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1 **Hybrid, public and private environmental governance: The case of**  
2 **sustainable coastal zone management in Quintana Roo, Mexico.**

3

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16 **Hybrid, public and private environmental governance: The case of**  
17 **sustainable coastal zone management in Quintana Roo, Mexico.**

18 **Abstract.** Coastal zones (CZ) are social-ecological systems where rapid forms of  
19 economic development are disrupting the existing patterns of relationships,  
20 raising challenges for governance. Institutional flexibility, broad participation,  
21 multilevel governance, and adaptability have been identified as critical conditions  
22 for the governance of social-ecological systems. While the importance of agency,  
23 through the substantive participation of private actors in rulemaking, has been  
24 researched, there is need to examine the dynamics involved in, and consequence  
25 of, hybrid governance arrangements. An empirical study is presented of hybrid  
26 governance, involving federal and local government and locally-based private  
27 actors from civil society organizations, environmental non-government  
28 organizations and local business interest associations, in the state of Quintana  
29 Roo, Mexico. The CZ of Quintana Roo is facing pressures from economic  
30 development, mainly tourism, with consequences for water pollution and  
31 fisheries. Through qualitative, mixed methods, we found that a thick network of  
32 private actors has mobilized to play an important role in environmental  
33 management and to act in collaboration with the State. Multiple rationales  
34 account for this development, including high levels of environmental awareness,  
35 particular with respect to water pollution, while the lack of institutional capacity  
36 also motivates state actors to seek partnerships. While private governance is  
37 emerging, our data reveal a complex case, where private actor mobilization seeks  
38 to promote better regulations, to share data and resources, and to improve  
39 implementation capacity within the public administration. Hybrid governance  
40 contributes to effective environmental governance of the CZ. However, this can  
41 also risk state retreat from its public responsibilities.

42 **Keywords:** governmentality; informal partnerships; multi-actor participation;  
43 networks; social-ecological systems; state corruption.

44 **Introduction**

45 This paper examines the role of hybrid authority in the governance of complex adaptive,  
46 social-ecological systems (SES). The literature has identified key conditions that are  
47 critical for the governance of SES systems: (1) flexibility in institutions; (2) openness of

48 institutions to provide for broad participation, not least in local decision-making and  
49 administration; (3) effectiveness of multilevel governance; (4) social structures that  
50 promote learning and adaptability without limiting the options for future development  
51 (Adger 2000; Binder et al. 2013; Folke et al. 2002; Folke 2006; Kooiman 2003; Walker  
52 and Salt 2006). However, research often fails to take account of the multiple actors  
53 involved across different governance levels. While the substantive participation of  
54 private actors in rule making has been researched, the dynamics involved in, and  
55 consequence of, opening institutions to provide for broad participation are less well  
56 understood. Moving from earlier ideas that the state is simply being ‘hollowed out’, and  
57 replaced by private actor governance, there is increasing recognition that the political  
58 relationship between state and non-state actors is not a zero-sum game (Bäckstrand  
59 2006; Newell et al. 2012), but is rather being replaced by hybrid forms that combine  
60 public and private authority in governance. However, understanding the factors that  
61 contribute to the development of hybrid forms of governance, and whether this ‘hybrid’  
62 form enhances governmentality, that is, the practices through which matters are  
63 governed, so as to improve environmental outcomes remains limited. This paper  
64 identifies the conditions that motivate actors to co-mingle in governance arrangements  
65 with public authorities to better understand the benefits and risks of hybrid authority. It  
66 also addresses the need to have a deeper understanding of the outcomes of private  
67 governance as they operate with the state in hybrid form. It specifically focuses on the  
68 whether or not this contribute to sustainability.

69         The most prominent example utilized in the literature of SES are coastal and  
70 marine ecosystems (Berkes 2011) and these systems form the empirical focus of this  
71 paper. Coastal ecosystems are here seen as having biophysical subsystems and human  
72 subsystems, the latter including economic, political, social and cultural components,

73 management and governance regimes (Paddock et al. 2018). However, while these  
74 characteristics have been well described at the conceptual level, there is still need to  
75 understand how they play out in practice, with a shortage of empirical studies in the  
76 area. The paper provides an empirical study of hybrid governance in coastal zone (CZ)  
77 governance in the state of Quintana Roo, Mexico. It examines the involvement of  
78 federal and local government and locally-based actors from civil society organizations  
79 (CSOs), environmental non-government organizations (ENGOS) and local business  
80 interest associations (BIAs) representing small and medium enterprises (SMEs), all  
81 operating in the CZ.

