1 **Institutional Integration in Transboundary Marine Spatial Planning: A theory-based**

2 **evaluative framework for Practice**

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10 **Abstract**

11 The governance of shared waters involves complex interactions between actors and institutions

12 embedded in different legislative approaches, cultures and administrative procedures. Marine

13 Spatial Planning can address the transboundary dimension of marine governance, based on its

14 potential to foster integration between sectoral agencies, regulatory bodies and local stakeholders

15 when making decisions about the distribution of coastal and maritime uses. Coordination between

16 activities and practices of actors in planning transboundary areas is imperative in advancing

17 sustainability. This paper seeks to make a contribution to the evolving field of MSP by expanding

18 the dimensions of integration in MSP to consider institutional integration. In doing so, the paper

19 reviews pivotal literature on MSP and makes an argument that existing studies on integration in

20 MSP are structured in an inductive manner and focused on national and sea-basin cases. In

21 response to addressing these gaps, we used the social systems theory and related theories, as an

22 overarching and valuable lens to understand the institutional challenges of planning across

23 maritime borders. Based on these lenses, we present an evaluation framework that uses the

24 metaphor of a 'wheel' to indicate iterative stages (observation, initial impact, response, recovery

25 and stabilisation) that are shaped by dimensions including structural alignment, self-oriented

26 action, collaborative capacity. This is followed by discussion about the potential application and

27 next steps for enhancing the utility of the framework. In conclusion, the paper adds to the growing

28 discourse on transboundary MSP by presenting a deductive framework that can be applied to

29 different context and multi-governance levels to understand institutional integration.

30

31 **Key words:** Marine Spatial Planning, Transboundary, Integration**,** Social Systems Theory,

32 Evaluation Framework

33

34

1   Introduction

36 Marine Spatial Planning (MSP)[1] is one approach of many, used for marine governance amongst
37 others such as conservation planning, ecosystem-based management (EBM), and integrated
38 coastal zone management (ICZM). Comparatively, MSP has gained popularity over the last two
39 decades with over 20 government-approved marine spatial plans instituted to legitimise the
40 development of maritime activities, reduce conflicts and enhance synergies between sectors (Ehler
41 et al., 2019; Iglesias-Campos et al., 2015). Maritime activities continue to grow exponentially;
42 maritime transport is responsible for 80% of world trade, offshore renewable energy output
43 increased by 21.7% (MW) between 2003–2008 in Europe, whilst the global total capacity of cables
44 increased at a compound growth rate of 57% between 2007 and 2011 (Gee et al., 2019; UNCTAD,
45 2018). The compound annual growth rate of global aquaculture industry is expected to increase by
46 4.46% between 2018 and 2022 (Technavio, 2018). Traditional maritime uses including maritime
47 transport, fishing and emerging uses, such as offshore grid connections, are mobile, spatially
48 heterogenous and span multiple maritime jurisdictions. The continuous growth and transboundary
49 nature of maritime activities calls for increased coordination between regulatory and sectoral
50 agencies for effective planning across borders. There have been continuous calls to consider the
51 transboundary nature of maritime activities and integration[2] in MSP (Papageorgiou & Kyvelou,
52 2018; Rus, 2012). In response to these calls and legislative drivers such as the EU MSP Directive
53 2014/89/EU, there are on-going development of institutions, concurrent co-development of
54 science and evidence in MSP practice.

55
56 However, various MSP discourses show that despite the growing attention on MSP, there remains
57 a gap between what MSP sets out to do in theory and actual gains in practice. The integrative
58 ability of MSP has been critiqued and labelled as 'post-political', in the sense that it fails to address
59 multi-sectoral objectives and largely re-enforces previous fragmented decision-making processes
60 (Tafon, 2018). Echoing this, Ritchie & Ellis (2010) and Flannery et. al (2018) have highlighted

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[1] Also known as Maritime Spatial Planning, Marine Planning or Coastal and Marine Spatial Planning
[2] Vince and Day (2020 p.2) defines integration as" a decision-making process designed for multilevel governance
and the involvement of multiple actors, with the potential for these to be applied across multiple timeframes".

61 the limited citizen participation, subjectivity, and top down nature of stakeholder engagement and

62 consultation. Similarly, Morf et al. (2019) noted that the much-acclaimed idealistic stance of

63 inclusive participation does not work in practice due to limited time and resources especially when

64 preparing first generation plans. Fairbanks et al. (2019) critiqued the limited broad public scrutiny

65 of MSP and its overemphasis on addressing spatial contentions between sectors such as shipping

66 and fisheries. Boucquey et al. (2016) examined the ontological politics of MSP and concluded that

67 human communities are marginalised due to inadequate socio-natural evidence. Kelly et al. (2018)

68 have argued for radical institutional change through a transitional management approach. Jentoft

69 (2017) argues that MSP needs innovative institutional restructuring to facilitate the integration of

70 stakeholder's interests and knowledge, especially least powerful stakeholders such as small-scale

71 fishers and coastal communities.

72

73 Studies that investigate integration in MSP have tended to focus on national cases mostly in the

74 UK, Europe, Australia and North America (Vince & Day, 2020; Smythe, 2019; Portman, 2011).

75 Understanding conditions that affect how MSP institutions are adopting or adapting MSP policies,

76 especially in transboundary areas is critical in addressing conflicting governance frameworks. This

77 paper aims to promote the understanding of transboundary MSP by firstly identifying knowledge

78 gaps with regards to transboundary MSP and integration and secondly, presenting an evaluation

79 framework for institutional integration based on theoretical perspectives.

80

81 In order to do this, we first discuss the approach that was used in developing this literature review-

82 based theoretical contribution. This is followed by an overview of key MSP integration

83 frameworks and literature. We then provide an in-depth review of transboundary MSP literature

84 to determine the evolution of research development and detect existing knowledge gaps. The

85 fourth section discusses theoretical perspectives from Social Systems Theory (SST) and related

86 theories to conceptualise transboundary institutional integration. The evaluation framework, as our

87 main contribution is then presented in the fifth section by drawing on internationally-recognised

88 examples. The potential application of the framework is discussed in the penultimate section

89 whilst the concluding section discusses the next steps for advancing the framework.

90 **2   Method and Approach**

91 The approach for developing the evaluation framework was in three main steps (Figure 1). The

92 first step involved understanding the current state-of-the-art research on MSP, integration and

93 related frameworks to detect knowledge gaps and research needs. In order to develop an in-depth

94 understanding of integration with a transboundary MSP focus, we reviewed transboundary MSP

95 literature and their discussion of institutional integration. Research articles were searched using

96 Scopus[3] database for an unlimited time frame. The search and selection of articles were performed

97 using the following search strings terms: ("transboundary") or ("cross-border") AND ("marine

98 spatial planning")[4] and ("transboundary") or ("cross-border") AND ("maritime spatial

99 planning").[5] The titles, abstract and full text of the articles were reviewed to select peer-reviewed

100 articles that focused on the practical application and implementation of MSP and explored

101 institutional integration and transboundary engagement for MSP practice. Articles which were

102 duplicated in the two-search combinations were removed and this resulted in ten research articles

103 which were reviewed. While it is acknowledged that grey literature such as project reports and

104 books were not included in analysing the state-of-the-art research on MSP, it is contended that

105 peer-reviewed articles are considered the most prominent and current in the field influencing

106 normative thinking. However, many of the examples used are from grey literature and project

107 documents.as they are current examples in practice. To conceptualise the framework that is

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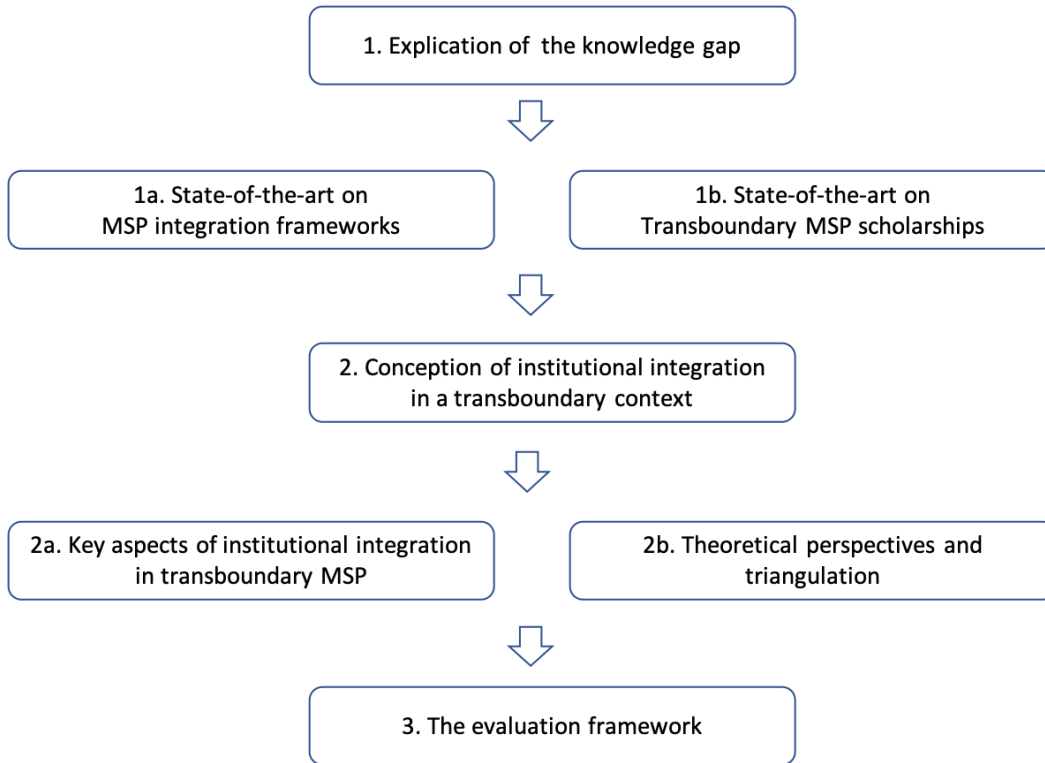[3] Elsevier's internationally recognised database

