and tools to perform this role.



Figure 2: Three levels of port environmental management

¹http://www.espo.be/images/stories/Publications/studies_reports_surveys/espofactfindingreport2010.pdf

²http://www.espo.be/images/stories/policy_papers/policy_papers2012/2012-05-11_20espo_20manifesto_20final.pdf

Diversity also exists when it comes to environmental considerations. These can be different for each port and greatly depend on the specific location and the characteristics of the port area. From a port authority environmental management perspective, three levels of potential intervention can be identified; the level of own port authority operations, that of the operations within the port area and the level of the transport and logistics chain (see figure 2).

The degree of influence a port authority can have towards taking actions to improve the environmental performance varies between the levels identified above and depends on the different objectives and functions, institutional framework and overall competence of the port authority.

2.2 Environmental priorities evolve

In February 1996 ESPO commissioned the first environmental survey about ports in order to assess response to the recommendations of the first ESPO Environmental Code of Practice (1994). The Environmental ESPO Questionnaire was useful to obtain an idea about the most important environmental problems in ports. 281 ports from 15 different European countries took part in this questionnaire. In April 2005 the results of a second study, the ESPO Environmental Survey 2004, were published. In that case, 129 ports participated in the survey. The survey not only identified the issues which were significant for EU ports in the field of environment but also established a port sector's European benchmark of environmental performance. It allowed a comparison of the results of both studies and also investigation of emerging trends. In 2009 a third major environmental survey was carried out under the umbrella of ESPO, the ESPO / EcoPorts Port Environmental Review 2009.

The ESPO / EcoPorts Port Environmental Review 2009³ identified the issues which were most significant for EU ports in the field of environment and demonstrated the sector's performance in terms of environmental management. The review up-dated the results of the previous similar exercises of 1996 and 2004, and assessed the progress that has been achieved over the years. Furthermore, the review re-established a European benchmark of environmental performance, against which individual ports were also able to evaluate their own environmental management in relation to some fundamental questions. 122 ports from 20 European Maritime States participated in this survey. The table presents the top 10 environmental priorities for 2009 together with the ones from the similar exercises that took place in 1996 and 2004 so that the variations over time can be demonstrated. Environmental issues that consistently appear over time are mapped with the same colour.

Table 1: Top 10 environmental priorities of the European port sector over time

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

³ http://www.espo.be/images/stories/Publications/studies_reports_surveys/ESPOEcoPortsPortEnvironmentalReview2009.pdf

Noise pollution is identified as the current top environmental priority by the European port sector as a whole, followed by air quality. The European Noise Directive is considered to be one of the main triggering factors for the high priority on noise within the ports environmental agenda. The significance of air quality clearly signals the priority given to issues related to the health of people working or living around ports, and it is in line with the European political agenda. The management of port waste remains high within the environmental priorities of the sector.



Some environmental issues, namely dredging operations, dredging disposal, dust and port development, appear consistently within the top 10 priorities in Europe over the last 15 years. Those highly prioritised environmental issues for a large majority of European ports form a basis for environmental collaboration in the port sector. The two “new entries” in the 2009 ‘Top-10’, namely the relationship with the local community and energy consumption are considered to be of significance. These clearly reflect the political priorities on energy efficiency and climate change

as well as the realisation by the port sector of the significance of good port-city relations and societal integration for the operation of a sustainable port.

The Top-10 environmental priorities for 2009 form the basis for selecting the themes that are addressed with greater detail in chapter 4 of the Green Guide (see section 4.1).

2.3 Evolution of port environmental management and sustainability

A well known definition for sustainability comes from the Brundtland report of 1986: “Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. The balance between social, economic and environmental considerations is the basis for sustainable development. The social scope often relates to elements such as the contribution to direct and indirect employment, the interaction and relationship between port and city, the contribution to knowledge development and education, and the “liveability” of the area surrounding the port. From an economic perspective, return on investment is vital in the assessment of any development projects. In addition, efficiency of the use of the port area and the provision of facilities for companies in order to maximise their performance, are all significant economic considerations.

The environmental dimension relates to environmental performance and management. As stated in section 2.1, environmental considerations can be different for each port and depend on the specific location and the characteristics of the port area. Seaport environmental management progressed over the last decades from a “point focused” seafront-based exercise to an integrated seaport area management concept. The dilemma for the port authority is that it may not necessarily be directly, legally responsible for the activities, products and services of the components of the logistic chain, but its overarching administrative role, ownership of the estate (land and water) and permanency of operational presence, means that the port is the obvious point of contact and the readily identifiable player for any environment related issues in the whole port area.

There is potential for further integration as seaports proactively act as facilitators of procedures and of communication between the different parties involved in the logistic chain. The concept of ports as facilitators refers to the contribution that ports can make in helping the whole port community (including partners in the logistic chain) to deliver compliance with legislation, prevention of pollution, reduction and mitigation of environmental impacts, sustainable development and evidence of satisfactory performance. This resulted in the development within some ports to include their efforts regarding sustainability, as part of their corporate social responsibility, in their yearly, audited, financial report.

2.4 Evidence of progress in environmental management

The European port sector has been monitoring selected environmental management indicators since back in 1996 as part of joint ESPO - EcoPorts initiatives. The aim was the monitoring of trends over time that would highlight tendencies and assist both the sector and policy makers. The table below illustrates the progress achieved by European sea ports on selected indicators over time. The data for 1996, 2004 and 2009 originates from consecutive surveys undertaken by ESPO and EcoPorts. The data for 2012 is derived from the updated European benchmark of environmental management performance for 2012 as constantly monitored through the analysis of the results of the Self Diagnosis Method (SDM)⁴.

Table 2: Progress on selected environmental performance indicators⁵

Environmental Management component	1996 (%)	2004 (%)	2009 (%)	2012 (%)	Percentage change (2004-2012)
Does the port authority have an environmental policy?	45	58	72	91	+33
Is the policy made available to the public?	-	59	62	85	+26
Does the policy aim to improve environmental standards beyond those required under legislation?	32	49	58	73	+24
Does the port publish an annual environmental review or report?	-	31	43	62	+31
Does the port have designated environmental personnel?	55	67	69	95	+28
Does the port have an environmental management system?	-	21	48	62	+41
Is environmental monitoring carried out in the port?	53	65	77	80	+15
Has your port identified environmental indicators to Monitor trends in environmental performance?	-	48	60	71	+23

The table clearly demonstrates evidence of the progress achieved by the port sector during the last 16 years. For example, the increasing trend for ports to produce an environmental policy, to publish an annual environmental report, and establish activities and procedures to manage their environmental risks such as designating environmental personnel, having an environmental management system, and monitoring environmental performance by the systematic use of environmental performance indicators. The trends demonstrate that a lot has been achieved through voluntary self regulation within the sector. ESPO is most encouraged by the positive trends and considers them as triggering factors for its member ports to continue evaluating and further improving their environmental performance.

