

# .SuPorts

SUSTAINABLE MANAGEMENT FOR EUROPEAN  
LOCAL PORTS **.FINAL REPORT**  
INTERREG IVC PROJECT

# SUSTAINABLE MANAGEMENT FOR EUROPEAN LOCAL PORTS



**DIDIER MARIE**  
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Lead partner of the SuPorts project

Of all the Ports within the European Union, 70% are local ports, which manage less than 1 million ton per year. Their operations are often linked to niche markets related to local businesses and to the inland economical background.

These ports face ever increasing difficulties, with respect to infrastructure development and accommodating fishing activities, freight movement and the requirements of an expanding leisure boating industry. These local ports are also essential to the identity of our territories and to the dynamism of our economies. However they also face some very real challenges in order to remain viable and competitive.

Local ports need to progress, adapt and reinvent themselves as they face tougher environmental legislation. These new regulations are helping to drive the sustainable development in our ports, pushing us to better identify our needs to satisfy the new and various regulations. However, we also recognise that meeting these obligations poses additional challenges on local port resources with respect to both finances and personnel. Thus in order to rise to these new challenges, ports will need to work with environmental legislation as part of their efforts to ensure their competitiveness and sustainability.

Through the SuPorts project, which consists of ten partners from all regions of Europe, we believe to have progressed in this direction. Having shared together our expertise, our difficulties and our doubts, enables us to deliver very interesting results and tools that could be used by every local port in Europe willing to address the issue of sustainable development. This final document compiles the best practices identified by partners, addressing various environmental threats and issues in 3 sections: The development of environmental friendly dredging options; the role of stakeholder management in environmental management; and the identification of biodiversity conservation best practices.

The fourth and final section relates to the sustainable strategy and policy drafted by the ECOSLC foundation and resulting from many workshops and exchanges with port authorities and stakeholders engaged in the SuPorts project across Europe. The wealth of information available will provide guidance to all local ports willing to implement or improve their environmental management systems.

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# SPEECH OF THE PRESIDENT OF THE DEPARTEMENT DE SEINE-MARITIME

Ladies and gentlemen,

I am delighted to welcome our European partners in Seine Maritime for the official launch of an ambitious project which will affect the future of our ports. I thank them greatly for their commitment in the SuPorts project.

Together, we are committed, until March 2013, to share our experiences, best practices in order to increase the activity of our local ports in an environmentally sustainable manner.

This sustainable development policy applied to a port development strategy has been initiated in Seine Maritime. Our coastal policy has a threefold aim:

- To strengthen a balanced development of our economy,
- To highlight the environmental quality of our coastal areas
- To foster sustainable tourism.

The Département is a partner of key role players, big maritime ports of Le Havre and Rouen, the port of Dieppe, port of Saint Valéry, but also is the managing authority of the ports of Fécamp and Le Tréport. In this subcontracted management, we finance:

- all investments linked to the construction and maintenance of infrastructures
- 50% of the budget linked to their operational costs and to superstructures

Indeed in 2011, 650 000 Euros have been earmarked to investments and 2,2 million Euros to the port authorities of both ports. Currently, a programme of more than 4 million Euros is underway in Le Tréport.

Indeed, 70 % of the thousand ports in Europe are local ports, managing less than 1 million ton per year, often linked to a “niche traffic” in relation to

local businesses and to the inland economical background.

These ports face very contrasted situations. If fishing activities are facing increasing difficulties, leisure boating is expanding.

These ports are essential to the identity of our territories, to the dynamism of our economies but they also face a very tough competition with common challenges.

Our ports need to progress, adapt and reinvent themselves as they face a tougher environmental legislation. These new regulations are driving the establishment of a new strategy for the sustainable development of our ports.

They are also pushing us to identify our needs: whether additional expertise or financial resources, we need to identify the necessary resources to respond to these new challenges: diversification of activities, development of ports, fishing and freight, environmental protection initiatives.

The challenges we face have led to the implementation of the SuPorts project, an interreg IVC project with a total budget of 2 million Euros, financed at 75 % by the ERDF funds.

SuPorts is a resource centre, a best practice exchange platform at a European level. We are confident that best practices, ideas, knowledge and transfer of know how will travel beyond borders.

Within the entire partnership, we have proposed 3 areas of work for this project:

- Understand how port activities impact on surrounding marine environments, through studies on biodiversity, and promoting methods that support marine and coastal habitats and species;
- Engaging small ports in integrated approaches for environmental management by adapting current certifications (EMAS,ISO,PERS,IPSEM) to their needs;
- Identifying and promoting best practice for the most sustainable dredging options, both environmentally and economically, through research, exchange of experience and contribution from experts.

It is a long process which will end in just over 12 months. By then, we will have progressed and will be ready to foster an authentic sustainable development strategy relating to port activities which includes the protection of the environment, from the quality of waters to the protection of biodiversity. SuPorts is a major project, ambitious and innovative. SuPorts has reunited various partners which are:

- l’Ente publico Puertos de Galicia, the port authority for the 122 ports of Galicia
- East Sussex County Council, our cross channel partner
- The port authority of Piombino, in Italy, in charge of the ports of Piombino and the island of Elbe
- The Port Authority in charge of Klaipėda, Lithuania
- The ECOSLC foundation, which follows the steps of the ECOPORTS foundation, a leader in environmental management which has the support of major European ports

- The foundation created by the partnership of Italian towns to foster their implication in European, CITTALIA
- Also in Italy, l’Istituto superior per la Protezione et Ricerca, a research institute specialised in environmental issues
- The civil engineering department of the University of Thessaloniki
- The Port Authority of Corfou

I am delighted to welcome their representatives in this invaluable project, which will undoubtedly benefit all European ports in the near future.

Throughout the project’s 3 year life span (January 2010 – March 2013), our partners, assisted by experts, will share and identify good practices as well as formalise methodological tools.

Project activities include studies, research, capitalisation, share of information, best practice, which starts with the establishment of a common language.

The SuPorts project led by the Département de Seine-Maritime, is an innovative action which will benefit all local European ports in the long term.

We are proud that this project has been selected by the interreg IVC programme.

It is a major project. It is also the first time that the Département is the “Lead partner” of a project recognised at European level. It is therefore an important moment that we now share with you.

Once more, I thank all our partners for their commitment.

Didier Marie

President of Seine-Maritime County Council,  
Lead partner of the SuPorts project



# DEVELOPMENT OF ENVIRONMENTAL FRIENDLY DREDGING OPTIONS IN EUROPEAN LOCAL PORTS

INTRODUCTION  
BEST PRACTICES AS IDENTIFIED  
BY SUPORTS PARTNERS  
CONCLUSIONS

COMPILED BY THE DÉPARTEMENT  
DE SEINE MARITIME WITH THE ASSISTANCE OF SuPorts PARTNERS

# DEVELOPMENT OF ENVIRONMENTAL FRIENDLY DREDGING OPTIONS IN EUROPEAN LOCAL PORTS

Dredging operations are an essential activity that enables the safe navigational and continued function of ports, harbours and marinas including those of local European ports. However, dredging remains a major environmental concern because of the potential to impact on biodiversity and hydrodynamic processes.

Concerns around dredging activities encompass both capital dredging and maintenance dredging activities.

Capital dredging may reverse the trend of estuarine infilling and thus affect existing hydrodynamics and estuarine processes. This occurs because the deepening of an estuary may alter the tidal prism, permitting the intrusion of salt water to further upstream; increase shoreline wave action; change tidal currents; and suspended sediment load and sedimentation. Additionally, the hydrodynamic changes and their effect on sediment erosion, deposition and transport may cause secondary geomorphological changes away from the dredging location, including the potential erosion of mudflats and salt marshes.

Maintenance dredging is the periodic or continuous activity necessary to maintain the navigable depth of a port or harbour. The critical difference between both operations is that whilst capital dredging imposes the major change, maintenance dredging prevents the system from returning to its original state, and potentially prevents intertidal habitat such as salt marsh and mudflats from accreting and keeping in pace with sea-level rise as a consequence of dredging activities contributing to a negative sediment budget. Continued maintenance dredging also has obvious physical impacts on the flora and fauna within the zone of maintenance dredging.

The best practices identified in this section of the handbook through the collaborative work undertaken by the SuPorts project team, aims to highlight the increasing awareness of the environmental impact of dredging activities on biodiversity and to document best practice examples employed by port authorities to reduce and mitigate for the impact on the natural environment.

## DREDGING AND TURBIDITY THRESHOLDS: THE EXAMPLE OF THE PORT OF MOLFETTA

**Ensuring turbidity thresholds are within acceptable limits**

**SUPPORTS PARTNER:** ISPRA

**TIME PERIOD:**

21<sup>st</sup> Oct 2010 – Dec 2010

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### DESCRIPTION OF PRACTICE:

The Regional Agency for the Protection of the Environment (ARPA) of Puglia is the authority appointed for the environmental control during the works for the construction of the new commercial port of Molfetta.

In particular, according to the agreement between ARPA and the Municipality of Molfetta, ARPA is to overlook the impact of dredging activities on the marine-coastal environment and to estimate the value of both the background turbidity and the limit turbidity beyond which the activities of dredging must be stopped.

In the agreement it is reported that the background turbidity value is determined by continuous measurements during the “ante operam” phase of works. The background turbidity is a required threshold value above which it is necessary to adopt some mitigation measures to avoid or reduce the impact on the marine-coastal environment.

Turbidity data was continuously collected during the “ante operam” phase within the period between the 21st of October 2010 and the 17th of December 2010, using a multi parametric probe allocated at a depth of about 5 meters just nearby the main entrance of Molfetta port. The probe recorded data of turbidity (Nephelometric Turbidity Units or NTU), direction of water stream (degrees), rate of water stream (cm/s), pressure (dBar), temperature (°C), salinity (Practical Salinity Units or PSU), every 5 minutes. 16.317 records were totally collected, each record including all the parameters above mentioned.

As for the most important parameter, i.e. turbidity, it is important to stress that a de trend procedure was applied in order to estimate and remove the positive trend caused by the formation of some fouling on the probe (biogenic fouling).

Reporting data into a plot, it is clearly shown that data is positively skewed by pointing out an asymmetrically right tailed distribution. The median value is equal to 1,63 NTU but this value could not be accepted as background value for the purpose of the study. Therefore, considering the cumulative frequencies curve, it was decided to choose as a robust measure of central tendency the sum of the median and the 95th percentile values in order to have a better estimation of the background turbidity. The so calculated background turbidity resulted to be 17,37 NTU.

The threshold value, beyond which it is necessary to adopt some mitigation measures to reduce the impact on the marine-coastal

environment, was calculated adding twice the maximum value recorded in the period (61,68 NTU) to the background turbidity. The choice of considering twice the maximum recorded value of turbidity was motivated considering the likely possibility to have meteo-marine events more intense than those recorded within the survey; as a matter of facts, in the Mediterranean sea wind can blow up to 9-10 of Beaufort scale. Therefore, the threshold value was considered equal to 140, 72 NTU measured by the probe nearby the entrance of the port.

### EVIDENCE OF SUCCESS:

The background and threshold values, even if determined by an empirical way, resulted to be extremely useful to achieve a good management of the dredging activities in the port of Molfetta avoiding an increasing of water turbidity and a re-suspension of pollutants that could be dangerous for the surrounding environment. Similar evaluation procedures could be used for other ports facing the same problems. Nevertheless, it is important to highlight that a more accurate background and threshold values could be supposed if data was referring to a larger seasonal period and also at the condition that the proposed value would be strictly site specific.



## RECLAMATION OF A POLLUTED SECTION OF COASTAL ZONE IN THE PORT OF THESSALONIKI

**Improvement of the port landscape and remediation of a polluted seabed**

**SUPPORTS PARTNER:** AUTH

**TIME PERIOD:**

Dec 1990 – May 1998

**CONTACT DETAILS:**

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### DESCRIPTION OF PRACTICE:

This project relates to the reclamation of land within the Port of Thessaloniki's coastal zone in order to create new land for port operations and also to remediate a section of heavily polluted seabed, composed of a mixture of polluted clay and mud. The whole work was financed by the port's own funds.

The seabed depth at which work was undertaken varied from +0.0 m. to -4.0m below sea level. The land reclamation works comprised of the following:

- initial site preparation, involving excavating (with sea disposal) of the polluted seabed material (1,000,000 m<sup>3</sup>);
- covering of excavated seabed with a layer of geotextile;
- the gradual depositing on site of good quality sediment (2,000,000m<sup>3</sup> of sand and gravel), taken from an aggregate extraction site off the gulf; and
- the installation of a dense grid of vertical drains for dispersing the presence of sea water below the new land and achieving the necessary land-bed strength in case of seismic loads.

The evaluation criteria applied to the proposed works as part of assessing overall project feasibility and suitability included:

- a. the environmental effectiveness and the compliance with the legislation;
- b. the pressure and expectations by the local community and the public authorities; and
- c. the total cost of the works.

The methodology applied by the Thessaloniki Port Authority is considered as being an innovative approach to addressing the issues of historic pollution and the requirements for identifying port space and environmental enhancements and as such is considered good practice with regards to the reclamation of a polluted port coastal zone, which other port and harbour authorities can adopt.

### EVIDENCE OF SUCCESS:

The work was to a great extent original and required the development of new know-how, in order to meet all the technical requirements. In developing this new know-how, the contractors were able to patent some of the equipment used such as the 'sea-bulldozer'. The solution was of great environmental effectiveness, as it overcame the challenges consistent with that of a polluted seabed and those around dredging and dredged material disposal activities. Furthermore, this scheme resulted in the improvement of the quality of the port landscape and met the expectations of both port administration and the residents, as the port authority gained new port land, whilst residents gained visual amenity benefits. Furthermore, the port's demonstration of its environmental concerns has resulted in the additional benefit of increasing the confidence of the port's stakeholders, promoting a positive public image of the port authority to the local community along with gaining other marketing advantages.

The total cost of the work was approximately €3,000,000.00 and approximately 10% cheaper than an alternative solution proposed, which the former envisaged the dredging of the polluted seabed area, the environmentally licensed disposal of that material in the sea or in a landfill, and the laying of good quality inert material on the dredged area.

## THE AGRIPORT PROJECT - MANAGEMENT OF POLLUTED SEDIMENTS FROM DREDGING OPERATIONS THROUGH BIOREMEDIATION METHODS

**An innovative approach to sediment decontamination through bioremediation methods**

**SUPPORTS PARTNER:** ISPRA

**TIME PERIOD:**

3d June 2009 – 3d June 2012

**CONTACT DETAILS:**

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### DESCRIPTION OF PRACTICE:

Commercial ports worldwide face the challenge of managing polluted sediments. Each year, a substantial amount of sediments is being dredged, and often an excessive content of priority hydrocarbons and/or heavy metal, prevent its dumping at sea. The AGRIPORT project promotes an innovative approach to treat slightly polluted dredged sediment in order to make the material available for use in the terrestrial environment. The project had the following objectives:

1. develop the use of AGRIPORT phyto-remediation technology as an innovative way to reclaim dredging sediments using plants (phyto-treatment) and earthworms;
2. optimise the proposed dredged sediments reclamation process and identify the most suitable crops to grow on the output material;
3. contribute to the reduction of costs associated with disposing slightly polluted port sediments and promote commercialisation of the phyto-treatment technology and the output material;
4. enhance job opportunities in the sectors related to the project (e.g. design and monitoring of treatment sites; chemical and biological laboratory, monitoring of remediation and recycling processes, etc.)

The project employs a phyto-remediation method that uses plants to treat polluted sediments in combination with the use of organisms such as earth worms, though prior preparation of the sediment is undertaken using inert material, agronomic terrain and/or organic substances that improve the physical and chemical characteristics of the sediment. Through the combined use of both plant and animal organisms, the sediment is removed of salt and pollutants, leaving the soil fertile and nutrient rich and useable for application onto arable land for use in landscaping, environmental restoration, gardening, landfill capping etc.

As part of the project, three facilities (Livorno and Pisa in Italy and Ravadim in Israel) were constructed dedicated to research and continued monitoring.

### EVIDENCE OF SUCCESS:

The AGRIPORT project, funded by the European Commission and the Italian Ministry for the Environment, Land and Sea in the framework of the Eco-Innovation Programme, is carried out by a group of public and private organizations led by the environmental engineering consultancy SGI Studio Galli Ingegneria S.P.A. and including: Port Authority of Livorno (APL), University of Pisa, Department of Civil Engineering (UNIFI); Italian National Research Council, Institute for Eco-system Studies (CNR), Agricultural Research Organization of the Israeli Ministry of Agriculture (Volcani Center), D'Appolonia and DFS Engineering.

### PROJECT RESULTS:

- Within two years, results indicated there being a reduction in both heavy metal and hydrocarbon content by 20% and 60% respectively;
- The treated sediments from the Livorno port and Kishon River represent characteristics similar to those of fertile soil;
- The estimated total treatment cost of 35 €/m<sup>3</sup> (in Italy) proves competitive concerning 20 case studies tested herein.

As a consequence of the trials, there is a proposal to construct a dedicated facility for application of this technology within the Port of Livorno, which is a big regional harbour in Tuscany servicing the traffic of goods that amounted close to 26.8 million tonnes in 2009. This proposed phyto-remediation facility is located on the area of the new maritime station, near the port's Donegani gate zone.

## BIOREMEDIATION OF WATER AT PORTO ANTICO (GENOVA) USING MICROBES TO TREAT POLLUTION AND DECREASE TOXICITY

To verify the effectiveness of a bacteria 'bio-fix' within the context of a marine environment and to determine the practicality of using such an initiative as a means to decontaminate polluted dredged sediments.

**SUPPORTS PARTNER:** ISPRA

**TIME PERIOD:**

1<sup>st</sup> Jun – 30<sup>th</sup> Nov 1998

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**DESCRIPTION OF PRACTICE:**

To test the 'bio-fix' solution, Porto Antico was selected as the study site as it is an area frequented by a large number of people (mainly tourists) and consequently, it was important to reduce turbidity levels and odour from the port's water. The site was also considered suitable for undertaking the trial, because the thick layer of polluted sediments at the site proved to be ideal substrate to undertake research on.

Initially the chemical properties of the site were characterised (sampling and chemical analysis of sediments), whilst micro-organisms considered more suitable and consistent with the features of the sediments were selected and introduced (application of bio-fix) into the sediment and surrounding water, with the monitoring of water quality and the monitoring of sediments undertaken:

**Monitoring of water quality**

A weekly monitoring of surface water (approximately 50cm depth) was performed by a multiparametric probe in order to measure temperature, salinity, dissolved oxygen, pH, redox potential and a-chlorophyll concentration. Lab analysis was necessary to evaluate the concentration of nourishing substances (i.e. ammonia, nitrates, nitrites, phosphates, etc.) present in the water, whereas the superficial transport properties and the surveying of meteorological-marine data were determined by using a floating apparatus.

**Monitoring of sediments**

A process of multistage sampling was performed, which included:

1. Chemical analysis to evaluate the relative humidity (%), dry fraction, concentration of hydrocarbons, oils and vegetable fats, etc.;
2. Evaluation of the biochemical composition of organic matter produced in the ecosystem by photosynthesis or coming from external sources (rain water, rivers, waste water, etc.);
3. Study of microbial composition (bacterial density and activity), providing information about the potential degradative capacity of the sediments.
4. Study of the meiofauna or rather the community of organisms specialized to live in particular habitat which are sensitive to the effects and changes to sediment caused by pollution; the changes of the structure of this community are used as a sign of perturbation phenomena in aquatic ecosystems.

**EVIDENCE OF SUCCESS:**

Principal results:

- During the running of the project, a decrease in the thickness of the sediments of about 10cm (due to decontamination process) was observed.
- Chemical analysis confirmed a consistent decrease in the concentration of total organic compounds (i.e. pollution).
- Meiofauna was observed to have increased in taxonomic diversity. This observed increase in the level of diversity observed was the initial phase of microbe re-colonisation as expected as part of the de-contamination and subsequent restoration of the sediment and the trophic relationships expected for non-polluted sediment
- As an overall final consideration, whilst the environmental status of the sediments was considered to be strongly degraded, the study demonstrated that this bioremediation method was effective and allowed for micro-organisms colonisation.

## BOFOPOLI PROJECT BONIFICA FONDALI PORTO DI LIVORNO

**Rehabilitation of the polluted seabed of the port of Livorno**

**SUPPORTS PARTNER:** ISPRA

**TIME PERIOD:**

1<sup>st</sup> Dec 1998 – 31<sup>st</sup> Dec 2000

**CONTACT DETAILS:**

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### DESCRIPTION OF PRACTICE:

The testing of a new technique to rehabilitate the polluted seabed of the Port of Livorno's industrial canal and to study a new process to recycle dredged material for other purposes (raw material for building roads, yards, etc.)

The practice consisted of three phases.

1. Chemical characterization of the site. The channel had been divided into square-shaped homogeneous sectors. The sectors alongside the wharfs had a surface area of 33 x 33m<sup>2</sup> whereas the sectors in the middle of the channel had a surface area of 66 x 66m<sup>2</sup>. Sediment samples from all the sectors were collected and successively analyzed in the laboratories of the Regional Agency for the Protection of the Environment (ARPA). Analysis of the samples indicated the presence of hydrocarbons and heavy metals (Cd, Zn, Cu, Ni, Pb, Hg, As, Cr) along the entire length of channel, which was three dimensionally mapped.
2. Removal of the sludge. The sludge on the bottom of the channel was transferred on land using a suction pump operating under the surface of the sludge with the use of a floating pipe. The coarse material was riddled and separated from the sludge, with the water removed from the solid sediment via several methods (sedimentation, hydrocycloning, clarifier and filter press). The remaining water was analysed and treated, and if the contamination levels were under the limits set by the law, it was discharged into the sea.
3. Treatment of the sludge. The adoption of the best technique to treat the polluted sediments depended on the criteria thresholds set by national and international environmental regulations. This resulted in further analysis of the sludge being undertaken to evaluate various methods and the feasibility of reproducing the test on a larger scale. Followed the identification of a two-staged process of sludge treatment involving basic washing alongside a phase designed to extract the organic content followed by an inactivation process.

### EVIDENCE OF SUCCESS:

Dredging activities increase sediment suspension, which in turn increase water turbidity, thereby increasing pollution levels in the surrounding water. This secondary pollution was shown to have significantly reduced as a consequence of the use of a suction pump operating under the surface of the sludge as proposed by Livorno Port Authority.

Operation costs due to the recovery and treating process of the sludge were estimated to be about €70 per m<sup>3</sup> whereas €520 per m<sup>3</sup> would have been necessary for the removal and disposal of the dredged material to a dumping site, demonstrating real economic and environmental benefits of this new dredging approach and methodology.

As a consequence of the success of the trial at Porto di Livorno, synergies with other ports in Europe were established and the know-how and techniques carried out by Livorno Port Authority exported and shared. The Italian Port Authority of Catania, La Spezia, Marina di Carrara and Venice were quite interested in the results of this practice

## MANAGEMENT OF MAINTENANCE DREDGING IN THE PORT OF PIRAEUS

### Maintenance dredging and sediment reuse

**SUPPORTS PARTNER:** AUTH

**TIME PERIOD:**

Dec 1990 – May 1998

**CONTACT DETAILS:**

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**ADDITIONAL INFORMATION:**

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### DESCRIPTION OF PRACTICE:

Dredging and dredging disposal activities could have various and serious negative effects on the marine and land environment. Consequently their proper management should follow all available good techniques and practices worldwide. The potential environmental effects of maintenance dredging are generally two-fold, firstly as a result of the dredging process itself and secondly as a result of the disposal of the dredged material.

