More than just water. Planning scenarios for a sustainable development of the Belgian part of the North Sea.

Although the sea is one of the most decisive factors for the planning of any coastal region, Belgian planners and policymakers have been doing it with their back towards the sea. But in the face of new spatial claims policymakers are forced to rethink the role of this seemingly endless surface of water. In the future this role will become even more important due to the upcoming challenges. The dominant land-oriented planning discourse of which the Belgian 'Atlantic Wall' and the Dutch 'Delta works' are exemplary, will no longer be tenable within the concept of sustainable spatial development.

This paper formulates new planning approaches for the development of the North Sea and its coasts, based on the specific dynamics and characteristics of the sea itself. The research tries to open up the perspective on the sea and the coast by using different development scenarios in order that the sea becomes a real structuring element.

Paper submitted for the 45^{the} congress of the European Regional Science Association (ERSA) from 23 until 28 august 2005.

Peter Vanden Abeele
p.vandenabeele@ugent.be

Ghent University,
Centre for Mobility and Physical Planning.
Campus "De Sterre", S8
Krijgslaan 281, 9000 Gent, BELGIUM

More than just water. Planning scenarios for a sustainable development of the Belgian part of the North Sea.

Coastal Regions, such as large parts of the Lowlands, can be considered as one the most intensely used, build and cultivated areas in the world. Although these areas only make up for 15% of the total land surface in the world, about 60% of the world population lives in coastal regions and about 2 of 3 of the most important economical, social and cultural centres in the world are located in coastal regions.[1] Coastal regions consist out of very fertile land and are therefore ideal locations for agricultural activities. They are in most cases flat planes which make it locations easy to cultivate and build on. Because of their relation with the sea, often through broad and flat littoral rivers and delta's, they are very accessible and thus ideal for trade activities. In regions with a favourable climate the sea and the beaches are major tourist attractions. Although the sea is one of the most decisive factors for the planning of any coastal region, planners and policymakers have been doing so with their back towards the sea. The Belgian 'Atlantic Wall' and the Dutch 'Delta works' can be regarded as examples of this land oriented planning discourse. But important economical, ecological and social changes are slowly shifting our point of view towards the sea. The multiple use and the future demands and ambitions at sea demand a spatial strategy for the development of the Belgian part of the North Sea. (Indicated in this paper with the abbreviation BNS).

FIGURE 1: position of the Belgian Part of the North Sea

A sea of place?

The North Sea is a seemingly never-ending surface of water. The Belgian part of the North Sea measures 3462 km2. This is more or less 1/9 of the total land surface of Belgium. It is an area with a maximal latitude of approximately 66 kilometres and a maximal seawards length of approximately 87 kilometres, which makes the area as big as an average Belgian province. Standing on the beach, the BNS looks infinite and seems to offer plenty of space for all kinds of new users and functions. But space is progressively getting scarce at the North Sea. We can deduct out of the current spatial claims at sea that the Belgian part is already intensely being fished, sailed, dredged and extracted. The current spatial claims at sea are very large, larger than one might think. If all claims at sea are added up, it amounts to more than 2.6 times the total available space. In the future the demand for space will only increase.