⁴ www.ecoport.com

⁵ As successive surveys represent different numbers and identities of respondent ports, the results should be interpreted with caution. The trends are more reliable as indicators of progress than the actual percentages



2.5 Common instruments for implementing environmental ambitions

In order to provide useful guidance for the port sector in general and port authorities in particular, a proper assessment of the different tools and instruments that all – or at least a significant number of – port authorities within the EU have at their disposal is necessary.

As already pointed out in the EC Communication on a European Ports Policy (COM(2007) 616), the set-up of port management varies considerably across the Community. In some Member States ports are managed by private entities which own port land (or have similar rights to those of an owner). In most cases ports are managed by public entities or undertakings. Within this group of public port authorities, differences can be witnessed with regard to the degree of autonomy from other public authorities, the level of government they belong to and the range of services they provide. Nevertheless, despite the variety of existing European port management models, a series of tools and instruments that port management bodies / port authorities usually have at their disposition can be identified. The following list may not be applicable to the same extent in each and every European port, but aims to describe the most common tools and instruments available to address environmental policy issues and implement environmental ambitions.

Port vision

In line with best business practice, port authorities formulate and periodically update their vision or business plan for the development of the port. In this vision information regarding the trends for sustainability and the environment on a port area level is provided. By collecting, combining and aggregating (individual) data, a specific environmental policy can be developed and implemented at the port area scale. Global data can also facilitate the detection of potential port development restrictions and assist in the prioritising and setting of environmental actions.

Spatial planning and infrastructure management

In line with the port vision, zoning plans and policies can be tools to address environmental issues in ports. The role of port authorities within these decision making processes varies throughout the EU (no role, advice, decision).

In most cases port authorities have an exclusive or shared operational and financial responsibility for the management of port infrastructure (e.g. docks, quays). This infrastructure management competences, and especially competences for environment-related infrastructure such as infrastructure linked to shore side electricity, bunkering systems, smart grids, waste water treatment etc., could also be a useful tool for port authorities in order to realise environmental ambitions.

A modern debate regarding transport must also include “soft infrastructure” elements. In its recent proposals on the TEN-T policy, the EC stipulates that the “core network” within the TEN-T-policy does not only contain the “hard infrastructure” such as new waterway/road/rail connections, but also intelligent traffic management systems and related tools. Tools such as traffic management, low emission areas and environmental zoning could indeed become part of a broad sustainable development policy in port areas. Often this discussion is closely linked to the relationship between ports and cities.

Tendering and/or concessions

In most cases, access to port land is a precondition for providing cargo-handling services. Other port-related activities are often also carried out on land granted by the port authority that owns the land or has similar rights to those of the landlord.

There is currently no secondary EU legislation on port concessions, although a horizontal instrument on service concessions is in preparation. Be that as it may, ESPO underlines the need for transparency and a level playing field regarding the use of concessions in the port sector. Broadly defined, these include both public domain concessions and land lease agreements. These rank among the most important governance tools for port authorities, enabling them to optimise the use of port land and performance of port services. Both the granting of concessions and the formulation of concession clauses can be very relevant in order to implement elements of an environmental policy in the port area.

In close relationship to concessions, ownership (or similar land rights) of the port managing bodies within port areas can support the practical implementation of an environmental policy. Access to port land can for example be made dependent of specific (environmental) preconditions. In some cases, port authorities have a mandate to expropriate land owners in order to serve public interests. With the same goal port authorities are sometimes entitled to exercise priority rights such as a pre-emptive right (to buy port land).

Port dues

When using ports, carriers have to pay several fees related to the use of the port and its infrastructure, and to services provided by terminal operators, pilots, tug-operators etc. These port dues could be policy instruments for encouraging for example the use of less polluting ships. It should be noted however that port users and ship-owners are the primary parties in charge of using the most advanced and sustainable available technologies in line with the polluter pays principle. In certain cases though, port authorities may choose to stimulate further the application of such technologies for a restricted period of time through for instance the application of incentive schemes that reward improved performance. This should however be subject to the policies of each individual port authority.

Enforcing

In certain cases, port authorities have the power to put in place local environmental regulations and to have an enforcing role.

Besides these general instruments, a port authority also has the possibility, often in cooperation with port users, to realise specific projects to either enhance the sustainability and environmental performance within the port area or to specifically address certain nuisance issues related to the port area to enhance the liveability within the nearby community. Examples of such projects are provided in Annex 1.



3. Guide to systematic environmental management

3.1 Environmental management framework; rationale

The concept of port environmental management has developed markedly in Europe during the last 15 years. The progress was driven by mutual collaboration between the port sector, research institutions and specialist organisations. The framework for this mutual collaboration was developed through joint activities instigated and funded by primary port partners and part-funded by EC Research and Development Programmes such as Eco-Information (1997-2000) and ECOPORTS (2002-2005). The cooperation between port professionals, academic researchers and specialist organisations has proved to be a potent mix in terms of delivering a functional framework of cost-effective solutions developed to implement policies and produce continuous improvement of the port environment.

In view of the differences between ports and the changing nature of the environmental challenges that ports face, the establishment of an environmental management framework or system is considered of utmost importance by ESPO. A systematic approach to environmental management enables the continuous identification of an individual port's priorities while introduces a functional organisational structure that sets respective targets, implements measures, monitors impact, evaluates, reviews and takes corrective actions when and where necessary. In this way ports can achieve and demonstrate continuous environmental improvement.

3.2 Assisting tools and methodologies

The EcoPorts tools and methodologies provide a proven overarching framework that assists ports in their environmental management. EcoPorts became an integral part of ESPO in January 2011. The EcoPorts tools became part of the services that ESPO provides to its member ports through the online platform at www.ecoport.com.

Self Diagnosis Method (SDM)

The Self Diagnosis Method (SDM)⁶ is a well established and widely adopted, time and cost efficient methodology for identifying environmental risk and establishing priorities for action and compliance. SDM is a concise checklist against which port managers can self assess the environmental management programme of the port in relation to the performance of both the sector and international standards. The SDM checklist addresses the fields of environmental policy (placing the focus on activities, aspects, objectives and targets), management organisation and personnel, environmental training, communication, operational management, emergency planning, monitoring, auditing and review. Individual port responses are treated confidentially and SDM is by no means a "pass" or "fail" exercise. The responses of the port managers are entered into a database and this contributes to the build up of the port sector's benchmark of performance.



⁶ <http://www.ecoport.com/templates/frontend/blue/images/pdf/SDMBrochure2011.pdf>

On completion of the checklist the port authority joins the EcoPorts network and obtains access to the other ESPO services namely the SDM Review and Port Environmental Review System (PERS). Ports are encouraged to submit their SDM for review in order to receive confidential feedback and advice. The individual port responses are treated anonymously and in strict confidence. The analytical review includes: (a) a projection of the port's answers against the European benchmark of performance, (b) a GAP analysis between the port's current organisation and performance and the requirements of established environmental management standards (ISO 14001 and PERS), (c) a SWOT (Strengths, Weaknesses, Opportunities, Threats) identification of the port's environmental management performance, and (d) an analytical report containing expert's advice and recommendations on the current status and the further development of the port's environmental management program. The use of the SDM tool over time provides a consistent periodic review of progress. The results obtained from SDM can be used effectively in annual reports and the information collected can be incorporated directly into more formal review systems. In addition, SDM assists in the implementation of the ESPO policy recommendations.

