Marine spatial planning – a theoretical overview
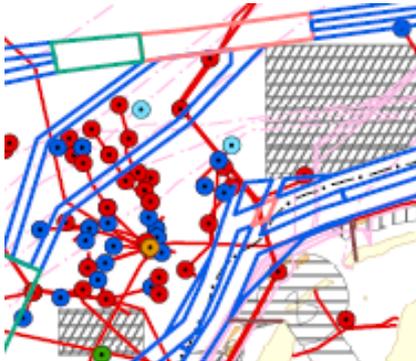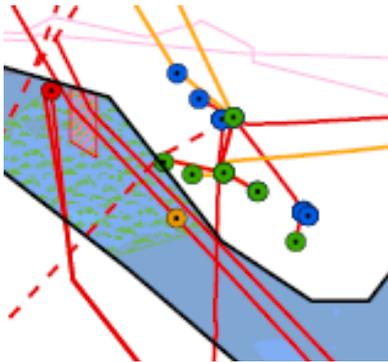
Draft report
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Contents

1   Introduction and purpose

Marine spatial planning as a new field

Recent years have been marked by a notable increase in the demands that are placed on coastal and marine resources. One reason is the continued intensification of uses, for instance shipping. Another is the development of new forms of maritime industries, such as hydrogen generation and storage. In the sea, offshore wind farms, port infrastructure or oil terminals are examples for large-scale maritime infrastructure, which are developing alongside the more traditional, more fleeting types of marine resource use. Also, the context of marine resource use is changing through external pressures such as climate change, global economic development and demographic change.

Whilst Integrated Coastal Zone Management (ICZM) has become a recognised framework for addressing these changes, marine spatial planning (MSP) has only recently emerged as a focal point in sea use management. Countries and international institutions, NGOs and international conventions such as OSPAR are taking note of or actually implementing MSP, and a wide range of policy documents now explicitly refer to MSP as a means of implementing sustainable marine resource management[1]. In 2006, an international workshop was co-convened by the Intergovernmental Oceanographic Commission and the Division of Ecological and Earth Sciences of UNESCO to discuss the current state and potential development of MSP, involving expert participants from a range of countries and producing a summary report with key recommendations.

So how can this sudden interest in MSP and the emerging activity in this field be explained?

Spatial planning is a specific, territorial form of planning which seeks to balance different demands on space and resolve conflicts of use. In many countries, it has become an essential tool for planning and managing land use, with further application in regional development, environmental or integrated regional planning. A common output is the provision of maps, which show restricted areas, priority areas or generally the distribution of different forms of land or resource use. The benefits of a spatial planning-based approach in balancing resource use are without doubt. It therefore makes good sense to transfer some of the benefits of this established system to the marine spatial context. A major advantage, which is also quoted by the 2006 Paris workshop, is that marine spatial planning and ocean zoning are place- or area-based, which means that they can be used at a marine ecosystem level.[2] A key expectation of MSP is therefore that it will provide a means for implementing the ecosystem approach to sustainable marine resource use.

Since its inception in the 1960s, the concept and the approach to spatial planning on land has undergone some significant transformations. The first transformation was its development from a project- or permit-based approach to a more comprehensive approach to resource use planning based on distinct areas. Usually, a spatial plan is used to set out a vision for these areas[3], which is implemented by concepts such as priority zones, development zones or restricted zones. The activity of spatial planning has also undergone a transformation, developing from a pure means of physically organising space to an increasingly

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[1] EU Maritime Policy, OSPAR, HELCOM?

[2] UNESCO International Workshop on Ecosystem - based, Sea Use Management/Marine Spatial Planning (2006), http://ioc3.unesco.org/marinesp/

[3] UNESCO International Workshop on Ecosystem - based, Sea Use Management/Marine Spatial Planning (2006), see first internet page on http://ioc3.unesco.org/marinesp/

communicative activity which needs to rely on co-operation between different scales of decision-making, sectors and stakeholders. An important emerging issue is the question of how to ensure a comprehensive description of space and the many complex systems interactions that manifest themselves in space. More recently, spatial planning is also being linked to the concept of coastal governance, where the focus is as much on the process of planning as on its actual outputs. An example of what is currently being debated is how spatial planning can be linked to more comprehensive forms of deliberation (for example, developing a vision for an area) and participative decision-making[4].

It has been said that 'planning' in the marine environment today resembles terrestrial planning in the 1970s[5]. The 2006 Paris workshop concluded that only few clearly articulated spatial (or temporal) visions or plan-based approaches exist for marine areas. Responsibilities for the marine environment continue to be sector-based, leading to the lack of a coherent approach to marine development and resource management. At the level of specific projects or planning applications, developers are therefore faced with drawn out processes, uncertainty in terms responsibilities and even greater uncertainty with respect to the overall success and long-term security of their projects[6]. At the level of integrated marine resource use, this means that key commitments made at a national and international level, such as implementing an ecosystem-based approach to marine management, are not being met. The 2006 Paris workshop therefore states that *"The time has now come for a strategic and integrated plan-based approach for marine management, instead of the piecemeal view."*

This report is an attempt at outlining the current state of the art in MSP and bringing together some key requirements that would make MSP successful. It will begin by outlining the need for MSP and some key principles of marine resource management before considering some of the specific requirements that MSP will need to meet.

Marine spatial planning and PlanCoast

This report forms part of a PlanCoast transnational study on the current thought and practice of MSP. Introducing marine spatial planning for the European and Mediterranean coastal zones, its aim is to provide a theoretical overview of MSP around the world and to set out some of the challenges arising for its implementation. Picking up on one of the issues raised during the 2006 UNESCO workshop, the specific objective of the study is to and to explain its relevance, aims and potentials to coastal planners and ICZM practitioners.

The report will be used as a basis for developing practical recommendations for implementing MSP in the PlanCoast countries. Specifically, it seeks to:

- contribute to the implementation of the EU recommendations on ICZM and the EU maritime strategy,

- provide grounds for implementing the provisions of the ICZM Protocol likely to be adopted by the Mediterranean countries and the objectives related to ICZM, in particular as far as the co-ordination and integration of the sea and land part of the coastal zones are concerned,

- prepare elements for the ICZM strategy for the Mediterranean requested by the above mentioned Protocol once it comes into force,

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[4] Bruns, A. et al; forthcoming in GAIA (2007)

[5] UNESCO International Workshop on Ecosystem - based, Sea Use Management/Marine Spatial Planning (2006), http://ioc3.unesco.org/marinesp/

[6] In Germany, this was confirmed by stakeholders surveyed in 2006 in the context of offshore wind farm planning applications (see www.coastal-futures.de for a detailed report).

- stimulate discussions at national levels on the importance of marine spatial planning,
- share experiences with different countries to harmonise approaches.

Important: some of this report is based on expectations rather than fact since MSP is not yet universally implemented.

2 The Marine Environment: Trends and challenges

"The health, well-being and, in some cases, the very survival of coastal populations depends upon the health and well-being of coastal systems."[7]

In recent years, there has been growing recognition that coasts and seas are subject to unprecedented human pressure. Algal blooms, shipping accidents, overfishing or oil pollution are just some examples that have repeatedly captured media attention in the Northern hemisphere; the recent flooding of New Orleans and the tsunami in Indonesia have raised troubling questions related to the continued life on coasts in times of climate change and the protection of vulnerable coastal communities. Similar concerns regarding the state and the future of the coastal and marine environment are being voiced all over the world. In 2001, UN marine experts listed 20 issues of global concern, which included many long-existing damages such as eutrophication, pollution, the loss of biodiversity, habitat destruction, overfishing and marine resource extraction, as well as up-and-coming concerns such as climate change and sea level rise[8].