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https://www.scopus.com/results/results.uri?numberOfFields=2&src=s&clickedLink=&edit=t&editSaveS=&origin=searchbasic&authorTab=&affiliationTab=&advancedTab=&scint=1&menu=search&tablin=&searchterm1=%22transboundary%22&field1=TITLE_ABS_KEY&connector=OR&searchterm2=%22cross-border%22&field2=TITLE_ABS_KEY&connectors=AND&searchTerms=%22marine+spatial+planning%22&fields=TITLE_ABS_KEY&dateType=Publication_Date_Type&yearFrom=Before+1960&yearTo=Present&loadDate=7&documenttype=All&accessTypes=All&resetFormLink=&st1=%22transboundary%22&st2=%22cross-border%22&sot=b&sdt=b&sl=109&s=%28TITLE-ABS-KEY%28%22transboundary%22%29+OR+TITLE-ABS-KEY%28%22cross-border%22%29AND+TITLE-ABS-KEY%28%22marine+spatial+planning%22%29%29&sid=3e8a6550fa27b0278c374226f83610b8&searchId=3e8a6550fa27b0278c374226f83610b8&txGid=72ef6837b96f284c1503456a498c2284&sort=cp-f&originationType=b&rr=

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https://www.scopus.com/results/results.uri?numberOfFields=2&src=s&clickedLink=&edit=t&editSaveSearch=&origin=searchbasic&authorTab=&affiliationTab=&advancedTab=&scint=1&menu=search&tablin=&searchterm1=%22transboundary%22&field1=TITLE_ABS_KEY&connector=OR&searchterm2=%22cross-border%22&field2=TITLE_ABS_KEY&connectors=AND&searchTerms=%22maritime+spatial+planning%22&fields=TITLE_ABS_KEY&dateType=Publication_Date_Type&yearFrom=Before+1960&yearTo=Present&loadDate=7&documenttype=All&accessTypes=All&resetFormLink=&st1=%22transboundary%22&st2=%22cross-border%22&sot=b&sdt=b&sl=111&s=%28TITLE-ABS-KEY%28%22transboundary%22%29+OR+TITLE-ABS-KEY%28%22cross-border%22%29AND+TITLE-ABS-KEY%28%22maritime+spatial+planning%22%29%29&sid=87cb737330cccb24cb3a167d74c59a05&searchId=87cb737330cccb24cb3a167d74c59a05&txGid=65c833d3b8e7dfe7fcb9ae815cf1e03c&sort=cp-f&originationType=b&rr=

108 presented, we defined three key aspects of transboundary institutional integration and related

109 theoretical perspectives.[6] The three theories were reviewed and triangulated by drawing on Ostrom

110 (2011) and Pemer & Skjølsvik (2018) frameworks for institutional analysis to derive key stages

111 and dimensions that shapes institutional integration.

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┌─────────────────────────────────────┐
│  1. Explication of the knowledge gap │
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┌──────────────────────────┐   ┌──────────────────────────┐
│  1a. State-of-the-art on │   │  1b. State-of-the-art on │
│  MSP integration         │   │  Transboundary MSP       │
│  frameworks              │   │  scholarships            │
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┌──────────────────────────────────────┐
│  2. Conception of institutional      │
│  integration in a transboundary      │
│  context                             │
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│  2a. Key aspects of institutional│   │  2b. Theoretical perspectives│
│  integration in transboundary MSP│   │  and triangulation           │
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│  3. The evaluation framework     │
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3 Institutional Integration and Transboundary MSP

114 *3.1 Previous MSP integration frameworks*

115

116 Fragmentation within marine governance has been discussed widely, categorised under

117 institutional fragmentation (see Ritchie & Ellis, 2010; Hassler et al., 2018; Flannery, 2015; van

118 Tatenhove, 2017), conceptual fragmentation (van Tatenhove, 2017; Janßen, et al., 2018), temporal

119 fragmentation (Keijser, 2018; Kull et al. 2019; Morf et al.,2019) amongst others. Integration in

120 MSP has been identified as one of the key approaches and not an end in itself to address fragmented

121 decision-making and enhance multi-governance interactions (Kidd et al.,2020; Saunders, 2019).

122 Reviewing key MSP integration frameworks and literature shows that the definition, dimensions

123 and conception of integration vary between MSP authors. However, there are common themes and

124 dimensions which reflect the multi-dimensional aspects (across sectors, governance levels and

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[6] Social Systems Theory, Evolutionary Governance Theory and Complex Adaptive Systems

125 scales) of integration. For instance, Kidd (2007) identified the dimensions of integration as sectoral
126 integration; territorial integration; and, organisational integration. On the other hand, Dickinson et
127 al. (2010 p.28) identified integration as one of the principles of MSP that occurs at different levels
128 including intersectoral, intergovernmental, spatial, science-management, international and
129 sustainable development. Portman (2011) examined how scale and scope of marine plans and
130 projects in the US, Portugal and the UK influenced the levels of integration that was achieved in
131 practice. The dimensions of integration identified were physical (spatial and temporal layout of
132 uses), multi-governance levels (inter-sectoral, intergovernmental management authorities,
133 jurisdictions, policies, and legislation) and science-policy integration. Kidd and McGowan (2013)
134 explored stakeholders' motivation for transnational partnership to support MSP in the Irish Sea by
135 expanding stakeholder integration. They presented a five-rung ladder towards transboundary
136 partnership. Alternatively, Saunders (2019) presented an integrative analytical framework that
137 defined cross-border, policy/sector, knowledge, stakeholder and temporal dimensions as
138 expressions of integration challenges in MSP practice. Ritchie et al (2019) building on the three
139 integration dimensions by Kidd (2007), identified transboundary integration as a fourth dimension
140 and advocated for a deeper understanding of how transnational and international institutions can
141 facilitate formal transboundary MSP process. Vince and Day (2020) suggested a framework for
142 determining effective integration in MSP by building on the work of Dickinson et al. (2010). They
143 stressed that the definition of effective integration in MSP should go beyond traditional dimensions
144 such as cross-sectoral, cross-cultural, intra-agency, intra-government, cross-jurisdictional, to
145 include novel dimensions such as intergenerational, cross disciplinary/interdisciplinary, broad
146 scale, with a focus on social capital, integrative capacity, place-based values, and cumulative
147 impacts.

148
149 Beyond the above literature that presented a framework for MSP integration, dimensions such as
150 stakeholder integration in transboundary context (Morf et al. 2019), knowledge integration
151 (Jentoft, 2017) and transboundary integration (Moodie et al. 2019) have enjoyed in-depth case
152 studies. Conversely, results from the analysis indicates that organisational integration identified
153 by Kidd (2007) remains understudied in MSP research and practice. We expand that further to
154 include the institutional aspects of integration given its importance in addressing conflicting
155 governance frameworks and effective delivery of other dimensions of integration (Kidd, 2007;

156 Ritchie et al., 2019). Here we share Moroni's (2010, p 3) definition of institutions as 'the rules of
157 the game' whilst organisations represent its 'players'. Institutions in this case, ensure that there is
158 pattern-coordination among individual actions and practices of organisations. In order to gain in-
159 depth understanding of institutional integration in transboundary MSP, we explore how it has been
160 discussed in transboundary MSP scholarships in the next section.
161
162
163 *3.2   Evolution of Transboundary MSP discourse*
164
165 For the purpose of this paper, we define transboundary MSP as engagement between multiple
166 entities (e.g. countries, states, provinces, organisations) at various levels of governance and across
167 borders to make decisions about the spatial and temporal ordering of maritime uses. With the aim
168 of expanding our conception and understanding of institutional integration in transboundary MSP,
169 we reviewed research articles based on the timeline of practice development (Figure 2) and the
170 institutional issues that were discussed (Table 1).
171
172 Early studies on transboundary MSP (between year 2011 to 2015) mainly assessed existing
173 national and sea basin legal, institutional frameworks, and transboundary conservation initiatives
174 to inform how transboundary MSP can be conducted. For instance, Backer (2011) reviewed the
175 evolution of national and international legal framework in the Baltic Sea and stressed that different
176 political ideologies and planning traditions of institutions can affect the success of transboundary
177 MSP practice. Backer (2011) recommended that transboundary engagement between actors should
178 be transparent and open to expose different national assumptions and interests. Mackelworth
179 (2011) after reviewing transboundary conservation initiatives[7] recommended that political support
180 beyond political time frames was critical for successful transboundary initiatives. Kerr et al. (2014)
181 examined land-sea interface as a transboundary area for renewable energy in Scotland. They
182 advocated for clear lines of accountability and appropriate local stakeholder participation as means
183 to reduce risk and stakeholder protest. Flannery et al. (2015) investigated political and institutional

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[7] Including Wadden Sea Area (Denmark, Germany and Netherlands), International Marine Park of the Mouths of Bonifacio (France and Italy), Red Sea Marine Peace Park, Turtle Islands Heritage Protected Area, Mesoamerican Barrier Reef System, Pelagos Sanctuary for Mediterranean Marine Mammals (Ecuador), Marine Conservation Corridor of the Tropical Eastern Pacific, Marine Peace Park Korea and Coral Triangle

184 conditions that can expedite transboundary MSP on the island of Ireland. They supported the role

185 of transboundary institutions and body to instigate joint solutions and advance transboundary MSP.

186

187 As transboundary MSP practice increased through pilot projects, studies from 2016 to 2019 started

188 exploring good practices on transboundary MSP and focused on transboundary integration and

189 procedures for transboundary MSP. For instance, Jay et al. (2016) examined the transboundary

190 dimensions of MSP based on experience from the TPEA[8] project between France, Ireland,

191 Portugal, Spain and the UK. They highlighted that disparities in institutional frameworks makes it

192 arduous to implement transboundary MSP and recommended enhanced interrelations between

193 actors and organisations. Van Tatenhove (2017) reviewed transboundary MSP projects in Europe

194 and argued that the national and rule-directed institutional approach to MSP are not being

195 challenged by actors due to limited political and knowledge capabilities. Platjouw (2018), after

196 comparing legal structures and policies in Netherlands and Norway, recommended a deeper

197 understanding of path dependent cultural, social and policy variations that impedes institutional

198 coordination. Janßen et al. (2018) examined practices and procedures for transboundary MSP

199 interactions based on the output of the Baltic Scope and BaltSpace Project. They argued for

200 increased transboundary integration and regular interactions between stakeholders across borders.

