

PIANC BELGIUM

Inland Navigation, a priority for PIANC/InCom

RIGO Philippe,

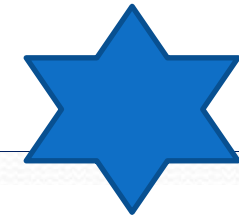
**University of Liege
PIANC INCOM Chairman**

Séminaire d'automne ALPCN, 14/10/2022, Namur

PIANC - InCOM

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WG 125: River Information Services (RIS)

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InCom WG Report
n° 125/I - 2019



**GUIDELINES AND RECOMMENDATIONS
FOR RIVER INFORMATION SERVICES**

The World Association for Waterborne Transport Infrastructure

- I – Guidelines and Recommendations for River Information Services**
- II – Technical Report on the Status of River Information Services;**
- III – RIS Related Definitions 2019.**

Chair: Cas Willems (NL) , ➔ Piet CREMERS (BE)

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InCom WG Report
n° 125/II - 2019



**TECHNICAL REPORT ON THE STATUS
OF RIVER INFORMATION SERVICES**

The World Association for Waterborne Transport Infrastructure

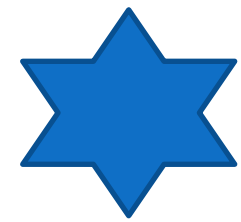
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InCom WG Report
n° 125/III - 2019



RIS RELATED DEFINITIONS 2019

The World Association for Waterborne Transport Infrastructure



WG 192 - Automation and Remote Operation on Locks and Bridges.

Chair: *Lieven Dejonckheere , Vlamse Waterweg, BE*

The report includes:

- New development in remote operation of structures
- Physical security including perimeter protection, intrusion detection technology, video analytic and access control
- Network security including protection of data, intrusion prevention/detection (hackers), etc.
- Integration of SCADA and Process for RIS, ERP
- Scanning & video technology
- Human Factor Engineering
- Simulation technology for training & certification of operators
- Big Data Analysis
- Self-learning technology

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InCom WG Report
n° 192 - 2019



REPORT ON THE DEVELOPMENTS
IN THE AUTOMATION AND REMOTE OPERATION
OF LOCKS AND BRIDGES



WG179 Standardization of Inland Waterways Proposal for the revision of the ECMT 1992 classification;

Chair: Ivo ten Broeke (RWS, NL)

The report includes:

- proposal for new EU classification and the differences between the ECMT and UNECE classifications are highlighted and explained.
- description of fleet characteristics and of waterway characteristics.
- enhances the fleet and waterway characteristics findings through a market analysis.
- synthesis of the information to develop a revised classification

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**InCom WG Report
n° 179 - 2020**



STANDARDISATION OF INLAND WATERWAYS
PROPOSAL FOR THE REVISION OF THE ECMT 1992 CLASSIFICATION

WG 201- Inland Waterway Classification in South America.

