



Terms of Reference

A Practical Guide to Environmental Risk Management for Navigation Infrastructure Projects

1. Background

Previous EnviCom Working Groups have developed procedures addressing various aspects of environmental risk assessment of dredging and dredged material disposal related to navigation and port infrastructure, providing a scientific basis for making decisions based on environmental risk assessment data. These reports did not address methodologies for informing risk management. A new effort is therefore proposed to fill this gap by developing a practical guide derived from existing methods and approaches for informing decision makers managing environmental risk associated with navigation infrastructure projects.

2. Objective

The objective of the proposed WG is to provide technical information to decision makers regarding the risk management process for navigation and infrastructure projects by drawing from existing approaches and best practices worldwide. The risk management methodology should be written using understandable terms. It will build on the EnviCom WG10 report and show decision makers how to transition from risk assessment to risk management. The WG will work closely with other proposed WG related to WWN and ecosystem goods and services (EGS) to ensure consistency among the WGs.

A methodology is required to inform risk management decisions for the comprehensive range of hazards and environmental risks pertinent to navigation infrastructure. The WG should provide a practical methodology for managing the likely effects of project components in the context of natural change in time (short to long term) and space, (e.g., floods, storms, near field/far field), other social and recreational activities (e.g., fishing) and the ability of the identified habitats or species to recover from or compensate for damage, i.e., temporary as opposed to permanent effects. The WG should identify recent case studies, summarizing them in an understandable manner as to how in each risk was managed to better inform decision makers.

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 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 developed risk management framework and supporting methodologies will provide the foundation for a decision support system for environmental risk management.

3. Earlier Reports to be Reviewed

The environmental risk management report will integrate current knowledge from existing frameworks, such as those recently developed by the PIANC EnviCom Permanent Task Group 3 on Climate Change (PTGCC) and Navigation and the Waste Assessment Guidance of the London Convention. It will build on the WG10 report "Environmental Risk Assessment of Dredging at Disposal Operations" and show decision makers how to transition from risk assessment to risk management.

4. Scope

EnviCom recommends that a report be produced that develops a practical and structured management process through which actions for reducing environmental risks are identified, evaluated, selected, and implemented. The process developed should describe available approaches and methods for comparing and evaluating alternative risk management actions to inform decision-making. The process developed should, where possible, be compatible with the 'Working with Nature' concept taking into account existing methods for managing environmental risks while providing an open, deliberative, and transparent decision-making process. The risk management process should:

- Define the concepts of risk, risk analysis, and risk management;
- Present an integrated approach to risk-based management 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, and resiliency of natural features;
- Review available methods that support risk-informed decision-making so that the uncertainties associated with managing environmental risk are recognized and addressed;
- Present risk management as a process for achieving efficient and effective risk reduction;
- Discuss the role of sustainability and life-cycle analysis in the context of risk management; and,
- Incorporate adaptive management principles and practices.

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 communication should be included as a means of developing a practical risk management framework.

5. Intended Product

The report shall comprise:

- An introduction to risk management issues and how they fit into the existing knowledge base from PIANC, CEDA and others;
- A conformation with the Working with Nature concept;
- A description of the risk management process developed; the method should address the multiple processes related to physical, chemical, biological, and socioeconomic factors operating over broad spatial and temporal scales. The approach must account for the magnitude, frequency and duration of risks and place these risks into

perspective with the natural variability of the physical, chemical and biological aspects of the whole ecosystem.

- A description of how to transition from risk assessment to risk management
- A focused international survey of existing environmental risk management approaches under consideration of legislative demands.
- An easily understood description of one or more case studies communicating risk management principles and best-practices addressing, for example resuspended sediments, the Working with Nature concept, climate change, and beneficial use of dredged material.
- A summary of existing PIANC, CEDA and other publications (e.g., WG10) to ensure the process developed is practical and integrates current knowledge.
- A description of adaptive management and monitoring principles and practices.

6. Working Group Membership

Members of the WG should include representatives from the target audience, i.e. consultants, regulators and contractors, Port Authorities and risk management practitioners who are tasked with making risk management decisions. The range of expertise should cover at least practical port design and construction knowledge and experience, geomorphology, physical processes, biology, ecology and hydraulic as well as hydro-ecological modeling. A regulator should be included to provide a regulatory perspective.

7. Relevance to Countries in Transition

The primary audience in both developed countries and countries in transition would be decision makers in planning, operations, and programming that have the decision-making responsibility pertaining to risk management.

8. Climate Change

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