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► To cite this version:

Brice Trouillet, Stephen Jay. The complex relationships between marine protected areas and marine spatial planning: Towards an analytical framework. *Marine Policy*, 2021, 127, pp.104441. 10.1016/j.marpol.2021.104441 . hal-03144610

HAL Id: hal-03144610

<https://hal.science/hal-03144610>

Submitted on 17 Feb 2021

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1 **Cite as:**

- 2 Trouillet, B., & Jay, S. (2021) The complex relationships between marine protected areas and
3 marine spatial planning: Towards an analytical framework. *Marine Policy*, 127, 104441.
4 <https://doi.org/10.1016/j.marpol.2021.104441>

5 **The complex relationships between Marine Protected Areas and Marine** 6 **Spatial Planning: towards an analytical framework**

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8

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14

15 **Abstract:** Systems of marine spatial planning (MSP) are now being introduced in many coun-
16 tries, with the intention of more rational arrangement of maritime uses and interests. It would
17 be expected that marine conservation, especially the designation of marine protected areas
18 (MPAs), would be incorporated into MSP. In practice, however, MSP and MPA designation
19 are often taking place in parallel to each other, with relatively little integration between them,
20 partly because of marine conservation's longer history and established institutional frame-
21 works which cannot be simply subsumed into MSP processes. There are, nonetheless, a series
22 of options available by which the two sets of process could be more closely linked. These op-
23 tions can be conceptualised temporally, by, for example, MSP improving the status of pre-
24 existing MPAs, or spatially, by, for example, facilitating the creation of multiple-use MPAs.
25 These difficulties and possibilities are illustrated through two national European experiences.

26 **Keywords:** Marine protected area, Marine spatial planning, Ocean management, Ocean
27 policy, Zoning, Multiple-use, Conservation, England, Germany

28 **1. Introduction**

29 Marine spatial planning (MSP) is becoming increasingly recognised as a means of managing
30 the marine environment and maritime activities more coherently than in the past (Ehler et al.,
31 2019). It introduces a more explicit spatial dimension to the regulation and management of ac-
32 tivities, with the aim of allocating space more clearly to sea uses, so that they do not conflict
33 with each other, make the best use of resources and minimise their environmental impact
34 (Douvere, 2008; Gilliland et al., 2008). Marine conservation is generally reckoned to be one
35 of the interests that should be included in MSP exercises, as economic activities should not
36 compromise valuable habitats and species. Designating marine protected areas (MPAs)
37 through systematic conservation planning (Margules and Pressey, 2000; Sarkar et al., 2006) is
38 a strong spatial mechanism for protection. This corresponds closely to the area-based rationale
39 of MSP, and it is reasonable to assume that in a marine spatial plan, MPAs would sit along-
40 side spatial allocations for economic uses, such as mineral extraction, shipping, fishing and
41 energy supply (Agardy et al., 2011). Moreover, it would be expected that MPAs would enjoy
42 protection from these other uses, by creating no-take zones with regard to fishing, for exam-
43 ple.

44 A logical and scientific approach, therefore, would be to integrate the planning of MPAs and
45 other uses within a MSP process, so that their various demands can be considered alongside
46 each other and an optimum, balanced arrangement of uses can be achieved, with attention
47 given to the most important ecological sites through MPAs designation. In this model, MPAs

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48 are both incorporated into and prioritised through an all-encompassing system of MSP (Craig
49 and Hughes, 2014; Harris et al., 2019). However, it would appear that other logics are at
50 work, notably when a real world-MSP is dominated by a neoliberal blue growth (Jones et al.,
51 2016); this calls into question the extent to which the above ideal is being seen in practice
52 and, possibly, its desirability. In addition, marine conservation efforts and MPAs have longer-
53 standing conceptual roots and institutional processes of their own that may not be easily sub-
54 sumed into MSP processes and that may suggest alternative relationships with MSP.

55 It may even be that MSP and MPA designation are diverging processes. Nonetheless, it ap-
56 pears that they also have a potential for co-evolution (Jones, 2014; Jones et al., 2016). For ex-
57 ample, Vaughan and Agardy (2020) set out how MSP can assist MPAs, as well as vice-versa:
58 *“Recognising that MPAs might be best treated as one part of a unified conservation strategy*
59 *means that MSP needs to be harnessed to create better, more durable MPAs. Conversely, in-*
60 *corporating MPA planning into MSP can reduce conflict for marine space through optimiza-*
61 *tion of that space.”* Jones (2014) also argues *“Whilst it is widely agreed that an important ob-*
62 *jective of MPAs is to contribute to MSP, it is important to bear in mind that there are many*
63 *different views on what MSP means and how MPAs should be designed to contribute to it.”* In
64 addition, Jones et al. (2016) have looked at other aspects of the relationships between MSP
65 and MPAs, such as potential convergences in terms of governance, conflicts, integration, par-
66 ticipation, justice and uncertainty.

67 This paper explores further the ways in which MPAs and MSP have developed alongside and
68 in relation to each other, with reference, firstly, to their scientific and policy-based back-
69 grounds (part 2), leading to a discussion of their interacting dynamics (part 3). Building upon
70 previous studies, this contribution aims to reconsider the perspective on these relationships by
71 developing a framework of their spatial and temporal relations. Secondly, this paper applies
72 this analytical framework to two national cases of MSP and MPA processes, throwing further
73 light on the uneasy relationship between them (part 4). Finally, the implications of the com-
74 plex relationships between these processes are discussed (part 5).

75 2. A “chicken-or-egg” problem

76 The need to manage and protect the seas has recently led to various approaches supported by
77 tools and policies that are not necessarily in keeping with each other and that raise the ques-
78 tion of which should come first.

79 2.1. Marine Spatial Planning

80 Rooted in initiatives dating from the late 1970s, MSP is a relatively new process that has been
81 widely disseminated over the two last decades to the point that by 2017 approximately 40
82 countries were carrying out MSP activities that produced over 60 plans completed at various
83 scales (Ehler, 2017); these figures have since considerably increased. One of the most signifi-
84 cant developments was the adoption of a European Union Directive requiring coastal Member
85 States to implement MSP (EPC, 2014).

86 However, MSP is best understood as a ‘soft process’ which is open to various interpretations
87 and means of implementation (Collie et al., 2013; Domínguez-Tejo et al., 2016 ; Ehler et al.,
88 2019; Jones et al., 2016; Trouillet, 2020). Hence only a general definition can encompass all
89 understandings, focusing on a few key principles that constitute the core of MSP. The most
90 common definition of MSP is: *“a public process of analyzing and allocating the spatial and*
91 *temporal distribution of human activities in marine areas to achieve ecological, economic,*

92 *and social objectives that usually have been specified through a political process*¹.” (Ehler
93 and Douvère, 2009). Originally conceived as a means of supporting marine conservation
94 (Agardy, 2010), MSP has been more recently oriented towards multi-use planning of marine
95 space (Degnbol and Wilson, 2008; Douvère, 2008; Douvère and Ehler, 2009a), or on the need
96 to support “blue growth” (Frazão Santos et al., 2014; Qiu and Jones, 2013; Jones et al., 2016).
97 However, its initial environmental imperative still characterises MSP and distinguishes it part-
98 ly from terrestrial planning (Kidd and Ellis, 2012; Kidd et al., 2019; Smith et al., 2011). Con-
99 sequently, MSP is often presented as an essential means and tool to achieve “ecosystem-based
100 sea use management”, with reference to wider notion of ecosystem-based management (An-
101 song et al., 2017; Domínguez-Tejo et al., 2016; Long et al., 2015; O’Higgins et al., 2019).
102 Nonetheless, in this regard, it should be recognised that an ecosystem-based approach can be
103 understood either as a fundamental goal (hard sustainability) or as one element amongst oth-
104 ers (soft sustainability) (Frazão Santos et al., 2014; Qiu and Jones, 2013; Jones, 2014; Jones et
105 al., 2016).