Chairs : *Philippe Rigo (ULiege, BE),
Ricardo Sánchez (ECLAC- CEPAL, UN)*

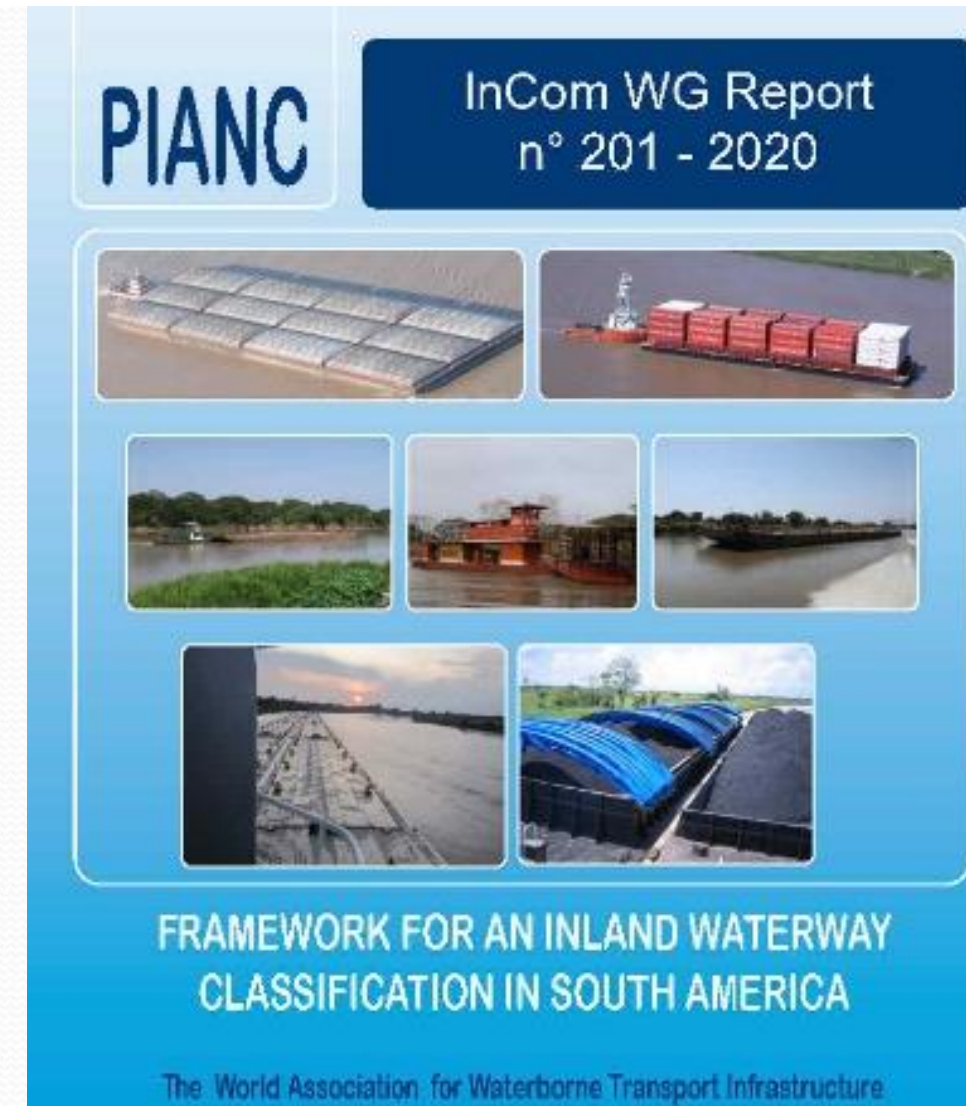
A common IW classification in South America could be a tool to support the development of inland navigation in South America (S.A.).

In S.A., there are several independent inland waterway systems, which currently have varying levels of development and investment.

The uses of IW in S.A. are challenged by various factors: a low level of investment; incomplete national and regional regulatory frameworks; poor administrative structures; limited use of navigational technologies.

These challenges have limited the potential of inland navigation in S.A.

So, an uniformized IW classification is required for all S.A. countries.



WG 189 - Fatigue of Hydraulic Steel Structures;

Chair: *Dirk Jan Peters (RHDHV, NL),*

The report concerns:

- Nature of fatigue in hydraulic structures,
- Significance and specific character of fatigue damage;
- Identification of fatigue loads, their sources, characters and correlations.

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InCom WG Report
n° 189 - 2020



FATIGUE OF HYDRAULIC STEEL STRUCTURES

WG 191 – Use of Composites in Hydraulic Structures

*Chair: Prof Hota Gangarao (WVU, USA),
and Ruifeng Ray Liang (co-chair)*

This report summarizes state of the art of FRP composites for hydraulic structures including design, construction, evaluation and repair.

- **Emphasis is placed on applications of composites in waterfront, marine, navigational structures including lock gates, gates and protection systems.**
- **Design of composite hydraulic structures is presented or referenced for the cases available, such as design of FRP Recess Panel, Miter Gates,**
- **Discussions on operation and maintenance guidance including nondestructive inspection and evaluation techniques.**

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InCom WG Report
n° 191 - 2020



COMPOSITES FOR HYDRAULIC STRUCTURES

WG 197 - Small Hydro Power Plant in Waterways

Chair: *Nicholas Crosby , KCAL-Global, UK*

The WG reports that:

- There is considerable potential in all countries to increase hydro capacity using small, mini- or micro-sized turbines on smaller water courses, rivers, and even man-made canals.
- Hydropower is usually incorporated in a multipurpose system used for water storage (irrigation and drinking water), flood attenuation and water management, navigation, and amenity.
- Any organization that controls or manages a water course can utilize the potential of moving water to generate renewable energy and inland navigations are an obvious possibility with existing infrastructure creating differences in level and water movement.

