Environmental Management Strategy for Improving Ecological Status of SEE Ports

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ABSTRACT: Significant progress of Southeast European (SEE) ports towards achieving high standards of environmental quality may be noted by the provided SWOT Analysis of the environmental protection measures and practices in ten SEE ports. It is the result of implementing both preventive (compliance with authorization regime; Environmental Assessment of plans; Environmental Impact Assessment of projects) and active (EMS or some EMS elements implementation; planned change in cargo turnover structure, equipment modernization and improvement of port infrastructure, risk reduced and etc.) measures to protect the environment from the negative impact of port activities, related to the port operation and development. However the context analysis of environmental situation in Southeast European ports (TEN ECOPORT and ECOPORT 8 projects of SEE EU program) shows growing sensibility of the management authorities to the environmental issues and objective difficulties for development of appropriate strategy and environmental policies due to the following reasons: the complex legislation which has not found yet the balance between the business interests in sea transport and the environment protection and poor enforcement of the regulations. The most effective way to overcome these realities, including the weaknesses, and to avoid the threats is a close cooperation between the ports of the SEE area in the field of environment on the base on a common management strategy for improving ecological status of SEE ports. It can be summarized in several strategic goals and activities: 1) Assessment of the current environmental status of the port waters, air, soil and maritime habitats and identification of significant environmental impacts from port activities and ships in ports; 2) Development and adoption of an environmental management system comprising environmental risk assessment, land & maritime use planning and ICZM' instruments as important parts of it; 3) Implementation of environmental management strategy and common policies in ports of the SEE area through developing and implementing intelligent environmental port management and information systems using integrated technologies for environmental risk protection, innovative methodologies and instruments for mapping the critical issues for each port involved and highlighting the common key-elements, as basis of the Common Action Plan aimed to protect ports area and surrounding ecosystem. The application of environmental management strategy in TEN ECOPORT project aims to capitalize the gained experience of the 10 SEE ports and to focus on the analysis of the linkage between sustainable and virtues processes implemented in ports and the results foreseen through a close chain approach which consists in verifying continuously the efficiency of the processes chosen.

KEY WORDS: Ports, Environmental Management Systems (EMS), Strategy approach, TEN ECOPORT.
1 INTRODUCTION

In European transportation strategies maritime traffic has an important role due to its relatively low environmental impact and costs. Nevertheless, the intensification of such traffic raises serious environmental issues for coastal zones and port waters as well as for the surrounding urban areas. Significant progress of Southeast European (SEE) ports towards achieving high standards of environmental quality may be noted by the provided environmental management strategy for improving ecological status of SEE ports in the implementation of two European projects ECOPORT 8 and TEN ECOPORT founded by South East Europe Program, (www.ecoport8.eu; www.tenecoport.eu). It is the result of implementing both preventive (compliance with authorization regime; Environmental Assessment of plans; Environmental Impact Assessment of projects) and active (EMS or some EMS elements implementation; planned change in cargo turnover structure, equipment modernization and improvement of port infrastructure, risk reduced and etc.) measures to protect the environment from the negative impact of port activities, related to the port operation and development.

In the recent years the ports are the hub-point of the Core Regional Transport Networks, as precursors for the TEN-T comprehensive network in the South East Europe. In this direction, a great responsibility was entrusted to the port authorities: they are the authority appointed for the Control and the real application of the Environmental Manage System, being the nodes that ensure the environmental sustainability of the intermodal transport networks, to them is entrust the management of the public area in which operate a lot of external enterprises that ensure the economic development of the cities and their environmental quality.

There are two steps to ensure the sustainable development of the sea-corridors: firstly working on sustainability of the process - the implementation of common policies creating same opportunities in the involved countries and not affecting the concurrency among ports - and secondly verifying the quality of process' results. This second step is harder to achieve than the first one because of the difficulty in defining the link between implemented processes and the foreseen results. The consideration makes necessary to follow up the process step by step, monitoring intermediate results and identifying the critical points in order to modify, over time, the implemented programs through a closed chain approach. It is necessary the involvement of all stakeholders managing activities related with ports, in order firstly to address directly responsibilities and to have timely responses and shared possible solutions in a peer relationship with Port Authorities.