106 **2.2. Marine Protected Areas**

107 The concept of MPAs similarly has universal ambitions and can be considered to belong to
108 the same family of general measures as MSP. The Convention on Biological Diversity (1992)
109 promoted the concept of “protected area” at the international scale, defined as “*a geograph-*
110 *ically defined area which is designated or regulated and managed to achieve specific conser-*
111 *vation objectives*”². This understanding was complemented by Dudley (2008): “*A clearly de-*
112 *defined geographical space, recognised, dedicated and managed, through legal or other*
113 *effective means, to achieve the long-term conservation of nature with associated ecosystem*
114 *services and cultural values*”. An important stage in the creation of MPAs was the World
115 Summit on Sustainable Development (2002), at which a quantified objective was set, that
116 10% of the sea surface should be designated as MPAs by 2010. This deadline was extended to
117 2020 by the 2010 Nagoya Conference (target n°11 of the Aichi Biodiversity Targets). MPAs
118 are nowadays considered to be a mainstream tool for achieving marine conservation (Agardy
119 et al., 2003) and quantitative facts are presented as testimony to their success: for example,
120 16,924 MPAs had been established around the world by 2020, covering 26.9 million km², cor-
121 responding to approximately 7.4% of the global ocean and just over 17% of areas within na-
122 tional jurisdiction (UNEP-WCMC and IUCN, 2020).

¹ Characteristics of effective marine spatial planning include: ecosystem-based, integrated, area-based, adaptive, strategic and anticipatory and participatory (ibid.).

² <https://www.cbd.int/doc/legal/cbd-en.pdf>

Activities	IUCN Categories						
	Ia	Ib	II	III	IV	V	VI
Research : non-extractive	Y*	Y	Y	Y	Y	Y	Y
Non-extractive traditional use	Y*	Y	Y	Y	Y	Y	Y
Restoration / enhancement for conservation (e. g. invasive species control, coral reintroduction)	Y*	*	Y	Y	Y	Y	Y
Traditional fishing / collection in accordance with cultural tradition and use	N	Y*	Y	Y	Y	Y	Y
Non-extractive recreation (e. g. diving)	N	*	Y	Y	Y	Y	Y
Large scale low intensity tourism	N	N	Y	Y	Y	Y	Y
Shipping (except as may be unavoidable under international maritime law)	N	N	Y*	Y*	Y	Y	Y
Problem with wildlife management (e. g. shark control programmes)	N	N	Y*	Y*	Y*	Y	Y
Research : extractive	N*	N*	N*	N*	Y	Y	Y
Renewable energy generation	N	N	N	N	Y	Y	Y
Restoration / enhancement for other reasons (e. g. beach replenishment, fish aggregation, artificial reefs)	N	N	N*	N*	Y	Y	Y
Fishing / collection : recreational	N	N	N	N	*	Y	Y
Fishing / collection : long term and sustainable local fishing practices)	N	N	N	N	*	Y	Y
Aquaculture	N	N	N	N	*	Y	Y
Works (e. g. harbours, ports, dredging)	N	N	N	N	*	Y	Y
Untreated waste discharge	N	N	N	N	N	Y	Y
Mining (seafloor as well as sub-seafloor)	N	N	N	N	N	Y*	Y*
Habitations	N	N	N*	N*	N*	Y	N*

Key	
No	N
Generally no, unless special circumstances only	N*
No	Y
No, because no alternative exists, but special approval is essential	Y*
* Variable : depends on whether this activity can be managed in such a way that it is compatible with the MPA's objectives	*

Source: Dudley 2008; Day et al. 2012

Table 1: Matrix of maritime activities that may be appropriate for each IUCN category

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In 1994, the International Union for Conservation of Nature (IUCN) defined six categories of protected areas with a wide range of objectives from strict protection to the sustainable use of natural resources (Dudley, 2008) (Table 1). According to an evaluation of the compatibility of maritime activities with each category of MPAs (Day et al., 2012) (Table 1), between two and five of the categories might be considered as “Multiple-use MPAs”. It is necessary to distinguish these categories from the names given to MPAs (national park, sanctuary, etc.) (Dudley, 2008). Practically speaking, and without a clear definition, it would seem that a Multiple-use MPA should be considered as a “large-scale MPA” where activities are allowed with some restrictions with regard to access and certain uses in all or part of the area (possibly with zoning, including nested no-take zones) (Garcia, 2013; Gascuel, 2011; Kelleher, 1999). This would be close to the 6th IUCN category, or possibly the 5th, though this is more difficult to apply in the marine context at present (Day et al., 2012). Also, one should keep in mind that some countries (France for instance; see MEDDTL, 2012), may have developed further the IUCN categories by promoting MPAs that are focused on sustainable activities, scientific or educational purposes, etc. Moreover, account should be taken of the different situations that may complicate the role of MPAs: (i) the presence of several IUCN categories within a single MPA, (ii) the combination of terrestrial and marine protected areas, (iii) the nesting of (marine) protected areas, (iv) the potential for vertical zoning of MPAs (Day et al., 2012).

144 2.3. Can MSP and MPAs produce the same results?

145 MSP and MPAs are not necessarily aiming for the same results. But potentially, there is co-
146 evolution (Jones et al., 2016) or convergence between the two systems (Vaughan and Agardy,
147 2020), that may produce the same results. In a first scenario, if well-defined, a large Multiple-
148 use MPA may be able to play practically the same role as an area covered by an “ecosystem-
149 based marine spatial plan”. MPAs could thus be viewed as a substitute for MSP or indeed as
150 the basis for maritime planning and strategy. Conversely, in a second scenario, a network of
151 MPAs may arise from a MSP process, especially through the application of zoning. In this
152 situation, MPAs could be perceived as simple areas for marine conservation that are zoned
153 within a marine plan, just as other ocean uses might be³. Thus MSP would constitute a
154 framework for the creation of a MPA network and the role of MPAs may be reduced to re-
155 serves or “no-take zones” in the wider marine area. Hence these tools may follow different
156 paths that raise a “chicken-or-egg” problem. Alternatively, MSP and MPAs may appear to be
157 different sides of the same coin. Accordingly, one may ask: which is part of which?