201 Similarly, Morf et al. (2019) investigated transboundary stakeholder integration in the Baltic Sea

202 and identified different institutional settings and vertical integration gaps as some of the obstacles

203 whiles recommending that institutional interactions should be deepened. Moreover, good practices

204 identified by Kull et al. (2019) reiterated instituting transboundary dialogue, discussion and

205 learning between actors.

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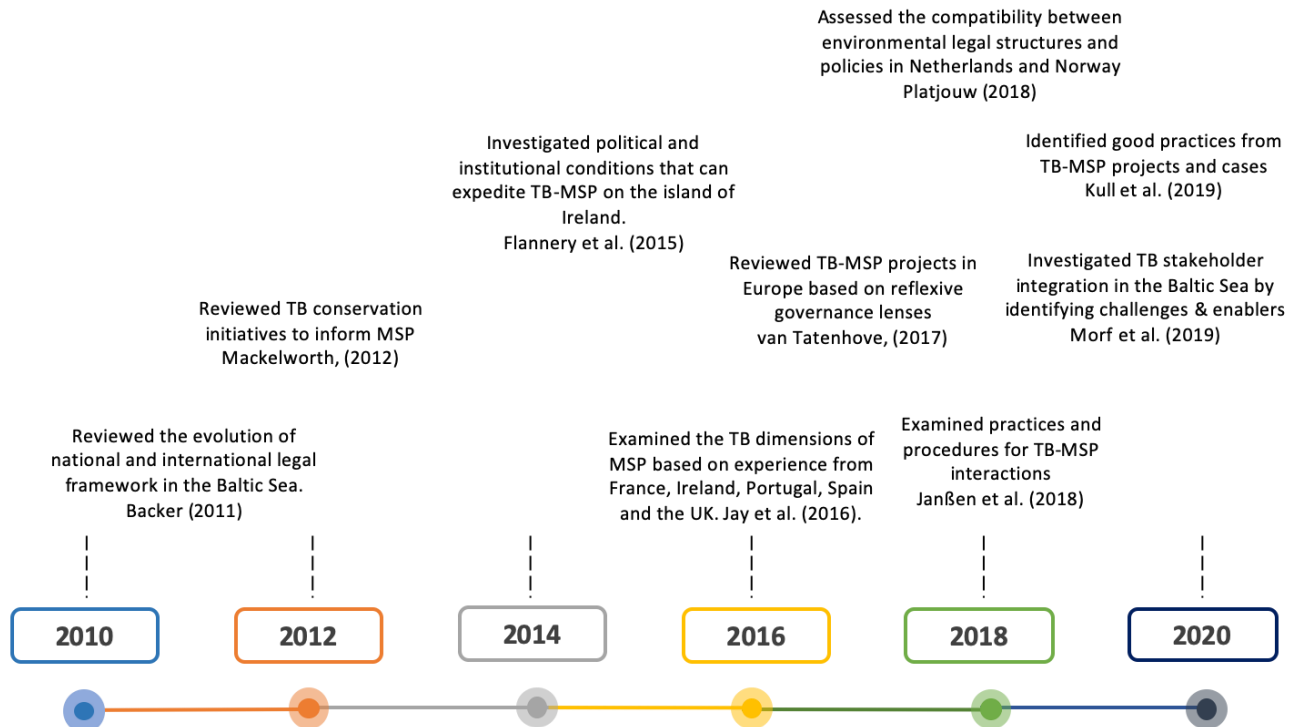207 **Table 1: Reviewed articles on cross-border and transboundary MSP**

No.	Authors &Title	Thematic Consideration		
		Objective/Focus	Conclusion	Recommendation
1	Backer (2011)	Reviewed the evolution of national and international legal framework in the Baltic Sea	Differences in governance arrangements presents challenges	Transparent & open dialogue process
2	Kerr et al. (2014)	Examined land-sea interface as a transboundary area for renewable energy in Scotland	Differing priorities, institutional and legal frameworks make full integration between terrestrial and marine planning impossible	Increased communication, accountability & local stakeholder participation

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[8] Transboundary Planning in the European Atlantic

3	Jay et al. (2016).	Examined the transboundary (TB) dimensions of MSP based on experience from France, Ireland, Portugal, Spain and the UK	Increased focus on understanding governance framework is needed	Enhance interrelations between actors & organisations
4	Mackelworth, (2012)	Reviewed TB conservation initiatives to inform MSP	Combining conservation and economic opportunities can spark political interest	Sustaining governmental and political interest
5	van Tatenhove, (2017)	Reviewed TB-MSP projects in Europe based on reflexive governance lenses	TB-MSP institutional rules are not being challenged	Enhance conditions of rule-altering politics, knowledge production, bordering capabilities
6	Flannery et al. (2015)	Investigated political and institutional conditions that can expedite TB-MSP on the island of Ireland.	Critical to foster cooperation between sub-national actors	MSP remit for an appropriate supranational body
7	Janßen et al. (2018)	Examined practices and procedures for TB-MSP interactions based on the output of the Baltic Scope and BaltSpace Project	Formal transboundary consultations were found to be too focused on environmental issues than other multi-objective issues	Increased institutional capacity and continuous TB engagement
8	Morf et al. (2019)	Investigated TB stakeholder integration in the Baltic Sea by identifying challenges and enablers	Differing institutional settings, vertical integration, limited capacity, awareness and knowledge about MSP, limits transboundary stakeholder integration	Facilitating resources, capacity, TB principles and innovative engagement techniques
9	Kull et al. (2019)	Identified good practices from non-EU transboundary MSP projects and BalticScope project	Different governance structures, disparity between planning systems, differing levels of stakeholder engagement limits TB-MSP	Fit for purpose framework that enables TB dialogue and learning
10	Platjouw (2018)	Assessed the compatibility between environmental legal structures and policies in Netherlands and Norway	Differences in the application of sectoral policies can influence TB-MSP application	Understanding different governance arrangements

208
209
210

Assessed the compatibility between
environmental legal structures and
policies in Netherlands and Norway
Platjouw (2018)

Investigated political and
institutional conditions that can
expedite TB-MSP on the island of
Ireland.
Flannery et al. (2015)

Identified good practices from
TB-MSP projects and cases
Kull et al. (2019)

Reviewed TB-MSP projects in
Europe based on reflexive
governance lenses
van Tatenhove, (2017)

Investigated TB stakeholder
integration in the Baltic Sea by
identifying challenges & enablers
Morf et al. (2019)

Reviewed TB conservation
initiatives to inform MSP
Mackelworth, (2012)

Reviewed the evolution of
national and international legal
framework in the Baltic Sea.
Backer (2011)

Examined the TB dimensions of
MSP based on experience from
France, Ireland, Portugal, Spain
and the UK. Jay et al. (2016).

Examined practices and
procedures for TB-MSP
interactions
Janßen et al. (2018)

| 2010 | 2012 | 2014 | 2016 | 2018 | 2020 |

Figure 2: Timeline of transboundary MSP practice development and institutional issues

The results from our analysis of the above literature illustrates the inductive, national and sea-basin focused nature of transboundary MSP scholarships. Most of the studies have covered the Baltic, North and Irish Sea with other examples in the Western Pacific Ocean and the Antarctic. In effect, deductive studies that presents a more overarching theory and related framework is needed. Secondly, understanding of the co-evolution of institutions and adaptation in a transboundary context has known little reception in MSP research. We proceed to conceptualise our understanding of institutional integration with a transboundary focus in the next section.

4   Theoretical perspectives for developing the evaluation framework

To develop an evaluation framework, inspiration is drawn from three key aspects of institutional integration and transboundary MSP including; interaction between differing planning systems and institutional frameworks, the evolution of organisations and institutions in MSP practice and finally the complex environment and interactions between actors. To promote a deductive understanding of transboundary MSP, we draw from the broad umbrella of the Social Systems Theory and complimentary theoretical lenses that reflect the three key aspects. This is also in

230 response to the systemic and multi-dimensional nature of institutional integration (Kelly et al.,
231 2018 p.27) and the need for integrative capacity for actors to address fragmentation at various
232 governance levels (Vince & Day, 2020; Ansong et al., 2019).
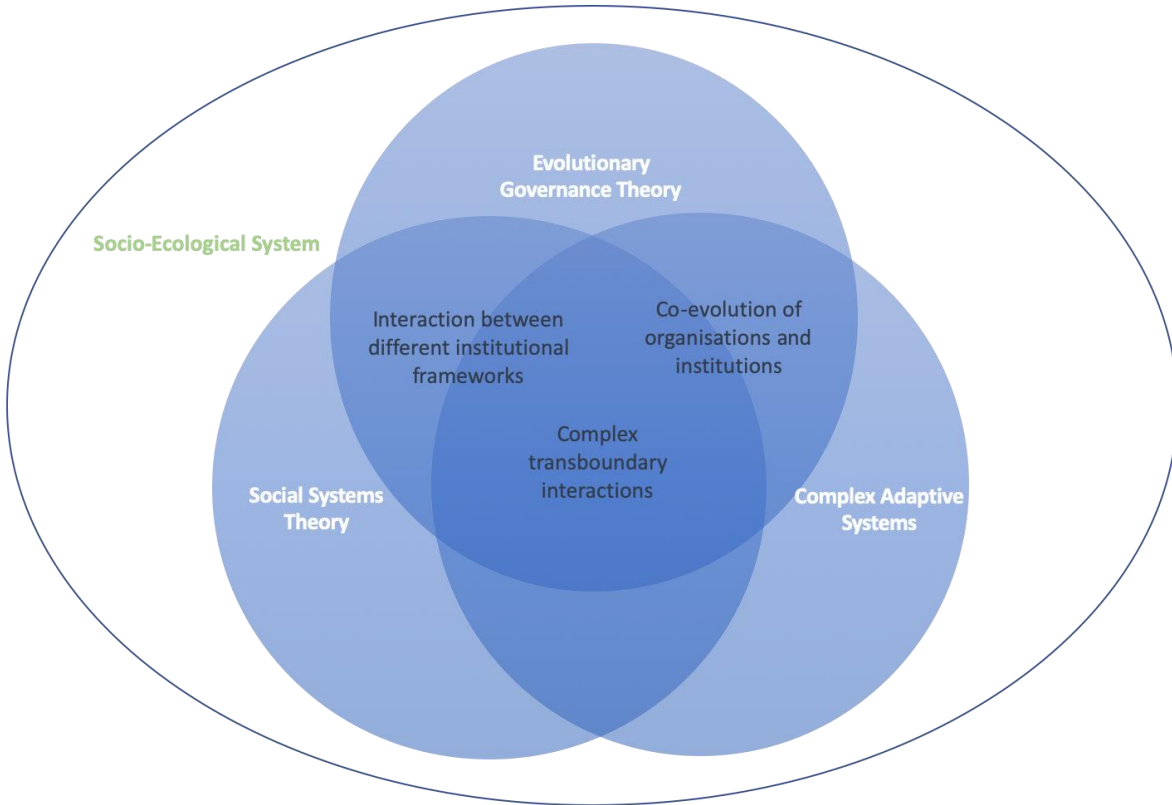
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234 Figure 3: Theoretical framework for institutional integration in transboundary MSP