The new vision in environmental strategy of SEE ports is focused on the creation of a permanent discussion platform organized on two levels: the first one among the port authorities - aimed to establish common rules - and a second one between ports and stakeholders operating within port area, aimed to verify the process results and to propose amending over time of the Environmental protocols.

The ECOPORT8 project activities have established a first port-network for developing, strengthening and transferring coordinated initiatives of cooperation for eco-management of the sea routes. Nevertheless, the project highlights some obstacles to define shared environmental policy due to different regulatory system in SEE countries. Moreover, the free concurrency regime characterizing port operators makes necessary to reduce production cost, with the consequence that an expensive policy will be not applied unless it is imposed by law.

A second consideration inspiring the TEN ECOPORT project (the extension of ECOPORT8) is the extensive review process of the trans-European transport network policy (TEN-T) during the last years. The main innovation put forward in the new policy of TEN was the concept of a "core network" as a part of a dual layer planning approach. This approach, broadly supported by the stakeholders, has established the importance of the regional networks for the future TEN-T development that are set in order to enable further economic growth, economic and social cohesion. In fact, one of greatest difficulties in the increasing cooperation among SEE Countries, especially those coming from the Balcanic area, is the lack of efficiency in people mobility. At the moment the ports are one of the greatest opportunities for increasing the relationship among SEE Countries and as a matter of fact, the ports observe an increasing trend in passenger mobility that are confirmed by the collection and analysis of data related to all features, traffics, services and facilities, operators and activities in ports. Therefore, the enhancement of the Core Regional SEA Network, as precursor of TEN networks, has led to update the goals with this new vision.
2 ENVIRONMENTAL POLICY AND COMMON STRATEGIC APPROACH

Through the Context Analysis of SEE ports (www.ecoport8.eu) it was reached the first result: the diagnostic of the ports involved gives a description of all features, services and facilities, operators and activities in ports; but the diagnostic was also “environmental” with the analysis and comparison of all existing environmental policies adopted by SEE ports, (Branca, T. et all., 2010). In addition with the Standard and SWOT Analysis that enlarged the research to the regulatory field this knowledge on ports allowed to understand the points of strength and the opportunities on which invest and, at the same time, the points of weakness and the threatens to improve. There are different difficulties and problems to improve the environmental performance in PAN-EU corridor 8 port areas such as the absence of well functioning system for environment management (EMS) in line with the international standards, lack of modern system for environment pollution risk assessment, weak integral policy for sustainable development of the ports based on the Integrated Coastal Zone Management (ICZM), ineffective utilization of raw materials, supplies and energy and insufficient use of the opportunities for reuse, recycling, and utilization of waste, not enough internal financial resources, administrative capacity, communication and awareness. Apart of them there are threats that can be regarded from several points of view:

a) Legislative shortcomings

The assessment of the environment protection in SEE ports shows that through the existing legislation a serious progress has been made. At the same time there are sufficient facts and arguments proving the difficulties with the application of the normative documents and the insufficiency of the potentialities for improvement of the environment status at this stage solely by means of the existing legislative arrangement because of the following reasons:

- Too complicated and fragmented environmental legislation which cannot as yet find the balance between the business interests in sea transport and the environment protection in the port regions and coastal zones;
- Not complete absorption of EU’s standards in national legislations, some EU’s laws in fact are still not enforced (totally or partially) in some SEE countries;
- Inadequate supervision by the competent authorities for compliance with environmental legislation;
- Insufficiently effective economic incentives and sanctions for environment protection;
- Lack of a specific environmental policy - specifically regarding the port area (beyond the policy introduced by the Greek legislation, Anastasopoulos D. et all. 2011);
- High costs of environmental law enforcement and poor enforcement of the regulations.