158 Along with Gubbay (2004) and Blæsbjerg et al. (2009), it is generally considered that MSP
159 has a broader remit and:

- 160 - provides “*an overall framework for managing activities, whereas MPAs are one of the*
161 *management tools (...)*” (Gubbay, 2004);
- 162 - is “*likely to include an element of zoning, with MPAs incorporated into such schemes*
163 *as areas where the conservation of biodiversity has priority. Some of these may be*
164 *“no-take zones”, whereas others may allow a variety of extractive activities to take*
165 *place, but only under certain conditions.*” (Blæsbjerg et al., 2009).

166 Thus MSP forms a framework in which MPAs should be developed, both from a strategic
167 point of view (planning as a policy tool) and from a spatial point of view (planning as a tech-
168 nical tool). This may be summarised as follows: “*Multiple use areas with Sustainable Devel-*
169 *opment objectives are probably more correctly described as areas subject to Marine Spatial*
170 *Planning whereas multiple use areas with biodiversity conservation objectives are probably*
171 *more correctly described as MPAs”* (Gubbay, 2005). Despite these points, there may be no
172 simple answer to the “chicken-or-egg” question for two main reasons. This is firstly because
173 MPAs are diverse and MSP is a soft and flexible process which does not systematically pro-
174 duce zoning, depending on the underlying approach to planning. Secondly, this is because the
175 answer involves the political issue of priority between marine conservation and economic
176 growth (Jones et al., 2016; Kidd and Ellis, 2012). The answer is even less obvious given that,
177 according to Caveen et al. (2013) discussing MPAs, the assumptions and ideological postures
178 are often hidden behind “scientific” arguments. This seems to be particularly relevant when,
179 in the EU for instance, Integrated Maritime Policy (IMP) encompasses several policies with
180 specific legal obligations (Natura 2000 network, Marine Strategy, Marine Spatial Planning,
181 Blue Growth, Common Fisheries Policy, Renewable energy...) and has also to play with dif-
182 ferent priorities and national interests.

183 Finally, looking beyond the “chicken-or-egg” problem to consider the complex relationship
184 between MSP and MPAs systems is crucial. Indeed, the combined or separate use of these
185 two processes is a pressing question in everyday practice. For instance, Trouillet (2020)
186 showed that in hard sustainability MSP systems, MSP tends to be envisaged as a ‘zoom-out’
187 tool to take into account pressures outside an existing MPAs network, while in soft sustaina-
188 bility MSP systems, MPAs are rather considered as a single-sector use at the same level than
189 other single-sector uses. So that in the first case, the two processes of MPAs and MSP are

³ For instance, the European Union Directive on MSP considers “*nature and species conservation sites and pro-
tected areas*” as “*possible activities and uses and interests*” (Article 8).

190 used jointly, whereas in the second case they are by essence envisaged separately. This also
191 points to the question of effectiveness of the two systems. Again, this could be seen as being
192 achieved jointly or separately. In some cases, MSP may provide leverage to make conserva-
193 tion more effective in “paper parks”. In other cases, MSP may result in a weak document or a
194 document that is not applied or is poorly applied (Stelzenmüller et al., 2021; Varjopuro, 2019).

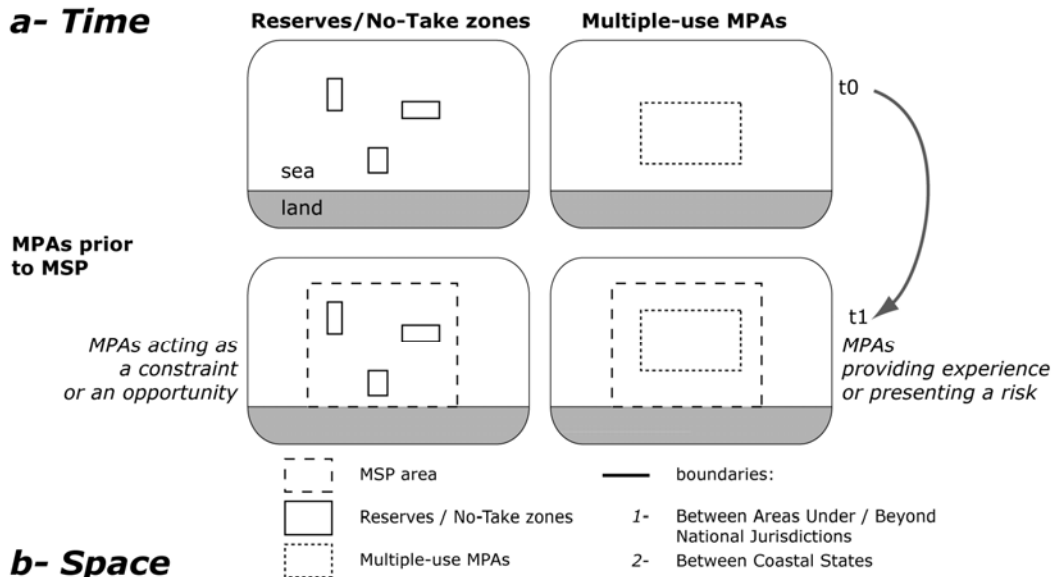
195 **3. Parallel or converging?**

196 Accordingly, links between MPAs and MSP are diverse and complex, due to their different
197 purposes, ideological backgrounds and varying territorial circumstances. For instance, Jones
198 et al. (2016) established that MSP and MPAs can take different roles depending on the type of
199 MSP, whether it is on the side of ecosystem-based approach or supporting maritime economic
200 development. From a theoretical point of view, these relationships can be explored from an al-
201 ternative perspective offering a complementary outlook: temporal and spatial. So, here again,
202 we do not claim to capture all the possible relationships between MSP and MPAs, but rather
203 to propose a framework –still partial– that helps to think about these relationships from the
204 only two perspectives of space and time. Figure 1 presents some of the relations between
205 MSP and MPAs schematically along temporal and spatial axes, reflecting the two main kinds
206 of MPAs, (whilst ignoring the diversity of MSP). Using this figure, we propose a tool for sys-
207 tematic analysis of the relationships between MSP and MPAs from a twinned temporal and
208 spatial point of view. This should be regarded as a draft that provides food for thought.