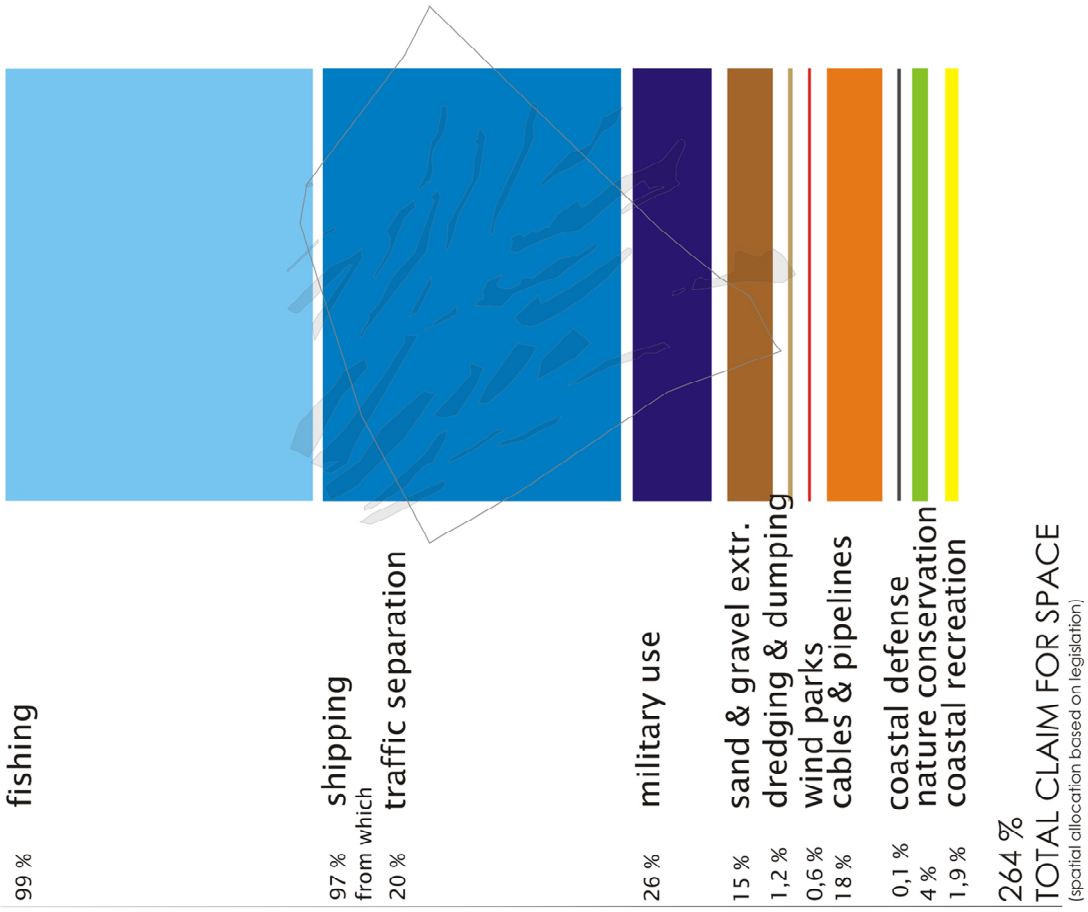

FIGURE 2: The spatial balance of the BNS, for every cubic metre several 'claims'.

Space, even at the vast and endless North Sea, is nevertheless limited and every user limits the possibilities of other users. Several functions might have a negative impact on the maritime ecosystems or the landscape, or even on other functions. On the other hand, some functions can profit from being in each others neighbourhood. The pressure on the existing space is gradually increasing resulting in a lack of space to answer the rising demands. An integrated spatial policy is needed. It is clear that even the sea needs some structuring and difficult choices must be made.

Sea versus land

In regard to these many spatial claims, one cannot consider the Belgian part of the North Sea as just an extension of the land. It has its own structure and dynamics. The conditions are different than on land. So we cannot go and plan the sea the same way as we plan the land. The policy to steer the spatial claims must therefore also be different and based on the specific characteristics of the sea itself. So a first choice is to recognize the specific character of the North Sea. We must dare to choose a sea-oriented planning discourse, a specific approach that fits the sea and its characteristics. A clear insight into these characteristics is therefore indispensable.

CHARISTERISTIC 1: ***the sea is free.***

The Romans considered the Mediterranean Sea as a sea of their own. Mare Nostrum was the centre of their empire as it was surrounded by only Roman provinces. Later on, also the Spanish and the Portuguese regarded some seas as appropriated territory. In an attempt to break the trading monopoly of the Portuguese in the East Indies, the Dutch legist Hugo De Groot introduced the ‘Mare Liberum’ doctrine in 1609. He considered the sea free for all pioneers and explorers. The sea belonged to no one. The sea became common and free, but at the same time the doctrine became a permit for the uncontrolled exploitation of the sea. Everything was allowed.

Therefore, the sea is now totally different from the land. Ownership does not exist at sea and thus there is no right to decide about what is permitted and what is not. No specific user of the sea can claim it. On land, landownership is the starting point for each form of planning.

Planning is considered as a method to give place to developments by granting different land-owners specific rights on their own territory, ensuring the possible development of neighbouring parcels. By demarcating a specific area, decisions about future developments in this area are made possible. But since there is no ownership at sea, those decisions are more difficult to make at sea especially because every user considers the sea as his own territory.

Gradually, due to the growing demand for space, the sea was occupied. Successive treaties have extended the sovereign territories into the sea, and have given coastal regions jurisdiction at sea. But the sea still doesn't belong to anyone or, because of the entrenched universal principle of the 'free sea', to everyone.

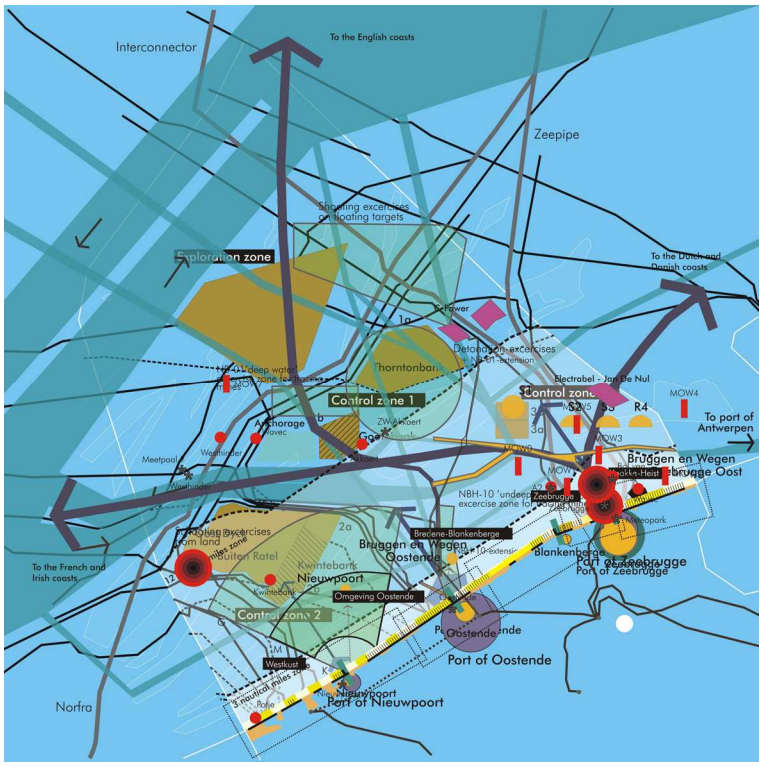

FIGURE 3: Mare Liberum, The BNS and its 10 users: shipping, fisheries, sand and gravel extraction, dredging and dredge disposal, recreation, military exercises, offshore windmill farms, cables and pipelines, soft and hard coastal defence, beacons and radar posts.

