



# PIANC

The World Association for Waterborne  
Transport Infrastructure

## BEST PRACTICES IN PLANNING AND MANAGEMENT OF MULTIMODAL LOGISTICS PLATFORMS ALONG INLAND WATERWAYS



InCom Working Group Report N° 216 – 2023

# **PIANC REPORT N° 216**

INLAND NAVIGATION COMMISSION

## **BEST PRACTICES IN PLANNING AND MANAGEMENT OF MULTIMODAL LOGISTICS PLATFORMS ALONG INLAND WATERWAYS**

December 2023

PIANC has Technical Commissions concerned with inland waterways and ports (InCom), coastal and ocean waterways (including ports and harbours) (MarCom), environmental aspects (EnviCom) and sport and pleasure navigation (RecCom).

This report has been produced by an international Working Group convened by the Inland Navigation Commission (InCom). Members of the Working Group represent several countries and are acknowledged experts in their profession.

The objective of this report is to provide information and recommendations on good practice. Conformity is not obligatory and engineering judgement should be used in its application, especially in special circumstances. This report should be seen as an expert guidance and state-of-the-art on this particular subject. PIANC disclaims all responsibility in the event that this report should be presented as an official standard.

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## EXECUTIVE SUMMARY

Inland ports and waterways offer numerous advantages for transporting, storing, and distributing goods in a safer, more efficient, and more sustainable manner compared to other transportation modes. They can provide larger cargo capacities, resulting in fewer trips and reduced fuel consumption; they can also be equipped with efficient cargo handling facilities, enabling quick loading and unloading; they have lower carbon emissions and drive a modal shift towards greener transportation. By combining inland waterways with road, rail, and air transportation, multimodal platforms can provide a comprehensive and sustainable multimodal logistics solution. Regional governments and cities recognise the advantages of multimodal transport and are exploring the integration of inland waterways with other modes of transport to create multimodal platforms. This integration enhances connectivity, efficiency, and reliability in goods movement, promoting a shift towards greener transportation options.

This study, conducted by PIANC Working Group (WG) 216, examines inland ports and multimodal platforms in Europe and Brazil. The study primarily focuses on analysing the strategies employed by port owners, platform management, and other stakeholders involved in platform development. These strategies aim to address various challenges including governance, spatial planning, services, equipment, and marketing to meet the rapidly evolving socio-economic, environmental and policy-related requirements. The authors adopt a comparative case study methodology, examining practices in nine inland ports and multimodal platforms: Galati (RO), BCTN (Albert Canal, BE), TRILOGIPORT (BE), Brussels (BE), LHTE HAROPA (FR), Lille (FR), SNE Canal (FR), and Rio Grande and Pelotas (BR).

The study reports on several challenges and their solutions when it comes to adapting inland ports and multimodal platforms to changing circumstances. One of the main challenges faced by ports is the limited available space, often constrained by original concessions or an inability to expand. The analysis identifies several solutions to address this issue. For example, rapid transportation of containers, e.g. by train, to nearby locations outside the concession allows for handling the contents efficiently; or cross-docking warehouses at customer locations nearby can be set up to optimise space utilisation. Multiple sites can also be established and coordinated as one entity to maximise resource usage efficiency. Additionally, the integration of existing smaller ports and platforms and the optimisation of truck parking, and loading and unloading times, can enhance space utilisation. Separating and optimizing modal flows, including river, road, train, and air transportation, can also help mitigate space limitations.

Secondly, the study also addresses the issue of energy production and consumption in ports and platforms. Multi-energy stations that provide hydrogen, electricity (battery charging and swapping), biofuel and diesel are increasingly necessary. Ports and platforms can utilise solar power plants and windmills, as well as hydroelectric power from locks. However, space limitations pose challenges for large-scale implementation. Efforts to reduce local energy consumption are encouraged, while ports and platforms can serve as hubs for distributing green energy, such as hydrogen. The introduction of hybrid barges and the potential for hydrogen-powered barges further contribute to the adoption of cleaner energy sources. Finally, the governance type of ports and platforms varies depending on their original objectives. They can be public facilities managed by the Chamber of Commerce, involving various stakeholders, a board of directors, and the city government. Some ports and platforms are publicly owned but privately operated. Others may have private ownership and governance, with a single large concession holder managing the port and its infrastructure.