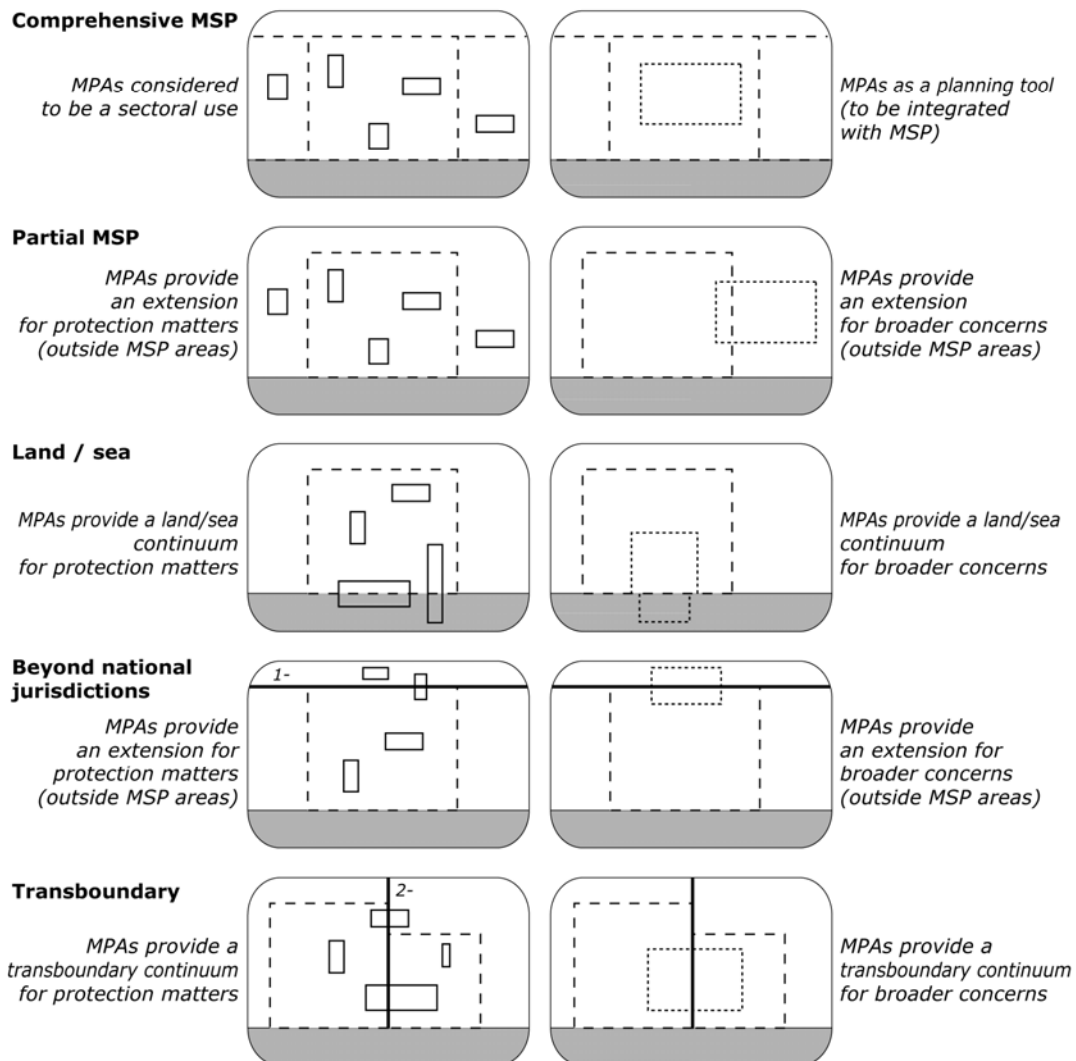
209 **3.1. From a temporal point of view**

210 Although MSP and MPA processes are relatively recent and still in progress, marine envi-
211 ronmental awareness has been established for some time. As far as the development of MSP
212 is concerned, in the EU for instance, IMP emerged in the form of a “green book” in 2006
213 then, after public consultation, with a “blue book” in 2007 and formally in 2012 with the Li-
214 massol Declaration. This policy led to a reorganisation of the Commission services, with the
215 enlargement of DG Mare's responsibilities and the establishment of a steering structure, the
216 “Common Implementation Strategy” (Chaigneau and Guineberteau, 2015). One of the three
217 tools of this policy is MSP, with different drivers that are difficult to reconcile (Qui and Jones,
218 2013; Jones et al., 2016). However, MSP has lagged behind notably when compared to the
219 development of MPA networks which has been in progress since the beginning of the 2000s
220 and has gathered greater momentum following the Malahide Conference (European Commis-
221 sion, 2007). Furthermore, the EU's Marine Strategy Framework Directive (presented as the
222 “environmental pillar” of the IMP) dates from 2008, while that on MSP was only adopted in
223 2014. In other words, MSP has been slower than the advance of MPAs in the European con-
224 text, except where Member States have taken their own initiatives ahead of the European
225 timetable. In all likelihood, the fact that the designation of
226

a- Time



b- Space



227
228
229

Fig. 1: Models of links between MSP and MPAs

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230 MPAs has mostly preceded MSP compromises the scope of MSP and creates some practical
231 difficulties (Figure 1a):

- 232 - Reserves and No-take zones could represent a constraint for the MSP process because
233 the network of MPAs, effectively zoned, has to be “taken as it is”. Conversely, it
234 could be an opportunity for MPAs insofar as “*the development of a system of MSP will*
235 *be an opportunity to expand the role and design of individual and networks of MPAs*
236 *[if MPAs are to be a type of “use zone” within MSP] and clarify this role to other user*
237 *groups.”* (Gubbay, 2004).
- 238 - As suggested for instance by Ban et al. (2012), multiple-use MPAs could present an
239 opportunity for MSP insofar as the experience gained from the MPA process improves
240 MSP or if synergies are encouraged (if MSP substitutes or complements MPAs), de-
241 pending on the characteristics of the MPAs (size, efficiency, partnership quality, etc.).
242 It could also increase the risk of biasing the MSP process, if that MSP is intended to
243 balance different interests.

244 This temporal shift is familiar in spatial planning in general, because planning rarely begins
245 with a clean sheet. This suggests at least a need to re-examine the MPAs strategy, if appropri-
246 ate, by replacing it with the wider perspective of strategic planning of the oceans. This could
247 also be the case for pre-existing sectoral planning and other forms of planning at a lower level
248 than MSP. But, in the case of a temporal shift, the main problem would be if the policy con-
249 text did not provide a clear direction, possibly due to political inability to decide or a lack of
250 political will in the context of subsidiarity.

251 Furthermore, the basic difference of timescales between MSP and MPA processes (adapted to
252 the short/mid-term for the former and the long term for the latter) inevitably introduces prob-
253 lems. For instance, if MPAs are fixed in maritime plans due to long-term conservation objec-
254 tives, they risk hindering further discussion during plan-making.

255 **3.2. From a spatial point of view**

256 There are several possible ways of interpreting technically the spatial aspects of links between
257 MSP and MPAs, with reference to: types of MPA in relation to the categories mentioned
258 above, land-sea integration, geographical scale, considerations beyond national jurisdiction,
259 transboundary issues, state-of-play of sectoral planning, etc. Indeed, there is a wide range of
260 possible connections between MSP and MPAs that will be influenced by these factors and
261 their combinations. Without attempting to cover all of them, Figure 1b presents an initial
262 characterisation of five cases exploring the roles that MPAs (summarized in two types: (i) No-
263 Take zones / Reserves, (ii) Multiple-use areas) could play:

- 264 - If MSP is comprehensive, MPAs may considered to be a “sectoral use” (type i) on the
265 one hand, or would allow good integration of management objectives (type ii) on the
266 other hand, especially if its scale approaches that of the MSP perimeter;
- 267 - If MSP is partial, MPAs could provide an effective extension of MSP outside MSP ar-
268 eas (types i and ii), possibly with more environmental requirements than MSP (type
269 ii);
- 270 - In the context of land-sea integration, Protected Areas straddling the land and the sea
271 could provide a continuum that may help to strengthen the links between land and sea
272 for certain conservation planning matters (type i) or for some broader concerns (type
273 ii);
- 274 - In the context of areas beyond national jurisdictions (ABNJ), MPAs could provide an
275 extension (types i and ii). This could be seen as contributing to a creeping jurisdiction
276 process, which also raises the question of applicability beyond national jurisdictions;

277 their status may be unclear whatever the type of MPAs (Ardron, 2008; Freestone et
278 al., 2014; Gjerde et al., 2008; Gjerde and Rulska-Domino, 2012; Matz-Lück and
279 Fuchs, 2014; Molenaar and Ould Elferink, 2009; Rochette et al., 2014; UNEP-MAP-
280 RAC/SPA, 2011); Wright et al., 2019), and certainly incomplete;
281 - In the context of transboundary issues, MPAs could provide a continuum facilitating
282 coordination between states. This could be especially in the European Union, for in-
283 stance, in relation to shared concerns such as conservation matters.

