

ENVIRONMENTAL IMPROVEMENT WITH ADDITIONAL INSTRUMENTS FOR ENVIRONMENTAL PROTECTION IN PORT AREAS

JORDAN MARINSKI⁽¹⁾, TANIA FLOQI⁽²⁾, GERGANA DROUMEVA⁽¹⁾, TATIANA BRANCA⁽³⁾, ALBENA VATRALOVA⁽¹⁾

⁽¹⁾National Institute of Meteorology and Hydrology, Bulgarian Academy of Sciences, Sofia, Bulgaria,
e-mail: marinski@bas.bg; drdroum@abv.bg; albenav@bas.bg

⁽²⁾Polytechnic University of Tirana, Tirana, Albania, e-mail: tfloqi@yahoo.com

⁽³⁾Technical University of Bari, Bari, Italy, e-mail: tatiana.branca@yahoo.it

Abstract¹. The context analysis of environmental situation in Corridor8 ports shows growing sensibility of the management authorities to the environmental issues and objective difficulties for development of appropriate 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. In order to mitigate the negative impact of these realities, some possible tools for environmental policy implementation in the SEE area ports are proposed in the present paper. Attention is focused on: Environmental management system; Environmental risk analysis, Environmental land and maritime use planning and Integrated coastal zone management.

Key words¹: Port environmental protection, ports, Environmental Management Systems (EMS), ECOPORT8

1. INTRODUCTION

The assessment of the environment protection in the Corridor 8 shows that a serious progress has been made in the field of the ports regions through the existing legislation. At the same time there are sufficient facts and arguments proving the difficulties to apply the normative documents and the insufficiency of the potentialities for the improvement of the environment status at this stage solely by means of the existing legislative arrangement. Complex legislation still has not found the balance between the business interests in sea transport and the environment protection in the port regions and coastal zones. In addition there is a poor enforcement of the regulations.

In order to future improve the environment protection it is necessary to seek for and to apply additional instruments. The conducted SWOT analysis shows that there are such op-

portunities. The involvement and application of suitable supplementary tools will enable the building of a holistic and effective general strategy for the environment preservation of Corridor 8 ports and the surrounding coastal zones.

The proposed additional instruments as a part of the Corridor 8 ports improved environment protection program are linked as a whole and in synergy with the primary designated objectives in Ecoport8 project. These are Environmental management system (EMS) in ports; Environmental risk analysis (ERA) in ports; Environmental land use plans (LUP) in ports; Integrated coastal zone management (ICZM).

2. ADDITIONAL INSTRUMENTS FOR ENVIRONMENTAL PROTECTION IN PORT AREAS

2.1 ENVIRONMENTAL MANAGEMENT SYSTEMS (EMS) IN SEE PORTS

EMS is a continual cycle of planning, implementing, reviewing and improving the processes and actions that a port

¹ ECOPORT 8 project, ENVIRONMENTAL MANAGEMENT OF TRANSBORDER CORRIDOR PORTS

undertakes to minimize environmental impacts arising from port activities. Each of the Corridor 8 ports has a system for environmental management but none of them meets the international standards for certification in respect of environment protection ISO 14000 or EMAS (EN ISO 14001-2004; EN ISO 14004-2004; EMAS-2010). Attempting to set up the basis for eco-management of PAN-EU corridor ports, Ecoport8 project makes the main steps in EMS development phase by means of: Initial environmental review (initial legislative and environmental analysis of all ports involved), Common environmental policy elaboration, Improvement programme for eco performance, Pilot monitoring systems establishment, Training, collaboration and effective relations, Shared guidelines creation with shared rules and methodologies for environmental port management (Fig. 1). The first three listed above are completed for this stage of the project.

The initial environmental review of ECOPORT8 is provided through the Standards and Documental Analysis in order to establish preliminary baseline data and to assess the range and quality of information available as a starting point from which to evolve an appropriate improved environmental management programme. It gives an understanding of legal requirements that are applied, current procedures and practices including the existing environmental management measures in ports involved in the ECOPORT8 and significant environmental aspects and impacts, including those associated with normal operating conditions, abnormal conditions and emergency situations and accidents (Branca et al., 2010).