Overall, the report presents various specific approaches to the creation of new, and management of existing inland multimodal platforms that can provide strategic insights to public and private stakeholders involved in the creation, design, transformation, or extension of inland ports and multimodal platforms.

## OBJECTIVES

The purpose of this report is to provide those in charge of, responsible for, or interested in, the creation and design of new, or the transformation or extension of existing multimodal platforms with an overview of proven strategic and operational design and management options. However, the report is not intended to be read as a recipe book, but rather as a compendium that acts as a companion in helping the reader to think in a strategic way about the various challenges and potential solutions. In this document, PIANC WG 216 reports on a study that involved investigating a broad variety of inland ports and/or multimodal platforms, situated in various geographical locations, and originally built with varying purposes.

## TERMS OF REFERENCE

### Background & Facts

Planning the development of ports in general, but also of inland ports, is not only a matter of infrastructure but also of choices in terms of intermodality, logistics and service provided to customers.

- **Logistics and intermodal** transportation are nowadays strongly associated with efficient transportation of goods and passengers. To develop the economy and a sustainable mobility of a region (or a city), good accessibility (and transportation) is a key issue. Simply being located near or on a river is not enough, it should be a waterway, allowing cheap, safe, reliable and just-in-time transportation (e.g. import and export) of goods of different types (containers, bulk, construction material, fluid, fuel, etc.) to inland ports.
- **Service given to customers:** Identifying customers' needs is required to identify the required infrastructure and the relevant facilities for a multimodal platform.

Integrating the water transportation related infrastructure with the various other transportation modes, thus transforming a river into an efficient means of transport (i.e. an inland waterway), requires a multimodal platform.

As the topic of **Planning Multimodal Platforms** is very broad, this WG will focus on multi modal platforms along inland waterways (IW), which have other distinctive features than sea ports (i.e. they have smaller dimensions, need different equipment, are subject to different geographical and other constraints, have other levels of traffic density, and use other forms of governance), after addressing some general concepts. Of course, the traffic between the seaports and those multimodal platforms is considered a key component of the multimodality of an IW platform, in addition to the railway and road connections with the platform. This WG will be a first step, while subsequently another PIANC WG may present a more global and comprehensive view, which includes the seaport specificities/perspectives. Hopefully, the masterplan of seaports has already been investigated in PIANC MarCom WG 158 and WG 185, and these WG-reports can be used as support for this WG.

The inland ports, as intermodal platforms, must:

- be integrated in information chains. A wide variety of communication systems already exist connecting intermodal operators and their clients, and many of them rely on modern technologies (RIS, Smart Shipping, etc.). Nowadays, information services are integrated as part of an e-logistics system and a transportation telematics system to link transport operators, shippers, forwarding agencies, and administrations together, transparently sharing information concerning cargo, means of transport, and traffic.
- deliver goods within precise time windows.
- synchronise logistics services with production processes with a minimal level of stock.
- assure collaboration among different partners in the supply chain through an effective flow of information, which provides the basic conditions (time intervals) for forecasts, supply optimisation, and marketing.

Some of these topics (such as 'information chains') will not be discussed in this WG, because they are separately addressed in WG 125/WG 246 (RIS) and WG 156 (e-navigation).

## **Objectives and Intended Outcomes**

The objective of having a PIANC WG on multimodal platforms is to help decision makers (policy makers, port managers, waterway managers, etc.) to make the right choices, and identify the relevant investment opportunities and sources, and platform locations. Multimodal platforms are mandatory tools for efficient logistics, because they facilitate efficient waterways, serving the economic development of a region or a country.

The 'pragmatic' objectives (outcomes) of this WG will be:

- To present a series of case studies (project reviews) used to establish lessons learnt on ports, which have transitioned to multi-modal platforms (success stories), including the connections between maritime ports and such IW platforms.
- To identify (based on these case studies) a methodology to assess the feasibility of a multimodal platform along an inland waterway. This methodology should support various specific IW development plans.

## **Detailed Content**

The WG-report has as a major objective to propose a general methodology, based on case studies, framing the studies to assess the feasibility of multi modal platforms.

