messina

Managing European Shorelines and Sharing Information on Near-shore Areas

www.interreg-messina.org

The MESSINA initiative built on the EUROSION project recommendation to:

'Strengthen the knowledge base of coastal erosion management and planning'.

In spite of major efforts invested in Europe since the mid 1980's, significant gaps still remain in the documentation of the exposure of European coasts to coastal hazards, and the accumulation of knowledge on coastal systems.

Several partners (ministries, universities in coastal geomorphology, social sciences, coastal managers, coastal and regional authorities) aim to bring solutions to day-to-day problems in managing the coastline, whilst also sharing coastal best practice and knowledge within the European framework context.

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North East South West
INTERREG IIIC

Project part-financed by the European Union

Project Objectives

To promote the good practices identified in terms of sustainable shoreline management to coastal authorities breaking the 'knowledge isolation' in this field by providing Practical Guides comprising:

- A State-of-the-Art of monitoring and modelling techniques dedicated to coastal management policies.
- An assessment of socio-economic analysis methods applied to shoreline management policies.
- A descriptive and financial analysis of the existing engineering techniques for innovative coastal defences, including soft and hard techniques, relevant to local spatial planning processes.
- An evaluation allowing local authorities to better integrate erosion defence processes into spatial planning policies.
- Prototypes of Geographic Information Systems dedicated to coastal planning at the local level.

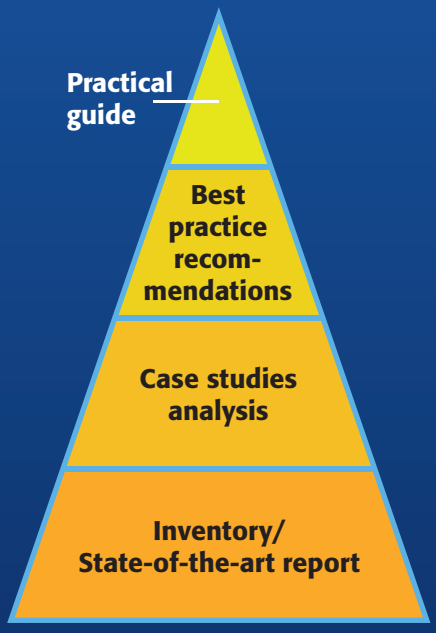
Methodology

1 State-of-the-Art (Inventory, Stock taking, Description)

2 Detailed Case Studies (Description, Analysis)

3 Recommendations, Discussions, Validation workshops

4 Draft of Practical Guide of 'Good Practices'



Monitoring and modelling the shoreline

This practical guide comprises an important overview of acquisition, monitoring and modelling techniques, useful for the surveillance and the monitoring in the framework of coastal zone management.

For each technique the main principles are explained with advantages and drawbacks, together with an assessment of associated roll-out costs.

Acquisition and monitoring techniques

- satellite: optical and radar
- aerial: photographs, SAR, LIDAR
- terrestrial: GPS, levelling, tensiometer, piezometer, hydrologic monitoring, soundings, video systems,
- maritime: bathymetric survey, multibeam sonar, secondary fund profiler, laser or sedimentary profiling imager, buoys, pressure recorder and tide gauges.

Modelling techniques

- tide models (MIKE, SWAN, STWAVE),
- sedimentary transport models,
- hydrodynamic models (MIKE21),
- beach profiling models (CERC, DUROS, Bruun, SBEACH, GENESIS).

Messina partners viewing Sete Lido, France

Integrating the shoreline into spatial policies

Complementary to the three others, this practical guide describes the application of their principles to three themes and geographical pilot sites.

By demonstrating the growing use of Geographic Information Systems (GIS) for coastal management, it brings increased understanding and facilitates for the establishment of hazards maps, of values or stakes maps and the combination of associated risks.

It also comprises the methodology and elements necessary for the elaboration of GIS dedicated to shoreline management (data, structures, resources…)

Finally prototypes have been developed as real tools for the following:

- the restoration of the dunes system with strategic retreat of infrastructures within the Sète-Marseillan's lido rehabilitation project (France);
- the cliff retreat on the Alabaster Coast (France) with the setting up of indicators of monitoring for the application of the French Coastal Act;
- the sustainable spatial planning within the context of urban growth resulting from attractive seasonal tourism on the Polish coastal area of Rewal.

Rewal, Poland

Valuing the shoreline

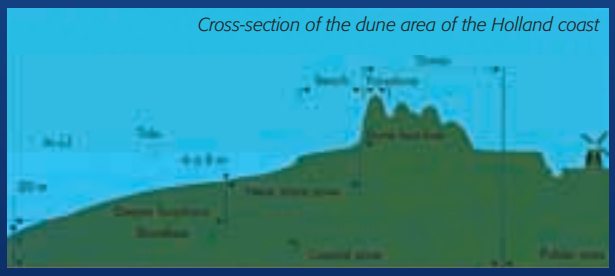
This practical guide builds upon a pragmatical analysis of coastal spatial planning and coastal erosion defence projects :

- identification of threatened coasts and actors,
- creation of alternatives for coast protection and evaluation of positive and negative impacts for each scenario, in term of monetary, social, natural, environmental and patrimonial values
- selection of economic analysis model the most appropriate to the context,
- model evaluation: limitations and recommendations.