Background: An amount of 220, 000 m<sup>3</sup> of seabed material had to be dredged in the port of Piraeus, in order to accommodate larger passenger and cruise vessels.

The port carried out a thorough environmental impact study, assessing all possible environmental effects and technical solutions. According to the relevant environmental permits issued by the competent Hellenic Ministry, the dredging and the disposal activities was to ensure no release of pollutants in the marine or land environment and promote the beneficial use of the dredged material.

The dredging was carried out by a mechanical dredger using in parallel an environmental friendly grabber and silt a curtain device to minimise re-suspension of sediments.

The dredged material was encased in caissons used for the extension of the port's pier, maximising the beneficial use of the entire container terminal.

The dredging activities were carried out to avoid impact to the thermocline and timed to avoid specific tidal periods when benthic communities are most vulnerable.

There was no need for drainage of the dredged material, as the whole amount was enclosed in the caissons. The whole work was financed by port's own funds.

### EVIDENCE OF SUCCESS:

The practice promoted the successful beneficial use of the total amount of the material dredged which in parallel helped to minimise the release of pollutants (e.g. heavy metals) into the marine environment.

The special designed environmental friendly grab and the use of silt curtains minimised the turbidity and release of pollutants during the dredging activity.

The solution applied has not taken longer to plan, obtain permits, realise the project, than traditional excavation, processing and disposal methods.

The measurements taken for the water quality parameters (especially on heavy metals) at the work site have showed no difference with the rest of the marine area (i.e. no increase in concentrations before and after the work).

## STRATEGIC PLAN FOR THE ASSESSMENT OF DISPOSAL SITES FOR DREDGED MATERIALS IN GALICIA

### Optimisation of disposal sites in Galicia

**SUPPORTS PARTNER:**

PORTOS DE GALICIA

**TIME PERIOD:**

Jan 2009 – May 2013

**CONTACT DETAILS:**

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Ente público Portos de Galicia  
pcomunitarios@portosdeg Galicia.com

**ADDITIONAL INFORMATION:**

www.portosdeg Galicia.es

### DESCRIPTION OF PRACTICE:

Aim: To limit pollution and adhere to legal environmental requirements. The main objectives include:

1. The reallocation of 9 of the previous disposal sites following the assertion “the proliferation of disposal sites must be avoided (dispersed pollution)”. We have decided to reallocate better rather than create new disposal sites. These new disposal sites correspond to less sensitive areas, far from Natura 2000 sites and from fishery areas.

2. To simplify the legal requirement, avoiding a “case by case framework”

Objectives of the best practice:

- Make a proposal for new disposal sites based on the fieldwork.
- Optimize and streamline the management of the dredged material in order to reduce the period to obtain dredging and dumping permissions.
- Increase the ratio of reused materials in productive uses against the dumping alternatives.
- Improve the coordination between the administrative departments involved in the decision-making relating to dredging and dumping operations.
- Control the impact of the dumping in the marine ecosystem on the long term.
- Enhance the scientific knowledge over the processes affecting the recovery of disposal sites

Remark about the responsible authorities for choosing disposal sites: The final decision is taken by the Maritime State Authority (Central State). In the previous stages of the procedure, depending on the zone, other administrations have different competences.

Now, this best practice is in one of the last stages «STAGE VIII: fulfilling regulatory procedures and assessment of stakeholders”.

The total cost of the best practice was: 328.900 euros.

### EVIDENCE OF SUCCESS:

The idea which led the process was as follows: Sacrifice of a given area is an unavoidable cost, but the proliferation of disposal sites must be avoided (dispersed pollution). Once this best practice was in place, a comprehensive and overall approach to the management of the dredged material has been implemented. Furthermore, 9 of the 15 initial sites have been relocated to areas which provide better conditions.

## JOINT PROCUREMENT PROCEDURE FOR DREDGING

### Mutualisation of resources in dredging operations

**SUPPORTS PARTNER:** SMCC

**TIME PERIOD:**

Jan 2010 – Dec 2013

**CONTACT DETAILS:**

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Technician of the Port of Le Tréport

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**ADDITIONAL INFORMATION:**

[www.seine-maritime.net](http://www.seine-maritime.net)

### DESCRIPTION OF PRACTICE:

At the time of writing, this practice is being carried out by different ports on the Norman French coast, through the cooperation of different legal entities: Seine-Maritime County Council (owner of two local ports: Fécamp and Le Tréport), Dieppe Harbour and Caen-Ouistreham Harbours.

In the past, when dredging for any of the ports was required, each individual port authority undertook its own public procurement to select a contractor to undertake the required dredging.

Since 2010, the 4 public organizations from the 2 different regions concluded a joint public procurement, which required the coordination of meetings with partners. This resulted in the agreement of a public procurement process, where a joint purchase order is made with minimum and maximum cubic meters to dredge by each port and component (further details below). As part of this “the joint venture”, there is a person in charge and a coordinator, respectively Dieppe Harbour and Caen-Ouistreham Harbours.

The public procurement includes five components: 1) grab bucket dredger, 2) trailing suction dredger, 3) trailing suction dredger with plough, 4) plough, 5) stationary suction dredger.

Every partner can choose the component that they require and make a purchase order per dredging campaign, through direct payment to the dredging company.

This public procurement is available for one year and can be renewed for up to three years.

### EVIDENCE OF SUCCESS:

The estimated financial savings reach 25%, mainly linked to the mobilisation and demobilisation of dredging facilities. Furthermore, this joint up approach allows for greater exchanges of experience between partners and the involvement of each contractor. This public procurement provides several years of work to each contractor. The environmental impact is reduced by the combination of decreasing mobilisation and demobilisation requirements of the dredging equipment between the local ports.

# CONCLUSION

The dredging practices identified clearly demonstrate the increasing awareness of the negative effects of dredging on the marine environment.

The evolutive qualification of sediments is also a strong incentive for the identification of alternative solutions to disposing sediments back into the sea.

Although the best practices found here are site specific, they provide a panel of solutions which could be easily transferable to other sites: from bioremediation technics to reduce pollution levels to the optimisation of dumping sites, these proposals aim to reduce the negative effects of dredging, which remains essential to maintaining optimal navigation conditions essential to the ports economical activities.

Other proposals, such as “joint tendering” proposed by Seine Maritime County Council for dredging campaigns reduce the financial costs of dredging for all partners by 25 %.

The environmental impact is also reduced by the reduced mobilisation and demobilisation of the dredging equipment between the local ports involved



# STAKEHOLDER ENGAGEMENT IN ENVIRONMENTAL MANAGEMENT

**INTRODUCTION**

**STAKEHOLDER ENGAGEMENT  
AND ENVIRONMENTAL MANAGEMENT**

**BEST PRACTICES AS IDENTIFIED  
BY SUPORTS PARTNERS**

**GENERAL PROPOSALS**

**REFERENCES**

COMPILED BY ENTE PÚBLICO PORTOS DE GALICIA WITH THE ASSISTANCE  
OF SuPorts PARTNERS AND THE SPECIAL CONTRIBUTION OF THE TRANSPORT  
SYSTEMS RESEARCH GROUP OF THE ARISTOTLE UNIVERSITY OF THESSALONIKI



# STAKEHOLDER ENGAGEMENT IN ENVIRONMENTAL MANAGEMENT

Across the European Union, local small ports face similar challenges as larger ports, in their attempts to comply with EU environmental legislation and address high expectations from their users and local residents.

In this handbook we have included the core of the paper elaborated, as a deliverable of the project, by the Transport Systems Research Group of the Aristotle University of Thessaloniki. The SuPorts project considers that this report provides extremely valuable ideas for small and local ports willing to enhance the role of their stakeholders and contribute to the management of environmental issues. In addition to the above mentioned report, this handbook details some examples of best practices regarding stakeholder engagement.

For the concluding remarks, a general proposals section is included in order to assist the decision-makers of local and small ports to extract and implement the main points collected in this handbook.

# 1. STAKEHOLDER ENGAGEMENT AND ENVIRONMENTAL MANAGEMENT

Effective stakeholder management can play a significant role in enabling organisations to manage current and future environmental issues and demands as part of corporate responsibility commitments and, in response to increasing environmental legislation and policy drivers.

## STEP 1: STAKEHOLDER IDENTIFICATION: SETTING PARAMETERS

The first step which can guide the decision-makers is to define general parameters for the identification of stakeholders. According to Krick et al. (2005; 24) from the AccountAbility, United Nations Environmental Programme and the Stakeholder Research Associates consortium, stakeholders are identified according to the following attributes:

1. By responsibility: people to whom you have, or in the future may have, legal, financial and operational responsibilities enshrined in regulations, contracts, policies or codes of practice.
2. By influence: people who are, or in future may be, able to influence that ability of your organisation to meet its goals; whether their actions are likely to drive or impede your performance. These can include those with informal influence and those with formal decision making power.
3. By proximity: the people that your organisation interacts with most, including internal stakeholders, those longstanding relationships, those you depend on your day-to-day operations, and those living next to your production sites.
4. By dependency: the people that are most dependent on your organisation, for example employees and their families, customers who are dependent on your products for their safety, livelihood, health or welfare or suppliers for whom you are a dominant customer.
5. By representation: the people that are through regulatory structures or culture/ tradition entrusted to represent other individuals; e.g. head of a local community, trade union representatives, councillors, representatives of membership based organisations, etc...

## STEP 2: ENVIRONMENT STAKEHOLDER MAPPING IN PORTS

This step is important in order to identify every individual stakeholder and to provide the necessary information to allow for a greater understanding of the number of stakeholders who affect or are affected by the port, in terms of environmental issues. Each port should aim at identifying and populating the list with the names of the all identified stakeholders. The following list presents all the stakeholders that are related to environmental issues at small and local ports:

1. Owners/ Shareholders
2. Administration/ Management
3. Port users
  - Terminal operators/ stevedoring
  - Transport companies
  - Shipping lines
  - Shipping agencies
  - Logistics companies
  - Warehousing companies
  - Industrial companies
4. Personnel
  - Importers/ exporters
  - Towage and pilotage
  - Waste reception
  - Employees & Port labour
  - Labour Unions
5. Suppliers
  - Ship chandlers
  - Fuel suppliers
6. Community stakeholders
  - Community groups
  - Environmental NGOs
  - Tourists
7. Government organisations
  - Labour inspection
  - Environmental inspection
  - Police
  - Fire service
  - Customs

- Health inspections
- Harbour Master's Office
- City planning
- 8. Insurance companies
- 9. Banks
- 10. Competitors
- 11. Press/media
- 12. Scientific institutions
- 13. National regulators
- 14. Local authorities
  - Municipality
  - Regional
  - Prefecture
- 15. Others

## STEP 3: IDENTIFY ENVIRONMENTAL ISSUES

The third step is related to identifying the environmental issues for discussion which are known interests/concerns to the identified stakeholders. To identify these parameters, the ports can use the environmental issues checklist of the Self Diagnosis Method of Ecoports (2012).

**TABLE 1 Ecosports Self Diagnosis Method (2012)**

PORT ENVIRONMENTAL ISSUES	
1. Air quality	11. Energy consumption
2. Dust	12. Community relations
3. Air emissions	13. Bunkering
4. Biodiversity/conservation areas	14. Ship ballast water
5. Noise	15. Hazardous cargos
6. Port Development (land, sea)	16. Light pollution
7. Ship waste	17. Dredging
8. Port waste	18. Odours
9. Sea water quality	19. Land contamination
10. Cargo releases	20. Contingencies

It is also important to prioritise environmental issues in terms of importance. Some of these issues might have caused nuisance or non compliance. Issues of greatest concern must be

given highest priority and be one of those that will be discussed first when eventual stakeholder dialogue begins.

## STEP 4: EVALUATION OF STAKEHOLDER INFLUENCE

Having identified the entire suit of port and harbour stakeholders, the next step is to evaluate their influence/significance with respect to their concerns regarding environmental issues. In the case of small and local ports, a suggestion is to follow the framework made by Bourne (2009; 60). Thus, stakeholder significance related to environmental issues for small and local ports could be evaluated using the following parameters, within which are 'grades/ranking' of significance:

- 1. Power:**
  - a. Relatively low levels of power: cannot generally cause much change.
  - b. Certain capacity to cause change.
  - c. Some capacity to formally instruct change: must be consulted or has to approve.
  - d. High capacity to formally instruct change: can have the work stopped.
- 2. Proximity:**
  - a. Relatively remote from port operations: has indirect involvement with processes, clients and most senior managers.
  - b. Detached from port operations: has regular contact with, or input to, the work processes.
  - c. Routinely involved in port operations: part-time team members, external suppliers and active sponsors.
  - d. Directly involved in port operations: team members working most of the time.
- 3. Urgency:**
  - a. Value: How much of a stake/interest does the individual have in the work or its outcomes?
    - Very low: has very limited or no stake in work's outcome.
    - Low: is aware of work and has an indirect

- stake in the work's outcome.
- Medium: has some direct stake in the outcome of the work.
- High: sees work's outcome as being important (benefit or threat) to self or organisation.
- Very high: has great personal stake in the work's outcome (success/ cancellation).
- b. Action: a measure of the likelihood that the stakeholder will take action, positive or negative, to influence the work or its outcomes.
- Very low: is unlikely to attempt to influence the work.
- Low: has the potential to attempt to influence the work.
- Medium: may be prepared to make an effort to influence the work.

**TABLE 2 Example of objectives & targets linked to stakeholders.**

ASPECT		
Generation of hazardous waste		
IMPACTS		
• Land contamination	• Water pollution	• Nuisance
• Health & safety issues	• Air pollution	
OBJECTIVE		
Improve compliance with applicable hazardous waste regulations (O1)		
STRATEGY		
1. Segregate waste streams		
2. Reduce hazardous waste production		
3. Improve communications and data collection		
INITIATIVE		
1.1. Segregate different hazardous waste streams and segregate from general waste.		
2.1. Reduce hazardous waste		
3.1. Provide proper training		
3.2. Collect hazardous waste weighting/ volume figures		
3.3. Label all hazardous waste containers.		
TARGET		
1.1.1. 100% hazardous waste streams disposed of in different containers (O.T. 1.1)		
2.1.1. 100% plastic containers to be recycled (O.T. 1.2).		
3.1.1. Train 100% of employees in waste management (O.T. 1.3)		
3.2.1. Collect weighting figures/ volumes for the different hazardous waste (O.T. 1.4)		
3.3.1. 100% hazardous waste containers are labelled (O.T. 1.5)		
PROGRAMME		
Provide appropriate containers for the different hazardous waste streams, and segregate these from general waste streams. Triple rinse plastic containers and send them for recycling/ or send them back to supplier whenever possible. Train employees in waste management. Create a database for the input of waste collection figures. Label Hazardous waste containers.		
PERSON RESPONSIBLE		
Environmental coordinator		
STAKEHOLDERS		
1. Employees	3. Suppliers	5. Port users
2. Administration/ management	4. Waste reception	

- High: is likely to make a significant effort to influence the work.
- Very high: self-activated, will go to almost any length to influence the work.

The sum of all the parameters for each stakeholder should provide an arithmetical value that indicates the significance weight. Stakeholders that would receive 18 as a score are the most influential since this would mean that the people carrying out the evaluation have given them top marks in each section. Hence, the scores can be used to rank the stakeholders according to the values, thus indicating their significance.

The task of evaluating the stakeholder significance is very important due to the fact that people involved in this exercise can get a better understanding of how stakeholders can influence or get influenced by environmental issues. It is suggested that more than one port employee should carry out this exercise, thus creating an average value, a better representative sample in the scoring and a more objective evaluation. It is suggested that, the people who will participate in this process should belong to the board of directors including the person responsible for environmental management at the port.

## STEP 5: CREATE ENVIRONMENTAL OBJECTIVES & TARGETS

This step entails the establishment of environmental objectives, taking into consideration how stakeholders themselves might be impacted. This task can be integrated into current Environmental Management Systems that the port might have such as ISO14001 or EMAS. It is believed that, this simple and proactive approach can incorporate stakeholder's perspectives at an earlier stage in the process. Table 2 presents an example of how objectives & targets can be linked with their

relevant stakeholders.

## STEP 6: PROFILING STAKEHOLDERS

This step is concerned with developing a greater understanding of the various stakeholders with a vested interest in the port and its operations. This activity is linked to step 2- stakeholder mapping and is effectively a process that encourages further exploration of the stakeholders and their interests. At this stage in the process, it is important that port personal tasked with undertaking this process can identify the representatives of the stakeholder groups, in case that they have not done so thus far.

As part of stakeholder profiling efforts, it is important to identify the expectations of the stakeholder groups and open up a process of dialogue with them regarding port performance. It is possible that some stakeholder groups only expect a simple dialogue, while others have operational/ environmental/ compliance expectations.

Table 3 presents an example of a stakeholder profiling form. Such a form can be used by port personal to assist them in building up a profile of their stakeholder groups and associated representatives.

## STEP 7: STRATEGIES FOR DELIVERING THE MESSAGE TO THE STAKEHOLDERS

Having identified and profiled the stakeholder groups with an interest in port operations and affairs, step 7 is concerned with developing and agreeing details of the stakeholder engagement plan. The key points to be aware of are:

### Who will deliver the message?

Ports need to identify and designate a port employee who will be the link between the port and stakeholder that keeps line of dialogue open. In some cases this individual's task might be sim-

# 1. STAKEHOLDER ENGAGEMENT AND ENVIRONMENTAL MANAGEMENT

**TABLE 3 Stakeholder profiling form. Source: Krick et al. (2005; 69)**

STAKEHOLDER PROFILE	
Last updated	
<b>STAKEHOLDER GROUP:</b>	
Primary subject/ issue of engagement with this group	
Stakeholder objective	
Preferred level of engagement with this group	
<b>STAKEHOLDER GROUP REPRESENTATIVE</b>	
Specific representative/ representing organisation	
Internal contact person	
Stakeholder's general view on the issue	
Expectations towards the business regarding the issue	
Engagement history & current highest level of and approaches to engagement	[fill in if you are already engaging]
Stakeholders' usual or preferred highest level of and approaches to engagement	
Stakeholders' sources of funding	
Relationships/ conflicts with other stakeholders	
Knowledge of the issue	<input type="checkbox"/> Leading Opinion <input type="checkbox"/> Good Knowledge <input type="checkbox"/> Medium Knowledge <input type="checkbox"/> Lacking Knowledge <input type="checkbox"/> No Knowledge Give details: ..... .....
Legitimacy or perceived legitimacy	<input type="checkbox"/> High Legitimacy <input type="checkbox"/> Limited Legitimacy <input type="checkbox"/> Low Legitimacy <input type="checkbox"/> No Legitimacy Give details: ..... <input type="checkbox"/> Conflict between perceived and actual legitimacy Give details: .....
Willingness to engage	<input type="checkbox"/> Willing <input type="checkbox"/> Moderately interested but friendly <input type="checkbox"/> Uninterested <input type="checkbox"/> Hostile
Actual and/or potential impacts of stakeholder on business – associated risks and opportunities	Positive impacts/ Opportunities: ..... Negative impacts / Risks: .....
Scale at which they operate	<input type="checkbox"/> Global <input type="checkbox"/> Regional <input type="checkbox"/> National <input type="checkbox"/> Subnational <input type="checkbox"/> Local Give details: .....
Cultural issues to consider	
Practical issues to consider (e.g. the stakeholder's ability to engage given resources, staff, etc) (See also Stage 3)	
Is it necessary to engage with this stakeholder?	
Other comments	

ply to act as a facilitator and assist in the dialogue process. It is also possible that board members will be involved in such discussions since they are responsible for decision making. Given the fact that small local ports lack resources, this task will most likely be given to the environmental coordinator. Hence, the person that will carry out this task needs to be trained and be well prepared prior to the dialogue process.

### What the message will be regular activity reports or special messages?

This refers to the content of the stakeholder dialogue and is linked to step 3 - identification of environmental issues. The environmental issues that have been identified as most important and most heavily influenced by stakeholders, need to be included as part of the dialogue. Hence, issues such as repeatable offences from port users, nuisance, compliance, reoccurring issues and other that can damage public image must be on top of the agenda. The issues discussed do not necessarily have to be restricted to the ones that have been identified by the port, as there will be cases where the stakeholders will bring unknown or previously unidentified issues to the port's attention.

### How will it be delivered - formal and/or informal, written and/or oral; choice of communication technology (emails, written memos, meetings) ?

How the port communicates with its stakeholders is a critical one. Face to face meetings can be more useful for discussing environmental issues. Tools such as emails, letters and telephone calls can be supplementary and can be used to assist the engagement process in terms of arranging the meetings. Also, information can be placed on the port's website, for example to invite stakeholders to events and meetings. It is critical to understand the technology capacity of stakeholders.

For example, access to the internet may not be universal across all stakeholder groups. Focus groups could also be used in order to involve more than one group of stakeholders or larger groups of stakeholder representatives, in order to determine views and opinions regarding environmental issues or other port issues.

Communication item: the information that will be distributed - that is the content of the report or message. The communication item could be a factsheet regarding port operations, a stakeholder & environmental report, a presentation from the ports, a post in the local newspaper or magazine or even a flyer. It is also possible that there is no written communication item and only dialogue is used instead.

### When (how frequently) will it be delivered and over what timeframe (where applicable)?

The frequency of the dialogue depends on the nature of the issues discussed. Certain environmental issues that are related to port development will require frequent and intense stakeholder consultation as part of efforts to maintain effective dialogue and stakeholder support as part of the decision making progress. Other stakeholder groups that are not heavily involved with port operations nor are highly influential may be satisfied with receiving updates as opposed to being involved with every detail of development progress or issue resolution. In such instances it may be sufficient to invite these peripheral stakeholders to yearly update events. On the other hand, groups that are related to issues of non compliance and nuisance need to be informed of the progress of corrective actions. In such cases, quarterly or even monthly meetings might be required.

### Why (purpose for the communication) - the

stakeholder is important for activity success and what the stakeholder requires from the activity.

Port authorities need to ask themselves why they want to engage with their stakeholders. The reasons could vary depending on the stakeholder groups, which include reasons such as the following:

- Gain the support of stakeholders (and thereby minimise conflict) regarding a proposed development;
- Gain a permit from local authorities;
- Simply to inform stakeholders of what the port is doing in terms of environmental issues as part of an open day event; and
- Engaging local community groups or environmental groups regarding nuisance and complaint issues.

Critical to the success of the engagement is understanding what stakeholder expectations are from the engagement. Stakeholder expectations could vary including the following: influencing and putting pressure onto a port's decision; asking for better environmental performance or an EMS certification; causing change in operations; and/or simply to get some information.

## STEP 8: QUESTIONNAIRE DESIGN FOR STAKEHOLDER ENGAGEMENT

During the first sessions of engagement with stakeholders, the ports should develop a questionnaire as part of efforts to:

- Identify and explore issues that the stakeholders might have;
- Evaluate what stakeholders think of the port's performance;
- Assess what expectations stakeholders have from the dialogue;
- Identify stakeholders' knowledge on specific topics; and
- Identify any other issues that the port will want to explore.

## STEP 9: STAKEHOLDER ENGAGEMENT

Constructive stakeholder engagement is the central aim to this process. This is why it is important that the maximum effort is given to the process as detailed in the proceeding steps. As part of the engagement, it will be necessary to always inform the stakeholders about the nature and content of the interviews/ discussions and maintain lines of communications, whether it is via emails, letters or phone.