Despite the many regional differences between types of coast, types of sea and coastal countries, the pressures listed above will be familiar to coastal managers and planners in every coastal country. Differences in having to deal with them are likely to be differences of degree rather than principle. It is no longer a question of "whether to", but rather "to what extent" and "how to".

The "how to", however, is no simple recipe or fits-all solution. It is intimately related to the nature of the coastal and marine environment, the specific combination of pressures in the areas in question and also the likely or desired development of these pressures in the future. The existing administrative and political context also plays an important role in that different administrative traditions will produce different solutions. Integrated Coastal Zone Management (ICZM) and Marine Spatial Planning (MSP) have been developed as generic frameworks to deliver sustainable development. This chapter looks at some of the challenges posed by the coastal and marine setting and explains some of the basic principles that have been developed to give ICZM and MSP purpose and focus.

A challenging environment

When it comes to any form of planning and management in the sea, a particular difficulty lies in the **continuous nature** of the marine environment and the sheer scale of marine ecosystems. Familiar concepts such as borders or even ecological boundaries are more difficult to apply than on land, not least because of the three-dimensional nature of the sea. Although some habitats may be readily identified, many marine systems are easily influenced by external factors that could originate at considerable distance. Water quality is one of the most obvious examples; others might be

> *"The character of the sea appears seamless, with ecological processes operating over large scales and distances. Boundaries can be subtle, being defined by temperature, currents, depth, stratification and salinity"*
> *(Laffoley et al. 2004)*

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[7] UNEP Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities, http://www.gpa.unep.org/ (last visited on 31 August 2007)

[8] GESAMP data on http://www.oceansatlas.com/unatlas/uses/uneptextsph/gesampph/gs71009a.html (last visited on 1 September 2007)

increases in turbidity or changes in salinity as a result of human activity. There is also the issue of high species mobility, which places limits on tools such as marine nature reserves. Policy-makers thus tend to agree that the sustainable management of the marine environment requires **international co-operation.** This must include countries not directly adjoining the coast but still impacting the sea through their activities, for instance through large river catchments. This has recently been affirmed in EU policy which states: *"Oceans and seas cannot be managed without cooperation with third countries and in multilateral fora. EU policy aimed at the oceans must be developed within that international context" (CEC 2006).*

Another factor specific to coasts and seas is the **complexity of land-sea interactions.**

Sectors with relevance to Germany's coasts and seas:

Aggregate extraction and mining
Agriculture
Aqua- and mariculture
Cables and pipeline
Coastal defence
Development of sea ports
Dumping at sea
Fishing
Marine protected areas and coastal nature reserves
Oil and gas extraction
Open seascapes
Shipping
Tourism
Wind energy and offshore wind farms
                    (Adapted from Gee et al. 2006)

Pollution from agricultural run-off, for example, is carried into the sea from entire river catchments; the productivity of coastal waters is hampered by the loss of coastal wetlands and lagoons; inland communities depend on the use of marine resources for their economy; fish such as sturgeon spend their adult lives at sea but depend on healthy rivers to spawn. UNEP estimates that 80% of the pollution load in the oceans originates from land-based activities[9] and concludes that human activities on land represent the main threat to the health, productivity and biodiversity of the marine environment. Land-sea interactions exist at many different scales and with different degrees of intensity, with their precise expression strongly dependent on their respective systems context. This too has long been recognised by managers and policy-makers, with integrated approaches called for that **view land and sea as a continuum** and **overcome traditional administrative divisions**.

New pressures on coastal and marine resources

The exploitation of coastal and marine resources has long been a source of wealth and power and has contributed much to shaping national identities. Fishing, shipping, international trade, the exploitation of oil and gas and tourism are examples of established sectors that have developed over decades and sometimes centuries. Recently however, other uses have begun to be added to the mix. Other sectors have grown in intensity as countries push for economic growth. A recent stocktake of the German coasts and seas has identified 14 sectors that depend on coastal and marine resources[10], but this list is by no means exhaustive. Major pressures have also been identified for some of the Adriatic countries[11]. More forms of use are likely to emerge through continued innovation, together with shifts of activity caused by global forces such as international trade or climate change.

An important tenet in any type of planning is that it should not be confined to the present, but also be able to respond to future developments. **What is the future likely to hold** for the

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[9] UNEP Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities
[10] Gee et al. 2006
[11] Summary report on coastal pressures in Adriatic PlanCoast countries, to be published

Fig. 1   Major pressures in the terrestrial zones and marine areas of Adriatic countries (PlanCoast, forthcoming)

+   = minor concern
++   = moderate concern
+++   = major concern

	Italy	Slovenia	Croatia	Monte-negro	Albania
Urbanisation /Littoralisation	++	+++	+++	+++	+
Tourism	+	+	+++	++	
Infrastructure	+	++	+	+++	++
Fresh water management		+++	+	+	+
Agriculture	+		+		++
Nature protection	+++	+	+++	+	+++
Landscape	+	++	+++	+++	
Erosion	+				+++
Earthquakes					+
Nautical tourism		+	++	+++	
Maritime Transport		+++	+	+	
Fishery		+	++		++
Aquaculture	++	++	++	+	
Water quality	+++	+	+	+	+++
Energy generation	+++	+++	+++		

coastal and marine environment? The following summarises what are considered **key general trends** that apply to coasts and seas all over the world.

Shifting driving forces

One aspect worth noting is the **increasing significance of global driving forces.** Climate change and economic liberalisation are useful examples of drivers that are currently causing worldwide impacts. What this means is that coastal nations – like all other nations - will need to respond to trends that may not be of their own making. At times, this may go hand in hand with a sense of losing control as the gap widens between the ability to influence global drivers (for instance, global markets) and the impacts of these forces at a national or local level (e.g. job losses). At the same time, trends such as these may herald new opportunities, such as stronger regional cohesion, co-operation and trade across regional seas and the development of regional infrastructure, for instance transport routes or electricity grids. Nevertheless, an increasingly global world will demand greater flexibility and the willingness and ability to adapt.

The opportunities and risks that may be inherent in globalisation are well illustrated by the example of shipping. Presently, 95% of the worldwide movement of goods and 62% of the European movement of goods are estimated to be down to seaborne transport. In the Baltic Sea alone, one of the busiest waterways in the world already, shipping movements are expected to double between 2002 and 2015, mostly on account of the EU Eastern expansion and increasing trade with Russia. For the North Sea similar developments are predicted, based on growth in container, oil and ferry transport: Freight is expected to double by 2015 in terms

of number and size of shipped units compared to 2003[12]. This harbours undoubted economic potential for many sea ports and surrounding coastal communities.

The globalisation of trade, however, also raises the level of competition between ports and related facilities. Already, the trend is towards further concentration on a few main ports and increased competition for transport chains across the world. In order to be a significant player, and in order to secure much-needed jobs, sea ports will need to invest in the provision of appropriate infrastructure. This might mean dredging deeper channels to accommodate larger container ships, constructing new port facilities, increasing the turnover of ships or tapping into major transport links such as the Trans-European Network TEN-T. It also illustrates another important principle when it comes to trends in coastal and marine development, which is that of **complex cause-and-effect relationships.** The knock-on effects of investments in ports, for example, are manifold and complex, both in the immediate and in the longer term. Direct impacts of dredging will be felt in the coastal and marine environment. Job creation is a boon to some coastal communities whilst job losses might be felt elsewhere as a result of other, smaller ports losing out. Indirect economic effects could be generated through the development of spin-off industries, whilst spatial planners might be called upon to accommodate additional roads or railway links to other nodes of transport. Similar cause-and-effect relationships can be constructed for other international driving forces, with climate change another prominent example. Again, both risks and opportunities are likely to emerge, with

> *"The EU is the leading maritime power in the world, in particular with regard to shipping, shipbuilding technology, coastal tourism, offshore energy, including renewables, and ancillary services. Looking to the future, according to a study of the Irish Marine Institute, the sectors with most growth potential appear to be cruise shipping, ports, aquaculture, renewable energy, submarine telecommunications and marine biotechnology".*
>
> *(CEC Green Paper: Towards a future Maritime Policy for the Union 2006)*

opportunities predicted for investments in clean energy (e.g. solar power, wave power, wind farming)[13]. The point is that **international driving forces have significant and varied impacts on local and regional sea use, and that most of these impacts spread through complex knock-on effects on marine, coastal and terrestrial ecosystems, socioeconomic systems or other forms of coastal and marine resource use.**

The sea: A new economic powerhouse?

