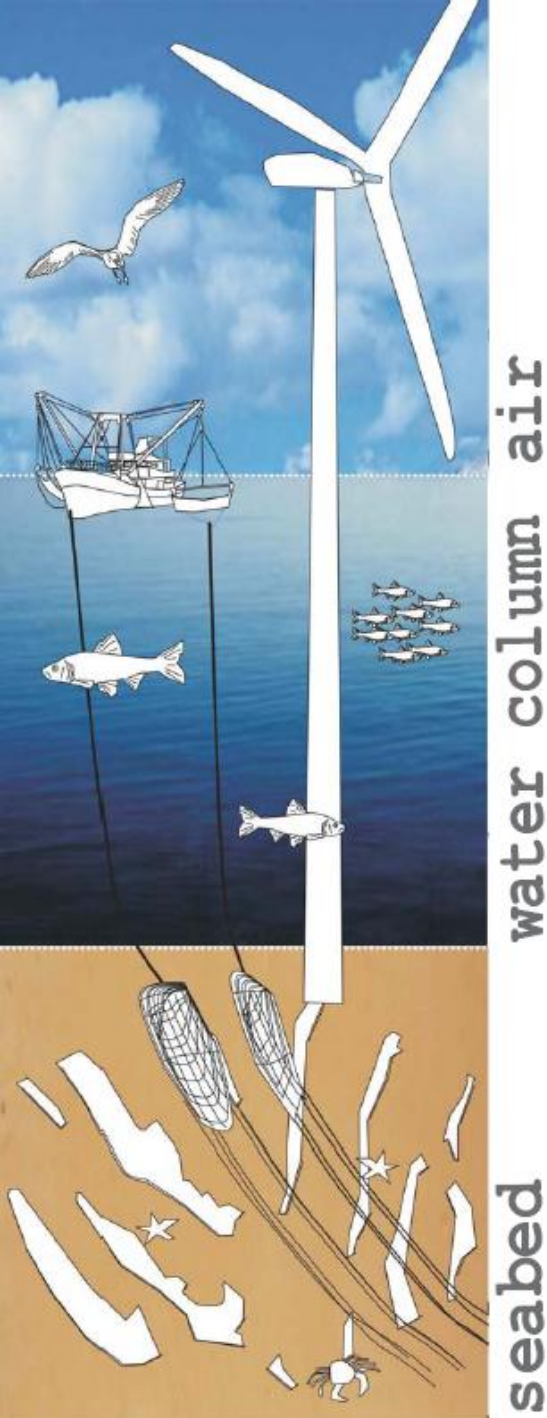


A Flood of Space. Towards Marine Spatial Planning in the BPNS.

Frank Maes
Maritime Institute
Ghent University



C-Scope – Ostend 29 April 2009



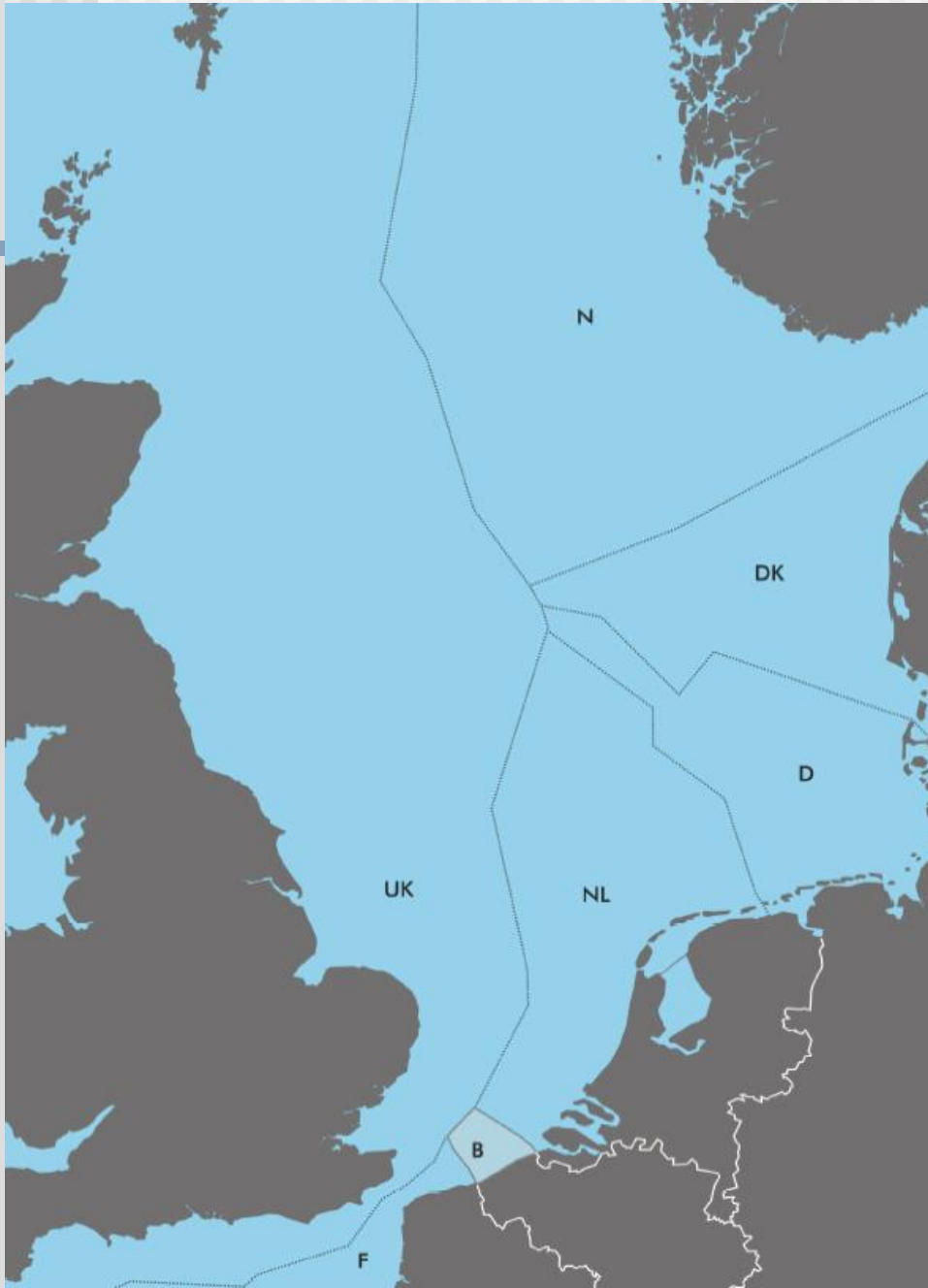
Content

- The Belgian case: planning facts
- From monitoring to GI visualization: a huge step?
- Scenarios & visions for planning with data gaps
- Conclusion



The Belgian part of the North Sea (BPNS): planning facts

Location of the BPNS

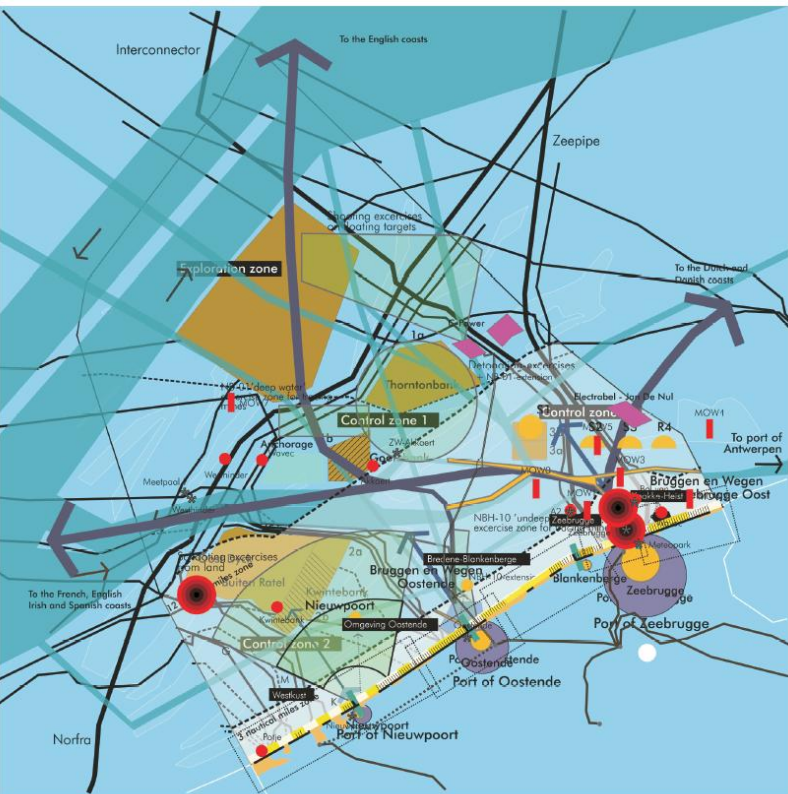


Map sources:

- **GAUFRE:** Maes, F., Schrijvers, J., Van Lancker, V., Verfaillie, E., Degraer, S., Deros, S., De Wachter, B., Volckaert, A., Vanhulle, A., Vandenabeele, P., Cliquet, A., Douvere, F., Lambrecht, J. & Makgill, R., Towards a spatial structure plan for the sustainable management of the sea. BELSPO-SPSD II, June 2005, 539. Short reference: Maes, F. *et al* (2005)
- **A Flood of Space.** Towards a spatial structure plan for the sustainable management of the North Sea, Belgian Science Policy, 2005, 204. Reference: Maes, F., Schrijvers, J. & Vanhulle, A. (2005).

Why spatial planning?