## STEP 10: BENCHMARK PERFORMANCE AGAINST EXPECTATIONS

After carrying out the dialogue with the stakeholders, it is important to evaluate the port's performance in terms of environmental issues against stakeholder expectations and carry out a gap analysis. The performance for each criteria can be evaluated as poor, average or good. Hence, the stakeholder demands need to be assessed whether they are achievable and within the aims and objectives of the port. Also, the urgency and legality of the stakeholder claims will vary. Thus, the port needs to evaluate which of these claims have a legal basis i.e. a case of non conformance or a complaint and which are urgent. Depending on these two parameters and in light of limited resources, the port needs to prioritise its actions accordingly.

## STEP 11: IMPLEMENTATION PHASE

Alongside stakeholder dialogue, the most important part of the engagement plan is to implement positive changes that have come out from the engagement process. This is important due to the fact that the whole purpose of the stakeholder engagement is to take forward reasonable suggestions and issues of concern that can help to improve port operations.

## STEP 12: CREATE A DATABASE FOR TRACKING DEMANDS

It is proposed that the port should track demands in the same manner that corrective and preventive actions (CAR/PAR) are tracked in ISO14001. In fact, in case that the port has a CAR/PAR tracking database, any demands can be tracked as part of the EMS (although not a requirement of ISO 14001 standard).

Table 4: This table below presents an example for tracking demands and their implementation.

## STEP 13: MONITOR EFFECTIVENESS OF THE STAKEHOLDER ENGAGEMENT ACTIVITIES

Step 13 refers to the importance of having performance measures to measure the effectiveness of the stakeholder engagement activities. Unless the engagement activities are benchmarked against

expected targets set by the ports, the whole effort could be ineffective. A simple example for evaluating the overall stakeholder engagement plan is given in table 5 below.

Besides assessing the overall performance, it is also possible to evaluate the effectiveness of stakeholder dialogue and the outcome of the meetings. Such an example is presented in table

## STEP 14: CONTINUOUS REVIEW OF THE STAKEHOLDER COMMUNITY

The final step of the whole stakeholder engagement plan is that there is a continuous review of the stakeholder community. Ports are dynamic entities, thus the stakeholders could change over time. This is why new stakeholders need to be identified and integrated into the engagement plan.

**TABLE 4** Tracking demands and their implementation

Area	Meeting No	Complaint ref No	Actioned to	Completed %				Completion date	Deadline	Days overdue	Repeat
				25%	50%	75%	100%				
Port tenant X	1	001-12	Environmental coordinator		X				31/10/2012		

**TABLE 5** Stakeholder engagement activities targets and measures of performance.

1. Air quality	11. Energy consumption
2. Dust	12. Community relations
3. Air emissions	13. Bunkering
4. Biodiversity/conservation areas	14. Ship ballast water
5. Noise	15. Hazardous cargos
6. Port Development (land, sea)	16. Light pollution
7. Ship waste	17. Dredging
8. Port waste	18. Odours
9. Sea water quality	19. Land contamination
10. Cargo releases	20. Contingencies

### STAKEHOLDER ROUNDTABLE MEETING AT THE PORT OF LAGOS, TO PROMOTE “STAKEHOLDER COOPERATION”

**Stakeholder engagement roundtable with local stakeholders of the Municipal Port Fund of Avdera regarding environmental issues and local development.**

**SUPPORTS PARTNER:**

Aristotle University of Thessaloniki.  
Port of Lagos (GR)

**TIME PERIOD:**

7 Sep 2012 – Ongoing

**CONTACT DETAILS:**

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**DESCRIPTION OF PRACTICE:**

A roundtable meeting took place during the SuPorts Workshop on stakeholder management at the Port of Lagos on the 7th of September 2012. The roundtable was organised by AUTH and OLKE inviting local stakeholders to join a discussion with the port regarding environmental issues. The meeting took place at the end of the Workshop and training session at a room provided by the Local Cultural Association of Lagos.

The aim of the meeting was to promote dialogue regarding environmental issues and port & area development between the local stakeholders and the port. This was done in order to present to the participants that this kind of meetings should take place more frequently, bringing in all the stakeholders of the area in order to discuss common problems and share ideas about finding solutions. Through this meeting it has been demonstrated that stakeholder involvement is crucial in cases where joint decisions need to be made.

The people that participated in the roundtable meeting were the following:

1. The president of the local Community Council Mr. George Pinos.
2. The president of the Management Body of Delta Nestos, Lakes Vistonida-Ismarida Mr. Manolis Koutrakis.
3. The president of the Municipal Port Fund of Avdera Mr. Dimitris Babidis.
4. The Harbour Master Mr. Dimitris Symeonidis.
5. The representative of Xanthi Customs Authority Mrs. Maria Karabatzi.
6. The president of the Fishermen's Cooperative Mr. Balasis.
7. The representative of the stevedores Mr. Choutas.
8. The president of the local Cultural Association Mr. Moschos.
9. Prof. Aristotelis Naniopoulos of AUTH was the chairman and moderator of the discussion.

During the roundtable meeting the chairman asked the participants to state their relationship with the port of Lagos, environmental issues, whether they find useful the dialogue among stakeholders and whether they had issues/experiences regarding biodiversity at the port. The participants expressed in turns their position/opinion. Afterwards, people from the audience were encouraged to ask the stakeholders' questions in an effort to initiate a dialogue/discussion. Financial arrangements were covered by the Port Fund of Lagos.

**STAKEHOLDERS INVOLVEMENT**

The stakeholders involved based upon stakeholder role follow:

Administration/ Management: The president of the Municipal Port Fund of Avdera Mr. Dimitris Babidis.

Port Users & Personnel: a) The president of the Fishermen's Cooperative Mr. Balasis and b) the representative of the stevedores Mr. Choutas.

Community Stakeholders: a) The president of the local Community Council Mr. George Pinos, b) the president of the Management Body of Delta Nestos, Lakes Vistonida- Ismarida Mr. Manolis Koutrakis and c) the president of the local Cultural Association Mr. Moschos.

Government Organisations: a) The Harbour Master Mr. Dimitris Symeonidis and b) the representative of Xanthi Customs Authority Mrs. Maria Karabatzi.

Scientific institutions: Prof. Aristotelis Naniopoulos of AUTH was the chairman and moderator of the discussion.

The stakeholders were identified into the categories based on the organisation they belonged to. The reason for them being involved in the meeting was that they were all effected or effect port operations. Hence, they were all part of the local community and could provide the best insight into the areas and port's issues.

**EVIDENCE OF SUCCESS:**

The roundtable is considered a good practice example because a meeting with so many stakeholders has not been done before at the port of Lagos. This is backed up by the comments that were received by the participants. Specifically, they found the meeting very useful since they understood that they need to meet more frequently in order to discuss the problems of the area/ port and jointly come up with solutions. They acknowledged that the initiative of AUTH and OLKE to bring them together has acted as a catalyst for the stakeholder cooperation at a local level.

Each stakeholder had the chance to express their point of view and the majority of the people coming to similar opinions. Specifically, they stated that they have to come up with solutions that would aim at finding an identity and image for the port and the area in order to bring in more visitors and at the same time preserve the ecosystem. This best practice can be applied to other ports that have not been able to engage with their stakeholders. It promotes cooperation between all the involved stakeholders and once it is undertaken for the first time it can be practiced more frequently and more effectively. This example demonstrates that talking to your stakeholders is a good thing to do and can be very helpful for ports.



### STAKEHOLDER ENGAGEMENT AT THE PORT OF KAVALA

#### Stakeholder engagement regarding environmental issues

#### SUPPORTS PARTNER:

Aristotle University of Thessaloniki.  
Port of Kavala (GR)

#### TIME PERIOD:

3 Feb 2010 – Ongoing

#### CONTACT DETAILS:

Aristotelis Naniopoulos.  
Aristotle University of Thessaloniki  
Transport Systems Research Group  
naniopou@civil.auth.gr

#### ADDITIONAL INFORMATION:

[www.civil.auth.gr](http://www.civil.auth.gr)

#### DESCRIPTION OF PRACTICE:

The existence of a communication dialogue at the port of Kavala, where the feedback from the dialogue process between the port, the Harbour Master's Office and the shipping lines was taken into account during the design phase of the port's action plan regarding environmental protection.

#### STAKEHOLDERS INVOLVEMENT

The stakeholders involved were:

- Administration/ Management (Port management),
- Personnel (environmental consultants hired by the port),
- Port users (shipping lines), and
- Government Organisations (Harbour Master's Office).

These stakeholders were identified by the Port Management and were called in to discuss the plans for environmental protection at the port of Kavala in order to improve current practices. These specific stakeholders were identified by the port management since they were port users. The reason for these groups being involved was due to their daily activities having direct or indirect affect on port operations and port development.

The stakeholders, who were involved in the dialogue process, were invited to express their opinions in board meetings.

#### EVIDENCE OF SUCCESS:

This example demonstrated that the port of Kavala's initiative to engage in dialogue with its stakeholders resulted in communication with partners, reaching the highest possible hierarchical level. As a direct consequence the environmental protection procedures/ processes were designed in conjunction with the stakeholders that significantly affect these operations. Thus, the dialogue process between all parties provided the opportunity for a better understanding of all the parameters that need to be considered in the design phase of environmental protection plans.

### PORT CONTINGENCY PLAN

#### Stakeholders Involvement in the Port Contingency Plan

#### SUPPORTS PARTNER:

Port of Corfú (GR)

#### TIME PERIOD:

1<sup>st</sup> Apr 2009 – Ongoing

#### CONTACT DETAILS:

Aris Batsoulis.  
OLKE SA - Port of Corfu  
abats@corfuport.gr

#### ADDITIONAL INFORMATION:

[www.corfuport.gr](http://www.corfuport.gr)

#### DESCRIPTION OF PRACTICE:

The Port of Corfu Contingency Plan is related to the measures and policies that must be followed in case of an oil spill or water pollution. The Port of Corfu has a detailed Contingency Plan, in which not only are described the steps to be taken according to the level and the kind of pollution, but also which stakeholder is involved as well and the degree of its involvement. Fishermen have expressed to the Port Authority their decision to participate voluntarily with respect, to water disinfection, so as to minimise water pollution caused by ships or fuel spills. The decision was made in an informal meeting discussion between the Association of Fishermen and the Port Authority.

#### STAKEHOLDERS INVOLVEMENT

The Contingency Plan describes the involvement of various stakeholders, namely: Administration Management -The Port Authority, consisting of Team Coordinator, Responsible Person of Administrative Support, and Sea Water Anti - Pollution team.

Other port stakeholders involved are Government Organisations (the Continent Region of Ionian Islands and the Department of Civil Protection), Local Authorities (Prefecture of Corfu, Department of Transport and Public Health, Municipality of Corfu, Municipality of Paxoi Islands, Corfu Hospital, Corfu Public Transportation and Corfu Airport), and Owners which are external partners who provide a ship for waste disposal collection, free of charge.

Furthermore, Port Users also participate in taking responsibility for their own pollution and waste. Fishermen although are not involved in the Port Contingency Plan, offer voluntarily their services, in an effort to further already good working relations with the Port Authority of Corfu, and the fact that limiting oil spills and pollution is in their interest. These stakeholders are all involved because they possess the know-how and the relevant experience to handle and manage pollution in the port, recognising that working together, they can achieve more than working alone.

#### EVIDENCE OF SUCCESS:

This practice is obviously very well considered, as every port must have a Contingency Plan. The key success factors can be summarized in the collaboration, very good relations between the port authority and the stakeholders, discussion, continuous dialogue and brainstorming.

### CUCKMERE ESTUARY PATHFINDER PROJECT

Whilst not related specifically to a Port, the Cuckmere Pathfinder Project is a good example of stakeholder engagements between the community, local government, government agencies and other interest groups.

#### SUPPORTS PARTNER:

Cuckmere Estuary.  
East Sussex County Council (UK)

#### TIME PERIOD:

2010 – 2011

#### CONTACT DETAILS:

Tom Schindl  
East Sussex County Council  
tom.schindl@eastsussex.gov.uk

#### ADDITIONAL INFORMATION:

<http://cuckmerepathfinder.org.uk>

#### DESCRIPTION OF PRACTICE:

Background to project: Sea defences at Cuckmere Estuary are coming to the end of their life and the agency (Environment Agency) responsible for their management and maintenance have proposed to end maintenance of the defences and allow the river valley to become undefended through 'managed realignment' of the defences. One reason sighted for this decision is that the defences are expensive to maintain and is not economically justifiable. Community groups have challenged this decision as there is displeasure by some that the unique landscape of the Cuckmere will be lost. The focus of the project had been a series of engagement events at which members of the community have worked alongside the County Council, landowners and other statutory bodies to identify the different management options for the sea defences and estuary, and together come up with a preferred approach for the future of the Cuckmere Estuary. To support this work, new research had been commissioned on the economy, visitors, landscape and heritage of the estuary, and new visual modelling had been produced. The budget for the project was £249,997; however actual expenditure came to £263,774. The project had 6 key stages, which included :

1. Sharing understanding of the situation with the sea defences and costs involved with maintaining them. This exchange was undertaken between the agency responsible for maintaining the defences and providing flood protection and those of the local community whom proposed alternative management options.
2. Agreeing a shortlist of possible options for the future of the management of the Cuckmere estuary, which were discussed at a workshop on the 14th of December 2010.
3. Reviewing the evidence, which involved commissioning for new research studies, on the economy, landscape, visitors and heritage?
4. Setting the assessment criteria against which the different options for the future of the estuary would be assessed.
5. Testing and piloting of the seven options against the criteria, using the evidence from the modelling and the research studies.
6. Agreeing the approach together - this cumulated into a major public meeting at which everyone had the chance to assess the seven options and to share their views on the best approach to planning for the change at the Cuckmere.

#### STAKEHOLDERS INVOLVEMENT

The future management of the Cuckmere has been a controversial matter, hence the various stakeholders where already known.

#### EVIDENCE OF SUCCESS:

The output of the project cumulated in the production of a report to DEFRA (UK government agency). The actual outputs of the project that were used in the production of the report stem from the 6 steps described above. As a result of this project, members of the community felt that they better understood the issues surrounding the future management of the Cuckmere and reasons behind the debate. The processes of engagement also enabled people with differing views regarding the future management of the Cuckmere to move from a position of conflict to a constructive dialogue as to how the estuary should be managed in the future. This is reflected in the near unanimous support of the solution that was reached at the final public engagement event.

The consensus was formed around how best to ensure the long-term survival of the meanders, which the evidence showed could be a mix between holding the line in the short terms and reactivating the meanders in the longer term. Upon completion of the project, a 'Celebrate Cuckmere' event was held acknowledging and celebrating the beauty of the Cuckmere landscape. This event was held together with an arts festival that included exhibitions guided walks and was attended by over 3,000 people.



### SUSTAINABLE STAKEHOLDERS STRATEGY AND IMPLEMENTATION PLAN

**Fields of action:** Port Community/  
Companies, city and regional politics,  
inhabitants city and region

**SUPPORTS PARTNER:**  
Port of Moerdijk.  
ECOSLC Foundation (NL)

**TIME PERIOD:**  
3 Feb 2010 – Ongoing

**CONTACT DETAILS:**  
Herman Journée  
ECOSLC Foundation

**ADDITIONAL INFORMATION:**  
herman.journee@ecoslc.eu

#### DESCRIPTION OF PRACTICE:

In order to improve stakeholder involvement, two different consultation boards were set up in the port and industry area of the port of Moerdijk (The Netherlands):

##### 1. Platform for Social Sustainability.

Aim: exchange of knowledge and experience in the fields of quality, healthy and safe working conditions, environment and safety. After evaluation of its functioning in 2011, a broader approach was followed and the name changed to Knowledge Platform, which included subjects like personnel management and emergency services within companies and for companies in the port area.

Actions: government representatives used the platform to explain new government communications and approaches and to get feedback to adapt for better support and implementation in practice. Participation costs: €300 per year.

##### 2. Advisory Board for Neighbouring Residents of the port and industry area, from cities and region.

Aim: create a better mutual understanding between residents of neighbouring cities, the region and companies in the port and industry area.

Actions: discussion of complaints from citizens and the way complaints are treated; coordination between a number of different authorities that are involved in an attempt to reach a common stream and to create one contact for the complaining citizen.

#### STAKEHOLDERS INVOLVEMENT

##### 1. Platform for Social Sustainability.

Participants: companies in the port and industry area and representatives of local, regional and national government.

##### 2. Advisory Board for Neighbouring Residents of the port and industry area, from cities and region.

Participants: representatives of companies of the port and industry area, representatives of neighbouring villages and towns.

#### EVIDENCE OF SUCCESS:

##### 1. Platform for Social Sustainability.

Results: improved procedures, cooperation in sustainability. For example: a company that has chemical waste as a result of its production process meets its neighbour that sees this 'waste' as a perfect (and cheap) input of raw material in their production process.

##### 2. Advisory Board for Neighbouring Residents of the port and industry area, from cities and region.

Results: improved procedures, better communication and the acquirement of additional knowledge for innovative solutions. For example: road is closed at night for safety reasons, leading to a lot of traffic on neighbouring villages' roads. Options for other solutions are discussed and implemented.

# GENERAL PROPOSALS

The following section is a summary of key points from the previous two sections of the handbook, together with extracts from the paper “Stakeholders environmental management – Pilot case of three Hellenic ports: Volos, Kavala and Lagos” authored by the Transport Systems Research Group of the Aristotle University of Thessaloniki.

The following points are considered to be good starting points for those ports which want to develop a process to enhance their stakeholder engagement with respect to environment management.

1. A port should establish environmental objectives & targets and identify how they can impact their stakeholders;
2. Ports should organise “open days” regularly (once or twice a year), where they can invite all the stakeholders and the general public (including the press and media). Through these events, ports should focus on: explaining their aims and objectives to the public; informing the public on port operations; present environmental monitoring figures to the public and highlight that they are making efforts to control their impacts on the environment. These events could be an opportunity for opening up a dialogue with stakeholders and hearing their ideas and suggestions;
3. Ports could create small port associations whose aim would be to help the ports improve in terms of environmental management. These groups should consist of a port representative, local community members, members of environmental groups, and members of the public that are willing to participate. It is believed that solutions to port problems could come from such groups, simply because they can bring to the table a different perspective in terms of how things work;
4. A group of small and local ports with common problems and interests could create a Special Interest Group (SIG) as a strategic alliance between themselves, focusing on environmental management. Through the SIG the ports could have a mutual exchange of information on management and environmental issues and together help to influence change;
5. Each port should ask from suppliers and port tenants to demonstrate that their personnel are environmentally aware and have received appropriate training. Port authorities should carry out Health, Safety & Environmental risk assessments for their operations inside the port and be able to demonstrate that their employees have been given training on the topics covering the main risks i.e. safe handling of cranes, manual handling, spills & leaks control, waste management and safe use of chemicals;
6. Ports would be well advised to track any kind of public complaints through complaint forms as part of their environmental management system requirements. All complaints and major issues must be given appropriate notice; and
7. From the best practice cases compiled we can deduce that the stakeholder engagement in the environmental management works extremely well when stakeholders are engaged from an early start as part of efforts towards developing a vision and progressing future strategies and plans. If small and local ports obtain the involvement of the stakeholders at this stage, it will help to avoid unnecessary conflict with respect to future development or changes in management regimes.

## REFERENCES

- *Pilot case of three Hellenic ports: Volos, Kavala and Lagos*. Aristotle University of Thessaloniki, Transport Systems Research Group: Naniopoulos A., Tromaras A., Vavelidou C., Palantzas G. (2012), Stakeholder environmental management
- *Stakeholder Relationship, Management: A maturity Model for Organisational Implementation*. Bourne L., (2009), Surrey, Gower Publishing Limited.
- *EcoPorts*, (2012), EcoPorts Website, accessed on 21/05/2012 <http://www.ecoport.com/>
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# PROTECTION OF BIODIVERSITY

INTRODUCTION

HABITAT RE-CREATION  
AND BIODIVERSITY PROTECTION

WASTE MANAGEMENT  
AND POLLUTION CONTROL

ENERGY EFFICIENCY

CONCLUSION

COMPILED BY EAST SUSSEX COUNTY COUNCIL WITH THE ASSISTANCE OF SuPorts PARTNERS

# PROTECTION OF BIODIVERSITY

This paper details the best practice examples identified by the SuPorts partners as part of the wider goals to exchange experience in order to assist local small ports in the management of their own ports and the protection of the marine and coastal environment.

Led by Seine-Maritime County Council, SuPorts partners have identified and collated 10 examples of best practice from their respective ports and regions. The common theme to all these examples is centred on biodiversity and environmental protection and enhancement, which itself leads to social and local community benefits.

## ENVIRONMENTAL POLICY AND LEGISLATION: SETTING THE SCENE

Ports by their very nature operate in coastal regions, where quite often part of their operating area is situated in or adjacent to areas of great environmental value. According to a survey undertaken by the European SeaPorts Organization (ESPO) in 2009, about 52% of European seaports are located in close proximity to Natura 2000 sites which are protected under the European directives for the protection of biodiversity (92/43/EEC and 2009/147/EC).

The Habitats Directive together with the Birds Directive form the cornerstone of nature conservation policy across the European Union. Built around the pillars of the Natura 2000 network of protected sites and the strict system of species protection, the Directive protects over 1,000 wild fauna and flora species and over 200 habitat types which are of European importance. The establishment of the Natura 2000 network also fulfils community obligations under the UN Convention on Biological Diversity.

The Natura 2000 network itself aims to assure the long-term survival of Europe's most valuable and threatened species and habitats and is comprised of Special Areas of Conservation and Special Protection Areas. The Natura 2000 network is not a system of strict nature reserves where all human activities are excluded, but rather a system where much of the area is privately owned and subject to human use and associated pressures. With this fact in mind, the focus is on ensuring that appropriate measures are in place and guaranteeing that the future management of Natura 2000 sites is both ecologically and economically sustainable.

In addition to the responsibilities set under EU policy and legislation, the RAMSAR convention on Wetlands of International Importance commits member countries to maintain the ecological character of their wetlands of international importance and to plan for the sustainable use of all of the wetlands in their territories. With respect to SuPorts partners, all are contracting parties to the Ramsar Convention on Wetlands. Notwithstanding the Habitat Regulation and the Ramsar Convention, ports and harbours also have local and national environmental legislation/protected areas to contend with. Given ports and the services that they provide have the potential to compromise the environmental integrity of the surrounding environment and protected sites, there is a need for ports to consider

## LYMINGTON HARBOUR HABITAT REPLENISHMENT SCHEME

Habitat enhancement of intertidal areas for the purpose of mitigating impact to N2K habitat as a consequence of the construction of a breakwater.

**SUPPORTS PARTNER:**

ESCC (UK)

**TIME PERIOD:**

Jan – Feb 2012

**CONTACT DETAILS:**

Tom Schindl

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**ADDITIONAL INFORMATION:**

[www.thecrownestate.co.uk](http://www.thecrownestate.co.uk)

**DESCRIPTION OF PRACTICE:**

The purpose of the scheme was to undertake a habitat replenishment scheme on an area of degraded/eroded saltmarsh, using sediment dredged during the maintenance dredging activities at the harbour, with the aim to raise the level of an area of intertidal mud within the tidal frame. If successful, this would provide a greater window for birds to utilise the area for feeding, along with providing the potential for saltmarsh plant colonisation. In order to ensure that sediment was retained on the site, drainage channels were blocked using semi-permeable structures made of willow and straw. A discharge pen was also constructed to prevent erosion of the saltmarsh during sediment discharge (via a pump), along with flow retarding structures to slow the flow of sediment and water across the site to promote pooling and to encourage deposition of the sediment.