At the same time, marine forms of resource use are receiving **increasing political recognition**. Governments and international institutions acknowledge that developments at sea actually constitute important economic driving forces in their own right. The 2006 EU Green Paper on maritime policy explicitly refers to maritime industries as a key driver of an innovative and competitive Europe. Dynamics are currently most pronounced in the field of renewable energy, but growth is also noted in marine technology, in renewable marine resources, deep-sea operation, oceanographic research, underwater vehicles and robots, maritime works and coastal engineering[14].

Of particular note is the emergence of new and **fixed structures** in previously 'unused' space. One such example is offshore wind farming, which is prominent in Europe; another is oil and gas extraction, the construction of oil terminals or the construction of new container ports. There is also increasing interest in **combining** different types of resource use in new forms of

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[12] SDN 2005
[13] Nicholas Stern (30 October 2006). "Stern Review executive summary". New Economics Foundation.
[14] CEC 2006

co-use. **The sea is therefore likely to drive economic development much more than it has in the past, with important repercussions on policy and planning. Coastal countries will increasingly be called upon to combine these new forms of use with more established and traditional industries such as fishing or tourism, whilst also ensuring the conservation of the natural resource base and the equitable sharing of benefits throughout society.**

Lifestyle

Without going into detail, another trend is that **coasts are increasingly attractive places to live and work**. 44% of the world's population currently live within 150 kilometres of the coast; eight of the top ten largest cities in the world are located by the coast. In China alone, where the urban population is expected to increase by over 125% in the next twenty five years, over 400 million live on the coast[15]. This is set to put **increasing pressure on coastal ecosystems and habitats**. Estimates show that almost 50% of the world's coasts are threatened by development-related activities[16].

As societies grow more affluent, other types of coastal and marine services are likely to gain prominence, namely those of health and leisure. For many coastal communities, tourism is a major source of revenue, with the direct turnover of marine tourism in Europe estimated at € 72 billion in 2004[17]. The significance of health-related tourism, wellness and retiring to the coast is likely to increase as the

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Future trends in sea use: A selection

- Developing know-how in *offshore technologies* such as carbon capture, geological storage, methane hydrates or hydrogen capture and storage;

- Reducing carbon emissions and becoming less energy-dependent by developing offshore wind, ocean currents, waves and tidal movements as *sources of renewable energy*;

- Enhancing innovative capacity and export through *blue biotechnology* and new products that can be obtained through the exploitation of marine biodiversity;

- Achieve synergies through *clustering* of industries;

- Increased need to *account for natural risks* such as as erosion, coastal flooding, storms and tsunamis, in planning decisions;

- Increased attention to *developments in global trade* and linked to these, developments in shipping and port infrastructure,

- Investing in *aqua- and mariculture* to provide goods for growing coastal populations,

- *Implementing international policies* such as European Directives, e.g. the designation of marine protected areas, and accounting for the resulting spatial effects;

- Acknowledging new demands in *coastal defence* as a result of climate change.

- Developing *multi-use concepts and synergies* between different forms of coastal and marine resource use

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[15]

http://www.oceansatlas.org/unatlas/projectmanager/atlas_cd/cds_static/gpa_global_prog_action_protection_marine__1877_2191.html, last visited on 1 September 2007

[16] UNEP Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities, http://www.gpa.unep.org/ (last visited on 31 August 2007)

[17] CEC 2006

average age of the population increases. Much of this is dependent on the environmental quality of the coast and the continued attraction of the coastal environment.

Quality of the environment, however, is also essential to the **wellbeing of local coastal communities.** Quality of life is a composite of factors, which partly builds on the natural environment and access to economic and social infrastructure, but is also shaped by intangible qualities and "non-market values" of coasts and seas, such as sense of place, tradition, identification with places and self-determination. To protect these values, and also in response to economic and global political change, communities, along with other stakeholders, are likely to demand an increasing share in decision-making

> *"Governance concerns the values, policies, laws and institutions by which issues are addressed. Governance defines the fundamental goals, the institutional processes and the structures that are the basis for planning and decision-making. (…) Governance sets the stage within which management occurs."*
>
> *(UNEP/GPA 2006)*

processes. New forms of governance are likely to emerge as a response to changing societies and political contexts, not least to be able to take into account such 'intangibles' when it comes to decisions on the future of the coastal and marine environment.

The consequences: Dealing with pressure

What is the consequence of this combination of driving forces and their effects?

- It is widely agreed that pressure on the marine and coastal environment will **continue to intensify**.

- Seas and coasts will be increasingly **crowded**, with more and more demands placed on finite resources.

- **Competition** for resources is likely to intensify.

- More and more **cumulative impacts** of different forms of use will need to be taken into account.

- **Conflicts** over resource use are also expected to intensify.

In the context of this paper, the most significant outcome is of course that pressure will also intensify when it comes to marine and coastal **space.** In seas that are already heavily used, such as the North Sea, the Mediterranean or the Black Sea, space will become a key resource as new and emerging industries will need to be located next to established ones and the needs of the ecosystem need to continue to be taken into account. **Spatial planning therefore needs to be placed alongside resource management in order to ensure sustainable sea use in a comprehensive, integrated and forward-looking manner.**

The need for an integrated approach

Virtually every policy on coastal and marine management is built around the idea that development, whether in the sea or on the mainland, should be sustainable. Delivering sustainable development in the sea however is no easy task.

> "Sustainable development is at the heart of the EU agenda. Its challenge is to ensure mutual reinforcement of economic growth, social welfare and environmental protection."
>
> (Commission of the European Communities 2006)

A key precept which is widely accepted is the **Ecosystem Approach**. This is based on the idea that functioning ecosystems are at the heart of delivering sustainable development. The Ecosystem Approach has been defined as "*comprehensive integrated management of human activities, based on best available scientific knowledge about the ecosystem and its dynamics, in order to identify and take action on influences which are critical to the health of the marine ecosystems, thereby achieving sustainable use of ecosystem goods and services and maintenance of ecosystem integrity.*"[18]

