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Reinventing marine spatial planning: a critical review of initiatives worldwide

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5 The past, present and future of marine spatial planning: a critical review 6 of initiatives worldwide

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9

10 Abstract: Although marine spatial planning (MSP) is increasingly being applied worldwide, it appears to be
11 based on an ambiguity that has arisen from its dichotomous role of ensuring both conservation and
12 development. This elusive ideal hints at a possible discrepancy between theory and practice. This paper
13 explores the hypothesis that beyond a performative narrative, MSP is actually better described as a variety of
14 devices which fulfil other roles and converge in terms of planning type. To test this hypothesis, this paper
15 analyses the content of past and present MSP initiatives from around the world. The findings show that these
16 initiatives view MSP either as a strategic sectoral spatial planning tool or strategic planning tool, brought in to
17 complement existing initiatives. Furthermore, these two approaches can actually be seen to converge in the
18 type of planning used, through the role attributed to spatial aspects, and more specifically in the place given to
19 zoning. There are two key implications of these findings: the need to open up theoretical debates more
20 broadly to different disciplinary perspectives on MSP; and the need for crucial choices to be made to ensure
21 that MSP does not become an illusion behind which other agendas lie.

22 Keywords: Marine Spatial Planning, Spatial planning, Strategic planning, Zoning, Critical review

23 1. Introduction

24 With just over sixty initiatives already completed worldwide (IOC-UNESCO & EC-DG
25 Mare, 2017), marine spatial planning (MSP) has now asserted itself worldwide with regards
26 to two major ocean-based phenomena¹. These are both causes and consequences of the
27 “*social construction of the ocean*” (Steinberg, 2001) and take on a variety of forms when
28 brought together. The first phenomenon is the increasing need for space due to the
29 development of ‘new’ uses (marine renewable energies, offshore aquaculture, extraction of
30 minerals, fibre optic cable, etc.) (e.g., Smith, 2000). The second one is the development of
31 tools – particularly marine protected areas (MPAs) – for protecting marine ecosystems and
32 biodiversity, with the aim of incorporating 10% of the world’s ocean surface area by 2020
33 (i.e., about 36 million km²), compared with the current 4.8%, 2.2% of which is ‘highly
34 protected’ (i.e., ‘no-take marine reserves’)².

35 Both of these two phenomena should continue to drive the need for developing MSP over
36 the coming years. This assumption is strongly supported by global goals for marine
37 protected areas (UNSDG Target 14.1). Regarding marine conservation on the one hand,
38 current debates mainly revolve around either the effectiveness of MPAs with regards to the
39 various anthropogenic impacts and the multiple forms they take (Pendleton et al., 2017;

¹ These tools are cited, for example, as being behind the need for planning in the first preamble of European Directive 2014/89 on establishing a framework for maritime spatial planning.

² <http://www.mpatlas.org/map/mpas/> (retrieved in September 2019). Other terms are also sometimes put forward, such as ‘fully protected areas’ (see Pendleton et al., 2017). The overall idea is to exclude ‘extractive activities’ – a term which is rather surprising as it seems to put all types of ‘extraction’ in the same basket.

40 Woodcock et al., 2017), along with their different characteristics (Edgar et al., 2014)³; or
41 the way in which functional goals of MPAs are defined and the consequences it may have
42 (Agardy et al., 2013; Agardy et al., 2016; Jameson et al., 2002). Despite this, a few voices
43 favouring a more ambitious goal are already being heard: at least 30% of ocean surface area
44 should be left free of ‘extractive activities’ (O’Leary et al., 2016; World Parks Congress,
45 2014), or even 50% (Wilson, 2016). These voices actually seem to find a certain echo in the
46 political sphere, as according to the International Union for Conservation of Nature, 129
47 governments or government agencies signed a motion in favour of raising the target to
48 30%⁴ at its congress held in Honolulu (USA) in September 2016, whereas only 16 of them
49 were against it. Thus marine conservation will probably continue to foster the expansion of
50 MSP.

51 A more circumspect approach is warranted, however, concerning the potential development
52 of ocean uses, in spite of the increasingly prevalent image of the ocean as a future El
53 Dorado offering breath-taking potential for economic growth: “*Global value added in the*
54 *ocean economy ‘business-as-usual scenario’ is estimated to grow to more than USD 3*
55 *trillion (in constant 2010 USD) by 2030 (...)*” (OECD, 2016)⁵. Although these predictions
56 forecast that the added value of the world ocean economy will double (Table 1), the same
57 study also later predicts that its contribution to the overall added value of the economy will
58 remain stable at 2.5% (OECD, 2016). This presents things from a rather different angle and
59 relativises the ‘blue growth’ narrative.

60 The blue economy predictions are further put into perspective when we note that the largest
61 sectors in 2010 (tourism, oil & gas and port activities) will probably continue to hold the
62 lion’s share in 2030 (Table 1). The offshore wind energy sector is the only newcomer with
63 added value that should grow at a spectacular rate of almost 8,000% between 2010 and
64 2030⁶ on a worldwide scale, given that in the present case, the three previously mentioned
65 uncertainties are currently more reined in: the resources, impacts and regulatory issues are
66 globally under control. So yes, the future will be blue but, aside from a narrative that has
67 proved rather hollow, not more so than today – proportionally at least.

68 Table 1 here

69 What can appear as somewhat surprising from afar is that these two antagonistic
70 phenomena lead to the same conclusion: MSP is regarded as *the* solution – or at least part
71 of the common solution – for protecting ecosystems and biodiversity as well as enabling the
72 ocean economy to develop. For instance, this is how things are stated in the MSP European
73 doctrine. The convergence of the following two conclusions serves as a good example and
74 as food for thought:

³ “Here we show that the conservation benefits of 87 MPAs investigated worldwide increase exponentially with the accumulation of five key features: no take, well enforced, old (>10 years), large (>100 km²), and isolated by deep water or sand” (Edgar et al., 2014).

⁴ <https://portals.iucn.org/library/sites/library/files/documents/IUCN-WCC-6th-005.pdf>

⁵ The two other scenarios (sustainable/unsustainable) produce similar figures (USD 3.2 and 2.8 trillion, respectively).

⁶ Important as it may be, as an absolute value (USD 227 billion), it comes in only third place, notably behind the tourism sector (USD 387 billion) in terms of growth.

- 75 • “Not surprisingly, we both come to the conclusion that MPAs fare best when
76 embedded in broader planning frameworks that can address both internal pressures
77 and external threats. Viva la MSP!” (Agardy, 2017);
78 • and “(...) MSP is seen as a process that can enhance sustainable growth as it
79 provides legal certainty, predictability and transparency, thus reducing costs for
80 investors and operators” (Schaefer & Barale, 2011).

81 On closer inspection, the oxymoron ‘blue growth’ highlights this convergence of seemingly
82 paradoxical objectives and squares the circle of an economic growth based on the ‘proper’
83 management of social-ecological systems (Eikeset et al., 2018). Furthermore, by
84 broadening reflection to include the notion of performativity (Denis, 2006; Dumez &
85 Jeunemaître, 2010; Muniesa & Callon, 2008), we could say that as a socio-technical device,
86 MSP unleashes the power of ‘blue growth’ to perform.