Key stakeholders: Crown Estate, Lymington Harbour Commissioners, recreational boat users, Natural England. Finance: Lymington Harbour Commissioners were awarded £74,000 of grant funding through the Crown Estate Marine Research programme. This covered the full cost of the sediment recharge and subsequent monitoring programme. Citation: Lowe, S (2012) 'Lymington Harbour habitat replenishment scheme: Summary of works'. The Crown Estate. ISBN: 978-1-906410-35-3

**EVIDENCE OF SUCCESS:**

Monitoring of the remedial work indicated that at least 80% of all the sediment pumped was deposited on the site, with sediment levels being raised by approximately 0.5 - 0.7m in the main channels and between 0.09 - 0.22m at gauging post locations. Site visits showed that the discharge pen was successful in protecting the saltmarsh and dispersing the sediment and water as it flowed out across the site. By re-using dredged sediment, the practice helped to retain sediment in the system. In the case of the recharge at Lymington, it also helped to enhance the quality of the habitat, which is expected to provide greater feeding opportunities for birds, and potentially provide an opportunity for saltmarsh to colonise. This 2nd point is important in the context of major saltmarsh erosion and die back that has occurred in the area since the 1920s. The success of this study is of great interest as it will inform and thereby influence the management of saltmarsh habitat across the UK.

and better integrate their operational and economic requirements with those of wider environmental conservation and sustainable development goals.

It is not just compliance with environmental legislation surrounding protected/designated sites and protected species. Other challenges facing port and harbour authorities include those of:

- Pollution control – improving air and water quality;
- Waste Management; and
- Energy Efficiency and working towards a low carbon economy.

Whilst a plethora of rules and regulations exist for managing the above, there is also a growing recognition that financial savings can be realised by enacting procedures aimed at addressing pollution, waste and energy management.

**BEST PRACTICES AS IDENTIFIED BY SUPORTS PARTNERS**

The partners from the SuPorts project identified 10 examples of best practice, under three separate themes, related to habitat and biodiversity conservation, namely:

1. Habitat re-creation and biodiversity protection;
2. Waste management and pollution control; and
3. Energy efficiency.

The following section compiles the examples of best practice under the above themes detailing the practices and their respective success, before a final summary of findings and observations is made.

## RYE HARBOUR FARM HABITAT RECREATION PROJECT

**Habitat recreation for the purpose of compensating for the loss/damage to SAC habitat as a consequence of continuing shingle recycling and the creation of a sea defence embankment.**

**SUPPORTS PARTNER:**

ESCC (UK)

**TIME PERIOD:**

Aug 2010 – Spring 2011

**CONTACT DETAILS:**

Tom Schindl

Tom.Schindl@eastsussex.gov.uk

**ADDITIONAL INFORMATION:**

[www.environment-agency.gov.uk/homeandleisure/floods/124392.aspx](http://www.environment-agency.gov.uk/homeandleisure/floods/124392.aspx)

**DESCRIPTION OF PRACTICE:**

In 2003 the Environment Agency bought Rye Harbour Farm for the purpose of providing compensatory habitat for the damage to the SAC at Rye Harbour due to continuing shingle recycling as part of the Pett Sea Defence Scheme. Rye Harbour Farm also provided a source of clay to build the secondary defences, running through the farm.

As part of the planning conditions for the Pett Sea Defence Scheme, the Environment Agency was required to manage the area for nature conservation. Since the completion of the sea defence works, the Environment Agency has been managing the site to restore habitats that previously existed in the area. The habitat recreation involved reinstating tidal influence to an area of habitat that was reclaimed from the sea for farming. This was achieved by constructing culverts and penstocks to provide a managed link to the tidal River Rother along with constructing a new outfall through the existing river wall. The success of the habitat creation project would not only help the Environment Agency to comply with Habitat Regulation requirements, but it would also contribute to the national habitat creation target - specifically intertidal habitat. The Rye Harbour Farm project delivered 18ha of intertidal habitat plus a range of additional habitats which included the restoration of shingle ridges, ponds and grazing marsh. This project also provided the opportunity for the Environment Agency and the NGO - Sussex Wildlife Trust, to work in partnership regarding the monitoring of the habitat recreated as well as providing the opportunity for an environmental education programme that provides learning opportunities for pupils and residents to learn about the coastal environment and its value in terms of wildlife. All this was achieved within the context of the Environment Agency's primary objective to provide a greater level of flood risk protection for more people.

**EVIDENCE OF SUCCESS:**

As stated above, the project fulfilled the objectives of providing flood protection to communities whilst the associated habitat creation project re-established habitat which will help to safeguard the bird populations of the Dungeness, Romney Marsh and Rye Bay area which includes sites of both national and international conservation importance. Furthermore the project also remediated a 1950s landfill site and ensured that the waste did not present a future risk to people or the environment. The remediation of the land along with the habitat recreation helped to restore the past ecological value of the area, which was destroyed by historic farming practices, and consequently provides a huge conservational bonus. To date, not all of the shingle ridges have been restored. Instead the shingle ridges that have been restored are being monitored for 5 years so as to get an idea if restoration is worthwhile in terms of the achievability of quality habitat. In total 60 ponds were created on the site along with the 18ha of intertidal. The new areas of intertidal habitat will provide feeding/nursery habitat for estuarine fish species including commercially important species that move to estuaries on the tide. Furthermore, the reintroduction of grazing on the site will make a small but sustainable contribution to local food production. An additional benefit of the habitat recreation scheme is that it contributes to local business/economy as Rye Harbour and the surrounding area is an important ecotourism destination.

## PORT OF BRISTOL DEEP SEA CONTAINER TERMINAL

Creation of new intertidal habitat at the Steart Peninsula in Bridgwater Bay (Severn Estuary) to compensate for changing the landscape at Avonmouth, together with providing a greater degree flood protection to local communities whose homes are increasingly under threat from encroachment by the sea.

### SUPPORTS PARTNER:

Aristotle University of Thessaloniki.  
Port of Lagos (GR)

### TIME PERIOD:

7 Sep 2012 – Ongoing

### CONTACT DETAILS:

Tom Schindl  
Tom.Schindl@eastsussex.gov.uk

### ADDITIONAL INFORMATION:

<http://dsct.bristolport.co.uk>

### DESCRIPTION OF PRACTICE:

In March 2010, the Department for Transport in the UK gave consent for the construction of Bristol's Deep Sea Container Terminal. The construction of the new container terminal will involve some reclamation of the foreshore on which birds currently feed and roost on. This includes national, European and international sites of conservation importance. The compensation objective is to create 120ha of intertidal habitat in the Severn Estuary, including 20ha of mudflat to support over 3,000 over wintering birds. As a consequence of the habitat creation a more sustainable approach to managing flood risk will also be achieved through improving sea defences that protect against flooding from the Severn Estuary. This is a significant benefit of the project as it will help local people whose homes are increasingly under threat from encroachment by the sea.

Key stakeholders: Crown Estate, The Bristol Port Company, Natural England, The Royal Society for the Protection of Birds, The Environment Agency, and local community.

### EVIDENCE OF SUCCESS:

Once full consent is obtained, 1800 jobs will be created and nearly 8,000 existing port related jobs will be protected. Furthermore by virtue of its location and where freight is transported to, the savings in time, cost and container mileage itself translates to substantial benefits with respect to reducing Carbon Dioxide emissions. Also, as mentioned above, there will be benefits to both habitat and wildlife along with social benefits to local communities in danger of flooding. This is a good example of Integrated Coastal Zone Management.

## PRESERVATION OF THE UNIQUE “SMELTE BOTANICAL RESERVE” LOCATED WITHIN THE TERRITORY OF KLAIPEDA PORT

Preservation of the unique “Smelte Botanical Reserve” located within the territory of Klaipeda Port through the construction of an underwater reinforcement wall, thus allowing the Klaipeda State Seaport Authority to carry out dredging whilst preserving the Smelte Botanical Reserve.

### SUPPORTS PARTNER:

Klaipeda (Lithuania)

### TIME PERIOD:

11 Jul 2011 – 11 Jul 2012

### CONTACT DETAILS:

Mrs. Kristina Gontier  
Klaipeda State Seaport Authority  
k.gontier@port.lt

### ADDITIONAL INFORMATION:

[www.portofklaipeda.lt](http://www.portofklaipeda.lt)

### DESCRIPTION OF PRACTICE:

The Smelte Botanical Reserve, which is located in the southern part of the port alongside Malku Bay, is acknowledged for its rare flora and fauna.

However, the waters of Malku Bay are also crucial for the economic prosperity of the port, because numerous stevedoring companies are located alongside this bay. Due to the fact that the reserve is located within port territory which is intensively used for stevedoring works, the Klaipeda State Seaport Authority faced the dual challenge to preserve the Smelte Botanical Reserve whilst allowing port development and expansion to occur, a component of which required dredging.

The dredging operation (planned for 2014) would require considerable dredging of the Malku Bay from its existing water depth of -10m to a depth of -13m, so as to assure the appropriate depth for the stevedore companies to be able to operate within Malku Bay.

The dredging operation is the main threat to the existence of the Smelte Botanical Reserve, because the dredging activities within Malku Bay would damage the slopes of the Smelte Botanical Reserve and compromise the stability of the reserve with the potential of the outer areas to slump into the bay.

In 2010, “Environmental Management Plan of the Malku Bay, including the Smelte Botanical Reserve” was carried out, with the plan identifying the obligations of Klaipeda State Seaport Authority with respect to conserving the Smelte Botanical Reserve”. In response, a Technical Project for the protection of the Smelte Botanical Reserve located in the Klaipeda Port was commissioned, which involved exploring and assessing the viability of various mitigation measures, before settling on a proposition to design and construct an underwater reinforcement wall along the slopes of the Reserve, so as to assure slope stability.

### EVIDENCE OF SUCCESS:

Having completed the Technical Project, the construction of the underwater reinforcement wall will be undertaken in 2014, as such this wall will allow Klaipeda State Seaport Authority to carry forward port infrastructure improvements whilst adhering to its environmental protection obligations and preserving the Smelte Botanical Reserve.

## MEASUREMENT OF ECOLOGICAL INDICATORS IN THE FRAMEWORK OF BIODIVERSITY AND CONSERVATION LEGISLATION

**Reconciliation of port development strategies within the EU Environmental Directive framework.**

**SUPPORTS PARTNER:**

AUTH (Greece)

**TIME PERIOD:**

1<sup>st</sup> Aug 2004 – 1<sup>st</sup> Mar 2010

**CONTACT DETAILS:**

Aristotelis Naniopoulos  
Aristotle University of Thessaloniki  
naniopou@civil.auth.gr

**ADDITIONAL INFORMATION:**

www.auth.gr

**DESCRIPTION OF PRACTICE:**

For imperative conservational reasons, it is necessary for Port Authorities to integrate conservation objectives into their development and maintenance strategies. Through the provision of reliable scientific data on ecological indices, a port can develop monitoring programs aimed at assessing impacts from the port and its operations on port biodiversity and wider marine ecology. Such Environmental Management Schemes could be employed to adhere to maintaining biodiversity and nature conservation objectives within port areas, of which is a requirement under various EU legislation. As Ports belong to Coastal waters, the principles of the Water Framework Directive 2000/60/EC apply along with other EU Directives such as Directive 2000/59 on Port facilities for ship-generated waste and cargo residues and Directive 2008/56 on establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive). Given these directives, the identification of appropriate biological quality indicators for the assessment of the status of port ecological quality is a requirement. However the identification of such indicators does pose several difficulties, given the complexity of benthic ecosystems and the associated difficulties in defining habitat quality for the use in the prediction of future ecological state as a consequence of a lack of comprehensive data on spatial-temporal dynamics and endogenous properties. Given the above, the aim of this study was to identify species that could be used as biotic indices. This required undertaking the following:

1. An analysis of the structure of benthic communities occupying both hard and soft substratum;
2. An investigation of fauna at a functional level; and
3. A comparison of the present status with previous data of species in order to assess any change in the ecosystem over time.

Sampling was carried out in August 2004 at three depth levels: -0.5 m; -3 m; and -7 m, using Scuba-diving equipment at 3 sites at the Port of Thessaloniki (Q1, Q2 and Q3 as indicated in Figure 1). Further sampling was also undertaken from the sea bottom among the three sampled quays.

The obtained samples were sieved in order to sort, count and identify all living specimens to species level. At each sampling site the main abiotic factors, i.e. temperature, salinity, dissolved oxygen,

water clarity and pH were measured. Finally two biotic indices as suggested under the Water Framework Directive auspices for the assessment of the ecological quality status of coastal water bodies, i.e. AMBI and BENTIX were calculated in order to test their applicability in temperate ports.

**EVIDENCE OF SUCCESS:**

The above considerations clearly show that measuring & monitoring Biodiversity is complicated due to spatial and temporal variations. It is clear that the legislative framework is new and still being formed, thus each European state has to set its own targets & methodologies. The study shows that given the difficulties of identifying appropriate biotic indices, it would be advantageous for the ports to begin implementing biodiversity monitoring, in an effort to identify biological indices that are practicable, user friendly and affordable to the particular situation and requirements of individual ports and harbours. Upon further analysis of the methodologies used and outcomes reached in this study, it is clear that the port sector needs to develop a check list of main marine habitats and indices that will make future bio monitoring studies effective as part of efforts to assess potential changes in the ecosystem and thereby protect biodiversity. This also leads to the necessity of developing specific integrated management plans for temperate ports under a broader land planning coastal zone policy.



## PROJECT FOR THE RECOVERY OF THE PIALLASSE DEL PIOMBONE SITE OF COMMUNITY IMPORTANCE (SCI) AT THE PORT OF RAVENNA

Creation of a new artificial channel and an embankment through the re-use of dredged material as part of efforts to promote and enhance the condition of important environmental areas.

### SUPPORTS PARTNER:

ISPRA (Italy)

### TIME PERIOD:

End of 2011 – middle of 2012

### CONTACT DETAILS:

Autorità Portuale Ravenna

### ADDITIONAL INFORMATION:

[www.port.ravenna.it](http://www.port.ravenna.it)

[www.parcodeltapo.it/er/Eindex.html](http://www.parcodeltapo.it/er/Eindex.html)

### DESCRIPTION OF PRACTICE:

The Port of Ravenna, located within the Po delta regional park (Park of Delta del Po - Stazione Pineta di S. Vitale e Piiallasse di Ravenna) is a major 'canal' port extending for more than 14km. It holds the leading position in Italy for the handling of dry bulk products, in particular cereals, fertilizers and animal feed products. It is also an important commercial call for general cargo and container traffic. Since its creation, the Port Authority of Ravenna has participated in several projects concerning and encouraging sustainable development including joining the Ecoports network. In 2011, the Port Authority of Ravenna achieved certification of its environmental management system according to the UNI EN ISO14001 standard.

The Po delta is certainly one of the most important wetlands in Italy and in Europe because of the variety and the abundance of fauna and biodiversity. The park (Figure 2) is made of 6 different ambits called "Stazioni" (Figure 3), with the "Stazione Pineta di S. Vitale e Piiallasse" being the closest to the port of Ravenna. The "Stazione Pineta di S. Vitale e Piiallasse" is 11,000 hectares wide and hosts a great variety of different species of birds including all the species of European heron and many species of ducks and sparrows. Within this area different SCIs and Special Protection Areas (SPA) are located, including the following:

- Punte Alberete – Valle Mandriole (IT4070001) having a surface of 742 hectares. It hosts a flooded forest where the red heron and the ibis mignattaio nest.
- Piiallasse della Baiona (IT4070004) having a surface of 1,595 hectares and Piiallasse del Piombone (IT4070006) having a surface of 465 hectares). Those are wide brackish lagoons connected to the sea by several channels where different alophile vegetation (*Salicornia*, *Limonium*) live.
- Pineta San Vitale – Bassa del Pirottolo (IT4070003) having a surface of 1,222 hectares. It is the most famous and wide pinewood (*Pinus pinea* and *Pinus pinaster*) in the park and it is dated back to the Roman era. The avifauna is particularly abundant in addition to hosting the *Testudo* (*Emys orbicularis*) and *Polecat* (*Mustela putorius*).

In recent years it was observed that sediment from the sea was naturally accreting and forming sandbanks inside the channels connecting the lagoon to the sea and thus obstructing the natural

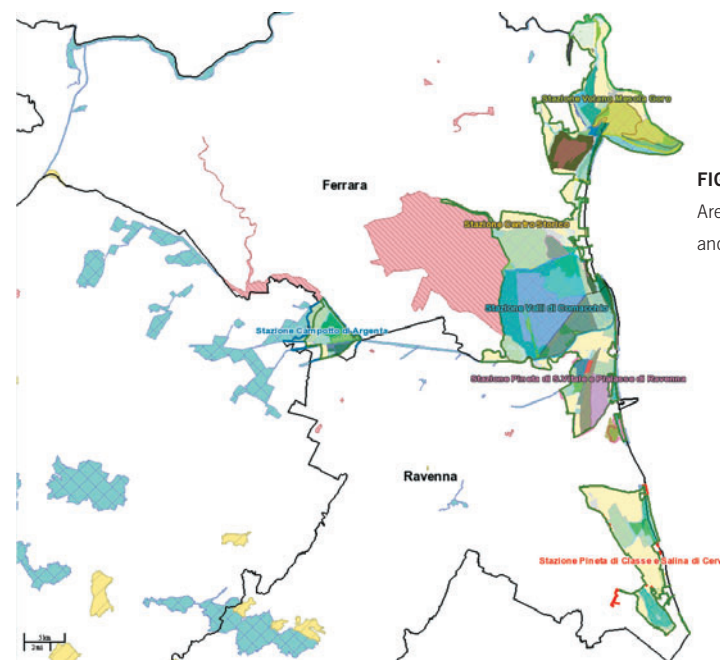


FIGURE 3:

Area map of Parco del Delta del Po and its 6 ambits (Stazioni)

exchange of water between the sea and the lagoon. Consequently, the limited exchange of water between the two systems was adversely affecting the environmental integrity of the lagoon along with its safe navigability. Recognising the dual concerns, the Port authority of Ravenna developed a scheme to dredge out the sandbanks and re-using the dredged material elsewhere as part of a management scheme for the wider environment.

### EVIDENCE OF SUCCESS:

The project to fund the works raised €32 millions and prior to proceeding, in 2009 it was subjected to an environmental impact assessment. The dredging of the sandbanks successfully resumed water exchange between the lagoon and sea, whilst the dredged material was used in establishing a natural embankment that helped to provide a barrier between the port and its activities and that of the conservation area. This barrier was also reforested as part of efforts to enhance the area and provide additional habitat for species.

In addition to the re-establishing natural water exchange and the constructing the embankments, restoration of historical port buildings along with some reforestation works were undertaken as part of an integrated scheme aimed at improving the environment of the working port and the conservation area.

## CREATION OF AN OASIS AT THE ISLAND OF ELBA FOR REPOPULATION OF PROTECTED SPECIES

**Submersion in the sea of cement pillars left from the demolition of a landing stage at Cavo on the island of Elba.**

**SUPPORTS PARTNER:**

Port Authority of Piombino (Italy)

**TIME PERIOD:**

Dec 2008 – Apr 2009

**CONTACT DETAILS:**

Claudia Bulleri  
Port Authority of Piombino  
c.bulleri@ap.piombinoelba.it

**ADDITIONAL INFORMATION:**

www.ap.piombinoelba.it

**DESCRIPTION OF PRACTICE:**

As part of efforts to discourage illegal dragnet fishing practices, cement pillars recycled from a demolished landing stage were utilised and deposited at sea to create physical barriers that impeded illegal dragnet fishing. The area identified for the positioning of the pillars did not contain any floral or faunal communities of conservation interest, hence the suitability of the site for depositing the structures in an attempt to safe guard the habitat from destructive fishing practices.

**EVIDENCE OF SUCCESS:**

Reports at the close of the activity have shown there to be an increase in the number of floral and faunal species within the area formally exposed to illegal dragnet fishing and now colonising the new hard structure habitat created by the cement pillars.

## METHODS FOR BIOGENOSIS RELOCATION IN THE PORT OF PIOMBINO AREA

**Biodiversity management by pre-serving protected organisms during marine works due to enlargement of the port.**

**SUPPORTS PARTNER:**

Port Authority of Piombino (Italy)

**TIME PERIOD:**

15 Nov 2012 – 15 Dec 2012

**CONTACT DETAILS:**

Claudia Bulleri  
Port Authority of Piombino  
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**ADDITIONAL INFORMATION:**

www.ap.piombinoelba.it

**DESCRIPTION OF PRACTICE:**

Planning marine works in coastal areas can often have a detrimental impact on protected organisms, resulting in challenges regarding their conservation and for the realisation of port development. For the Port Authority of Piombino, which was progressing a large scale expansion of its facilities, the port has utilised a suite of mitigatory/compensatory measures which helped to overcome the challenges posed by conserving its marine environment whilst promoting economic development.

In order for port development to occur, the port authority will mitigate for the loss of habitable area as a consequence of port expansion by relocating the current community to another location suited to the organisms. As part of this exercise, an in-depth investigation was undertaken by the Port Authority in June 2012 to identify the protected species in the area affected by the proposed port expansion. As part of this exercise, the port authority also researched suitable locations within the Gulf of Follonica for the transfer of the identified animal and plant species. The identified species included 17 examples of *Pinna nobilis*, 7 examples of *Posidonia oceanica*, and of a significant part of the *Cymodocea nodosa* community.

Financial resources for its implementation will be borne by the APP

**EVIDENCE OF SUCCESS:**

More than 2,000 protected species (in some cases on the verge of extinction) will be saved and relocated to new, suitable habitat. As part of the relocation effort, monitoring will be in place to assess the effectiveness of the translocation process and help to inform future translocation initiatives.

With the ability of the port to relocate the affected community elsewhere, it allows the port authority to continue with the development of critical port infrastructure whilst conserving local marine biodiversity.

### RECOVERY AND RECYCLING OF SOLID WASTE PRODUCED BY FISHING AND PORT ACTIVITIES

Improving the quality of the seabed through the proper use and recycling of equipment commonly used in the fishing industry.

**SUPPORTS PARTNER:**

Portos de Galicia (Spain)

**TIME PERIOD:** July 2010

**CONTACT DETAILS:**

Héctor Sánchez Fernández  
Ente público Portos de Galicia  
pcomunitarios@portosdeg Galicia.com

**ADDITIONAL INFORMATION:**

www.portosdeg Galicia.es

**DESCRIPTION OF PRACTICE:**

A system of management and recycling for three of the most common solid waste (in terms of both volume and impact on the marine environment) generated by fishing and port activities (i.e. fishing nets, expanded polystyrene and batteries) was developed. For each specific item of waste, a different approach to recycling was undertaken, as described below:

- Fishing nets: implementation of a system of classification and treatment of the nets in order to improve their suitability for the recycling process. This included developing a process for the separation of different nets; the cleaning and sterilisation of netting; a process for the extraction of metals; and the crushing, and compaction of materials.
- Expanded polystyrene: classification and preparation for recycling, which included the separation and cleaning of organic wastes along with the development of a process for volume reduction in order to facilitate transport.
- Batteries: Implementation of an appropriate collection and recycling procedure for the maritime and port environment.