Ports around Europe find SDM to be a highly effective tool for developing their environmental management programme, as well as in reporting progress and raising environmental awareness of staff internally within the port organisation. The nature of the tool makes it applicable and beneficial for ports of different sizes and at different stages of development regarding their environmental priorities. SDM is being used by some of the largest ports in Europe, by ports with a progressive environmental policy that are already certified by an EMS (e.g. PERS, ISO 14001 or EMAS), as well as by small ports that want to initiate a process of self-assessment and to create awareness of environmental issues.

Port Environmental Review System (PERS)

Over the last 10 years and having the continuous support and recognition of ESPO, the Port Environmental Review System (PERS)⁷ has firmly established its reputation as the only port sector specific environmental management standard. PERS stems from work carried out by the ports themselves and it is specifically designed to assist port authorities with the functional organisation necessary to deliver the goals of sustainable development. The overriding ports element is especially important. There is plenty of advice available on general environmental topics but the highly specialised nature of the environmental challenges in the port area that port authorities face, means that a "custom made" approach is absolutely vital. While incorporating the main generic requirements of recognised environmental management standards (e.g. ISO 14001), PERS is adapted to deliver effective port environmental management and its implementation can be independently certified by Lloyd's Register. Furthermore, the scheme effectively builds upon the policy recommendations of ESPO and gives ports clear objectives at which to aim.

Port interests are increasingly under pressure to confirm compliance with environmental legislation, report on environmental quality, and measure the effectiveness of the management system itself. Many ports have therefore an interest in introducing an Environmental Management System in their port but find it difficult to make personnel available for its introduction. PERS addresses this challenge being credible and at the same time user friendly and not too demanding in terms of resources and time. Being developed by ports for ports PERS is designed to deliver key elements, such as an environmental policy statement, a standard description of the actual set up of the port's environmental management organisation, and an overview of the environmental aspects of port's activities.



⁷ <http://www.ecoport.com/templates/frontend/blue/images/pdf/PERSBrochure2011.pdf>

3.3 Established systems

Apart from the EcoPorts tools, there are also well established environmental management standards that ports may choose to implement such as ISO 14001 and EMAS. Although not being sector specific, ISO 14001 and EMAS are widely recognised by stakeholders and general public.

ISO 14001

The ISO 14001⁸ standard specifies requirements for an environmental management system to enable an organisation to develop and implement a policy and objectives which take into account legal and other requirements to which the organisation subscribes, and information about significant environmental aspects. It applies to those environmental aspects that the organisation identifies as those which it can control and those which it can influence. It does not itself state specific environmental performance criteria. ISO 14001 is applicable to any organization that wishes to establish, implement, maintain and improve an environmental management system, to assure itself of conformity with its stated environmental policy, and to demonstrate conformity with ISO 14001 by:

1. making a self-determination and self-declaration, or
2. seeking confirmation of its conformance by parties having an interest in the organisation, such as customers, or
3. seeking confirmation of its self-declaration by a party external to the organisation, or
4. seeking certification/registration of its environmental management system by an external organisation.

All the requirements in ISO 14001 are intended to be incorporated into any environmental management system. The extent of the application will depend on factors such as the environmental policy of the organisation, the nature of its activities, products and services and the location where and the conditions in which it functions.

EMAS

The EU Eco-Management and Audit Scheme (EMAS)⁹ is a management tool for companies and other organisations to evaluate, report and improve their environmental performance. The scheme has been available for participation by companies since 1995 and was originally restricted to companies in industrial sectors. Since 2001 EMAS has been open to all economic sectors including public and private services. In 2009 the EMAS Regulation was revised and modified for the second time. Regulation (EC) No 1221/2009 of the European Parliament and of the Council of 25 November 2009 on the voluntary participation by organisations in a Community eco-management and audit scheme (EMAS) was published on 22 December 2009 and entered into force on 11 January 2010.

⁸ http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=31807

⁹ http://ec.europa.eu/environment/emas/index_en.htm

3.4 Recommendations

ESPO highly recommends to all ports within its membership to work towards establishing and maintaining a systematic approach to environmental management in the form of a framework or system. The proven and only port sector specific method to do so is through the use of the EcoPorts tools and methodologies. In addition, established environmental management standards such as ISO 14001 and EMAS are available in the market. ESPO fully endorses the EcoPorts approach and in fact manages the use of the EcoPorts tools as part of the services that offers to its member ports. ESPO therefore advises European ports, and in particular those that initiate the establishment of an environmental management system to:

1. Join the EcoPorts network of ports and register within www.ecoport.com
2. Complete an SDM checklist
3. Use the SDM results in identifying the current status of their environmental management programmes and in establishing priorities for actions
4. Implement PERS and achieve certification
5. Consider moving towards ISO 14001 or EMAS certification
6. Produce periodically a publicly available environmental report, for which the use of the Global Reporting Initiative (GRI) standard can be helpful.



ESPO also recommends to those ports that are already ISO 14001 or EMAS certified to join the network of EcoPorts ports by registering within www.ecoport.com and by completing the SDM checklist. This is significant for the European port sector because the results of the SDM enable the creation and up-to-date maintenance of a European benchmark of performance in environmental management. This strengthens transparency through periodic environmental reporting and identification of environmental priorities.

4. Common approach in tackling environmental priorities

4.1 Introduction

In this section the main environmental priorities of European ports are addressed. The overall aim is to determine the vision of the European port sector with regard to the management of its priorities and to demonstrate proactiveness and self regulation in practical terms. The identified priority issues include; (1) air quality management, (2) energy conservation and climate change, (3) noise management, (4) waste management and (5) water (both consumption and quantity) management. These priority issues have been continuously identified as such by the European port sector in consecutive ESPO / EcoPorts surveys in the course of the last 15 years as highlighted in Table 1 on page 11. Other priorities, such as the management of community relations and aspects related to port development projects are intentionally not dedicated a separate section within the Green Guide. This is mainly due to the availability of past and current work by ESPO as explained in section 4.7.

The level of analysis for each priority first highlights the main associated challenges and the drivers for action by the port authority in the respective field. Then, guidance is provided in terms of potential response options classified under the framework of 5 Es as introduced in section 1.2. The section systematically addresses the way that ports can respond to the identified challenges by making full use of their competences as landlord, port authority, infrastructure manager, service provider or area manager. For the systematic classification and presentation of the various response options, the Guide distinguishes and structures the port authority's actions towards improved environmental performance into five categories, under the headings; Exemplify, Enable, Encourage, Engage and Enforce.