87 In principle, MSP is needed to take overall account of social and economic requirements as
88 well as the protection of the marine environment. It enables an all-encompassing strategy to
89 be defined, avoiding patchy and uncoordinated decisions (Kannen, 2014). However, at the
90 same time, MSP appears to be based on an ambiguity that has arisen from its dichotomous
91 role of ensuring conservation and development. Although this can become some sort of
92 ideal to be attained, in reality, it is hard to imagine how MSP could incorporate all the
93 stakes and more specifically, fulfil this dichotomous role. Consequently, our hypothesis in
94 this paper is that beyond a theoretical performative narrative, MSP actually corresponds
95 rather to a variety of devices which (i) seem to have other roles to play than that of an ideal
96 balance between conservation and development; and (ii) converge, despite their
97 heterogeneity, in certain ways through the type of planning used (strategic, sectoral,
98 spatial...) and their implications. Discrepancies hence appear between theory and practice,
99 requiring a more critical approach to decipher the true functions of these MSP processes
100 and understand how they operate. To identify and understand these possible discrepancies
101 and their implications, this paper will analyse the content of past and present MSP
102 initiatives from all around the globe. First of all, we will describe and justify the method of
103 analysis (2). The findings will then be presented (3) and discussed (4). This will be
104 followed by the conclusion, which puts these findings into perspective with a broader
105 reflection on planning (5).

106 2. Materials and methods

107 To test our hypothesis, different past and present initiatives were analysed in detail. Three
108 published studies analysed these practical initiatives on a global basis:

- 109 • Collie et al. (2013) conducted a study on 16 cases from around the world using an
110 analysis framework comprised of 42 questions on objectives, scope, managing
111 authority, type of participants, data, decision-making tools, monitoring and
112 evaluation of measures. This grid drew on four works on MSP (Beck et al., 2009;
113 Ehler & Douvère, 2009; Gold et al., 2011; Halpern et al., 2012). The study led to the
114 following conclusions: (i) although used, decision-making tools were not always
115 applied in a logical manner, (ii) most of the time, the different approaches did not
116 lead to the selection of the preferred scenario, (iii) the plans stemming from the
117 approaches were diverse in nature;

- 118 • Jones et al. (2016) analysed 12 cases in Europe only, using an analysis framework
119 established in an empirical way and structured by the following themes:
120 governance, conflicts, degree of integration, participation, equity and uncertainty.
121 Their conclusions were centred around four main points: (i) in reality, the
122 approaches were more similar to strategic sectoral planning initiatives than MSP,
123 (ii) the planning process was actually more pragmatic – in other words, it moved
124 away from a process theoretically built around cyclical stages towards a mixed
125 formal and informal framework, (iii) participation had a limited influence on
126 decisions, (iv) zoning reflected top-down decision-making;
- 127 • Domínguez-Tejo et al. (2016) studied 12 cases throughout the world using an
128 analysis framework based on seven of the 12 principles of the ecosystem-based
129 approach (or Malawi principles). This study found that: (i) in the field, MSP
130 revealed a diversity of practices; (ii) non-commercial, cultural or heritage values
131 were rarely taken into account (and scarcely documented from a spatial perspective)
132 compared with economic and environmental values; (iii) the issue of combined
133 impacts was barely taken into account; and (iv) environmental values (especially
134 biodiversity and water quality) were mainly considered through the lens of MPA
135 networks.

136 These three studies conducted on a limited number of cases already converge at least one
137 point – which is not surprising given the multiplicity of situations throughout the world:
138 MSP practices are in fact very diverse. This diversity can lead to deviations from the
139 theory, which varies depending on the case. In addition, other than in Jones et al. (2016)
140 and because their objectives were focused on MSP principles and norms, these works tell
141 us little about the actual roles fulfilled by MSP. Our paper thus attempts to document this
142 aspect more specifically, while at the same time broadening the scope of analysis to include
143 all practical MSP initiatives from around the world.

144 **2.1. Corpus of documents**

145 To do this, our analysis focuses on MSP initiatives recognised by UNESCO, which reports
146 and monitors them on its website⁷. According to this, there are 150 MSP initiatives in
147 phases spread between preparatory and final phases (on 1 April 2018) (see Appendix 1a).
148 On this basis, we only retained the completed documents pending approval (i.e., phase 4 of
149 UNESCO's seven-phase approach) or later stage documents (= 59 documents) for our
150 study. This choice was justified by two factors: firstly, we decided to study primary
151 sources, i.e., the planning documents themselves (Appendix 1b), rather than secondary
152 sources (e.g., scientific publications analysing practical initiatives) which naturally imply
153 the existence of a completed document (i.e., a management plan completed). Secondly, the
154 number of initiatives having reached phase 5 (or approved status) and whose final
155 document was available was limited (25 cases). Consequently, 19 initiatives out of the 59
156 initially retained were rejected, mainly due to document availability issues. However, three
157 more were added after we noticed recording errors made by UNESCO (i.e., phase 5 had
158 been validated but not phase 4). Lastly, the Chinese MSP initiatives required a slightly

⁷ http://msp.ioc-unesco.org/world-applications/status_of_msp/

159 different approach: it seemed both impossible to analyse them, because of lack of access to
160 final documents, and difficult to ignore them completely (16 documents inaccessible in
161 total, including 12 in China). Given that they appeared to have an overall logical coherence,
162 we decided to treat all the Chinese cases as one single case, using scientific publications
163 regarding Chinese plans (Appendix 1a and 1b). The question also arose of considering
164 different initiatives within the same country as a single case. We have chosen as a general
165 principle in advance to keep all initiatives as different cases for two main reasons: on the
166 one hand the political organization of countries (e.g., federal model) can generate initiatives
167 with different characteristics, on the other hand, different initiatives within a same country
168 may have taken place at different times also potentially leading to different characteristics.

169 In all, the corpus of data comprised 44 MSP cases from around the globe (= 59-19+3+1)
170 (Figure 1). This corpus itself will be discussed later. One may observe that such MSP
171 initiatives are mainly concentrated in some regions, namely Northern and Western Europe
172 and Northern America firstly, and secondly Middle America, South-eastern Asia and
173 Oceania. Also, according to the UNESCO database and considering plans only at phase 4
174 or later stage, large parts of the world ocean are blank of MSP initiatives (i.e., Africa, Asia,
175 and Southern America).

176 Figure 1 here

177 **2.2. Analytical framework**

178 Once this corpus had been determined, we set out to establish a specific analytical
179 framework. This was empirically structured, drawing on a literature review oriented around
180 the subject: the roles of MSP and the types of planning concerned. This review revealed
181 ambiguities at both levels, perpetuated by a lack of theoretical explanation. This paper aims
182 to discuss these three aspects (MSP roles, planning types and ambiguities linked to these
183 two points) in detail to establish the basis for our analytical approach and for defining
184 indicators.

