MSP as a step-by-step process - 1

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Policy Cycle Frameworks

1) Agenda setting (problem identification) – Understand situation

2) Policy formulation – Identify potential solutions

3) Decision-making – Decide on solutions

4) Implementation – Do what you plan

5) Evaluation – Do your solutions work?
The Planning Wheel for England’ MSPs
(Source: Marine Management Organisation)
Managing the maritime spatial planning process

Establishing the MSP context

→ EC Maritime Spatial Planning Directive
→ ...

→ Relevant competent authorities
→ Governance structure and secretariat functions
→ Stakeholder consultation and feedback processes
→ Scientific and technical advisory processes
Marine Spatial Planning

Article 1 – What the EU wants to achieve by MSP

- sustainable growth of maritime economies,
- sustainable development of marine areas
- sustainable use of marine resources.
EU Maritime Spatial Planning Directive

Integration of environmental concerns such as:

- Marine strategy framework directive
- Water directive
- Natural habitats, wild fauna and flora directive
- Conservation of wild birds directive
- Conservation and sustainable exploitation of fisheries resources under the Common Fisheries Policy

Land-sea interaction

- Integrated coastal management recommendations and agreements
Scope of Marine and Maritime policies


- Article 1
  - Achieve or maintain good environmental status
- Annex III: Pressures and Impacts
- Annex VI: Program of measures
  - Input controls
  - Spatial and temporal distribution controls
  - Output controls

Maritime Spatial Planning Directive

- Article 1
  - Sustainable growth of maritime economies
  - Sustainable development of marine areas
  - Sustainable use of marine resources
- Article 5
  - land-sea interactions
  - Environmental, economic and social aspects
  - Safety aspects
  - Coherence with integrated coastal management
- Article 8
  - Spatial and temporal distribution
From legislative boundaries to legislation to statutory communication
Marine spatial planning is a complex process that needs structured and defined steps. It is driven by legislation, terms of references, decision hierarchy, stakeholder representation, scientific and technical advice. The marine spatial plan needs an agreement by the jurisdiction that will be implementing the spatial and temporal allocations.

Identifying the concerns

If context has been set and competent authority been assigned:

- Environmental aspects
- Economic aspects
- Social aspects
- Cultural aspects
- Safety aspects
- Land-sea interactions in the coastal zones
- **Spatial and temporal distribution of existing and future activities**
- Existing legislations and policy requirements
Looking at the boundaries

Legislation in the planning area

QUEENSLAND GOVERNMENT

Minister for Environment and Heritage

Environment Protection Act 1994

QUEENSLAND GOVERNMENT

Minister for Natural Resources and Mines

Vegetation Management Act 1999
Water Act 2000

QUEENSLAND GOVERNMENT

Minister for Transport and Main Roads

Transport Infrastructure Act 1994

QUEENSLAND GOVERNMENT

Minister for State Development, Infrastructure and Planning

Sustainable Planning Act 2009
Economic Development Act 2012

AUSTRALIAN GOVERNMENT

Minister for the Environment

Great Barrier Reef Marine Park Act 1975
Great Barrier Reef Marine Park Regulations 1983

Environment Protection and Biodiversity Conservation Act 1999
Historic Shipwrecks Act 1976
Environment Protection (Sea Dumping) Act 1981
Sea Installations Act 1987

Protection of the Sea (Prevention of Pollution from Ships) Act 1982

AUSTRALIAN GOVERNMENT

Minister for Infrastructure and Regional Development

Maritime Safety Act 2002

Department of Transport and Main Roads

QUEENSLAND GOVERNMENT

Minister for National Parks, Recreation, Sport and Racing

Marine Parks Act 2004
Nature Conservation Act 1992

Parks and Wildlife Service Queensland

COAST PARK

GREAT BARRIER REEF WORLD HERITAGE AREA
North Sea: Existing and Perspective Uses and Nature Conservation

Maritime Features
- Traffic separation zone
- Deep water route
- Precautionary area
- Inshore traffic zone
- Shipping lane, recommended
- Shipping lane, not classified

Boundaries
- Continental Shelf/EEZ
- Territorial Waters/12 nm Zone
- International Boundary