**EVIDENCE OF SUCCESS:**

The system was implemented in all the 122 ports managed by Portos de Galicia, involving all the stakeholders, with the solid waste collected at the ports, handled and collected by authorised management agents.

A key factor in the success of this initiative was the partnership arrangement made, where the agent (contractor) removed the fishing nets and the expanded polystyrene at no cost, as they are able to make a profit from the waste to make new products with recycling materials. Portos de Galicia organises the logistics, the dissemination and the training of employees.

Nowadays 90-95% of the fishing nets, expanded polypropylene and batteries which arrive at port are recycled or/and delivered to authorized management agents..

### IMPROVING ENERGY EFFICIENCY AND REDUCING ENERGY CONSUMPTION

Improving energy efficiency and reducing energy consumption in the ports of Celeri, Ribeira and O Grove.

**SUPPORTS PARTNER:**

Portos de Galicia (Spain)

**TIME PERIOD:**

Oct 2010 – Dec 2010

**CONTACT DETAILS:**

Héctor Sánchez Fernández  
Ente público Portos de Galicia  
pcomunitarios@portosdeg Galicia.com

**ADDITIONAL INFORMATION:**

www.portosdeg Galicia.es

**DESCRIPTION OF PRACTICE:**

This good practice consists in the implementation of an agreement between Portos de Galicia and the Energy Institute of Galicia (INEGA) on energy savings and efficiency measures. As an objective of the agreement, performance studies for the introduction of measures for making energy efficiency savings at port facilities and for their activities was agreed.

1. The first specific action was to accomplish an energy audit in the public lighting of three different ports: Celeiro, Ribeira and O Grove, analyzing the characteristics of the existing facilities and to set up the possible measures to adopt best practice for energy efficiency and reduce its consumption.
2. A pilot project was launched, which assessed energy savings from the substitution of current public lighting fixtures in a port and replacing them with LED lights. This projected evaluation used real data including luminous efficiency, comparison of power usage and any reduction of consumption; together with comparing the cost of introduction and maintenance.

**EVIDENCE OF SUCCESS:**

Estimates of a possible 30% saving in outdoor public lighting in the ports and port facilities was calculated.

# SUMMARY

Increased environmental awareness over the past few decades has seen changes in attitude regarding the coastal and marine environment. This has helped to bring about improvements in environmental quality including that within ports and harbours which have historically been viewed as an ‘environmentally challenged’ industry. Through the SuPorts project, 10 examples of biodiversity best practice have been identified, which detail various strategies and efforts partners within the SuPorts project have used or identified to achieve positive environmental and biodiversity outcomes for their ports and the wider coastal and marine environment.

## HABITAT RECREATION AND BIODIVERSITY PROTECTION

The overwhelming proportion of best practice (8 examples from a total of 10) relate to the management and recreation of habitat and the direct protection of biodiversity interests. Whilst the majority of these projects are in response to overcoming the dual challenges of conserving nature whilst promoting port development, they do demonstrate that port authorities recognise the importance of sustainable development and it is not just a matter of being motivated by complying with legislation. The Port of Bristol example of best practice highlighted how extending the management of port development to include wider population and environmental interests can result in substantial benefits to the wider area and community. It also demonstrated that broadening focus to the wider area and to the benefits that it could bring to the community and to the wider environment; the more likely it was to succeed and gain popular and stakeholder support.

Other examples, demonstrated how the re-use of sediment from dredging can be used to enhance degraded habitat or recreate new habitat features to accompany existing habitat. For instance, the re-use of soft sediment to enhance degraded saltmarsh at Lymington Harbour, proved how effective the re-use of sediment could be towards addressing the issues of managing important habitat areas for conservation purposes along with reducing the need to dispose of sediment at sea – an activity considered to have a negative impact on the sediment budget. Similarly the Port of Ravenna, proved how positive environmental gains could be achieved from spoil produced as a consequence of dredging requirements.

The unique example provided by the Port of Thessaloniki provided a different take on biodiversity conservation, highlighting the importance for measuring and monitoring biodiversity using biotic indices as part of efforts to monitor, assess and react to potential changes in the ecosystem as part of efforts to protect biodiversity.

In fact for the 8 examples related to habitat recreation and biodiversity protection provided by SuPort partners, the common thread through the majority of these was the provision of multiple benefits that ensured/enjoyed broad stakeholder support. Simply allowing development was not considered good practice, but development that provided provision for habitat enhancement and/or preserved ecologically important habitat and protected species as with the examples to preserve the Smelte Botanical Reserve and the translocation of marine seabed species as illustrated by Klaipeda State Seaport Authority and the Port Authority of Piombino respectively. The Port of Authority of Piombino also demonstrated how redundant hard standing structures scheduled for removal could be utilised in an attempt to manage illegal activities that threatened species and habitat.

## WASTE MANAGEMENT AND POLLUTION CONTROL

From creating habitat to cleaning-up habitat, the best practice example illustrated how seabed quality could be improved through a project that targeted the recovery and recycling of solid waste produced by fishing and port authorities as identified within the Spanish region of Galicia. The adoption of the solid waste recovery and recycling project across all the 122 ports managed by Portos de Galicia, has obvious benefits with respect to habitat quality and environmental conservation, in addition to the benefits stemming from the reuse and recycling of recovered materials.

## ENERGY EFFICIENCY

Of the 10 best practices, there was one whose benefits transcended environmental improvement made at the local/regional level of the port, but rather contributed to global efforts to reduce carbon dioxide emissions in an attempt to address wider climate change challenges. Whilst the best practice introduced by Portos de Galicia, is a simple matter of making specific changes to replace certain electrical fittings and fixtures, the savings generated as a consequence of the introduction of the energy efficiency procedures could only be demonstrated by undertaking an initial audit. Whilst an audit is not necessary to implement changes, it does provide data to make comparisons and calculate energy and thus cost savings, along with determining the reduction of Carbon Dioxide emitted into the air.

The best practice examples presented by the SuPorts project, whilst covering three broad areas, i.e. Habitat recreation and biodiversity protection; Waste management and pollution control; and Energy efficiency, all are underpinned by the principle of sustainability.

Amalgamating these examples together into one package, the SuPorts project hopes to make these best practices more widely available to the port industry. For European small ports, these best practices provide solutions to some unique challenges and issues. Whilst some of the examples may not apply to the specific situations of individual ports, the SuPorts project has shown that simple changes made to improve energy efficiency along with changes made to the recovery and recycling of waste, especially with regards to the fishing industry, or the provision for habitat creation, not only results in environment improvements but can also pay financial dividends and/or provide a means of allowing development projects to go forward.

# .IV

## THE IMPLEMENTATION OF THE ECOPORTS TOOLS IN THE SUPORTS PROJECT

“IF ONE DOES NOT KNOW TO WHICH PORT ONE IS SAILING, NO WIND IS FAVOURABLE”  
(Lucius Annaeus Seneca, Roman Statesman, Born 5 BC, Died 65BC)

# THE IMPLEMENTATION OF THE ECOPORTS TOOLS IN THE SUPORTS PROJECT

### THE STRATEGIC RESEARCH PATHWAY OF ECOSLC IN THE SUPORTS PROJECT

As specified in the INTERREG IVC document 'Sustainable Management for European local Ports', Application Form, submitted by the Lead Partner, Département de Seine-Maritime, the major objectives of the Project were clearly to assist smaller ports to implement effective environmental management systems (EMS) in order to address their environmental liabilities and responsibilities. The experience of small ports that faced difficulties in introducing EMS was one of the starting points of the project.

This objective required the development and delivery of practicable tools and methodologies backed-up by dedicated training and Workshop sessions. This Final Report by ECOSLC 'Local Port's Sustainable Strategy and Policy' is a compendium of information that mirrors the programme put in place to support the overall objectives of the Project. This report includes the changes that are seen in European policy and legislation, and in market circumstances of all ports, small as well as large, in the years between the first draft proposal for the SuPorts project and today.

These changes are most clearly reflected in the fully up-to-date recommendations of the European Sea Ports Organisation towards its members: ports have to change their policy approach from environment to sustainability, and from port orientation to port and logistic networks orientation. European policies and directives are strongly concentrated on sustainability as the guiding principle for ports and on logistics as one of the most environmentally damaging effects of globalization that are directly related with the functioning of ports and their networks.

The R&D strategy adopted by ECOSLC was a phased development of background research, identification of current good practice, selection of appropriate tools and methodologies, the design and delivery of specific training programmes, and analysis of progress and impact through benchmark performance achieved.

The fact that small ports should be considered as a special case in terms of resources, knowledge-base, in-house capabilities and influence is widely recognized and accepted at all levels of governance. Recent European policies reflect this view and show for the first time separate attention to the case of small ports as key elements in European logistics networks, networks that need to be made sustainable. However, it is also true to say that small port operations and activities still have actual and potentially significant environmental impact requiring compliance with legislation and regulation common throughout the whole port sector regardless of size.

In the SuPorts project one of the deliverables to be produced by ECOSLC is therefore called a sustainable port policy and not so much an environmental port policy only.

ECOSLC acknowledged that for several ports in the project network, the starting point for developing and implementing an effective Environmental Management System (EMS) was at best basic, and in some cases it represented the first time that environmental issues were considered in any

form of structured approach instead of what was traditionally more of an ad hoc approach. Small port' employees with an environmental responsibility mentioned in the workshops that they were not used to sharing views and exchanging experience within their port or between ports in a structured manner. With this in mind, the philosophy of ECOSLC was to establish baseline principles and data, introduce the EcoPorts tools ([www.ecoport.com](http://www.ecoport.com)) in a phased, iterative manner, and to build internal capability within the participating ports and local authorities through dedicated Training and feed-back sessions. The basic approach of Ecoports is both top down and bottom up: employees deliver their views and ideas in a structured manner to the management, and the management checks its views in a structured manner with the employees. The approach is chosen to use all relevant knowledge and creativity from the organisation.

This approach drew on the established EcoPorts concepts of ports-assist-ports, collaborative networking is time- and cost-efficient, and port professionals require practicable, user-friendly tools with which to achieve their environmental objectives. For this reason ECOSLC invited to the workshops on the Ecoports Tools and Methodologies experienced ports that had already introduced the Ecoports Tools. In this way a personal exchange of good practice experience was organised. Personal exchange of experience in group meetings is seen as the most effective way to create awareness and understanding for the introduction of Ecoports Tools. In addition, a new Tool was designed, the so-called Sustainable Ports Policy Self Diagnosis Method (SPP SDM), to help to structure the discussions in the workshops in a professional way towards sustainability thinking and acting. However, ECOSLC recognizes that to train and encourage implementation of such tools in isolation from the rapidly evolving global context of port activities would have been artificial, unrealistic and unfair to the port professionals who work in the regime of burgeoning legislation, increased competition, and ever-widening group of stakeholders. As the whole port sector itself has shifted its environmental focus from quay-side to port area, from port area to city and its environs, and must now play its role as a crucial node in the Logistic Chain (with all the environmental concerns concomitant with associated liabilities), so small ports must adapt to changing circumstances related to legislation and commerce if sustainable development is to be achieved. It is a misapprehension that small ports are somehow isolated from the wider environmental demands placed on medium and large-sized ports. Any accident or incident occurring in a small port located within, or adjacent to, a sensitive environment may have as profound impact in terms of safety, health and environment as for example, an oil-spillage in a semi-enclosed dock in the heart of a major city. Similarly, small ports are not exempt from the environmental issues related to the Logistic Chain. Indeed, in some cases, the small port is such a significant node that the relative scale of concentration of activity has high impact on the local community and region. Small ports within the project were often reliant on road transport links, experienced significant seasonal impact from tourist vehicles, operated as selected links in

established distribution chains; and their very survival in commercial terms requires their active participation in contributing to a policy of sustainable maintenance and development of the Chain. Another reason that ECOSLC set its training of basic Environmental Management into the broader context of the functional organization of the Chain relates directly to the requirements of compliance with legislation and regulation through voluntary, self-regulation (the formal policy of the European Sea Ports Organization, [www.espo.be](http://www.espo.be)). The established and widely accepted objectives of Environmental Management are to control the Significant Environmental Aspects (those activities, products and services of, in this Project the Port Authority, which may impact directly or indirectly on water, air, soil, sediment or ecosystems). The tests for significance are very important in the case of SuPorts because ports must manage those aspects for which: i) it has direct liability and responsibility, ii) for which, in a court of law it may be deemed to be able "to bring influence to bear", and iii) those aspects that are of local, regional or national status.

These tests are enshrined in such standards as ISO14001 and indeed they shape the compliance options of all recognized EMS. It is immediately obvious that where test i) is non-negotiable, tests ii) and iii) are very likely to be significant even for a small port because they may well have tenants and operators, service providers, suppliers, industry, building contractors and Logistic Operators in their port area over whom that could reasonably be expected to "bring influence to bear" over their environmental behaviour. A court of law may consider that granting access, approving work, granting permits and issuing licenses implies at least some liability on behalf of the port authority. All these considerations were observed or reported in relation to SuPort participating ports.

ECOSLC therefore set its programme in the broad context of 'real-world' application of EMS where even small ports face the same issues and challenges as large ports (legislation rarely discriminates by size of organization). It offered the established 'step-by-step' approach built into EcoPorts at the request of port professionals so that managers of small ports can select the pace at which they implement EMS and the desired level of achievement. Throughout the SuPorts Programme, ECOSLC focused on the introductory Self-Diagnosis Methodology (SDM) – yet flagged (successfully) the option of the next level of Port Environmental Review System (PERS). It invited ports with experience in PERS to contribute their experience to fellow-professionals, and pointed out that PERS itself was designed to be a stepping-stone towards ISO14001 or EMAS. To all ports, the merits of at least considering the implications of sustainable development of the Logistic Chain were explained in terms of i) retaining influence on port policy (an ESPO recommendation), ii) opportunity for cost- and risk reduction by collaboration with chain partners, iii) future development of port's own EMS, iv) opportunity for further certification and strengthening of its licence to operate (eg SPPDM), and v) commercial advantage to be gained from pro-active role in Chain development.

Selected details of the targets achieved, benchmark performance attained, and certificated stand-



ards awarded are given in this report where SWOT and GAP analysis of 5 exemplar Project Partner ports along with their certification are described. The target of the SuPorts project to be delivered by ECOSLC was to introduce Ecoports Tools in 5 ports of which 1 port would be certified.

#### **ACHIEVEMENTS OF THE SUPORTS PROJECT**

The final result was that more than 35 ports participated in the Ecoports Tools and Methodologies workshops, 12 ports introduced Ecoports SDM and are now recognized by ESPO as an Ecoports Port, and 5 ports introduced also PERS, received Ecoports PERS certification in March 2013 and are recognized by ESPO as an Ecoports Certified Port. It is expected however that more ports that participated will introduce SDM and in some cases also PERS.

A general description of the Ecoports/Ecoslc Tools can be found in annex.

**NOTE**, under a long-standing Memorandum of Understanding between ESPO and EcoPorts/ ECOSLC, the actual responses to specific questions of any individual SDM are treated in confidence and the reports are compiled anonymously into the European benchmark. Over more than fifteen years this has built a culture of trust between the individual port authority and ESPO to the extent that ESPO periodically publishes the benchmark data for the sector as a whole. Individual participating ports are flagged on the EcoPorts website whilst their actual responses are treated in confidence. ECOSLC was able to collaborate with the Participating Ports and produce a profile of achievement and conclusions from their involvement with SuPorts through ECOSLC training and subsequent validation involving EcoPorts SDM and PERS pathways.



The SuPorts project started from the assumption that small ports face hindrances in the introduction of an Environmental Management System, such as the Ecoports Tools and Methodologies and EMAS. In the preparation of the project proposal the view was that modifications to the Ecoports Tools, especially for small ports or additional Tools for small ports would eventually be an option to take away these hindrances and open the way for introduction of port environmental management systems.

At the same time the view was taken that more than environmental considerations started to govern small ports. For that reason a sustainable ports policy document was proposed as one of the deliverables. Between the year in which this proposal was drafted and the finalisation of the project in 2013 large changes have been introduced by the European Commission and the member countries in environmental legislation and new policies and rules have been introduced to change the behaviour of ports in to sustainable behaviour. During the execution of the project these assumptions could be clarified in the practical workshops and adapted to the latest insights and the recent Directives, rules and policies could be taken into consideration.

## 1. PORT ENVIRONMENTAL SELF DIAGNOSIS METHOD (SDM).

This is to check to what level a port is already active in port environmental management issues. Ecoports/Ecoslc has a database of results from a large number of ports in and outside Europe, and can therefore benchmark the result. It is possible for participants/users to receive the benchmark. Further, it is possible to receive a GAP and a SWOT analysis of this result. This result is then compared with the requirements of ISO14001 environmental quality management. It then becomes visible as to what is already in place and what still has to be done to achieve ISO14001 standard. A port that has filled out SDM will formally be recognized as an “Ecoports Port” and will be mentioned on the ECOSLC and ESPO website.

## 2. PORT ENVIRONMENTAL REVIEW SYSTEM: PERS.

This is the basic Ecoports environmental management system specific to ports. It was developed by ports, for ports. To implement this system it is required, amongst others, to formulate a port environmental policy, to provide a description of how environmental management is implemented in the port organisation, and to make an overview of environmental aspects that are seen in the whole port area. Certification is possible after the validation of the results by an independent auditor - Lloyds Register. A port that is certified will formally be recognized as an “Ecoports PERS certified port” and will formally be mentioned on the ECOSLC and ESPO website.

## 3. NETWORK OF PORT ENVIRONMENTAL MANAGERS:

to exchange good practice experience in port environmental issues. The network can be considered as an important Tool for environmental management. It is the experience of many participating ports that it is very useful to exchange solutions for the daily port environmental, operational practices in the port with a colleague from another port. In this way ports assist ports with practical, operational knowledge and prevent ports to invent the wheel again if solutions are already available in colleague ports.

Cooperation between Port Authority and Coast Guard in Piombino (Italy) in the SuPorts Ecoports Tools and Methodologies Workshop.

## 4. ECOPORTS TOOLS AND METHODOLOGIES WORKSHOPS

were organised to create awareness of port environmental management issues, to introduce the Ecoports Tools and Methodologies, and to deliver training for their implementation. Also, a general introduction in Sustainable Port Strategy and Policy was given. A larger, Ecoports PERS certified port contributed to the workshop to show its experience with local ports. An important part of the workshop was dedicated to exchange of good practice experience.

### SUSTAINABLE PORT POLICY SELF DIAGNOSIS METHOD

In the SuPorts project a new Tool was developed and evaluated in the workshops during topics related to Sustainable Ports Tools. The Tool is based on good practice experience of a number of ports and port-related organisations who have developed their own sustainable port policies and who have put them into practice.

These include ports, ministries, regional governments and city governments. The Tool was developed to structure discussions in workshops with local port's representatives in the relatively new field of sustainable port strategy and policy. The Tool was evaluated and validated in workshops in France, Italy, Spain and the UK. The structured feedback received was very positive. By using the Tool a discussion about what is sustainability, sustainable port management and a sustainable port strategy was well-structured. Participants felt confident to deliver their own views and in this way started building their own sustainable port policy. It was important to recognize that

each port is different, and that the introduction of a European standard to specific port adapted approach would be well appreciated. Specific circumstances, stakeholders, large companies with a high influence on the very existence of the port or local policies require customized measures. It was interesting to note that most participants thought that the good practices shown in the first draft of the Tool were dedicated to large ports and not to local ports. After in depth discussions this view was however modified; most solutions can be seen as new standards that can be applied to small and medium sized ports as well but after adapting them to the scale of these ports.

Before a strategy and policy can be designed a good insight is needed in actual market developments that are of critical interest for the actual operations. These include its actual position in the competition with other ports and the future position of the port the port-city and region. This means that a good insight is needed in the quality and competition of its products and services, and also of its management systems and the supporting systems such as IT. A standardised self-diagnosis method can assist here.

### SELF-DIAGNOSIS

A quick business scan is a strong starting point. It investigates if development and exploitation of the port is structurally feasible. This shows which position the port can have in the market, what parts of the port earn the port's income, what costs are involved, if the port is up to date in environmental and sustainable management, and if also in the future a positive result can be expected. The results can in some cases be benchmarked with the sector's average. The Ecoports and ECOSLC Tools include the option of benchmarking.

### TOOLS FOR THE FIRST STEPS: SELF-DIAGNOSIS, QUALITY ASSESSMENT AND BENCHMARKING

In the SuPorts project workshops the following Tools were introduced, tested and trained. They contain management systems and standards developed by ports for ports and by ports and logistics related companies for the own sector.

1. ECOPORTS: port environmental Self Diagnosis Method to find gaps in the environmental management activities and to define environmental priority actions.
2. Benchmark of the results against the port sector's average to have an objective indication of the actual position and the steps needed for improvement.

3. ECOSLC: Sustainable Port Policy Self Diagnosis Method, to discuss in a structured way options for a sustainable port strategy and policy with colleagues from the own port and from other ports.
4. ECOSLC: Sustainable Ports and Logistics Self Diagnosis Method, to find gaps in the sustainable ports and logistics management activities and to define priorities for improvement.
5. Benchmark of the result against the port and logistic sector's average to have an objective indication of the actual position and the steps needed for improvement.

### ECOSLC SDM: SUSTAINABLE CHAIN MANAGEMENT SELF DIAGNOSIS METHOD

With this standardised questionnaire a port and logistics company can make an appraisal of its position in sustainable management against the requirements of ISO quality management Tools for environment, logistics, security and customs. In the SuPorts project the draft version has been finalised. After introduction a benchmark system will be set up to offer the possibility for a port and logistics company to benchmark its SDM result against the sector average. Ports and companies that introduced the ECOSLC SDM will be recognised as ECOSLC port or company on the ECOSLC website.

The benchmarks may be followed by a gap analysis to reveal what is still missing and a swot analysis to decide on priorities for improvement.

From the abovementioned actions the basic information is now available to design a sustainable port and logistics strategy on a basic level. A basic standard model can now be used, such as:

**Vision:** outlines what the port wants to be. It is a long-term view and concentrates on the future: for example. The port wants to be a sustainable port with respect to costs, social effects such as jobs and environmentally friendly.

**Mission:** this defines the fundamental purpose of the port, describing why it exists and what it does to achieve its vision. For example: contribute to a healthy regional economic structure by providing sustainable jobs and income.

**Values:** this is seen as beliefs that are shared among the stakeholders of the port. Values drive the port's culture and priorities and provide a framework in which decisions are made. For example: the port wants to be an integrated part of a competing port's and logistics network.