185 **2.2.1 Roles of MSP**

186 The first aspect is the roles played by MSP. The literature review revealed the coexistence
187 of concepts inherited from the two phenomena behind the development of MSP.
188 Additionally, as demonstrated by the European example, some consider the ecosystem as a
189 use among others (integrated-use MSP – soft sustainability), whereas others see the
190 ecosystem-based approach as a precondition (ecosystem-based MSP – hard sustainability)
191 (Frazão Santos et al., 2014; Qiu & Jones, 2013). In the European case, this ambiguity was
192 already present at the incubation stage, before Directive 2014/89 (MSPD) was even
193 enacted, as fundamental divergences had been observed between Directive 2008/56
194 (MSFD) and the Integrated Maritime Policy, on the actual role of MSP or MPAs (Qiu &
195 Jones, 2013) for example. Today, in the European context, the MSFD serves as an
196 environmental guideline⁸ for the MSPD, and MPAs are viewed as one ‘use’ among others

⁸ <http://eur-lex.europa.eu/legal-content/FR/TXT/?uri=LEGISSUM:l28164>

197 in marine planning documents⁹. However, in practice, member states are free to interpret
198 and implement in a broad variety of ways. Under these conditions, it is not surprising that
199 the interaction between MSP and MPA can take many forms: for instance, MPAs with
200 multiple objectives are sometimes considered as a form of MSP.

201 More generally, although numerous authors indicate that MSP is taking root in the tenets of
202 ‘ecosystem-based management’¹⁰ (e.g., Crowder et al., 2006; Degnbol & Wilson, 2008;
203 Douvère, 2008; Douvère & Ehler, 2009; Elher & Douvère, 2009; Gilliland & Laffoley,
204 2008; Symes, 2005), and the example of the Great Barrier Reef (Australia) is often
205 presented as being the first ocean-based planning initiative¹¹ (Day, 2002; Olsson et al.,
206 2008), though it would be hard to identify MSP solely in this way.

207 Ocean-based planning is not actually a completely new idea, even in its integrated form,
208 and it evokes practices that are already relatively time-tested and established. As of the
209 1970s (during the early years of offshore oil extraction in the North Sea), the notion of ‘sea-
210 use planning’ – or ‘sea-use management’ – was born, notably amongst British geographers
211 (i.e., Cicin-Sain et al., 1992; Eisma et al., 1979; Smith, 1988; Smith, 1990; Smith, 1991a &
212 1991b; Smith, 1994; Smith & Lalwani, 1996; Young & Fricke, 1975). It not only took the
213 specificities of the marine environment into account, but also more traditional planning
214 theory concepts, which had been mainly developed for land planning purposes (Kidd &
215 Ellis, 2012; Kidd & Shaw, 2014; Gazzola et al., 2015; Smith et al., 2011)). In the same
216 period, riding on the wave of a new discipline (conservation biology), ‘systematic’
217 conservation planning surfaced in response to the need to curb the decline in biodiversity. It
218 gradually integrated socio-economic criteria and finally grew by increasingly using
219 quantitative approaches to identify priority conservation areas according to more explicit
220 criteria (hence the use of the adjective ‘systematic’) (Margules & Pressey, 2000; Sarkar et
221 al., 2006). This approach, which promoted one conservation tool amidst others (the
222 protected area), appropriated tools dating back to the end of the 19th century (parks,
223 reserves, etc.). It then looked to rationalise the methods for identifying and harmonising
224 forms at an international level. The tools then logically ended up being applied to oceans
225 (i.e., MPA) (Dudley, 2008; Kelleher & Kenchington, 1991). Furthermore, in the same way
226 that environmental planning formerly sought to make planning (urban or territorial) more
227 ecological without strengthening its theoretical principles (Briassoulis, 1989; Faludi, 1987;
228 Slocombe, 1993; Whatmore & Boucher, 1993), it would appear that MSP can be
229 schematically perceived as an as yet unsuccessful ocean-based attempt either to ‘ecologize’
230 the planning of uses, or to ‘socialise’ conservation planning. There is still a fundamental
231 ambiguity surrounding the roles of MSP, notably on how the ‘environment’ is considered.

232 2.2.2 Approaches to Planning

233 The second aspect to be discussed relating to our literature review is the type of planning
234 used. Different names are given to MSP in scientific literature and official documents (Jay,
235 2013). The expressions ‘marine spatial planning’, ‘maritime spatial planning’, ‘marine and

⁹ See Article 8 of the MSPD.

¹⁰ The quotation marks underline the fact that the notion of ecosystem-based management (EBM) is not stable and can take on different meanings within the scientific community (Long et al., 2015). Also see the interesting contribution made by Slocombe (1993) on this topic.

¹¹ The park was established in 1975 and the first zoning plan was drawn up in 1981 (Day, 2002).

236 coastal spatial planning’ and ‘maritime space planning’ – to mention the most frequently
237 used terms – are often used analogously. The adjectives ‘maritime’ and ‘marine’ are often
238 used interchangeably from one expression to another. The first adjective evokes things
239 associated with the sea, possibly including the coast itself, and therefore covers a wider
240 notion, including spatially. However, in a more restrictive way, the second adjective only
241 refers to what directly relates to the sea, in addition to probably placing a stronger emphasis
242 on the ‘environment’. For instance, a fish is a marine resource while a boat is a maritime
243 resource, as well as a marine pollution is a pollution of the sea while a maritime pollution is
244 a pollution (of the coast) that comes from the sea. Consequently, marine planning and
245 maritime planning cannot be strictly equivalent. Furthermore, the first three terms put the
246 emphasis on spatial planning (Smith et al., 2011) which, with a rationalist basis and
247 suggesting the division of uses in space, can lead almost automatically to zoning (see Jay,
248 2013). In addition, one should also consider a distinction between spatial planning at sea
249 and marine spatial planning; the latter suggesting a specific way to conceptualize and
250 practice spatial planning. The approach of spatial planning has also evolved over time,
251 changing in essence by being applied to the maritime domain (Kidd & Ellis, 2012), and no
252 longer having the same meaning depending on the planning culture. Accordingly, to put
253 emphasis on spatial planning at sea rather than maritime planning has serious implications.
254 As for the fourth term, by contrast, it originates from the desire to promote strategic
255 (spatial?) planning, automatically relegating the spatial aspect to second place (Albrechts,
256 2004; Healey, 2004). In other words, it would theoretically explore the ‘why’ before
257 tackling the ‘how’. Far from being a simple question of form or technique¹², this is actually
258 a fundamental reflection on the place of both strategic and spatial aspects in ocean
259 planning. The balance between spatial and strategic aspects appears unclear where MSP is
260 concerned, revealing contexts in which the spatial aspects – and even zoning – are activated
261 in potentially different ways depending on the case.

262 Beyond this, the fundamental question of historical context is also raised. Taken from a
263 general point of view, MSP is similar to other forms of planning in that it does not emerge
264 from a void. In Europe for example, a certain number of countries had already developed
265 national strategies for conserving biodiversity or developing offshore wind farms (to
266 mention just two examples) *before* defining their global maritime strategies. Although this
267 scenario is not unusual in the world of planning, it nevertheless raises the question of
268 whether one of the hidden roles of this type of approach could actually be to offer ‘staging’
269 for decisions already took or underway, in the same vein as strategic planning (particularly
270 in terms of communication) or new spatial planning (Albrechts et al., 2003; Allmendinger
271 & Haughton, 2012; Demazière & Desjardins, 2016; Demazière et al., 2016; Faludi, 2000;
272 Healey, 1997; Salet & Faludi, 2000). Taking a closer look at the details reveals that
273 whereas conservation only makes sense in the long term, as the positive effects of an MPA
274 only surface after several years (Edgar et al., 2014; Pendleton et al., 2017), the planning of

¹² Whereas the title of the English version of the MSPD (2014/89) is ‘*Maritime spatial planning*’, the titles of the Directive in other languages (Italian, French, Portuguese, Spanish, etc.) refer to ‘planning of maritime space’, which tends to evoke the space to which planning is applied rather than how the planning in itself can be envisaged.