As outlined above however, identifying and delineating ecosystems in large-scale aquatic environments is difficult. There is also a need to consider the human dimensions of the system. **An integrated and systems-oriented perspective** is therefore a key principle for the sustainable development of coasts and seas. An integrated perspective takes account of the four subsystems ecosystem, cultural and institutional system, social system and economic system and provides a coherent framework for management based on systems interactions. Fig. 1 is an illustration of this. The Ecosystem Approach is at the centre, enabling conservation of the resource base, resource use and the sharing of benefits throughout society. What is also needed however is an integrated context and agreement on objectives and targets over time across sectors and across institutions. Fig. 1 describes this as seven areas of coherence.
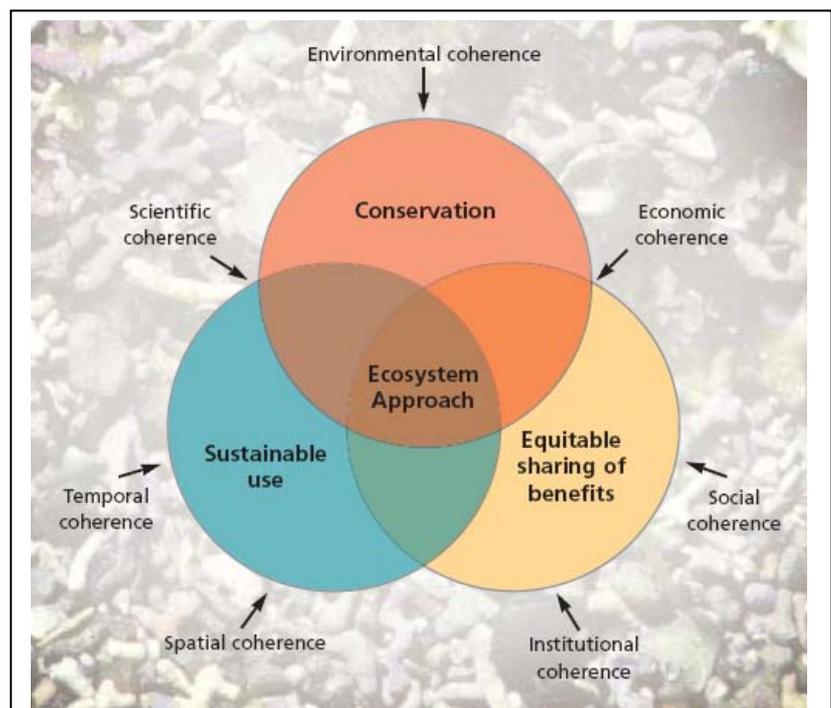

Fig. 1: A methodological framework for sustainable development, to be delivered through seven areas of coherence (Laffoley et al. 2004)

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[18] EU Marine Strategy Stakeholder Workshop, Denmark, 4-6 December 2002

> *Key principles for managing coastal resources*
>
> - *Ocean space is a valuable resource—one that is increasingly over-used in many places of the world's oceans (e.g., the North Sea) and often poorly managed.*
>
> - *Ecosystem components of marine areas are not managed; human uses of ocean resources, including the use of ocean space, can be managed.*
>
> - *Human uses of ocean space often conflict with one another (use-use conflicts) and some human uses are incompatible with maintaining critical ecosystem functions (use-environment conflicts).*
>
> *UNESCO Workshop on MSP 2006*

Some current failings

As outlined above, there is a need to deliver the following key objectives of management and integration:

- sustainable development as an overarching goal, to be delivered on the basis of the ecosystem approach,
- facilitating new developments and new forms of use,
- ensuring the best possible co-existence of different forms of use,
- ensuring equal access to and equitable sharing of marine resources
- being open-ended and forward-looking,
- integration of policies and management measures across sectors.

Implementation of these objectives is essentially hampered by the **fragmented nature of management in the marine environment.**

Most countries still designate ocean space on a case-by-case, sector-by-sector basis. Holistic, plan-led approaches to managing the sea are rare. As competition increases for marine resources, a **case-based sectoral approach** is less and less appropriate if sustainable development is to be achieved.

"(The lack of an overall framework for planning and management) is contradictory to the desire for an ecosystem-based approach to planning and management, which requires a holistic and integrated view rather than an almost total reliance on sectoral decision-making."

(WWF 2006)

The North Sea is a good example to illustrate this. It is one of the most heavily used seas in the world with a highly complex pattern of use. New pressures are constantly being added, but no overall framework yet exists for planning and management. Given the multitude of interests, it is clear that a sectoral, piecemeal approach is less and less sustainable and unable to accommodate the demands of the ecosystem approach.

The piecemeal approach at a sector level is exacerbated by the lack of a cohesive approach across administrative boundaries and wider spatial units. As a result, conflicting measures may be taken in adjoining spaces. Thinking in prescribed administrative units also makes it more difficult to measure and counter potentially cumulative effects of sea uses or to tap previously unexplored synergies. This applies both to individual countries as far as

"Oceans and seas cannot be managed without cooperation with third countries and in multilateral fora. EU policy aimed at the oceans must be developed within that international context."

(CEC 2006)

their own territorial waters are concerned, as well as to the EEZ and international waters in the context of a regional seas approach. The Dogger Bank is situated in the North Sea between the UK, the Netherlands, Germany and Denmark and has been used as an example[19]. It is a classic area of multiple sea use and different spatial demands, including fishing, nature conservation and oil and gas exploration. A coherent approach and joint management umbrella across countries would clearly be beneficial in order to ensure the sustainable management of this area of the North Sea.

Another shortcoming is the continued **lack of land-sea integration at the planning level**. The EU Green Paper uses coastal waters as an example, highlighting the need to view coastal waters and river catchments as continuous systems. This is echoed by the UN which has called for Integrated Coastal and River Basin Management (ICRAM). Another example is that of integrated transport planning, which needs to link land-based transportation to ports, logistics and shipping lanes.

Lastly, there are also clear limits of existing tools of integrated management. There may also be misconceptions as to what such tools can and should deliver. An important aspect is that visioning and other strategic tools need to be linked to delivery tools as part of a continuous cycle of planning and management. Fig. 2 is an illustration of the interaction of different components to deliver ecosystem-based management of the coast and the sea.

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[19] Map of the North Sea showing the location of the Dogger Bank and the boundaries of the Exclusive Economic Zones (EEZs) and/or equivalents of Denmark, Germany, the Netherlands and United Kingdom. © WWF / Sabine Christiansen, WWF (no year)

3   Marine Spatial Planning

"We should consider a new approach to oceans and seas management that no longer looks only at what humans can extract from the oceans and seas, nor one that looks at the oceans and seas on a purely sectoral basis, but one that looks at them as a whole." [20]