b) Lack of coordination and integrated management of the coastal zones

Policies and legislation on coastal management and their implementation mechanisms have, by and large, been developed separately from each other and on a purely sectoral basis. This can lead to conflicting priorities, a lack of clarity and overall a fragmented approach when it comes to implementing the relevant policies and legislation. A more coherent and integrated approach to coastal planning and management should provide a better context to benefit from synergies, to level out inconsistencies, and ultimately to better and more effectively achieve sustainable development in coastal zone where ports are vital links for transport and trade but important sectors for the south east European coasts are tourism industry, fisheries and agriculture too. That is why coordination and integrated management approach are necessary in the environmental improvement program because

- Mismanagement and insufficient communication and coordination between institutions and other stakeholders responsible for implementing the legislation in the port and port regions are found.

c) Deterioration of the conditions

Coastal zones are under increasing pressure by human activities including development of water transport and port extension, and possible changes in climate. Possible rising sea levels increase the likelihood of storm surges, augment the risk of coastal erosion and flooding, enforce landward intrusion of salt water and further endanger natural buffers such as wetlands, lead to the chronic deficit of sediment balance

As a threat for environment in whole port areas are pointed out:
• Deterioration of the condition in some ecosystems including their biodiversity, which will incur more stringent requirements for issuing permits and EIA for the port;
• Expected increase in ship call and cargo turnover in the port, which is a potential danger to environmental protection;
• Low environmental consciousness;
• Resisting bad practices.

The most effective way to overcome the weaknesses and to avoid the threats is a close cooperation between the ports of the SEE Area in the field of environment on the base on a common SEE port strategic environmental approach and common environmental improvement program.

On the basis of this knowledge are proposed additional instruments for the improvement program for future environmental protection and management of the SEE ports in accordance with the requirements of international and European standards for ports and so are defined the common objectives and methodologies for environmental protection in the SEE port area, (Marinski et al. 2012).

Our SEE program projects aims to improve the quality of ports of the SEE area with the relevant tools for environmental management. The improvement program of the eco-performance of the port areas offered by us develops common strategic environmental approach which encourages the balanced development of integrated port territory system. The common strategic environmental approach is a logic consequence of the performance context analysis of the present state in SEE ports and environmental legislation. It can be summarized in several strategic goals:

The first strategic goal is: **An assessment of the current environmental status of the port waters, air, soil and maritime habitats and identification of significant environmental impacts from port activities and ships in ports.**

This goal has a preparatory character for the corridors ports. By means of the implemented analyses important information about ports environment preservation and the potential significant impacts on it was obtained. But the appraisal of the concrete status and the identification of the considerable effects on the environmental for every single port will be possible after implementation of measurements and monitoring. For two of the corridor ports these are accomplished in the frame of the project. The others will make use of the methodology developed for the monitoring and the elaborated system of indicators for quantitative assessment of the environment status in the port.

The second strategic goal is: **Development and adoption of an environmental management system comprising environmental risk assessment, land & maritime use planning and ICZM’ instruments as important parts of it.**

The environmental management system in the common strategic approach is considered in more enhanced meaning where environmental risk assessment, land & maritime use planning and ICZM’ instruments are part of it.

The third strategic goal is: **Implementation of environmental management system (EMS) in ports of the SEE area.**

The common environmental approach aims towards the sharing of common regulations and standards. The results of both projects provide the port authorities the opportunity to acquire environmental certification (EN ISO 14001, 2004), Figure 1.