**Strategy:** now a combination can be made of the end goals for which the port is striving and the means (policies) by which it is seeking to get there. This is the road map or path chosen towards the end vision. The most important part of the strategy is ensuring that the port is going in the

right direction which is towards the end vision. The approach to strategic planning can also be a basic standard way:

**Draw- See- Think- Plan**

**Draw:** what is the ideal image or the desired end state?

**See:** what's today's situation? What is the gap from ideal and why?

**Think:** what specific actions must be taken to close the gap between today's situation and the ideal state?

**Plan:** what resources are required to execute the activities?

Example Sustainable Ports and Logistics Strategy Port of Dublin: "Integrating Dublin Port with Dublin city is a key objective and a policy imperative of the Master Plan 2012-2014"

### 5 SMALL PORTS THAT PARTICIPATED IN THE ECOPORTS TOOLS AND METHODOLOGIES WORKSHOPS

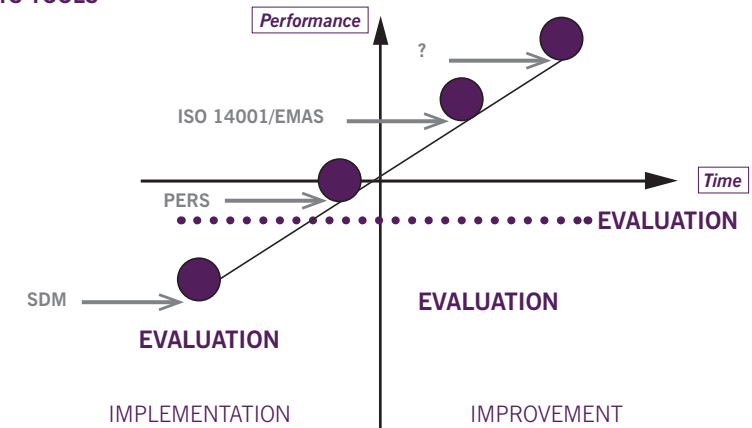
5 ports participated in Ecoports Tools and Methodologies Workshops in the SuPorts project. During the exchange of experience and the Tools training the functioning in practice of Port Environmental Management was made transparent. This offered the detailed insight in where to assist this small port in the introduction of Ecoports Tools. Below an overview is given of a part of this practical assistance. This can be seen as a guide for other small ports.

**THE ECO-SLC APPROACH TO TRAINING AND INTRODUCTION TO SUPORTS PARTNER, BENCHMARK PERFORMANCE AND PORT SDM SUMMARY PROFILES.**

From the outset of the SuPorts Project ECO-SLC was aware from fifteen years of experience in analysing port environmental performance that small ports were indeed a special case when it came to developing and implementing an effective and credible EMS. Europe-wide experience through the auspices of ESPO/EcoPorts had demonstrated the extent to which the EcoPorts tools were acceptable and endorsed by port professionals throughout the sector. ECO-SLC recognized that with appropriate modifications to the training packages, and with presentational material specifically designed for the particular

small port Workshops, the established approach of phased development from SDM upwards would be effective, acceptable and feasible. The following diagram illustrates the established step-by-step approach that was used in SuPorts and that led to the successful outcome of 5 ports attaining PERS within the lifetime of the Project (a unique occurrence within E.C. R&D projects). The fine-tuning of Workshop material arose from both formal and informal discussions with a number of port professional managers from a wide range of small ports. The challenges and difficulties were sometimes evidenced in reports and survey feedback, at other times they were identified by anecdotal comments during structured interviews. The profile of a small port environmental manager was typically an

ECOPORTS TOOLS



## 5. CASE REPORTS

**TABLE 1 Classification of Greek ports**

INTERNATIONAL	NATIONAL	MAJOR PORTS OF INTEREST	CONTINUED
Piraeus	Argostoli *	Ikaria *	Skiathos
Thessaloniki *	Zante *	Agios Konstantinos	Skopelos
Volos *	Thera	Ag.Nicholas Lasithioy	Sitia
Alexandroupolis	Kalamata	Aegina *	Spetses *
Elefsina *	Katakolon	Aigioy	Stylista
Igoumenitsa *	Corinth *	Gythio	Tinos
Heraklion	Kyllinis	Thassos	Hydra *
Kavala *	Ko	Itea	
Corfu *	Lagos *	Kymis	
Lavrion		Lefkada *	
Patras *	Preveza	Mesolgiou	Ports marked with* were studied for feedback
Rafina	Rethimno	Myrina	
Mykonos	Vatheos Samos *	Naxos	
Mytilene	Syros Alkidos	Nafplio *	
Rhodes	Chios	Nea Moudania	
Chania Souda		Patmos	
		Samothrakis	
		Poros Kafallinias	

individual whose role involved multi-tasking (often with Safety, Health and general 'Harbour Master' duties), and the individual was extremely knowledgeable about their port (including tenants and operators), and was well-connected with the local community.

During the course of the SuPorts Project ECO\_SLC spoke with a wide range of representatives from ports in several countries apart from the ports formally involved with the Project. For example, in Greece alone, aspects of port environmental management were discussed during visits specifically designed to identify the challenges, problems and options for improvement. The following table illustrates some of the ports interviewed in order to appreciate the views of port professionals.

The challenges identified had a profound effect on the design and delivery of training material and the associated presentational methods. Successive Workshops and visits provided the opportunity for evaluation and validation and as reported in the following pages, the network approach of collaboration between academic institutions (AUTH and Piraeus), Professional Trainers (ECO-SLC), and Partner Port professionals with the coordination and facilitation of Seine-Maritime arguably produced tangible and long-lasting results. As ever, the personal

contacts made during the project inspired trust and confidence between researchers and the small port professionals – difficult to quantify but essential for progress.

Open debate and discussion revealed the problems of effective Environmental Management as perceived by port professionals. See following table.

**NOTES:** The challenges identified during the course of the Project are not prioritized or ranked. The diversity of backgrounds and circumstances made the surveys qualitative and subjective. Nevertheless, it is suggested that the above lists are representative of the views of small port environmental managers and that the uptake and completion of SDM, and the achievement of PERS within such a relatively short time span confirms the efficacy of the tools and the impact of the training workshops.

The approach adopted by ECO-SLC has been validated by successive ESPO surveys that confirm the positive trend in progress towards effective Environmental Management by ports using EcoPorts tools as shown in the adjacent table. Clear evidence of the impact of the collaborative SuPorts approach can be seen in the results of analysis of the EcoPorts performance table below. SuPorts training workshops and SDM support

**TABLE 2 The challenges**

Expense	Legislation and regulation
Training provision	IT resources
Status of environment	Multi-tasking staff
Information and Assistance	Personnel
Number of agencies	Local aspects
Monitoring equipment	Stakeholder expectations
Time	Socio-economic status
Monitoring techniques	Practicable tools

**TABLE 3 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	+25
Does the policy aim to improve environmental standards beyond those required under legislation?	32	49	58	73	+24
Does the port publish an 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

**TABLE 4 Example of objectives & targets linked to stakeholders.**

COUNTRY	SDM	PERS	ISO14001	INDEX	RANKING
UK	12	2	5	31	1
GREECE	7	6*	1	20	2 =
ITALY	5	1	5	22	2 =
FRANCE	7	–	2	13	4
SWEDEN	3	–	3	12	5
IRELAND	3	1	2	11	6
FINLAND	7	–	2	8	7 =
NETHERLANDS	4	2	–	8	7 =
SPAIN	2	1	1	7	9
DENMARK	3	–	1	6	10
ALBANIA	1	–	1	4	11 =
GERMANY	2	1	–	4	11 =
NORWAY	1	–	1	4	11 =
PORTUGAL	1	–	1	4	11 =
CYPRUS	1	–	1	4	11 =
BELGIUM	2	–	–	2	16
CROATIA	1	–	–	1	17

services were delivered in the top-4 performing countries. It is interesting to note that UK and Greece in particular have a large number of small ports. If the size of the country, GDP and commercial profile is taken into account, it is reasonable to suggest that Greece and Italy are performing particularly well in terms of EcoPorts' status largely as a result of SuPorts and the collaborative approach that includes the ECO-SLC strategy of phased development from initial baseline to Chain-involvement.

It is suggested that one of the most compelling justifications for the approach taken by ECO-SLC and partner research groups is the result of the GAP analysis carried out on SDM responses. The GAP analysis indicates the extent to which the port authority's response complies with the requirements of the standards specified by the EcoPorts' Port Environmental Review System (PERS) and the International Organisation for Standardisation's ISO 14001. The GAP analysis can be used to assess the level of performance against the generic standards and indicate the potential for compliance with Environmental Management Systems (EMS).

Results for the 5 ports that achieved PERS show that the value-added from their initial SDM baseline response to the achievement of PERS as assessed independently by Lloyd's Register averaged +41.42% for PERS and +34.73% rela-

tive to ISO14001 requirements. These figures in conjunction with the relatively rapid achievement of the PERS standard can reasonably be claimed at least in part to be the result of the specifically designed training workshops and network support provided by ECO-SLC and its project partners.

NOTE: As stated in the introductory text to this report, the performance of individual ports is treated in strict confidence in line with the Memorandum of Understanding signed between ESPO and EcoPorts/ECOSLC. Sector benchmark performance is compiled anonymously, and no port-specific performance is divulged to public access. Individual ports are not identified in terms of published SDM performance. (Many ports willingly subscribe to placing the results of monitoring of their management and environmental quality results on-line or in publically accessible reports). The implications of SDM responses are reflected in subsequent PERS certification and are verified by independent scrutiny. PERS certification remains a voluntary option although it is recommended by ESPO.

In the following SDM summary statements, the references to specific sections of SDM relate to the SDM format and nomenclature, details of which can be seen at ([www.ecoport.com](http://www.ecoport.com)).



## PORT AUTHORITY OF KAVALA

### SDM SUMMARY PROFILE

State-owned OLK SA is responsible for the management of four ports in the region of Kavala namely the central Port of Kavala, The Commercial Port 'Phillip II', the Port of freedom and Port Keramoti. One of the authority's objectives is to develop the Port of Kavala system into a major shipping hub in the region with particular emphasis on the Eastern Balkans.

The Port Authority's declared strategy is:

- Linked to the needs of customers and seeks to add value to their activities
- To deliver effective management of space and facilities aiming at constant improvement of internal operating procedures
- To innovate in terms of monitoring trends in the field of maritime transport that seeks ways to exploit opportunities and deal with threats
- Achieve sustainable development based on a sound financial base and competitive operations.

Located in an embayment, the port is adjacent to, and lies within the city surrounded by woodland, cliffs, rocky foreshore and rolling hills with a port area of 300,000m<sup>2</sup>. Kavala is typical of the 'Small port' profile handling <5m tons/yr, <250 ('000 TEU/Yr) and between 1000-3000m passengers/yr. The main activities and cargoes are grain, timber, cement and potash. The port has one designated person for environmental issues. The Port Authority had existing experience with management systems having achieved ISO9001.

Recommendations following the SWOT and GAP analysis of SDM included:

- The Port Authority compiles an Inventory of its Significant Environmental Aspects (SEAs) as a matter of urgent priority. The Inventory of SEAs is a fundamental document because it identifies the impacts that ports activities, products and services may have on the environment. It is closely linked to the Inventory of legislation and is an important component in the procedure to confirm that the Authority is aware of its liabilities and responsibilities. It is of major assistance in identifying objectives and developing action plans.
- The activities and responsibilities of other key staff should be documented for effective implementation of the Environmental Management System (EMS).
- A procedure is put in place to facilitate the exchange of port environmental information and views between stakeholders, including external groups.



- The Emergency and Contingency Plan is enhanced further and made more robust.
- Kavala Port Authority develops and implements an appropriate environmental monitoring programme. The Port Authority need not necessarily undertake the monitoring itself. It may, for example, be able to come to a suitable arrangement with other Municipal departments, NGOs or Universities. The monitoring programme may be developed over several years and build up in phases as additional parameters are considered and detail added. The Environmental Performance Indicators (EPIs) selected should reflect the significance of the Aspects (Inventory of SEAs) and the Authority's own liabilities and responsibilities (Inventory of Legislation). The Environmental Monitoring Programme should consider both the quality of the physical environment itself and the performance of the port's management system.

### CONCLUSIONS:

- The Port of Kavala Authority went on to work closely with the Aristotle University of Thessaloniki as part of the SuPorts Project to build on the SDM feedback and achieved PERS status after independent verification by Lloyd's Register.
- Support and recognition at Senior Management level within the Authority was a driving force for the achievement of PERS.
- Kavala's progress was relatively fast compared with many other instances of port's preparing for PERS. It may be suggested that it demonstrates the value of a focused, networked initiative where independent, informed advice and guidance is provided by such initiatives as SuPorts. AUTH and ECOSLC contributed training and backup support, and the Authority developed further its own in-house capability.
- Kavala's ambitions in terms of shipping hub status confirm the value of a system approach and the raising of awareness of the port's status as a critically important node within the Chain with all the environmental implications that entails.

## PORT OF CORFU

### SDM SUMMARY PROFILE

Corfu Port Authority (CPA) is a shareholders company whose sole shareholder is the Greek State. CPA has in its jurisdiction the Port of Corfu, the three ports of Paxos Island, the Ports of Othonoi (Fani Island), the Port of Erreikousa (Merlera Island) and a large part of the waterfront of Corfu town. CPA's declared mission and its principal source of income is the management of the Port of Corfu which is a key entrance point to the Island for people and goods. Over the last three years, the port handled (apart from cruise ships), an average of 1,300,000 passengers and 536,000 vehicles as well as 485 cruise ships with over 640,000 passengers.

The Corfu Port Authority has established, implemented and maintains an Environmental Management System which complies with all legal and regulatory requirements of national, European and international legal framework and requirements of the international standard ISO 14001:2004. Through its environmental policy, the agency's senior management is committed to the following:

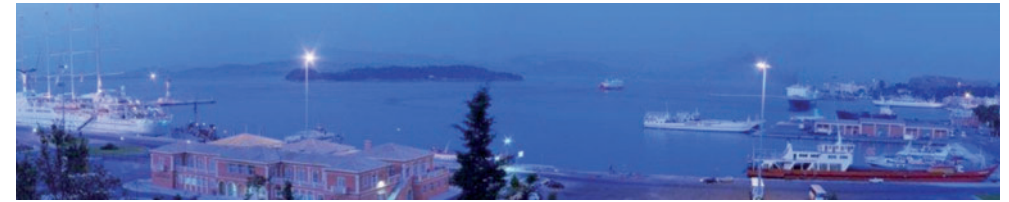
- to comply with applicable environmental laws
- to inform, educate and encourage all staff to engage in activities of environmental protection area of responsibility
- make the systematic identification, assessment and control of all environmental aspects and impacts arising from activities, products or services .
- trying to minimize and safe disposal of waste

produced by the activities of the organization, applying best available techniques, recovery techniques, reuse and recycle where possible, contributing in this way to prevent pollution

- Establishing , documenting and reviewing environmental objectives and environmental programs
- inform suppliers and contractors working with the company for Environmental Policy that applies to ensure them from meeting the respective environmental management principles
- aim to create and maintain an open and creative relationship of trust with the local community and the general public
- trying to continuously improve the environmental performance of the organization

Corfu Port Authority successfully completed the initial evaluation of the Environmental Management System implemented and early December 2012, certified according to the ISO 14001:2004 standard for environmental management activities by the independent certification body EUROCERT SA. Environmental Policy Signed by D. Director Mr. S. Vlachos & Environmental Management Certificate ISO 14001:2004.

With an engineered coastline as well as natural features, and a port area of 160,625m2, Corfu's major activities and cargoes include aggregates of sand and gravel, marinas, timber, fishing and fish processing, and livestock. The urban area in-fringed by rocky foreshore with stretches of sand and shingle.



CPA thus made an ideal collaborating port because although it had an established EMS, it qualified by definition as a 'small port' and thanks to the marked commitment and support of its Senior Management, CPA played a key role in providing experience, knowledge and approach from the perspective of professional practice.

Even with its established involvement working towards ISO14001, CPA used the SuPorts Workshops and SDM experience as a spring-board to advance its objectives of attaining international standard of EMS. Advice provided following SuPorts site visits and SDM analysis included:

1. Based on its collaborative activity on EMAS/ISO, the Corfu Port Authority could develop a comprehensive Policy as the major statement to drive the whole EMS. See Section A of SDM and the Guidelines of PERS ([www.ecoport.com](http://www.ecoport.com)) for examples.
2. Re-visit the Inventories of Legislation and Aspects to confirm that they are comprehensive and up-to-date.
3. Identify and confirm representative responsible for EMS and detail responsibilities of those involved.
4. Review the Opportunities and put in place appropriate procedures for Reporting and Communication.
5. Develop 'SMART' action plans and specifically address as a matter of high priority - a method for dealing with non-compliance of internal and external compliance.
6. An appropriate programme of monitoring

should be introduced. This can be selective and relatively restricted in the first instance, and then developed through phased action plans as the EMS is implemented.

With its active participation in the E.C. SuPorts Project, its on-going research into EMAS/ISO, and the culture of pro-active involvement and high level of awareness of its environmental liabilities and responsibilities, the Corfu Port Authority is well-positioned to develop and implement a credible EMS. It is suggested that the short-term objective of PERS would be an appropriate first step although it is understood that the Authority is currently developing EMAS/ISO. Regardless of the pathway and objectives selected, it is a fact that SDM, PERS, EMAS and ISO are generic in their principal components and so the analysis and interpretation of results of this SDM should assist the Authority in its endeavors to implement a credible EMS.

### CONCLUSIONS:

The ECOSLC approach of 'port-assist-port' in terms of EMS development and implementation was demonstrably successful in this case. CPA were excellent ambassadors for the SuPorts objectives and ECOSLC's contribution through training presentations in conjunction with other partners, particularly AUPh, gave confidence and insight to ports with less experience than CPA.

CPA itself benefitted from network participation and the phased approach of site visit, training

session, web-based and personal follow-up support services through SuPorts assisted CPA to enhance further its environmental credentials by achieving PERS in addition to ISO14001. It should be noted that PERS is still the only port-specific EMS standard.

– CPA confirmed the significance of the transport chain in terms of developing a comprehensive EMS. The SuPorts discussions both formal and informal highlighted the absolute significance of shipping and road vehicular transport to such small ports as Corfu. Having introduced SDM in a more phased manner than would normally be the case for medium and larger ports, the logic of port-port-area-port city-Chain was immediately apparent to CPA. Since SuPorts the Authority has continued to show interest and support for the SPPDM concept.



## PORT AUTHORITY OF PIOMBINO

### SDM SUMMARY PROFILE

The Port Authority of Piombino was established by Presidential Decree on the 20th March 1996, implementing article 6, clause 8 of law n° 84 of the 28th January 1994. The current characteristics of the port have been historically conditioned by the presence of the large steel working industries that started at the close of the 19th century, and were to develop during the last century in the areas surrounding the port. Piombino is in fact home to an important industrially productive district, where the companies present are controlled by some of the most important multinational groups in the world, such as

- Lucchini SpA, the second-largest steel plant in Italy, belonging to Severstal (Russia), which produces a wide range of specialised, high-quality, long products (bars, rods, billets, rails), directly pressed pieces, forged parts and laminated flat parts;
- Magona d'Italia SpA, of the Arcelor/Mittal group (France & India), product leader in the sector of pre-painted and galvanised thin steel laminates;
- Tenaris Dalmine, of the Techint group, specialised in the production of welded pipes for water and gas conduits.

Piombino is in seventh place amongst Italian ports for the dry bulk sector. The other historic vocation of the port is closely linked to the ferry sector (Elba, Sardinia, and in season Corsica) given the high number of passengers (the fifth port in Italy), a consequence of the tourist devel-

opment of the island of Elba and of the notable increase in ro/ro traffic to and from Sardinia.

Although with a throughput of 5-15m tonnes/Yr., <250 ('000 TEU/Yr) and between 3-7m passengers/Yr., Piombino still qualified as a small port in terms of SuPorts definition and that of ESPO. With major activities and cargoes including cement, coal, iron ore, pyrites, ro-ro, fish and fish processing, and scrap, the port provided an ideal contrast to some of the other participating ports in terms of diversity of activities and concentration of operations. Piombino represents a specific challenge to the development and implementation of EMS because of the range of its Environmental Aspects, resource capability, and scale of infrastructure and stage of development. The urban and industrial area includes in its environs conservation and protected areas, offshore islands, and coastal features of boulders and sandy beaches.

Piombino was another port that through established experience was able to both encourage other small ports with little or no record of EMS by contributing experience from the point of view of professional practice, and also gained further insight by feedback from ECOSLC training and the presentations of other SuPort partners. At the start of the SuPorts Project it had several demonstrable strengths in its organization, procedures, and the inventories of aspects and legislation of its current programme. Comparison with the European benchmark demonstrated its



strong status in areas related to policy and monitoring strategies. The GAP analysis showed no profound omissions from the components necessary for an effective Environmental Management System (EMS) and the Authority was well-placed to enhance further the Port's environmental management programme. It was recommended that the Port continued to review its environmental policy. Similarly, it was advised that expansion of the amount of information and detail on the website would produce immediate, high impact with detailed information and so play an active role in communication and Stakeholder relations with specific reference to 'Environmental Issues'. The Port was well-placed to enhance further its environmental management programme and it was advised to consider adopting PERS as an intermediate measure before embarking on a standard such as ISO14001. PERS is the port sector's own standard specifically designed to assist ports in developing and implementing an effective EMS. It is generically linked to ISO and so work put into compiling PERS would in the future, if so desired, be of direct use for the next step.

The Piombino Port Authority obviously had a positive and pro-active approach to its Environmental Management was highlighted by the SDM responses and its involvement with European research and Development Projects such as SuPorts and Integrated Eco-friendly Mobility

Services. The Authority has the opportunity to compile and consolidate all the documents related to SDM and was well-placed to achieve PERS recognition.

### CONCLUSIONS:

It may be suggested that Piombino's pro-active response to its environmental liabilities and responsibilities made it an ideal 'catalyst' partner for the SuPorts Project. The collaboration between port professionals (Ports of Piombino and Corfu), academic institutions (AUn) and training professionals (ECOSLC) demonstrated the value of the research-led, networked approach.

Piombino's achievement of PERS in the context of a collaborative R&D project was confirmed to the fact that ECOSLC's phased approach was appropriate at both ends of the spectrum of port experience.

## MUNICIPAL PORT FUND OF AVDERA

### SDM SUMMARY PROFILE

Porto Lagos is a small scenic village, coastal and lakeside at the same time located near Vistonida lake and its coastline, part of the Thracien sea. It is located on the north eastern side of the prefecture at the borders of Xanthi and Rodopi prefectures and is popular with ornithologists, as well as bird watchers. Among lagoons, valleys, forests and Vistonida Lake there is a biotope that hosts a rich bird fauna. In this area there are 322 bird species reported including little egret, flamingos, pygmy and cormorant. Three kinds of herons nest in the small forest at the entrance of the village and its port, above the dense pine trees: the Grey Heron, the Squacco Heron and the Little Egret.

For many of the SuPorts' research partners it may be suggested that Avdera or Porto Lagos was the very epitome of a small port and really characterized the audience and objectives of the whole project. The small-scale development, tight local community, isolated location and extremely sensitive environmental setting made it an ideal test case for the ECOSLC approach of low-key initial presentation building up through phased presentations backed up by on-going service support in conjunction with other SuPorts partners. With <5m tonnes/Yr. cargo, <250 ('000 TEU/Yr) and <1000 passengers/Yr., Porto Lagos was arguably the perfect location for evaluation and validation of the ECOSLC approach.

Even within the small area of the port (380,000m<sup>2</sup>, the major activities of marina

operations, fishing and fish processing, dry bulk handling, timber, and petroleum and oil products present a challenge to any organization or agency. The Project site meeting confirmed the extent of local knowledge, recognition of the natural heritage of the area, and the significance of environmental issues. The natural environment consists of conservation and protected areas, open water, tidal flats, lagoon, sandy areas and salt marsh. The Municipality has one designated environmental person and the multi-tasking role was obvious during discussions and the site visit.