275 uses mainly involves readjustments over a shorter term¹³, even if the long term also needs
276 to be considered.

277 2.2.3 Theoretical Foundations and Ambiguities

278 The third and final aspect to be considered in our literature review is the theoretical
279 foundations. It is not surprising that under the above-mentioned conditions, MSP is still
280 suffering from a lack of clarity: “(...) [its] literature has generally lacked deeper reflexive
281 engagement with the emerging system of governance for our seas that has meant that many
282 of MSP’s core concepts, assumptions and institutional arrangements have not been subject
283 to rigorous intellectual debate” (Kidd & Ellis, 2012). This situation can probably be
284 explained by the fact that scientific communities and a variety of practitioners gravitate,
285 sometimes opportunistically¹⁴, around MSP without necessarily being able to clearly
286 articulate their relation to a common subject. This observation is backed up by a graph
287 analysis applied to scientific publications on MSP, which shows that publications cluster in
288 different groups based on an association of keywords (Figure 2). Four main groups are
289 revealed¹⁵: one centring on management issues (group 1 - green/blue), one on
290 methodological issues (group 2 - green), another on conservation issues (group 3 - yellow)
291 and a fourth one focusing more specifically on fisheries (group 4 - orange). These
292 publication groups obviously have blurred and porous boundaries and the names they are
293 given are suggestive: they are neither mutually exclusive, nor easily associated with
294 clearly-defined scientific communities. That said, they nonetheless appear to indicate that
295 MSP is approached from dramatically different perspectives. All this could appear quite
296 normal if it had not been concomitantly noted that the levels of theoretical reflection on
297 planning (roles, types), and its political dimensions, are only secondary or even marginal,
298 when it should play a more primary role and give rise to more rigorous debate, thus
299 enabling the core concepts to be properly grounded.

300 Figure 2 here

301 From this point of view, the definition of MSP most often quoted in the literature is
302 symptomatic: “*Marine spatial planning is a public process of analyzing and allocating the*
303 *spatial and temporal distribution of human activities in marine areas to achieve ecological,*
304 *economic, and social objectives that usually have been specified through a political*
305 *process*” (Ehler & Douvere, 2009). Its main characteristics are then described using a
306 variety of soft concepts¹⁶, which become ‘buzz words’ whose status is rarely brought into
307 question. In the same vein, the adverb ‘usually’, which features in the definition, relegates
308 the political dimension of planning to second position or even the sidelines. Consequently,
309 MSP seems to be lowered to the rank of a technical protocol (e.g., Caldow et al., 2015;
310 Center for Ocean Solutions, 2011; Pınarbaşı et al., 2017; Stelzenmüller et al., 2013) and is
311 apparently depoliticised. It is clear that none of the scientific approaches and stances taken
312 in relation to MSP, however legitimate or pertinent, can claim to be neutral, as the way in
313 which the question is actually raised places MSP under the focus of objectives, methods or

¹³ Besides, in Europe, the MSPD proposes that plans be reviewed every 10 years at the most.

¹⁴ In terms of MSP, as for many seemingly new and politically-integrated ideas or fields of study, a ‘label’ or fad effect can naturally emerge, which contributes to muddying the waters.

¹⁵ In addition to a smaller and more marginal fifth group (in blue).

¹⁶ Notably: ecosystem-based, integrated, area-based, adaptive, strategic, anticipatory, participatory, etc.

314 tools, which in themselves have a political meaning. Neither can it be denied that
315 theoretical blind spots in MSP can also be exploited by non-transparent strategies or
316 policies.

317 This lack of theoretical clarity contributes to sustaining ambiguities on the real roles of
318 MSP and on the type of planning which serves to fulfil these roles, all the more so given
319 that this question has been dealt with by mainly the scientific community and professional
320 practitioners. Our paper has thus attempted to establish an analytical framework focusing
321 mainly on these two crucial MSP ambiguities.

322 To do this, we defined and proposed to apply seven indicators to the corpus of documents
323 (Table 2). Whereas indicator I1 is factual and may enable the size of the planning zone to
324 be put into perspective, the six other indicators are interpretative and completed based on
325 an analysis of the content of the corpus. Two of the six indicators attempt to identify the
326 real roles of MSP (indicator I2 and I3) and five of the six try to pinpoint the type of
327 planning that enables these roles (indicators I3, I4, I5, I6, and I7). Other elements could
328 also have been involved in the analysis, such as the planning trajectory or planning culture.
329 Two main reasons led to dismissing them. First, these elements are generally not
330 apprehensible in planning documents. Secondly, for a general-level study with other
331 benefits such as providing a common analytical framework for comparison, it does not
332 seem possible to address this point which would require much more extensive and probably
333 unrealistic investigation. Thus, these other elements can be taken into account in targeted
334 case studies using materials other than planning documents alone. To measure the
335 indicators, the structure of the documents contained within the corpus (Appendix 1a) was
336 analysed and we gave whole parts of documents a close reading (e.g., sections relating to
337 strategic objectives, maps).

338 Table 2 here

339 **3. Results**

340 Given the sum of compiled elements, we decided to present only the synthesis of the results
341 in this section and to list details in the appendices. In addition, to fully understand the main
342 factual results delivered in this section, it is important to read the text and the contents of
343 the tables in parallel and, if necessary, to refer to the corresponding appendices.

344 The analysis of documents (Table 3) gave the following outline results – only the trends
345 and general proportions were considered rather than undertaking a statistical analysis,
346 which would not have been meaningful given the reduced number of MSPs included
347 (between 30 and 44 depending on the indicators):

- 348 • Indicator I1 (Appendix 1c): the MSP initiatives considered covered geographical
349 zones ranging from 674 km² (Philippines, PH2) to 2 million km² (Australia, South-
350 East region, AU3). However, more than half covered a surface area of less than
351 60,000 km² and a third even covered a surface area of less than 10,000 km².
- 352 • Indicator I2 (Appendix 1d): a clear majority of initiatives had a broad thematic
353 scope, often covering a wider range of stakeholder interests. The rest, except for one
354 (US-41, Oregon), were conservation-focused strategic plans (four of the Australian
355 plans, AU-4 to AU-7, and the one for the Galapagos Islands, EQ-35). Even though

356 these few cases covered very widespread geographical sectors, there did not seem to
357 be a clear correlation with the size criterion applied to planning zones.

