Environmental Science & Policy 58 (2016) 29–40

Contents lists available at ScienceDirect

Environmental Science & Policy

journal homepage: www.elsevier.com/locate/envsci

New environmental performance baseline for inland ports: A benchmark for the European inland port sector

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ARTICLE INFO

Article history:
Received 10 November 2015
Received in revised form 23 December 2015
Accepted 24 December 2015
Available online 14 January 2016

Keywords:
Inland ports
Environmental performance
Indicators
Environmental management
European benchmark

ABSTRACT

This paper presents the results of a collaborative programme of action between the European Federation of Inland Ports (EFIP) and the EC PORTOPIA research project to assist EU inland ports to enhance further their environmental performance. In order to achieve this goal, an environmental survey was specifically designed to reflect the operational and geographical circumstances of inland ports and to help to accelerate the culture of the reporting of environmental performance.

The survey was developed to be user-friendly and practicable, and based on established good-practice taking into account the suggestions and advice of EFIP and its members, as well as the experience of the EcoPorts Network. As a result of the survey, an initial baseline of environmental performance for the EU inland port sector was established.

A total of 27 port authorities participated in the survey, representing a range of port profiles in terms of size, commercial profile and geography. All response details were treated in strict confidence and the benchmark performance was reported as a European average. Results show that approximately 70% of the respondent ports declare that they have the major components of an Environmental Management System (EMS) actively in place (e.g. policy, inventory of legislation). An environmental index (1–10) has been calculated reflecting the performance of the sector in terms of the application of major EMS components. The average index value for the EU inland port sector baseline resulted in 6.

Almost 67% of respondent ports indicated that they conduct environmental monitoring of different aspects, with waste being the most common. The survey results have also delivered the first top-10 ranking of environmental priorities for the EU inland port sector. It is interesting to note that also almost 70% of the inland ports apply initiatives to implement green actions. The outcomes of this paper are likely to be of interest to a wide range of stakeholders and decision-makers.

1. Introduction

Inland ports are very diverse in the functions they fulfil, the role that they play in the modal shift and in their size, as recognized by the European Federation of Inland Ports (EFIP) (www.inlandports.eu). The policy of this institution is to foster the use of the inland waterway, which is one of the three most environmentally friendly modes of transport along with rail and maritime transport (EFIP, 2015).

For this reason, EFIP and the European Commission believe that inland ports have a strong potential that requires investment in order to optimize the co-modal transport chain and to contribute to a sustainable transport. EFIP and its members recognize that the development and use of inland waterway infrastructure must be performed taking into consideration European and other environmental legislation. In fact, the EU approach towards inland ports has been already defined in different policies and documents, such as the revised Trans-European Transport Network policy (EC, 2007) and the Combined Transport Directive (EC, 1992). Both highlight the potential of inland waterway transport and combined transport as a more sustainable alternative to pure road transport (EFIP, 2015).

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http://dx.doi.org/10.1016/j.envsci.2015.12.014
1462-9011/

To achieve integration and sustainability of inland ports, EFIP has fostered different environmental initiatives, such as the implementation of Liquefied Natural Gas (LNG) refuelling points and shore-side electricity supply, promoted by the EU-Commission (EFIP, 2015). In addition, different European projects supported by EFIP, such as Connecting Citizen Ports (CCP21, 2010), the DaHaR project (DaHAR, 2011), or the WANDA project (WANDA, 2012) have also been devoted to improve inland ports' performance. The first one aims at encouraging connectivity and sustainable transport among inland ports from Belgium, France, Germany and Switzerland (e.g. port of Paris, Brussels, Basel), whereas DaHaR and WANDA projects have the goal to enhance the sustainability of the inland port transport in the Danube Region.

In this paper, an initiative is presented to promote sustainability and integration of the EU inland port sector through a diagnosis of the environmental performance of the member ports. This initiative, conducted within the framework of the EC PORTOPIA project (www.portopia.eu) and with the supervision and collaboration of EFIP, took the form of an environmental survey dedicated to inland ports. The scientific basis for the development of the survey as well as the validation process and the gathered outcomes are presented in the current document.

2. Inland ports and environment

2.1. Inland port definition

The research pathway took into account the definition of the concept of inland port in order to target the main actors, limit the scope, and to develop a suitable approach for this particular type of ports. However, there are few comprehensive and recognized definitions in the literature. In fact, inland ports are generally included in a broader term called *Inland node* that could be defined in general terms as "An inland location where a trade activity is conducted, regardless its scale" (Rodrigue, 2015). Although the breadth of the definition of this type of nodes, all of them gather the following three characteristics (Rodrigue and Notteboom, 2013):

- Existence of an intermodal terminal (e.g. truck, rail, barge).
- Connection with a port terminal through rail, barge or truck services, often through a high capacity corridor.
- Existence of logistical activities that support and organize the freight transited, often collocated with the intermodal terminal.

When focusing on inland ports, one general and accepted definition is the one of Rodrigue and Notteboom (2013): "A rail or a barge terminal that is linked to a maritime terminal with regular inland transport services". According to this definition, an inland port has a level of integration with the maritime terminal and supports a more efficient access to the inland market both for inbound and outbound traffic. This implies an array of related logistical activities linked with the terminal, such as distribution centers, depots for containers and chassis, warehouses and logistical service providers.

However, the inland port definition is still very broad and can have different interpretations. Therefore, for this study the aforementioned definition has been adapted to: "An Inland port is a strategic multimodal node that includes at least a ship or barge terminal with connection with other ports (maritime terminal or inland port) before reaching the oceanic or sea trade". It is important to highlight that the present definition has been validated by EFIP, which has collaborated and contributed with its knowledge, advice and experience throughout the study.

2.2. EFIP environmental initiatives

As previously stated, one of the main purposes of EFIP is to foster sustainability among its port members. This statement is clearly recognizable in its annual reports, policies and newsletters. The message is reinforced by EFIP's logo that combines the elements of rail, road and barge traffic, signifying the multimodal nature of inland ports' activities. In addition, the blue and green colours reflect the sector's strong link with the water as well as its commitment to contribute to an environmentally sustainable transport system (EFIP, 2014).

In fact, EFIP is devoted to promote a greener inland waterway transport sector in order to maintain its proactive profile in terms of overall environmental performance. Therefore, EFIP supports policies aimed at further reducing emissions from inland waterway transport, pointing out that the special economic circumstances of the sector should be taken into account. Thus, on this basis, it recommends that strict emission standards should be

PORTOPIA

Environmental Survey for inland ports

EFIP European Federation of Inland Ports

D. Green actions

Nº	Questions	YES	NO
13	*Does the port apply initiatives to implement green actions? If yes, is any of the following carried out? (Please tick)*	☐	☐
	• *On-shore power supply*	☐	☐
	• *Biofuel production for port self-supply or bunkering*	☐	☐
	• *Liquefied Natural Gas (LNG) bunkering*	☐	☐
14	*Does the port recognize green ship certificates[10]?*	☐	☐
15	*Does the port applies differentiated fees for implementing green actions? If yes, is any of the following applied? (Please tick)*	☐	☐
	• *Incentives for companies that treat their waste*	☐	☐
	• *Incentives to reduce vessel speed according to a virtual arrival[11]*	☐	☐
	• *Discounts for ships using bunker oils with low Sulphur content*	☐	☐
	• *Discounts for ships using particle filters that reduce emissions of NO_x*	☐	☐
	• *Incentives for companies using the inland waterway (i.e.ships) for the freight distribution*	☐	☐
	• *Other:*	☐	☐

Fig. 1. Green actions section in the environmental survey for inland ports.