



Extended values of “Low-Use” Inland Waterways

1. Background

Historically, navigable rivers and canals have been an important feature of human society through transportation, water supply, agricultural management, economic and societal benefits. With increasing population and the concomitant development of market economy many rivers have been transformed to inland waterways (IW) operated as navigation corridors by use of structures (locks, weirs,...) and the design of specific vessels to support rapid and efficient transport of bulk materials (e.g. ore, petroleum and coal). Common river training (including dredging, groins,...) was also used to maintain the navigability of the IW across a range of hydrologic conditions. The result has been a complex infrastructure and training management integrated to support navigation during the all year (as much as possible).

This navigation infrastructure requires also governing bodies (as CCNR, USACE, ...) to establish parameters for its effective use such as safety and cost-effective use while protecting populations from floods and droughts.

In addition, ecosystem services and recreation were often neglected in the past along waterways whereas nowadays the importance of ecological (and social) functions of waterways are emphasized and ask for special care (see INCOM WG 203).

Nowadays, while large inland waterways remain economically viable and continue to support substantial commercial navigation, competition from rail and truck has resulted in less commercial use of some smaller inland waterways. Concurrently, large waterways are emphasized with new effective and modern infrastructure and management improvements, and, on the contrary, we observe less incentive for investment in less economically viable inland waterways. **These are the so-called “low-use inland waterways”** (see definition in Section 2).

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

Economic sectors such as recreational navigation (INCOM WG 219) are significant opportunities to reevaluate society's investment in navigation infrastructure. Indeed, the economic benefits of waterborne tourism need to be considered in the economic analyses (see INCOM WG 203: Sustainable Inland Waterways – A Guide for Waterways Managers on Social and Environmental Impacts). In addition, redefining values for IW nowadays explicitly includes ecological upgrading or re-establishment of riverine biodiversity generating additional societal benefits in terms of ecosystem services (see EnviCom WG 195).

Additionally, urban IW waterfront opportunities and other social benefits have to be enhanced.

In general, existing legal and administrative structures may be updated to integrate new economic sectors not considered so far into broader operation and maintenance of low-use IW. Specifically, the source of funding for infrastructure maintenance and/or adaptation to new uses is challenging because it often does not fall under traditional sources or administration structures, and may no longer be justifiable under its original mandates. In fact, the advantages to handle multi-functional and multi-responsible management of low-use IW must be considered (see INCOM WG203).

This is an important topic in many developed countries (France, DE, UK, USA, etc.) because they have some old canals and rivers with almost no significant commercial transport traffic and only leisure navigation and other new uses. Nevertheless it could be valuable to keep commercial navigation and cargo shipping in these existing waterways.

Additionally, there is experience transitioning into new uses, funding and management structures in many parts of the world. For example, the Florida Inland Navigation District (FIND, in the USA) has evolved into a well-funded agency that maintains navigation infrastructure primarily for recreational uses and supports environmental restoration and waterfront urban improvements.

The WG will explore experience and studies on such situations.

When there is a low commercial transport traffic, the idea is:

- to transfer the responsibilities to other authorities/jurisdictions for local uses (totally or partially);
- to look for additional economic and ecological uses then commercial navigation (flood control, irrigation, recreation navigation, environmental restoration, for example);
- to develop new ideas and benefits, and as well to assess precisely the technical constraints and costs

The WG will identify study cases where low traffic is due to a bad status of infrastructure (as locks, dykes, or dredging) caused by a lack of investment (due to project prioritisation).

Indeed, the main technical problems to keep these low-use IW are:

- inspection and maintenance for low cost, but ensuring safety;
- vegetation management (banks, trees, floating debris, etc.);
- operation management compatible with low use (automatization, etc.);
- definition of navigation infrastructure management goals, adjusted to restricted navigation (water depth, navigation width, air clearance under bridge, etc.);
- assessment of the operation costs in order to obtain budget;
- assessment of the refurbishment cost if the infrastructure has been neglected;
- determine potential multi-uses and multi-purposes including water management, urban use, environment, landscape, commercial and recreational navigation;
- lack of water resources;
- ...

Decommissioning is an important matter to be dealt by this WG. It involves:

- assessment of status and cost of refurbishment (before decision);
- assessment of safety;
- hydraulic constraints linked to water levels;
- societal and political consequences of IW suppression, e.g. note that closing IW for commercial navigation can generate large juridical consequences, as it can take the bread out of the mouth of entrepreneurs. In some countries the

waterway is public and open to any navigation. Decision of closing should be preceded by a public procedure and could lead to massive economic claims.

New potential of the low use IW for commercial navigation should be analysed through an analysis of innovative developments and options, for instance, Smart Shipping (unmanned vessels).

Very often it is not possible to come back to the natural situation because the river/canal (IW) has modified the valley (often since more than 100 years) and the current situation is considered as the historical status. So the decommissioning may imply significant costs.

2. Definition of “Low-use Inland Waterways”

This tentative of definition of “Low-use Inland Waterways” has ONLY as objective to clarify the scope and objectives of this TOR.

This TOR on “**Low-use Inland Waterways**” focuses on Inland waterways (including navigable rivers, canals and canalized rivers). We will resume it by simply talking about **Low-use IW**.

By “**Low-use IW**”, we mean IW:

- which were previously managed to be an important or significant IW, used for commercial navigation;
- which are agreed to have in the future no substantial significance for (cargo) transportation purpose but are useful for other purposes as drainage, flood management, pleasure navigation, ecological enhancement, etc. and are still today being managed as IW for commercial navigation, but still have potential in terms of navigation as the results of innovative and future-oriented developments like Smart Shipping is;
- where other present and potential values are not yet included in IW management and development (such as social interest, culture, environment, recreational navigation, nature, etc.). These reasons may also include new economic values for the local entities (such as tourism, societal services of ecosystems, culture, promotion of patrimony,...), ...