As explained in section 2.1, port authorities throughout Europe differ in terms of governance, market power, knowledge and skills they can rely on when it comes to take action. As a consequence, even in a situation of comparable level of challenges and responsibilities that come along with these challenges, the actual implementation of a port's commitments in terms of actions leaves a lot of scope for different approaches in tackling these similar issues. Acknowledging that, the Green Guide aims to set out a proactive approach of European port authorities acting as environmentally responsible entities. Acting as environmentally responsible entities means that port authorities are committing themselves to a fair part in the effort to tackle the environmental externalities that originate from port operations. In addition, ports are committed to working in partnership with their city communities to deal effectively with the challenge of environmental management. This cooperation recognises the dual rights both to live in a clean environment and the margin of appreciation needed to operate a port service.

A common approach does not necessarily result in a common level of responsibility for all port authorities. It is for each and every port to assess its own responsibilities vis-à-vis the specific nature of the challenges it faces. The Green Guide is not aiming to define one-fit-all type of response options that would be applicable to all port authorities. Recognising the need for individual flexibility, the Green Guide leaves enough room for individual port authorities to define their own policies and to implement actions, relative to their respective position in terms of governance, financial means, competences and market power.

Nevertheless, it is unlikely that a port authority has no port infrastructure to manage, no sites to allocate, no own activities to optimise, no information or knowledge to share/extend, no power whatsoever to regulate/survey/enforce, and no financial means to dedicate. Therefore, the Green Guide gives a comprehensive and structured overview of responsible response options under the 5 Es and expects port authorities to prioritise between those options in accordance to their specific situation and financial means, fully acknowledging though that “doing nothing” is not an option for responsible ports while tackling in particular the high profile issues presented within this section.

It should be noticed that the examples provided below are indicative rather than exhaustive. In addition, not all examples and in certain cases not even all 5 Es are relevant for all ports. The Green Guide is accompanied by an online annex (see annex 1) of good practices that demonstrates in concrete terms some of the response options that are only generically presented in the following sections.



4.2 Air quality management

Challenges

Air quality is an item of the highest priority on the environmental and political agenda. The impacts of air pollutants such as CO, NO_x, SO₂, hydrocarbons (HCs), volatile organic compounds (VOCs), lead and particulates vary in scale and range from locally based to regional and global effects.

Reports by the World Health Organisation (WHO) and the European Environment Agency (EEA) regularly emphasise the potential impact of air pollutants to human health. Air pollution has a consistently high profile in public concern and it is often the target of regulatory control. The European Commission has clearly given priority to the implementation and enforcement of the European air-related legislation, especially the comprehensive Directive 2008/50/EC on ambient air quality and cleaner air for Europe. Several Member States are brought to the European Court of Justice – or are already convicted for the violation of air quality levels.

The European Commission has launched a comprehensive review of its air policy to be completed by 2013 at the latest¹⁰. The EU objective remains to achieve levels of air quality that do not result in unacceptable impacts on, and risks to, human health and the environment. The supporting Commission Staff Working Paper justifies the need of the review since “prompt action is required to further reduce air emissions linked to the most problematic pollutant such as particulate matter, ground-level ozone, and nitrogen dioxide”¹¹. It is argued that transport is one of the main reasons that the current policy efforts, at EU and national level, have not fully delivered the expected results.

This is attributed to various factors such as the increase in transport volumes, the quality of marine fuels in use, the slower than expected modernisation of vehicles fleets, and the differences observed between vehicle operational emissions and limits prescribed by the EURO standards. Overall the European legislation on air quality is expected to strengthen in the years to come.

Ports are most usually situated within or in close proximity to densely populated urban areas that are often critically affected by air pollution. In addition, being major nodes linking and bringing together international transport chains and related economic activities, port areas are often part of critical geographical areas when it comes to air quality considerations. Although port-related emissions contribute only for a part to air quality problems in port and surrounding areas, these problems can affect negatively the image of ports vis-à-vis their surrounding residential zones and put serious pressure on port development ambitions. In fact, air quality is often at the heart of the political and societal debate about economic development plans and port development projects. The emissions of air pollutants by port operations are therefore of high priority to European port authorities. The main challenge that port authorities face is to apply appropriate control mechanisms in order to manage and reduce port related air pollution.



¹⁰ http://ec.europa.eu/environment/air/review_air_policy.htm

¹¹ Commission Staff Working Paper on the implementation of EU Air Quality Policy and preparing for its comprehensive review (SEC(2011) 342 final)

Guidance - Air quality management

Exemplifying; setting the good example when managing own operations

- » Investing in low emission and fuel efficient own fleet (vehicles and vessels);
- » Making use of state of the art own terminal equipment (e.g. movable and non-movable cranes);
- » Using low emission fuels (sulphur, carbon, PM) in operating own fleet (cars, trucks, service vessels) and terminal equipment (e.g. movable and non-movable cranes);
- » Investing in projects demonstrating the feasibility of new technologies that reduce air pollution even further than existing state of the art;
- » Reporting and communicating port authority achievements.

Enabling; providing conditions that facilitate users and enhance improved performance

- » Providing the preparatory or complete infrastructural facilities for Onshore Power Supply (OPS) (cabling, frequency converters, transformers);
- » Providing suitable space in the port area for LNG bunkering facilities;
- » Applying techniques (e.g. wind screens, buffering zones) to prevent dust dispersion from dry bulk operations and/or road traffic.

Encouraging; providing incentives to greener port users

- » Applying an incentive scheme rewarding ship owners and operators that demonstrate an outstanding environmental performance (e.g. ahead of what it is required by legislation);
- » Applying an incentive scheme to support ship owners/operators that use OPS;
- » Applying an incentive scheme to support terminal operators that invest in state of the art terminal equipment;
- » Providing visibility to front runners through “best performer of the year” type of awards.

Engaging; with users and/or authorities in sharing knowledge and skills

- » Creating and maintaining a database on all port-related emissions and their contribution to air quality levels on local and regional scale, in close cooperation with the port users;
- » Organising joint pilot projects and feasibility studies together with port users, especially in fields and areas of overlapping responsibilities. In such way the port authority can create a sense of co-ownership of the air quality challenges;
- » Sharing means and expertise (e.g. co-organising workshops and co-hiring experts) for improving air quality;
- » Working together with port users and competent authorities in view of deploying OPS and LNG bunkering infrastructure.

Enforcing; setting rules and ensuring compliance

- » Restricting the entrance of vehicles (trucks/barges/trains) in certain parts of the port area by establishing low emission zones;
- » Controlling the performance of contractors by introducing expected standards regarding emissions into contract documents at the tender stage;
- » Incorporating air emissions criteria and good operational practices in tendering procedures associated with concession and lease agreements;
- » Undertaking inspections to ensure that port users and/or contractors comply with the rules and agreements.

4.3 Energy conservation and climate change

Challenges

The most often cited global environmental concern associated with transport is global warming and climate change. It is placed at the very centre of the debate on sustainable development and it receives the most attention by the media, general public, governmental and non-governmental organisations.