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236 A hybrid framework is presented from the triangulation of three theories (see Figure 3) as they
237 have similar intellectual origin and are consistent with institutional analysis and framework
238 development by Ostrom (2011). Each of the three aspects and related theoretical lenses are
239 explored in turn below:

240

241 Firstly, transboundary MSP involves coordination between differing planning systems and
242 institutional frameworks including stakeholders, organisations, knowledge, and coordination
243 mechanisms (van Tatenhove ,2017; Flannery, 2015). Luhmann's Social System Theory (SST)[9]

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[9] Niklas Luhmann was one of the first proponent of the social systems theory which is seen as one of the most elaborate theories of society. The theory combines social, communication and evolution theories (Luhmann, 1975) Luhmann's theory focuses on the reconstruction of society by setting a distinction between system and environment

244 provides a useful starting point in understanding institutional integration. Niklas Luhmann wrote
245 that:

246   "Our thesis, namely that there are systems, can now be narrowed down to: there are self-
247   referential systems. This means first of all in an entirely general sense: there are systems
248   that have the ability to establish relations with themselves and to differentiate these
249   relations with their environment" (Luhmann, 1995, p 13).

250

251 Communication and interaction between organisations and institutions under the SST, are seen as
252 autopoietic or self-productive, where actors do not communicate with each other, but about each
253 other (Luhmann, 1995; Van Assche and Verschraegen, 2008). For example, an environmental non-
254 governmental organisation (NGO) will respond to a marine plan based on its organisational
255 function which is the "environmental agenda" but yet, as an organisation it can utilise legal
256 communication (Dom et al., 2019). The NGO will use legal communication when engaging with
257 the courts on objections relating to a marine plan. A ruling by a court that the marine plan and
258 zones does not address environmental legislative commitments is a legal communication.
259 However, this legal communication can have economic repercussions for developers and political
260 precedence for decision makers. This is a common feature of the complexity faced by organisations
261 involved in transboundary MSP who are in constant process of adjustments to different
262 communication from political, economic and legal systems (Jay et al., 2016; Jacobs, 2016). Pemer
263 and Skjølsvik (2018) presents a framework which illustrates the ongoing process of actors
264 engaging in different institutional work and functions. They argue that institutional working
265 unfolds through four waves; initial impact, response, recovery, and stabilisation. This line of
266 thinking is also reflected in the works of Cloutier et al., (2016) and Greenwood et al., (2014) which
267 promote institutional change through discursive processes.

268

269 Understanding institutional integration from the lenses of the SST, affirms the fragmentation
270 experienced in MSP practice due to the national and sector-oriented functions and decision

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by stressing that the significance of system building rests not only on the internal ordering of parts into the broader system but in a system's continuous interactions with its environment. According to Luhmann, the social system is not based on actions or actors as originally proposed by Parson's systems theory, but on communication (autopoietic). The concept of social systems being autopoietic has been critiqued by some academics (Zeleny and Hufford Kay, 1991; Herting and Stein, 2007) who question if indeed social systems can be classified as autopoietic and its importance for planning since human beings/actors are not part of system of society but part of its environment.

making. Institutional integration here is a mutual adaptive process where organisation and actors take notice of economic, legal and political decisions made within and by other organisations. The use of the SST perspective to analyse institutional integration must consider how actors align their activities. Again, collaborative capacity for differing national rationalities, functions and interests should be considered to understand the effectiveness of transboundary MSP.

Secondly, transboundary MSP comprises interactions between organisations under constant changes which forms an evolutionary path and dependencies that influence integration (Clarke and Flannery, 2019; Kelly, 2018). The Evolutionary Governance Theory (EGT)[10] is selected here to conceptualise the evolutionary aspect of transboundary MSP. The basic thesis of EGT holds that decisions and interactions between actors and institutions are shaped by history, contingencies and bygones are rarely bygones (Sydow et al, 2009; Nooteboom, 1997). One of the main proponents of the EGT, Van Assche states that:

> "Governance, the making of and living by collectively binding decisions in any community, is a processual amalgam of the continuous, ever changing, and thus evolutionary interplay of actors, institutions, knowledges and systems of sense-making, in any location and at any point in time" (Van Assche, et. al. 2019, p. 4).

In effect, decisions from the past are likely to influence current decision-making process and the interplay can result in flexibilities and rigidities in governance (Van Assche, et. al. 2019). For example, in Ireland, it is noted that the numerous changes in government departments responsible for the costal and marine issues has led to path dependency and haphazard evolution of institutions which impedes integrated decision making (O'Hagan et al. 2020; Kelly, 2019). These path dependent issues affect the effectiveness to engage a specific department on transnational issue due to loss of institutional memory.

The implication of EGT for analysing institutional integration is that historical context and pre-existing institutional arrangements can affect the outcomes and possibilities for integration. Actors

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[10] EGT offers a framework which is built on social systems theory, post-structuralism, and institutional economics. EGT distinguishes between path dependencies (legacies from the past), interdependencies (dependencies in the present between and within actors and institutions and goal dependencies (impact of visions for the future), together making up the rigidity in contingent governance paths.

300 are embedded in politics and legal frameworks which may have different outlook on why and how
301 MSP works. New forms of integration mechanisms in a transboundary MSP cannot exclude past
302 and existing forms and its evolution (Janßen et al. 2018, p208). The analysis of institutional
303 integration should consider institutional evolution, its impact on decision making as well as how
304 structured interventions have addressed path dependency issues.

305
306 Thirdly, transboundary MSP takes place within a complex, uncertain and constantly changing
307 socio-ecological system (Yawson, 2013). We employ the theory of Complex Adaptive Systems
308 (CAS)[11] to aid our understanding of integration. CAS is defined as open dynamical systems that
309 are able to self-organise their structural components; they are locally controlled and adaptive to
310 external forces (Turner and Baker, 2019). CAS work on the thesis that:

311
312   "Simple systems give rise to complex behaviour and complex systems give rise to simple
313   behaviour" (Gleick, 2008, p. 304).

314
315 Essentially, CAS presents a way of analysing institutions by recognising complexity and
316 interrelationships rather than concentrating on cause and effect. It promotes local institutions as
317 the fulcrum of integration through an evolving network of interactions and relationships
318 (Richardson, 2004). CAS recognises the complexity of modern society and having to deal with
319 wicked problems[12]. For example, cross-border loughs on the island of Ireland (Flannery et al.,
320 2015; Ritchie et al., 2019) and the Pomeranian Bay between Germany and Poland (Zaucha, 2014
321 and Giacometti et al. 2017) have to deal with wicked problems such as disputed borders and
322 unclear remits of regulatory bodies.

323
324 The relevance of the CAS for our conception of institutional integration is the need to understand
325 how actors deal with constant and complex changes in the socio-ecological system. Variables such

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[11] Proponents of CAS critique SST as being as unable to address modern complexity and non-linear systems such as the marine ecosystem (Yawson, 2013). Unlike the SST, CAS asserts that the whole system is different from the sum of its parts and their interactions (Richardson, 2004). It is based on 8 tenets including: path dependence, non-linearity, emergence, operates between order and chaos, irreducible, self-organising, systems have history and adaptiveness.

[12] Wicked problems are complications that are indeterminant and uncertain in their formulation and solution between actors with conflicting values (McCall and Burge, 2016)

326 as self-action and learning between local actors and communities in transboundary areas need to

327 be understood as part of efforts in addressing fragmentation at multiple governance levels.

328

329 Combining these three theories presents the following to understand institutional integration,

330 firstly institutional integration is a balancing act of complex activities, interrelationships and

331 decisions as actors co-evolve through various stages overtime secondly. Contingencies can

332 influence the activities and work of actors and finally. capacity dimensions inform how actors

333 adapt to decisions and contingencies. In the next section we use these findings to construct our

334 framework on institutional integration.

335 **5   The Wheel of Institutional Integration for Transboundary MSP**

336 The literature discussed and cited above provides the foundation to formulate an evaluation

337 framework for institutional integration in a transboundary context. We firstly identify the stages

338 of institutional integration and then the common dimensions that can influence activities at each

339 stage (Ostrom 2011, p 9).

340 *5.1   Stages of Institutional Integration*

341 Review of literature (see Section 4) shows that adaptation between institutions and actors is a

342 process of continuous observation, learning and response at national, regional and local levels.

343 Following Pemer and Skjølsvik (2018), we adapt the four waves of institutional work to consider

344 its application in a transboundary context called the Wheel of Institutional Integration (Figure 4).