The environmental policy is the foundation for the EMS development and implementation and provides a unified version of environmental concern by the entire port organization. The review of the existing SEE ports' policies indicates

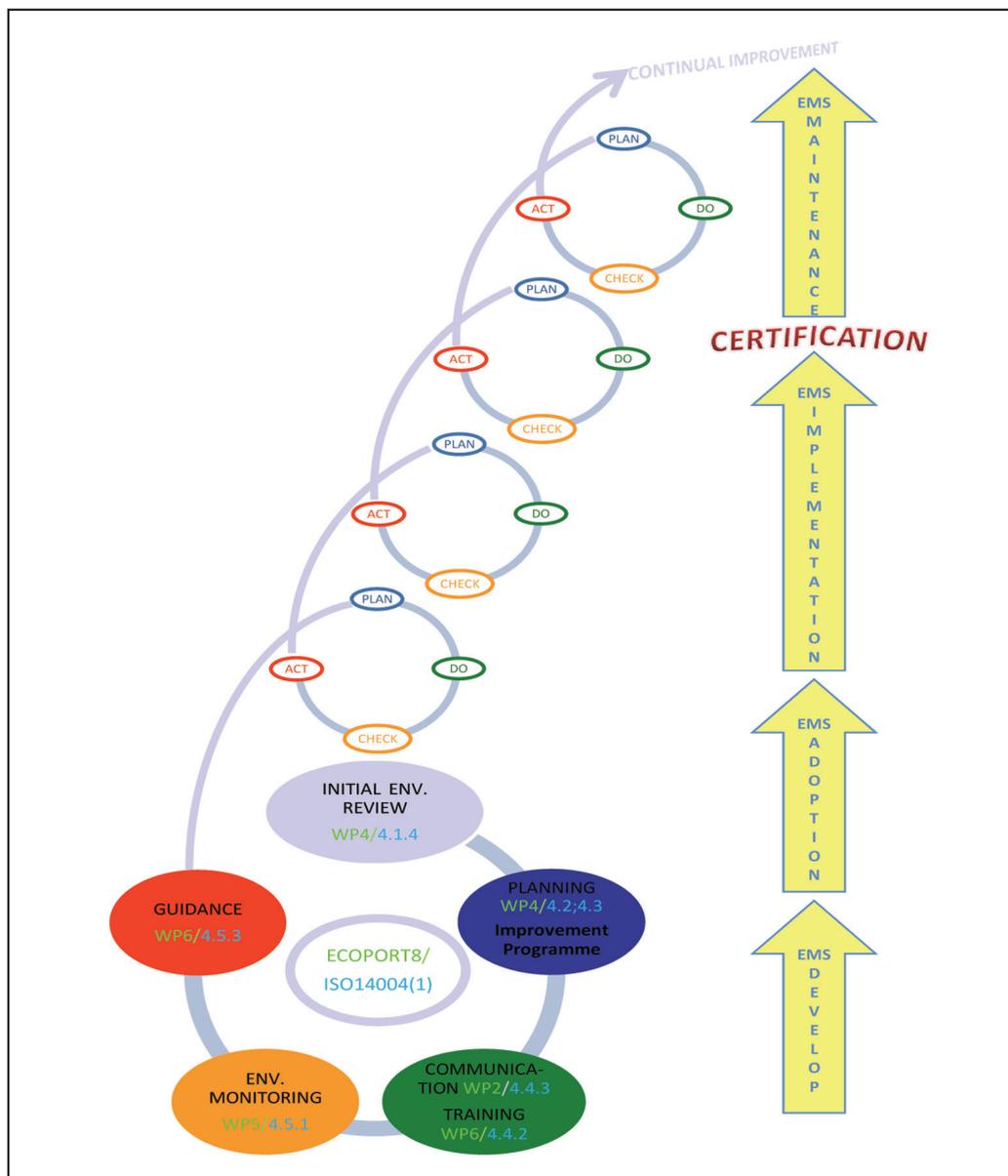


Fig. 1 ECOPORT 8 – EMS trigger

Table 1 Environmental objectives and principal measures as part of an eco-performance improvement programme in the SEE port areas regarding EMS