At the same time the different legal situation in the involved countries creates difficulties for the unification of procedures which can guarantee a good environmental quality, without affecting the concurrency rules. As a matter, different norms and rules can lead to disparities in terms of competition between ports. The extension of ECOPORT8 project -TEN ECOPORT aims to become a driving force of competition and cooperation among all ports involved toward the same direction: the equaled environmental effectiveness of the sea-networks. The port authorities should face high costs for the strict application of a proper environmental policy that heavily affects the economic interests. In this particular period of the EU zone, under the grip of the economic crisis, port authorities should take into account their double role: on one hand their commercial aspects, and on the other hand, Control and Management of Environmental Policies within the port area.

The TEN ECOPORT project strategy aims also at bridging the lack of a local platform for discussion constituted in two levels: one level between the port authorities based on the peer consultation approach and a second "top-down" level - among ports and stakeholders as fundamental element for the timely
solving of the problem. The platform will be the base for the establishment of a Transnational Task Force as impartial and multidisciplinary subject that can support the ports in the achievement of the results based on EMS system.

The application of environmental policies is urgent for the high impact of the activities performed inside ports. The status of voluntary environmental regulation, jointly with the consideration that positive results can be expected in a long period discourages the application of the environmental policies. The project aims at encouraging starting an environmental policy, by promoting a step by step implementation, based on a close chain process, starting from more critical issues included in an organic plan looking at all environmental risks. In this way, it will be possible to reduce initial investments, without losing sight of long term vision.

The TEN ECOPORT as a strategy includes general (long-term) and specific objectives. The general objectives are:

- Enhancing the cross-border and trans-European partnership between SEE port areas developing collaboration and effective relation among all stakeholder (port authorities, local institution, enterprises, external operators and citizens of the involved countries), in order to stimulate an integrated policy on environmental protection and growth of TEN corridors;

- Developing and implementing intelligent environmental port management and information systems using integrated technologies for environmental risk protection in order to reduce impacts on human health, biodiversity and other environmental issues.

The achievement of the general objectives is possible through the following specific objectives:

- Improving the capacity of port authorities for developing and implementing effective policies for
environmental management of the port areas, by defining specific critical issues, implementing Specific Action Plan useful for a shared efficient and sustainable Operational Environmental Plan;

- promoting a peer discussion among all the people and Institution involved in port activities, aimed at providing, education, training, consulting and reviewing based on the best experiences and lessons gained by all the ports involved;
- creating regional/local platforms involving all the local stakeholder connected directly or indirectly with the port areas and the cities hosting them, in order to guarantees information about the peculiarities of each areas involved end to provide timely solution plans;
- providing innovative methodologies and instruments for mapping the critical issues for each port involved and highlighting the common key-elements, as basis of the Common Action Plan aimed to protect ports area and surrounding ecosystem;
- providing EDI (electronic data interchange) system and other ICT instruments for updating the EMS systems starting by the assessing of the vulnerabilities and risks;
- creating an information base of research methodologies for environmental protection in SEE ports;
- promoting the transnational enhancement of a permanent TEN_ECOPORT network for developing, strengthening and transferring of coordinated initiatives useful for a transnational strategy for port-eco-management in SEE sea basins;
- establishment of transnational subject as a multidisciplinary Task Force for gathering all the knowledge and experienced gained by the present project and other future experience aimed to keep supporting and providing services to ports of SEE.

The project strategy aims to provide a transnational network that can support policy coordination among the partners and stakeholders that based on "peer approach" can support the sea networks in the development and implementation of intelligent environmental port management and information systems through integrated technologies for identification of the environmental risks. The project specific objectives and also its methods, tools and activities chosen for achievement of the project results can contribute in the development of integrated policies for coordinated risk prevention by providing plans, measures, sets of vulnerability studies within the chosen sea-network, including in the improvement of a Sustainable Model of Accessibility of SEE ports. The will of project participants is to give at created network and its evolvement and enhancement over time an important role: to evolve it towards a permanent transnational discussion platform for supporting policy coordination among the ports and the local authority of the countries (Institutional Bodies and policy makers at regional, national and European level) involved for proposing a Common Model for the sustainable and environmentally friendly development of the sea-corridors.