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InCom WG Report
n° 197 - 2021



SMALL HYDRO POWER PLANT IN WATERWAYS

WG 198 - Saltwater Intrusion Mitigation in Inland Waterways

Chair: *Tom O'Mahoney (NL)*

This report provides recommendations for the study of saltwater intrusion in IW. Mitigation methods are summarised as well as measurement and modelling techniques that can be used to predict or determine the effectiveness of various measures.

The report provides guidance and insight to :

- Quantify salt propagation (speed, distance and concentration) ;**
- Monitor waterway salinity intrusion,**
- Measurement of saltwater intrusion and monitoring;**
- Modelling: Physics based multi-dimensional modelling,**
- Mitigation: Methods for arresting salinity intrusion.**

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InCom WG Report
n° 198 - 2021



SALTWATER INTRUSION MITIGATION
IN INLAND WATERWAYS

WG 204 - Cybersecurity in Inland Navigation

Chair: *Gernot Pauli* , Germany, CCNR

Inland navigation should be seen as a complex system, including the vessels, waterways, ports, shipping companies and cargo, linked by ICT services (such as RIS) and subject to cybersecurity risks.

Cyberspace is understood as a complex environment where people, software and services interact, supported by information and communications technology (ICT) devices and interconnected networks, especially the internet.

Cybersecurity is the protection of this environment and its elements from theft or damage (hardware, software, information), as well as from disruption or misdirection of the services they provide.

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InCom Task Group
n° 204 - 2019



AWARENESS PAPER ON CYBERSECURITY
IN INLAND NAVIGATION

The World Association for Waterborne Transport Infrastructure



WG 210- Smart Shipping on Inland Waterways

Chair: *Ann-Sofie Pauwelyn (BE); Lea Kuiters (NL)*

PIANC is aware that Smart developments in other transport modes have been reaching a mature status (as train and automobile). So, this WG refers to the methodologies implemented in these modes and focuses on smart shipping with a specific interest on the waterborne infrastructure.

Autonomous driving are expected to reduce the costs of road transport and to increase its flexibility, while new rail corridors and the next generation of freight trains are expected to lower the technical and organizational barriers for rail freight.

It is therefore of paramount importance that technologically innovative initiatives like smart shipping are in the focus of the IWT sector to improve efficiency, safety and sustainability.

SMART SHIPPING ON INLAND WATERWAYS



InCom Working Group Report N° 210 – 2022

THE RUNNING INCOM WGs

WG 234 – Infrastructure for the decarbonisation of IWT

Chair: Mark van Koningsveld, TUD, NL

Decarbonisation is of existential importance for inland navigation.

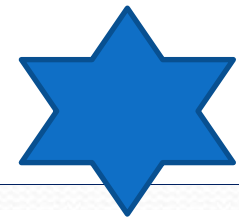
Without decarbonisation, IWT will lose all its political support and will become as transport mode “non grata” for freight forwarders. Global and European societal pressure is growing to keep climate change and air pollution within acceptable limits.

The availability of zero-emission fuels infrastructure, including onshore electric power supply, will be key to enable zero-emission vessels and increase the competitiveness of IWT as a whole, at a time when other modes of transport are reducing their ecological footprint.

WG 229 – Guidelines for Sustainable Performance Indicators for Inland Waterways

Chair: Klaas Visser, TUD, NL

This WG has as main objective to tackle “sustainable performance indicators”, with a specific target on the hazardous emissions and greenhouse gas production aspects induced by the IW navigation. PIANC is aware that performance indicators should also relate to technical performance, economic performance, maintenance performance, etc.



