

Integrated Coastal Zone Management Plan for the Northern French Coast "Côte d'Opale"



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Client: Syndicat Mixte de la Côte d'Opale

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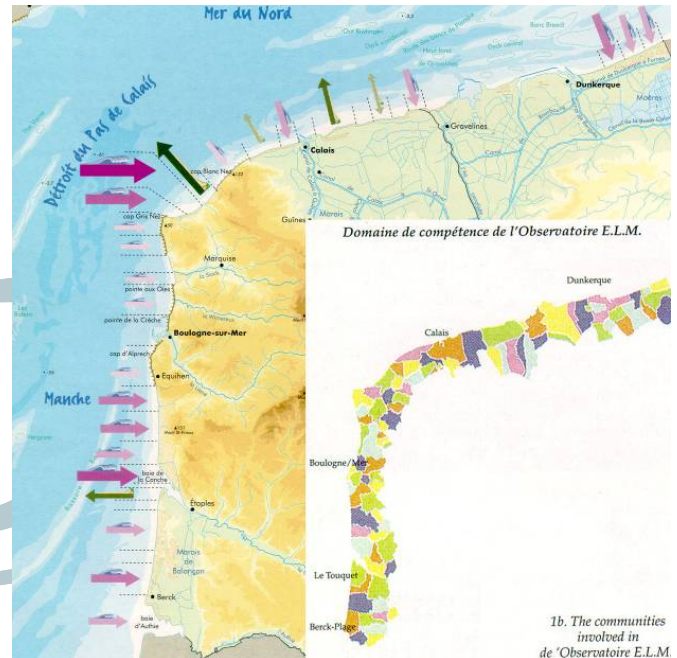
Location: Northern French Coast (140 km) (from the Belgian boarder to the mouth of the river Authie)

Assignment:

In the framework of the EU-SAIL programme on the Coastal Zone Management of Central and Capital Cities area, a set-up of an integrated coastal zone management plan for the French Côte d'Opale area was awarded to the LNHE-haecon study group. The project identified the actual risks and potential development perspectives as a proper base for an integrated management plan for the studied coastal reach.

Scope of Services:

- Mathematical model
- Coastal morphology processes
- Geology (cliffs - dunes)
- Coastal zone management plan
- Coastal protection
- Vulnerability assessment
- Risk index assessment and risk analysis
- Integrated coastal zone policy



Project area French coast "Côte d'Opale"

Technical Description:

The pressure on the natural environment in the Northern part of the French Coast is continuously increasing due to human, industrial and commercial activities. Natural (erosion) processes threat the stability of the actual sea defence system, inducing increasing flooding risks. Together with the systematically rising value of the hinterland and the external (sustainable) pressure to reconcile all activities in an integrated approach, a more sustainable coastal management is absolutely needed.

Starting from a systematic and thematic inventory of the actual situation of both coastal zone and associated hinterland, an integrated coastal zone management plan is proposed for future, both on the short-term and on the long-term, sustainable development.



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In the Interreg IIc SAIL programme, special attention was given to ecological values and development in the coastal area. Therefore, intensive and strategic monitoring of the ecological features was defined, set up and realised.

Intensive collaboration with local French partners ensured a proper and more smooth entrance into the French market.

To develop the input for the integrated management plan, the coastal reach of the French Côte d'Opale was divided into individual management units. For each of these individual coastal zone units, both actual risk level (according to flooding, coastal retreat or disrapture) and hinterland values were listed in a GIS environment.

Together with the inventory of the actual situation, potential future perspectives for ecological, economical, social or other developments were identified.

- dunes as the link between the foreshore beach and the wide hinterland
- wide (recreational) beaches shoreward protected with groynes or seawalls
- river estuaries
- port areas (Dunkerque, Calais)



Satellite image of the Authie estuary

From the GIS database, a clear identification, quantification and visualisation of both potentials and threats were possible and publicly available ("visual") for each coastal management unit.

Typically for the studied French coastal area is not only the wide range of (conflicting) activities, which is naturally associated with a "busy" coast, but also the diversity in coastal stretches itself :

- cliffs with limited beaches in front (Cap Gris Nez, Cap Blanc Nez, ...)



Cliffs at Cap Blanc Nez

In order to quantify the hydro- and morphodynamic features of the coastal zone, numerical modelling was used to calculate the flooding risks and associated coastal defence levels. Statistically defined stresses on the coastal stretch were combined with the identified coastal defence properties and the hinterland characteristics in order to quantify the risk level for each coastal management unit. From this risk evaluation, together with the future development perspectives, proper management measures were formulated in an integrated (taking into account technological, ecological, urban and/or socio-economical topics) management plan for the studied coastal area.



Sea wall in Wissant during storm