The World's Energy Outlook of the International Energy Agency (IEA) provides a global overview of expected developments in energy demand, trade and investment for the year 2035. According to this outlook, oil would still be the dominant fuel in the primary energy mix, largely due to the growth from the transport sector. Gas, however, will become more and more important. The demand for coal will remain the backbone of the global electricity generation. Renewable energies will only be able to enter the mainstream if public support is made available. The use of biofuels is especially expected to increase rapidly until 2035. The share of nuclear power will increase only marginally. This however depends largely on political decisions and public support. The demand for energy in Europe is high and is expected to increase over the years. Energy from fossil sources, such as coal, petroleum and natural gas, leads to CO₂ emissions and affects our climate through the greenhouse effect. Drastic changes in the global climate will have an irreversible impact, like the melting of the polar icecaps in Greenland and Antarctica and a long term rise in sea levels.



The key drivers of the EU's energy policy are security of supply and combating climate change. This policy and coherent directives, such as the EU Renewable Energy Directive from 2009, contain a binding objective to ensure that by 2020:

- » a reduction in EU greenhouse gas emissions of at least 20% below 1990 levels is achieved;
- » 20% of all energy used in the European Union comes from renewable sources such as solid biomass, wind energy, solar energy or hydropower; and
- » 20% reduction in primary energy use compared with projected levels is achieved by improving energy efficiency.

In November 2010, the Energy Strategy for 2011-2020 was released. This strategy will be integrated in the long-term perspective, called Roadmap 2050, to reduce EU's greenhouse gasses by 80-95% before 2050.

As gateways of most of Europe's external trade, seaports are key parts of logistic chains designed to provide a vital link between industries and their market and supply sources. Ports are often also the location where industrial activities take place, which need energy for their production processes. Energy consumption and GHG emissions from shipping and the port sector are increasingly in the focus of public and political attention.

Guidance - Energy conservation add climate change

Exemplifying; setting the good example when managing own operations

- » Managing own energy consumption systematically (e.g. passive/low energy office buildings, use electric vehicles) and improving energy efficiency;
- » Calculating the carbon footprint of the port authority and setting reduction targets towards carbon neutrality;
- » Using renewable energy where possible for port authority operations and producing renewable energy in the port area;
- » Adopting the World Ports Climate Declaration;
- » Reporting and communicating port authority achievements.

Enabling; providing conditions that facilitate users and enhance improved performance

- » Providing the preparatory or complete infrastructural facilities for OPS (cabling, frequency converters, transformers);
- » Letting the port area be used for provision and generation of renewable energy as well as LNG/CNG/ electrical charging infrastructure;
- » Creating the space, facilities and circumstances for companies to work together under an industrial ecology concept;
- » Providing the conditions (e.g. IT systems, vessel traffic management) for efficient vessel servicing and handling (e.g. slot system).

Encouraging; providing incentives to greener port users

- » Applying an incentive scheme rewarding ship owners and operators that apply a carbon management plan and demonstrate improvement;
- » Applying an incentive scheme to support ship owners/operators that use OPS;
- » Applying an incentive scheme to support terminal operators that invest in state of the art terminal equipment that uses less energy and/or alternative energy sources;
- » Providing incentives for reduced carbon footprint within concession agreements;
- » Providing visibility to front runners through "best performer of the year" type of awards.

Engaging; with users and/or authorities in sharing knowledge and skills

- » Working together with port users and competent authorities in view of deploying the right infrastructure to and from the port area allowing the carbon efficient use of transport modes;
- » Working together with port users and competent authorities in view of deploying OPS and LNG bunkering infrastructure;
- » Working together with port users for calculating the carbon footprint of the port area;
- » Sharing means and expertise with port users and terminal operators in view of improving energy efficiency and reducing carbon footprint.

Enforcing; setting rules and ensuring compliance

- » Controlling the performance of contractors by introducing expected standards regarding energy consumption and efficiency into contract documents at the tender stage;
- » Incorporating energy consumption and efficiency criteria and good operational practices in tendering procedures associated with concession and lease agreements;
- » Undertaking inspections to ensure that port users and/or contractors comply with the rules and agreements.

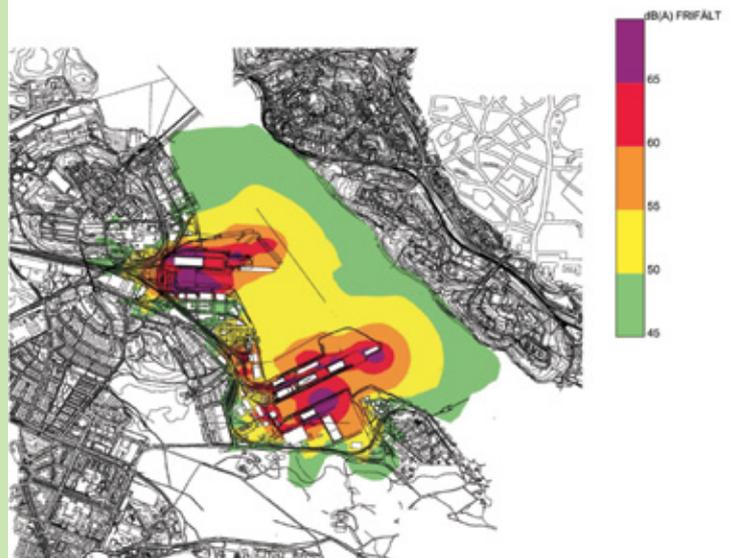
4.4 Noise management

Challenges

Noise pollution, the excessive or annoying degree of unwanted sound in a particular area, is the nuisance most often cited in connection with transport. In addition to being unpleasant, noise contributes to such health problems as stress disturbances, cardiovascular disease and hearing loss. It can also disturb sleep and work. People feel more directly affected by noise than by any other form of pollution. Noise is a major social problem and has considerable implications for port operations. It should also be recognised that noise is claimed as being an important part of the human rights jurisprudence of the European Convention on Human Rights. The main sources of noise in ports originate from not only the direct port operational activities but also from traffic (road, rail, ships) and industry.

There are many guidelines for noise measurement and assessment, such as the World Health Organisation (WHO) Guidelines for Community Noise 1999, International Standard ISO 1996-1:2003 Acoustics, description, measurement and assessment of environmental noise, the BS 4142: 1997 Methods for determining the level of industrial noise affecting mixed residential and industrial areas and the recently produced and very significant port community paper entitled the 'Good Practice Guide on Port Noise Mapping and Management'¹² developed by the partners of the NoMEPorts Project (Noise Management in European Ports). These guidelines assist ports in meeting regional legislative requirements specifically the Environmental Noise Directive (2002/49/EC) and its transposed national laws with their individually set national limit values. In line with the purpose of the Noise directive there should be a common approach to port activities including port traffic and port industry 'to avoid, prevent or reduce on a prioritised basis the harmful effects, including annoyance, due to the exposure to environmental noise'¹³. This guideline recognises that environmental noise is a significant environmental problem across the EU. Increasingly more information is becoming available about the health impacts of noise, for example, the latest publication¹⁴ of the World Health Organisation and the Joint Research Centre of the Commission shows that traffic related noise may account for over 1 million healthy years of life lost annually in the EU Member States and other Western European countries.¹⁵

The major challenge in noise management is for existing ports in close proximity to residential areas. Newly built ports with separation zones and good planning design can ensure appropriate and enhanced mitigation measures to the highest standards.