WG 203 – Sustainable Inland Waterways

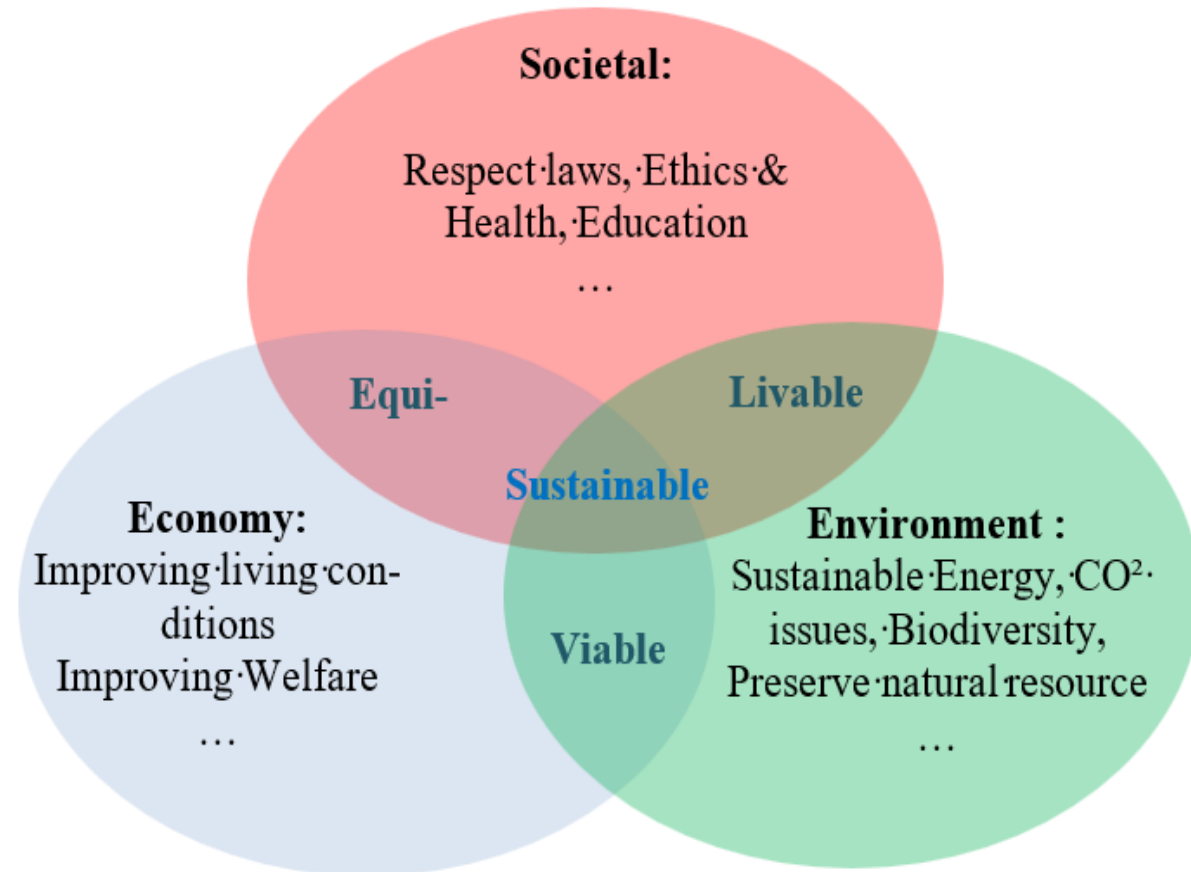
A Guide for Waterways Managers on Social and Environmental Impacts

Chair: Andreas Dohms, WSV, Germany

WG203 focuses on:

- Multifunction of Inland Waterways
- “Social and Environmental Awareness of Waterborne Infrastructure Managers”, also called CSR (Corporate Social Responsibility).

The purpose is to raise the global awareness of the PIANC community, pushing to change education and mentality towards a more sustainable world.



WG 228 – Extended values of “Low-use” Inland Waterways

Chair: Arjan de Heer, WitteWeenBos, NL (in collaboration with IWI)

Historically, navigable rivers and canals have been an important feature of human society through transportation, water supply, agriculture, economic and societal benefits.

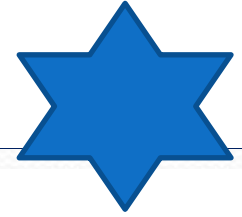
In many cases, decommissioning the low-use IW and their infrastructure is not feasible and not desirable, thus we need to identify new beneficial values of these inland waterways in terms other than only the commercial transport navigation.

Maintaining the use of IW by commercial vessels remains a decisive focus as the developments in Smart Shipping and logistics might provide a strong and sustainable economically viable base.