ENVIRONMENTAL OBJECTIVES	PRINCIPAL MEASURES
To identify and ensure compliance with environmental legislation and regulations	<ul style="list-style-type: none"> • Each of SEE area ports to create a Legal Register containing legal and other requirements by means of Chapter 4 of the Final report “Identification and analysis of EU and national regulatory framework”; • To assess regularly compliance to environmental legislation; • To influence the development of the environmental legislation related to ports and to assist in its implementation.
To elaborate an environmental management system for achieving SEE area ports environmental policy and environmental objectives and targets following UNI EN ISO 14001(4)/EMAS	<ul style="list-style-type: none"> • Each of SEE area ports to update the existing management system and programmes (plans) taking advantage of ECOPORT8 project recommendations and guidelines; • To determine more precisely environmental aspects and impacts associated with normal, abnormal and emergency conditions; • To produce a procedure to assess the significance of aspects and establish a Significant Aspects Register; • To establish measurable environmental performance indicators; • To review environmental management system periodically; • To stimulate continuous improvement in the port environment and its port environmental management by promoting the use of Environmental Management Information System tools (such as environmental audit, environmental review, environmental management system, decision support system, etc).
To introduce monitoring, based on environmental performance indicators in order to measure progress in environmental port practices	<ul style="list-style-type: none"> • To set up a monitoring system with defined purposes, and implementation plan; • To calibrate or verify measuring equipment prior to use at specified intervals according to common standards; • To use qualified personnel to conduct and control the monitoring process.
To strengthen the administrative capacity for environmental requirements implementation and enforcement	<ul style="list-style-type: none"> • To establish and improve working of the basic administrative structures at central and local level - appointment of additional personnel at the competent authorities, exercising of control over the environmental requirements implementation, providing the functioning of the competent authorities with the necessary technical equipment; • To train the experts in EMS development and implementation in ports and to facilitate cooperation between SEE area port administrations in the environmental field; • To increase awareness about environmental concerns of everyone involved in port activities and to set up an educational and information centre for port environmental issues.
To improve SEE ports communication policy and practice	<ul style="list-style-type: none"> • To have better communication and coordination between port administrations, port users and state institutions responsible for environmental legal implementation; • To encourage wide consultation, dialogue and cooperation between port administrations and stakeholders at local level (port users, public, NGOs); • To inform the society about port initiatives taken to protect the environment and to conduct joint eco-campaigns; • To use environmental reporting to the stakeholders, the state and the European institutions as means of communicating environmentally good behaviour.
To efficiently mobilize and utilize the financial and material resources to ensure sustainable port development and environmentally sound ports’ operation	<ul style="list-style-type: none"> • To share the costs of environmental solutions between SEE ports; • To prevent wasteful duplication of research and development efforts by means of SEE ports close cooperation; • To benefit EU financial instruments for support of EU port operations management and environmental protection; • To ensure effective utilization of raw materials, supplies and energy;

that they are not fully complying with international environmental standards and calls for revision and supplementation. After analyzing the existing good practice and following the key principles of the environmental standards, some strategic goals are synthesized as a basis for the common environmental policy of ECOPORT8 ports:

- To minimize any significant adverse environmental impact through preparation and implementation of comprehensive environmental management plans using integrated environmental management procedures;
- To comply with relevant environmental legislation, and to extend practical implementation programmes that exceed government requirements;
- To run port operations in ways that enables prevention of pollution and waste and promotes efficient use of resources;
- To design all infrastructures in such a way as to minimize their environmental impacts;
- To maintain the port area in a manner that values the vegetation and aesthetic appearance;
- To involve and communicate with community groups sharing common environmental resources;
- To extend environmental education and training to all employees concerned;
- To encourage the use of environmental management procedures by contractors;
- To develop a system of environmental performance indicators in order to measure and assess the progress in environmental port practices.

Based on the context analysis of all PAN-EU Corridor 8 ports some environmental objectives and principal measures are suggested as a part of improvement programme of the eco-performance of the ECOPORT8 port areas (Table 1).