CHARISTERISTIC 2: ***the sea is ad hoc regulated.***

One can deduct from the existing spatial conflicts at sea that the BNS today only knows an incidental spatial policy. Sometimes policymakers pay attention to the important natural values and ecosystems and start delimiting marine protected area's (MPA's) but at the same time they forget to issue the necessary laws to protect these areas or they lack the means or decisiveness to enforce them. On other occasions they seem to randomly plan windmill farms or grant concessions to gain sand or gravel from the seabed. The existing ad hoc planning documents merely function as guidelines for a policy of prohibition that limits itself to

passing judgement about what is possible at sea and especially what is not. This kind of planning documents does not have the ambition to structure the sea or illustrate its many possibilities, but limits itself to regulating the existing activities using sectoral rules and mono-functional zones (the fishery regulations and the military activity zones), concessions (for sand and gravel extraction or for dredging activities) and legal proceedings (for the construction of cables, pipelines and windmill farms).

The sea gradually degraded into a place where activities could be allocated that were unwelcome on land. Therefore policymakers saw it as a dumping ground for old war ammunition or for industrial garbage, a wasteland for randomly laying cables and pipelines connecting the different banks of this otherwise worthless pool of water. But it is to easy to regard the sea as a unlimited open space which can be used for all kinds of activities we do not want on land in the close vicinity of where we live. The sea does not lend itself to NIMBY-projects. Planning at sea is in need for a specific sea-oriented planning discourse that protects the sea against interventions foreign to its own nature. That is why, according to the principle of precaution,[2] we must check if an activity cannot reasonably be planned on land instead of at sea. This principle clearly illustrates that sustainability and safety are the most important basic assumptions while planning the future development of the BNS.

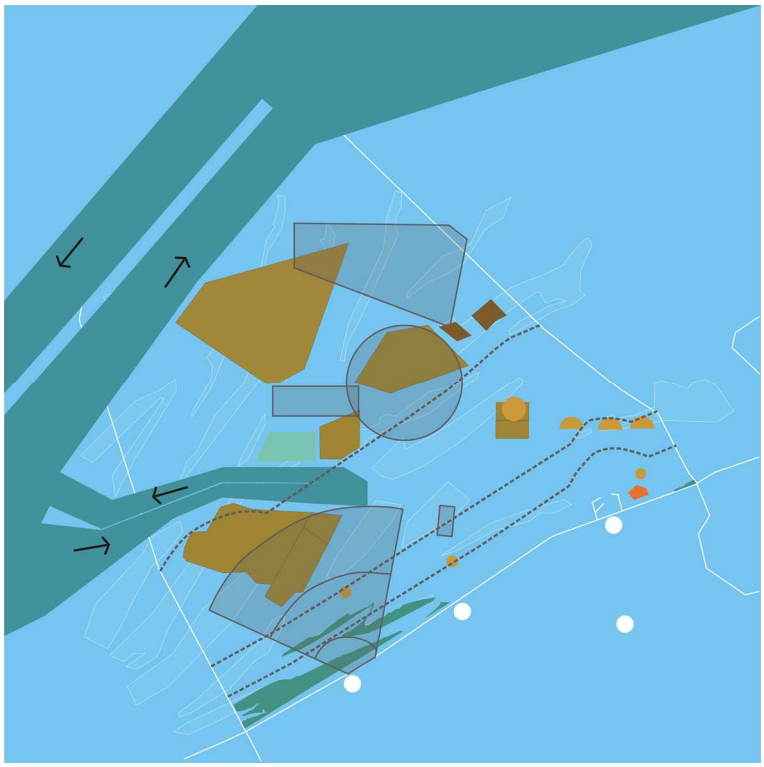

FIGURE 4: The planning context: everything that is currently legalised and formalised.

CHARISTERISTIC 3: ***the sea is an unknown territory.***

Sustainability presumes that we deal with the North Sea in a meticulous manner, and that is why a good insight into the structure and processes of the North Sea is indispensable. In contrast with the situation on land, where we can easily go on site and examine the territory, we still know to little about the sea and the processes which take place in it, although the BNS probably is one of the most intensely examined parts of any sea in the world. Through the use of research boats, patrol vessels, satellites, computers and acoustic techniques we have gained a better insight into the maritime world. Notwithstanding the many data, the gained knowledge remains limited, in regard to the examined spaces as well as in regard to the underlying processes. Therefore we still cannot assess fully the impact of any spatial intervention, such as the construction of offshore windmill farms, on the maritime environment. We must try to gain more knowledge about the sea in order to make well-founded decisions in the planning of the sea. If we nevertheless take decisions, we will have to, due to the uncertain character of every intervention, keep monitoring the impact of these decisions for a long time.

CHARISTERISTIC 4: ***the sea is infinite.***

Planning often leads to the delimitation and allocation of specific areas or zones. But this kind of territorial logic, which was used when dividing the North sea into ‘countries’ like the Belgian, Dutch, French,… part of the North Sea, is not adapted to the specific characteristics of the marine world. The very dynamic system of the North Sea does not let itself be bound by borders. Water and the organisms that live in it take no notice of these boundaries. Neither do pollution or different types of waste. The sea knows no physical boundaries, only political and mental ones. But it is precisely the latter type of boundary that stands in the way of a sea-oriented planning policy. The sea does not lend itself for a sectoral approach or an organisation into zones. A sustainable North Sea needs an integration of the actors involved in structuring the activities both at sea as in the coastal areas. If we want to develop an integrated coastal management policy, we will have to look at the whole picture and therefore look beyond the different borders. This prompts us to develop a supra national approach which places the problems of the BNS in the context of the entire North Sea.