Example of a noise map - Ports of Stockholm

¹² http://www.ecoport.com/templates/frontend/blue/images/pdf/good_practice_guide.pdf

¹³ 2002/49/EC

¹⁴ WHO-JRC, 2011: Report on 'Burden of disease from environmental noise'.

¹⁵ EU Com /2011/0321

Guidance - Noise management

Exemplifying; setting the good example when managing own operations

- » Establishing a noise management plan in line with the 'Good Practice Guide on Port Area Noise Mapping and Management' developed by the partners of the NoMEPorts Project ¹⁶;
- » Monitoring port noise to determine the extent of the problem, the origin of the significant noise risers and the effectiveness of remedial actions;
- » Sourcing best available techniques (silent technologies for own fleet and infrastructure);
- » Investing in projects demonstrating the feasibility of new technologies that go beyond the current state of the art.

Enabling; providing conditions that facilitate users and enhance improved performance

- » Providing of ongoing monitoring including continuous recording to the operators in order to define the extent of a noise nuisance, and to assist in the determination of the noise source and the effectiveness of the remedial actions to be taken;
- » Providing the infrastructural preconditions for silent technologies such as OPS facilities;
- » Applying techniques (e.g. noise barriers, buffering zones) to prevent noise propagation from industrial operations and port traffic;
- » Establishing a noise complaints recording and management system.

Encouraging; providing incentives to greener port users

- » Sharing and disseminating successful project implementations;
- » Providing favourable mooring locations or other incentives to more quiet ships;
- » Applying an incentive scheme to support ship owners/operators that use OPS;
- » Applying an incentive scheme to support terminal operators that invest in state of the art terminal equipment;
- » Taking initiatives or support actions in order to keep the port related truck traffic out of the residential areas in the vicinity of the port (e.g. development of appropriate truck route plans).

Engaging; with users and/or authorities in sharing knowledge and skills

- » Interacting with the wider port community and assisting with the installation of noise insulation in residential areas or acoustic barriers at the port boundaries;
- » Engaging with shipping industry regarding on board practices and silent technologies;
- » Developing relationship with equipment suppliers to support the development of 'whisper technology'.

Enforcing; setting rules and ensuring compliance

- » Controlling the performance of contractors by introducing expected standards regarding noise generation into contract documents at the tender stage;
- » Incorporating noise management requirements in tendering procedures associated with concession and lease agreements;
- » Applying a noise zoning system that takes noise requirements into consideration in the planning of locating companies and/or activities (e.g. cruise terminals) within the port area in view of respecting acceptable noise exposure limits to the surrounding residential areas;
- » Monitoring and enforcement of rules, agreements and operational parameters (e.g. speed limits).

¹⁶ Noise Management in European Ports - www.ecoport.com/publications

4.5 Waste management

Challenges

In the European Union we throw away 3 billion tonnes of waste every year and 90 million tonnes of it is hazardous. This amounts to about 6 tonnes of solid waste for every man, woman and child. It is obvious that we have to handle and/or reuse this material. Between 1990 and 1995 the amount of waste increased by 10 % according to OECD. Today 67% of all waste is burnt in incinerators or dumped into landfill sites. Both of these methods have a negative effect on the environment. They cause air, water and soil pollution, discharging CO₂ and CH₄ into the atmosphere and chemicals and pesticides into the earth and groundwater. Landfilling also takes up valuable land space. The OECD estimates that we could be generating 45% more waste than we did in 1995. The EU's Sixth Environmental Action Programme identifies waste prevention and management as one of four top priorities. The main objective is to decouple waste generation from economic activity. Ports have a duty to take care of their own waste but also waste from ships, tenants and operators. The ports' challenge in this work is to contribute to a reduction of waste in a safe and efficient manner.

The EU has taken initiatives for waste prevention, better use of resources and encouraging a shift to more sustainable consumption behavior. The EU's approach to waste management is based on three principles:

1. Waste prevention: To reduce the amount of waste generated and also reduce the presence of dangerous substances in products. Waste prevention is very closely linked with improved manufacturing methods and also with influencing the consumers demand.
2. Recycling and reuse: As many as possible of the materials should be recovered, preferably by recycling. The European Commission has defined several waste streams that require extra attention in view of reducing their overall environmental impact. Those include: packaging waste, end-of-life vehicles, batteries, electrical and electronic waste.
3. Improving final disposal and monitoring: Waste that cannot be recycled or reused should be safely incinerated while landfill should only be used as a last alternative. Both methods need close monitoring.

Ports are very often key hubs for passengers and also often the location where industrial activities take place. All these activities generate waste and ports have to handle very many fractions of waste, both ordinary rubbish as well as hazardous materials. Most Member States in the EU already have well functioning waste sorting systems and therefore it is easy to connect the port to the national recycling system. The vessels garbage is furthermore regulated by Marpol 73/78. For example vessels are banned to discharge all plastics or plastic materials and many vessels already do waste sorting onboard and therefore ease the waste management in the ports. Ports do all need to have a Waste Management Plan, which regulates how the port is handling all kind of waste.

There are three important issues in the management of waste, whether this waste comes from own port activities, vessels, tenants or other port users. One issue concerns the technical and practical design of reception facilities. Another issue is the system of charging for waste management. The third issue concerns information relating to waste management.



Guidance - Waste management

Exemplifying; setting the good example when managing own operations

- » Establishing a waste management plan;
- » Consulting with shipowners, tenants and other port users while planning and designing the port's reception facilities and the waste management plan;
- » Demonstrating excellence while managing port authority generated waste (offices, fleet, vehicles, own operations);
- » Investing in equipment for optimal handling of waste;
- » Setting targets for reducing amount of port authority generated waste;
- » Setting targets for increasing recycling and reuse.

Enabling; providing conditions that facilitate users and enhance improved performance

- » Building/establishing port reception facilities for different types of waste;
- » Facilitating port users (vessels, tenants and operators) to separate and deliver their waste in an effective way;
- » Establishing a simple system for notification information on quantities and types of waste that vessels want to deliver, in order to optimise the reception on arrival;
- » Providing easily accessible information through the port's web site and through other means (leaflets, newsletters, information meetings).

Encouraging; providing incentives to greener port users

- » Monitoring waste volumes and types and reporting those to the vessels;
- » Including waste collection fees within the port dues;
- » Applying an incentive scheme rewarding waste separation;
- » Applying an incentive scheme rewarding vessels with less water in sludge.

Engaging; with users and/or authorities in sharing knowledge and skills

- » Cooperating with agents in view of providing accurate and up-to-date waste related information to ship owners;
- » Collaborating with other ports and exchanging waste related information (e.g. waste reception facilities);
- » Monitoring and communicating the cost reductions due to waste sorting;
- » Sorting of biological waste (if possible) and monitoring how much green energy it will produce.