82         The paper begins by examining the current state of knowledge on the  
83 governance of SES, including on the role of private actors. The challenges that the  
84 emergence of hybrid forms of governance presents for analysis are then outlined.  
85 Having described the methodology, the paper turns attention to the empirical case.  
86 Information on both the ecological and social context of Quintana Roo provides the  
87 backdrop for the presentation of the empirical findings. The paper concludes by  
88 examining the significance of finding for our understanding of the governance of  
89 complex, adaptive systems, highlighting the paper's key contribution.

## 90 **The Governance of Social-Ecological Systems**

91 In the classical understanding of governing, boundaries between the public and private  
92 realms are seen as strict. Governing is equated exclusively with government, with  
93 responsibility for public issues consigned to the public domain of the state. In this view,  
94 public management is mainly rule-orientated, legalistic and rather formal. However,  
95 recent decades have seen a shift in both our understanding and practice of governing,  
96 with less emphasis placed upon the autonomy of the three domains of state, market and  
97 civil society, and instead their interdependencies are stressed. The term 'governance'

98 captures this new emphasis (Glasbergen 2007). These interdependencies operate across  
99 multi-level scales, ranging from international through to the regional and local levels.  
100 However, in the context of neoliberalism, we need to be mindful that governments often  
101 leave responsibilities to third parties, resulting in the private governance of public  
102 goods. While this can bring positive benefits, such as when private provision allows the  
103 state to channel scarce resources to other areas of need, private governance raises issues  
104 about whose interests get served and how the wider public are affected (Rudder 2008).  
105 Nevertheless, private governance can also be driven by the need for business  
106 corporations to be seen to be socially responsible and enable them to derive moral  
107 authority through showing leadership. This has led to the development of codes of  
108 conduct, for example in in the tourism sector (Newell et al. 2012).

109         In addition, forms of multi-actor governance are also created through a  
110 multitude of civil society coalitions, alliances, and networks, engagements that are often  
111 about defending the rights of local and indigenous communities to natural resources as  
112 much as they are about directly shaping formal policy (Newell et al. 2012). However,  
113 the main focus of the literature has been on institutionalized hybrid authority, in  
114 particular through co-management, public-private partnerships and social-private  
115 partnerships (Lemos and Agrawal 2006). While partnerships themselves are broadly  
116 understood (Börzel and Risse 2002), this focus is too narrow for our purposes  
117 (Andonova 2010). There is need to widen the focus to examine hybrid form of  
118 governance that involve a complex array of state led, regulatory governing, interacting  
119 with self- organized interests, and with participatory forms of steering from social  
120 actors, which are not necessarily formalized.

121         In relation to environmental governance, it is long recognized that civil society  
122 actors and business interest association co-produce public environmental regulations

123 and are heavily involved in lobbying to shape regulation (Newell et al. 2012). Hybrid  
124 governance is also a response to the complexity, dynamics and uncertainty of policy  
125 making in the context of global environmental change, where traditional modes of state-  
126 based regulation are limited in their reach, effectiveness, authority, and even legitimacy  
127 (Kooiman 2003; Lemos and Agrawal 2006). Instead of a strong *state* to govern, a strong  
128 *society*, which is at least partly based on engagement from the market and civil society  
129 (Glasbergen 2007), is seen as critical for the promotion of sustainable futures.

130         Hybrid forms of governance help fill gaps in both the ‘regulatory deficit’ and  
131 ‘implementation deficit’ in environmental policy. Pooling of resources, including  
132 knowledge and finance, and burden sharing can increase the problem-solving capacity  
133 of governance arrangements (Börzel and Risse 2002). This can include the provision of  
134 place-specific information that may allow a more equitable allocation of benefits from  
135 environmental assets (Lemos and Agrawal 2006; Baker and Chapin 2018). These  
136 arguments are closely linked to the claim that participation increases the democratic  
137 nature of policy (Baker and Chapin 2018). Partnership arrangements are seen as  
138 reducing conflict, mediating the confrontational relation that has traditionally existed  
139 between companies, governments, and civil society in relation to environmental  
140 regulations. For their part, limited resources and high capacity requirements for the  
141 implementation of regulatory environmental standards provide a partial explanation for  
142 the willingness of the state to experiment with hybrid governance.

