



Terms of Reference Screening Evaluation of Environmental Effects of Navigation and Infrastructure Projects

Background

Working Group (Envicom) 10 (Environmental risk assessment in dredging and dredged material disposal) outlined a procedure to give a scientific basis for making a decision when a potential high risk has been assessed during previous screening or environmental impact assessment. The report did not consider the initial screening evaluation. As a consequence it did not identify the range of specific events and pathways to environmental impact that might arise. A new report is therefore required to fill this gap and at the same time provide a transparent method for the project screening process.

Scope

Members of Envicom WG 10 and Envicom consider that a report is therefore required to outline the potential pathways of environmental effects from navigation and infrastructure projects (not only dredging issues) and provide a methodology for a screening evaluation taking an holistic view of the environment (including economic and societal aspects) as well as the feasibility of any technical solutions. The method developed should, where possible, be compatible with the 'Working with Nature' philosophy, take account of existing national screening methods for environmental effects and provide a transparent high level evaluation process. The screening evaluation therefore requires after project need and objectives have been established:

- An understanding of the system in which the project is to be undertaken to identify the environment related functional changes;
- An holistic ecosystem approach;
- Consideration of various lines and weights of evidence; and
- The requirement to only use existing readily available information.

In such a high level evaluation the role of expert knowledge of the system, the understanding of the project components and their different construction techniques as well as stakeholder consultation to identify possible win-win

opportunities will be important. Thus documentation of the screening evaluation assumptions will form an essential part.

Within the report, for the detail, signposting should be made to existing PIANC, CEDA and other publications in order that the document is practical in its use and integrates the previous knowledge.

Objective

The objective of the proposed WG is to develop robust methodological guidance to provide a screening evaluation 'tool' for navigation and port infrastructure projects. To aid the user the document should identify and briefly describe the events and functional chains (pathways) of environmental change, from the possible external driving forces, and the likely environmental receptors that might be affected by the various potential technical components of any navigation and infrastructure project.

For each relevant pathway of change the screening evaluation method should use basic, simple generic terms on a broad holistic basis and as far as possible should be integrated with existing frameworks, such as those recently developed by the New! Delta project and the Waste Assessment Guidance of the London Convention.

The goal is to classify, in a transparent way, the events likely to cause change from a specific project into risk categories, such as (to be reviewed/confirmed/expanded or otherwise by the WG):

- **None:** A de minimis identifiable environmental harm will arise from constructional interference of the envisaged project;
- **Minor.** E.g. not likely to cause unacceptable harm (for example if there is no pathway from the event causing change to a sensitive area);
- **Moderate.** E.g. limited unacceptable harm (for example a sensitive area or species has been identified, a pathway exists but the sediment has only low levels of contamination or the port project is not in direct contact with the sensitive area). Under this heading mitigation by various management (dredging or otherwise) techniques may be possible. Examples should be indicated for certain events (to illustrate the idea) with signposting to other existing PIANC (e.g. Envicom WG 100), CEDA documents etc;
- **Severe.** E.g. likely to cause extensive unacceptable harm; for example when a sensitive area or species has been identified and the project component completely removes a habitat, such as intertidal reclamation,

or where habitats or species are likely to be affected in their ecological function. In certain situations there may be insufficient evidence on the likely effects to enable a screening opinion to be made. In such cases it may be necessary to move on to a full risk assessment as described in WG10 Report to determine how significant this harm will be to the ecosystem as a whole.

This analysis structure therefore acts as decision support information/tool for a screening opinion, allowing minor effects to be eliminated from further assessment and concentration on more significant impacts in a tiered approach.

A methodology is also required to summarize the assessment of the specific pathways to allow a technical screening evaluation of the project as a whole.

In this classification process the WG should provide a method of assessing the likely effects of the project components in the context of natural change in time (short to long term) and space, (e.g. floods, storms), other accepted anthropogenic activity (e.g. fishing) and the ability of the identified habitats or species to recover from damage, i.e. temporary as opposed to permanent effects. Members of the WG should investigate what research is taking place on these issues and where possible summarise relevant conclusions as examples and provide signposting to further information.

The classification of potential effects should identify the most significant areas of concern, as well as the reason and the expected area of influence. It will identify areas where modified project design, mitigation measures or further assessment will be required, but most importantly define events that will not have a significant environmental impact.

Report

The report may comprise:

- Introduction on the requirement of the report and how it fits into the existing knowledge base achieved from recent previous reports from PIANC, CEDA and others and conforms to the 'Working with Nature' philosophy;
- Description of the need for a consistent approach to Screening Evaluation in navigation and port infrastructure projects;

- Descriptions of aspects of navigation and port infrastructure projects that give rise to environmental impact: E.g. drag head disturbance, overflow, spillage into the water or on land during the dredging operations, noise and vibration from piling operations, bank redesign, building of groins, relocation of river channel, bed lowering, shaping of floodplain etc. It would be useful to categorise these into the different types of operations.
- Description of types of ecosystem receptors for different initiating events: E.g. habitat type, morphology, fauna, flora etc (it will not be possible or helpful to name all species etc but those known to be particularly susceptible or endangered might be listed);
- Description of environmental functional chains (pathways): waterborne, (semi) terrestrial, atmospheric, anthropogenic. This should include examples of how they may be assessed. Important is the need for specific system understanding, which may be the only information available in countries in transition as a precursor to using various models, including hydrodynamic, plume, sediment release rate, noise and ecological models at the next level of assessment;
- Broad description of existing methodologies to forecast and evaluate environmental impacts in the context of screening evaluation of navigation and infrastructure projects. This may comprise several approaches starting from "simple" verbal-argumentative projections up to modelling techniques;
- Overview of management methods to mitigate impacts;
- Description of the screening evaluation process developed; if possible the method must assess the real affects from a project and not just the perceived effect. The assessment approach must be able to take account of the magnitude, frequency and duration of the initiating event along the spatial pathways and place this into perspective with the natural variability of the physical, chemical and biological aspects of the ecosystem as a whole. In this respect the greater the system understanding as well as lines and weights of evidence available, the lower the uncertainty in the evaluation will be;
- Description of best-practice examples (e.g. country wise).

Audience

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The audience would be project designers, environmental staff, civil engineers, dredging practitioners and those responsible for drawing up environmental assessments, the regulators who have the decision-making responsibility and contractors who will have to carry out the projects to any rules developed through the evaluation process.

Members

Members of the WG should include each of the above, i.e. consultants, regulators and contractors, Port Authorities and EIA practitioners. 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. It would be beneficial to include a regulator to ensure that the approach of the group addresses the requirements of the decision makers.