- 358 • Indicator I3 (Appendix 1d): about two-thirds of the analysed documents regarded
359 MSP from a soft sustainability perspective, namely a development-oriented
360 document (marine energy, shipping, aquaculture, etc.) seeking to take into account
361 conservation issues. When we excluded the conservation-focused strategic plans,
362 which were questionable to equate with MSP (see I2), this proportion was even
363 greater. Two initiatives could not be classed under one of the two categories as they
364 focused on a knowledge gaining objective, by setting up spatial data portals (USA,
365 US-43 and US-44). Otherwise, there was a strong correlation with the size of the
366 planning zones, as almost all the plans covering a zone with a surface area of less
367 than 60,000 km² regarded MSP from a soft sustainability perspective, whereas more
368 than two-thirds of the plans covering a zone with a surface area of more than
369 60,000 km² leant towards hard sustainability. Regardless of the difficulty in
370 generally interpreting the type of sustainability, it emerges from this exercise that
371 we have rarely hesitated on any of the sustainability approaches in each planning
372 process. Often, this clearly appears in the very content of the documents, and
373 particularly in the relative place given to different priorities whether it concerns
374 conservation or economic development: these are never at the same level.
- 375 • Indicator I4 (Appendix 1e): only slightly more than half of the analysed initiatives
376 had orientations which defined and described spatially-explicit strategies. The
377 others were either strategic documents without a spatial dimension (e.g., marine
378 energy development), or in some cases, documents without an explicit strategic
379 dimension other than some main guiding principles (Germany, GE-14 and GE-15,
380 Normay, NO-20 and NO-21, UK, Scotland, UK-25, Mexico, ME-36-38). More than
381 three-quarters of the initiatives establishing spatially-implemented strategic
382 orientations concerned zones of less than 60,000 km² and conversely, three-quarters
383 of the initiatives not establishing a spatially-implemented strategic approach
384 concerned zones of more than 60,000 km².
- 385 • Indicator I5 (Appendix 1e): almost half of the MSP initiatives had a strategic
386 orientation that was spatially implemented through zoning. Three-quarters of them
387 concerned plans established over zones of less than 60,000 km². Others may have
388 strategic orientations which, when they are spatially-explicit, are expressed in the
389 form of one or more spatialized scenarios or by indicative and sometimes even
390 approximate maps (e.g., United Kingdom, UK-22, UK-23, UK-24, UK-26, Belize,
391 BE-28, Mexico, ME-36, ME-37, ME-38, USA, US-40 and US-41). By the way, one
392 should also note that it is sometimes possible to have a zoning map without any
393 explicit strategic orientation. This is why I4, I5 and I6 do not necessarily overlap but
394 are rather complementary.
- 395 • Indicator I6 (Appendix 1e): almost all the initiatives implemented accurate zoning
396 or by default, presented a 'spatial vision' (scenario, maps, etc.) based on precise
397 mapping (it is worth noting that some approaches were part of a 'spatial vision'
398 which was not necessarily strategic or a fortiori, prescriptive, e.g., an illustrative
399 scenario; again this is why indicators I4 and I6 did not totally concur). Accurate
400 zoning was particularly used in plans covering zones with a surface area of less than
401 60,000 km². Only two initiatives had accurate zoning or mapping that expressed a

402 schematic ‘spatial vision’. Besides, almost three-quarters of MSP initiatives
403 undertaken with a soft sustainability approach (see I3) implemented accurate zoning
404 or by default, a ‘spatial vision’ (scenario) based on precise mapping. The correlation
405 was less clear-cut in terms of MSP initiatives based on a hard sustainability
406 approach.

- 407 • Indicator I7 (Appendix 1e): Slightly over half of zoning or mapping which
408 expressed a ‘spatial vision’ were not prescriptive and tended more towards being
409 indicative. The prescriptive MSPs were plans aiming either to bolster or implement
410 a MPAs network, or to enable new activities to be developed (especially offshore
411 wind energy). In addition, two-thirds of the prescriptive MSPs were plans
412 concerning zones of less than 60,000 km².

413 Table 3 here

414 Beyond this first basic classification, other more cross-cutting results were obtained by
415 combining the different indicators to classify the MSPs into types. To do this, we looked at
416 indicators I3 (sustainability), I4 (type of planning), I5 (zoning) and I6 (type of zoning). We
417 set aside the other three indicators after observing that empirically, they tended to provide
418 complementary information rather than any major insight: size (I1), thematic scope (I2) and
419 the prescriptive or indicative nature of zoning (I7). Furthermore, two initiatives were not
420 taken into account in this classification given that they were approaches closely linked to an
421 activity providing support to MSP (i.e., spatial data portals) rather than being ‘true MSP’
422 approaches in themselves. In the end, four main types clearly stood out (Figure 3):

- 423 • Type 1 (20 cases): MSP initiatives viewed from a soft sustainability perspective (I3)
424 with a strategic dimension implemented spatially (I4) in the form of accurate (I6)
425 zoning (I5). The main focus of the objectives for all but three (Belize, Croatia and
426 Nunavut) of this type of initiative was to identify geographical areas for developing
427 marine renewable energies;
- 428 • Type 2 (7 cases): MSP initiatives viewed from a soft sustainability perspective (I3),
429 but without a spatially-implemented strategy (I4). Aside from two Norwegian cases,
430 these were mainly local-scale plans with marine renewable energies as a core
431 development objective;
- 432 • Type 3 (11 cases): MSP initiatives viewed from a hard sustainability perspective
433 (I3) without a spatially-implemented strategy (I4). Aside from two specific cases
434 (Philippines and Galapagos Islands), these were mainly general documents
435 providing guidelines for existing or soon-to-be MPAs (which employ spatially
436 explicit zoning);
- 437 • Type 4 (4 cases): MSP initiatives viewed from a hard sustainability perspective (I3)
438 with a strategic dimension implemented spatially (I4) in the form of accurate (I6)
439 zoning (I5). These cases tended to resemble multi-objective MPAs.

440 Figure 3 here

441 Accordingly, the analysis of these 44 initiatives conducted throughout the world indicates
442 that MSP is probably not able to fulfil the double role of conserving marine ecosystems and
443 biodiversity on the one hand, and enabling economic activities to develop on the other. If
444 we look at the facts, despite taking on a wide variety of forms, initiatives tend either
445 towards one or the other. This serves to confirm that two main sustainability concepts

446 coexist in MSP, but that they are hard to reconcile and attract a host of intertwined
447 subtleties. These findings seem to indicate that the real roles of MSP currently are:

- 448 • either to accompany the development of economic activities, particularly renewable
449 marine energies, by parading MSP as a process that is ecosystem-based (soft
450 sustainability), integrated, area-based, adaptive, strategic, anticipatory, participatory
451 or another contributing concept that follows a consensus-building logic;
- 452 • or to a lesser degree, to provide the context for an MPA network within a much
453 larger space. MSP is assigned the task of refocusing the different MPAs towards
454 broader conservation goals to take account of the pressure placed on ecosystems
455 outside of MPAs.

456 In the first case, MSP is conceived as a strategic sectoral planning tool whose main
457 mechanism is zoning. In the second case, MSP appears above all to be a strategic planning
458 tool which supplements existing zoning systems (MPA). In a tentative way, although the
459 first part of our hypothesis seems to be confirmed, the second part (i.e., the hypothesis that
460 approaches based on different rationales converge in terms of planning type) cannot be
461 entirely confirmed at this stage.