Enforcing; setting rules and ensuring compliance

- » Incorporating good waste management practices in tendering procedures associated with concession and lease agreements;
- » Monitoring and ensuring that port users comply with the rules and agreements.

4.6 Water (both consumption and quality) management

Challenges

Port authorities have a clear interest in water management both in terms of potable water consumption and water quality. Water is a valuable natural resource and as such needs to be used with caution. The significance of water consumption may vary between regions of Europe but the unnecessary consumption of a natural resource is not a sustainable practice. In addition, the use of water is linked to waste water treatment techniques while savings in water consumption represent an opportunity for port authorities also from an economic perspective. In parallel, good water quality is essential for ecosystems and biodiversity and the varied port operations can impact significantly in port waters. Ship ballast water discharges may introduce alien species, surface water runoff may carry contamination into the water boddies, while the same stands for port estate land and marine spillages including ones associated with cargo handling operations.

Water management is a priority issue for both the IMO and the EU. Its significance and importance is clearly highlighted in the Water Framework Directive which states that "Water is not a commercial product like any other but, rather, a heritage which must be protected, defended and treated as such". Protection of water resources, of water ecosystems and control of water consumption, is one of the cornerstones of environmental protection in Europe. The Water Framework Directive adopted in 2000 put forward an integrated approach for EU water policy, centred on the concept of river basin management with the objective of achieving good status of all EU waters by 2015. Nevertheless, as highlighted during the 3rd European Water Conference ¹⁷, more than 50% of European surface water bodies are in less than good ecological status and the environmental objectives of the Water Framework Directive for 2015 will not be fully met. The Blueprint to Safeguard Europe's Water will be the EU policy response to these challenges. It will aim to ensure good quality water in sufficient quantities for all legitimate uses. The time horizon of the Blueprint is 2020 since it is closely related to the EU 2020 Strategy and, in particular, to the planned Resource Efficiency Roadmap.

In this context, the challenge for ports is to prioritise their water management processes, as part of their corporate, social and responsibility objectives as well as their Port Environmental continuous improvement programmes.



Water main system and district monitoring areas -
Dublin Port Company

¹⁷ http://waterblueprint2012.eu/sites/default/files/Key%20Messages_English_1.pdf

Guidance - Water management

Exemplifying; setting the good example when managing own operations

- » Establishing a water management plan;
- » Setting targets on reducing own direct water usage and indirect consumption within the estate infrastructure using available technologies (e.g. continuous monitoring of water demand to identify leakages, spray nozzles on water taps, sensor operated flows, dry basins);
- » Establishing spill monitoring and proven emergency response procedures for both land and marine operations;
- » Ensuring that own cargo handling equipment is in line with best environmental practice (e.g. enclosed grabs, Eco-Hopper) that minimise spillages;
- » Ensuring that port authority staff are environmentally aware, trained and both proactive and exemplary in their behaviour;
- » Disseminating the efforts of the port authority in the field of water management to the general public.

Enabling; providing conditions that facilitate users and enhance improved performance

- » Providing the infrastructure, support, training, operating and monitoring procedures necessary for good environmental stewardship;
- » Providing surface water infrastructure and monitoring systems to manage runoff water;
- » Maintaining up to date knowledge on best equipment, technologies and service providers and keep port operators advised.

Encouraging; providing incentives to greener port users

- » Applying an incentive scheme rewarding port users that exceed the minimum compliance requirements;
- » Encouraging external 3rd Party verification through incentives;
- » Promoting and disseminating positive experiences such as proactively reducing port operators costs by reducing their water usage;
- » Providing visibility to front runners through "best performer of the year" type of awards.

Engaging; with users and/or authorities in sharing knowledge and skills

- » Reviewing and monitoring of ship ballast, sewage or bilge discharges in cooperation with Port State Control;
- » Working together with port operators and competent authorities on incident management, response procedures and improvement process;
- » Conducting joint exercises to improve partnership in handling incidents that impact on water quality (e.g. spills);
- » Working together with port operators and competent authorities on ongoing monitoring (e.g. water quality, surface water runoff quality, river and sediment quality).

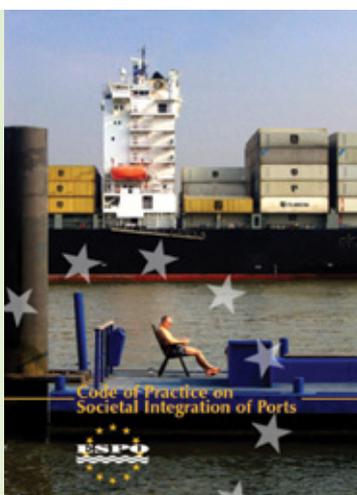
Enforcing; setting rules and ensuring compliance

- » Systematically managing and enforcing corrective and preventative actions raised following audits, reports, observations or incidents;
- » Controlling the performance of contractors by introducing expected standards regarding water consumption and operations that may affect water quality into contract documents at the tender stage;
- » Incorporating water consumption criteria and good operational practices in tendering procedures associated with concession and lease agreements;
- » Undertaking site environmental audits and / or periodically requesting for environmental reports to ensure that port users and/or contractors comply with the rules and agreements.
- » Enforcing the 'polluter pays' principle when incidents occur.

4.7 Other environmental priorities

Some of the environmental priorities of the European seaports as depicted in continuous ESPO/EcoPorts surveys since 1996 (see Table 1, page 11) are deliberately not dedicated a separate section within the Green Guide. Those mainly include the management of community relations, operational activities such as dredging and environmental aspects related to port development projects. This is mainly due to the existence of past and ongoing work by ESPO on those fields and of comprehensive guidance documents.

Regarding the management of community relations, European port authorities acknowledge fully their role in serving the needs of local communities and their rights to a clean environment. Ports grant and maintain their license to operate and to grow from the society and the aim in this respect is the sustainable operation of port areas. Reference is to be made here to the ESPO Code of Practice on Societal Integration¹⁸ that was published in 2010 and that declares the ports' commitment towards that direction and offers guidance. The importance placed by ESPO on the management of community relations is also clearly demonstrated by the annual ESPO Award on Societal Integration of Ports¹⁹ that runs since 2009. Port projects that bring ports and their communities closer are being evaluated and promoted while the best project every year receives wide recognition and is being awarded the prestigious ESPO Award during a annual ceremony in the Town Hall of Brussels.