CHARISTERISTIC 5: ***the sea is rough.***

The sea is an extremely mobile and variable physical system that alters its direction several times in the course of one day. The sea is subject to currents, storms, all types of physic-chemical fluctuations and changes during tides and season. It varies from open sea to brackish and briny delta waters. The sea is furthermore one of the last really rough areas in the world. The sea is unpredictable and therefore difficult to organize. It is even more complex due to its three-dimensional structure. The different layers – the seabed, the water column and airspace above the water surface – allow different users to navigate, dredge, fish, and sail simultaneously. These layers are strongly interwoven. The structure of the seabed – such as its geographic relief, dept an composition – not only influences the activities directly on it, like cables and pipes, but also the functioning of the other two layers. Al marine life, and consequently all seabirds, feed off the micro-organisms (the different types of benthos) which live on the seabed. Planning the sea therefore demands a discourse that takes into account the dynamic and unreliable character of the sea. The sea needs enough space to unhindered go its own way.

CHARISTERISTIC 6: ***the sea is disputable.***

Although the sea seems endless, the urge for space remains very large. Because it is absurd to delimit certain areas and because the sea is considered a free territory belonging to nobody, it often comes to conflicts between different actors claiming space. It seems as if they all want to hold on to acquired rights, jurisdictions and interests. The failed reforms of the European fishery policy can be regarded as an excellent example of this thinking in terms of preservation of existing rights, instead of exploring the vast possibilities of the sea in a creative manner. The development of another user at sea is regarded as a threat to their own development. Interests tie down a lot of the possibilities at sea and narrow down the different development scenarios to the short term, to a sectoral approach and a primarily mono-functional use of the sea. The necessity for an integrated approach is hardly felt by the users of the BNS. As long as they can maintain their activities we will not have to expect important changes. We will have to wait until real challenges are presented, or until an inspiring vision is formulated.

More space for the sea.

In the face of new spatial claims for more maritime transport, windmill farms, sand and gravel extraction, and even nature conservation, policymakers are forced to rethink the role of this seemingly endless surface of water. In the future this role will become even more important.

The sea, coast and delta will soon face far-reaching changes. In the short term they will have to answer to the growth in prosperity, the increase in mobility and the resulting need for more space. In the long term the rise of the network-society and the globalisation of the economy that goes with it. But also the individualisation of society and culture and linked to it, the changing patterns of leisure and recreation, which are more and more focused on experiences, will have their impact. Especially the challenges posed by the climate changes and their consequences, namely the rise of the sea-level and the disappearance of several eco-systems, will have to be answered. All these challenges will lead to an increased interest in the BNS. The dominant land-oriented planning discourse of which the Belgian 'Atlantic Wall' and the Dutch 'Delta works' are exemplary, will no longer be tenable within the concept of sustainable spatial development.

It is therefore time to open a sea-oriented perspective on the development of the North Sea, its coast and deltas. But a development strategy that takes into account six specific challenges, which in turn will be able to answer in a specific manner the growing needs of and towards the sea.

CHALLENGE 1: ***Go wit the flow.***

Hard and soft forms of coastal protection, ranging from a dike and a breakwater to raising the beach with sand (suppletion) and fortifying the dunes, assure the protection of the land against the sea. With an acceptable risk of a disaster once in a couple of thousand years, the land is sealed off from the sea. The Belgian Atlantic Wall and the Dutch Delta works can be considered as model examples of this type of land-oriented organisation of the coastal defence structures. They reflect a planning discourse that has dominated the planning of coastal regions for decades, namely the protection of the land against the rough and dangerous sea. The narrow coastline is regarded as the end of the land, and as an outpost in the defence of the land. The coastline is considered as something hard and fixed; it is a rigid line separating land and sea from each other.

Due to climate changes the sea level will start to rise the coming century. The prognoses for the rise of the sea-level at the Belgian coast go up to 1 metre by 2100.[3] This rise in sea-level

seems minimal but the impact goes beyond the sea-level itself. The climate change will affect the North-Atlantic Gulf Stream and therefore the local climate conditions; it will increase the risks of floods, induce a more rapid beach and dune erosion, and even slowly render the polder landscape brackish. All these evolutions will have a tremendous impact on the use of the North Sea, and in particular the use of the densely build planes and polders of the Lowlands. Policymakers will probably, without an alternative planning discourse, fall back on measures like raising the dikes and fortifying the beaches and dunes. But the magnitude of the consequences of the rising sea seem that large that the current planning discourse no longer solely can answer the upcoming challenges the sea level poses in these coastal regions.

In a sea-oriented planning discourse we must stop thinking in terms of raising dikes but in terms of broadening the interaction zone between land and sea. Lowering the dikes and giving ground to the water is a principle used more and more on land for decreasing floods caused by rivers by restoring the summer and winter beds of the river. Perhaps solutions can be found for the threatening rise of the water when we try taking into account the dynamics of the sea. Solutions that no longer protect the land by sealing it off from the sea, but see the division between land and water instead as a line as an area where they can interact and where there is enough space for the dynamic and changing nature of the sea. For example through the use of so-called 'wisselpolders' or intertidal zones. These are areas placed once again under the influence of the sea and which can, in times of extreme high water, serve as expansion areas for the upcoming water. But we can also use the dynamics of the sea itself to protect the land. The natural sand transport caused by currents can be used to nourish the beaches, strengthen the dunes and therefore break the powerfull surge of the sea. That is why we have to come up with new methods of building defences against the rising water together with the natural dynamics of the sea instead of against it.[4]