143         Despite its highly developed nature, the literature assumes that we are speaking  
144 about changes taking place in the liberal democratic order. Such order is assumed in the  
145 classic work of Glasbergen (2011) and in Börzel and Risse (2002), where new forms of  
146 governance are explored in western, democratic welfare states. Thus, there is need to  
147 distance research from a Weberian, state-centric narratives, grounded in the European

148 experiences of state formation (Colona and Jaffe 2016). This facilitates analysis of cases  
149 that do not require some form of developed welfare state regime, to enables the  
150 exploration of cases where there are high levels of state corruption. The case of  
151 Quintana Roo provides an opportunity to examine governance in the context of weak  
152 state presence, with the system of public administration only emerging as municipality  
153 formation takes place.

#### 154 **Methodology**

155 A case study approach (Gerring 2007) using qualitative, mixed methods was employed.  
156 Qualitative fieldwork involved stakeholder focus groups, in-depth interviews, direct  
157 observation, and document analysis to examine key actor perceptions, attitudes, and  
158 interests. The study took place along the coastal corridor of the state of Quintana Roo  
159 (Figure 1) throughout 2017-2018. The authors received ethical approval from their  
160 respective Universities. Four stakeholder Focus Groups were held in Tulum, attended  
161 by 24 participants in all; and one was held in Bacalar, attended by 7 participants. The  
162 Focus Groups were held in March 2017, and drew representatives from local and  
163 regional government, research institutions, representatives from the water, forestry, and  
164 ecotourism sectors, and from CSOs, ENGOs, and members of BIAs. The discussions  
165 were guided by a facilitator, while members of the research team took detailed notes of  
166 the conversations in each group. Four follow-up stakeholder Focus Groups were held in  
167 Playa del Carmen. One public meeting was held in Playa del Carmen in February 2018  
168 to present preliminary results to the general public so as to create awareness and  
169 generate feedback. Between May and September 2017, semi-structured interviews were  
170 conducted in Chetumal, Cancún, Playa del Carmen, Felipe Carrillo Puerto, and Tulum  
171 (29 interviews in all). Interviewees were drawn from the municipal (Tulum and Felipe  
172 Carrillo Puerto), state and federal levels of government in the environmental sector, and

173 from BIAs, ENGOs and CSOs operating in the region. The interviews lasted between  
174 60-90 minutes and explored a series of themes related to the mechanisms of multi-actor  
175 collaboration and public participation, environmental policy integration, integration  
176 across multi-level governance, and the presence of political influence and of corruption.  
177 All the interviews were recorded and transcribed with the consent of participants.  
178 Transcripts were analyzed through Atlas.ti 8 for Windows (Scientific Software  
179 Development GmbH), using the qualitative content analysis method (Schreier 2012)  
180 based on a deductive coding strategy (Mayring 2000; Hsieh and Shannon 2005). In  
181 addition, grey literature from within the system of public administration, dealing with  
182 technical reports, development plans, land and urban planning documents, etc., provided  
183 background information, together with direct observations, for internal validity of  
184 results through data triangulation. The research was also informed by the scientific  
185 literature, in particular from within political science, public administration studies.  
186

187 Figure 1. Map of the coastal zone of Quintana Roo showing the location of the study  
188 sites

### 189 *The Coastal Zone of Quintana Roo as a Coupled System*

190 The state of Quintana Roo occupies the eastern portion of the Yucatan Peninsula  
191 (Figure 1). Although the region has a long history of human occupation, including by  
192 the Maya civilization (Faust 2001), the area now known as Quintana Roo was only  
193 named as such at the beginning of the 20<sup>th</sup> Century. In 1902, the then Mexican  
194 President, Porfirio Díaz, decreed jurisdiction over the Federal Territory of Quintana  
195 Roo. Although the 1917 Constitution of Mexico saw the creation of the municipalities  
196 of Cozumel, Isla Mujeres and Payo Obispo, the Governor continued to exercise power