284 Obviously, these theoretical models of spatial relationships between MPAs and MSP are
285 mixed, and will fluctuate with the contents, issues, expected outputs and stakeholder engage-
286 ment in the two processes.

287 As a first attempt, this analysis is incomplete because, for instance, it underestimates the role
288 of the scale/size of MPAs, notably with “large-scale MPAs” currently encouraged by public
289 authorities with certain political targets (Leenhardt et al., 2013) who consider that the size and
290 age of marine reserves matter (Claudet et al., 2008). It also neglects the way that MPAs are
291 designed and managed, including participation issues (even if social considerations are as im-
292 portant in marine conservation as in MSP (Ban et al., 2013)). In practice, things are also more
293 nuanced with, for instance the inclusion of one or several No-Take zones in a Multiple-use
294 MPAs, the possible mixing of situations presented here, the question of the size of MPAs
295 which may influence the relations with MSP or even the need for MSP. In addition to these
296 temporal and spatial considerations, one should consider that processes could be interlinked
297 and progressive: no process is done in a vacuum (for example, stakeholders who are involved
298 in one process, producing knowledge and contributing to decision-making, could influence
299 other processes). Governance processes also play an important role. Moreover, as well as the
300 particular case of MSP and MPAs, there are interactions with other management tools (in-
301 cluding sectoral ones), especially when they focus, possibly partly, on the same space even (in
302 the case of overlapping, interlocking scales...). In addition, the different possible levels of de-
303 cision-making (local, national, regional) –referring themselves to the different kinds of distri-
304 bution of competencies in national contexts (federal model, centralised model, etc.)– play an
305 important role in the relationship between MSP and MPAs systems. In this respect, it seems
306 that no approach has proved more successful than another in its ability to integrate the sys-
307 tems of MSPs and MPAs. With this in mind, this analytical framework highlights many issues
308 that are often unexplored in the literature discussing the links between MSP and MPAs. Some
309 of them will be further analysed by using this analytical framework in two case studies.

Box 1- Few illustrations about the French case

The French context helps to illustrate potential relations between MSP and MPAs for three main reasons. Firstly, within the European Union which is at the forefront of MSP, France has already (quantitatively speaking) an extended MPAs network⁴, whilst MSP is not yet fully implemented but still in progress (though due to meet the deadline of March 2021 according to Article 15 of the European Union Directive on MSP). Secondly, France has a very large maritime domain with overseas territories, and MSP is only anticipated for some of them⁵. Thirdly,

⁴ According to their French definitions, MPAs cover 2,419,325 km² in the early 2019, that is to say 23.57% of waters under jurisdiction (<http://indicateurs-biodiversite.naturefrance.fr/fr/indicateurs/surfaces-en-aieres-marines-protegees>). This is the result of the national strategy for MPAs in France, defined in 2007 and revised in 2012, whilst that constituting a frame for MSP has been adopted ten years later (2017).

⁵ Even if overseas territories are not concerned by the European Union Directive on MSP, the French government still decided to set up marine spatial plans in four “maritime basins” (West Indies, South of Indian ocean, Guyana and St.Pierre-et-Miquelon). On the other side, French Polynesia and New Caledonia have their own competencies for maritime affairs and no marine spatial plan could be expected by the French government (and

most French MPAs have a broader purpose of sustainable multiple-use of the sea rather than conservation-only MPAs and, thus has similarities to some other spatial planning tools.

Based on this experience, some examples of models shown in Figure 1 are as follows:

- MPAs prior to MSP: What could be considered as No-Take zones represent about 30% of French MPAs (mainly due to the 670.000 km² of the national reserve of the French Southern Lands). On one hand, these have to be incorporated as they stand into maritime plans. On the other hand, MSP is now an opportunity to introduce connectivity and networks, especially in the case of spatially-fragmented and size-reduced reserves. Regarding Multiple-use MPAs, many existing MPAs (mostly at a lower scale than those of the forthcoming maritime plans) may benefit from ongoing MSP processes. But, at the same time, there could be a risk of bias in the MSP process, especially in the case of large-scale MPAs such as, for instance, the Marine Natural Park of Mayotte (68,381 km²) which covers an entire EEZ and has already a management plan until 2028.
- Comprehensive MSP: For mainland France, where MSP will be implemented throughout the whole of the marine area, the remarks above also apply
- Partial MSP: To date, no maritime plan is anticipated in New Caledonia and a very large MPA (the Natural Park of the Coral Sea; 1,290,000 km² covering its entire EEZ) has been in place since 2014. In such cases, MPAs could constitute a framework for MSP and provide an extension for broader concerns in the case of Multiple-use MPAs (regarded as planning tools).
- Land / sea: Because MSP is indirectly connected to coastal matters, protected areas that are straddling the land and the sea may facilitate a degree of land/sea integration which can complement MSP processes. For instance, this would be (type i) the case for National Reserves with a marine part (Seine estuary, Scandola, French Southern Lands...), and (type ii) for the three National Parks with a marine part (Port-Cros, Calanques, Guadeloupe).
- Beyond national jurisdictions: France has been involved for some years in actions of the Oslo-Paris Convention (OSPAR) and the Convention on the Conservation of Antarctic Marine Living resources (CCAMLR) concerning MPAs in the Atlantic and in the Antarctic beyond national jurisdictions. To date, no MSP exists in the high seas, but it is an objective which was confirmed at a recent EU-UNESCO conference on MSP (Paris, March 2017).

310 **4. First lessons from two European case studies**

311 In the European context where the devices for MSP and MPA have been designed, two cases
312 are particularly interesting because the processes have been initiated over several years: Eng-
313 land and Germany. As far as possible, the different perspectives above will be used as an ana-
314 lytical framework.

315 **4.1. England: Two separate processes**

316 A statutory system for MSP was introduced to the United Kingdom through a series of policy
317 documents which culminated in primary legislation in 2009 and 2010 (Defra, 2007; HM Gov-
318 ernment et al., 2011). This paved the way for MSP implementation, which was devolved to
319 the four constituent parts of the UK (England, Scotland, Wales and Northern Ireland). In Eng-
320 land, the newly-formed Marine Management Organisation (MMO) became responsible for
321 preparing maritime plans and began a rolling programme of plan-making for English waters,
322 of which the first ones, for parts of the North Sea and the English Channel, were completed in
323 2014 and 2018 (Defra, 2011; HM Government, 2014, 2018). Plans for the remaining areas are
324 currently being prepared.