345 To describe how the integration process, actors and their activities evolve over time, we use the

346 metaphor of the wheel. Each section describes a stage and a set of related institutional activities

347 and practices (Table 2). However, set of practices and activities from the previous stage or section

348 of the wheel do not necessarily replace the new ones, they can coexist, switch between stages,

349 some given prominence over the other and not all practices listed are deemed to happen in all cases

350 (Greenwood et al. 2011). The stages and related activities with examples are explained below.
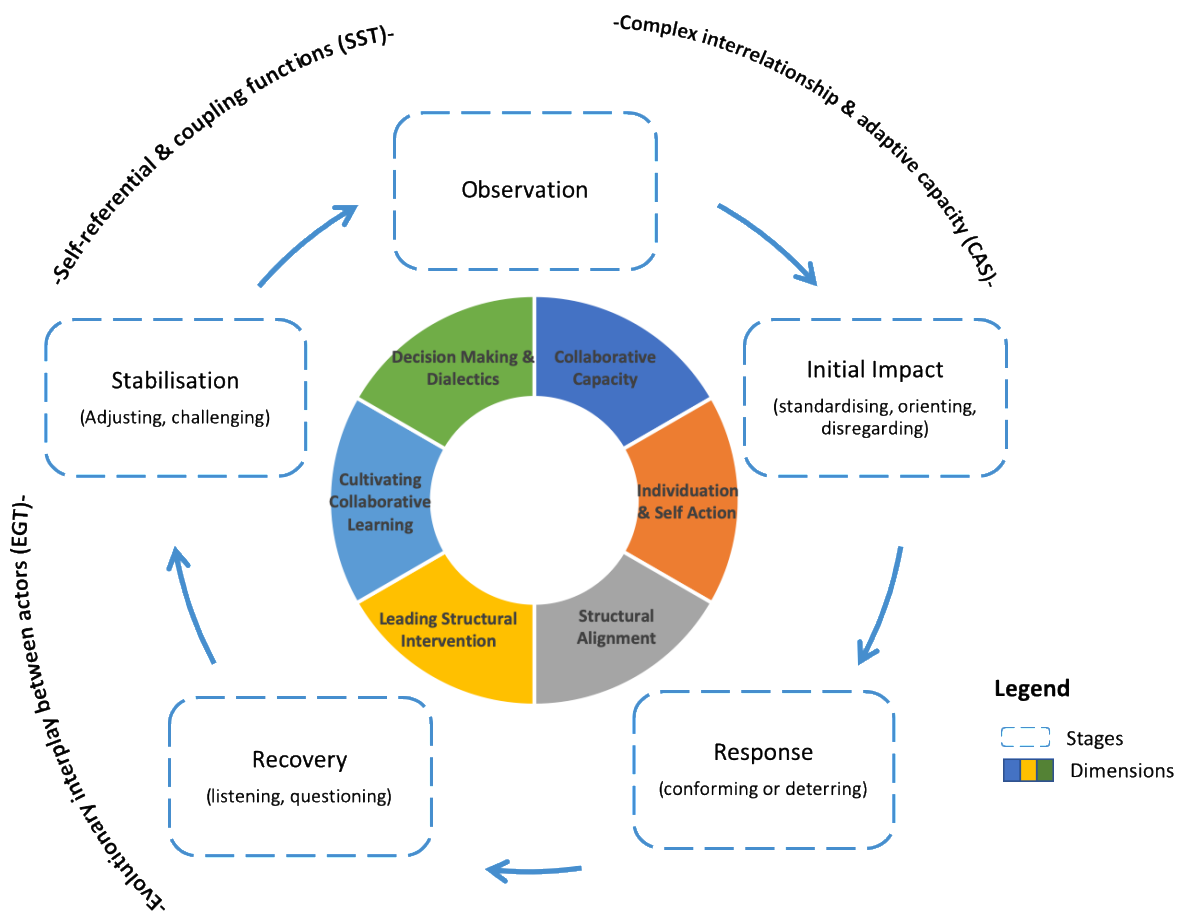
Figure 4: The Wheel of Institutional Integration for Transboundary MSP; adapted from Pemer and Skjølsvik (2018)

The first stage on the wheel is *Observation*, where actors observe a transnational policy or neighbouring country's planning decision which causes an institutional shock to respond with regulatory changes such as establishing a marine planning authority. At this stage it is envisaged that there is limited transboundary collaboration between actors at different governance levels on MSP. This stage and related activities were prominent when the EU MSP Directive 2014/89/EU was first introduced. Its introduction included requirements for a marine planning authority to be set up and ensure transboundary cooperation during preparation of marine plans. Member States started considering approaches and mechanisms for adopting the Directive into national legislative frameworks and mechanisms for transboundary cooperation.

363 The second stage causes an *Initial Impact*, where there is sparse collaboration between
364 transboundary actors. At this stage, actors are involved in preparation and discussions to
365 standardise decisions into national institutional frameworks. However, knowledge exchange
366 between actors is limited. Organisations leading and supporting MSP start understanding different
367 transboundary requirements for MSP, approaches used for MSP by neighbouring countries, and
368 platforms for engagement on MSP. However, some actors might show reluctance or disregard at
369 this stage to ratify transnational or regional agreements and decisions. The Coral Triangle Initiative
370 on Coral Reefs, Fisheries, and Food Security (CTI-CFF)[13] can be considered as an example of this
371 stage and some of the expected issues. During the inception phase of the CTI-CFF, it was evident
372 that some of the Member Parties were reluctant to ratify the Regional Plan of Action due to changes
373 in government ministers and limited experience of some national actors in engaging at a
374 transnational level (Thomas et al., 2017, p. 42)

375

376 The third stage entails a *Response* where there is closed transboundary dialogue but mainly at an
377 inter-organisational level. It is envisaged that actors will show signs of conforming to
378 transboundary agreements and requirements by establishing platforms for coordination at a high
379 level. For instance, an inter-organisational marine planning group was formed in 2018 for
380 jurisdictions in the Irish Sea. The group consisted of senior policy and planning officials from the
381 six marine planning authorities of Ireland, Northern Ireland, England, Scotland, Wales and the Isle
382 of Man. The group met on a 6-monthly basis and served as a platform to discuss latest
383 developments in terms of national plans and planning-related issues of mutual concern or interest
384 (DPHLG, 2018 p 23).

385

386 At the *Recovery stage*, there are signs of open dialogue between transboundary actors. Actors will
387 start listening to each other and questioning existing approaches, mechanism for coordination and
388 planning process. It is envisaged that this might lead to new partnerships especially between local
389 stakeholders. Coastal Planning Partnerships that cover border areas between England and Scotland
390 are examples of this stage. Partnerships' such as the Solway Firth Partnership and North West
391 Coastal Forum were used as forums to gather the views of local stakeholders and users in cross-

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[13] The CTI-CFF is a multi-lateral treaty partnership between Indonesia, Malaysia, Papua New Guinea, Philippines, Solomon Islands and Timor-Leste to collaborate and address marine issues such as food security, climate change and marine biodiversity.

392　border areas as part of the preparation of the English North-West Plans[14]. During such forums
393　there were discussions about how to evolve the Solway Firth Partnership into a Marine Planning
394　Partnership to prepare a regional plan for the Scottish side of the firth (Baruah et al., 2017).
395
396　The fifth stage is *Stabilisation* which involves increased knowledge sharing, stakeholder
397　networking, specialised expertise and development of specific transboundary MSP guidelines. At
398　this stage transboundary institutional collaboration is more advanced and there is increased
399　alignment between actors. The HELCOM-VASAB MSP Working Group in the Baltic Sea and the
400　introduction of the Guidelines on Transboundary MSP Consultation is an example of this stage
401　(HELCOM-VASAB, 2016). Such mechanisms and related activities have been used to promote a
402　sea-basin wide thinking and facilitate coherent planning. Again, projects such as Capacity4MSP[15]
403　in the Baltic are examples of this stage where practical collaboration and capacity are promoted
404　through dialogue and knowledge exchange.
405
406　These stages are however influenced by dimensions that are discussed in the next section.
407
408　**Table 2: Stages and Characteristics of Institutional Integration**
409

No.	Stages	Institutional practices and activities
1	Observation	• Lack of transboundary collaboration between actors on MSP
2	Initial Impact	• Sparse collaboration between transboundary actors • Knowledge centralisation • Skewed power balance towards high level organisations
3	Response	• Limited interorganisational transboundary collaboration • Closed dialogue process • Limited expertise and capacity for transboundary MSP
4	Recovery	• Open transboundary dialogue process • Partnerships between transboundary actors especially local stakeholders
5	Stabilisation	• Networking between different actors and knowledge sharing • Local actor representation • Platform to engage less powerful stakeholders' • Specialised expertise • Development of transboundary guidelines and principles

410

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[14] https://marinedevelopments.blog.gov.uk/2018/03/05/marine-planning-iteration-workshops-consultation/
[15] https://vasab.org/project/capacity4msp/

411 ## *5.2 Dimensions of Institutional Integration*
412
413 Following methodological implications suggested by (Van Asche et al., 2014, p.5), we selected
414 the main structural variables that are common to analyse institutional arrangements but whose
415 values differ from one organisation to the other. However, these are not all the dimensions that
416 could influence institutional work, practices and activities at each of the stages. These are thematic
417 means to explore specific barriers or enablers influencing actor's ability to coordinate with other
418 decisions. They include: structural alignment, individuation and self-oriented action, decision
419 making and dialectics, cultivating collaborative learning, leading structured intervention and
420 collaborative capacity.
421
422 ### *5.2.1 Structural Alignment*
423
424 Structural Alignment[16] include the elements and resources for institutional frameworks across
425 borders to be coherent in the management of marine ecosystem. Epstein et al. (2015) and Guerrero
426 et al., (2015) contend that institutions are likely to succeed or fail in relation to how they are
427 matched with each other and the characteristics of the ecosystem. This dimension is chosen to
428 understand how actors managing shared ecosystems align with decision made by other actors. This
429 is noted within transboundary MSP discourse; van Tatenhove (2017) argues that coherence
430 between discourse that actors use, and governance arrangements are means to influence
431 institutions. The CTI-CFF as a transboundary partnership uses Regional and National Plans of
432 Action as mechanisms to align transboundary discourse between Member States of the Coral
433 Triangle region (Carneiro et al., 2017). However, the level and minimum requirement for
434 alignment should be defined and monitored to ensure that such mechanisms are effective for
435 transboundary institutional integration.
436
437 ### *5.2.2 Individuation and Self-oriented action*
438
439 Individuation and self-oriented action involve the creation of an environment for local actors to
440 develop their own plans, influence policy and manage resources. Flannery et al. (2015) advocated
441 for understanding how both sub-national and local institutions could aid the implementation of

---

[16] Two types of alignment are identified; strategic alignment (coherence of strategies, policies and interests) and organisational alignment (coherence of administrative and institutional arrangement especially at regional and local level).