"The Commission believes that a system of spatial planning for maritime activities on the waters under the jurisdiction of or controlled by the Member States should be created. It should build on the ecosystem-based approach laid down in the Thematic Strategy for the Marine Environment, but should also deal with licensing, promoting or placing restrictions on maritime activities." [21]
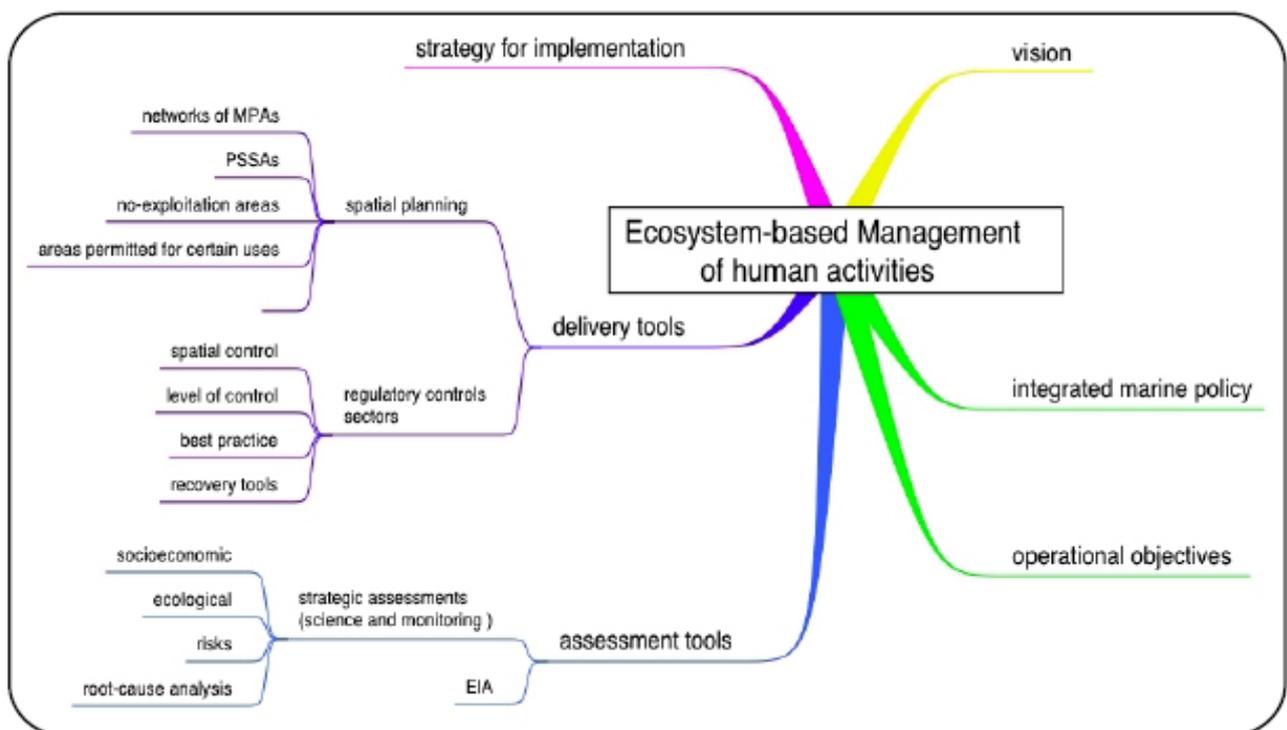

Fig. 2: Components required to deliver the ecosystem approach to managing coasts and seas (WWF briefing on sea use and marine spatial planning, no year)

There is no universally accepted definition of marine spatial planning or what a marine spatial plan should consist of. Rationalising sectoral decision-making and providing greater consistency in management decisions are two key interests commonly referred to, and strong links are also acknowledged to ICZM, which pursues similar aims. At its heart, marine spatial planning (MSP) is one of a series of **delivery tools** designed to facilitate the sustainable, ecosystem-based management of marine resources. MSP however is also a **process** aimed at securing sectoral, temporal and spatial coherence between different forms of sea use. Some

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[20] Commission of the European Communities (2006): Towards a future Maritime Policy for the Union: A European vision for the oceans and seas.
[21] CEC (2006), p.34

have considered this process more important than the actual outcome and point out that the end result could vary, only one being the traditional idea of a map of spatial uses[22].

This chapter sets out some of the basic concepts of MSP before explaining its potential benefits in some more detail.

3.1 Basic concepts

Sea use planning and MSP

Various terms have been used to describe responses to pressures on marine resources. **Sea use planning** and/or management is a general term which emphasises the need for a coherent approach in guiding marine resource use. Sea use planning is not necessarily equivalent to MSP, although the two have been used interchangeably. **MSP** could be seen as one of the tools employed to deliver the objective of integrated sea use planning, which is to secure the sustainable use and development of marine resources. Importantly, sea use planning is not confined to spatial planning, but encompasses all forms of resource management.

MSP: Focus on space as a resource

A key principle to remember about MSP is that it is about space. **MSP influences the location of human activities in space and time, both in cases where multiple resource use already exists or where it is still being planned.** As such, it is *a strategic plan for regulating, managing and protecting the marine environment that addresses the multiple, cumulative and potentially conflicting uses of the sea"[23]*. "Plan" in this instance refers to both the process of planning and the outcome of this process, which might be a vision, a written strategy or a series of GIS-based maps.

> *"Marine Spatial Planning (MSP) in its broadest sense is about analyzing and allocating parts of three-dimensional marine spaces to specific uses, to achieve ecological, economic, and social objectives that are usually specified through the political process. MSP is place- or area-based and can provide a practical approach to long-term ecosystem-based management. MSP should be comprehensive, adaptive, and participatory, and resolve conflicts among multiple uses and the ecosystem."*
>
> *(UNESCO MSP Workshop 2006[21])*

Spatial regulation is closely linked to the idea of **spatial demand** and/or **spatial impact.** If both are low, then spatial management may not be the instrument of choice, although other forms of management may be required to manage non-spatial forms of impact. MSP will likely be required where there is conflicting spatial demand and high spatial impacts of uses.

Other significant concepts in this context are the degree of **permanence** of uses and the understanding that uses are not always spatially **compatible**. High spatial demand may well be acceptable if it is limited in time or if it can be combined with other forms of use. An example might be to combine offshore wind farms with mariculture and the establishment of nursery areas for fish. Conflicts most often arise when high spatial demands are linked to the establishment of permanent structures and when other forms of use are excluded. This is easy to visualise in case of large-scale industrial structures such as oil terminals or extraction zones, but also in case of Marine Protected Areas (MPAs) where other forms of use may be

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[22] for instance in Tyldesley, D. (2004) Coastal and marine spatial planning framework for the Irish Sea Pilot project. Report to JNCC by David Tyldesley and Associates, February 2004.
[23] Canning, R. in Earll, B. (2003): Spatial Planning in the Coastal and Marine environment: Next steps to Action. Post-conference briefing, download on www.coastnet.co.uk/files/reports

restricted. Spatial impacts also include less visible structures though, for instance shipping routes, priority areas for mineral extraction or bird migration routes.