325 In parallel to this, a process got underway for designating a suite of new MPAs, referred to as
326 Marine Conservation Zones (MCZs). This was described in some of the same policy docu-
327 ments that introduced MSP, and for England, the statutory basis for MCZs is set out in the
328 same legislation (Marine and Coastal Access Act 2009). However, MCZs are dealt with in a

without to mention upcoming referendums about self-determination in the first case and independence for the second one).

329 separate part of the Act, and statutory responsibility for the MCZ process lies not with the
330 MMO but with government bodies that have a nature conservation remit (Natural England
331 within the 12 nm limit and the Joint Nature Conservation Committee beyond 12 nm). This led
332 to a lengthy consultation process that aimed to decide on the most appropriate locations for
333 MCZs. English waters were divided into four areas for this purpose, and a separate exercise
334 was carried out with conservation experts and stakeholders for each area. The intention was to
335 incorporate rare, threatened and representative marine flora and fauna and features of geologi-
336 cal and geomorphological interest, though also taking into account social and economic im-
337 pacts.

338 This led to proposals for 127 MCZs spread throughout English waters, covering 15% of the
339 marine area, varying greatly in size and in terms of the features to be protected. 65 of the are-
340 as were recommended for high level protection. These stakeholder-led proposals were broadly
341 supported by a further scientific study (though with some questioning about the degree of
342 confidence with which the MCZs could capture the intended features) (JNCC and Natural
343 England, 2012). This exercise was hailed as a great success by marine conservationists⁶.
344 However, this soon turned to disappointment when government did not accept the recommen-
345 dations in full, but, in 2013, only gave official designation to 27 of the proposed MCZs. This
346 was seen as a shift away from an integrated network approach towards preservation of site-
347 specific features (Lieberknecht and Jones, 2016). Moreover, the designations did not intro-
348 duce any restrictions on activities within them, leading to accusations of these being MCZs on
349 paper only (Appleby and Jones, 2012)⁷. A designation order simply includes the definition of
350 boundary coordinates, conservation objectives and key natural features for the MCZ in ques-
351 tion. Nonetheless, two further rounds ('tranches') of MCZ designation followed in 2016 and
352 2019, leading to a total of 91 MCZs⁸.

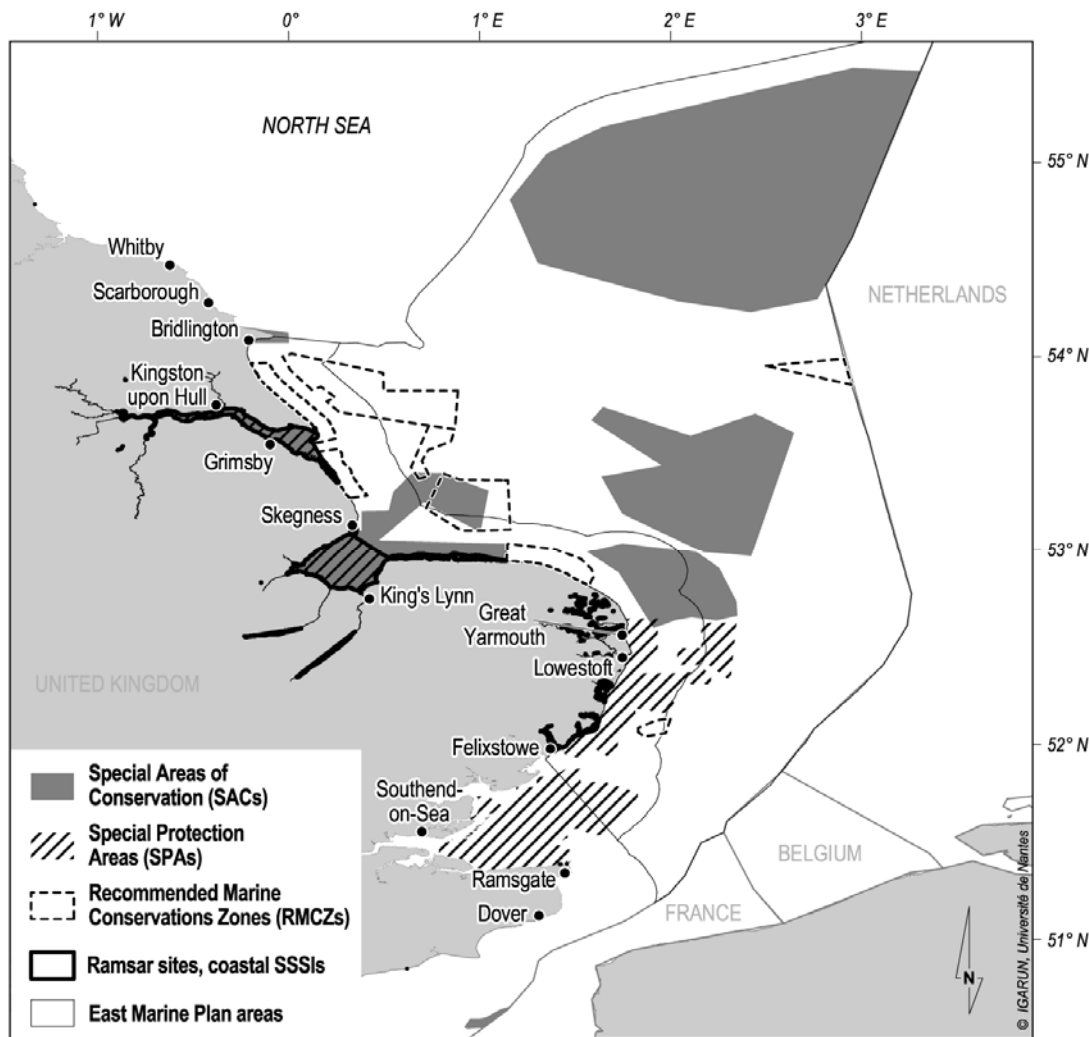
353 MCZs are intended to supplement a range of existing marine conservation designations. These
354 have been established under various national, European and international conservation
355 frameworks, and in England include Sites of Special Scientific Interest, Special Areas of Con-
356 servation, Special Protected Areas and Ramsar Sites. These are generally terrestrial designa-
357 tions, but in many cases they are coastal in nature and extend into coastal waters, especially
358 estuarine and inter-tidal waters. The marine components of these designations are considered
359 to be MPAs, and along with the newly-formed MCZs (and their equivalent in Scotland) form
360 a national MPA Network⁹. Figure 2 shows the potential network in England's first maritime
361 plan areas.

⁶ The Wildlife Trusts Marine Conservation Zones (England): <http://www.wildlifetrusts.org/mcz>

⁷ C. Roberts, England's marine conservation network is worse than useless. The Guardian, 17 June, 2014:
<http://www.theguardian.com/environment/2014/jun/17/england-marine-conservation-zones>

⁸ Department for Environment, Food and Rural Affairs (Defra) :
<https://www.gov.uk/government/collections/marine-conservation-zone-designations-in-england#2019-mcz-designations-and-factsheets>

⁹ Joint Nature Conservation Committee (JNCC): <http://jncc.defra.gov.uk/>



Source : « East Inshore and East Offshore Marine Plans », UK Department for Environment, Food and Rural Affairs, modified

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362
363
364

Figure 2: Potential MPA network in England's East Inshore and Offshore marine plan areas

365 The designation of MPAs in England does not of itself generally impose any restriction on ac-
366 tivities within them. It is intended that protection will be achieved through advice and man-
367 agement measures, tailored to individual MPAs. In the case of MCZs, for example, authorities
368 are expected to contribute to conservation objectives when licensing activities; they should al-
369 so work with stakeholders in developing suitable measures, which may be voluntary in nature
370 (Defra, 2013).