462 **4. Discussion**

463 The approach taken in this study and the findings made can be discussed from three
464 different perspectives.

465 Firstly, the corpus of documents gathered and analysed give rise to debate about core
466 definitions. This corpus was actually established based on UNESCO monitoring data, and
467 we have chosen to take it into account as is. However, distinguishing between what is
468 considered as MSP or another management approach is in fact neither trivial nor neutral:
469 some approaches may be called MSP but actually correspond to something else, whereas
470 others may not claim to be MSP but strongly resemble it. Several marine and coastal
471 management processes may be linked to one another and differences between processes are
472 often subtle; thus it is sometimes not easy to distinguish with MPA planning for instance.
473 Beyond this, an initiative can change in character over time, anchoring any observations
474 made to a specific moment in time. These challenges are not unique to MSP, as they are
475 found in a whole host of planning approaches that have blurred outlines – especially when
476 they are taken as being universal. This is true of integrated coastal zone management
477 (ICZM) for example, where Sorensen (2002), after analysing worldwide initiatives,
478 concluded that: *“it is not imperative to make an exact separation between what is, or is not
479 an integrated coastal management [ICM] effort. Other types of environmental planning and
480 management efforts, such as marine protected areas or nation-wide integrated
481 environmental action plans, commonly address many of the same issues in the same ways
482 as ICM efforts.”* In the same vein, the fact that only the initiatives having reached at least
483 the document finalisation stage (i.e., phase 4) were retained may create biases, as this kind
484 of approach has to be part of a process which goes above and beyond the mere production
485 of a document. Besides – and this could be the main criticism – focusing on the analysis of
486 only these documents can lead us to forget the larger institutional context in which they
487 were produced, whether we are referring to other more or less parallel approaches that can
488 nevertheless have impacts (e.g., MPA, terrestrial planning, sectoral policies, etc.), or

489 trajectories and timeframes which are specific to each different approach (e.g., an MPA that
490 gradually mutates into an MSP approach). It would be useful to be able to compare and
491 refine these findings with those derived from a different corpus taking into account a wider
492 governance context or with another analysis angle (e.g., other documents than final
493 documents only).

494 Secondly, the method itself is limited in certain ways. This study did not presume to
495 encompass all possible fields of analysis for MSP initiatives. The aim was to focus on the
496 elements that directly addressed our initial questions. In doing this, it is possible that other
497 elements may have been overlooked in the process of interpreting the content of the
498 analysed planning documents and filling in the indicator table. Besides this, the fact that we
499 interpreted the content of documents is also a limiting factor in itself. Although some
500 indicators were relatively easy to fill in (i.e., I1, I2, I7), others required the unravelling of
501 subtleties, the outcome of which was not certain – even by attentively reading documents.
502 This was especially true when there were references to fuzzy categories, such as the
503 distinction there may be between soft and hard sustainability, or the relative weight
504 strategic and spatial dimensions have in planning (i.e., I3, I4, I5, I6). Beyond this, the act of
505 interpreting itself could not take place without acknowledging the role played by the
506 disciplinary background: for example, it is likely that two different disciplinary stances will
507 lead to two different readings. This is why a maximum number of elements justifying the
508 interpretation were recorded to be referred to on a case by case basis (see the comment
509 columns in Appendix 1d-e). Future research should aim to conduct analysis within a
510 collective framework enabling contradictory arguments, or simply different disciplinary
511 opinions, to be expressed.

512 Figure 4 here

513 Thirdly and finally, concerning the findings themselves, it could be tempting to go further
514 than the main trends exposed, by combining roles and planning types to draw conclusions
515 supported by statistical analysis. However, given the relatively small number of MSP
516 initiatives chosen, the nature of the corpus of documents (e.g., the case of the Chinese
517 initiatives, which were all rolled into one) and, more generally, the interpretation of the
518 above-mentioned discussion points, this would not make much sense. Yet, this remark does
519 at least invite us to turn our attention back to the second part of our hypothesis, which could
520 not be fully confirmed. For, although the hypothesis that approaches based on different
521 rationales converge in terms of planning type could not be officially confirmed, it still
522 ultimately led us back to what is understood as being a part of MSP. In fact, in the case of
523 MSP approaches regarded as strategic planning that supplements existing devices, such as
524 MPAs, the fact that spatial planning or zoning took place ‘outside of’ (and also before)
525 MSP meant that this convergence could not be observed with MSP approaches based on
526 strategic sectoral spatial planning, which draws heavily on zoning. Three points emerge
527 from this. First of all, it invites us to take the broadest possible view of MSP. This means
528 integrating all formal and informal initiatives competing to share or divide maritime space,
529 because planning, development or conservation processes neither exist within a vacuum nor
530 emanate from a void. In other words, whatever the path followed and as long as a broad
531 view is taken, in practice MSP often ultimately seems to express itself through zoning, or
532 be nourished by it. If this is the case, it is problematic for certain interests which are not
533 entirely compatible with this zoning model (e.g., the connectivity of habitats, scattered

534 activities), without even speaking of the fact that zoning itself evokes a certain discourse
535 and idea of ‘the environment’ in terms of conservation (Whatmore & Boucher, 1993).
536 Secondly, another more schematic way of looking at the two broad categories that have
537 emerged comes to the fore: (i) an MSP which plays the role of a ‘zoom-in’ tool, leading to
538 a type of zoning that justifies and imposes strategic sectoral decisions taken elsewhere; and
539 (ii) an MSP which serves as a ‘zoom-out’ instrument, using existing zoning (MPA) to take
540 external pressures into account (Figure 4). Therefore, two different pathways lead to two
541 hidden or non-explicit purposes embodied by MSP today. Thirdly, whichever of these two
542 pathways are taken, the social, societal and, more generally, territorial stakes are actually
543 marginalised: on the one hand, they are rarely the starting point for establishing sectoral
544 strategies and more often than not, play a somewhat simplistic justificatory role (e.g., the
545 number of jobs created), and on the other hand, they are rarely at one with the geographic
546 scale of an MPAs network.

547 **5. Conclusion**

548 In the same way that there is no best or single method for undertaking ‘strategic (spatial)
549 planning’ (Albrechts, 2004), it is clear that there is no single method for carrying out MSP.
550 We must remind ourselves that according to its declared intentions, MSP is a necessarily a
551 process whose role is to provide a framework where it is needed and on the scale required.
552 This framework should enable a diversity of visions of maritime space to be expressed and
553 compared. This in turn should lead to discussions and negotiations on propositions and
554 decisions to resolve and anticipate any conflicts of uses, minimise the impact on marine
555 habitats and maximise the well-being of populations that inhabit, depend on or simply
556 enjoy this space. From theory through to practice, discrepancies arise requiring deeper
557 reflection, because it is clear that MSP is not quite what it seems (yet?). It is highly
558 probable that time is needed for the different processes to settle. However, scientific
559 communities dealing with the subject also need to cast a more critical eye in terms of the
560 theory behind the concepts on which MSP is based. Although this issue is true for planning
561 in the wider sense (e.g., Olesen, 2014), the ocean puts a different spin on it if we consider
562 both the need for theoretical debates to be broadened to include conservation sciences and
563 the nature of maritime spaces themselves, which can be viewed as ‘soft spaces’ (see
564 Allmendinger & Haughton, 2012; Jay, 2018; Olesen, 2014). Failing this, there is a risk that
565 ocean planning will become a pretence of democracy – as is potentially the case of strategic
566 spatial planning in the terrestrial domain – by shifting into a post-political register (e.g.,
567 Allmendinger & Haughton, 2012), which is likely to serve the interests of the powerful, as
568 Healey (1994) has already reminded us in a more general manner: “*How far is it possible to*
569 *imagine that a development plan can be anything other than either a project of the*
570 *powerful or an ineffective dream of the idealistic?*”. In other words, as with strategic
571 territorial planning (Demazières & Desjardins, 2016), MSP creates a paradox in that it
572 proves to be probably both illusory and necessary. Accordingly, there is a need to engage in
573 a more in-depth study and to explicit the political dimension of these processes, in order not
574 to “*fall into the trap of totally unrealistic and naïve optimism*” (Friedberg, 1993 quoted by
575 d’Aquino, 2002). If this was to happen, MSP would be reduced to an approach guided by
576 an instrumental rationality, when, as is the case in land planning, it needs to combine other
577 forms of interconnected rationalities (value, communicative, and strategic) (Albrechts,
578 2004). One of the options for advancing towards theoretical renewal in terms of MSP

579 would be to give more in-depth reflection to the participation of actors and the role played
580 by socio-technical devices (maps, planning documents, data, etc.) in implementing MSP.
581 This would enable future alternatives (value rationality), the diversity of actors
582 (communicative rationality) and the power relations between the different actors when
583 building the strategy (strategic rationality) to be taken into account (Albrechts, 2004).