442 transboundary MSP. This dimension is chosen in order to analyse how actors especially local

443 stakeholders organise themselves to influence existing institutions. Marine plans developed by

444 First Nations in Canada is an example of self-oriented action where indigenous communities used

445 traditional knowledge to develop local marine plans. The Haida Gwaii traditional territory for

446 example structured their plan around their distinct culture, ethical values and principles[17] nested

447 with regional and sub-regional plans (Jones et al., 2010). Such initiatives give actors the autonomy

448 to mobilise, define problem, objectives and challenge the policy domain.

449

450 *5.2.3   Decision making and dialectics*

451

452 The outcomes of transboundary MSP are influenced by the evolution between actors and

453 institutions through a dialectic process[18]. Legacies from the past have been noted as influencing

454 effective implementation of first generation plans in a positive and negative manner (Kelly, 2019)

455 This dimension is chosen to analyse the evolutionary interplay between actors and understand how

456 institutional transformation can be negotiated, debated, and endorsed through MSP (Tafon et al.,

457 2019; Flannery et al., 2019). For instance, in Britain, coastal partnerships established before MSP

458 have played a positive role in engaging different marine stakeholders between England and

459 Scotland on MSP (Baruah et al., 2017). It critical that some of these informal mechanisms are

460 examined to understand their contribution to transboundary marine governance arrangements.

461

462 *5.2.4   Cultivating Collaborative Learning*

463

464 The collaborative discovery of knowledge, ideas, practices and learning[19] (local, indigenous and

465 scientific) and the propensity of its cultivation plays a critical role in ensuring that actors adapt to

466 each other through sustained multi-level interaction. Keijser et al., (2020) argues that there is a

467 'learning paradox' in MSP and highlights the limited attention it has received in practice. This

468 dimension is selected to address this knowledge gap and analyse how actors collaborate to generate

469 and share knowledge. In Indonesia, bridging organisations including Reef Check Indonesia, a

---

[17] Including respect, responsibility, balance, seeking wise counsel, reciprocity and interconnectedness

[18] Dialectics is defined as a process whereby formal and informal institutions transform each other including their functioning, form and space (Van Assche, 2014).

[19] Two types of organisational learning are identified: explorative and exploitation learning. Explorative learning is where the development and use of knowledge leads to innovative changes in the actions and behaviour of an organisation whiles exploitation learning leads to incremental changes based on old certainties (Greve, 2017; March, 1991).

470 national NGO played a critical role in directing the flow of knowledge between organisations in
471 the development of multi-use zoning plan for the Nusa Penida Marine Protected Area (MPA)
472 (Armitage et al., 2017; Berdej and Armitage, 2016). However, evaluation of learning should
473 consider power processes about who is included and excluded in transboundary MSP.

474
475 *5.2.5   Leading Structured Intervention*
476
477 Leadership is critical in channelling proactive and deliberate interventions to change entrenched
478 power relations and path dependency. Armitage et al. (2017) identifies leadership as one of the
479 enabling conditions to instigate change in institutional processes. This dimension was selected to
480 explore how path dependent issues are addressed to bring about transformative change. In Norway,
481 active political leadership was one of the success criteria that changed a fragmented sector-led
482 management to a whole government approach for implementing the Barents Sea Management Plan
483 (Sander, 2018). The delegation of national planning remits without the political will to address
484 transboundary issues such as disputed borders limited efforts towards EBM and continued
485 transboundary working relations (Ansong et al., 2017). This calls for leadership by building trust,
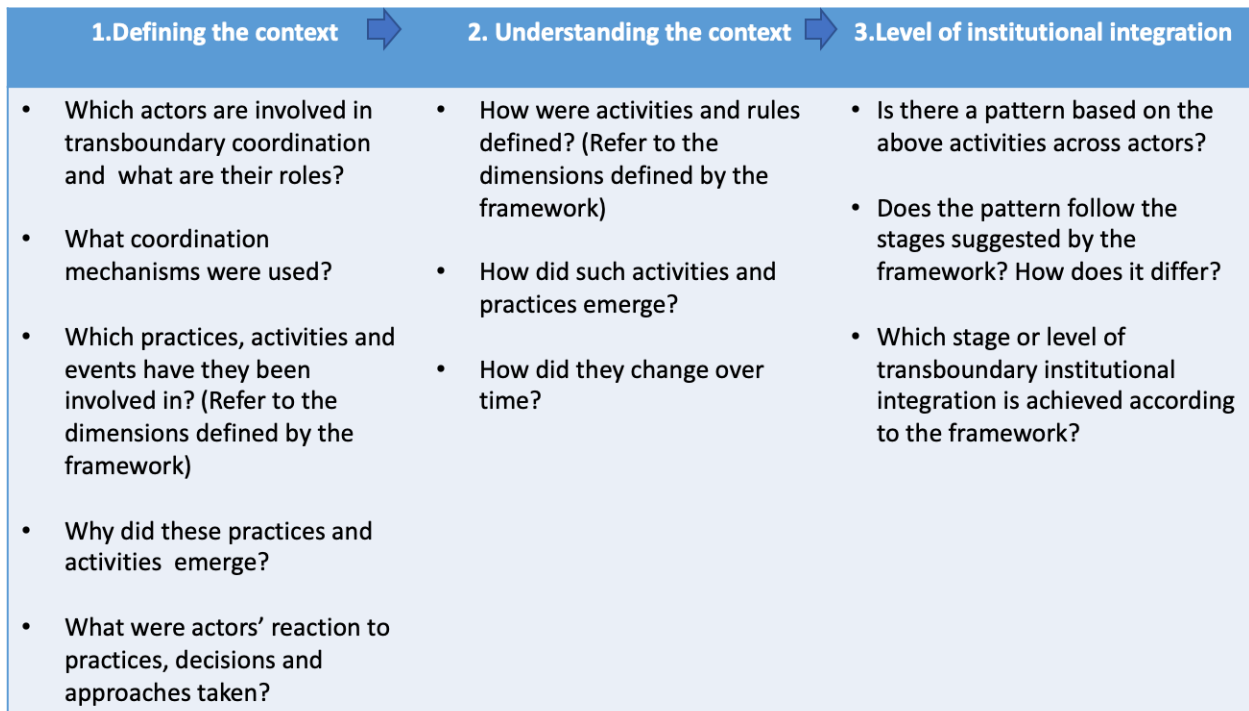486 transparency and managing conflicts between actors especially in cross-border communities.

487
488 *5.2.6   Collaborative Capacity*
489
490 Collaborative capacity is the ability (through foresight, incentives, resources, legal and
491 administrative processes) to foster multi-level collaboration (Kidd and McGowan, 2013). Other
492 MSP authors have referred to it as 'bordering capabilities' to formulate a common regional
493 position on MSP (see van Tatenhove ,2017 and Sassen, 2009). This dimension has been selected
494 to understand the ability for transnational actors to undertake roles to formulate and agree on
495 regional positions based on existing collaboration structures. For instance, the Northern Shelf bio-
496 regional MSP governance structure in Canada was designed so that regional and sub-regional
497 actors provided technical capacity and oversight for local marine planners and community
498 technical committees. This was facilitated by a Memorandum of Understanding (MoU) that pushed
499 for cross-jurisdictional planning between first nations, provincial and federal government (Jones
500 et al., 2010).

501 **6   Potential Application of the Wheel of Institutional Integration**

502   The critical and urgent question that this framework can address is: to what extent are
503   transboundary and regional actors, and institutions adapting or adopting transboundary
504   cooperation requirements and decisions? In answering this question and operationalising the
505   framework, we suggest a three-step process and questions to be used by planners and practitioners
506   especially in the social science field in understanding institutional processes for MSP at multi-
507   levels of governance (Figure 5).

508

1. Defining the context	2. Understanding the context	3. Level of institutional integration
• Which actors are involved in transboundary coordination and what are their roles? • What coordination mechanisms were used? • Which practices, activities and events have they been involved in? (Refer to the dimensions defined by the framework) • Why did these practices and activities emerge? • What were actors' reaction to practices, decisions and approaches taken?	• How were activities and rules defined? (Refer to the dimensions defined by the framework) • How did such activities and practices emerge? • How did they change over time?	• Is there a pattern based on the above activities across actors? • Does the pattern follow the stages suggested by the framework? How does it differ? • Which stage or level of transboundary institutional integration is achieved according to the framework?

509   Figure 5: Evaluation questions to guide the operationalisation of the framework

510
511   These questions and the dimensions identified above should be used to tease out institutional
512   activities, the resulting patterns of interactions and outcomes. Data analysis from such questions
513   with the use of the framework should aid visualising which stage of institutional integration has
514   been achieved. Specifically, the framework can be applied in a pre and post-evaluation manner
515   under the following context:

516
517   1. *Pre-evaluation*: It can be applied at the pre-planning stage of the marine plan preparation
518   process to appreciate existing and potential institutional challenges and opportunities for
519   transboundary MSP. Here, previous transboundary initiatives and projects can be
520   considered to understand institutional processes. The results from such an analysis should

521 give an understanding of the level of institutional integration and how new initiatives can
522 adapt and advance institutional procedures. Again, before starting a transboundary MSP
523 initiative and project, the dimensions can be used to evaluate how organisation and actors
524 interact across borders. This should inform how to adapt existing mechanisms for effective
525 coordination.
526
527 2. *Post-evaluation:* In Europe, Member States are at various stages of finalising maritime
528 spatial plans with all plans expected to be established and published latest by 31st March
529 2021. This framework can serve as a tool in analysing the effectiveness of transboundary
530 institutional engagement. It would be valuable in evaluating transboundary institutions
531 practices since the introduction of the EU MSP Directive 2014/89/EU.
532
533 However, the framework should be used with the understanding that activities and their outcomes
534 evolve and manifest themselves over time. Some activities may emerge even before the discussion
535 about MSP. Data collected should consider historical activities and current outcomes to have a
536 thorough understanding of how actors are implementing MSP and transboundary requirements.
537 Furthermore, the framework is developed on the assumption that there is a common regional
538 directive and policy that national organisations and actors are supposed to adopt or adapt into
539 existing national framework. Nevertheless, the framework is still relevant even in cases where
540 there is no regional MSP directive as there are other international and regional marine legislation
541 and strategies such as ICZM that follow similar pattern and coordination between actors.