CHALLENGE 2: ***reliving the coast.***

The general perception of the Belgian coast is dominated by the image of the Atlantic Wall, a dens strip of 67 kilometres long and at the most a few kilometres wide, which divides the sea from the polder landscape. The combination of beach, sea wall and ten storey high flats make it a linear city with in between small fragments of dunes, which remind us of the former natural landscape. With the royal coastal road and the coastal tramway as structuring elements, the coastal zone has been transformed into a grand tourist experience, driven by

speculation and the value of the view on the open sea. The sea is regarded as a place to discharge all of the 'stress' of the mainland; it is a place where people can relax, it serves as a place where people can get a breath of fresh air, it is considered a holiday getaway. On a hot summer day people long for the refreshing sea and cars are lined up the highways halfway up to Brussels. But the sea is farther away than expected. Not so much in kilometres or the time still to go, but in the mentality of the people visiting it. For many people the sea remains an apartment at the sea wall with a narrow strip of beach in front of it. Recreational experiences at the coast seem to forget the sea itself, it serves at the most to bathe or take a dive in.

Current changes in society gradually ask for totally different tourist-recreational experiences. Due to the ongoing tendency for individualisation, the need for individualised recreational activities and exceptional experiences rises. In this process mass tourism seems to lose its appeal. The Belgian coast, with its stacked apartments with identical views, its sea wall with everywhere the same ice cream parlours and waffles stalls, and its sandy beaches where everyone is nicely lined up, does no longer fit the needs of the ever more critical consumer. From the point of view of the experience economy the reinvention or reinterpretation of the coast and in particular the sea is more than obvious. For example, a creative way of nourishing the beach using small islands or reefs could, besides its logical function as a defence structure, also offer a more varied, playful and dynamic landscape with high recreational value. Sand suppletions can make space for the desired coastal developments and for new maritime experiences. But besides reshaping the coastline, other creative possibilities can be found further at sea or oppositely in the flat polder landscape.

CHALLENGE 3: ***once again Mare Nostrum?***

Instead of being an endpoint of the land, a border or a barrier between different communities and countries, the North Sea can also act as a link between the different people living around it. The thalassacentric thesis of Braudel[5] sees an exquisite opportunity for the North Sea as an ostensibly empty centre for a real North Sea Region. The European Spatial Development Perspective[6] also recognizes this North Sea Region as a region with a more or less common socio-economical and cultural identity. The sea can serve between all these communities, ethnicities and subcultures as a common cultural denominator of a region that owes her rich development to its geographical position at the most utilized sea in the world. The Mediterranean Sea, for example, has been known to shape the lives of all the people visiting

and living in the region around this closed sea. It is the origin of concepts as siesta, strolling the beach promenade, sunbathing, and sidewalk cafés. It is the birthplace of beach tourism at the infamous Costa's, and hyper densely urbanised and commercialised leisure cities such as Benidorm.[7] Maybe the North Sea also can function as such a cultural element. In a society that is rapidly disintegrating into different niches and subcultures, this common link might be able to offer space for common cultural expressions. Maybe we can start considering the North Sea as a gigantic public domain, accessible to all.

CHALLENGE 4: ***Network North Sea.***

From the fourteenth century on, the North ea has been the centre of a vast trade network connecting almost 200 trading cities, known as 'Hanseatic League'. Because transport over sea was much easier than over land, the contacts between these cities were more intense and frequent than these with cities more inland. Therefore gradually a network emerged between the port cities that nowadays are part of one of the most urbanised and industrialized regions of the world. This world size economical centre stretches from Le Havre, over London, Rotterdam and Antwerp, to Hamburg. It Therefore the North Sea Region is shaped by all these movements, relations, and routes. The sea is no longer considered a barrier between different cities and countries, but serves as a connection. The North Sea is already the busiest navigated sea in the world, but can, in the context of the ongoing globalisation and the Unified Europe, serve even more as a central logistic node. With the introduction of a string of East-European, Baltic and Mediterranean countries into the European Union, connections, both at sea as on land, will grow in importance.

Therefore the North Sea as a worldwide logistic network will need a clear structure for handling the gigantic flow of goods, persons, information and energy moving across it daily. In this context land and sea have to be considered as part of the same network, as elements on the same line connecting two cities or centres. On the one hand new forms and methods of mobility and transport at sea can help dealing with congestion problems in the densely urbanised regions. On the other hand transport at sea will need good infrastructural connections on land, which are becoming longer by the day now that the centre of Europe is slowly shifting eastwards and away from the sea. A maritime culture like the one of the North Sea Region needs open borders, mutual trade relations, and new connections and should in this context be able to exploit new possibilities to do so.

CHALLENGE 5: ***sustainable resources.***

The BNS is a very rich area, that offers specific resources and circumstances that cannot be found anywhere on land. Coastal seas, such as the North Sea, are extremely productive. These coastal seas deliver 90% of all fish caught at sea and 25% of all biological products in the world. This adds up to the fact that the demand for fish as a main source of food is still growing in importance. But as a result of these developments a large portion of the main fishing grounds is systematically overexploited. This raises questions about the sustainable exploitation of these natural resources. But while some of the natural resources are being overexploited, others are only utilized at a minimum of their potential.

The North Sea has many resources which are forgotten or where additional uses could be found for. Based on the rich biological life of the sea, numerous applications in the field of the chemical, pharmaceutical, and biotech industry could be found. Also in the field of energy production the great forces of the North Sea are being forgotten because we limit ourselves to the extraction of crude oil and natural gas. But the need for electricity will rise the upcoming 30 years with more than 60% while traditional combustions, like oil, coals or natural gas, are depleting and many governments want to stop with nuclear energy. Tidal power plants, energy plants using the energy of sea currents and windmill farms show the large range of possibilities the sea can offer us for more sustainable methods of electricity production.