WG 219 – Guidelines for IW Infrastructure to Facilitate Tourism

Chair: Rudy Van Der Ween, Port of Gent, BE (in collaboration with IWI)

Recreational navigation is a growing activity, also in the managed inland waterway systems. The increase in demand for IW recreational of activities has led to development of infrastructure which should be sustainable and well-integrated with transportation systems.

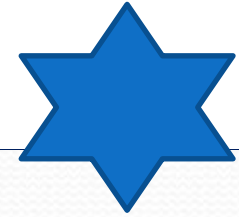


WG 236 – Sustainable Management of the Navigability of Free Flow Rivers

Chair: Calvin Creech, USACE, NL

This WG focuses on free-flowing currents or rivers in their natural state, entirety or partially, in which the flow is not constrained by any hydraulic infrastructure. We refer to these as "natural rivers."

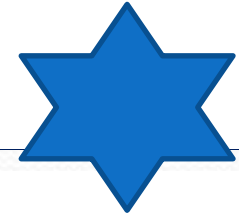
This WG is dedicated to the improvement of navigability natural rivers that are not intended to be regulated. The goal is finding ways to guaranty/improve navigability without conventional training structures, concrete, rock etc. inside the natural rivers.



WG 128 - Alternative Technical-Biological Bank Protection Methods for Inland Waterways

Chair: Bernhard Soehngen, BAW, Germany

The objective of the InCom WG128 is to understand, evaluate and report on the effectiveness of best practice examples of innovative (alternative) bank protection measures, as related to different impact influences and boundary conditions, to fulfil the technical purposes and additionally to improve the ecological conditions.



WG 206 – Update of the Final Report of the International Commission for the Study of Locks

***Chair:* John Clarkson, USACE, USA**

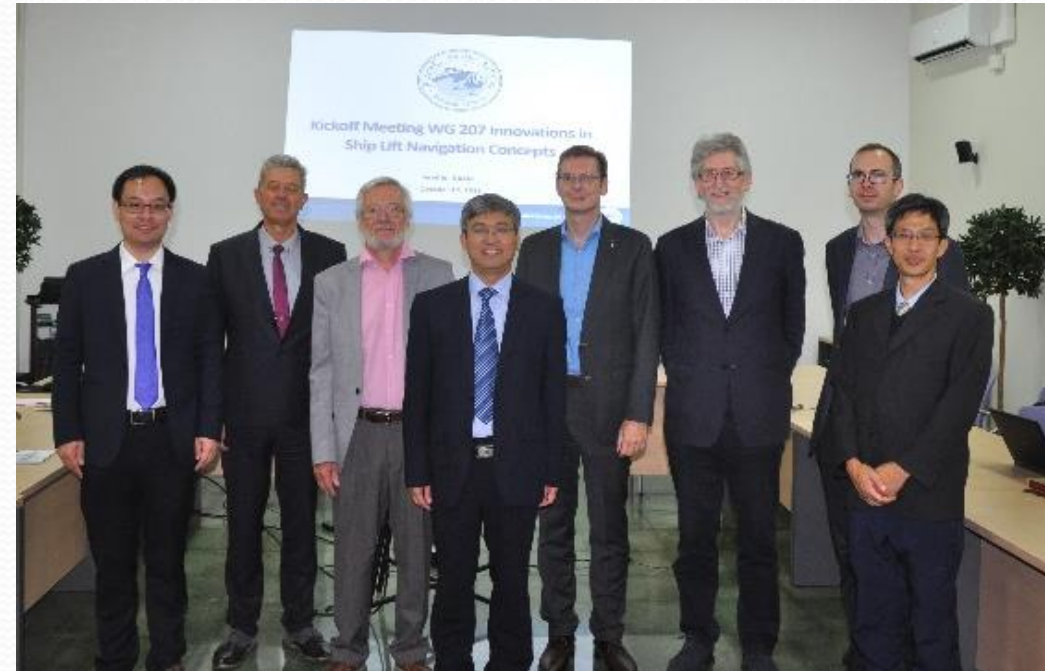
The main objective of the WG 206 is to update the PIANC 1986 Report of the International Commission for the Study of Locks.

It has been over 30 years since this benchmark document was produced and much has evolved and an updated report, second version, is needed for the navigation community.