197 over practically all decisions related to the management of the Territory, and was  
198 directly appointed by the Federal government in Mexico City (Careaga Viliesid and  
199 Higuera Bonfil 2011). From 1975 to 2016, all seven governors of Quintana Roo were  
200 members of the *Partido Revolucionario Institucional* (Institutional Revolutionary Party,  
201 PRI), which ruled the country for more than seven decades (Hernández 2017). The  
202 imposition of external governors was combined with an open disregard for the lives of  
203 the inhabitants and a lack of interest in generating institutions and local management  
204 capacities (Samaniego 2010). It was not until 1974 that the Territory of Quintana Roo  
205 became a free and sovereign State, but history has left a legacy of corruption and  
206 neglect (Dachary et al. 1992; Careaga Viliesid and Higuera Bonfil 2011). As in the rest  
207 of the country, the absence of separation of powers that enables checks and balances in  
208 the political system has meant that the Executive branch continues to maintain an  
209 excessive influence (Álvarez Tovar 2013), blocking the development of an independent  
210 and professional system of public administration (Hernández 2017). The fact that  
211 almost all of the State's financial resources come from the Federal government also  
212 generates dependence. Corruption abound (Kaufmann et al. 2010), with high levels of  
213 mistrust from citizens towards politicians and the political system more generally  
214 (Transparency International 2016).

215 Quintana Roo can be conceptualized as a social-ecological system. A distinctive  
216 topographical, geo-hydrological and biophysical characteristic makes up the Yucatan  
217 Peninsula (Lutz et al. 2000). The Peninsula's karst aquifer is one of the most extensive  
218 in the world and extends in a transboundary manner over an extensive area in Mexico,  
219 Guatemala and Belize. The karst aquifer hosts large amounts of spring-fed groundwater  
220 which maintain highly diverse groundwater-dependent ecosystems. The karstic  
221 limestone has produced a network of underground rivers and sinkholes (*cenotes*) that

222 provide the only sources of freshwater in the Peninsula. The ecosystem also includes  
223 significant wetlands, one of the most important of which is the Sian Ka'an Biosphere  
224 Reserve. The CZ also encompasses an ecologically rich ecosystem of mangroves,  
225 seagrass meadows and the extensive 600-km-long Mesoamerican coral reef that extends  
226 along the mainland coast and around the Island of Cozumel. The reef provides  
227 important ecosystem services for coastal populations, protects the coast from erosion,  
228 moderates the damaging effects of hurricanes, sustains subsistence and commercial  
229 fisheries, supplies sand for beaches that is critical for the tourism industry, and generate  
230 recreational opportunities (Melbourne-Thomas et al. 2011). However, high permeability  
231 in the karst system means that pollution can spread over large distances, making water  
232 management very challenging (Bauer-Gottwein et al. 2011).

233         Quintana Roo also forms part of the Selva Maya (Maya Forest), which is the last  
234 large block of tropical forest remaining in North and Central America (Primack et al.  
235 1998). For centuries, the area has seen the harvest of quality timbers, such as Spanish  
236 cedar (*Cedrela odorata*) and mahogany (*Swietenia macrophylla*). During the 20<sup>th</sup>  
237 Century, the extraction of precious woods first took place as part of a state concession  
238 (*Maderas Industriales de Quintana Roo*) and later through community management  
239 (*Plan Piloto Forestal*). Although results are mixed, community forest management  
240 tends to result in maintenance of forest cover and of biodiversity, and promotes local  
241 wellbeing (Arts and de Koning 2017; Primack et al. 1998). The *milpa* cultivation system  
242 has also helped maintain ecological diversity (Ellis et al. 2017). However, although  
243 there are differences between ejidos, the ejido system in Mexico has suffered from a  
244 narrow production, low wages, under-employment, low standard of living, and where,  
245 at times, corruption is combined with high dependency on state agencies for capital  
246 subsidies resulting in high levels of indebtedness (Climo 1978; Perramond 2008; World

247 Bank 2001). As a result, many ejidos within Quintana Roo are now seeking new forms  
248 of economic activity, such as ecotourism, and new ways to protect the ecological  
249 diversity within the system, for example, through reforestation. Nevertheless,  
250 substantial deforestation continues within the State, arising largely from land-take for  
251 tourism and urban development (Ellis et al. 2017).