CHALLENGE 6: ***preservation of the marine world.***

The North Sea is one of the last remaining unspoilt landscapes, which can be found in densely urbanised Belgium. As a vast hardly influenced territory it has great ecological value and has a rich natural variety of ecological networks consisting out of different types of benthos, fish, sea mammals and birds, forming important ecosystems in which these ecological elements are related to physical elements like the geographical relief, the currents, the wind... The most important ecosystems are these of the shallows sandbanks, the dunes, habitats on hard surfaces and the intertidal zones of estuaries. But most people regard the open horizon as the most important natural value of the North Sea. It is found that important that even a possible disturbance of this empty view was seized to stop the construction of an offshore windmill farm.

But the quality of the marine environment is put under pressure from external influences. The North Sea is due to its intense use and the proximity of large industrial regions, which drain through large rivers as the Rhine, Thames or Scheldt directly in the sea, one of the most polluted seas in the world. The different types of pollution, both historical as the current ones, pose an ongoing threat to the vulnerable ecosystems of the North Sea. These ecosystems need to be protected, in order to preserve them for future generations. Not only because of its natural value but especially because of its importance as a production and supply space for many of the natural resources of the North Sea. But the preservation of these natural values needs to be imbedded in a larger vision, which pays attention to the roughness of the maritime world and the endlessness of its horizon.

Developing a vision for the sea

For more than a decade, different departments of the Ghent University have engaged in research on the BNS. Through the years valuable information about the use, the natural and economical dynamics and even the socio-cultural meaning of this small part of the North Sea has been gathered. But only recently with the introduction of spatial planners in the GAUFRE-research project "Towards a spatial plan for the Belgian part of the North Sea" [8], the main focus shifted from gathering scientific information, as part of an extensive analysis of the BNS, to designing future scenarios by which we could plan the BNS.

The GAUFRE-project tries to formulate new planning approaches for the development of the BNS and the 67 km short strip of Belgian coast. This development strategy is based on the six specific characteristics of the sea itself and the six challenges which we have to answer the coming century. In order not to end in a final regional plan or a fixed set of planning regulations but in a totally new and sea-oriented planning discourse, the research tries to open up the perspective on the sea and the coast by using different development scenarios.

STEP1: ANALYZING THE BNS.

Based on the numerous data of different research groups at the University of Ghent, the spatial structure of the BNS was analyzed. This analysis was made up out of three important parts:

- The three-dimensional structure of the underground and soil and its the geographic relief, the water column and its the currents, and the water surface and airspace above it. For all three structures natural values, disturbances and pollution have been analyzed.
- The immobile users of the BNS: cables and pipelines, windmill farms, beacons and radar posts, hard and soft defence works.
- The mobile users: shipping, fishery, military exercises, recreation, sand and gravel extraction and dredging activities and dumping of the dredged material.

In a first step these elements where analyzed separately from each other. In a second step user interactions were analyzed by examining their relations and the positive or negative impact they had on one another using user-user or user-environment impact matrices. User-user impact matrices then could serve in the planning process to determine whether certain functions could be combined, or could be allocated in each others vicinity. User-environment impact matrices showed the impact a certain user had on the natural or physic-geographical environment. In a last step the existing legal preconditions of every user on the BNS were examined in order to better estimate their possibilities in terms of allocation, required space, safety measures...

STEP 2: FORMULATING THE CORE VALUES

In order to plan activities we have to have a clear insight in the principal functions of the BNS. Its great value for society can be divided into three core values:

- The first core value is the well-being, or the social value of the North Sea in the well-being of the people living close to it. The North Sea and in particular its coast are regarded as spaces for relaxation and recreation. For tourists and recreants, the sea is seen as an empty space in contrast to the fullness of the land. But they also offer a lot of healthy products, ranging from fresh air and fish to beauty products and medicines, which are valuable for the well-being of its residents.
- The second core value is de ecological value and the valuable landscape of the North Sea. The BNS is one of the last remaining unspoiled landscapes of Belgium, with an important ecological value. The ecosystems are very divers and dynamic and are for some species even on a European scale important to preserve.

- The last core value is the economical potential of the sea. The BNS is a very rich area, rich in specific resources and condition that cannot be found on land. A surplus for the development of the BNS can be found in the maximal exploitation of these resources.

The usefulness and necessity of every intervention in the maritime world can be considered keeping in mind these three core values. When planning new infrastructures, demarcating MPA's, exploiting natural resources, issuing sand or gravel concessions or constructing additional dikes, all interventions will have their place. Therefore the core values are an excellent means by which we can weigh the pros and cons of every intervention. A truly sustainable development will always find a balance between these three core values so that all kinds of developments, both social, ecological as economical, are possible.

But because of the specific nature of the maritime world, we have to add another element to ensure a sustainable maritime environment. In order to maintain the specific qualities of this world we also handle the already mentioned principle of precaution. The principle of precaution unites sustainability and safety. Sustainability at sea not only means that we should not shift the consequences of our actions on the next generation but it also implies that we do not shift the consequences of our way of life on land onto the sea. Everything that can be done in a reasonable fashion on land should therefore not be done at sea. The second important principle is safety. We have to interpret this in two ways: not only do we have to protect the maritime world; we also have to protect ourselves against the overwhelming powers of it. We have to protect ourselves against possible floods, the rise of the sea-level and storms. We have to protect marine ecosystems against pollution, disturbance and destruction. We have to protect shipping against collisions and other types of disasters. Politicians will even point out that we have to protect the sea against invaders, because the sea is more and more used by migrants as a backdoor to enter Fort Europe.