The collaboration between all SuPorts partners was particularly effective during the engagement with the port. The genuinely interactive visit gave the opportunity for data and information gathering for the research partnership, and an ideal occasion for the modified presentational training programme of ECOSLC (in conjunction with AUTH and Piraeus University) to be delivered to a wide range of local stakeholders. Again, experience from other parts of Europe (presented by ECOSLC and Piombino) gave examples and confidence to the representatives of the port.

The site visit was particularly useful as it identified several of the key issues in terms of the difficulties that small, local ports face in managing their environmental liabilities and responsibilities. Recurrent themes noted from other small ports included the perceived 'distance' between State Government and Local Municipality in terms of policy development and guidelines, adequate

in-house knowledge and experience, lack of resources (financial, I.T., and technological), plethora of legislation and the often conflicting demands of commercial necessity and the perceived environmental imperative. The ECOSLC approach in tandem with the other specialist skills of project partners encouraged a demonstrably pro-active and successful response in that not only did the port complete SDM but it also achieved PERS status in an impressive time-scale and to acknowledged high standard of achievement. Again, the networked collaboration between research-led education (AUTH and Piraeus) supported by training Professionals (ECOSLC) formed an effective and well-received partnership.

### THE PORT ADMINISTRATIVE BUILDING

The initial recommendations from the SDM were that the Municipal Port Fund of Avdera had a reasonable base from which to develop further its Environmental Management Programme. There were established Strengths within the existing provisions particularly with respect to organization of its environmental management, employee awareness, compliance procedures and elements of its Emergency Plan. It was recommended that:

- The Environmental Policy was reviewed taking into account the comments made in relation to: Communication to stakeholders. Availability on a website. Reference to the publication of an Environmental report. identification of the port's Significant Environmental Aspects;
- The Municipal Port Fund of Avdera consid-

ers the compilation of an Inventory of its significant Environmental aspects as a matter of urgency. It may be considered a Threat if document did not exist within the Authority. The Inventory is vital in terms of identifying priorities for action, identifying objectives and monitoring for compliance and progress. The Inventory of Environmental Aspects is a key document in terms of compliance and control. It would be a Threat to the port if the authority cannot identify its Significant Environmental Aspects (SEAs) that is, those activities, products and services that may impact on the environment directly, or indirectly. It is a most important document in terms of liability and responsibility of MPFA;

- The environmental responsibilities of other key personnel are documented so that in the event of an incident being reported, the chain of command and duties are clear to all concerned;
- MPFA gives strong consideration to the publishing of a short Environmental Report. It's active participation in SuPorts is worthy of mention;
- Puts in place procedures to exchange environmental information with Stakeholders including external parties. Such procedures can raise the port's profile and build influence;
- An Environmental Programme and action plans are prepared. they do not need to be too elaborate but can be developed through a series of phased initiatives to 'start the ball rolling' in terms of implementing an effective

Environmental Management System (EMS);

- The Emergency and Contingency Plan should be reviewed to incorporate at least some of the other components listed. In order to be seen to be applying the Precautionary Principle and to be able to demonstrate sustainable development, environmental protection and continuous progress, MPFA should initiate an environmental monitoring programme.

In order to achieve the port's environmental ambitions it is further recommended that: The Municipal Port Fund of Avdera reviews the SWOT and GAP analysis of this SDM report and responds where possible to the recommendations made above. The comments should act as a guide towards PERS and further enhancement of the port's EMS standard. Experience suggests that a further evolution of the EMS is required and a phased development of EMS using the SuPorts network may assist the authority to continue to build internal capacity and to develop its EMS at its own pace. In the meantime, if any further advice, guidance or training would be helpful, the port is welcome to contact SuPort Partners.

## CONCLUSIONS:

- The award of PERS to The Municipal Port Fund of Avdera was a fine achievement which testifies for the enthusiasm and dedication of the local port employees and associated community representatives.
- It may reasonably be suggested that the personal contacts, phased delivery, network support and on-site presentations, all facilitated through SuPorts and Seine-Maritime's coordination, delivered a demonstrably successful outcome that has set the basis of in-house capability within the port to work towards sustainable development. ECOSLC's tools and presentational methods were effective for port's starting from an initial baseline with little or no experience.

## PORT OF VOLOS

### SDM SUMMARY PROFILE

The State-owned port began operating in 1893 and is located within the fabric city of Volos. The port has a central position in Greece and is the eastern portal of the European Union where it serves passengers, tourists and freight. There are ferry connections with the Northern Sporades and the NE Aegean Islands. Volos receives a large number of cruise ships and has the appropriate infrastructure whilst also serving a wide range of freight containers and bulk cargoes.

The major activities and cargoes include aggregates of sand and gravel, fishing and fish processing, coal, grains, scrap and soya. The port area is 585km<sup>2</sup>. Volos' profile matches the definition of small port adopted for SuPorts in that it handles <5m tonnes/yr, <250 ('000 TEU/Yr) and <1million passengers/yr.

Volos is in an environmentally sensitive situation being adjacent to conservation, protected areas with a coastline of boulders and sandy beaches in juxtaposition with urban and industrial zones. The port had a background of addressing specific environmental issues but no formal, structured EMS. An example of existing good practice within the port was its ship's Waste Management Plan in response to the implementation of the International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978 (Marpol 73/78) regulating what wastes can be discharged into the marine environment from ships and requires that states parties ensure that adequate reception facilities are made available

in ports. 'All Member States have ratified Marpol 73/78.

The European Union, considering the size of the problem and the risks to the marine environment Community, went even further by enacting legislation Directive 2000/59/EC, which makes it mandatory for all European ports the existence of reception facilities for ship-generated waste, introducing, among particular criteria and pricing of services delivery and management of waste. As Greece is fully harmonized with the Directive, based on CMD 3418/07/2002, The Port Authority SA Volos, in full compliance with this legislation and with a sense of environmental responsibility and awareness, (a) wrote the "Waste Management Plan Ship" and (b) showed, through a public open tender, a contractor for the integrated provision of facilities waste reception ships in the port of Volos.

The SA OLV has comprehensive and organized reception facilities for ship-generated waste, which may serve the following categories of waste:

- Oily bilge water - bilge water
- Oily residues (sludge) - oil residues (sludge)
- Oily tank washings (slops) - Oil tank washings
- Dirty ballast water - Gas ballast
- Scale and sludge from tanker cleaning - Waste tank cleaning
- Oily mixtures containing chemicals - Oil mixtures containing harmful chemicals
- Chemical / NLS - Hazardous and noxious liquid chemicals (categories X, Y, Z)
- Sewage - Sewage
- Garbage - Waste



- Ozone-depleting substances - Substances that Deplete the Ozone
  - Exhaust gas-cleaning residues - Waste gas purification
- Masters of ships / vessels other than fishing vessels and recreational craft authorized to carry 12 passengers, which is to enter the ports, complete and submit the "Form notifications" in NORTH AEGEAN SLOPS, the Port Authority of Volos and Central Port of Volos, (a) at least 24 hours prior to arrival in the port, if it is known that the ship will be in port, or (b) just knowing that the ship will dock in the port area of responsibility if the information is available less than 24 hours before arrival, or (c) no later than the departure from the previous port if the voyage is less than 24 hours. The completion and submission of the "Forms" from the masters is regardless of whether they want to deliver waste to port facilities. If the master considers that the services provided are inadequate, it may submit the relevant 'Report Form Deficiency of Port Reception Facilities Waste "in SA OLV, who will communicate and evaluate the content of the report in accordance with the relevant provisions of the IMO. The recommendations made to Volos following SDM submission were that:

The Volos Port Authority has a strong framework in place for its developing Environmental Management Program and System. The SDM indicates a positive potential to improve its environmental credentials. The Port Authority's website demonstrates good environmental practice content as it does a signed Environmental Policy (A specific Strength), comprehensive mapped detail, interactive maps and useful images, relevant statistical data, and geographical information. The port's activity and commercial profile is readily understood from the port-profile and website, and the priority aspects and issues are accurately identified within the SDM.

The Ship waste Management Program is particularly well-developed. Volos Port Authority has a well-developed and appropriate Environmental Policy (A.1) and clearly declared statement on its Environmental Objectives and Targets (A.83). The critically important Inventory or register of Aspects (A.21) is well-established though some aspects are recommended for further review of their potential significance (see notes). Employee awareness is indicated to be at a high level though there is a recommendation to incorporate Environmental training in issues into the employee Induction process (C.7).

Management organization is developed to a high standard according to the SDM response (B.1 and following) and the culture of auditing the EMS is well-established (H.1 and following). It is recommended that for the sake of clarity and implementation, that the identification and provision of budget for Environmental Management (A.87) and Environmental Monitoring (A.91) is considered as a matter of priority to provide continuity of effort and recognition of environmental status.

The major recommendation is that Volos Port Authority should address E.5 (Are there methods to deal with non-compliance with internal and external standards?) as a matter of urgency). It may be suggested that this is essential to protect the Port Authority in terms of its legal liabilities and responsibilities. Similarly, it is suggested that the Port Authority's Emergency Plan (F.1 and following) should be reviewed to include some of the issues identified in the Notes, particularly the inclusion of external agencies. The identification of practicable and appropriate Environmental Performance Indicators (EPIs) would also enhance further the monitoring programme (G.14). The Volos Port Authority has a strongly-established framework and organization to enhance further its Environmental Management System and to be one of the best-performing ports in terms of demonstrable good practice and culture of environmental protection.

## CONCLUSIONS

The ECOSLC approach of providing a Workshop prior to SDM completion fast-tracked the understanding of the environmental representative in terms of appreciating the benefits of the checklist, definition of terms used, and the extent to which SDM would act as a catalyst for further enhancement of the port's Environmental Programme.

The SuPorts/ECOSLC network of post-Workshop support and guidance was a particularly useful mechanism for the input required for the successful attainment of PERS



## PORT OF FÉCAMP

Located in Normandy, near the main maritime ports of Le Havre and Rouen, in the heart of a high performance logistics zone, the commercial port of Fécamp plays a major role in hosting middle-sized ships used for coastal shipping.

At present, Fécamp hosts over 100 commercial vessels a year and receives approximately 200 000 tons of goods annually. The main imports commodities come from Scandinavia, the Baltic States and Russia for lumber, from Southern Europe for rock salt and from Africa for oils and fats. Export goods are mainly shipped to Great Britain but new destination routes are being considered.

The commercial port of Fécamp is specialized in the shipping and handling of solid and liquid bulk goods as well as conventional commodities. Bulk goods are Nepheline, Feldspath, Salts, Fertilizer, Animal fats and vegetable oils, sea-dredged gravel, Beet molasses and Grain. Conventional commodities are wood pulp, sawn timber, metal goods, frozen fish, particle panes and heavy and bulky items.

### CONCLUSIONS AND RECOMMENDATIONS:

The SDM was completed comprehensively with sufficient detail and explanation to allow reasonable Interpretation of the Port of Fécamps current Environmental Management Programme. The document demonstrated a range of response options indicating an accurate and open testimony to the situation in the port. The SDM revealed examples of established Strengths

and in other sections there are Opportunities for further development. Instances of perceived Weaknesses and Threats are also identified. The port of Fécamp can therefore see its own performance relative to the current European benchmark. Useful background information to assist the reviewer with context was obtained from a variety of industry documents and web-based sources that mention the port and its environs, including the port's own website.

### SWOT ANALYSIS:

The Port of Fécamp has a very reasonable base from which to develop further its Environmental Management Programme. There are established Strengths within the existing provisions particularly with respect to organization of its environmental management, employee awareness, the identification of objectives, approach to training and elements of its Emergency Plan.

However, the GAP analysis of 35.71% (PERS) and 35.53% (ISO14001) indicates that there are substantive enhancements that would be required if Fécamp has the objective of achieving a recognized standard of Environmental Management System. The open and comprehensive response to this Self Diagnosis Methodology indicates an awareness and recognition of the steps that would need to be taken in order to obtain certification of the port's Environmental Management System. In particular, it is strongly recommended that:

1. The Environmental Policy is reviewed taking



Aerial view of the port of Fécamp

into account the comments made in relation to: Availability of Policy on a website, Reference to the publication of an Environmental report, Introduction of an EMS and reference to guidelines of the European Sea Ports Organization (ESPO).

2. The Port of Fécamp compiles an Inventory of Legislation as a priority activity of urgency.
3. The Port of Fécamp considers the compilation of an Inventory of its significant Environmental aspects as a matter of urgency. It may be considered a Threat that this document does not exist within the Authority. The Inventory is vital in terms of identifying priorities for

- action, identifying objectives and monitoring for compliance and progress. The Inventory of Environmental Aspects is a key document in terms of compliance and control. It is a Threat to Fécamp if the authority cannot identify its Significant Environmental Aspects (SEAs) that is, those activities, products and services that may impact on the environment directly, or indirectly. It is a most important document in terms of liability and responsibility of Fécamp..
4. Consideration is given to appropriate budget allocation for Environmental Management programme and monitoring.
5. Documentation is completed to detail environ-

mental management responsibilities.

6. Elements of the training Programme are instigated inclusive.
7. port of Fécamp gives strong consideration to the publishing of a short Environmental Report. It's active participation in SuPorts is worthy of mention as is completion of this SDM.
8. Puts in place procedures to exchange environmental information with Stakeholders including external parties. Such procedures can raise the port's profile and build influence.
9. An Environmental Programme and action plans are prepared. they do not need to be too elaborate but can be developed through a series of phased initiatives to 'start the ball rolling' in terms of implementing an effective Environmental Management System (EMS) - see comments.
10. A Monitoring Programme is introduced to track progress of Environmental Condition/ quality and the Environmental Management System itself. It is strongly recommended that the Port of Fécamp considers the adoption and achievement of PERS as a practicable step

towards developing its Environmental Management Programme further. Details and guidelines may be obtained via the ESPO/EcoPorts website ([www.espo.be](http://www.espo.be)). The Port could pursue the Port Environmental Review System (PERS) as the next phase of its EMS development as a cost and time-effective tool to enhance further its capabilities (see [www.espo.be](http://www.espo.be)). Many port authorities have used PERS as a stepping-stone towards ISO14001 and found it to be a user-friendly option. The Port could proceed at its own pace and build internal capacity as it compiles the information ready for PERS. The system is based generically on the ISO14001 approach so that time and effort invested in PERS would be of direct value if the Company decides to develop its EMS further and apply for ISO14001.

On the basis of this analysis it may be stated that the Port of Fécamp is well-positioned to consolidate and develop further its Environmental Management Programme. The SWOT, GAP and benchmark performance indicates the positive potential for continued development.

## PORT OF LE TRÉPORT

Located in Normandy, at the edge with Picardy, and at the exit of the industrial valley of La Bresle, the port of Le Tréport represents a typical local port with both fishing and commercial activities.

Each year the port hosts circa 100 commercial vessels and imports or exports 300 000 tons of goods. The main imports and exports commodities originate from or depart to England, Belgium, Germany, Netherlands, Italy, Greece, Morocco, Turkey and Russia.

The commercial port of Le Tréport is specialized in the shipping and handling of liquid (Phosphoric Acid) and solid bulk goods such as Salts, Fertilizer, Bentonite, Granusil, shingle, sea-dredged gravel, shredded tyres.

### CONCLUSIONS AND RECOMMENDATIONS:

The SDM was completed comprehensively with sufficient detail and explanation to allow reasonable interpretation of the current Environmental Management of the Le Tréport Port Authority's Programme and associated arrangements. The document demonstrated a range of response options indicating an accurate and open testimony to the situation in the Port of Le Tréport. The SDM revealed examples of established Strengths and in other sections there are Opportunities for further development. Instances of perceived Weaknesses and Threats are also identified.

Le Tréport Port Authority can therefore see its own performance relative to the current European

benchmark. Useful background information to assist the reviewer with context was obtained from a variety of industry documents and web-based sources.

### SWOT ANALYSIS:

The responses to the various sections were analyzed in terms of standard SWOT procedure in order to assist in prioritizing action for improvement. The analysis sheets were reviewed against the expected or anticipated best practice responses expected from a management system performing to high standards of effective delivery. The European Benchmark performance percentages listed in the analysis table (separate document) refer to the 2012 (latest available) responses. The results of the survey by the European Sea Ports Organization (ESPO) confirm the trend of general improvement of the port sector's response to its environmental liabilities and responsibilities.

Le Tréport Port Authority has a reasonable base from which to further develop its Environmental Management Programme. There are established Strengths within the existing provisions and an obvious willingness to address key issues through completion of this SDM.

However, the GAP analysis of 10.71% (PERS) and 6.58% (ISO14001) indicates that there are substantive enhancements that would be required for the Port Authority to achieve its objective of achieving a recognized standard of EMS. The open and comprehensive response to this SDM



Suction dredger in the outer harbour of Le Tréport

indicate an awareness and recognition of the steps that would need to be taken in order to obtain certification of the port's EMS. In particular, it is strongly recommended that (in conjunction with the 'Comments' in the review):

1. The Port develops a comprehensive POLICY incorporating appropriate the elements listed as appropriate.
2. An Inventory of legislation should be compiled as a matter of urgency.
3. An Inventory of significant Environmental Aspects should be compiled as a matter of priority.
4. Consideration should be given to allocation of suitable budget for development of EMS.
5. Identification of personnel and responsibilities.
6. Address the training provisions.
7. Consider producing Environmental report.
8. Investigate application of the most appropriate communication tools for Le Tréport.
9. Consider introducing a selective monitoring programme.

Le Tréport may develop its EMS at its own pace and schedule. Experience from other small ports suggests that repeating the SDM process in approximately 12 months is beneficial in tracking progress, confirming priorities and comparing benchmark performance.



### THE ECOPORTS TOOLS AND METHODOLOGIES WORKSHOPS

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The workshops in the SuPorts project were organised in a number of countries: France, Greece, Lithuania, Italy, Spain, and the UK. The workshops were set up as an introduction to the Tools and Methodologies, exchange of good practice experience, and training in the implementation of the Tools. A new Tool was developed and tested in the workshops to structure discussions on the introduction of Sustainable Port Strategy and Policy. Other new Tools have been developed and tested to assist ports, governments and companies with an operational task in the logistic chain to operate ports and logistics in a sustainable way.

The workshops created a good platform to exchange good practice experience. In all workshops a representative of a larger, Ecoports certified, port was invited to share experience. A number of lessons were learned from the representatives of more than 35 participating ports. An important lesson for organising future projects is that it is very difficult to get the participation of representatives of local ports workshops on Port Environmental Management in a European or in a national setup. Local ports have very limited personnel. Personnel fulfil often more than one task, multitasking seems to be the rule. It is almost not acceptable for them to interrupt their work for a seminar or to transfer their work to a colleague. In addition to this, their budgets are too limited: travel over longer distances is therefore only allowed in a very limited number of cases or not at all.

Several lessons have been learned from the

meetings. Some of them are mentioned below. The lessons touch upon all fields of activity of the port: Strategy development, Management, Port Exploitation, Resources, Knowledge, Skills, the use of Ecoports and ECOSLC Tools, the need for additional Tools, a policy and action plan for port-city – region relations, and for a structural way to exchange good practice experience. In annex II a listing is shown of lessons learned, as they have been mentioned by participants in the SuPorts workshops. These lessons have been validated by ECOSLC in discussions in workshops with other local ports in Europe and extended with lessons learned by these other local ports in Ecoports Tools and Methodologies workshops organised in other, on-going, European projects and in conferences and seminars where SuPorts project results have been presented and discussed. (33,34). In Annex IV specific case descriptions are given for 5 ports.

### SUMMARY

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#### I. THE WORLD OF PORTS AND LOGISTICS IS CHANGING

New insights in environment and sustainability, innovations in management and production, sales and logistics, scale enlargement, globalization, sustainability as guiding principle, are just a few of recent influences that started restructuring processes that will change the existing structures and business models of ports and logistics. The changes can be as diverse as the increasing scale of containers ships, where 6000 TEU was considered as the very maximum ship size, and in a few years 9000 - 18000 TEU seems to become the norm for long distance container transport. In addition there is also the increasing scale of container cranes and terminals as well as an increased scale of the companies who are running them. Where a container terminal company in a port was a local company as the norm, now large industry groups are active each running 50 to 70 container terminals all over the (port) world. Recent developments include also the collaboration between competitors in a logistic chain or between governmental organisations with operational tasks in a logistic chain such as customs, and ports and logistics companies - no longer on a regional or national but on a global scale. Cooperation between ports on such a scale is not a reality, but the process that creates large scale companies that run ports all over the world seems to have started. IT plays a vital role in ports and logistics. Influence of stakeholders in the daily management of ports and logistics is increasing. The number of laws and regulations (already more than 160) is also increasing and all aimed

at reducing the negative environmental effects of ports and logistics. In recent years a number of EU directives and policies started to support or require changes in behaviour and investments to deliver sustainability in ports, cities, regions and countries.

#### II. PORTS AND LOGISTICS ARE CHANGING NOW

These changes have led to a greater complexity of processes, more knowledge about the details of them and additional skills to deal with them. Government and the market require therefore different types of management, improvement of management quality and of the quality of products and services, connected with ports and logistics. IT, the Internet and many new tools and systems connected with them deliver far more information than ever before on all processes that make ports and logistics function. This information can be used to run ports and logistics in a more sophisticated, smart way. This new information offers the option to combine information that earlier could not be combined, leading to new insights and to new added value products and services but also to different business models especially in organisation and finance. Where competition between companies is now the rule in the ports and logistics sector, this is changing now to competition between logistic chains and to competition between networks. Cooperation and collaboration between competitors in order to run together an end-to-end logistic chain is emerging fast partly driven by e-commerce and

Internet buying. The EU started stimulating the development of E-government, E-maritime and E-logistics especially on the part of the government to increase efficiency and to lower the costs of the government tasks and role in ports and logistics and combines this insight with improving sustainable behaviour.

### III. SUSTAINABLE MANAGEMENT EXTENDS THE ROLE OF ENVIRONMENTAL MANAGEMENT

A switch to sustainability in ports and logistics has broadened the concept of making them more environmentally friendly. Reduction of environmental impact of ports and logistics is in this approach, no longer enough. The social, environmental and cost-effects have to be taken into consideration at the same time in an integrated management approach. As a result improving the environment is seen in more cases now as a means to improve economics at the same time. These on-going changes in the world of ports and logistics require new investments, knowledge, skills, organization models and financial models for ports and logistics.

This is a big challenge for local ports. They are by definition small, with a limited number of personnel, financial resources and equipment. In many small ports a structure to work with an Environmental Management System and sustainability is not yet in place.

### IV. NEW PRACTICES, NEW STRUCTURES IN PORTS AND LOGISTICS

In recent years a number of innovative approaches in small and medium sized ports are seen that offer new options to deal with these new requirements from the market and legislation. They can vary between starting cooperation with nearby local ports or with a nearby large port, or integration of the local port's organisation in new commercial ports organization.

These new practices can also lead to re-assessing the port's strategy in order to become sustainable and connected in ports and logistics networks. This can also lead to reconsideration of the impact of products and services actually seen in the local port, on the port finance and functioning of the port, on products such as cruise-shipping and marinas, connected with the tourism industry; or transshipment facilities connected with warehousing and logistics industry, or fishing activities connected with the food industry. The creation of local ports with new and not foreseen connections with the regional, national and international networks of their local industries is another new approach of the port strategy and policy. Environmental impact reduction and management continues to be a high priority of the port to keep its license to operate as an important element of its sustainability. Cooperation, being connected to networks for the exchange of good environmental practice experience is a way forward. Introduction of this new approach is done in a step-by-step-manner. This process of improvement starts with the

creation of awareness in the ports and logistics organisations, introduction of a basic level of port environmental management and port sustainable management and their standards, and certification after validation by an independent auditor. From there it is easier to achieve ISO or EMAS quality management levels.

