



Terms of Reference (ToR)

A Guide for the Decision-Making Process Relating to Environmental Windows & Seasonal Restrictions for Dredging and Navigation Infrastructure Works

1. Background

Environmental windows and seasonal restrictions are a common measure used to mitigate impacts of navigation infrastructure construction- and maintenance works such as dredging. Defining these windows in a sound manner is a challenging but important part of the mitigation process and should be based on the local ecological-, physical- and social environment, type-, intensity- and frequency of the works and existing rules and regulations whilst taking into account the existing background situation.

Previous PIANC, CEDA and IADC Working Groups (WG) have developed procedures and knowledge which can be used to define scientifically sound, realistic and practical working windows and seasonal restrictions. A lot of knowledge was gained on understanding impacts of dredge related works such as the biological assessment of dredged material, evaluating whether sediments to be dredged are appropriate for use beneficially or require special handling, as related to navigation and port infrastructure.

However, these reports did not address specific tools, steps, and practices needed to evaluate seasonal environmental restrictions currently being placed on navigation works and dredging and dredging placement / disposal operations. A new effort is proposed to fill this gap by developing a practical guide to assist those tasked with making such decisions such as regulators, project owners and stakeholders planning- & designing projects.

The report will further define these environmental windows, overall accepted to be a common management (mitigation) practice used to minimize or avoid stresses from navigation infrastructure works on resident and transient biota. Working windows are times during which works such as dredging and dredged material disposal are allowed, whereas seasonal restrictions are periods during which these activities are prohibited.

Seasonal restrictions are imposed based upon the assumption that potential detrimental exposures could cause significant harm during these predetermined periods. Such time-of-year constraints are associated with execution of projects in many navigation infrastructure areas globally. They often complicate contracting schedules (constricting them), add challenges with respect to availability of dredge plant, impact safety of works and substantially inflate the cost of the works whilst often not being based on factual data.



2. Objective

The objective of the proposed WG is to provide a framework (i.e. a method or approach) which is accessible (easy to understand and apply) and robust (consistently yields the correct result), which can be applied universally in cases where seasonal restrictions on navigation infrastructure works may be considered. The framework provides guidance on how to define the intensity (what is possible) and the 'borders' (how long) the seasonal restrictions need to be implemented. It is recognized that uncertainty and risk are key factors in the decision-making process relating to seasonal restrictions, as such these will be important topics for the Working Group.

The framework should be applicable to waterborne transport infrastructure projects in both coastal and inland waterways. The approach will draw from existing approaches and best practices worldwide. It will build on the work of CEDA/IADC (2018) and PIANC WG175. The WG will work closely with other proposed WGs related to Working with Nature (WwN) and ecosystem goods and services (EGS) within the PIANC, CEDA and IADC organizations to ensure consistency among the WGs and sector globally.

The WG should develop a practical methodology for identifying the potential impact and managing the likely effects of navigation infrastructure and dredging works in the context of natural variations in time (short to long term) and space, (e.g., floods, storms, near field/far field), other activities that cause resuspension of sediments (e.g., commercial shipping, storm runoff, etc.) and the ability of the identified habitats or species to recover from or compensate for effects, i.e., temporary as opposed to permanent effects (e.g., Building with Nature species response curves).

Managing project risks involves considering multiple processes (e.g., physical, chemical, biological, socioeconomic, etc.) operating over broad spatial and temporal scales. Large uncertainties related to these processes prevent clear projections about the future performance of risk management actions. The effectiveness and choice of the management of risk involves both large economic and environmental costs and is further complicated by the diverse range of policies, perspectives, risk attitudes and personal values that drive risk management decision making.

The decision-making framework is to be designed to deliver robust management decisions with respect to the need or otherwise for seasonal restrictions, the nature of these and the (local) evidence supporting them, along with guidance for review of those restrictions already in place.

3. Related Reports

The guidance relating to the seasonal restriction decision-making process will appropriately integrate current knowledge from existing reports and frameworks, building on the work of CEDA/IADC (2018). Additionally, it is anticipated that the following references will be of importance:

- National Research Council (NRC). A Process for Setting, Managing, and Monitoring Environmental Windows for Dredging Projects. Marine Board, Transportation Research Board, Special Report 262. National Academy Press, Washington, D.C. 2001.
- IADC. 2016. Facts about Adaptive Management Practices.
- PIANC EnviCOM WG 175 report "A Practical Guide to Environmental Risk Management (ERM) for Navigation Infrastructure Projects."