- Bring order in chaos
- Visualize information
- As management tool
- Facilitate public participation



Map III.1.1.d. 'Mare Liberum': all uses of the BPNS in an overlay (cables and pipelines, sand and gravel extraction, shipping, fishing, military use, dredging and dumping of dredge disposal, tourism and recreation, coastal defense, windparks, survey and monitoring) (Map: Maritime Institute - Gent University)



Main shipping route	Habitat area	Cables in use
Anchorage area	Ramsar area	Cables in disuse
Dredged zones	Military exercises	Pipelines
Dumping zones	Buoys and weather masts	Electricity cable
Aggregate extraction	Wrecks	3 nautical mile
Former war munition dumping site		6 nautical mile
Wind turbine concessions		12 nautical mile

0 2.5 5 10 km

UTM31N - WGS84 coordinates

Original data source: cfr. all spatial distribution maps
Map preparation: RCMG - Ghent University

May 2005

Increasing spatial claims

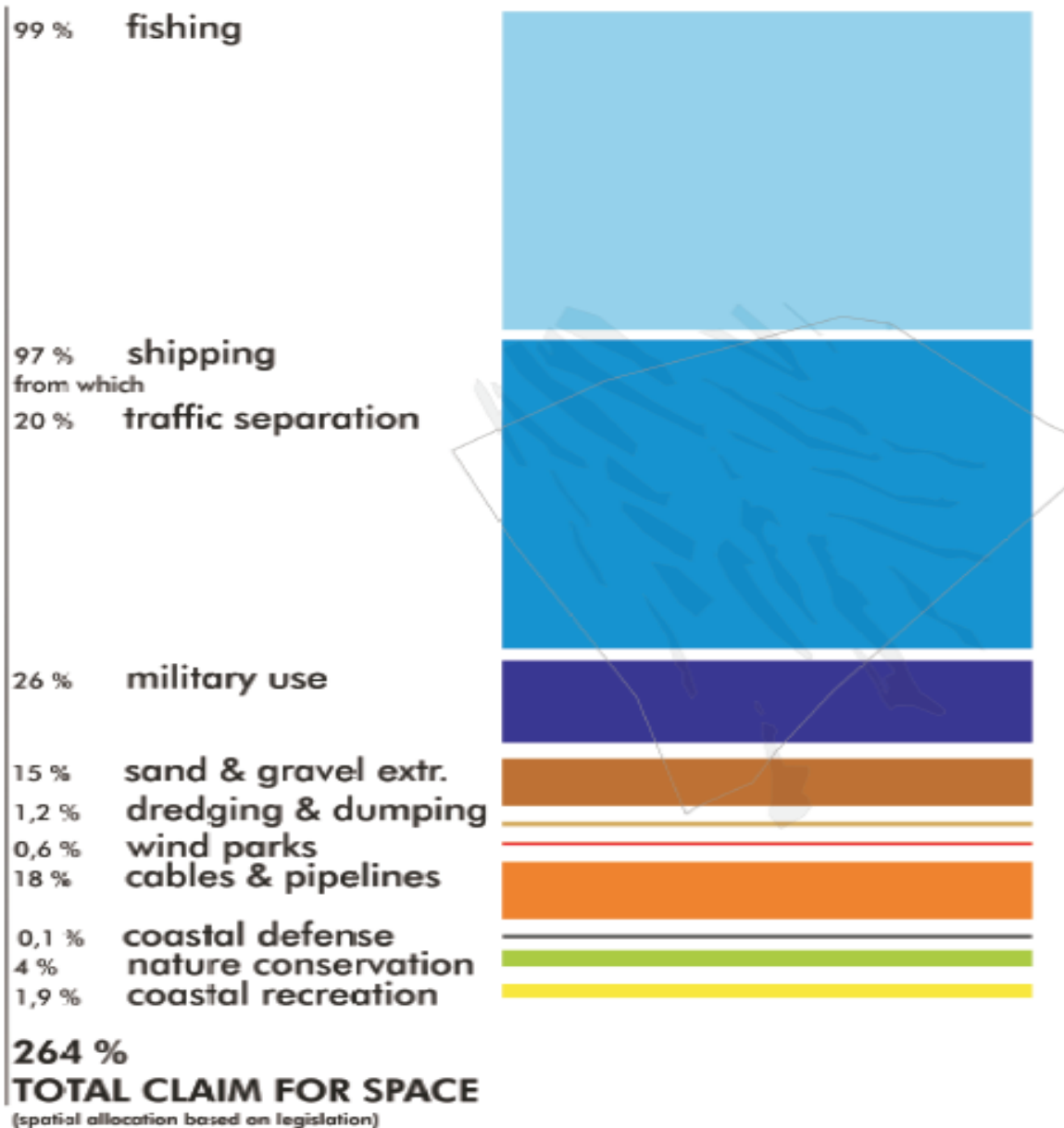


Figure III.1.4.1a. Demand for space in the BPNS, based on legislation and on the condition that all space would be both available and suitable (abstract and simplified scheme)

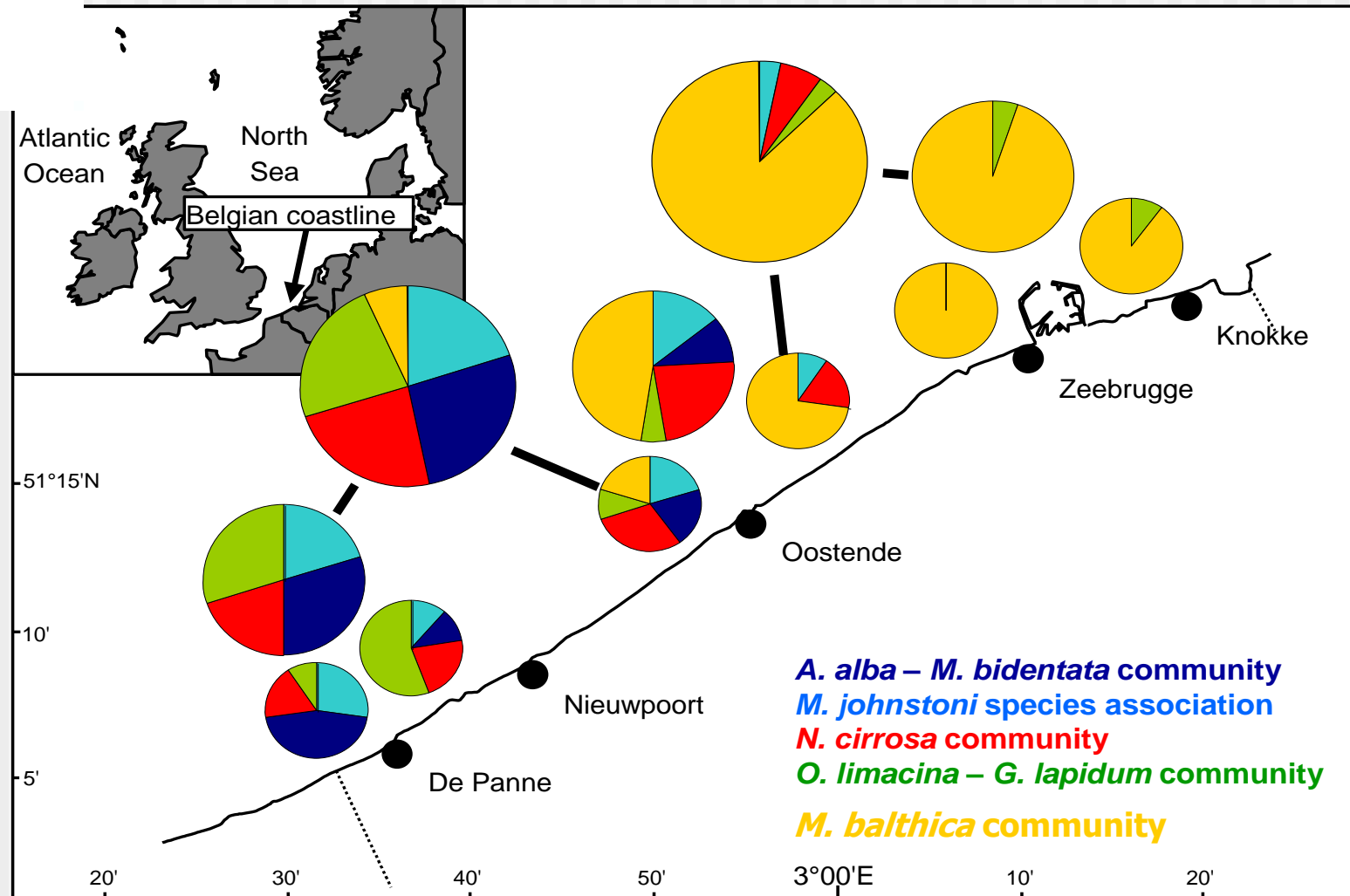
(Maritime Institute - Gent University)





From monitoring to GI visualization
and interpretation:
a huge step ?

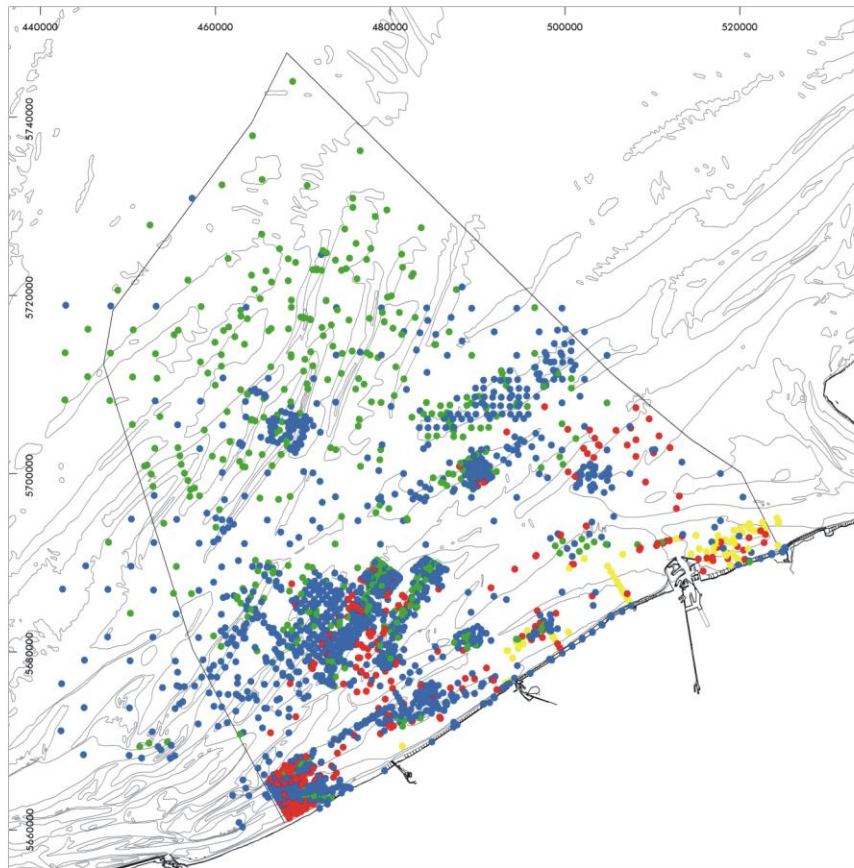
Biological data: from monitoring to ...