This methodology includes the following steps (this list is not exhaustive and will be completed by the WG):

- General concepts for multimodal platforms where waterborne transport (maritime and/or inland navigation) is present will be derived from the case studies.
- Market Analysis:

Identification of the needs in term of transport of goods and passengers, on the waterway but also for road and train (we need a multi modal transport model analysis):

- Transport what?
- How much?
- From where to where?



- What are the current traffic flows (goods and passengers)?
- What are the trends for the future?
- Identify the stakeholders (shipping lines, ports, local industries, etc.);
- Concept design of a platform in an IW:
  - Where to build?
  - What are the required facilities (quays, cranes, storage, etc.)?
  - What are the targets, connecting modes, expected size, required access, etc.?
- Environment impacts
- Societal impacts & social acceptance (treat = Nimby)
- Economic impacts (jobs, etc.)
- How to manage a platform and how to make it efficient (business plan)?

Potential case studies (project reviews), used to derive lessons learnt, must be developed.

## Existing Documents and PIANC Reports

The following documents will be reviewed, referenced and integrated when necessary:

- PIANC reports:
  - PIANC MarCom WG 172 (2016): "Design of Small to Mid-Scale Marine LNG Terminals Including Bunkering".
  - PIANC MarCom WG 158 (2014): "Masterplans for the Development of Existing Ports".
  - PIANC MarCom WG 152 (2016): "Guidelines for Cruise Terminals".
  - PIANC MarCom WG 135 (2014): "Design Principles for Small and Medium Marine Container Terminals".
  - PIANC InCom WG 110 (2010): "Governance Organisation and Management of River Ports".
- Annual reports of IW Ports (Duisburg, Paris, Liege, Pittsburgh, etc.)
- Economic development plans (or business plan) of the concerned counties/regions
- IAPH reports

## Working Group Membership

The WG should ideally include:

- Port managers and multimodal platform managers
- Waterway and/or political authorities funding the platform
- Logistics companies, transportation companies
- Shippers
- Infrastructure developers (Engineering Design and contractors) – Companies in charge of transport assessment, traffic surveys, etc.
- Consultants and experts in transport modelling and transport plan analysis
- Others, such as an expert from IAPH

## Relevance to Countries in Transition

The report will be of substantial interest for South America and for most Countries in Transition. It will particularly assist decision makers in the assessment of investment in ports and waterway infrastructure.

## Working with Nature Change

Impact studies (usually mandatory), including effects on the environment, will be tackled by the WG and will be included in the proposed methodology, to make them opportunities and

not constraints (PIANC WG 203: "Sustainable Inland Waterways – A Guide for Social and Environmental Awareness of IW Managers".)

## DEFINITIONS AND ACRONYMS

- B2B: Business to Business
- BIC: Bureau International des Containers
- CCNR: Central Commission for the Navigation of the Rhine
- CEF: Connecting Europe Facility
- CIS: Commonwealth of Independent States (Russia and former USSR members)
- CRM: Customer Relationship Management
- CSR: Corporate Social Responsibility
- DUP: Déclaration d'Utilité Publique (Declaration of Public Interest)
- DVW: De Vlaamse Waterweg N.V. (Inland Waterways Flanders)
- EFIP: European Federation of Inland Ports
- ERDF: European Regional Development Fund
- ESG: Environmental, Social and Governance (reporting)
- ESI: Environmental Ships Index
- EU: European Union
- GPS: Global Positioning System
- ILU: Intermodal Loading Units
- INCOM: Inland Navigation Commission
- IT: Information Technology
- IW: Inland Waterway
- IWT: Inland Waterway Transport
- N/A: Not applicable
- OCR: Optical Character Recognition
- PELT-RS: Plan for Logistics Transportation of Rio Grande State (Brazil)
- PNLN: National Port Logistics Plan (Brazil)
- RIS: River Information Services
- SCSNE: Société du Canal Seine-Nord Europe (Seine-North-Europe canal company)
- SDG: Sustainable Development Goals (UN)
- SNE: Seine Nord Europe
- SWOT: Strengths/Weaknesses/Opportunities/Threats (analysis)
- TEN-T: Trans-European Transport Network
- TEU: twenty-foot equivalent units (container size)
- VNF: Voies Navigables de France (Inland Waterways France)
- WG: Working Group
- ZAC: Zone d'Aménagement Concerté (publicly initiated building zone)



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