Remark: By referring to “Low-use IW” we explicitly exclude (for this WG):

- small rivers, which have never been used for navigation;
- rivers, which have never been used for intensive commercial navigation (as many rivers in S.A, Africa, SE Asia, Latin America, etc.);
- operating commercial transport ports (even inland port), costal infrastructure, estuaries,...

3. Scope and Objectives

The proposed WG is to deal with **inland waterways that have today less value for transportation than in the past**, as per the definition of “Low-use IW”. These are no more well-funded and well-managed in an integrated systems; but waterways where management, planning and resources for investment and operational expenses are no more available as in the past. These are systems that “need a new life”, where more integrated planning is needed because the old drivers of economic use (e.g. transport of goods) are not viable anymore.

The objectives are:

- Determine the conditions which describe low-use IW. Develop diagnostic criteria for identifying low-use IW.
- Quantify the challenges and opportunities for developing new benefits for low-use IW, ensuring their future viability and revival.
- Develop an economic, environmental, recreational, institutional, and regulatory framework for evaluating the current-state of low-use IW.

- Conduct an SWOT Analysis disclosing strength, weakness, opportunities and threats in present and future management of low-use IW.
- List new technologies and innovative ship concepts to IW navigation in shallow water (see INCOM WG 210 Smart Shipping) to identify the untapped value for transport infrastructure.
- Document existing case studies including successful and unsuccessful redevelopment and management of low-use IW.
- Propose and advertise a comprehensive analysis framework for the future of low-use and multi-use IW that describes possible management and funding systems that produce positive outcomes for all stakeholders (in complementarity with INCOM WG203)

Remark: Through this WG, PIANC does not mean that large waterways do not consider waterborne tourism and recreational use, neither that they neglect urban river waterfronts and ecosystem services. In addition, nowadays, the "multi-functional and multi-responsible management" is not just a problem of "Low-Use IW" – see WG 203.

4. Earlier reports to be reviewed

InCom

- WG 219: Guidelines for IW recreation infrastructure (ongoing, 2019);
- WG 210 Smart Shipping (ongoing, 2018);
- WG 203: Sustainable Inland Waterways - A Guide for Waterways Managers on Social and Environmental Impact (ongoing, 2017);
- WG 139: Values of Inland Waterways (2016);
- WG 129: Waterway Infrastructure Asset Maintenance Management (2013);
- WG 111: Performance Indicators for Inland Waterways Transport? User Guideline (2010);
- WG 25: Maintenance and Renovation of Navigation Infrastructure (2006);

EnviCom

- WG195: An Introduction to applying Ecosystem Services for Waterborne Transport Infrastructure Projects (expected 2019)
- WG 176: Guide for Applying Working with Nature to Navigation Infrastructure Project (2018)
- WG 107: Sustainable Waterways in the Context of Navigation and Flood Management (2009)
- WG 6: Guidelines for Sustainable Inland Waterways and Navigation (2003)

RecCom

- WG 202: Influence of Recreational Navigation Infrastructures on Waterfront Projects
- WG 149: Guidelines for Marina Design – Part 4 (2017)

5. Intended product

The report will deliver an understanding of the problems of low-use IW, and will propose recommended approaches with beneficial multi-functional use considering typical cases studies of political and administrative context.

This WG should coordinate with the work of the ongoing WG 203 and WG 219 and avoid overlaps or incompatibilities with them.

A practical insight will be given by case-studies. Essential part will be a guiding analytical framework to outline a 'masterplan' for future management of low-use IW creating win-win situations for all affected and involved sectors.

6. Working Group membership

The topic of low-use IW really is a PIANC cross-commission issue and this is why WG members should include representatives from InCom (coordinator), EnviCom and RecCom, and potentially of other commissions such as CoCom.

The WG should have experts from those sectors which are involved in the management of inland waterways, as well as all other new beneficial uses. Experts from the recreational world having an expertise on IW (RecCom) and from the nature conservation of IW (EnviCom – see also Section 8 below) are required.

Local governments are also critical stakeholders, and their representation should be considered. Agents of administrative and legal executive bodies also have to be included. Members from countries in transition should be encouraged to contribute their perspective, experience, and needs in managing and maintaining low-use waterways.

7. Relevance to Countries in Transition

Compared to well developed countries, transitional countries may lag in the development of waterway infrastructure, but there are also many cases with old and reconverted facilities. Experiences in managing infrastructure in low-use waterways can be adapted to these emerging economies with the goal of maintaining economic efficiency and multi-use value.

Unsuccessful management of the transition from high-use to low-use waterways in developed countries also are valuable lessons-learned. In other circumstances, countries in transition may propose case studies of successful conversion of old IW infrastructure to beneficial transportation and non-transportation related uses. The comprehensive analysis framework should assist transitional countries in developing strategies that generate more widespread social, environmental and economic benefits.

8. Climate Change, Working-with-Nature and SDGs

Low-use waterways revisited and possibly redeveloped with ecosystem services and climate change issues in mind may support adaptation and sustainability goals. Because low-use IW contribute to water supply in high-use IW they can also increase climate resiliency and support sustainable multi-use of low-use IW concept. Those create benefit for navigation and nature.

The topic of the report touches UN Sustainable Development Goals (SDG).

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- 5) 28 July 2019 - RecCom, Esteban Biondi
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