2.2. ENVIRONMENTAL RISK ANALYSIS (ERA) IN SEE PORTS

Environmental risk analysis helps to identify existing problems, anticipate the risks and planned actions, establish research priorities and provide a scientific basis for regulatory actions. In this way ERA provides the information needed to make management decisions to ensure safety of a port. Quantitative risk analysis is essential for those ports where hazardous cargoes are handled. It is mainly undertaken to enable port authorities to determine the action that is needed to improve the safety of navigation and to deal with the foreseeable effects of an incident in the port area and in the port waters. The components of a framework for ERA are: hazard identification, exposure assessment, risk characterization and risk management. The hazard identification phase determines whether a particular danger exists, if the effects associated with the hazard are significant to warrant further study or immediate management action, and the kinds of data required to determine the level of risk. During the exposure assessment, the exposure to the hazardous agent in question is determined. The process includes the measurement or prediction of movement, fate and partitioning of chemicals in the environment. The risk characterization phase involves describing the nature and magnitude of risks, including the inherent uncertainties. Risk can be defined as a product of the probability of occurrence of a hazardous event and the magnitude of resulting harmful consequences. Information from previous phases is integrated and communicated with decision makers. In a final stage of the procedure, risk management, decisions are made about whether an assessed risk needs to be managed and the means for accomplishing it.

Environmental risk analysis as an important instrument for environmental protection of port areas insets the improvement programme of the ECOPORT8 port eco-performance (Table 2).

Table 2 Environmental objectives and principal measures as part of an eco-performance improvement programme in the SEE port areas regarding ERA

ENVIRONMENTAL OBJECTIVES	PRINCIPAL MEASURES
To evaluate and manage environmental risk	<ul style="list-style-type: none"> • To ensure relevant information and data base for more precise environmental risk assessment; • To introduce a modern system for risk assessment of environmental pollution; • To update Port Preparedness and Contingency Plans; • To provide equipment, resources and infrastructure in case of emergencies; • To established measures for long-term environmental rehabilitation in case of accidents.

2.3 ENVIRONMENTAL LAND USE PLANS (LUP) IN SEE PORTS

This strategic planning comprises the long-term development plans for the port, the associated “nature compensation measures” and the creation of new natural areas within the port area. Environmental Impact Assessment of LUP guarantees maximum protection of the surrounding residential areas, builds up the “ecological infrastructure” inside and outside the port area and makes efficient use of space. LUP in-

cludes the identification of the connection of port areas with neighboring territories and aquatoria on the ecological map in view of coordinating actions and measures addressing environmental protection issues. Ports should be considered as part of the coastal area accommodating beaches, inlets, lagoons, lakes, protected territories and water areas, coastal waters, built-up territories, industrial sites, agricultural land, Special Protection Area’s (SPA’s), Special Areas of Conservation (SAC’s), etc. Within the mentioned extensive diversity this type of ecological map should contribute to and facilitate

Table 3 Environmental objectives and principal measures as a part of an eco-performance improvement programme in the SEE port areas regarding LUP

ENVIRONMENTAL OBJECTIVES	PRINCIPAL MEASURES
To use and practice environmental preventive measures including ones based on land and maritime use planning	<ul style="list-style-type: none"> • To conduct port development preventive measures: Strategic Environmental Impact Assessments of port development plans , Environmental Assessment of Master Plans, Environmental Impact Assessments of port projects; • To practice environmental preventive measures based on land and maritime use planning: <ul style="list-style-type: none"> • Moving port equipment related to operations such as bulk- and liquid cargoes transfer and other procedures generating environmental concern far from the broad city center areas; • Identifying the connection of port areas with neighbouring territories and aquatories on the ecological map in view of coordinating actions and measures addressing environmental protection issues; • Identifying the ports’ transport communications as a water transport logistic unit with the different types of land and internal transport in view of environmental improvement; • Reconstruction of part of the port’s facilities and equipment now restricting the access of the city to the sea into passenger terminals, sports and recreational areas and business zones; • Applying the principles of green architecture and bioclimatic planning to the ports of ECOPORT 8; • Graphic presentation of port’s ecological infrastructure and its functioning; • To conduct port operational preventive measures: <ul style="list-style-type: none"> • Change in structure of cargo turnover as increase of container and Ro-Ro traffic; • Equipment modernization; • Providing of necessary reception installations; • Improvement (reorganization modernization, maintenance) of port infrastructure supported by materials with low environmental impact; • Improving the work organization.

environmental protection by its preventive character. This is related both to the territories and coastal waters in immediate contact with the boundaries of the port aquatoria where there are still pending issues generated by definite interests.

