

Terms of Reference

Environmental Aspects of Dredging and Port and Waterway Construction around coastal plant habitats

1. Background:

In order to fill the gaps in information about the relation between dredging and port construction and the well being of productive marine and inter tidal plant habitats, an EnviCom Work Group is to be established.

There is a constant challenge to all governments of the world to achieve development without compromising the health and functioning of our environment and consequently the benefits that we depend on for food, health, security and our economies. Healthy marine and coastal ecosystems provide a huge range of ecosystem services to coastal communities: protect shorelines from storm surges and waves, prevent erosion, sequester carbon, provide food, and support livelihoods, provide biogeophysical framework for navigation.

Marine and inter tidal ecosystems such as mangrove, seagrass and salt marshes contribute a critical role in climate regulation. Of all the carbon dioxide captured by photosynthetic activity globally each year, more than half is captured by marine living organisms (Nellemann et al, 2009¹).

These ecosystems have an important role to play in climate change mitigation and adaptation strategies both in terms of their capacity for carbon sequestration and storage and also in terms of reacting to the impacts of climate change, such as sea level rise. This provides a strong driver for the protection of these ecosystems.

2. Objective

The task of the Working Group would be:

- to collect available literature and 'good practice'-case studies from dredging and port construction around marine and inter tidal plant habitats and their associated communities,
- to analyze the information,
- to provide a concise report with guidelines based on the actual knowledge of the effects of dredging and port construction activities and methods/techniques to minimize impacts on the coastal ecosystem services and/or to benefit from these (win-win-situation).

The report shall serve as state-of-the-practice guidance by presenting all available information in a systematic format. The report is not intended to serve as a restrictive guideline on practices of operating around marine and inter tidal ecosystems with vegetation. Local conditions are unique and therefore may not be replicated to other areas. The use of 'good practice'-case studies however can highlight important issues to be considered in the planning of such work and how they might be addressed.

3. Terms to be Investigated

The following Terms of Reference describe themes that should be included in the guide, all based on a worldwide analysis of existing literature:

- Define marine and inter tidal plant habitats that are the focus of this report (expected to include mangrove forests, sea grass meadows and salt marshes);

- Describe the significance of these ecosystems in terms of the services that they provide to human society (e.g. in terms of shoreline protection, carbon sequestration, food security, waste assimilation, nutrient management, navigation), the value of these services and costs to society if these services should be lost (the working group should be aware of emerging nutrient markets e.g. for carbon and nitrogen)²;
- Identify the particular sensitivities to dredging and port construction and their operational impacts around the identified habitats
- Consider the sensitivity of the identified marine and inter tidal plant habitats in terms of community, resilience, number of other concurrent impacts, variation in sensitivities depending on dominant species, community composition, seasonality, etc.;
- Report the available 'good practices' for the assessment and monitoring and management of impacts to marine and inter tidal ecosystems, Also consider responses of associated biodiversity. Limit activities during periods or larval recruitment. Identify and categorize the types of protection or mitigation measures, and evaluate their effectiveness indicating seasonal or case specific suitability. This might include protection by screens, utilizing environmental windows, restoration. This should be a major emphasis of the report. Strategies and approaches on impact avoidance or minimization should be emphasized over mitigation, especially to woody species due to the difficulty in regeneration. Some consideration should be given to the challenges and opportunities of restoration and regeneration of blue carbon ecosystems.
- demonstrate win-win-situations for both plant habitats and dredging/port/waterway constructions where plant habitats are beneficial for realizing a dredging/port/waterway-project and vice versa (Working with Nature philosophy)
- Based on the information and cases reviewed consider the possibilities for new protection measures and conditions for their suitable employment;
- Presentation of 'good practice'-case histories.

The report should be designed for use by a broad spectrum of stakeholders, interested in sustainable coastal and marine resource management and both the sustainability of coastal vegetation and dredging, port construction, and related activities, including port authorities, regulatory agencies, the construction and dredging industry, and non-governmental organizations such as environmentalists and private sector consultancies. The relevance of the report for countries in transition shall be considered.

3. Membership

The chairman should have experience in dredging and port construction activities, be aware of coastal vegetative ecosystems and their associated communities, and be sensitive to these environmental issues. The members should have knowledge in specific fields of interest identified above (preferably including the economic valuation of marine and inter tidal ecosystem services, and emerging markets associated with carbon sequestration and nutrients). Possible members can be engaged from PIANC, CEDA, WEDA, ESC, contractor representatives from IADC, members, UNEP, GPA, UNEP-GRID Arendal, some of them possibly more as technical reviewers and/or corresponding members.

4. Links to other PIANC Activities and partners

The working group will draw on the work of EnviCom WG 13 (PIANC report no. 100), EnviCom WG 15 (PIANC report no. 108) and the Permanent Task Group on Climate Change (PTGCC).

5. Consultation

Drawing on the networks of the working group, the development of this report should engage as much as possible with all relevant stakeholder groups.

¹Nellemann, C., Corcoran, E., Duarte, C. M., Valdés, L., De Young, C., Fonseca, L., Grimsditch, G. (Eds). 2009. **Blue Carbon**. A Rapid Response Assessment. United Nations Environment Programme, GRID-Arendal, www.grida.no

²Martínez, M.L., A. Intralawan, G. Vázquez, O. Pérez-Maqueo, P. Sutton and R. Landgrage. 2007. The cost of our world: ecological, economic and social importance. *Ecological Economics* 63: 254-272