Macrobenthic communities (Degraer et al., 2003)

GIS maps and ...

spatial structure maps

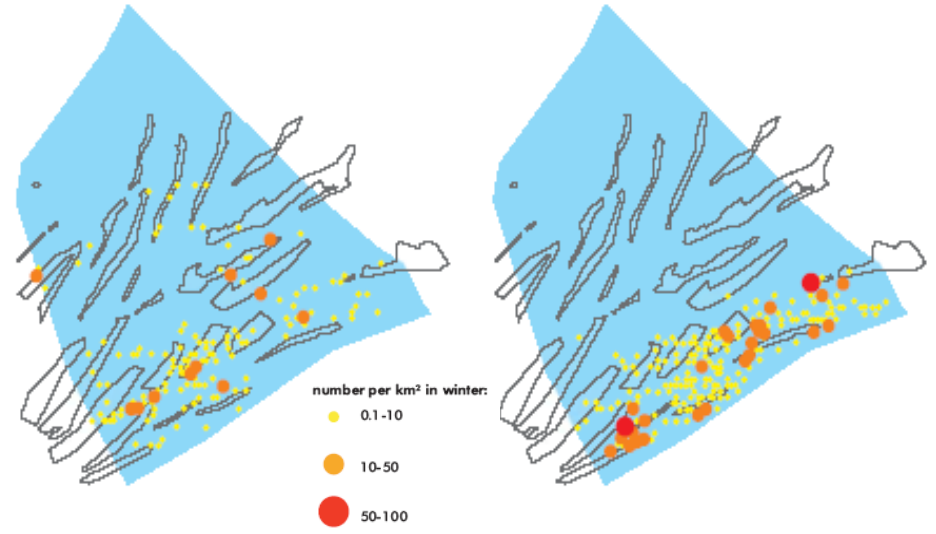


- *Macoma balthica* community
- *Abra alba* - *Mysella bidentata* community
- *Nephys cirrosa* community
- *Ophelia limacina* - *Glycera lapidum* community

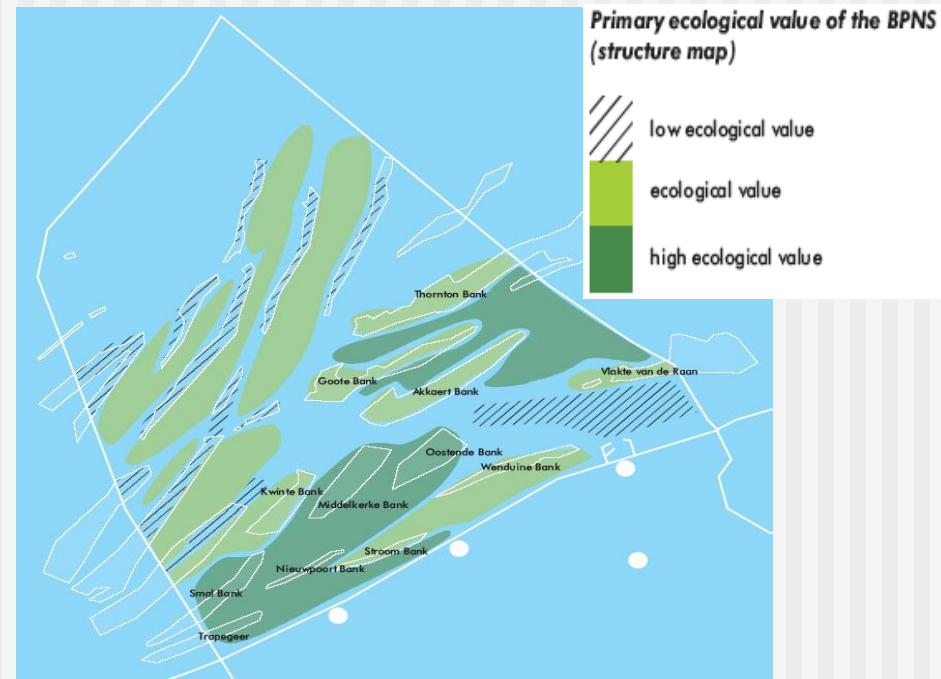
0 2.5 5 10 km
 UTM31N - WGS84 coordinates

Original data source: Marine Biology Section - Ghent University
 RCMG - Ghent University
 Data analysis: Marine Biology Section - Ghent University
 RCMG - Ghent University
 Map preparation: RCMG - Ghent University

May 2005



Red-throated diver (left) and great crested grebe (right) in winter

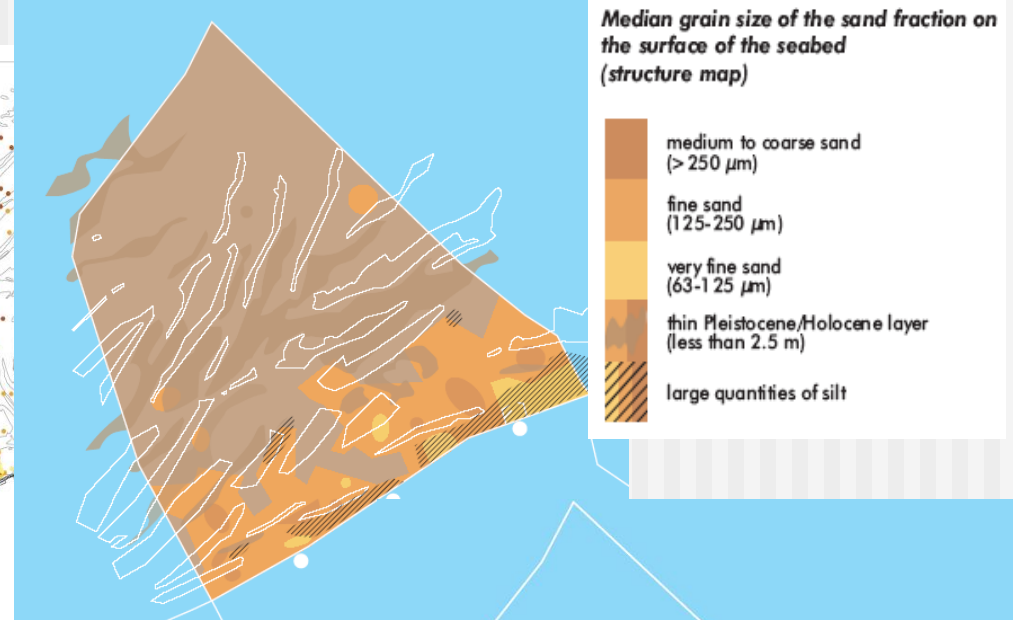
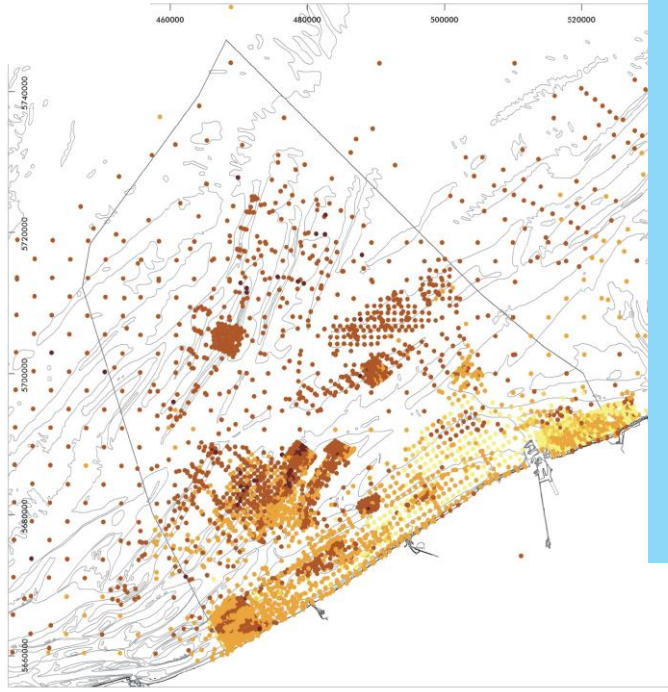
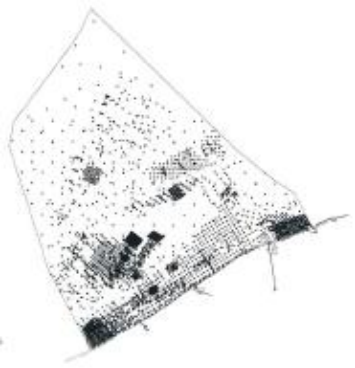


Primary ecological value of the BPNS (structure map)

- ▨ low ecological value
- ecological value
- high ecological value

Distribution of four soft-sediment macrobenthic communities

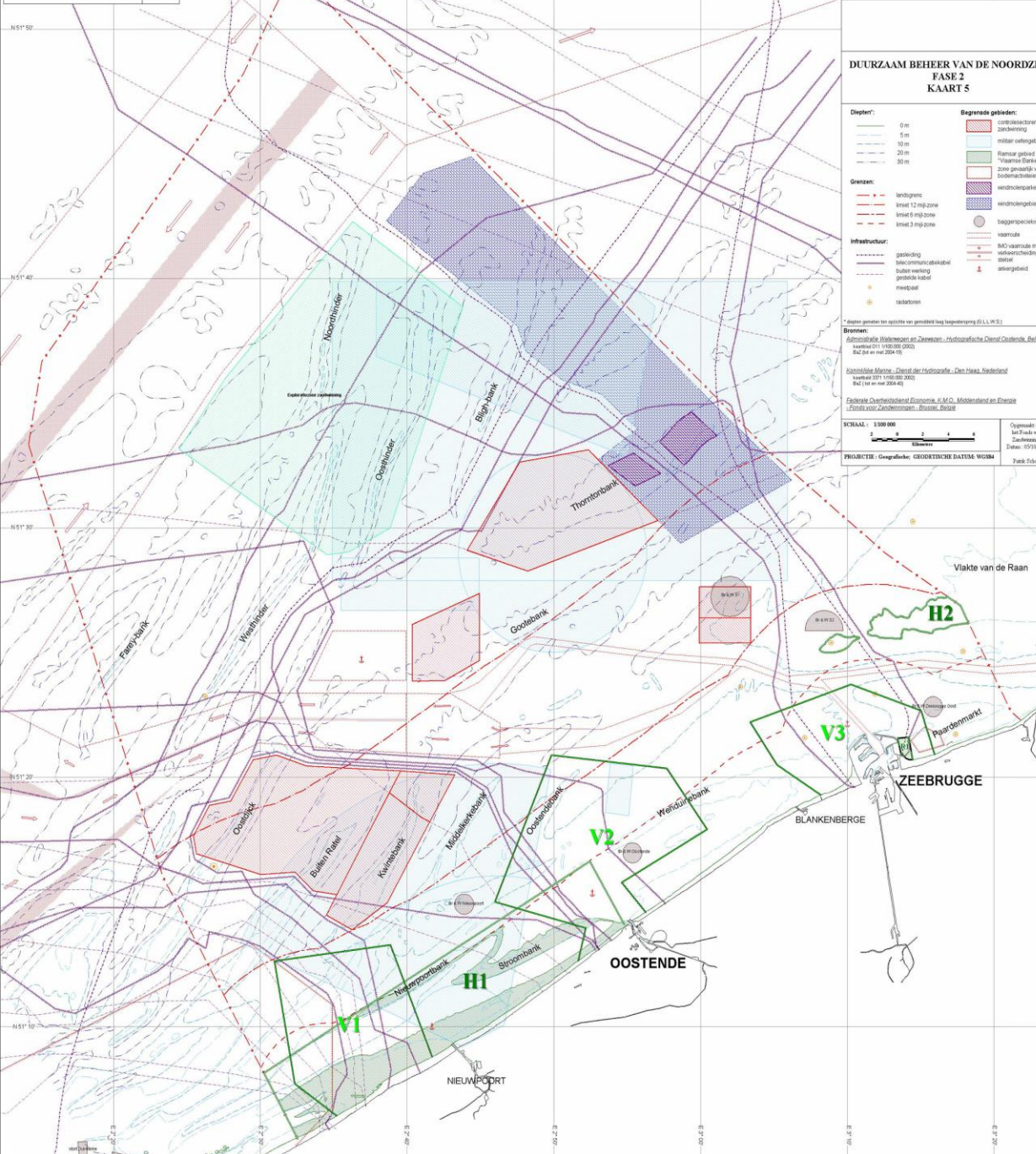
Sand grain size: from monitoring to ... GIS maps and ... spatial structure maps ... to concession zones