Applications on 5 case studies

Cost-Benefit Analysis on Zandvoort and South-Holland, Cost-Efficiency Analysis on Ystad (Sweden), Social Multi-Criteria Analysis on the lido of Sète-Marseillan (France) and the village of Trzesacz (Poland).

Beyond the pedagogy of the Practical Guide, a comparative analysis of the methods used is also proposed, allowing the reader to diagnose which method better suits upon a given context.



Cross-section of the dune area of the Holland coast

Engineering the shoreline

This practical guide encompasses the descriptions of a huge panel of coastal innovations and more environmentally friendly engineering techniques. It builds upon collaboration and exchanges of experience between scientists, stakeholders and coastal practitioners worldwide and is empowered to inform local coastal councillors of conceivable innovative solutions.

Ragusa project, Sicily, May 2005

After a short reminder of elementary concepts defining the coastal physical system (coastal sedimentary cell), ecological, social, economical or political contexts, the authors described innovative defence techniques such as beach nourishment, beach drainage, the creation or restoration of wet spaces, the dune rehabilitation, the artificial reef's creation…

For each method its main principles, the favourable context of application and the methods limitations, a roll-out methodology, the awaited benefits not only technical, social and environmental but also financial established with the help of impacts, perception and costs analyses are described. Each technique is illustrated with concrete European examples, a data-base is available online via *www.interreg-messina.org* website.

MESSINA
Coastal Toolkit

Monitoring and modelling the shoreline

Integrating the shoreline into spatial policies

Valuing the shoreline

Engineering the shoreline

Antique church threatened by coastal erosion along the coast of Rewal. Poland

Partners

IGN France International (IGN FI)	
National Institute for Coastal and Marine Management of the Netherlands (RIKZ)	
Swedish Geotechnical Institute (SGI)	
Community of Agglomeration of the Thau Bassin	*France*
Municipality of Ystad	*Sweden*
Municipality of Rewal	*Poland*
Province of Ragusa	*Italy*
Isle of Wight Council	*United Kingdom*
Autonomous University of Barcelona (UAB)	*Spain*
University of Szczecin	*Poland*
University of Naples Federico II	*Italy*
University of Messine	*Italy*
Centre for coastal erosion studies	*Sweden*

North East South West INTERREG IIIC

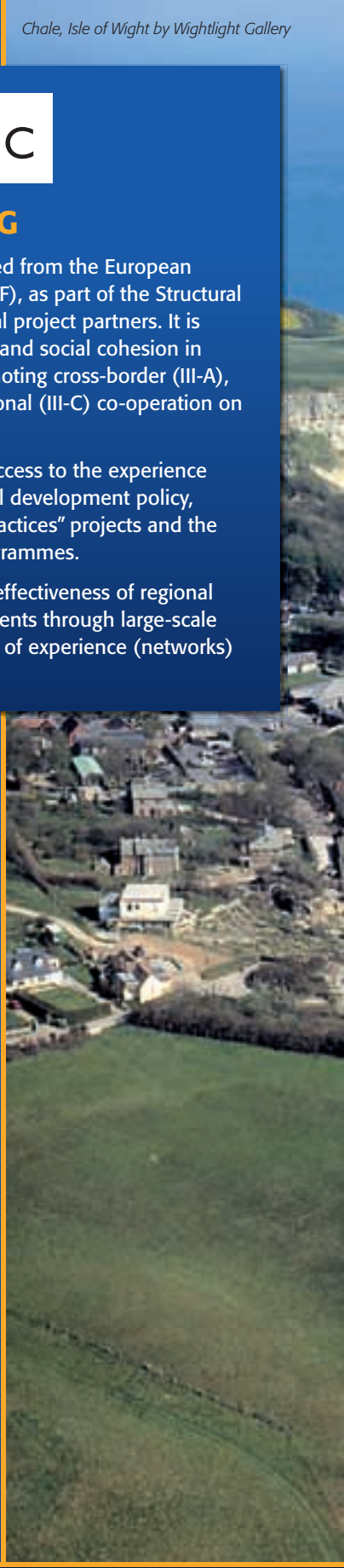
Programme INTERREG

The Inrerreg Programme is financed from the European Regional Development Fund (ERDF), as part of the Structural Funds, and co-financed by national project partners. It is designed to strengthen economic and social cohesion in the European Union (EU) by promoting cross-border (III-A), trans-national (III-B) and interregional (III-C) co-operation on the basis of proposition calls.

INTERREG IIIC co-operation give access to the experience of other actors involved in regional development policy, create synergies between "best practices" projects and the Structural Fund's mainstream programmes.

The overall aim is to improve the effectiveness of regional development policies and instruments through large-scale information exchange and sharing of experience (networks) in a structured way.

Chale, Isle of Wight by Wightlight Gallery



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