542 **7   Conclusion and Next Steps**

543 We have reviewed recent literature to understand existing knowledge and gaps have been raised
544 in academia and experienced by practitioners in relation to how institutional complexity impedes
545 transboundary MSP. The review illustrated that more deductive studies on transboundary MSP are
546 needed to understand how institutions can facilitate effective transboundary integration (Saunders
547 et al 2019, Kelly,2018). Based on our analysis of current literature we make two contributions to
548 existing knowledge: firstly, we define our understanding of institutional integration in a
549 transboundary context and secondly, we develop an evaluation framework based on theoretical
550 perspectives to analyse institutional integration. The framework combines the stages of

institutional adaptation (observation, initial impact, response, recovery and stabilisation) and dimensions that influence the stages (structural alignment, self-oriented actions, learning, collaborative capacity and decision-making dialectics). This is just an initial step in building the framework. There is room to extend this line of thinking and the utility of the framework by:

1. Expanding the set of institutional practices and activities at each stage of the wheel after empirical research, and
2. Expanding the dimensions which are currently theoretically derived, based on key variables identified. The operationalisation of the framework in practice should inform which dimensions are influencing institutional integration to allow generalisability.

Finally, there is the need for detailed case studies to help elaborate the issues and challenges of transboundary MSP as indicated through the framework. Some of the issues raised by the framework have been endorsed by other MSP authors. For instance, Kelly et al (2018) have called for the need for systems and institutional analysis in MSP. Co-evolution between actors and its influence has already been highlighted by Van Asche et al. (2019) and O'Hagan et al. (2020). This paper responds to these calls and promotes a deductive understanding of transboundary MSP. By presenting a broader theoretical perspective, this framework can be adapted to different contexts and can explore detailed cases on institutional working. European and non-European transboundary MSP examples are also presented to show possible context of application and guide any case specific evaluation.

Acknowledgements

References

Ansong, J., Calado, H. & Gilliland, P.M. (2019). A Multifaceted Approach to Building Capacity for Marine/Maritime Spatial Planning Based on European Experience. *Marine Policy*, Article ID: 103422. (In Press) https://doi.org/10.1016/j.marpol.2019.01.011

Ansong, J., Gissi, E., & Calado, H. (2017). An approach to ecosystem-based management in maritime spatial planning process. *Ocean and Coastal Management*, 141, 65–81. https://doi.org/10.1016/j.ocecoaman.2017.03.005

Armitage, D., Charles, A.T., & Berkes F. (2017). Governing the Coastal Commons: Communities, Resilience and Transformation. Routledge, Taylor & Francis Group

Backer, H. (2011). Transboundary maritime spatial planning: A Baltic sea perspective. *Journal of Coastal Conservation*, 15(2), 279-289. doi:10.1007/s11852-011-0156-1

Baruah, E.L., Fairgrieve, R. & Haddon, P. (2017). Report on Sectoral Interactions around the Solway Firth in relation to marine planning. Supporting Implementation of Maritime Spatial Planning in the Celtic Seas (SIMCelt). Marine Scotland. 84pp.

Berdej S.M & Armitage D.R. (2016) Bridging Organisations Drive Effective Governance Outcomes for Conservation of Indonesia's Marine Systems. *PLOS ONE* 11(1): e0147142. https://doi.org/10.1371/journal.pone.0147142

Boucquey, N., Fairbanks, L., St. Martin, K., Campbell, L. M., & McCay, B. (2016). The ontological politics of marine spatial planning: Assembling the ocean and shaping the capacities of 'Community' and 'Environment'. *Geoforum*, 75, 1-11. doi:10.1016/j.geoforum.2016.06.014

Carneiro, G.; Thomas, H.; Olsen, S.; Benzaken. D.; Fletcher, S.; Méndez Roldán, S. & Stanwell-Smith, D. (2017). Cross-border cooperation in Maritime Spatial Planning. Final report: Study on International Best Practices for Cross-border MSP. Luxembourg: *Publications of the European Union*, 109pp. DOI: 10.2826/28939

Clarke, J., & Flannery, W. (2019). The post-political nature of marine spatial planning and modalities for its re-politicisation. *Journal of Environmental Policy and Planning*, doi:10.1080/1523908X.2019.1680276

Cloutier, C., Denis, J.,L., Langley, A., & Lamothe, L. (2016).Agency at the Managerial Interface: Public Sector Reform as Institutional Work, *Journal of Public Administration Research and Theory*, Volume 26, Issue 2, , Pages 259–276, https://doi.org/10.1093/jopart/muv009

Department of Housing Planning and Local Government (2019). National Marine Planning Framework Consultation Draft. Available at: https://www.housing.gov.ie/sites/default/files/public-consultation/files/draft_national_marine_planning_framework_final.pdf

Dickinson, M., Rutherford, M. & Gunton T. (2010). Principles for integrated marine planning: a review of international experience. *Environments* 37 (3): 21–47.

Dom, A., Belin, A., Hafdelin N. (2019). A guide to maritime spatial planning with nature in mind.

Ehler C., Zaucha J., Gee K. (2019) Maritime/Marine Spatial Planning at the Interface of Research and Practice. In: Zaucha J.,Gee K. (eds) Maritime Spatial Planning. *Palgrave Macmillan*, Cham

Epstein, G., Pittman, J. Alexander, S. M., Berdej, S., Dyck, T., Kreitmair, U., Raithwell, K. J., Villamayor-Tomas, S., Vogt, J. & Armitag, D. (2015). Institutional fit and the sustainability of

social-ecological systems. *Current Opinion in Environmental Sustainability* 14:34-40. http://dx.doi.org/10.1016/j.cosust.2015.03.005

Fairbanks, L., Boucquey, N., Campbell, L. M., & Wise, S. (2019). Remaking oceans governance: Critical perspectives on marine spatial planning. *Environment and Society: Advances in Research*, 10(1), 122-140. doi:10.3167/ares.2019.100108

Flannery, W., Clarke, J., & McAteer, B. (2019). Politics and power in marine spatial planning. Maritime spatial planning: Past, present, future (pp. 201-217) doi:10.1007/978-3-319-98696-8_9

Flannery, W., Healy, N., & Luna, M. (2018). Exclusion and non-participation in marine spatial planning. *Marine Policy*, 88, 32-40. doi:10.1016/j.marpol.2017.11.001

Flannery, W., O'Hagan, A. M., O'Mahony, C., Ritchie, H., & Twomey, S. (2015). Evaluating conditions for transboundary marine spatial planning: Challenges and opportunities on the island of Ireland. *Marine Policy*, 51, 86-95. doi:10.1016/j.marpol.2014.07.021

Gee, K., Lukic, I., Schultz-Zehden, A., Ooms, E., Ansong, J.O., & Passerello, C. (2019). Addressing conflicting spatial demands in MSP. Considerations for MSP planners: final technical study. Available at: https://op.europa.eu/en/publication-detail/-/publication/8971ab22-8285-11e9-9f05-01aa75ed71a1/language-en/format-PDF/source-98582084

Giacometti, A., Moodie, J. Kull M., & Morf A. (2017). Coherent Cross-border Maritime Spatial Planning for the Southwest Baltic Sea - Results from Baltic SCOPE. Available at: http://www.balticscope.eu/content/uploads/2017/03/BalticScope_CB_report_WWW-fin.pdf

Gleick, J. (2008) Chaos: Making a New Science; Penguin Books: New York, NY, USA, ISBN 0143113453.

Greve, H. R. (2017). Organizational learning and adaptation. In *Oxford Research Encyclopedia of Business and Management*. Oxford University Press USA. doi: DOI:10.1093/acrefore/9780190224851.013.138

Greenwood, R., Hinings, C.R, & Whetten D. (2014). Rethinking institutions and organizations. *Journal of Management Studies* 51:1206–20.

Guerrero, A. M., Bodin, Ö. R., McAllister, R. J, & Wilson, K. A. (2015a). Achieving social-ecological fit through bottom-up collaborative governance: an empirical investigation. *Ecology and Society* 20(4):41. http://dx.doi.org/10.5751/ES-08035-200441

Hassler, B. Saunders, F. Stalmokaite, I. Gilek, M. Morf, A. Luttman, A. Strand H., Zaucha, J. & Gee K. (2018). Collective action and agency in Baltic Sea marine spatial planning: transnational policy coordination in the promotion of regional coherence. *Mar. Policy*, 92, pp. 138-147

HELCOM-VASAB (2016) Guidelines on transboundary consultations, public participation and cooperation. Available online: https://helcom.fi/media/documents/Guidelines-on-transboundary-consultations-public-participation-and-co-operation-_June-2016.pdf

Herting, S, & Stein, L (2007) The evolution of Luhmann's systems theory with focus on the constructivist influence. International Journal of General Systems 36: 1–17.

Iglesias-Campos, A., Meiner, A., Bowen, K., & Ansong, J.O. (2015). Coastal Population and Land Use Changes in Europe: Challenges for a Sustainable Future. Coastal Zones: Solutions for the 21st Century, pp. 29-49

Jacobs, J. (2016). Spatial planning in cross-border regions: A systems-theoretical perspective. *Planning Theory*, 15(1), 68–90.