Environmental approach and initiatives in the field of port infrastructure and management are quite diverse and extensive. Applying the territory planning approach to ports has a strongly expressed preventive nature. This approach, considered as an element of the general strategy for environmental protection in port areas, is a part of the improvement programme of the eco-performance of the SEE port areas (Table 3).

2.4 INTEGRATED COASTAL ZONE MANAGEMENT (ICZM)

ICZM is also an example of an ‘ecosystem approach’ developed as an overall strategy for integrated environmental management promoting conservation and sustainable use in an equitable way. To achieve the objectives of ECOPORT 8, general principles and tools that are used in integrated management of coastal zones are provided (Fig. 2).

The implementation of ICZM tools in ECOPORT8 project is one of the goals of the project and is an important part of the present improvement programme for eco performance of the SEE port area (Table 4)

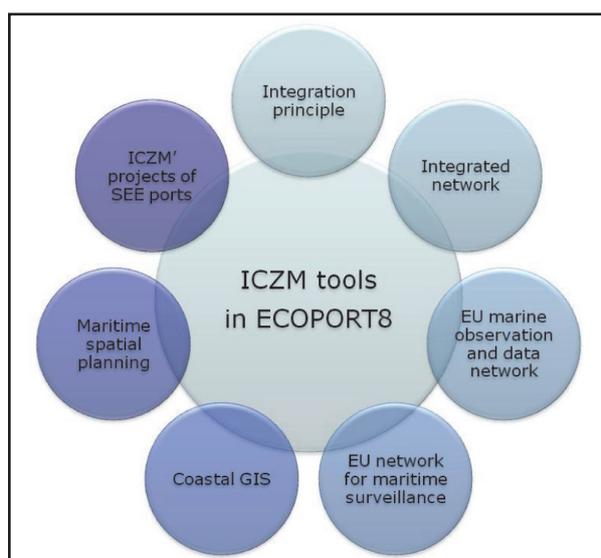


Fig. 2 ICZM tools implemented in ECOPORT8 project.

CONCLUSIONS

Environmental approach and initiatives in the field of port infrastructure and management are quite diverse and extensive. Applying the Environmental management system, Environmental risk analysis, Environmental land and maritime use planning and Integrated coastal zone management to SEE ports have a preventive nature too. These instruments should be considered as a part of the general strategy for environmental protection in SEE port areas and will be approved in the pilot port projects.

Table 4 Environmental objectives and principal measures as part of an eco-performance improvement programme in the SEE port areas regarding ICZM

ENVIRONMENTAL OBJECTIVES	PRINCIPAL MEASURES
To apply the Integrated Coastal Zone Management (ICZM) approach and tools for achieving environmental goals in the SEE area ports	<ul style="list-style-type: none"> • To facilitate the reconciliation, at an early stage, of differing interests and the acceptance of port projects by the local community; • To develop a permanent PAN-EU network, to strengthen and transfer coordinated initiatives of cooperation for eco-management of PAN-EU corridor ports of ECOPORT8 and to enhance the exchange of experiences and implementation of best practices on environmental issues among SEE port area including maritime surveillance and on-line GIS System; • To develop the data monitoring network and EU marine observation network guaranteeing trans-national cooperation.

ACKNOWLEDGEMENTS

This research was made possible thanks to a research grant provided by South East Europe Transnational Cooperation Programme within Environmental Management of Transborder Corridor Ports, ECOPORT 8 project Code SEE/A/218/2.2/X.

REFERENCES

- BRANCA, T., DAMIANI L., FLOQI T., MARINSKI J.(2010). Existing environmental management measures in SEE ports. Proceedings of 2nd Transnational Event, 21 October 2010, Bucharest, Romania
- EN ISO 14001. Environmental management systems - Requirements with guidance for use, Brussels: CEN, 2004
- EN ISO 14004. Environmental management systems - General guidelines on principles, systems and support techniques, Brussels: CEN, 2004
- REGULATION (EC) No 1221/2009 of the European Parliament and of the Council of 25 November 2009 on the voluntary participation by organisations in a Community eco-management and audit scheme (EMAS), Official Journal of the European Communities, 2009