371 The procedure of MPA designation in England is therefore divorced from the preparation of
372 maritime plans. The MMO was not involved in the MCZ exercise, and it was not the primary
373 purpose of identifying possible MCZs to integrate marine conservation with other interests.
374 The MMO is, however, clearly one of the authorities that should work towards achieving
375 MPA objectives, both in plan-making and licencing decisions.

376 So as far as MSP is concerned, the preparation of maritime plans is taking place against a
377 backdrop of existing MPA designations in coastal areas and an ongoing process of establish-
378 ing new MPAs (MCZs) throughout UK waters¹⁰. This approximates to multiple-use MPAs es-

¹⁰ This is, in fact, in keeping with terrestrial planning practice, which works within ever-changing contexts of natural conditions and built development, only some of which it has direct control over.

379 established prior to MSP in Figure 1. It should also be noted that some other protected areas,
380 shown in Figure 2, straddle the land-sea divide, providing a continuum as shown in Figure 1.

381 However, in England, MSP is expected to contribute towards achieving the objectives of
382 MPAs. This is evident both at strategic and plan-making levels. To begin with, the national
383 guidance for MSP reiterates government commitment to the MPA Network and to protecting
384 biodiversity throughout UK waters (HM Government et al., 2011). Following on from this,
385 the first maritime plans give policy support to MCZs and the wider MPA network (HM Gov-
386 ernment, 2014). This implies that MPA objectives will be an important consideration in any
387 licensing decisions that may affect MPAs and may weigh against permitting certain activities.
388 Although this falls short of guaranteeing that MPAs will be fully protected, it does allow for
389 the needs of individual MPAs to be addressed in future planning decisions. This is, arguably,
390 in keeping with the wider UK tradition of spatial planning, which is to establish policy priori-
391 ties through plans and judge development proposals in the context of these priorities and other
392 relevant considerations. Moreover, the MMO may collaborate with other agencies and stake-
393 holders in developing management measures for individual MCZs, as envisaged by the desig-
394 nation process.

395 So MPA designation is not being incorporated fully into the MSP process in England; it is the
396 subject of a separate exercise rather than being part of an integrative process of planning all
397 maritime activities. Also, it has not met initial expectations, leading in the eyes of some to no
398 more than ‘paper parks’. But MSP does offer the opportunity for MPAs to be given greater
399 prominence and protection through ongoing incorporation into planning and management
400 processes, within the context of a flexible approach to marine nature conservation.

401 **4.2. Germany: a missed opportunity?**

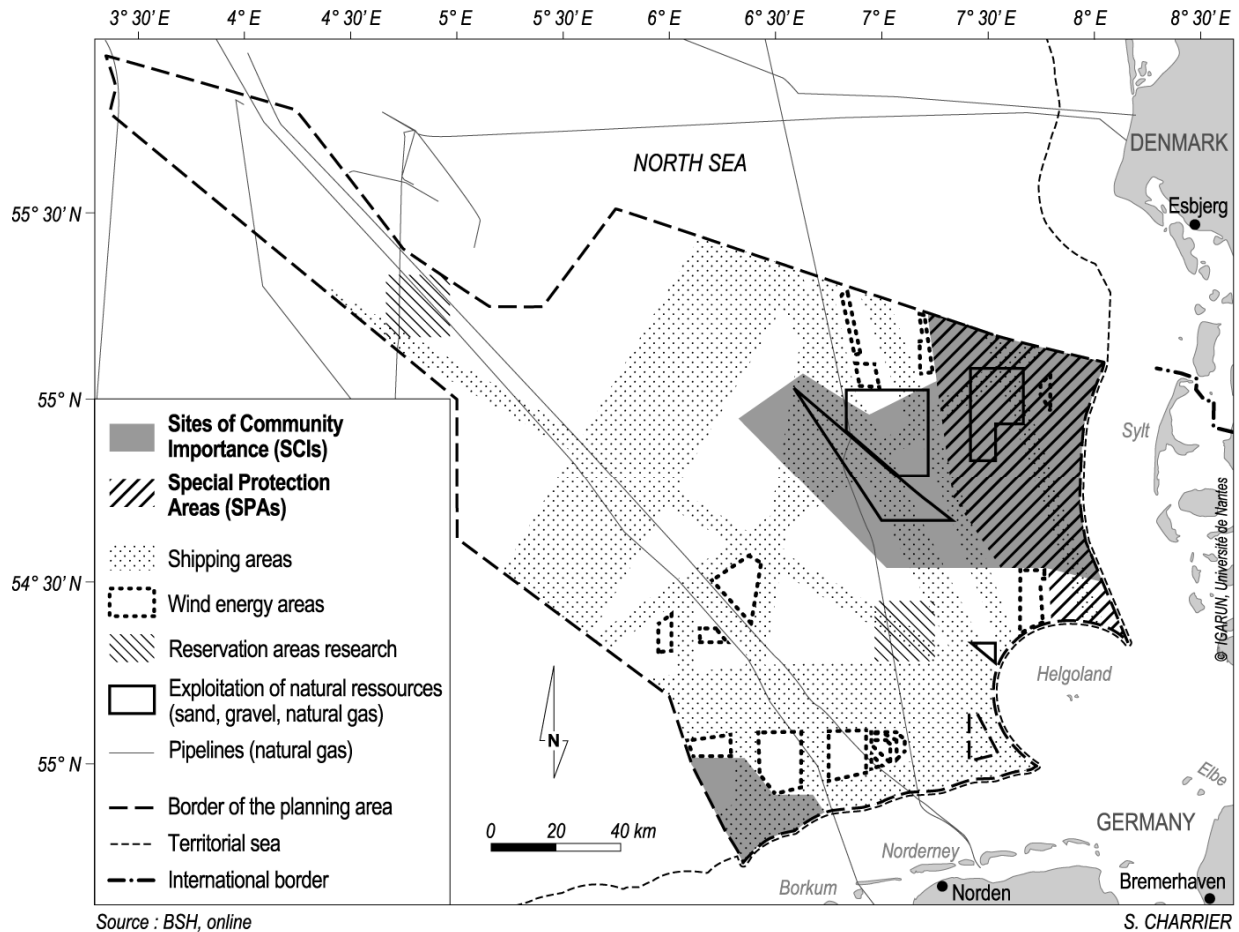
402 Germany was the first European nation to implement a statutory system of MSP for its waters.
403 This was done at two levels of governance, reflecting Germany’s federal structure: the federal
404 government took on responsibility for MSP in the nation’s exclusive economic zone (EEZ)
405 and the coastal states extended their planning competencies into the coastal waters as far as
406 the EEZ. This system was established on the basis of existing planning legislation (Douvere
407 and Ehler, 2009b). MSP in the EEZ has been the most striking initiative. This was delegated
408 to the federal maritime agency (Bundesamt für Seeschifffahrt und Hydrographie (BSH)),
409 which began the process in 2005, leading to two plans for Germany’s EEZ, one for the North
410 Sea part in 2008 and the other for the Baltic Sea part in 2009 (BSH, 2009). These plans are
411 currently being revised¹¹.