MSP: A form of zoning

In its broadest sense, the process of MSP is therefore "*about analyzing and allocating parts of three-dimensional marine spaces to specific uses*"[24]. This is done by setting **priorities** and introducing restrictions depending on the type of space and the constellation of uses to be managed. MSP is thus a form of zoning, which first arose around the establishment of Marine Protected Areas (MPAs) (e.g. Douvere et al. 2007). Many other forms of zoning exist in the context of conservation such as fisheries no-take zones, spawning areas, migratory routes or nursery grounds, but increasingly also in other contexts such as the designation of priority areas for certain types of sea use. Fig. 3[25] is an example of priority areas for nature conservation in the German North Sea.
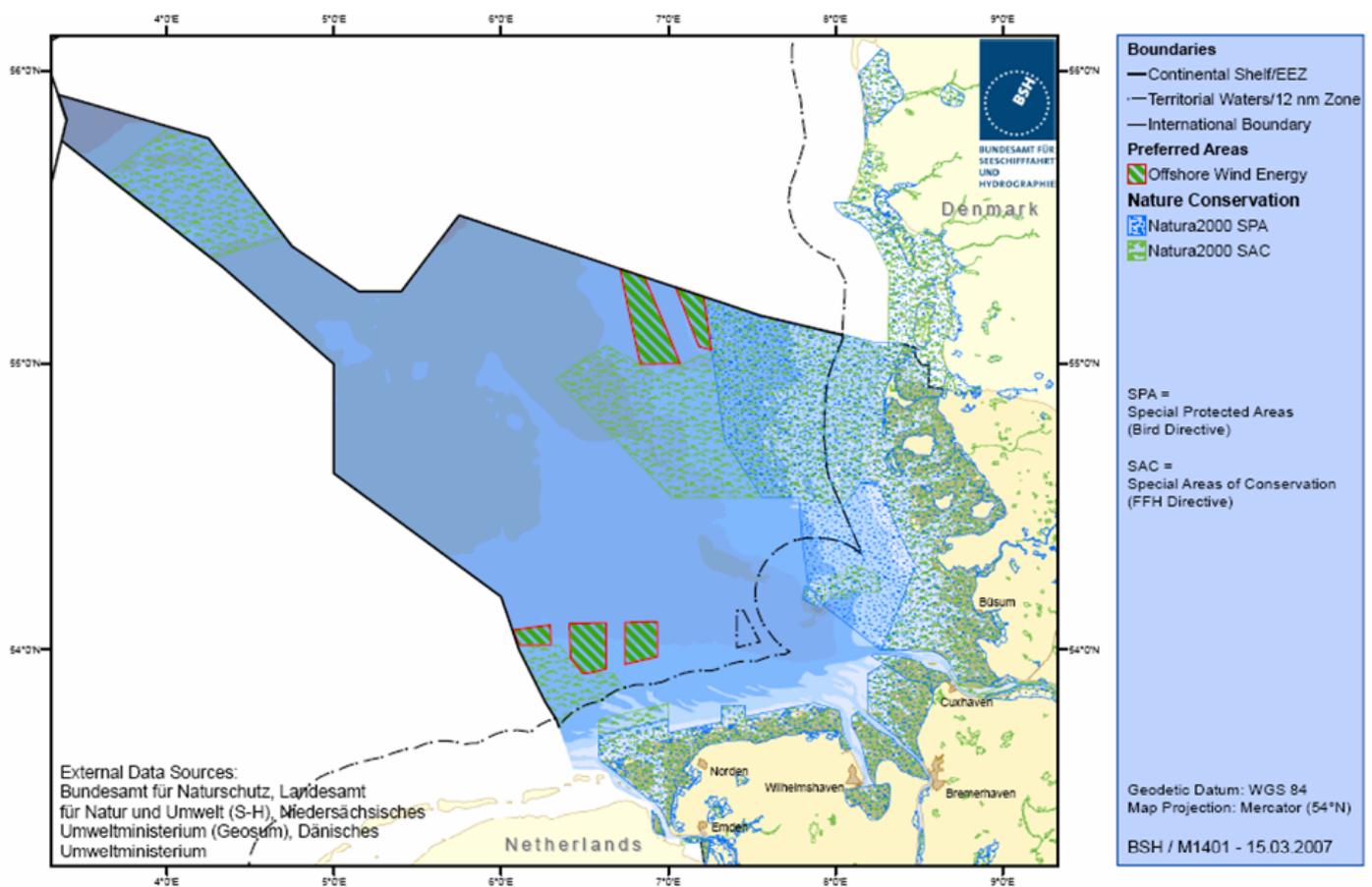
Fig. 3: Preferred Areas and Nature Conservation in the German North Sea (BSH 2007)

MSP: An arbiter between interests

MSP is different from spatial planning on land because the sea is not inhabited and sea areas do not constitute private property. Since it is based on setting priorities, MSP is not a value-free approach. Nevertheless, MSP is unlike any other sectors in that its interest is not

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[24] International Workshop on Marine Spatial Planning, UNESCO, Paris, France, 8-10 November 2006, http://ioc3.unesco.org/marinesp/files/FinalConclusionsNextSteps_041206.pdf (last visited on 1 September 2007)
[25] CONTIS map provided online by the Federal Maritime and Hydrographic Agency, www.bsh.de (last visited on 1 September 2007)

economic, but managerial. MSP should not be guided by sectoral interests, but by a vision for sustainable development, implying the ecosystem approach and equal consideration of ecological, economic and social principles. As a neutral facilitator, MSP should also be perceived as acting in the public good.

MSP: An adaptive concept

Any approach would demand an adaptive strategy to forward planning and management due to the dynamic nature of the marine environment and to accommodate developments in marine science and understanding.

3.2   Benefits of Marine Spatial Planning

"In terms of what MSP might consist of, it is important to emphasise that it is not just about producing a map with lines demarcating allocation (…)"[26]

Despite the many uncertainties surrounding the definition of marine spatial planning, there is widespread agreement as to its purpose and benefits. The following is a summary of commonly named benefits.

A tool to promote integration and a look at the 'bigger picture'

The most significant purpose of MSP, and at the same time its greatest advantage, is its ability to facilitate integration. MSP is designed to **optimise decision-making** in a way that ensures the best use of available resources, combining those uses which are compatible and limiting those which are incompatible. The Scottish Coastal Forum defines the purpose of marine spatial planning as

> *"(a) to secure sustainable and integrated development which balances and, where appropriate, advances economic, social and environmental objectives, and considers the implications of the ecosystem approach, and (b) to allocate space in inshore waters in a rational manner which minimises conflicts of interest and maximises synergistic relations."*

Because of its integrative approach, and because of its consideration of multiple rather than single resource use, MSP is a means of **actively promoting synergies** and facilitating co-use. 'Bigger picture' therefore both refers to the often complex spatial context within which MSP takes place, as well as the complexity of stakeholder interests that come together in the coastal zone. MSP provides a means of strategic conflict resolution at a regional rather than a project level.

Co-ordinating function

One objective relates to the idea of bringing together often disjointed decision-making regimes under **one umbrella**. In this instance, MSP has a central co-ordinating function:

> *"The objective is to rationalise sectoral decision-making regimes (without necessarily replacing them, and provide consistency in arriving at decisions affecting the development and conservation of the marine environment, Marine spatial planning could include means to achieve integration between different sectors, for example (…)" (Canning 2003)*

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[26] Country Agencies Interacengy MSP Working Group (2005): The added value of Marine Spatial Planning (MSP) – an informal discussion paper. final version, 23/09/05, download from ioc3.unesco.org/marinesp/files/

MSP helps to overcome the limits of administrative boundaries, facilitating a regional seas approach to marine resource management and leading to **more consistent decision-making**.

A tool to deliver a shared vision of sustainable development based on the ecosystem approach

MSP is more than a tool of conflict resolution and co-ordination. Perhaps its most significant objective lies in its ability to pursue a central overarching vision, which is that of implementing sustainable development in an integrated manner. One way of achieving this is to identify zones where economic activities have least environmental impact.

MSP also provides the means for looking at cumulative impacts of sea uses, which is essential when it comes to delivering the ecosystem approach. Strategic Environmental Assessment (SEA) of all uses at the ecosystem level is a recommended tool for achieving this.

MSP as a means of implementing marine conservation and to deliver commitments to conserving biodiversity

MSP can be used to create a network of protected sites at a national and international level. Conservation needs can be considered on a par with other sea uses and given spatial priority where necessary. Because of its comprehensive approach, MSP is useful in creating networks of protected areas or priority areas for nature conservation, in particular when combined with sea use zoning. In the UK for example, a review of marine nature conservation was carried out, which called for a comprehensive marine nature conservation framework of different sea areas, important marine areas and priority features in UK waters[27]. MSP was seen as a key means for delivering this. MSP can generally help governments to implement strategies of conservation or ecosystem restoration, which may gain added importance when it comes to implementing the EU Habitats Directive.

Providing certainty for investors

MSP is an essential tool for guiding future sea uses in that it provides an indicative framework for action. The EU underlines the significance of this:

> *"As maritime activities continue to thrive, there will be increasing competition between them for the use of European coastal waters. Without some form of indicative planning, investment decisions will be hampered by uncertainty with respect to whether the activity in question will be licensed for a particular site[28]"*

MSP is therefore a means of increasing investor confidence in regulatory processes and decision-making, especially if coupled with tools such as licensing (also called for by the EU).

Pro-active rather than reactive planning

In the past, marine resource management has often been reactive in that it responded to undesired impacts or developments. Because of its ability to integrate perspectives, MSP is able to take a pro-active role in planning, setting out a future framework and targets for spatial use. Forward-looking planning can therefore replace the often ad-hoc system of decision-making and regulation.