STEP 3: DEVELOPING SCENARIOS

Starting from the three core values or a combination of two of them, six thematic scenarios were developed through design-oriented research. Three scenarios are strongly aimed at one of the central core values, the other three scenarios emphasise a crossover between two core values. The six scenarios are presented schematically on each of the angles of a hexagon. It should be clear that these scenarios were deliberately elaborated as quite extreme and conflicting images of a possible future. Working with such extreme scenarios offers the

possibility of a more innovative and inspiring thinking beyond the obvious. These scenarios try to show new possibilities and aim to work inspiring for the future policymakers. Therefore, it was not the intention of the GAUFRE-project to design the spatial structure plan for the North Sea; this would be a plan made and approved by policymakers that rather tries to find a balance between the three core values and therefore it would be situated in the middle of the hexagon instead of on the angles.

In every scenario the underused potential of the water was looked at in a totally different way in order to develop the water in a sustainable way. Water proved to be a much richer resource by which we could plan the sea and the coast than it is currently considered to be. Whether it is used for transport (short sea shipping, harbour islands), recreation (at the coast or on new islands), fishery (in concession areas or based on a rotation system), nature conservation (dynamic coastline, natural coastal defence, Marine Protected Areas) or even for new functions like windmill farms, aquaculture and mariculture (as land-based development of resources of the sea), in all six of the scenarios water became a real structuralizing element.

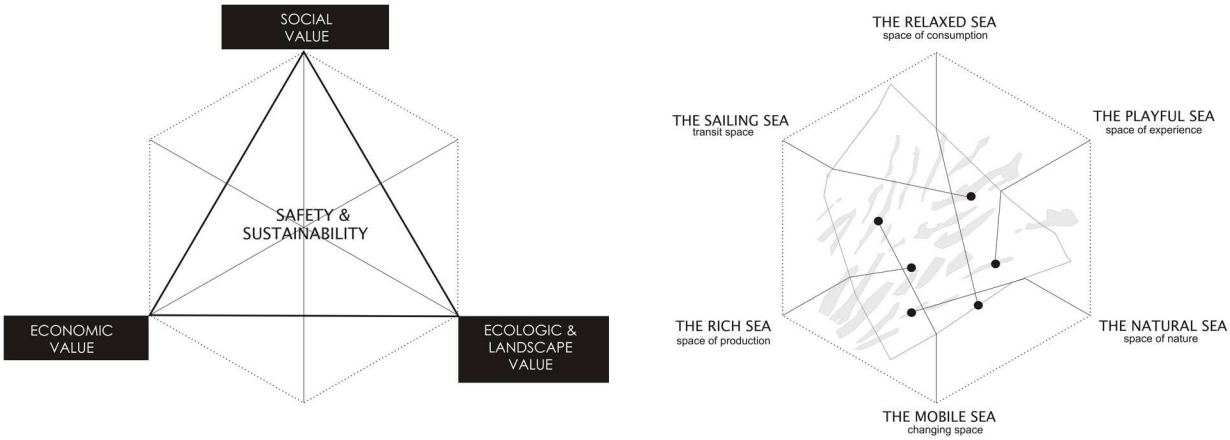

FIGURE 5 + 6: starting with three core values, ending with six scenarios for the BNS

SCENARIO 1: ***the relaxed sea.***

This scenario focuses on the value of well-being. The further development of the coastal area as recreational and tourist area is stimulated as much as possible. In addition, the sea also offers new possibilities for the well-being of its users: for instance algae therapy, biopharmaceutical products etc. Aquaculture can play an important role. Besides recreational and tourist activities, research & development and even production activities aimed at the well-being of society are stimulated in this scenario. All activities on sea that impede or disturb the well being of the 'coastal consumer' have to move to places where they produce no or less nuisance.

SCENARIO 2: ***the playful sea.***

This scenario focuses both on the value of well-being and the ecological value of the North Sea. The complete sea is considered as a space of perception. The maritime landscape acts as a valuable basis for a new look at the North Sea. The shallow sandbanks in the Belgian coastal waters, for example, can offer ample opportunity for the development of several coastal islands with a recreational and / or natural function. Wrecks in the North Sea can become recreational or ecological hotspots, and windmills farms can be placed as a reflection of the underlying water landscape (the structure of the sandbanks).

SCENARIO 3: ***the natural sea.***

The main aim of the third scenario is the reinforcement of the landscape and the ecological value of the North Sea. The goal is to delimit large natural marine protected areas. For the BNS this means that especially the coastal area with its shallow sandbanks will be protected. This can lead to large MPA's (or 'Marine Protected Areas') where nature can develop freely. Therefore other activities that cause conflicts with the natural function are limited or even entirely prohibited. For example, in this scenario offshore windmills farms are not allowed because they are fixed elements and they form a new (rocky) habitat at sea. Their impact on the natural environment of the Belgian part of the North Sea, where there are no rocky habitats, is too large.

SCENARIO 4: ***the mobile sea.***

In this scenario both the ecological and the economic value play a distinguished role. In other words, this image of the future targets to reconcile economy and ecology. Economic activities such as fishery and sand- and gravel extraction will have to take the natural dynamics of the North Sea into account. This means that some sort of rotation system will be used in order not to charge the natural environment too much. During vulnerable seasons no activities will be allowed in natural areas with a great value. Moreover, activities are preferably situated on the sandbanks because these areas are already very dynamic. For dredging the natural sea circulations can be used as much as possible (see for example the (failed) system of the sluice reservoir, the so-called ‘spuikom‘ in the port of Ostend and the former open structure of the jetties at the port of Zeebrugge).