Janßen, H., Varjopuro, R., Luttmann, A., Morf, A., Nieminen, H. (2018). Imbalances in interaction for transboundary marine spatial planning: Insights from the baltic sea region. *Ocean and Coastal Management*, 161, 201-210. doi:10.1016/j.ocecoaman.2018.05.008

Jay, S., Alves, F. L., O'Mahony, C., Gomez, M., Rooney, A., Almodovar, M., & Campos, A. (2016). Transboundary dimensions of marine spatial planning: Fostering inter-jurisdictional relations and governance. *Marine Policy*, 65, 85-96. doi:10.1016/j.marpol.2015.12.025

Jentoft, S. (2017). Small-scale fisheries within maritime spatial planning: knowledge integration and power, *Journal of Environmental Policy & Planning*, 19:3, 266-278, DOI: 10.1080/1523908X.2017.1304210

Jones, R., Rigg, C., Lee L. (2010). Haida marine planning: First Nations as a partner in marine conservation. *Ecology and Society* 15(1): 12. [online] Available at: http://www.ecologyandsociety.org/vol15/iss1/art12/

Keijser, X., Toonen, H., van Tatenhove, J. (2020). A "learning paradox" in maritime spatial planning. Maritime Studies. https://doi.org/10.1007/s40152-020-00169-z

Keijser, X., Ripken, M., Mayer, I., Warmelink, H., Abspoel, L., Fairgrieve, R., & Paris, C. (2018). Stakeholder engagement in Maritime Spatial Planning: The efficacy of a serious game approach. Water (Switzerland), 10(6), [724]. https://doi.org/10.3390/w10060724

Kelly, C., Ellis, G. & Flannery, W. (2019) Unravelling Persistent Problems to Transformative Marine Governance. *Front. Mar. Sci.* 6:213. doi: 10.3389/fmars.2019.00213

Kelly, C., Ellis, G., & Flannery, W. (2018). Conceptualising change in marine governance: Learning from Transition Management. *Marine Policy*, 95, 24-35. https://doi.org/10.1016/j.marpol.2018.06.023

Kerr, S., Johnson, K., & Side, J. C. (2014). Planning at the edge: Integrating across the land sea divide. *Marine Policy*, 47, 118-125. doi:10.1016/j.marpol.2014.01.023

Kidd, S. (2007). Towards a Framework of Integration in Spatial Planning: An Exploration from a Health Perspective, Planning Theory & Practice, 8:2, 161-181, DOI: 10.1080/14649350701324367

Kidd, S., Mc Gowan, L. (2013) Constructing a ladder of transnational partnership working in support of marine spatial planning: thoughts from the Irish Sea. *J. Environ. Manag.*, 126 pp. 63-71

Kidd, S., Calado, H., Gee, K., Gilek, M., & Saunders, F. (2020). Marine Spatial Planning and sustainability: Examining the roles of integration - Scale, policies, stakeholders and knowledge. *Ocean and Coastal Management*, 191

Kull, M., Moodie, J. R., Thomas, H. L., Mendez-Roldan, S., Giacometti, A., Morf, A., & Isaksson, I. (2019). International good practices for facilitating transboundary collaboration in marine spatial planning. *Marine Policy*, doi:10.1016/j.marpol.2019.03.005

Luhmann, N. (1995). Social Systems. Stanford, CA: *Stanford University Press*

Luhmann. N. (1975). "Systemtheorie, Evolutionstheorie und Kommunikationstheorie", in: Soziologische Gids 22 3. pp.154–168

Mackelworth, P. (2012). Peace parks and transboundary initiatives: Implications for marine conservation and spatial planning. *Conservation Letters*, 5(2), 90-98. doi:10.1111/j.1755-263X.2012. 00223.x

March, J. G. (1991). "Exploration and exploitation in organizational learning." *Organization Science,* 2: 71-87

McCall, R., & Burge, J. (2016). Untangling wicked problems., Artif. Intell. Eng. Des. Anal. Manuf. 30, 200–210. doi:10.1017/s089006041600007x

Moodie, J.R. Kull, M. Morf, A. Schroder, L. & Giacometti A. (2019). Challenges and enablers for transboundary integration in MSP: practical experiences from the Baltic Scope project
Ocean Coast Manag., 177 pp. 1-21

Morf, A., Moodie, J., Gee, K., Giacometti, A., Kull, M., Piwowarczyk, J., . . . Strand, H. (2019). Towards sustainability of marine governance: Challenges and enablers for stakeholder integration in transboundary marine spatial planning in the Baltic sea. *Ocean and Coastal Management*, 177, 200-212. doi:10.1016/j.ocecoaman.2019.04.009

Moroni, S. (2010). An evolutionary theory of institutions and a dynamic approach to reform. *Planning Theory*, 9(4), 275–297. https://doi.org/10.1177/1473095210368778

Nooteboom, B. (1997). Path dependence of knowledge: Implication for the theory of the firm. In L. Magnusson & J. Ottosson (Eds.) *Evolutionary economics and path dependence*: 57–78. Cheltenham, UK: Edward Elgar.

O'Hagan, A.M., Paterson, S. & Tissier, M.L. (2020). Addressing the tangled web of governance mechanisms for land-sea interactions: Assessing implementation challenges across scales. *Marine Policy*, 112

Ostrom E. (2011) Background on the institutional analysis and development framework. *Policy Stud.* J., 39 (1), pp. 7-27

Papageorgiou, M., & Kyvelou, S. (2018). Aspects of marine spatial planning and governance: Adapting to the transboundary nature and the special conditions of the sea. *European Journal of Environmental Sciences*, 8(1), 31-37. doi:10.14712/23361964.2018.5

Pemer, F. & Skjølsvik, T. (2018). Adopt or Adapt? Unpacking the Role of Institutional Work Processes in the Implementation of New Regulations, *Journal of Public Administration Research and Theory*, Volume 28, Issue 1, pp.138–154, https://doi.org/10.1093/jopart/mux020

Portman, M. E. (2011). Marine spatial planning: achieving and evaluating integration, *ICES Journal of Marine Science*, Volume 68, Issue 10, November Pages 2191–2200, https://doi.org/10.1093/icesjms/fsr157

Platjouw, F. M. (2018). Marine spatial planning in the North Sea-are national policies and legal structures compatible enough? the case of Norway and the Netherlands. *International Journal of Marine and Coastal Law*, 33(1), 34-78. doi:10.1163/15718085-12320075

Richardson, K. (2004). Systems theory and complexity. *Emerg. Complex. Organ*. 6, 77–82.

Ritchie, H., Flannery, W., O'Hagan, A. M., Twomey, S., & O'Mahony, C. (2019). Marine Spatial Planning, Brexit and the island of Ireland. *Irish Geography*. Vol. 52, No. 2

Ritchie, H., & Ellis, G. (2010). 'A system that works for the sea'? exploring stakeholder engagement in marine spatial planning. *Journal of Environmental Planning and Management*, 53(6), 701-723. doi:10.1080/09640568.2010.488100

Rus, H.A. (2012) *Environ Resource Econ* 53: 159.Available at: https://doi.org/10.1007/s10640-012-9554-6

Sander, G. (2018). Ecosystem-based management in Canada and Norway: The importance of political leadership and effective decision-making for implementation. Ocean and Coastal Management 163: 485–497.

Saskia S. (2009). Bordering Capabilities Versus Borders: Implications for National Borders, 30 MICH. J. INT'LL. 567 Available at: https://repository.law.umich.edu/mjil/vol30/iss3/2

Saunders, F., Gilek, M., Day, J., Hassler, B., McCann, J., & Smythe, T. (2019). Examining the role of integration in marine spatial planning: Towards an analytical framework to understand challenges in diverse settings. *Ocean and Coastal Management*, 169, 1-9. doi:10.1016/j.ocecoaman.2018.11.011

Smythe, T. C., & McCann, J. (2019). Achieving integration in marine governance through marine spatial planning: Findings from practice in the united states. *Ocean and Coastal Management*, 167, 197-207. doi:10.1016/j.ocecoaman.2018.10.006

Sydow, J., Schreyogg, G. & Koch, J. (2009). ' Organizational path dependence: opening the black box. *Academy of Management Review*, 34, 689– 709.

Tafon, R., Howarth, D., & Griggs, S. (2019). The politics of Estonia's offshore wind energy programme: Discourse, power and marine spatial planning. *Environment and Planning* C: Politics and Space, 37(1), 157-176. doi:10.1177/2399654418778037

Tafon, R. V. (2018). Taking power to sea: Towards a post-structuralist discourse theoretical critique of marine spatial planning. *Environment and Planning* C: Politics and Space, 36(2), 258-273. doi:10.1177/23996544177075

Technavio (2018). Global Aquaculture Market 2018-2022. Available At: https://www.technavio.com/report/global-aquaculture-market-analysis-share-2018

Thomas, H., White, A., Whitford, L., & Scrimgeour R. (2017). Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security (CTI-CFF). Cross-border cooperation in Maritime Spatial Planning. Case Study Summary Report. *Publications of the European Union*. Available at: https://op.europa.eu/en/publication-detail/-/publication/3cd88112-45ad-11e7-aea8-01aa75ed71a1

Turner, J.R. & Baker, R. (2019). Complexity theory. An overview with potential applications for the social sciences. *Systems*, 7(4): p. 23

UNCTAD (2018). Review of Maritime Transport 2012 (United Nations publication. Sales No. Sales No. E.18.II.D.5. New York and Geneva

Van Assche, K., Hornidge, A., Schlüter, A., & Văidianu N. (2019). Governance and the coastal condition: towards new modes of observation, adaptation and integration. *Mar. Policy* https://doi.org/10.1016/j.marpol.2019.01.002

Van Assche, K., & Verschraegen, G. (2008). The Limits of Planning: Niklas Luhmann's Systems Theory and the Analysis of Planning and Planning Ambitions. *Planning Theory,* 7(3), 263–283. https://doi.org/10.1177/1473095208094824

Van Assche, K., Beunen, R., & Duineveld, M. (2014) Evolutionary Governance Theory: An introduction. Springer Briefs in Economics. *Springer International Publishing*: Heidelberg. Available at: http://www.springer.com/gp/book/9783319009834

857   Van Tatenhove, J. P. M. (2017). Transboundary marine spatial planning: A reflexive marine
858   governance experiment? *Journal of Environmental Policy and Planning*, 19(6), 783-794.
859   doi:10.1080/1523908X.2017.1292120
860

861   Vince, J., & Day, J.C. (2020). Effective integration and integrative capacity in marine spatial
862   planning. *Maritime Studies*. https://doi.org/10.1007/s40152-020-00167-1
863

864   Yawson, R.M. (2013). Systems theory and thinking as a foundational theory in human resource
865   development—A myth or reality? *Hum. Resour. Dev. Rev*. 12, 53–85
866

867   Zaucha J. (2014). Sea basin maritime spatial planning: a case study of the Baltic Sea region and
868   Poland. *Mar. Pol*., 50, pp. 34-45, 10.1016/j.marpol.2014.05.00
869

870   Zeleny, M. & Hufford, K.D. (1991). All autopoietic systems must be social-systems (living implies
871   autopoietic—but, autopoietic does not imply living)—an application of autopoietic criteria in
872   systems-analysis. *Journal of Social and Biological Structures*, 14(3): 311–332