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[27] Gubbay, S. (2004)
[28] CEC 2006

Facilitating competitiveness, entrepreneurship and the ability to innovate, as well as assisting disadvantaged areas

MSP provides a means of visualising future trends and demands and provides a framework for responding to these. In line with EU demands set out in the current Green Paper, this can ensure better access to markets, for instance by providing transport connections, links to other countries, or supporting the development of ports as a key for future competitiveness. The establishment of maritime industry clusters on the mainland and on the coast is another example of this. In line with its forward-looking nature, MSP would be a means of ensuring the continued spatial availability of coastal and marine areas for future uses.

MSP could also be used to actively promote disadvantaged areas and ensuring more equitable access to marine resources and the benefits arising from their use. Again, the siting of key industries could be a means for steering development, for instance in rural or structurally weak areas of coast and coastal hinterland. Indirectly, MSP could also be used to facilitate urban regeneration, such as that of former port areas.

Ability to be implemented at different scales

MSP is not prescriptive in terms of the spatial scale it uses. MSP can be implemented at a regional, national or international level, depending on local context and above all need. There is also the possibility of creating a nested approach, with different plans created for different sea areas. As on land, these could become increasingly detailed the more local they become. The advantage of this nested approach would be greater overall coherence of planning.

Increase stakeholder participation

In order to achieve a truly integrated approach, MSP will need to involve a wide range of stakeholders and interests. In line with demands made in ICZM, more participatory approaches of decision-making will need to be considered. This is related to questions of equal representation of stakeholders and involving 'quiet' stakeholders that are underrepresented in current decision-making processes.

Greater transparency

In combination with respective stakeholder participation, and employing appropriate techniques of dissemination, MSP can provide greater transparency on current developments and expected trends to users and communities of interest. A solid information basis can be made available which will allow stakeholders to judge how their activities might impact on others and vice versa. This can contribute once again to more forward-looking rather than reactive planning and also contribute to lessening conflicts of interest because of more information becoming more readily accessible.

Improving information and data management

In line with all the above, MSP is a means of improving the collection, processing and dissemination of information in terms of targeting it to specific needs. Because of its cross-sectoral approach, and because of its inherent transparency, MSP can facilitate the exchange of information and data.

4   Criteria for success

Despite its undoubted potential, MSP is not a magic bullet. Success will depend, amongst others, on the following criteria:

International and cross-boundary coherence

At whatever level MSP is carried out, coherence between different scales and administrative units must be ensured. Whether decisions are taken at a national or local level, a degree of commonality between the systems will be needed to ensure that decisions affecting the same ecosystem or cross-border activities, such as pipeline and shipping routes, are dealt with in a coherent manner. This particularly applies to the international context of regional seas, as exemplified in the case of the North Sea mentioned above.

Consistency of land and sea use

MSP should be consistent with spatial planning on land in order to avoid transferring land-based problems to the sea. "*A common vision in the form of an overall coastal and marine spatial development plan could provide a coherent set of policy objectives and principles[29]*". To ensure such a common vision, MSP could consider involving the same stakeholders in land- and sea-based planning processes. Much, however, will depend on the ability to measure the impacts of sea uses on the mainland and vice versa and to develop an appropriate system of monitoring.

Adaptiveness

In order to be a forward-looking instrument, and in order to be pro-active, MSP needs to be open to future trends and developments that cannot yet be foreseen. As international and national drivers continue to evolve, countries, regions and regional seas will need to adapt to changing demands and develop new solutions to newly arising problems. Climate change is a consideration already raised; other challenges will undoubtedly arise.

MSP should therefore perceive itself as a flexible instrument, which is guided by the vision of sustainable development, but does not foreclose on any options as a matter of principle. This is best illustrated using the concept of polyculture as an example. Simply put, polyculture is the co-existence of several forms of use in the same space. Whether co-existence is possible and what form co-existence should take is something that will need to be negotiated against specific systems contexts. What is important is that the principle of polyculture itself is not prescriptive or deterministic in a sense that it chooses some options over others. It is an open concept in that it does not exclude any future development options; it does, however, demand ways of assessing the degree of compatibility between different forms of resource use.

The point is that MSP is not a one-off exercise, but a way of balancing different forms of sea use as part of a polyculture of uses and against changing backgrounds of values, priorities and drivers.

Criteria for setting priorities

If MSP is indeed considered a form of ocean zoning, then some form of prioritisation is inevitable. Zoning however only makes sense if the knock-on effects of human activities on other system components are known, so that compatible uses can be grouped together and incompatible ones excluded. Procedures thus need to be developed to assess the impact of

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[29] CEC 2006

human activities at each level of the MSP framework and to develop and agree indicators and procedures for monitoring.

Decision-makers and stakeholders need to acknowledge that despite attempts to rationalise choice by means of scientific criteria, prioritisation is never purely objective. Societal preferences and political constellations all influence the decisions that are taken. This is also true when it comes to weighing up different demands of resource use against the objective of sustainable development. Sustainable development, too, is a value-based concept and not inherently objective.

Weighing up interests however, particularly in an international context, can also be a legal matter. An important concern of the EU and other international organisations is the ability of MSP to secure the right to innocent passage in international waters. This is a particular issue where activities extend a long way offshore, potentially in combination with fixed structures (also nature reserves). Multilateral rules will need to be established internationally to resolve this.

Differentiate between outputs and outcomes

The added value of MSP not only consists of outputs such as a plan with maps, but also a process leading to an agreed framework of resource use. MSP might therefore result in outputs other than a single plan. This could be a series of spatial plans, improved sectoral policies, or a series of intangible outcomes such as a greater sense of trust between stakeholders and willingness to engage. There is no hard and fast rule as to what MSP should produce, and sometimes the outcomes might be more important than the actual tangible outputs.

The other point is that MSP, like other planning processes, takes time and cannot be done overnight. This is because the planning process is likely to involve a series of stages, each of which involves considerable commitment on the part of the participating stakeholders. Work to date suggests that the three likely stages of MSP are plan making, implementation, and monitoring and review. Plan making will likely rely on elements of stocktake, comprising both the natural and the socioeconomic environment, impact assessments including cumulative impacts, setting ecological, economic and social targets for development, and drawing up a sea use plan, which is likely to be supported by maps. Likely elements of a marine spatial plan are described in Fig. 4.

Appropriate tools and processes

One of the most important tools of MSP is to provide a clear and easily accessible mechanism for stakeholder involvement in the planning and management of activities in the marine environment. This is supported by experiences with other forms of resource use planning, which shows that planning systems need to be designed with the participation of all relevant stakeholders.

The process is made both politically easier and economically more efficient by the provision of appropriate management tools. Among these are systems for the provision of extensive spatial data, cumulative environmental impact assessments (EIAs) and marine protected areas (MPAs). Strategic Environment Assessment (SEA) is likely to be another component of MSP. The process can have a role beyond giving guidance in relation to plans and projects by providing the context for policy development. The work and associated data collection required for SEA may also help identify locations that would benefit from being designated specific priority areas. It could also help to identify areas where there is likely to be more pressure for development.

Fig. 4: What would a Marine Spatial Plan comprise? The view from Wales

Just like a land use plan, a sea use plan (or marine spatial plan) would in essence set out a vision for a defined marine area. It would identify potential sites for appropriate development and uses, those in which development or activities should be managed or restricted, areas where important assets need to be protected, and where there should be a presumption against development or uses. Key elements on which to base a marine spatial plan could include:

- Access to marine and coastal information for decision-support purposes;
- Identification of the shared values of the region, including environmental, economic, social and cultural (heritage) values;
- Current uses, activities and pressures for change, including future trends;
- SEA for the marine area as a whole;
- Modelling of physical and biological processes and their interactions;
- Conflict resolution tools and cumulative impact assessment;
- Streamlined mechanism for administering the consents process;
- Identification of administrative and institutional arrangements and responsibilities;
- Mechanism for stakeholder involvement;
- Monitoring programmes and methods for assessing performance.