Platforms
- Measurement Platform, in use
- Measurement Platform, under construction
- Measurement Platform, approved
- Measurement Platform, application submitted
- Petroleum Platform, in use
- Petroleum Platform, out of use
- Natural Gas Platform, in use
- Compressor Platform, in use
- Unclassified, in use
- Unclassified, approved
- Unclassified, out of use
- E-Transformer, in use
- E-Transformer, under construction
- E-Transformer, approved
- E-Transformer, application submitted
- E-Converter, in use
- E-Converter, approved
- E-Converter, under construction
- E-Converter, application submitted

Pipelines
- Natural Gas Pipeline, in use
- Natural Gas Pipeline, under construction
- Natural Gas Pipeline, approved
- Natural Gas Pipeline, application submitted
- Hydrocarbons Pipeline, in use

Cables
- High Voltage Cable, in use
- High Voltage Cable, under construction
- High Voltage Cable, approved
- High Voltage Cable, application submitted
- Data Cable, in use
- Data Cable, application submitted
- Data Cable, out of use
- Data Cable, unknown

Geodetic Datum: WGS 84
Map Projection: Mercator (54°N)

BSH / O1 - 06.04.2018

Offshore Windfarms
- In use
- Under construction
- Approved
- Application submitted
- Denied

Sediment Extraction
- In use
- Approved
- Application submitted

Dumping Grounds
- Dredged Material, in use
- Dredged Material, out of use

Military Practice Area
- Unclassified

Restricted Area
- Torpedo Exercise
- Submarine Exercise

Air Force Exercise
- Mine Hunting Practice
- Nature Conservation

Natura2000 SCI
- Culture Area

Preferred Areas
- Offshore Wind Energy

External Data Sources: See Special Theme Maps

Analyzing the issues

Environmental considerations
  → Pressures, Impacts on Ecosystem Services
  → Good Environmental Status
  → Natural and climate change implications

Traditional and cultural considerations
  → place attachment
  → attitudes, beliefs, values,

Socio-economic sustainability considerations
  → Growth of marine economies
  → Development of marine areas
  → Use of marine resources
EU MSP Directive: Bowtie Risk Analysis linking pressures, measures and objectives and identifying measures
Evaluating management options

- Measures and targets
- Spatial and temporal allocation to activities
- Technical and administrative burden and cost
- Incentives and attractiveness for investors
- Scientific, management and operational uncertainties
- Competent authorities for implementation
- Enforcement and surveillance of activities
- Environmental monitoring
- Social, socio-economic, socio-cultural monitoring
Spatial management toolkit

There are various spatial and temporal management measures you can use:

**Different spatial priorities**
(separate activities in separate spaces)

**Different temporal priorities**
(separate activities in the same space but at different times)

**Permits / approvals** for an activity for a certain number of years (including rebuilding) (conditions for licensing)

**Spatial safety procedures** and enforced controls
(e.g. emergency units, airborne surveillance)

**Voluntary agreements** with particular user groups (e.g. to not use a certain area for recreation during a breeding season)
<table>
<thead>
<tr>
<th>Management tool</th>
<th>Biodiversity protection</th>
<th>Indigenous heritage</th>
<th>Historic heritage</th>
<th>Community benefits</th>
<th>Climate change and extreme weather</th>
<th>Water quality protection</th>
<th>Coastal development</th>
<th>Tourism</th>
<th>Fishing — commercial</th>
<th>Fishing — recreational</th>
<th>Recreation</th>
<th>Port activities</th>
<th>Shipping</th>
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<td>Acts and Regulations</td>
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</tbody>
</table>
Deciding on base of the evaluated management options leads to a draft plan, which may go for public consultation and subsequent steps in the planning cycle.
The spatial plan for the German North Sea EEZ
From overview of the **planning process**
to a detailed look into **conflict analysis** and
how to identify **compatibilities**
between human activities in the sea
Now you have completed your initial assessment of the planning area.

What do you do next?
Towards a draft plan

It is time to assess pressures and conflicts.

Source: Schultz-Zehden & Gee 2012
Pressures, impacts and conflicts

You may now want to think about:

1. What are the **pressures** and **impacts** of the various activities you have identified (direct, indirect, cumulative)?

3. How do you assess the **conflict potential** (or actual conflicts) between different activities or activities and the marine environment?