control and exploration zones

rotation system:
closed until February 2006

limitations: no extraction
in March, April and May



**DUURZAAM BEHEER VAN DE NOORDZEE
FASE 2
KAART 5**

- Diepten:**
- 0 m
 - 5 m
 - 10 m
 - 20 m
 - 30 m
- Grenzen:**
- landsgrens
 - limes 12 mijlzone
 - limes 6 mijlzone
 - limes 3 mijlzone
- Infrastructuur:**
- geleiding
 - sluizenmaatschappij
 - buizenleiding
 - geplande kabel
 - meerpoot
 - radarstation
- Begrensd gebieden:**
- concessiezone
 - zandwinning
 - recreatiegebied
 - "Vlaamse Banken"
 - zone geschikt voor bodemactiviteiten
 - windroelgebied
 - hydrologisch gebied
 - begeerpotentieel
 - voamde
 - NVO voamde met verkeersbedingszone
 - aanregebied

* Deze gebieden zijn op basis van gemiddeld laag laagwaterstand (G.L.L.W.S.)

Bronnen:
 Geografische Waternen en Zeevaren - Hydrografische Dienst Oostende, Beeld kaart 011 1500-00 (2002) (Bd 10 en 2004-05)
 Schakelkaart Vlaamse Banken der Hydrografie - Den Haag, Nederland
 kaart 011 1500-00 (2002) (Bd 10 en 2004-05)

Federale Overheidsdienst Economie, K.M.O., Middenstand en Energie
 - Dienst voor Landmetingen, Bouwen, Stroom

SCHAAL: 1:100 000
 0 2 5 10 4
 Kilometers

Opgesteld door
 RCMG met
 Samenwerking
 Dinsdag 10/10/2009

PROJECTIE: Geografische, GEODETISCHE DATUM: WGS84
 Piek Schaal:



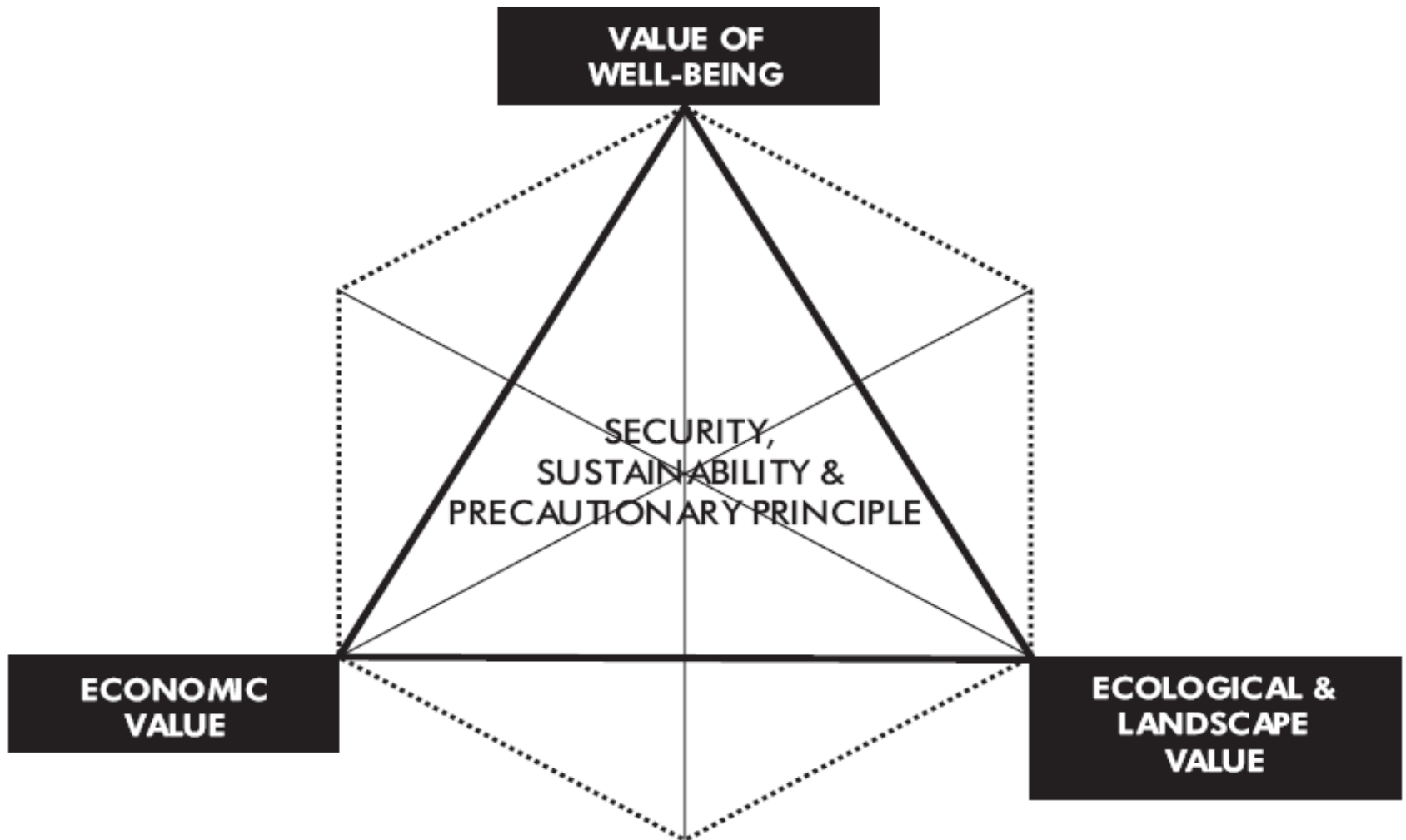
- Control zones sand extraction
 - Exploration zone
 - Past concession zones
- 0 2.5 5 10 km
 N
 UTM31N - WGS84 coordinates

Original data source: Federal Public Service Economy, SMEs, Self-employed and Energy Ministry of the Flemish Community, Department of Environment and Infrastructure, Waterways and Marine Affairs Administration, Division Coast, Hydrographic Office
 Map preparation: RCMG - Ghent University



Scenarios & visions for planning with data gaps

Planning drivers & core values of sustainable management



Core values of sustainable management:
Well-being
Economic
Ecological/landscape

Developing scenarios



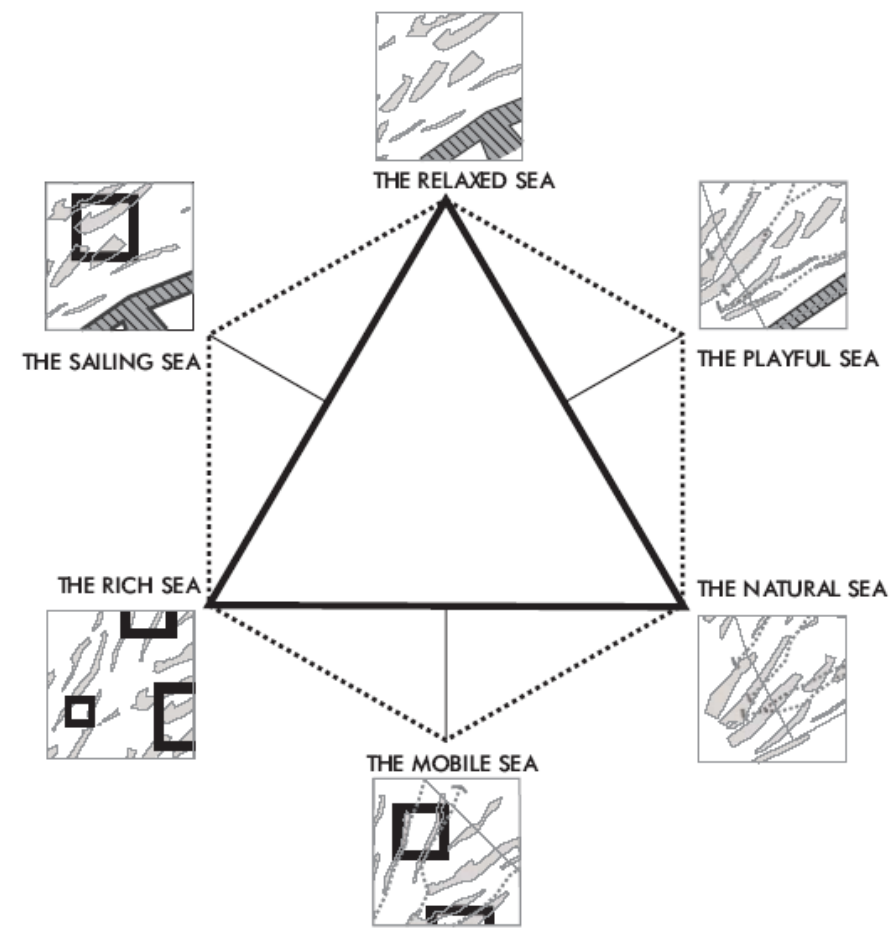
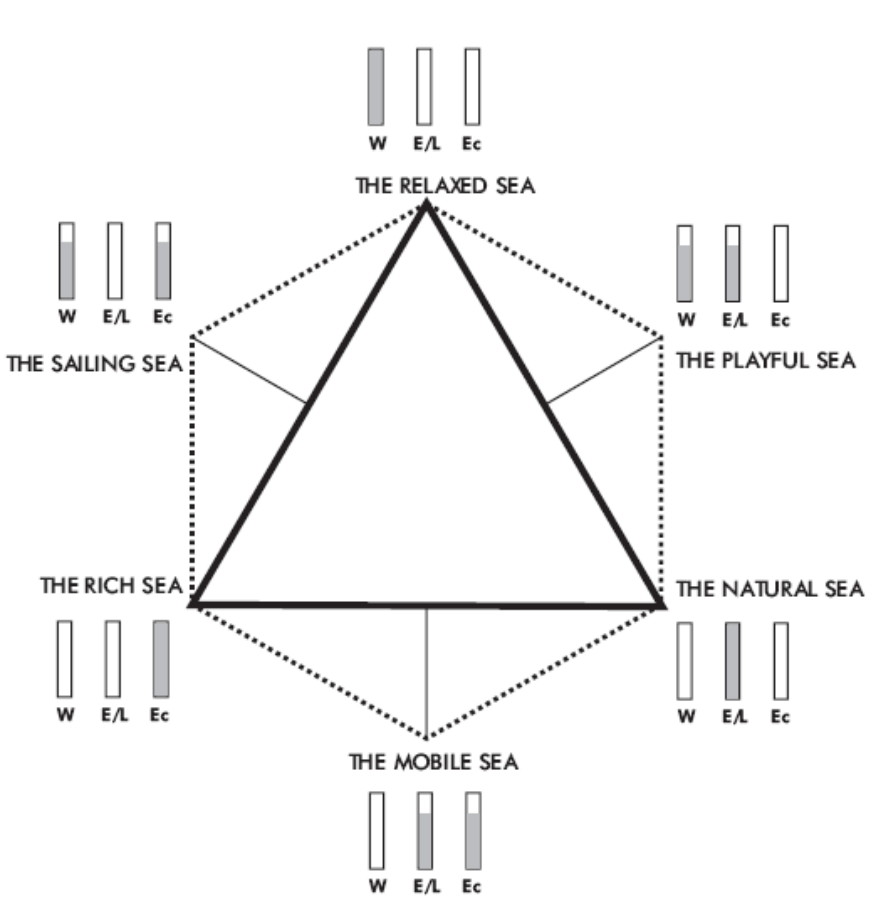
RICH SEA