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824 Table 1. Evolution of the added value of the global ocean economy (in USD). OECD, 2016.

Ocean-related sectors	2010	2030	Evol. 2010-2030
Maritime and coastal tourism	390 107 246 153	777 138 485 595	99,21%
Offshore oil and gas	504 034 800 805	636 089 807 812	26,20%
Port activities	193 000 000 000	472 850 000 000	145,00%
Maritime equipment	168 034 658 400	299 674 237 328	78,34%
Fish processing	78 806 980 720	265 601 462 945	237,03%
Offshore wind	2 867 787 104	230 472 860 260	7936,61%
Water transport	82 594 084 254	118 023 313 343	42,90%
Shipbuilding and repair	57 693 008 821	102 890 133 394	78,34%
Industrial capture fisheries	21 081 783 838	47 048 622 903	123,17%
Industrial marine aquaculture	3 627 080 903	10 964 638 511	202,30%
	1 501 847 430 997	2 960 753 562 090	97,14%

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827 Figure 1. Distribution of the 44 MSP initiatives analysed

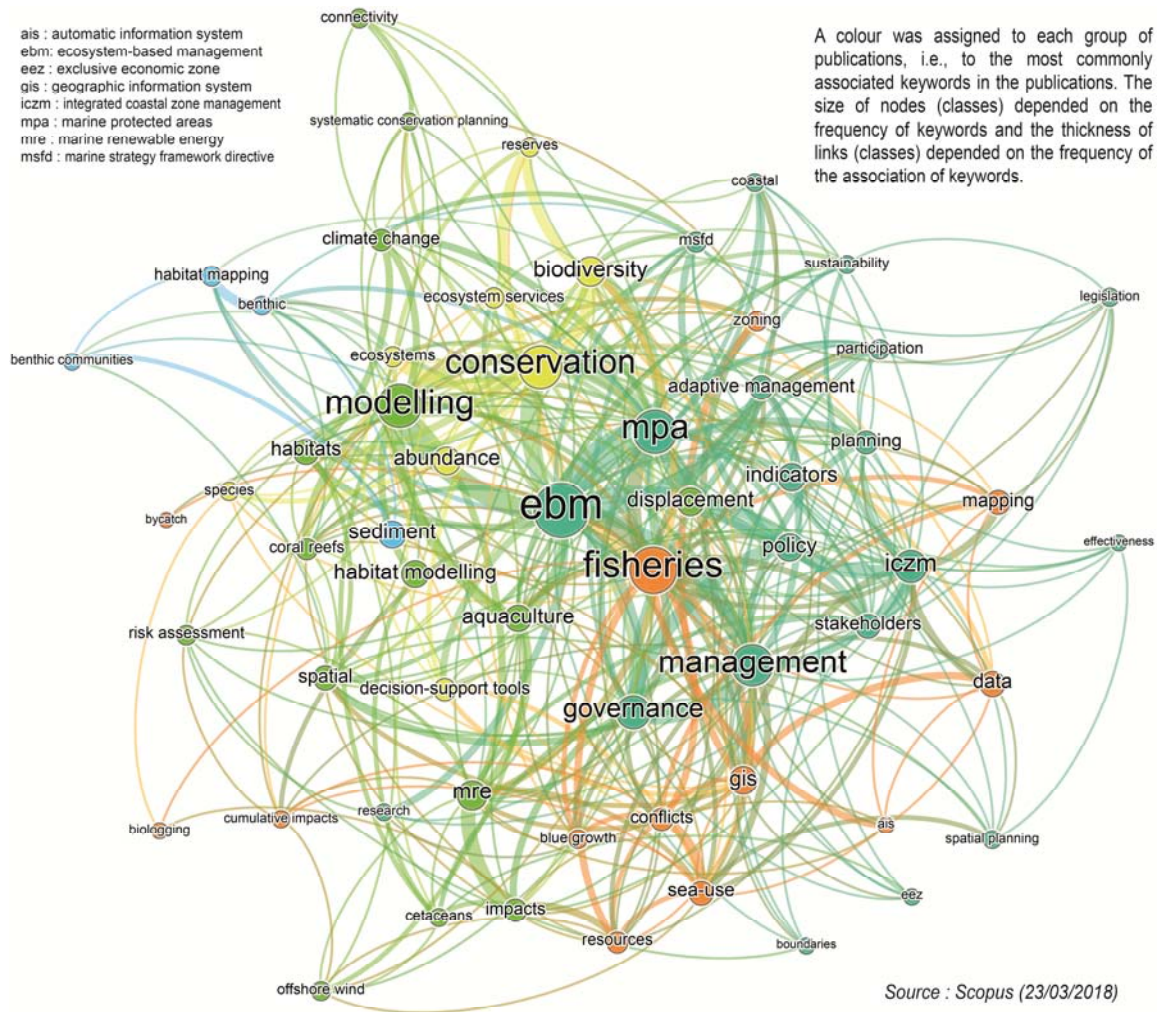


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831 Figure 2. Identification of MSP publication groups using an influence graph.



Method:

1/ A Scopus query was made on the terms "marine spatial planning" or "maritime spatial planning" in the title, abstract or keywords (listed by the authors), restricting the search to articles published or to be published in scientific journals (i.e., excluding indexed books). The two oldest articles dated from 2004 and the search was made on 31/03/2018. Result = 735 publications.

2/ Extraction of all keywords.

3/ Cleaning the data file involved: deletion of toponyms, names of organisations and adjectives (e.g. marine, maritime, oceanic, etc.), except when specialisation conserved meaning (e.g. "coral reefs" vs. "artificial reefs"), case standardisation, harmonisation of the use of the singular or plural and generalisation of certain keywords (e.g., "data" replaced "databases", "geodatabases", "geospatial data", etc., and "governance" replaced "co-governance", "environmental governance", etc.). After cleaning, there remained 635 items with at least one keyword.

4/ Main stages of the construction of the influence graph with Gephi 0.9.2 : import of the file as an adjacency list (non-directed graph) comprising 902 nodes (different keywords) and 2116 links (one keyword was linked to another if it appeared in the same list for an article), filter performed on the degree range (60 nodes retained and 416 links), "atlas force" spatialisation mode (making it possible to show "communities"), partition of nodes from modularity statistics.

Main limitations:

The query was only for indexed journals (in Scopus). Searching based on keywords obviously cannot faithfully reproduce the content of publications. The cleaning operations may have caused handling or interpretation errors.