4. How do you identify **hotspots of pressure**?

5. How do you discuss various **development options**?

6. How do you assess the **risks** associated with different development options?
Pressure maps

This map shows the relative pressures on a planning area, indicated by the number of activities occurring concurrently.
Examples of impacts – direct and indirect:

- **Environmental impacts of activities**
  (e.g. pollution, destruction of seafloor habitats …)

- **Ecological impacts of activities**
  (e.g. impact on biodiversity, disruption of networks of habitats,
  indirect impacts of marine activities on fish distribution …)

- **Spatial impacts of activities**
  (e.g. one activity leads to the displacement of others, one activity
  may need particularly large areas)

- **Impacts of activities on other marine activities**
  (e.g. activities preclude other activities due to some form of
  incompatibility)
Cumulative impacts

- many of the same activity
  e.g. one vs. many wind farms

- many different activities
  e.g. wind farms plus shipping vs. bird habitats

- scaling: local vs. large scale effects
  e.g. a high local impact may be low at larger scale

Cumulative impacts are notoriously difficult to assess!
Cumulative Effects

Source: Busch et al. 2013
Changes in species composition due to increasing water temperatures can be observed (Graphics: OSPAR 2010)
Impacts

Activities and installations in the management plan area (southern Norway) with impacts on the seabed (bottom trawling, petroleum installations, exploration wells, pipelines)

Source: Norwegian Ministry of the Environment 2013
Conflict analysis

Impact is not the same as conflict, although the two are obviously linked.

- There is no hard and fast rule for how to do a conflict analysis.
- It is important to differentiate between real, potential and imagined conflicts and scales of conflict (temporal and spatial)
- It is important to rate conflicts in terms of their severity and relevance to the planning area.

Importance of stakeholder involvement in conflict analysis!
Collating sectoral targets and priorities

- Sectoral targets and priorities are a useful indicator for potential conflicts
- Can be collated from documents/policies, but more importantly from stakeholder dialogue – e.g.:

<table>
<thead>
<tr>
<th>Sector</th>
<th>Issues</th>
<th>Priorities</th>
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</thead>
<tbody>
<tr>
<td>Fishery</td>
<td>Maintaining fishery as part of local cultural heritage and a potential basis for tourism</td>
<td>Construction of small ports and marinas, modernising the fishing fleet</td>
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<tr>
<td>Tourism</td>
<td>Strong role in regional development</td>
<td>Need for marinas for small and recreational boats</td>
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<tr>
<td>Shipping and ports</td>
<td>Increase in cargo turnover, need for port expansion, increased collision risk from increased shipping intensity</td>
<td>Modernisation of port infrastructure, deepwater port construction</td>
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<tr>
<td>Offshore wind</td>
<td>Targets in MW to be achieved</td>
<td>Wind energy development</td>
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</tbody>
</table>

Adapted from Schultz-Zehden & Gee 2012
Compatibility types:

- uses that are in conflict with each other/with the environment
- uses that are in conflict, but where management can enable co-existence
- uses where one creates a risk for another, but where measures can mitigate risks
- uses where synergies may exist with other uses

This can be shown in matrices or maps.
# Tools for conflict analysis: Compatibility matrices

<table>
<thead>
<tr>
<th>Conflicts -1</th>
<th>Offshore wind farms</th>
<th>Marine protected areas</th>
<th>Fisheries</th>
<th>The sea as a public good</th>
<th>Cables</th>
<th>Tourism</th>
<th>Shipping and shipping routes</th>
<th>Harbours and ports</th>
<th>Agriculture/run-off</th>
<th>Sand and gravel extraction</th>
<th>Oil and gas exploration</th>
<th>Dumping of dredging material</th>
<th>Mariculture</th>
<th>Coastal service centres</th>
<th>Nature conservation</th>
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A spatial compatibility matrix for different uses in the Baltic

Source: Schultz-Zehden & Gee 2012
## Tools for conflict analysis: Compatibility matrices

### Compatibility of activities and habitats

![Compatibility Matrices](image)