>>> STRESSES ECONOMIC POTENTIAL (EP), ECOLOGY AND LANDSCAPE ARE LESS IMPORTANT (E/L), WELL-BEING IS IN BETWEEN (V or W/B)

FOR EACH SCENARIO:

>>> IDENTIFY A VISION AND POINTS OF DEPARTURE BASED ON CORE VALUES

>>> TRANSLATE VISION IN A SLOGAN, A MOTTO



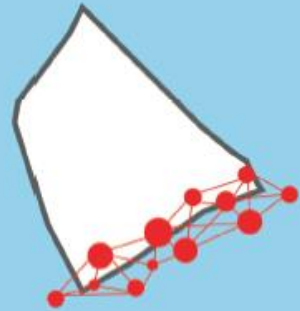
Translating scenarios in spatial structure plans



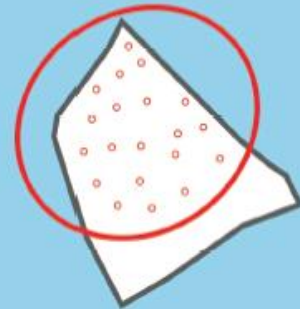
The relaxed sea



concentration and intensification of activities in the coastal area (seaside and landside)



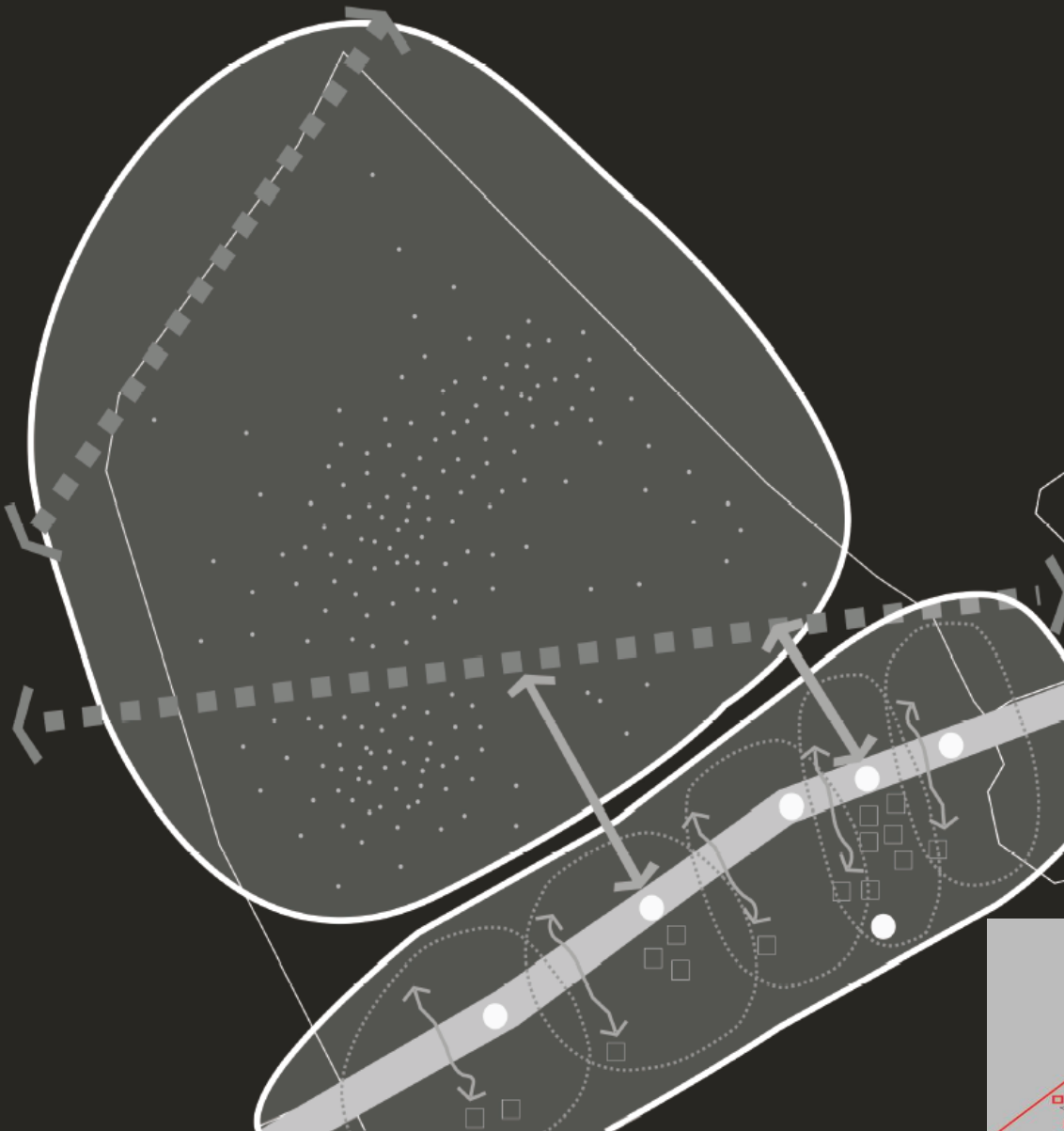
coastal area as a network of complementary activities (tourism - marine land development - ...)



activities that cause disturbance to tourism and recreation are located in the deep sea

the relaxed sea

The relaxed sea



Structure plan

-  subareas: the coastal zone and the deep-sea
-  most important connections between the subareas coastal zone and deep-sea
-  subareas with a personal profile
-  hard coastal defences and other structures parallel with the coastline (roads, coastal tram) as backbone for development
-  seaside resorts as development centers
-  intense relation between sea- and landside
-  new development poles for marine induced land development (mariculture, pharmaceutical industry, food and beverage industry)
-  activities on sea (point density represents intensity)
-  international shipping lanes





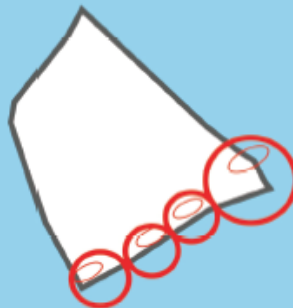
The playful sea



the whole North Sea
as experience



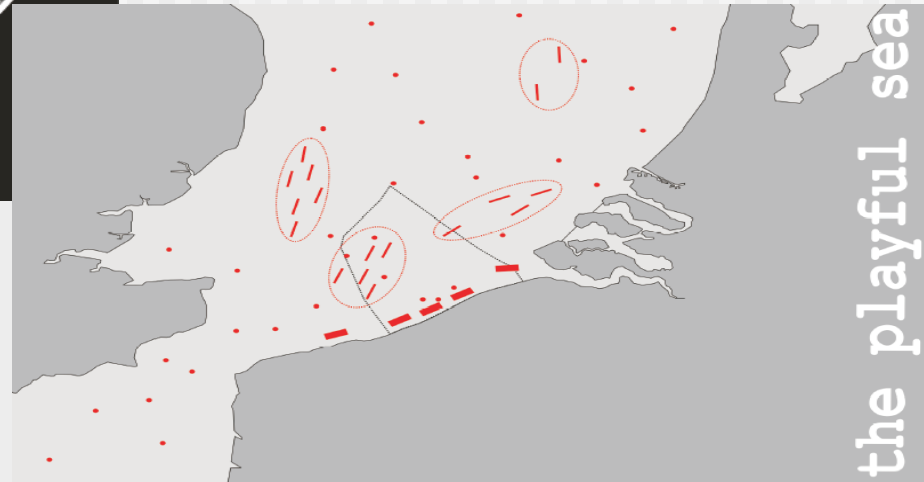
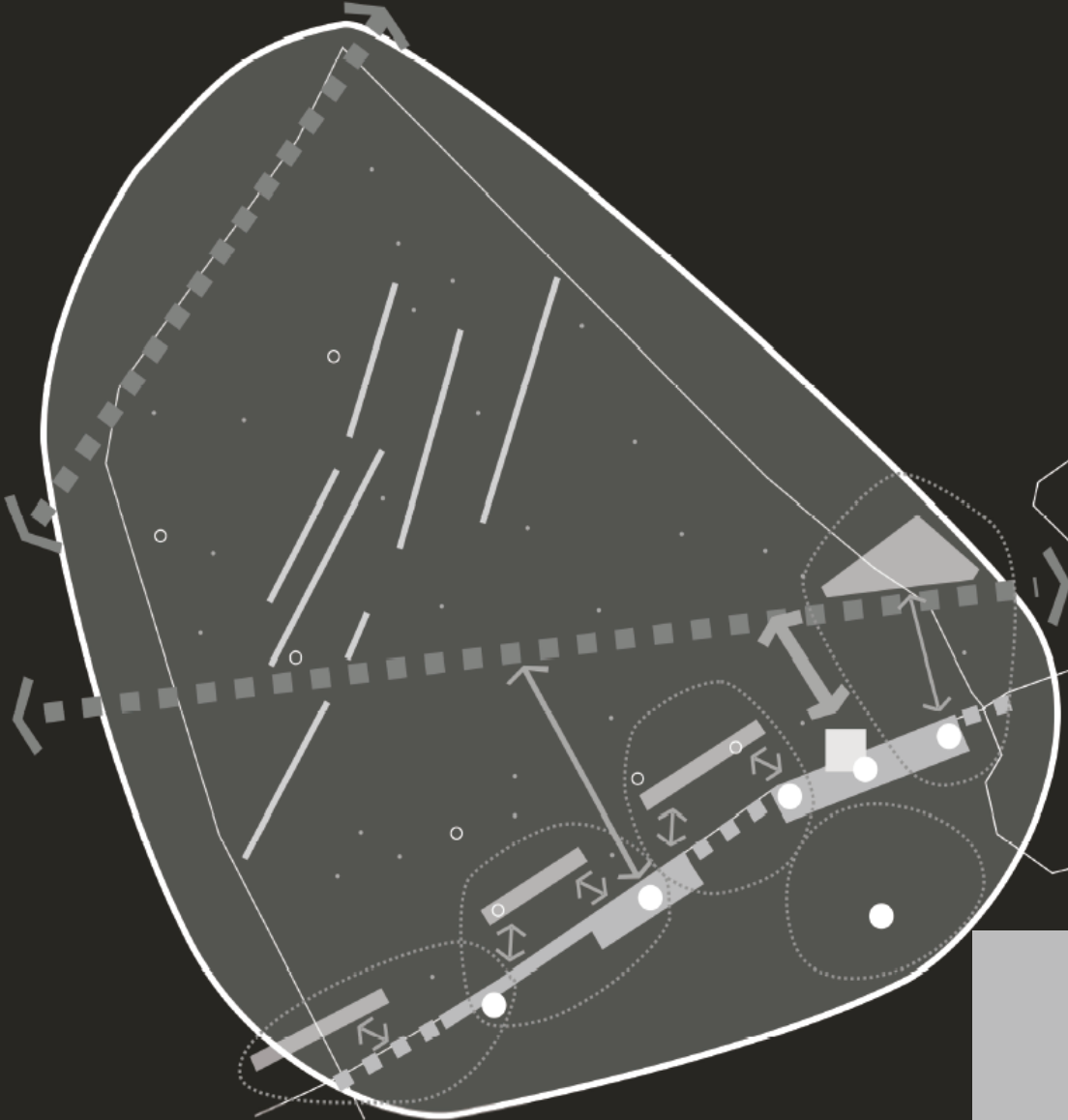
making the landscape of the
sea visible



