

# Economic Modelling of the Management of Dredged Marine Sediments

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## Introduction:

The EU Interreg-funded *CEAMaS* project promotes the use and sustainable management of dredged marine sediments for civil engineering applications. The management of dredged sediments is a significant challenge for many ports. This paper presents work on the economic modelling and analysis of some beneficial use of marine sediments.

Proposed use options analysed include brick production, road sub-base construction and wetland habitat creation and enhancement. In addition other sediment management approaches including the disposal to the Slufter in the Netherlands and sediment processing at the AMORAS site at the Port of Antwerp are also analysed. A GIS analysis is also implemented to assess the geographic feasibility of beneficial use related to sediment sources with comparison to availability of natural aggregate.

## Methods:

A decision support tool has been developed to assess the economics of a range of management uses/scenarios for dredged marine sediments for the CEAMaS project partner countries (Ireland, France, Belgium and the Netherlands).

The decision support tool provides analysis of the full range of relevant processes from the original sediment generation through the logistical transport chain to the ultimate end use. Required inputs for the tool include sediment characteristics, relevant logistical data, economic impact area on a national scale and economic data including direct costings. The tool has been validated against real case studies across the partner countries.

At a regional scale the GIS study provides a spatial analysis of the potential use of dredged marine sediments.

## Results:

The output from the decision support tool includes economic analysis and assessment of a range of sediment management scenarios across the partner

countries. The decision tool provides detailed economic results allowing assessment of the feasibility of a range of different management options across the project partner countries. The output from the GIS analysis presents 'opportunity maps' for beneficial use at a regional scale.

Such outputs provide valuable information for the optimum management of marine sediments, allowing comparison between traditional disposal options and a range of beneficial use scenarios.

The results from the decision support and GIS tools will assist key stakeholders and decision makers, including Port Authorities, in assessing the economic feasibility of a range of civil engineering applications given the different national contexts of the partner countries. Such feasibility analyses may indicate the potential for an expanded range of marine sediment use options and ultimately contribute to changing traditional attitudes towards this type of material, which has often been considered a waste. It may ultimately influence policy at a National and at an EU-wide level.

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## Key words:

- Marine sediment
- Dredging
- Civil engineering
- Decision tool
- Methodology
- Economic model
- GIS
- Reuse

## Theme:

Sediment and society  
Best practices in sediment management  
Building with dredged material