SCENARIO 5: ***the rich sea.***

This is the most economical scenario for the BNS. Economic extraction of the North Sea is stimulated as much as possible and fishing, sand- and gravel extraction and wind mill parks will be assigned to those locations that are economically considered to be the best (shortest possible distance to the coast, good fishing grounds, good sand quality, optimum wind flows). Just like it is done for sand- and gravel extraction, fishing will also be delimited within 'fishery concession zones' where fishermen can fish without quota or other limits. They must manage their own 'lands' and ensure that they do not exhaust their ‘harvest‘ (comparison with agriculture lands). Nature protection areas and windmill farms function as stock areas for the fishery.

SCENARIO 6: ***the sailing sea.***

This final image of the future focuses on the value of well-being and on the economic value of the North Sea. The most attention is given to a more efficient organisation of the transport system. A group of islands will be developed at the ‘junction‘of the large international shipping route (the so-called ‘international separation scheme‘). They will have a function as airport and port at sea. These islands will especially have a function in the treatment of freight (no passengers). This way, heavy cargo liners do not have to navigate all the way to Antwerp, Zeebrugge or even Rotterdam or London. Instead they can unload at this strategic port island along the international shipping route. The cargo is transported from the island to the ports in

the region by means of smaller ships (short sea shipping), using the hub and spokes concept often used in air traffic schemes. For airport movement the same system is applied. The airport island can offer an answer to the problems of (nocturnal) nuisance for people who live closely to freight airports (for example the city airports of Ostend and Zaventem...).

The sea is rising.

There is not only a need to start planning the sea for the long term and to think in a more creative way about the sea, using all sorts of revolutionary scenarios, there is especially need for a sea-oriented planning discourse that pays attention to the specific planning characteristics of the sea itself, planning characteristics which makes planning totally different than on land.

A sustainable way of planning sees the sea as an opportunity instead of a threat, leaves room for the sea instead of parcel its open spaces out in small mono-functional zones and pays attention to the dynamics of the sea instead of trying to limit it, or dam it up. The sea needs a planning discourse that tries to use the vast open spaces in creative and multiple ways instead of thinking in terms of sectors and holding on to short-term interests.

There is a need for more sea, so let the sea be more than just water.

Bibliography

De Graaf J. (2002), *De Noordzee op de kaart*, S&RO, nr 4, 2002, pg. 46-52

Luiten E. (2004), *Zee in zicht, Zilte waarden duurzaam benut*. Den Haag, STT/Beweton.

Maes F., Vanden Abeele P., Vanhulle A. ea (2005), *Naar een ruimtelijk structuurplan voor het Belgische deel van de Noordzee*, onderzoeksrapport in opdracht van het Federaal wetenschapsbeleid, Brussel.

Maes F., Vanden Abeele P., Vanhulle A. (2005), *Mare Liberum*, bijdrage tentoonstelling International Architectuur Biënnale Rotterdam, Rotterdam.

Maes F., Cliquet A., Seys J., Meire P., Offringa H. (2000) *Limited atlas of the Belgian Part of the North Sea*, Brussel.

MVRDV (2000), *Costa Iberica, Upbeat to the Leisure City.* Barcelona, Actar.

Ruimtelijk Planbureau (2003), *Naar zee! Ontwerpen aan de kust*. Nai Uitgevers, Rotterdam.

Waterman R.E. (1991), *Naar een integraal kustbeleid via bouwen met de natuur.* Waterman, Delft

---

Notes

[1] According to the Intergovernmental Panel on Climate Change (IPCC)

[2] The principle of precaution implies that measures must be taken when there is reasonable doubt about the effects of directly or indirectly in the marine world introduced materials, energy or users which can lead to danger for the public health, which can destroy living resources and valuable ecosystems or which can endanger possible uses of the sea. These measures must even be taken when there is no conclusive evidence for the causal connection between the introduction of materials, energy or users and the effects of it. While balancing the possible introduction an the resulting effects, we have to give the sea the benefit of the doubt. The principle of precaution is part of the OSPAR-treaty, approved and signed by all North Sea Countries (Great-Brittan, France, Belgium, Holland, Germany, Denmark and Norway) which tries to set rules to protect the North Sea.

[3] According to a rapport of the UCL about the consequences of the climate changes for Belgium

[4] Waterman, R.E., *Naar een integraal kustbeleid via bouwen met de natuur.* (1991).

[5] F. Braudel, *The Mediterraneum and the mediterraneum world in the age of Philips the second.* (1975).

[6] The European Spatial Development Programme (ESDP) presents a vision of the future territory of the EU supported by the Member States and the Commission. It represents a frame of reference for spatially effective measures and provides public and private decision-makers with a concept to formulate their policies and actions. It pays great attention to the possible role of regions within the spatial structure of the EU instead of countries or cities. It that perspective it reorganizes the concept of the North Sea Region.

[7] For an extensive research of the phenomenon 'Costa', I refer to MVRDV's *Costa Iberica*. (2002)

[8] the GAUFRE-project *"Towards a spatial structure plan for the Belgian part of the North Sea"* was financed by the Belgian Federal Science Policy and ended 30 April 2005. The research was managed and at the Maritime Institute of the University of Ghent, in collaboration with the Renard Centre for Marine Geology, the Centre for Marine Biology and Ecolas, under the supervision of Prof. Dr. Frank Maes. A detailed research rapport can be obtained at the offices of the federal science policy. In autumn 2005 an atlas of the project will be issued.