Many of the elements that could underpin a system of marine spatial planning already exist, for instance SEA. SEAs however are largely sectoral and do not assess cumulative or in-combination effects of the total human activities in any given area of sea. Such effects would need to be addressed by cross-sectoral policies.

(from part three of Legislative Reform for the Welsh Marine Environment, prepared by the University of Cardiff for the WWF (2005). The full report can be downloaded from www.wwf.org.uk/cymru)

Acknowledging imperfect knowledge base

Information on the marine environment, and also on coastal habitats and processes, will always be limited and imperfect. On the one hand, this is something to be acknowledged by stakeholders in order to resist the tendency to defer decisions on account of insufficient information. On the other hand, this also needs to be acknowledged in the context of MSP adaptivity, with the framework requiring adjustment as new information comes to light. This is particularly the case as far as cumulative impacts of previously untried and also traditional industries are concerned.

5 Specific considerations of spatial planning in the marine context: "musts" and caveats

This chapter attempts to summarise the above considerations by providing some central recommendations for the development of MSP in practice.

The first and most important is that MSP can only be successful if it meets a clearly defined need and purpose. MSP should not be undertaken as a matter of course, but **in response to specific demands**. Most likely, these demands will stem from conflicts arising from the multiple use of resources and the lack of an integrative perspective. The needs-based approach is closely linked to the issue of scale and appropriateness of response. If conflicts are small-scale and local, it may be sufficient to establish a forum for dialogue and exchange rather than a national or even international system of MSP. If, on the other hand, multiple resource use already exists or is likely to exist in the near future, then a holistic, large-scale approach can provide multiple benefits.

The second issue to emphasise is that MSP should simply transfer the terrestrial approach to the marine environment. There are lessons to be learnt in terms of implementing a spatial planning system, but certain conditions apply to the marine environment that do not apply to the terrestrial environment. The three-dimensional nature of the sea is one example; the internationality of the marine environment another.

MSP has one primary, overarching objective, which is to provide an integrated, spatially oriented approach to facilitate sustainable resource management. As such, it is not an end in itself, but a means to an end, namely the sustainable development of coastal and marine areas. MSP is not a fixed end result, but rather an adaptive process which should be linked to a system of spatial monitoring, much as it is on the mainland. Just like ICZM, MSP is therefore a continuous process of adaptation.

As was emphasized above, MSP is not in itself prescriptive, but sets out visions developed by society for the marine environment. These visions can change. MSP therefore requires flexibility: not in terms of the basic principles set out above, but in terms of what priorities to set and what tools to use.

Lastly, different political contexts may require different tools to achieve similar overall objectives. Again, MSP is not prescriptive in the tools it provides, although some are obvious choices. Rather, it provides a conceptual framework which can be adapted to different spatial scales and administrative settings.

A summary of key principles:

- **MSP must be based on a comprehensive systems approach.** This is one step up from the ecosystems approach and sets out to implement a vision of sustainable development.

- **MSP must be based on the principles of polyculture, openness and integration and sustainable development**.

- **MSP is a question of scale.** Large-scale fast-developing uses need different consideration than smaller-scale pressures that develop slowly.

- **The sea is a three-dimensional environment.** This poses different constraints on marine resource management, but also provides opportunities in terms of multiple use of the same space. Impacts always need to be considered as part of this three-dimensional environment, in particular as far as cumulative impacts are concerned.

- **MSP must take into account land-sea interactions.** This must include the impacts of marine resource use on land and vice versa, as one cannot be separated from the other.

- **Many marine issues require an international solution** and cannot be dealt with by one nation alone. The sea knows no boundaries when it comes to mobile species or pollution.

- **MSP needs to take account of different regional realities.** The ecological characteristics of Europe's coastal waters and the structure and intensity of the maritime activities which take place on them vary widely between the Baltic, the Mediterranean, the Atlantic and the North Sea, and the Black Sea.

- **MSP needs to take account of political realities** in the respective implementing countries. Rather than being imposed from outside, MSP should be allowed to take on different forms in different contexts, without however neglecting the basic principles.

- MSP is a stepwise process rather than a quick-fix solution and will require time to set up.

The conclusions put forward by the UNESCO workshop in Paris[30] provide additional important considerations, which are stated on the workshop website as follows and provide a useful summary of conclusions:

1) A statutory or legislative basis for MSP is beneficial. A legislative basis can provide the authority to prepare a plan and an incentive for cooperation in the planning process; however, clear objectives, rules, and procedures to support MSP initiatives are just as important. These should be future-oriented instead of providing ad hoc solutions for temporary problems.

2) MSP should keep the "ecosystem" in ecosystem-based management by employing key ecosystem features as a template for its planning; ecosystem structure and function should be protected; habitat integrity maintained, connectivity (both spatial and temporal) of populations and key food web connections should be maintained. At the same time, economic and social objectives should have equal weight as the ecological objectives for a true ecological approach to management.

3) The human dimension of MSP usually reduces to a listing of activities (e.g., recreation, oil/gas, fisheries, shipping) that overly simplifies complex human processes. Integrating the human dimension requires the same diversity of disciplines/perspectives as does the ecosystems approach relative to the biophysical environment. It is vital that the human dimension is not only reduced to economics, but rather is studied in a multi-disciplinary manner similar to that used to understand biophysical processes.

4) MSP is only one tool of "sea use management". Applications of MSP will be a mix of zoning, other management measures, and regulatory or economic incentives; planning processes will probably be a mix of "bottom up" and "top down", depending on the culture and political process; planning for MPA networks should be an integral part of MSP.

5) Early and continuing engagement of stakeholders in a clear MSP process is critical to success and engenders trust; people matter and can often be agents for change; an effective engagement of stakeholders requires investments of resources and time from the beginning of the MSP process; however, it is a worthwhile investment and will increase capacity, encourage "ownership" of the plan, and reduce future conflicts.

6) MSP should consider the level of knowledge (uncertainty) about the areas and the intensity and character of their existing and predicted uses. Generally, both the knowledge and intensity of use decrease with distance from the coast. In that context, MSPs could have differing levels of detail/generalization and legal status. For example, for areas where knowledge or use intensity is low, plans could be general, strategic documents; on the other hand, for some areas close to shore, or for offshore areas with existing or predicted intense (or diverse) use, the plans could have a similar character and status as statutory land use plans.

7) Lack of scientific knowledge about ecosystem functioning or its components should not be used as an argument for postponing MSP; driving forces for MSP should include biodiversity, security, sustainable management, and the precautionary approach.

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[30] Conclusions and Next Steps from the International Workshop on Marine Spatial Planning, UNESCO Paris, France, 8-10 November 2006

8) Political criteria for evaluating MSP proposals are often different from those used by scientists and planners, e.g., time required to implement and see results, clear statement of added value of MSP, risk of legal challenge, resources required to implement, and consensus across government and stakeholders; political will to convert plans to action is essential.

9) Monitoring and evaluation are critical elements of the MSP process—and to broader sea use management activities. They should not be perceived as "add-on" or "once-off" activities.

10) MSP and implementation should be closely linked with integrated coastal zone management activities; this will require effective cooperation and coordination among different responsible bodies.

11) Ecosystem-based, marine (or sea use) management will evolve over the next decade, but MSP is a learning, adaptive process; it is important to start and learn by doing.

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