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835 Table 2. Indicators used to analyse MSP initiatives.

Indicator	Code	Label
Size of the planning area	I1	0 – 19,999 km ²
		20,000-99,999 km ²
		100,000 – 499,999 km ²
		500,000 – 2,000,000 km ²
Content of the planning document	I2	The content is single-sector focused or conservation-focused (other issues are poorly documented)
		The content is broad and includes a large range of sectors and conservation issues.
MSP Orientations	I3	Ecosystem-based MSP (hard sustainability)
		Integrated-use MSP (soft sustainability)
		Other/Non applicable
Spatially-explicit strategic orientations in the planning document	I4	Yes
		No
Role given to zoning	I5	Strategic orientations are given through a zoning plan OR a zoning plan is presented
		Strategic orientations are not given through a zoning plan.
Accuracy of mapping features	I6	There is an accurate zoning plan OR a spatial vision is precisely expressed
		A zoning plan OR a spatial vision is fuzzily expressed
Prescriptive/indicative	I7	The zoning OR the spatial vision expressed is prescriptive
		The zoning OR the spatial vision expressed is indicative

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839 Table 3. Raw results.

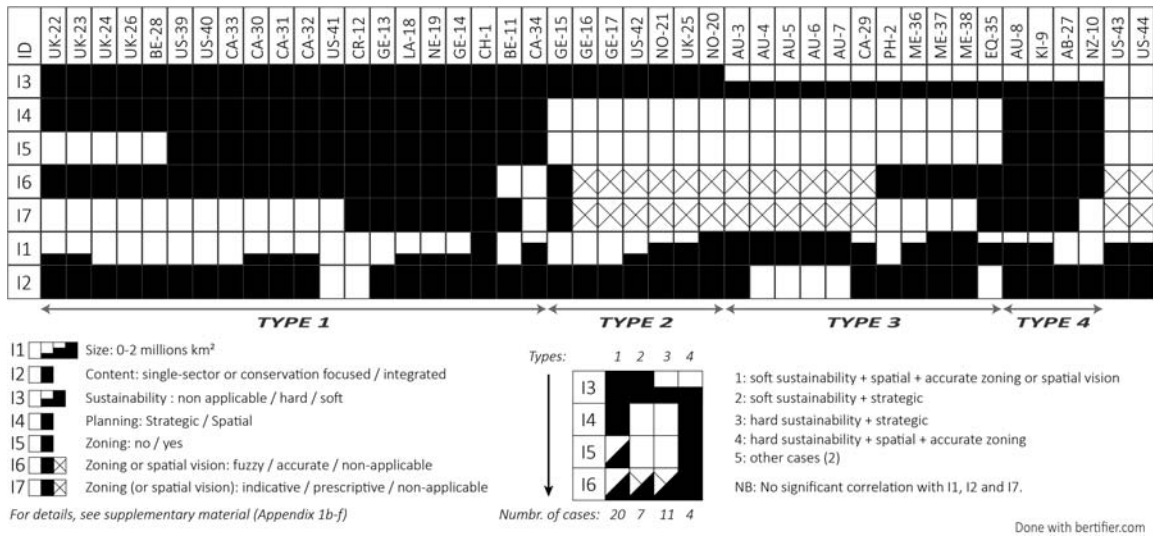
Code	Value	Count	Comments
I1	1	16	Information was missing for 8 planning areas (see Appendix 1c). Due to the size of the classes, a rough evaluation was done to sort the cases into the six size classes.
	2	9	
	3	10	
	4	9	
	<i>Sub.</i>	44	
I2	1	7	Considering that MSP is not a substitute for single-sector planning and is not conservation-only planning either (see http://msp.ioc-unesco.org/about/marine-spatial-planning/), I2 is dedicated to checking the content of the planning document, which sometimes gives an indication on its orientation. Details in Appendix 1d.
	2	37	
	<i>Sub.</i>	44	
I3	1	15	I3 is dedicated to interpreting the way to consider sustainability in the plan. In some cases, it is obviously not easy to interpret whether the approach is that of hard or soft sustainability. Some arguments and explanations are given in Appendix 1d (see comments). In addition, the main orientations are summarized in Appendix 1d. Those between parentheses have been interpreted as secondary.
	2	27	
	0	2	
	<i>Sub.</i>	44	
I4	1	24	I4 is dedicated to interpreting the combination of strategic and spatial dimensions of the planning process. A strategic vision is not always expressed spatially, and conversely a spatial vision is not always strategic. Details in Appendix 1e.
	0	20	
	<i>Sub.</i>	44	
I5	1	19	I5 is dedicated to interpreting the way the strategic orientations are expressed. These can be expressed through objectives (for instance, in terms of extension/development but without specifying where). It can also be expressed either by a zoning plan (I5) or in another way that gives a "spatial vision" (ex. scenario) (I6). One should also note that there is sometimes a zoning plan without a strategic dimension expressed (most of the time here, this is because the zoning plan already exists). In few cases, there is a zoning map (I4) without any explicit strategic orientation. Details in Appendix 1e.
	0	25	
	<i>Sub.</i>	44	
I6	1	28	I6 is dedicated to interpreting whether the zoning plan (or the "spatial vision") is mapped with accuracy or, conversely, in a fuzzy manner. Details in Appendix 1e.
	0	2	
	<i>Sub.</i>	30	
I7	1	12	Complementarily, I7 is dedicated to interpreting whether the zoning plan (or the "spatial vision") is prescriptive or indicative. Details in Appendix 1e.
	0	18	
	<i>Sub.</i>	30	

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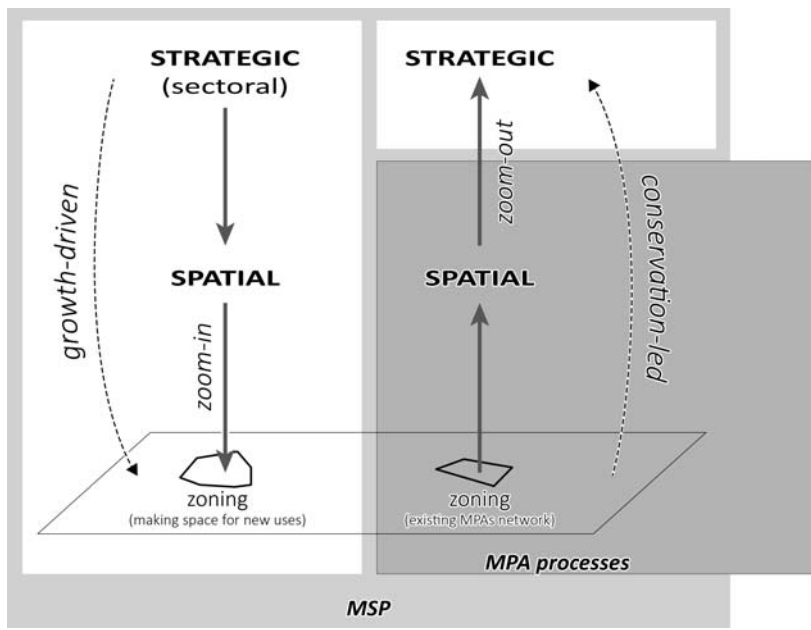
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843 Figure 3. Classifying MSP initiatives by type.



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846 Figure 4. The two main facets of MSP.



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