WG 207 – Innovations in Shiplift Navigation Concepts

Chair: Hu Yaan, NHRI, China
Dr Gensheng Zhao (co-chair, YP)

It was required to establish a new PIANC report about the new development of shiplifts and provide guidance on construction, management and maintenance of new and old shiplifts for the coming 20-30 years.



WG 199 – Health Monitoring for Port and Waterway Structures

Chair: Brian Eick, Mathew Smith, USACE, USA

Structural health monitoring (SHM) principles, damage prognosis strategy, and technology adoption can provide continuous measurements of aging infrastructure to support real-time operations, **provide alerts concerning imminent failures, and provide longer-term monitoring** to accurately quantify asset and component condition, including remaining service life, risk assessment, and maintenance requirements.

The main goal of structural health monitoring of Waterway and Port structures is to provide quantified probabilistic measures of risk and reliability necessary to make operational and financial decisions concerning the functionality and safety of those structures.

WG 190 – Corrosion Protection of Lock Equipment

Chair: Rebekah Wilson , USACE, USA

WG 190 will allow owners and operators to make durable and sustainable decisions, from original construction of lock equipment to long term maintenance strategies that prolong the life of the assets.

In today's competitive environment, maintenance costs are a crucial and very significant part of a structure's life cycle cost and its ability to deliver value to its owner.

Corrosion is a major degradation factor responsible for significant maintenance costs.

One of the most effective strategies to prolong the life of steel structures and equipment is thus a high performance corrosion protection system.

There is currently very little research and documentation available for corrosion protection systems as they pertain to lock equipment such as gates and valves which operate in an aggressive aquatic environment and are subjected to hydro-mechanical forces.



WG 216 – Best Practices in Planning Inland Waterways Multimodal Platforms

Chair: Allard Van Riel (U Hasselt, BE) , P. Rigo (ULiege, BE)

This WG focuses on multi modal platform along inland waterways which have other specificities than sea ports (smaller dimensions, different equipment's, other constraints and geographical implementation, traffic density, ...and other governances).

Planning the development of ports in general, but also of inland ports, is not only a matter of infrastructures but also of intermodality, logistics and service given to costumers.

To integrate the infrastructure with the various transportation modes, making a river an efficient mean of transport (an Inland Waterway) the “requested” facility is a multimodal platform.

WG237 - Bottlenecks and Best Practices of Transport of Containers on Inland Waterway

Chair: Krämer Iven , SWH Bremen, Germany

Making our economies climate neutral will lead to a decline in the volume of fossil fuels, often the most important cargo for inland navigation.

In Europe, the market for coal is already shrinking and with the further electrification of road transport, the market for liquid fossil fuels will follow.

Thus, inland navigation needs urgently to find other cargoes and to expand its market share in the transport of cargoes, which will stay relevant in the future.

WG241 - Handling Accidents and Calamities in Hydraulic Structures

Chair: Yves Masson, CNR, France , with Richard Daniel (NL), and Tim Paulus (USACE, USA)

Various PIANC WGs have, so far, provided guidance for preventing accidents from happening, particularly the accidents resulting from strength excess.

While this should remain the engineer's main concern, there is also a **demand for guidance how to effectively handle the accidents and calamities that have actually happen.**

This is a matter of combined effort of not only engineers.

Nevertheless, engineers can and should contribute to the solutions in such cases.

WG242 - Permanent Floating Houses along IW Banks and Infrastructure

Chair: Heiner Haass , D-Marin Consult, Germany

(with Sandrine Darimont from SPW)

In many large cities (Paris, London, Amsterdam, ..) a significant ratio (%) of the inland waterway banks (and sometime also the infrastructure) are used by moored ships and floating houses as fixed and permanent residences or accommodations (for private and commercial uses).

These former cargo ships often are not able to navigate anymore.

The floating houses for residential or hospitality uses are connected to land with permanent gangways and water and electricity supply and sewage treatment systems.

The WG will make recommendations.

PIANC - InCOM

PIANC/INCOM is the key worldwide scientific and technical association in charge of the dissemination of the knowledge in the field of inland waterways, inland navigation and inland infrastructure.

If you have expertise in this field, contact PIANC to join an INCOM WG to share your expertise and get benefit of the PIANC network.

<http://incomnews.org>

YOU ARE WELCOME!



Welcome to the PIANC INCOM Commission