<table>
<thead>
<tr>
<th></th>
<th>Avistamiento de cetáceos</th>
<th>Conservación</th>
<th>Investigación</th>
<th>Kayak</th>
<th>Kitesurf/windsurf</th>
<th>Pesca artesanal con cuerda</th>
<th>Pesca artesanal con línea de fondo</th>
<th>Pesca artesanal con trasmallo</th>
<th>Pesca con palangre superficial</th>
<th>Pesca de arrastre</th>
<th>Pesca de subsistencia</th>
<th>Pesca deportiva/turística</th>
<th>Pesca submarina</th>
<th>Recolección de cambute</th>
<th>Snorkel</th>
<th>Surf</th>
<th>SUP</th>
<th>Transito embarcaciones grandes</th>
<th>Transito de embarcaciones pequeñas</th>
<th>Turismo de playa</th>
<th>Voluntariado playas tortugeras</th>
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Source: Punta Banco – Punta Burica MSP process, Costa Rica ([www.marviva.net](http://www.marviva.net))
Compatibility maps

Compatibility map expressing the levels of compatibility (or incompatibility) between activities and habitats.
Creating conflict maps

In a conflict map, existing and sometimes overlapping or conflicting uses, areas and interests are displayed. It becomes obvious where use conflicts arise and where solutions must be negotiated and decided (WWF 2010)

Note: Just because activities overlap does not automatically imply a conflict!
Creating conflict maps

Conflict map indicating the spatial location of conflicts between uses and nature conservation.
Risk assessment (rating conflicts and impacts)

It may be worth discussing the risks associated with various conflicts and impacts.

Consider:

- Ecological risks
- Economic risks
- Social and cultural risks
- What assets are to be protected?

This step should link back to the aims and objectives of the plan that have been developed previously.
The outcome of conflict analysis

• Important: Conflict analysis is a *dynamic process!* Views might change over time and in the light of new knowledge

• Conflict analysis should leave planners with a **specific task** to be addressed.
Analysing spatial claims and needs

The diversity of uses takes place in four dimensions:

- at different times, and possibly with different intensities at times
- on the sea surface (e.g. shipping)
- in the water column (e.g. fisheries)
- on the seafloor (e.g. resource extraction)

Location of uses depends on the quality of that space – differs for each use:

- Mining will only take place where high geological resource deposits exist
- Conservation will only take place where valuable biodiversity is
- Shipping does not need a good environmental status but uninhibited access to ports and
- Fishing and mariculture strongly depend on good environmental status and “intact” habitat
Spatial compatibilities

The mere overlap of activities does not automatically imply they are in conflict.

Some uses can **gladly co-exist** in the same marine area – they simply do not interfere with each other, for example:

- Sustainable tourism, heritage and environmental protection

Other uses cannot occupy the same space at the same time and are **mutually exclusive**, leading to conflict, for example:

- Geological resource exploitation and environmental protection
A compatibility matrix

<table>
<thead>
<tr>
<th>Military training (activity)</th>
<th>Mariculture (area)</th>
<th>Marine catamaran tours (activity)</th>
<th>Kayak tours (activity)</th>
<th>Angling (ski boats and beach based)</th>
<th>Mid-water trawling (activity)</th>
<th>Bottom trawling (activity)</th>
<th>Pole and line fishing (activity)</th>
<th>Sea water abstraction/desalination (area)</th>
<th>Seismic exploration (activity)</th>
<th>Non-seismic exploration (activity)</th>
<th>Mining exploitation (activity)</th>
<th>Species conservation (activity)</th>
<th>Habitat conservation (area)</th>
<th>Shipping routes (area)</th>
<th>Anchorage areas (area)</th>
<th>Marine heritage sites (shipwrecks) (area)</th>
<th>Underwater cable (area)</th>
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<td>Marine heritage sites (shipwrecks) (area)</td>
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<thead>
<tr>
<th>Activity</th>
<th>Requirements</th>
<th>Other uses affected and nature of impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geological resource exploration</td>
<td>• Presence of geological resources (seafloor)</td>
<td>• Fishing: Seismic surveys affect fish species</td>
</tr>
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<td></td>
<td>• Access to the resource/seabed</td>
<td>• Conservation: seismic surveys affect fish (large pelagics) and mammal species</td>
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<tr>
<td>Geological resource exploitation:</td>
<td>• Presence of geological resources (seafloor)</td>
<td>• Other sectors using the seabed: Pipelines create exclusion areas</td>
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<tr>
<td>Extraction (dredging, drilling, etc.)</td>
<td>• Unrestricted access to the resource</td>
<td>• Fishing: physical exclusion</td>
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<tr>
<td>Pipelines for oil exploration</td>
<td>• Safe operating environment</td>
<td>• Fishing and conservation: habitat destruction, contamination and nutrient removal and disruption</td>
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<td></td>
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<td>• Affecting other mammal species</td>
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</tbody>
</table>
### Current and future conflicts identified