coastal islands render
a new, typical profile
to the Belgian coast

the playful sea

The playful sea

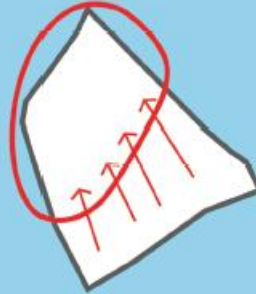




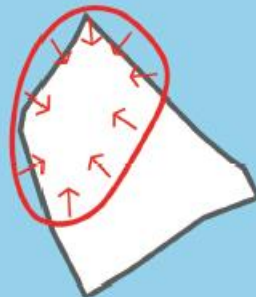
The natural sea



protecting the natural wealth of the shallow coastal area and coastal polders (marine protected areas)



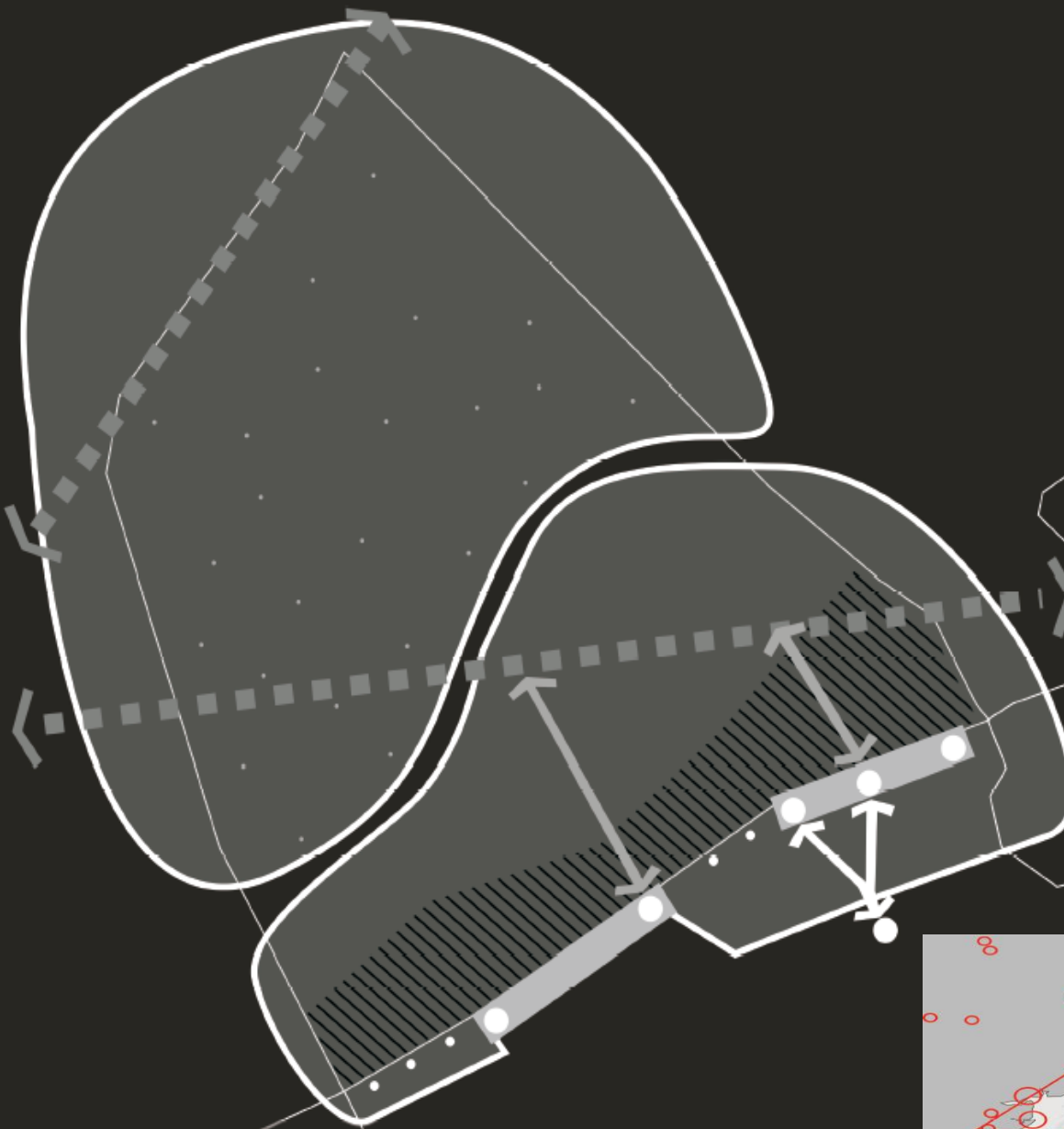
relocating activities to the deep sea











reducing and extending activities that cause disturbance to nature prohibiting activities with an excessive impact on nature

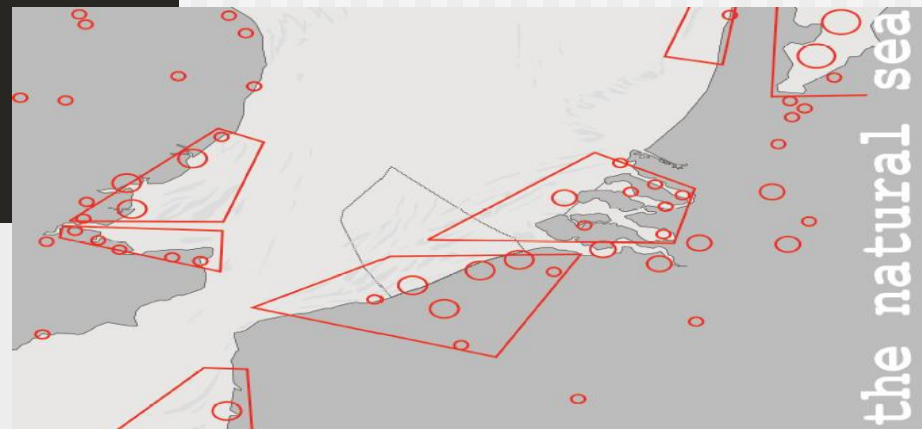
the natural sea

The natural sea

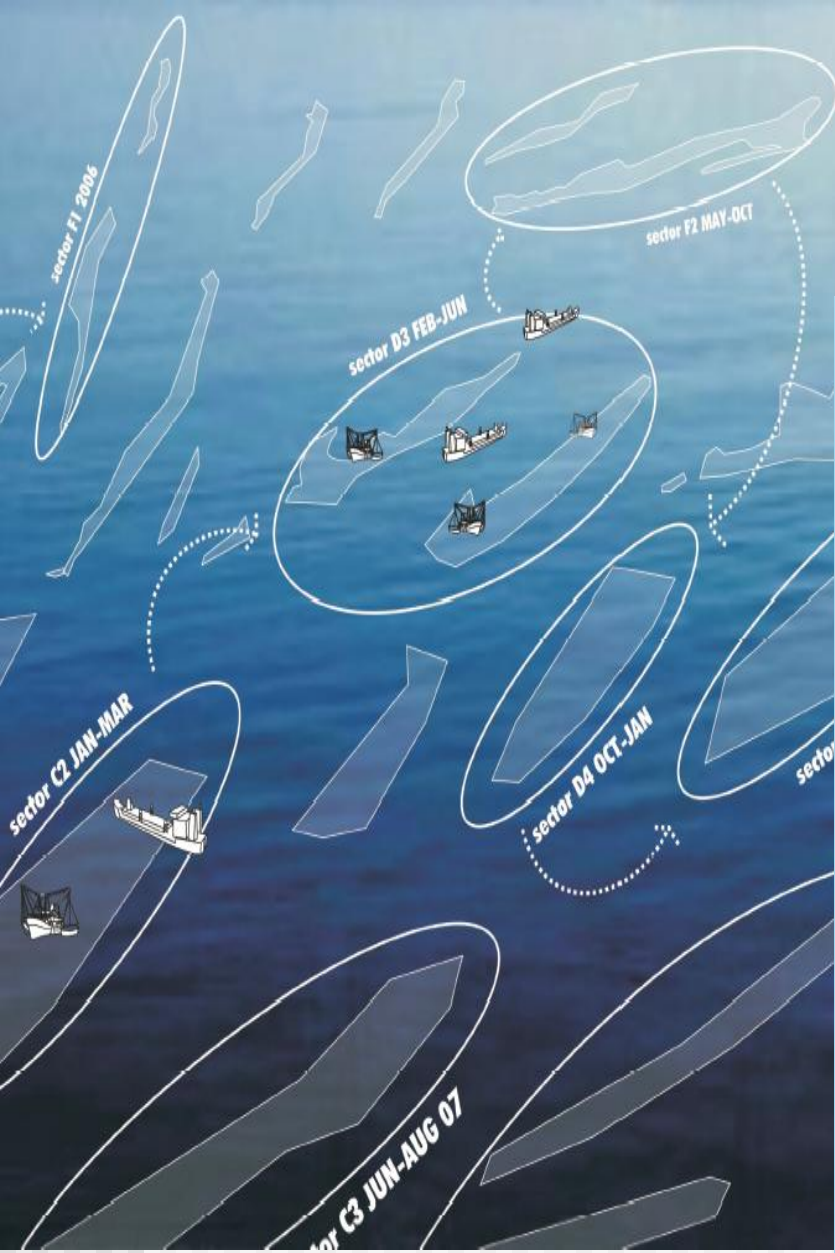


Structure plan

-  subareas:
the deeper sea and the natural coastal zone
-  most important connections
to the shipping lanes
-  marine protected areas
-  hard coastal defence
-  coastal centers
-  coastal villages
-  activities on sea
(density of points represents the intensity)
-  international shipping lanes