- PIANC EnviCOM WG226 (in preparation) “A Guide for Assessing and Managing Effects of Underwater Sounds from Navigation Infrastructure Activities”
- CEDA Information Paper (2020) Assessing and Evaluating Environmental Turbidity Limits for Dredging
- PIANC EnviCom Permanent Task Group 3 on Climate Change (PTGCC)

4. Scope

The EnviCom WG will develop a report that develops a practical and structured management/decision process (framework) through which management actions are identified, evaluated, selected, and implemented.

Decisions should be evidence based: a key consideration is which lines of evidence are relevant. Those which are the most obvious may not be the only evidence streams which matter. Where data, knowledge and understanding are incomplete (as is usually the case) simply adopting a highly precautionary approach may not be the best solution. The report should make it clear that projects can differ significantly, thus preventing copying requirements from other projects without substantiating their effectiveness.

The process developed should, where possible, be compatible with the WwN concept taking into account existing methods for managing environmental risks while providing an open, deliberative, and transparent decision-making process.

The management process should:

- Consider the evidence streams which are relevant and available and seek to make best use of these to deliver evidence – based decisions;
- Define the concepts of risk and risk-informed decision making;
- Present an integrated approach / framework to requirements that is practical and implementable;
- Address such topics as uncertainty (e.g., short-term event-based related to infrastructure operations), long-range risks (e.g., climate change), residual risk, sustainability, in-combination effects, resiliency, and collaborative processes;
- Review available methods that support risk-informed decision making so that the uncertainties associated with managing environmental risk of works are recognized and addressed;
- Present risk-informed decision making as a process of shifting toward more sustainable practices for achieving multiple project benefits (i.e., environmental, social and economic) so that the uncertainties associated with managing risks are recognized and addressed;
- Discuss the role of sustainability and life-cycle analysis in the context of risk management of works; and,
- Incorporate adaptive management principles and practices, as appropriate.

In developing the approach, elements addressing issues associated with expert knowledge of the system, including an understanding of the ecosystem, project components and their different construction techniques as well as stakeholder participation should be included as a means of developing a practical approach for addressing environmental restrictions on dredging.

The WG should give thought to ways of promoting uptake of their guidance by project owners, consultants & experts defining restrictions and regulators and discuss this with the WG's mentor within PIANC and more widely with representatives of CEDA and IADC.



5. Intended Product

The report shall comprise and/or be based on:

- An introduction to navigation infrastructure works such as dredging restrictions and how they fit into the existing knowledge base from PIANC, CEDA, WEDA, IADC, and others;
- A description of the approach / framework developed; the method should address the steps and timing needed to meet project objectives, based on evidence, and in a local ecosystem context. The approach must show how stakeholders can be included in the process and identify and exploit triple win solutions by systematically integrating social, environmental and economic considerations into decision making and actions at every phase of a dredging project.
- Potential impediments to applying the process and ways in which these can be overcome. A focused international survey of existing approaches to the setting and management of seasonal restrictions on navigation infrastructure works, recognizing varying legislative demands.
- An easily understood description of two or more case studies where determining whether restrictions should be placed on works such as dredging was informed by a science-based approach as successfully applied in practice;
- A summary of existing PIANC, CEDA, IADC and other publications to ensure the process developed is practical and integrates current knowledge;
- Working with Nature, Engineering With Nature® and Building with Nature programs
- Discussion of progress and approaches developed through recent CEDA/IADC book "Dredging for Sustainable Infrastructure" (2018).

6. Working Group Membership

Members of the WG should include representatives of the three participating associations, PIANC, CEDA and IADC, from the target audience, i.e., port authorities, regulators, waterways managers, consultants, resource agencies, contractors, and environmental non-governmental organizations, who are tasked with making decisions.

The range of expertise should cover at least practical port design-, construction- and operation knowledge and experience, geomorphology, physical processes, biology, ecology and hydraulic as well as hydro-ecological modeling.

One or more regulators should be included to represent the regulatory perspective. To attract the interest of regulators and resource agencies and to more completely cover wide-ranging regulatory jurisdictions, the WG should hold meetings in strategic locations in the form of workshops where local and regional regulators / NGOs / resource agencies can be invited to attend. Such workshops achieve better outcomes, ensure wider representation, and result in a report that is as widely applicable as possible.

7. Relevance to Countries in Transition

The primary audience would be project designers, waterways managers, contractors, ecologists, civil engineers, planners, regulators and environmental stakeholders who have an influence on the decision-making responsibility pertaining to placing restrictions on navigation infrastructure works. The report will be written in a manner easily understood in developed, developing and in transition countries.



8. Climate Change

The report content will consider the role, influences, and implications of climate change and will integrate current knowledge from reports produced by the PIANC Permanent Task Group on Climate Change (PTGCC).