<table>
<thead>
<tr>
<th>Activity</th>
<th>Requirements</th>
<th>Other uses affected and nature of impacts</th>
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</thead>
<tbody>
<tr>
<td>Transport</td>
<td>• Free and unhindered passage (UNCLOS)</td>
<td>• Conservation: impacts of underwater noise on mammals and fish, ship strikes, pollution from ships</td>
</tr>
<tr>
<td></td>
<td>• Efficient routes</td>
<td>• Spatial incompatibility with geological resource exploitation</td>
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<tr>
<td></td>
<td>• Ports infrastructure and safe port operating environment (incl. anchorage areas)</td>
<td>• Fishing: vessels can destroy long lines</td>
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<td>• Underwater heritage and sea cables can be damaged by ships anchoring</td>
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<tr>
<td></td>
<td>• Passage of ships</td>
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<td>• Anchoring</td>
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- **Transport**
  - Passage of ships
  - Anchoring

- **Conservation**
  - Impacts of underwater noise on mammals and fish, ship strikes, pollution from ships
  - Spatial incompatibility with geological resource exploitation
  - Fishing: vessels can destroy long lines
  - Underwater heritage and sea cables can be damaged by ships anchoring
<table>
<thead>
<tr>
<th>Activity</th>
<th>Synergy</th>
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</thead>
<tbody>
<tr>
<td>Conservation</td>
<td>Benefits for fishery in terms of preserving key habitats and related marine resources</td>
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<tr>
<td>Sustainable marine tourism</td>
<td>Benefits from conservation in that tourists appreciate a healthy natural environment</td>
</tr>
<tr>
<td>Military exercise</td>
<td>Benefits for conservation as closed training areas may act as de facto nature conservation areas</td>
</tr>
<tr>
<td>Mining</td>
<td>Tidal energy as a future option; deserted coastal diamond areas for tourism and possibly mariculture</td>
</tr>
<tr>
<td>Marine and cultural heritage</td>
<td>Benefits for conservation as shipwrecks represent artificial reefs; areas may be closed to other extractive or destructive activities</td>
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</tbody>
</table>
Current and future conflicts identified

<table>
<thead>
<tr>
<th>Activity</th>
<th>Requirements</th>
<th>Other uses affected and nature of impacts</th>
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<tbody>
<tr>
<td>Anchorage areas</td>
<td>• Space in shallow and sheltered areas close to the port</td>
<td>• Conservation: possible impact on marine mammals (displacement) and possible environmental impact through pollution from vessels</td>
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<td>• Mariculture: anchorage areas preclude expansion and encroach into designated mariculture sites</td>
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<td>• Military: anchorage areas and military training areas are mutually exclusive</td>
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Issues identified

• Current levels of use are low, throughout the Namibian ocean space and in the planning area, with the exception of Walvis Bay as hotspot area
• EBSAs have been identified which require protection
• Fishing requires the greatest spatial flexibility due to the mobile nature of its resource
  ➢ Protect key fish habitats and resources and secure key fishing areas
• Mining is spatially very extensive activity as it is determined in its feasibility by the availability and accessibility of the resource:
  ➢ Provisions need to be made to allow such exploitation to take place in areas where licences have already been awarded
  ➢ Provisions need to be made for possible future exploitation where mineable deposits are known
The key spatial conflicts that MSP in Namibia and the 1st Marine Spatial Plan can and should address therefore exist between mining, conservation and fisheries.
Finally,

If a spatial plan is the output of the MSP process, what then is the outcome?

Who implements the plan?

Who decides on investments (public or private) and along which rules?
Homework

Based on the overview of activities in your marine area, we now want to know whether these are in conflict or not.

- Prepare your own compatibility matrix for the activities occurring there.
- Highlight sectors that might be susceptible to climate change or other relevant pressures – how will this affect them spatially?
- Are there any „hotspot“ areas where there are particular cumulative pressures?

Remember to focus on activities rather than sectors – fishing for example can be many different types of fishing, each of which may have different compatibilities.

- From your analysis, develop planning recommendations: What issues and areas should MSP concentrate on?