### V. SUSTAINABLE PORTS AND LOGISTICS: SUSTAINABLE STRATEGY, POLICY, MANAGEMENT AND CHANGE MANAGEMENT

A step-by-step approach provides a strong basis for the process. It makes the management level and the operational level of ports aware of the need and the effects of environmental and sustainable management. In the SuPorts project this was the approach taken. Ecoports Tools and newly developed ECOSLC Tools that assist in the introduction of sustainable port management were integrated into the Project. The aim of the SuPorts (Ecoports Tools and Methodologies) workshops has been: the creation of awareness of port environmental management, and the introduction of the Tools and of the option for certification. Experienced larger ports that have been Ecoports certified earlier exchanged their experience with the smaller ports in the SuPorts workshops. Ports that introduced SDM are recognized as "Ecoports Ports" on the websites of ESPO and ECOSLC. Ports that have been certified are recognized as "Ecoports PERS certified port". The test and introduction of the new developed ECOSLC Tools can assist local ports in the

development and introduction of sustainability in ports and logistics. The approach also starts with creating awareness and doing a self-diagnosis. In effect this starts a process of change of existing structures in the ports organization, and in the ports and logistics sector. In the SuPorts project more than 35 local and medium size ports have attended the Ecoports Tools and Methodologies and its certification in workshops in 6 countries. The Tools also deliver a benchmark of the results against the sector's average level.

Change creates winners but also losers and at the same time options for potential losers to adapt. Change management is needed to facilitate this renewal process of the sector.

Change in management regime identifies progressive, pro-active ports with strengths – and reactive or negligent ports with threats and weaknesses. The sector itself benefits from a combined, continuous improvement in benchmark performance.

Sustainable Port Strategy and Policy looks into the basics of the port and logistics structure, checks the quality of its management and finance system compares the quality of its product and services with those of its competitors and delivers an approach to connect the port with new developments in this sector in a sustainable way.

## LOCAL PORTS POLICY RECOMMENDATIONS

### 1. BARRIERS

From the overview in this report of the actual development in the ports and logistics sector and the position of small and medium sized ports, the following 6 barriers could be defined that make it difficult for small and medium sized ports to stay or become connected with the new developing ports and logistics networks, and hub and spoke systems:

1. Lack of resources,
2. Lack of personnel
3. Lack of information, knowledge and skills
4. Lack of standards in small port's operations
5. Lack of infrastructure
6. Lack of possibilities to exchange good practice experience in a regular or structural way

### 2. MAIN RECOMMENDATIONS

A number of detailed problems are connected with each of these barriers. The following recommendations could deliver the options for solutions:

1. A small port's system for financing small ports functioning in the ports and logistics networks.
2. The setup of a system for small ports to enter into 'ports and logistics collaboration networks' for the public as well as the private partners involved.
3. The creation of a knowledge system (not centre) for specific small ports issues.
4. A system for e- government and e-maritime issues dedicated to small ports requirements adjacent to the on-going legal and operational developments in this field.

5. The professionalization of the very specific survival approach of small ports of multi-tasking of its personnel.

6. The setup of a benchmarking system for small ports.

7. A specific interconnected regional, national and international system for the exchange of good practice experience that is usable for small ports within the limitations of their resources.

### 2.1. PORT FINANCE

The small port's income from harbour dues and land lease may be not high enough to pay for the investments needed to adapt to larger scales ships, terminals and IT systems required. Other options can be developed looking to good practice experiences that can be diverse:

- The development of other income generating activities such as by playing a role in the tourist related activities of its port (cruise, marinas), its logistic centre function
- The setup of commercial cooperation with local companies with a high impact on the port's continuity
- The collaboration with nearby larger ports that already have a transport connection with companies in its port area or in the port city or region
- The integration of the small port in the nearby large port's organization and development.

The financial resources of the port-city or port regional government are not high enough to run the risk of high level further investments in the port. Several options are open for staying con-

nected in further development but to an acceptable level of risk, for example:

- Customization of good practice solutions found in similar situations dedicated to the local port's needs, such as via commercialisation or privatisation of the port as a whole or of parts of it.
- New types of Management have to be introduced

1. Risk Management: financial and environmental
2. Reputation Management
3. Quality management systems and standards for sustainable ports and logistics: top down and bottom up
4. Stakeholder Cooperation Management: use their knowledge, get their support
5. Asset Management: monitor results of all of your assets(23,44)

### 2.2. COLLABORATION

Collaboration can be seen as a next step in cooperation. This involves sharing of resources and systems or integrating parts of the organisation in a full port's and logistic chain approach. Collaborating partners can be considered by the market as one organisation. This offers new and better options to structure finance and organise small port's activities. Integration is again one step further. It is not an easy way because the different public and private organizations involved in this process will consider this approach in a first reaction as a threat for the continuity of jobs and the entire organisation, where, in fact the contrary situation is the case. A series of tools are required and in fact are available as has been

shown in this report. A system to structure the process towards collaboration can be achieved by creating awareness, bringing partners onto the same level of knowledge, introduction of the same standards or of easy to use interfaces that connect persons and systems etc. Some of the SuPorts partners could act as a starting group, for example first in:

- Stakeholder Cooperation Management
- IT port community networks and nautical port authority networks
- Connection of the port with hinterland logistic systems and networks

### 2.3. SPECIFIC SMALL PORTS KNOWLEDGE

A small organisation that lacks resources and at the same time needs to fulfil legislative and market requirements finds in practice ways and means to do so on a certain basic acceptable level but in a number of cases only a substandard level is possible. Solutions found are interesting and could be professionalized and in so doing help to bring the results to an acceptable level. Close cooperation between personnel of the port authority and companies in the port, assisting each other in daily operational problem solving are just a few of the issues here. The introduction of quality management systems, standards and technical solutions could assist here to improve results.

### 2.4. E-MARITIME, E-GOVERNMENT

Several EC policies and programs (5) stimulate

the introduction of IT systems and standards in ports and the chain. They aim to make administrative procedures and decision making processes more efficient, cost effective, transparent and objective. At the same time e- government does not prevent governments for entrepreneurial initiatives where they would be needed but where the market does not start them due to too high administrative, political or other barriers.

One of the important results is a substantial reduction of failures and therefore of the costs of repair of these failures. In logistics-related companies these costs can be as high as 30% of their yearly costs. The systems require high investments in IT hardware and software. Hardware and software may have to be renewed every 2 or 3 years. That means that maintenance costs of ports increase and new budgets are needed. Introduction of these systems start the process of permanent training of personnel. Here too new budgets are needed. At the e-maritime conference of November 2012, organised by the European Commission (5), one of the questions discussed was how to connect small and medium sized ports with their small budgets and limited personnel. A definitive answer was not yet identified. Some small ports however, found SMART solutions, to become connected to the larger networks, but a stimulation and exchange of experience program would be needed to connect the more than 1000 small ports in Europe.

### 2.5. BENCHMARKING SMALL PORTS PERFORMANCES

In a rapidly changing world of ports and logistics, and a world of increasing competition, ports need to know how good they are and if their improving priorities are the right ones. They also need to identify if their strategic and investment plan concentrates on the right issues. Where ports will be connected increasingly to national and international networks, objective information is needed about the national and international competition position of the port in order to make the right decisions. Benchmarking port performance against the sector's average delivers a much needed neutral and objective insight. In this report two basic 'Self Diagnosis Methods' have been described as used in the SuPorts project that deliver this option of benchmarking. That is, the port environmental Self Diagnosis Method of Ecoports and the Sustainable Port's and Logistic Chain Self Diagnosis Method of ECOSLC.

A database for this benchmarking is available in Ecoports/ECOSLC Foundation. Continuous organisation of local ports workshops to teach the use of self-diagnosis systems and benchmarking could be of help for local ports in preparing their sustainable strategies and policies.

### 2.6. STRUCTURES FOR LOCAL PORTS FOR THE EXCHANGE OF GOOD PRACTICE EXPERIENCE.

In the SuPorts project international, European, meetings of local ports for the exchange of good practice experience have been tested. In order to be successful employees with responsibilities in daily operations in environment and logistics

have to attend because they have the critical knowledge of practical problems and solutions. It pointed out that this is not a workable approach for most small ports. The regional workshops for local ports have on the other hand been very successful to exchange good practice solutions between operational persons. The reason was very simple and pragmatic. Personnel of small ports are needed continuously to concentrate their time on port operations and are not allowed to attend workshops of 2 days or even 1 day. Small ports don't allocate budgets for travelling for these activities due to limitations of their total budget. A workshop on a short distance of a small port however can be well supported. In all of these workshops in the SuPorts project a large port was attending in order to share good practice experience. Also, in each workshop the results of other workshops have been shared. The overall results have been presented in national workshops and in European Conferences for ports. In this way a bottom up approach was followed that in the end leads to the same result: a European approach. This setup requires a strict and neutral organizational structure and a central database.

# CONCLUSION

- The world of ports and logistics is changing fast. Substantive, large-scale increases in the size of sea ships along with legal and commercial actions to reduce the environmental impact of the growing ports and logistics sector is having a profound effect on port management. In addition, legal actions to improve safety and security in ports and logistics, regulations to make public operational tasks that influence the functioning of ports and logistics much more efficient (e- government) coupled with the very fast upcoming new systems of the use of IT-systems and the Internet in all parts of ports and logistics operations are leading to a redefinition of the role and responsibilities of ports and logistics, and of the public and private sector organizations with operational tasks in this field.
- The stakes, set by the public and private sector are high: high levels of quality, flexibility, and reliability create a, new, and so far small, group of ports and logistics organizations that are able to achieve the world's highest quality standards.
- Greenfield port developments, such as the Vuosaari Port near Helsinki, show a state of the art environmental and sustainable quality level for ports that can be a guide for their future developments.
- Sustainability has become a leading principle, integrating cost and profit interests with environmental and social interests.
- Redefining this role leads to redefining the organizations themselves, the investments to be done by each of the participants and the way in which they are financed.
- Liabilities have to be crystal clear in terms of environmental issues including such considerations in logistics as improvements of bundling of cargo.
- Ports are running different types of risks and need risk management - financial risk management as well as environment risk management.
- Risk prevention is a key element of risk management.
- Introduction of Quality Management Tools play an important part in risk management.
- Cooperation and collaboration in the field of ports and logistics is an upcoming role model to run ports and logistics as a system. Cooperation between public parties involved in its operations as well as private companies has demonstrated its effectiveness.
- Cooperation poses new challenges especially for cooperating competitors or cooperating “competing” governmental organizations.
- Change management is needed to get the support of organizations and their employees, and to lead them towards the new ways of thinking and acting.
- Logistic chain approach for collaboration and sustainable ports and logistics management and networking are seen as upcoming organizational principles for introduction of sustainability in ports and the chain.

- Small and medium sized ports form a special category in this changing world; they have experienced general, sector-wide problems but also specific challenges seen only in small ports organizations and operations. The gap between them and large ports in the implementation of systems and new skills becomes larger and present challenges to stay connected or become connected to the world of ports and logistics networks. the situation is often caused by limited personnel and resources, lack of the newly needed knowledge and skills, and sometimes complicated and slow operating decision making systems
- Basic Quality Management Systems and Tools such as Ecoports Tools deliver for all ports, small and large, an easy- to- introduce first step in port environmental management. They are developed by ports - for ports and contain the option of benchmarking and certification.
- Exchange of good practice experience may well be a time and cost-effective option for small ports to get connected with the newest insights and developments in port and logistics operations, and in the implementation of port related legislation.
- Exchange of good practice experience is only effective in a person to person approach that gives background information that is not available in any other way.
- Small ports can deliver efficient, cost effective and sustainable connections to the ports and logistics networks for cities, regions and remote areas when they are integrated in ports and logistic chains networks, and hub and spoke systems.
- An efficient, low cost connection offers the basics for companies to settle and to create income and jobs.
- There are a number of barriers for small ports and a number of problems connected with them that prevent small ports from becoming connected or that make it at least difficult to take this step. For example, the fact that small ports lack a network for the exchange of good practice experience because small organizations with sometimes only 7 employees cannot make personnel available for these meetings and cannot accept the use of budget for travel.

## 1. PORT ENVIRONMENTAL SELF DIAGNOSIS METHOD (SDM).

This is to check to what level a port is already active in port environmental management issues. SDM can be used to find gaps in the environmental management activities and to define environmental priority actions.

Below a part of the SDM is shown to clarify its functioning with respect to answers, Gap analysis related to EMAS and ISO and benchmark against the port' sector average.

## 2. BENCHMARKING

Ecoports/Ecoslc has a database of results from a large number of ports in and outside Europe, and can therefore benchmark the result. It is possible for participants/users to receive the benchmark.

Benchmark of the results against the port sector's average delivers an objective indication of the actual position and the steps needed for improvement.

M4	ENVIRONMENTAL TRAINING					
Nr	Question	EMAS	ISO	1998	1999	2000
4.01	Are all employees aware of the importance of compliance with environmental policy?			EMS		
4.02	Are all employees aware of the potential environmental effects of their work activities?					
4.03	Are all employees aware of their responsibility to conform to the environmental policy and management objectives?					
4.04	Are all employees aware of consequences of non-compliance?					
4.05	Are all employees aware of the environmental benefits of improved performance?					
4.06	Are all employees aware of the economic benefits of improved performance?					
4.1	<b>Have the environmental training requirements of employees been identified?</b>					
4.21	Are relevant Port personnel trained in standard environmental operating procedures?					
4.22	Are relevant Port personnel trained in pollution prevention and reduction equipment use?					
4.3	<b>Does the Port authority have an environmental training program for its employees?</b>					
4.4	<b>Do you maintain a full record of environmental training for each employee?</b>					
4.51	Trainees name, location and job description?					
4.52	Nature and date of training course?					
4.53	Trainee feedback?					
4.54	Effectiveness of training?					

## 3. GAP AND SWOT ANALYSIS

It is possible to receive a GAP and a SWOT analysis of this result. This result is then compared with the requirements of ISO14001 environmental quality management. It then becomes visible as to what is already in place and what still has to be done to achieve ISO14001 standard.

## 4. FORMAL RECOGNITION

A port that has filled out SDM will formally be recognized as an "Ecoports Port" and will be mentioned on the ECOSLC and ESPO website.

## 5. PORT ENVIRONMENTAL REVIEW SYSTEM (PERS)

This is a basic standardized port environmental management system that can be introduced in Port Authorities as a first step to organize environmental improvement. A central element in this system is the so-called aspect register or inventory. This reveals the environmental aspects of the functioning of

SWOT	EUROPEAN RESPONSE			
	ANS (%)	YES (%)	PARTIAL (%)	NO (%)
	100	31,3	46,9	21,9
	100	40,6	50	9,4
	100	28,1	40,6	31,3
	96,9	19,4	45,2	35,5
	96,9	19,4	61,3	19,4
	96,9	16,1	48,4	35,5
	93,8	26,7	–	73,3
	100	25	40,6	34,4
	100	40,6	43,8	15,6
	96,9	16,1		83,9
	96,9	35,5		64,5
	59,4	57,9		42,1
	59,4	57,9		42,1
	59,4	42,1		57,9
	59,4	26,3		73,7
	87,7	32,2		



the port and the persons, responsible for implementing rules and legislation that govern these aspects. This is a specific port instrument. Port Authorities have, as such, limited responsibility for environmental issues. The companies in the port area are held accountable for their environmental impact. However, the port authority may reasonably be expected to know what is going on in the port area and act accordingly even if the responsibility is elsewhere. The Environmental Liability Directive requires this attitude. PERS is a basic instrument that assists here.

Below the central element of PERS is shown: the overview of all relevant port related environmental aspects and connected issues.

## 6. CERTIFICATION LEADS TO ECOPORTS (PERS) CERTIFIED PORT

If the PERS is introduced in the port's organization an independent auditor, Lloyds Register, may be asked to validate the results and eventually advises ECOSLC that the port has reached the required standard and can be certified.

Below an example is shown of the Ecoports PERS Certificate that can be received by ports that have been validated positively by Lloyds.

## 7. ECOPORTS NETWORK TO EXCHANGE GOOD PRACTICE EXPERIENCE

The process of permanent environmental improvement is a process of introduction of good practices. Here the costly risk of re-inventing the wheel could come up. The network of colleagues from other ports can help to learn about good and bad practices in improving the environment. This helps to lower the threshold to find solutions in the daily operations of a port can keep the costs acceptable and can speed up the introduction of solutions. The Environment has consistently been acknowledged as pre-competitive throughout the sector.

ENVIRONMENTAL ASPECT REGISTER					PAMPUS
Ref. Nr.	(SUB) DEPARTMENT, TENANT, OPERATORS	IMPACT ON	RESPONSIBLE PERSON / ORGANISATION	LEGAL AND OTHER REQUIREMENTS	REMARKS
<b>Aspects / Port / Harbour Department</b>					
H1	Bunkering-spillage of fuel	Land / soil	Harbour master	Soil protection act, § 5-2	containment
H2	Ship movements-noise	Area nuisance	Harbour master	Permit 1, requirement 23	monitoring
H3	Ship movements-waste removal	Land / soil	Harbour master	Permit 2, requirement 5,6,7	facility
H4	Ship discharge ballast-wastewater	Water	Harbour master	Permit 2, requirement 18	monitoring
<b>Maintenance / Department</b>					
M1	Dredging-sediment disposal	Land / water	Port engineer	Permit 2, requirement 8-12	bi-yearly
M2	Dredging-release of contaminants	Water	Port engineer	Habitat law, § 4-3	bi-yearly
<b>Environmental Department</b>					
E1	Port operations-noise	Area nuisance	Environmental engineer	Port Noise Plan, section 4	monitoring



Below: 5 small ports that received their Ecoports PERS certificate Certificate during the Award Ceremony in Piraeus in February 2013, after they participated in the Ecoports Tools and Methodologies workshops in SuPorts: Piombino (Italy), Corfu, Kavala, Lagos, Volos (Greece).



## 1. SUSTAINABLE PORT POLICY SELF DIAGNOSIS METHOD

This is a new Tool especially developed to structure discussions in introduction and training workshops for sustainable local port management. The Tool is based upon good practice experience of Sustainable Port Strategy and Policy makers of ministries, regional governments, local governments and Port Authorities. Below: an example of some of the issues of sustainability discussed in the workshops by using a structured approach.

## 2. ECOSLC BASIC SUSTAINABLE PORTS AND LOGISTICS REVIEW SYSTEM

The system assists ports and logistic companies to introduce a sustainable end to end management system by collaboration following certain rules, standards and key performance indicators. It allows for a step by step improvement. The first introduction may lead to a level 1 quality management; after improvements have been introduced in the management system a renewal can lead to the next level 2 and so on. The key element is, like in PERS, the sustainable logistics Aspect Register, showing responsibilities and liabilities. Sustainability is expressed here in terms of for example environment, costs, quality and security.

## 3. ECOSLC CERTIFICATION

Ports and logistics companies that can prove that they collaborate in an end to end logistic chain in a sustainable way can be validated by the independent auditor Lloyds Register who eventually can advise to certify.

## 4. FORMAL RECOGNITION

ECOSLC certified ports and logistics companies will formally be mentioned on the ECOSLC website as ECOSLC certified port or company. By starting collaboration with other certified ports and companies, sustainable logistic chains can be created. This again offers the option to certify a sustainable logistics chain.

## 5. ECOSLC NETWORK FOR EXCHANGE OF GOOD PRACTICE EXPERIENCE.

Implementation of good practice experience in sustainable chain management can be facilitated by exchange of good practice experience of other ports and companies that are collaborating on a sustainable logistic chain basis. This reduces costs and adds value by creating an option for new products and services in the daily management of ports and logistics activities.

SPP SDM SUSTAINABLE PORT POLICY SELF DIAGNOSTIC METHOD	
What type of organization is your port ?	
A.	Landlord
B.	
C.	
What does your government expect from having a seaport, what are the positive effects ?	
A.	
B.	
C.	
What are the negative environmental effects of your port ?	
A.	
B.	
C.	

## 10 PARTNERS IN 7 EUROPEAN COUNTRIES



**1 DÉPARTEMENT DE SEINE-MARITIME** (ROUEN, FRANCE) French local authority with the responsibility of managing the ports of Fécamp and Le Tréport. Seine-maritime County Council is the lead partner of the project, delivering coordination, as well as the financial and administrative responsibility.



**2 ENTE PÚBLICO PORTOS DE GALICIA** (SAINT-JACQUES-DE-COMPOSTELLE, SPAIN) Spanish public and local authority responsible for the management of 122 local ports in Galicia.



**3 EAST SUSSEX COUNTY COUNCIL** (LEWES, UNITED KINGDOM) The Council has a responsibility to promote and enhance local biodiversity and maintains an overview of coastal management and planning in the County;



**4 ECOSLC FOUNDATION** (AMSTERDAM, THE NETHERLANDS) Trust founded by big maritime ports for the development of expertise in environmental management applied to ports. It aims at promoting management tools for local ports.



**5 AUTORITÀ PORTUALE DI PIOMBINO** (PIOMBINO, ITALY) Public Port Authority for the ports of Piombino and the island of Elbe;



**6 CITTALIA RESEARCH FOUNDATION OF THE NATIONAL ASSOCIATION OF ITALIAN MUNICIPALITIES** (ROME, ITALY) Cittalia is a European research centre dedicated to cities and municipalities that deals with urban policies and planning by promoting innovation and sustainability.



**7 ISTITUTO SUPERIORE PER LA PROTEZIONE E LA RICERCA AMBIENTALE** (ROME, ITALY) Italian Public Research Body specialised in environmental studies.



**8 KLAIPĖDOS VALS-TYBINIO JŪRŲ UOSTO DIREKCIJA** (KLAIPEDA, LITUANIA) Public Authority in charge of the management of the port of Klaipeda;



**9 ARISTOTLE UNIVERSITY OF THESSALONIKI, TRANSPORT SYSTEMS RESEARCH GROUP (TSRG)** ΑΡΙΣΤΟΤΕΛΕΙΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΘΕΣΣΑΛΟΝΙΚΗΣ (THESSALONIKI, GREECE) Ερευνητική



**10 CORFU PORT AUTHORITY S.A** (CORFU, GREECE) Public Body governed by Greek law. It is a Greece based company involved in the management and operation of

Ομάδα Συστημάτων Μεταφορών (ΕΟΣΜ) ΤSRG is a research team of AUTh promoting research and offering services related, among others, to port, environmental and transport issues.

Corfu port. Its facilities include a conventional port, passenger terminal, duty free commercial area and others. Services provided include coastal shipping and cruise liner passengers, ship anchoring, mooring and berthing, as well as car parking

Photographs courtesy of the SuPorts project partners

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The Interregional Cooperation Programme INTERREG IVC, financed by the European Union's Regional Development Fund, helps Regions of Europe work together to share experience and good practice in the areas of innovation, the knowledge economy, the environment and risk prevention. EUR 302 million is available for project funding but, more than that, a wealth of knowledge and potential solutions are also on hand for regional policy-makers.