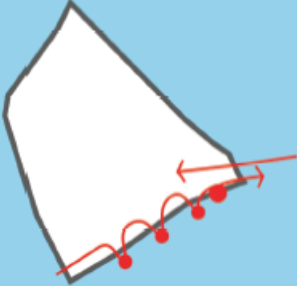
The mobile sea



concentration of alternating activities on the sandbanks (fast regeneration)



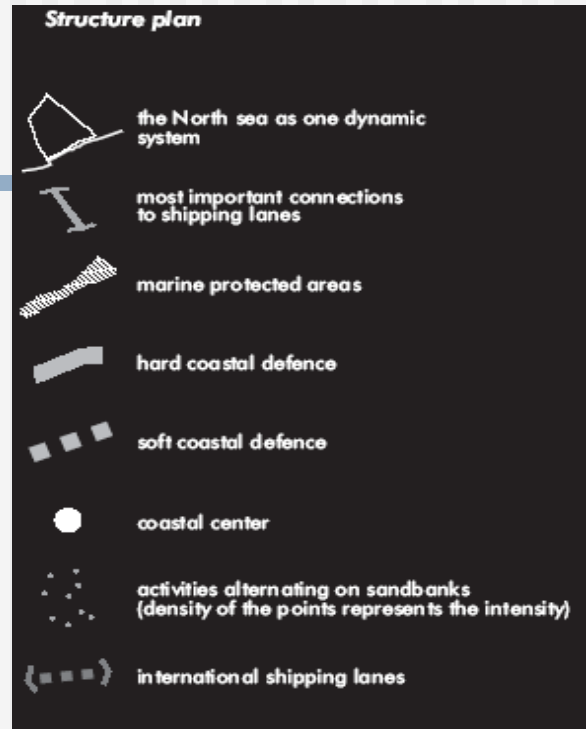
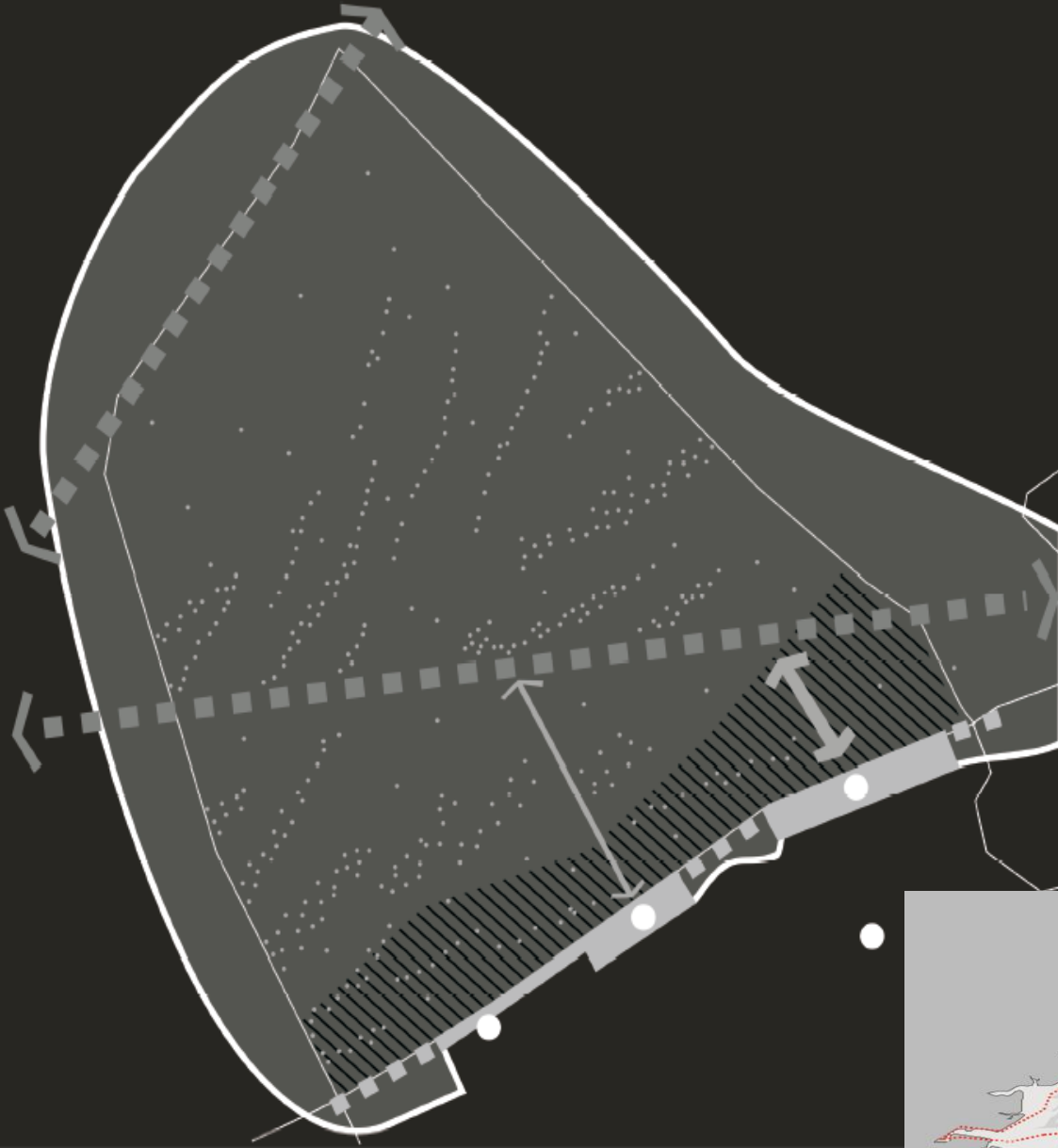
mobile energy platforms



coastal currents yield natural dredging of ports and shipping lanes

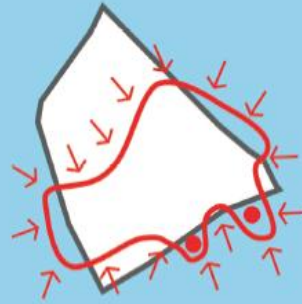
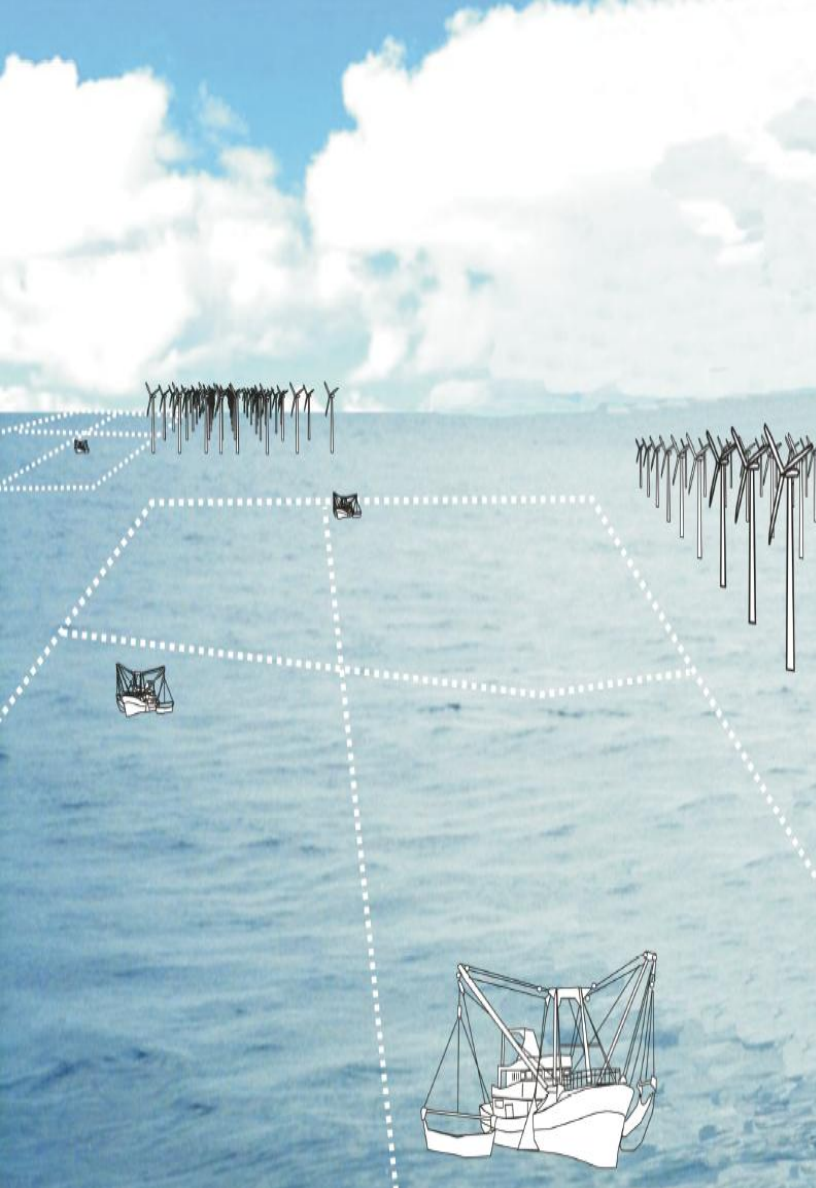
the mobile sea