3 METHODOLOGICAL APPROACH

The methodological approach in the project strategy is the “closed chain” type, that means that some of the project activities are used to validate the initial estimates, or to correct management actions planned, Fig.2.

The different phases of the closed chain cycle can be summarized as:
- Identification of the key-actors within the partnership;
- Identification of the key-activities for achievement the forecasted aims;
- Application of environment protocol;
- Monitoring the obtained results;
- Identification of the obstacles which prevented the achievement of objectives;
- Identification of the possible solutions and review of initial hypothesis

By this way, partial results can be used to verify the goodness of the performed job and the effectiveness of initial assumption. In case disagreement of the obtained results with the forecasted ones, it will be possible to modify the initial assumptions and fielding the most effective provisions.

The project strategy focuses clearly on port authorities who have the key role in activities management and are more able to involve port operators in environmental improving processes. By this way, the role of scientific institutions involved in the project is essential as consultancy for port authorities; moreover they contribute in processing and evaluating the achieved results during the project. The strong relation among all key-actors is an essential part of the methodological approach.
All activities and the relative information (or part of it) are integrated to the final proposed model of accessibility towards a sustainable and environmental friendly development of the TEN networks.

4 RESULTS

The environmental management strategy for improving ecological status of SEE ports aims to achieve the following most relevant results:

- Creation of shared Common Eco management Strategy for port areas for solving common problems;
- Creation of shared Programme for monitoring and management at national, local and regional level of the port areas management;
- Creation of wider network among port areas with different peculiarities improving co-ordination in promoting, planning and operation for effectiveness of maritime transportation;
- Using ICT instruments for updating the EMS systems starting by the assessing of the vulnerabilities and risks;
- Enhancement of the Permanent information channel among TEN ECOPORT Community;
- Creation of a Transnational subject as a multidisciplinary Task Force for gathering all the knowledge and experiences gained by the present projects and other future experience aimed to keep supporting and providing services to ports of SEE;

To reach expected results the current strategy is focused on the tight collaboration of following target groups:

The Port Authorities of the SEE area are considered as a key-target group. They have to create an extended network and eco-cooperation among them as a responsible and the direct beneficiaries of the sustainable model that the project performs. Main characteristic of this group is their common ground on which a dialogue and join work will be based the transnational perspective on problem tackling and the grade of related regulatory and technical skills.

Another target group involved all policy and decision makers coming from the SEE countries involved in the project. It is foreseen a future prospective on enlargement in the whole SEE area and EU. This group is involved in order to promote “face to face” discussions for setting up and defining either the specific critical issues of the port areas, and the authorities, that will use this data, for the future planning of the transport-networks.

Figure 2 Explanatory scheme of the “closed chain approach” adopted in TEN ECOPORT project
Port end-user play an important role in enhancing port-networks, therefore they constitute the next group that is involved in a wide dissemination phase.

Last key-actors come from the research and education sectors. All the research entities coming from Universities and research institutions support and guarantee the scientific quality of the outputs and results.

Through target groups the project reach an open variety of beneficiaries and stakeholders, allowing a productive dialogue that finalized the current environmental port strategy that guaranties findings the best environmental solutions in port areas.

5 CONCLUSIONS
The present environmental management strategy has to capitalize the results of all studies during implementation of the both SEE projects - ECOPORT8 and TEN ECOPORT. There are several fundamental elements of capitalization:

a) The protocol that established common control standards and results of the monitoring of the principal environmental parameters within ports;

b) The shared guidelines for eco-management of ports including: initial environmental analysis, monitoring management methods, emergency management, continuing development programmes;

c) The advanced WebGIS platform of the SEE ports

d) The sustainable Model for friendly environmental development of the port-networks.

Finally, TEN ECOPORT strategy can concretely develop not only the environmental protection of the port areas and the surrounding hinterland, but the creation of further updated elements that the Local Authority can use for the future environmental planning.

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