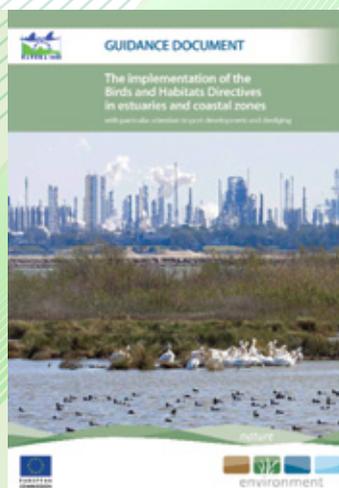


¹⁸ http://www.espo.be/images/stories/Publications/codes_of_practice/ESPOCodeofPracticeonSocietalIntegrationofPorts2010.pdf

¹⁹ http://www.espo.be/index.php?option=com_content&view=article&id=238&Itemid=81

Regarding the environmental aspects related to port development, ESPO released in 2007 its Code of Practice on the Birds and Habitats Directives²⁰ that provides guidance to ports on how to implement the Directives with particular attention to port development projects. The imperatives of protecting nature and habitats in the context of port development and dredging projects are being systematically addressed within the European Commission guidelines on “The implementation of the Birds and Habitats Directives in estuaries and coastal zones, with particular reference to port development and dredging”, commonly referred to as “Environmental Guidelines” that were published in 2011²¹. The Guidelines came as the result of a constructive process of cooperation between DG Environment, DG MOVE, ports and other relevant stakeholders and were warmly welcomed by ESPO that has been an active partner in the whole process.

Environmental issues in ports evolve over time subject to new scientific knowledge, emerging technologies, new legislation and changes in the political agenda and public perception. In order for the Green Guide to tackle forthcoming environmental priorities, ESPO is committed to the periodical review of chapter 4 of the Guide and its accompanying annex of best practice response options.



²⁰ http://www.espo.be/images/stories/Publications/codes_of_practice/ESPOCodeofPracticeontheBirdsandHabitatDirectives2006.pdf

²¹ http://ec.europa.eu/transport/maritime/ports_en.htm

Annexes

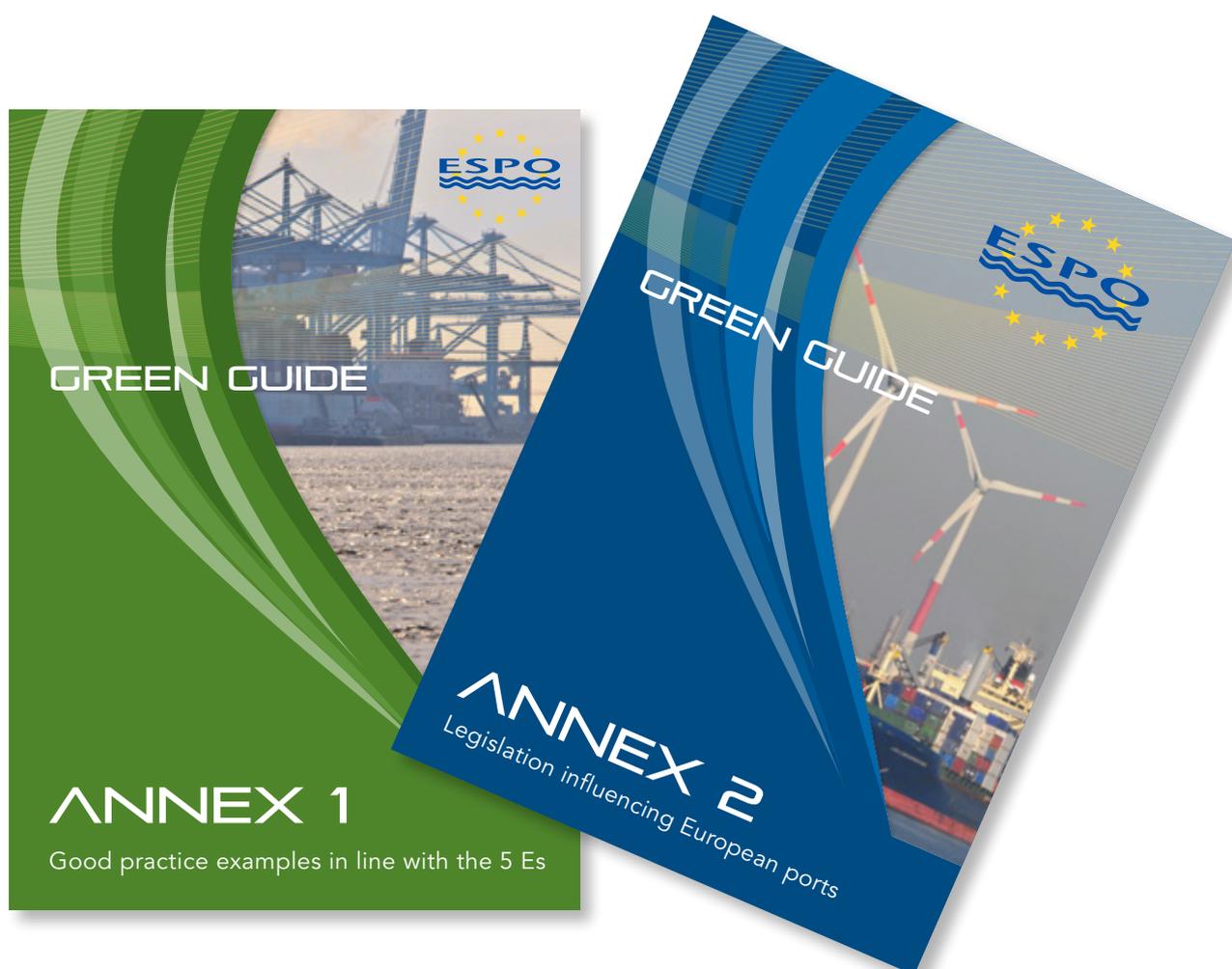
The ESPO Green Guide is accompanied by two annexes that are available online through www.espo.be and www.ecoport.com.

Annex 1: Good practice examples in line with the 5 Es

Annex 1 consists of exemplary response options and good practices that are in place in European ports. The good practice examples support further chapter 4 and demonstrate evidence and application of the 5 Es framework in practical terms. The annex is meant to be dynamic and will be updated periodically.

Annex 2: Legislation influencing European ports

Annex 2 summarises the most significant European legislation that influences the environmental management of port areas. It is also subject to periodic review in order to reflect emerging rules and regulations.



Colophon

The European Sea Ports Organisation (ESPO) represents the seaports of the Member States of the European Union and has observer members in several other European countries.

The “ESPO Green Guide; Towards excellence in port environmental management and sustainability” was edited by Antonis Michail of the ESPO Secretariat. The Secretariat is grateful to the ESPO Sustainable Development Committee and its ad-hoc group, consisting of Ciaran Callan (Dublin Port Company), Resianne Dekker (Port of Rotterdam), Guy Janssens and Toon Tessier (Antwerp Port Authority), and Gun Rudeberg (Ports of Stockholm), for providing valuable input and assistance during the drafting process. Thanks further go to Chris Wooldridge (Cardiff University) for the linguistic support.

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Although all efforts have been made to ensure the accuracy, currency and reliability of the information contained in this Green Guide, neither the European Sea Ports Organisation nor those individuals that have contributed to the publication accept any responsibility in this regard.

Notes

A series of 25 horizontal dotted lines for writing notes.



GREEN GUIDE

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