The mobile sea

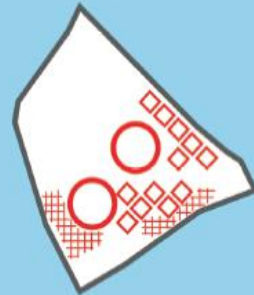


the mobile sea

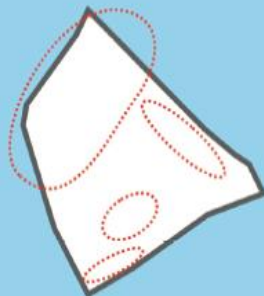
The rich sea



concentration of economic activities in a central area



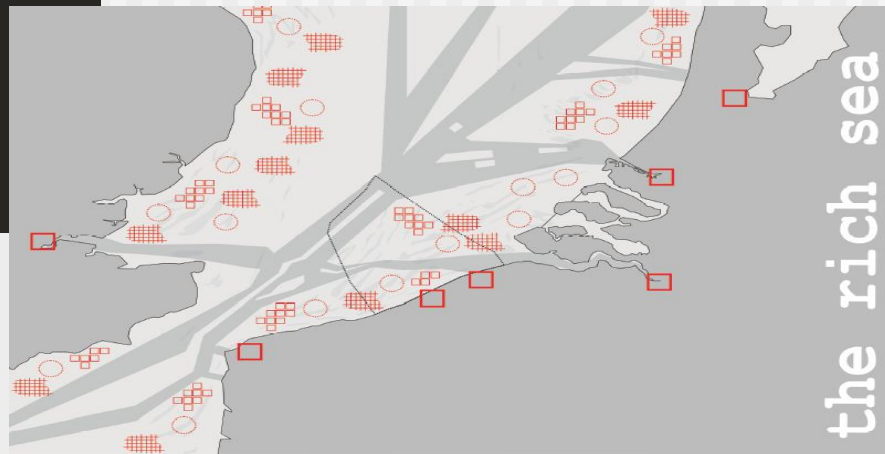
most important economic activities (fishing, sand & gravel extraction, wind parks) are allocated to a specific area (concession zones) based on economic suitability



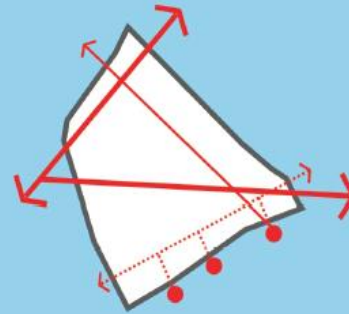
natural and other 'sheltered' areas (wind parks, deep sea) function as storage rooms (additional possibilities for fishery and aquaculture)

the rich sea

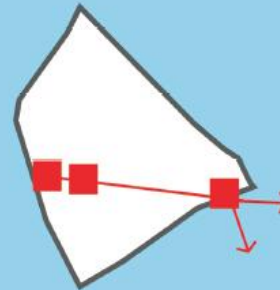
The rich sea



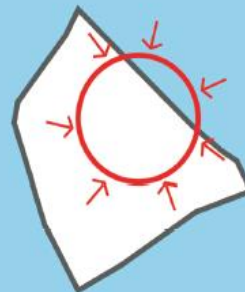
The sailing sea



development of a differentiated mobility network
(short sea shipping - traffic separation for economic shipping - ferry lines)

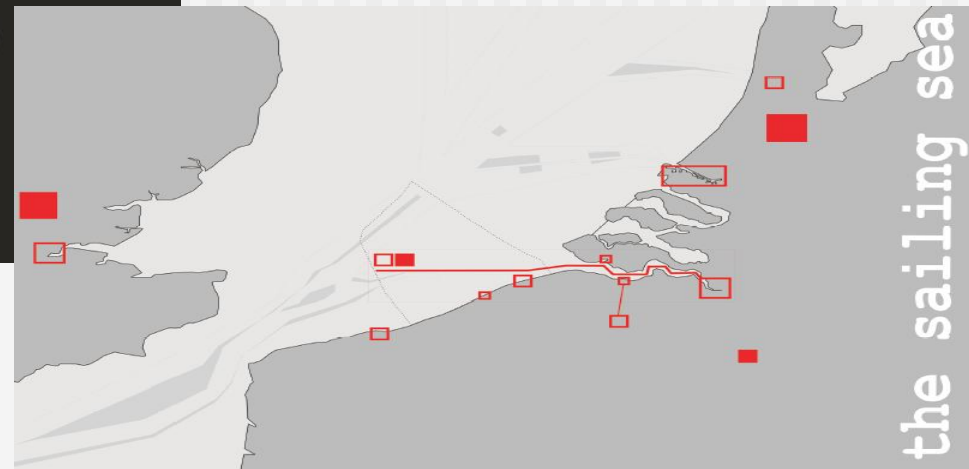
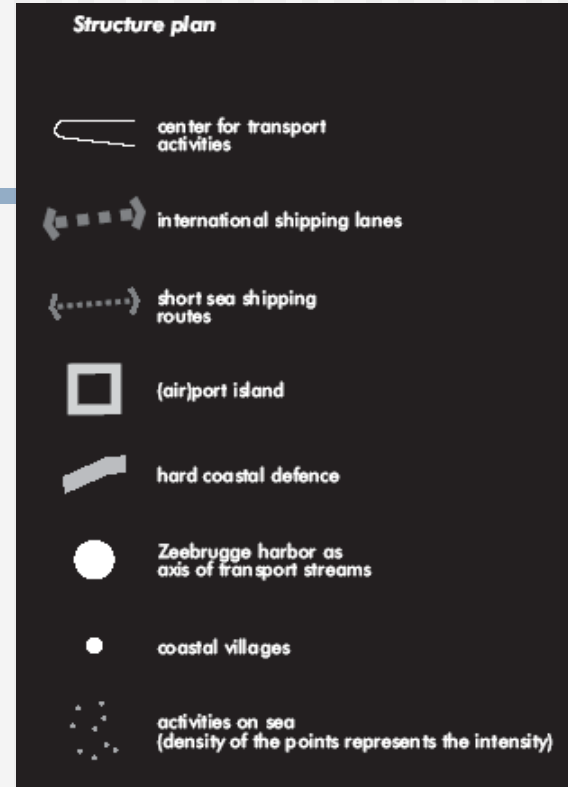
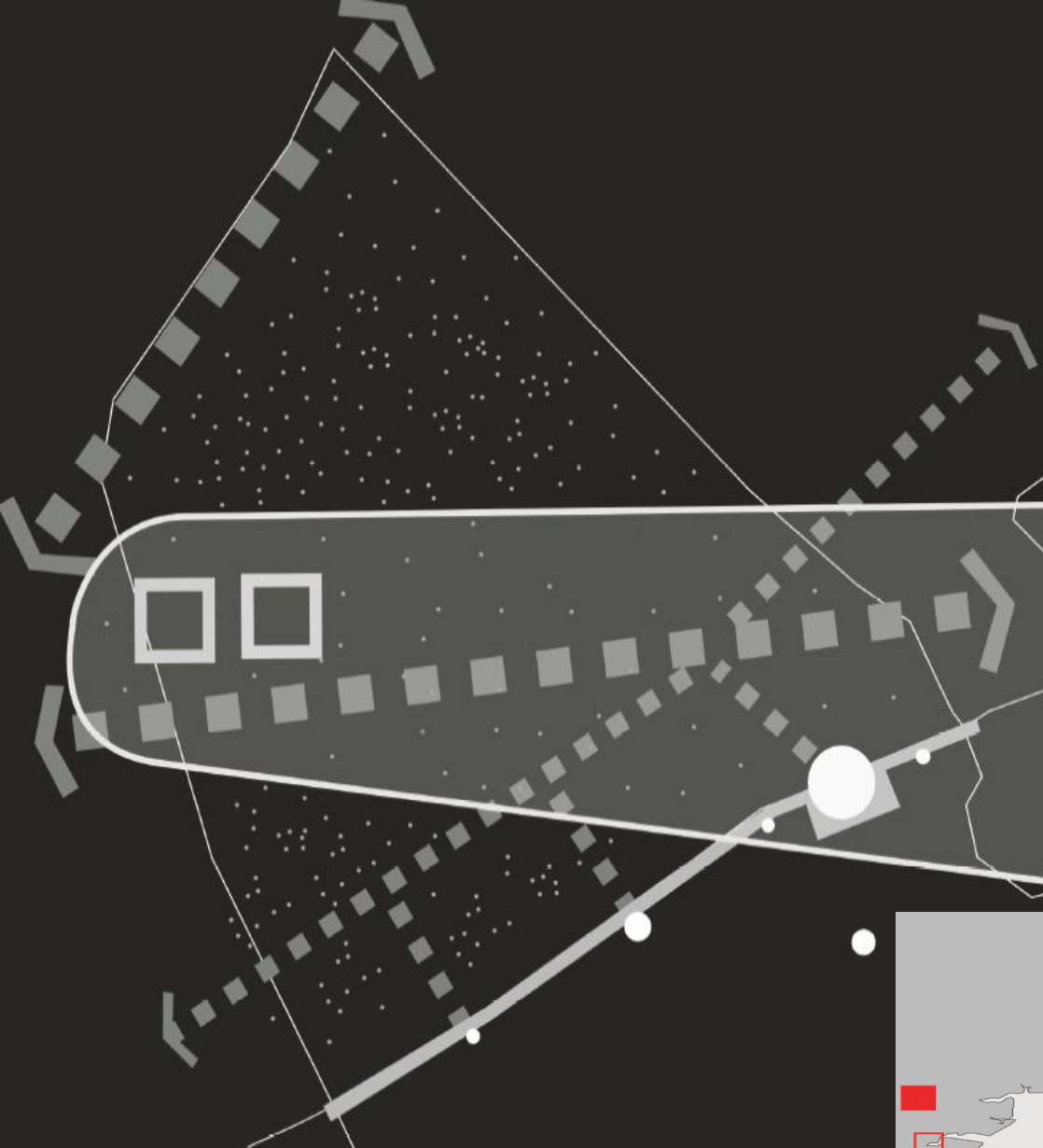


development of a port and airport at sea, connected to the port of Zeebrugge and to relieve Oostende, Zaventem, ...



concentration of other economic activities

The sailing sea





Conclusion

Marine spatial planning should be fully based on all available information and guided by sustainable management, that can be translated for the public into more easily understandable core values.

We have opted for the value of well being, ecological and landscape value, and economic value.

On the basis of these core values, six scenarios have been developed to discuss the future spatial planning of the BPNS.

Conclusion

These scenarios have been translated into separate structure maps to visualize their management options.

Structure maps make it easier to facilitate discussion and public participation on marine spatial planning, including the designation of certain areas to certain activities or the exclusion of activities in certain areas.



Conclusion

Spatial planning, the supporting scenarios and visions to it, do not intend to replace scientific data. A spatial planning process uses all existing scientific data available and complements the lack of scientific data, but also reveals data gaps.