412 The plans for the EEZ focused on a few key maritime interests, by setting out extensive pri-
413 ority areas and other measures for them. The sectors covered were shipping, offshore wind
414 energy, pipelines and cables and scientific research. Notably, the plans did not establish any
415 new areas or significant measures for nature conservation. BSH worked on the assumption
416 that nature conservation areas had already been designated through Natura 2000 legislation,
417 implementing the European Union’s bird and habitat directives. These sites cover about 30%
418 of the EEZ and most of the coastal waters (and are the only form of MPA in Germany). BSH
419 held that the purpose of MSP was to cater for other, under-represented, interests.

420 This approach was contested by environmental organisations, research institutions and the
421 federal environment agencies. They argued that the plan provided an opportunity for addition-
422 al measures that would help protect the Natura 2000 areas in the EEZ, by being made into na-

¹¹ Bundesamt für Seeschifffahrt und Hydrographie (BSH):
https://www.bsh.de/EN/TOPICS/Offshore/Maritime_spatial_planning/maritime_spatial_planning_node.html

423 ture conservation priority areas on a par with those for shipping, etc. In response, BSH simply
 424 showed the Natura 2000 areas on the EEZ maps by way of information (they had not been
 425 shown at all on the first drafts), maintaining that these areas had a separate legal basis and that
 426 the plan, as a legal ordinance, was concerned with other matters. Environmental stakeholders
 427 continued to criticise this as an overly-legalistic approach to MSP and a missed opportunity as
 428 far as the Natura 2000 sites were concerned; they contended that these sites were not getting
 429 the protection they needed under the narrow provisions of the Natura 2000 legislation and that
 430 there would be additional value in giving them greater recognition in the plans.



431
 432 **Figure 3: Part of the North Sea plan for the German EEZ**
 433

434 BSH resisted these arguments, claiming that management plans under Natura 2000 would be
 435 sufficient. The agency also pointed to the plans' broader provisions for nature conservation,
 436 that other uses must respect ecological concerns throughout the whole of the EEZ, not just in
 437 Natura 2000 areas. Indeed, biodiversity and environmental protection concerns do recur
 438 throughout the plans; for example, offshore wind farms are not allowed in Natura 2000 areas,
 439 and the need to ensure best environmental practice is repeatedly stated (Jay et al., 2012). Also,
 440 nature conservation was given a prominent role through a lengthy environmental report ac-
 441 companying the plans, which had major input from the federal agency for nature conservation
 442 (Bundesamt für Naturschutz).

443 But environmental organisations remained unconvinced, continuing to feel that the plan did
 444 not succeed in balancing conflicting interests and was biased towards certain sectors, especial-
 445 ly those for which BSH has other statutory responsibilities. Indeed, the plans might be thought
 446 to compromise further the integrity of the Natura 2000 sites, as maritime activities such as
 447 shipping are given priority areas through the sites (Jay et al., 2016) (Figure 3).

448 For the coastal waters, the states have made much less definitive proposals. There has been
449 little more than a broad indication of key interests, with some integration with the EEZ plans,
450 such as a continuation of shipping areas and routes for cables and pipelines. Natura 2000 are-
451 as have, however, been treated on an equal, if not very strong, footing. This reflects the differ-
452 ent nature of these plans, as they offer strategic level guidance for the state territories (mostly
453 covering land), rather than legally-binding instruments, as in the case of the EEZ. They have
454 also been prepared by the states' established agencies of planning, who have simply added the
455 coastal waters to their remit. Arguably, they have adopted a more integrative approach to ma-
456 rine interests, including nature conservation, than BSH has in federal waters (which represents
457 not only a new geographical domain for planning, but also a new federal role in spatial plan-
458 ning).

459 So in Germany, MSP is not acting as a mechanism for designating MPAs or for improving
460 their management, but is being used primarily for the benefit of more economically-focused
461 activities. MPAs rely on other legal provisions, namely European conservation frameworks.
462 However, they are being accommodated to some extent into emerging patterns of sea-use, as
463 expressed in marine spatial plans, and are a constraint on some potentially harmful activities.
464 As is generally the case in England, therefore, MPAs also approximate to multiple-use MPAs
465 established prior to MSP (Figure 1), but MSP is not specifically expected to contribute to
466 MPA objectives.

467 **5. Discussion & Conclusion**

468 There are multiple ways to consider the links between MPAs and MSP; approaches are both
469 parallel and converging depending on the different forms they take in practice. The two ex-
470 amples presented above, from England and Germany, illustrate different paths where there are
471 difficulties of integration, perhaps more for political than technical or practical reasons. Real
472 world-MSP is often driven by Blue Growth logics (Jones et al., 2016) which challenges the
473 convergence between the two processes. The relationships between MPAs and MSP are com-
474 plex, multiple, changing, and must be viewed from various angles. MSP and MPAs some-
475 times share tools (namely decision-support tools), sometimes not depending of the type of
476 planning in play.

477 The framework proposed in this paper emphasizes relationships in space and time. This is not
478 intended as the final tool with which to conceptualize the relationships between MSP and
479 MPAs, but it does provide a complementary point of view for discussion. Furthermore, this
480 reflection draws attention to four points in order to improve the integration of MPAs and
481 MSP. Firstly, inter-relations must be considered from a policy point of view, as technical dis-
482 cussions alone remain purely theoretical. It would appear that in the European context, either
483 policy choices have not been made or they are not yet clearly expressed. Whatever the situa-
484 tion, the development of planning initiatives (MSP, sectoral planning, conservation zoning...) is
485 not neutral and may raise in some cases questions of "ocean grabbing" (Bennett et al.,
486 2015) and "sea sparing" (protecting areas from uses while intensifying uses in other areas)
487 (Wolff, 2015). Secondly, taking into account the relative weakening of public power and the
488 rise of non-state actors (companies, NGOs, associations...), the choices available to ocean
489 management underline the need of a democratic and open debate. Both MSP and MPAs have
490 the potential of 'hijacking' if political considerations are in the backseat when, in the same
491 time, an evidence-based-rationalist planning is driving the system. Thirdly, the issue of finan-
492 cial resources should not be overlooked as it has a bearing on technical and, indirectly, politi-
493 cal choices. There is therefore a question about the tools promoted by different communities
494 of scientists and practitioners (coastal and marine planners, conservationists...). Finally, there

495 is an important issue around data, information and knowledge (including non-scientific
496 knowledge), because whatever the links between MPAs and MSP, much will depend on the
497 availability, quality and uses of all kinds of data and knowledge to inform these processes and
498 ensure a real and effective participation.

499 **Acknowledgements**

500 This research did not receive any specific grant from funding agencies in the public, commer-
501 cial, or not-for-profit sectors.

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