## 252 **Governance of the Quintana Roo Social-Ecological System**

### 253 *Governance Challenges*

254 During the last decades, demographic growth has been triggered by a rapid expansion of  
255 the tourism sector, and sees the population of the State predicted to reach 2 million by  
256 2025, from 500,000 in 1990. Tourist resorts are highly concentrated in the coast, from  
257 Cancún to Tulum, an area now known as the Riviera Maya, and on Cozumel Island. In  
258 recent years, coastal development has rapidly extending southward to Bacalar,  
259 Mahahual and Xcalak. The State has experienced a growth in hotel rooms of more than  
260 800% during the period 1980-2015 (Poter-Bolland et al. 2015). Much of this rapid  
261 urbanization and tourism infrastructural development has been piecemeal, as one public  
262 official explains:

263 Coastal development is not planned, does not follow an integral plan, does not  
264 follow a high-level strategic program, it follows the POEs (Ecological Planning  
265 Programs), and perhaps the PDUs (Urban Development Programs), but it does not  
266 conceive an integral vision of the state, much less of the region (Officer A, Federal  
267 Government Environmental Sector).

268 Thus, as in other CZ, the system in Quintana Roo is experiencing pressures from inward  
269 migration, economic development (mainly tourism) and resource exploitation. As a  
270 result, the system is showing signs of intense environmental pressures. Environmental  
271 degradation is now being experienced in many municipalities, including water pollution

272 from untreated waste water and sewage, increased sedimentation in the marine  
273 ecosystem, and growing problems of waste management, especially in the  
274 municipalities of Benito Juárez and Solidaridad, where the cities of Cancún and Playa  
275 del Carmen, the main tourist sites, are located. Threats to ground water are particular  
276 acute in the Riviera Maya coastal district. Large parts of the karst aquifer are now  
277 affected by anthropogenic pollution (Bauer-Gottwein et al. 2011).

278         Given the tightly coupled nature of the system, all the more pronounced because  
279 of its karst characteristics, land use and land use changes inland have had a direct  
280 impact on the marine ecosystem, including through coastal sedimentation and nutrient  
281 loading, with consequences for marine functioning and productivity on the coast (Bray  
282 et al. 2004). The construction and operation of hotels close to the coast have, in  
283 particular, brought negative impact on the crucially important Mesoamerican coral reef  
284 system (Murray 2007).

285         The environment division of the State government of Quintana Roo is aware of  
286 this problem:

287         We have a problem with deforestation due to the growth of the agricultural-  
288 livestock frontier and due to urbanization, particularly in the coast. The  
289 urbanization of the coast alters ecosystems, such as mangroves, coastal areas;  
290 tourism development also affects the reef ... and the marine ecosystem. Also, the  
291 management of solid waste is a very important problem... all kinds of pollution  
292 (Officer A, State Government Environmental Sector).

293 This understanding is also shared by environmental groups, including the very active  
294 *Healthy Reefs for Healthy People*, a Smithsonian partnership that aims to improve the  
295 health of the Mesoamerican Reef and thus sustain the lives of those who depend on it:

296         Our biggest threats are the inadequate wastewater treatment ... and right now, solid  
297 waste management (Interviewee D, ENGO).

298 The failure to ensure connection to the sewage system in the fast growing urban areas is  
299 of particular concern:

300 The National Water Commission, together with the State of Quintana Roo, has  
301 created the basic infrastructure, such as treatment plants, sewage mains, the entire  
302 sanitation system; however, we have places like Playa del Carmen and Tulum itself  
303 where they have the infrastructure, but people are not connected to the sewage  
304 (Officer A, Federal Government Water Commission).

305 An interviewee from the local government pointed out that in Tulum, which is a major  
306 tourist area, only 15% of the population are connected to the drainage system, and the  
307 rest uses septic tanks (Officer C, Municipal Government Environmental Sector).

308 The impact of water pollution on the marine environment, in particular on the  
309 Mesoamerican reef has drawn a lot of attention:

310 One of the main threats, not only for Mexico but for the whole Mesoamerican reef  
311 is the macro algae cover because is increasing. From 2006 to 2014, it doubled, it's  
312 a lot. And that's because we don't have the appropriate waste water treatment in  
313 our municipalities, so we are fertilizing the water with all this... poop! that's the  
314 truth! Yeah, and that's nutrients for the macro algae to grow, overcome the coral  
315 cover (Interviewee D, ENGO).

316 Informants, although at times reluctant to go into specific detail, were keenly aware of  
317 limitations of the system governance in the State. As one representative from a key BIA  
318 dealing with tourism explained:

319 I think the biggest challenge is the government. When you talk with them, you can  
320 see very easily that they don't necessarily have that position because they have the  
321 skill to have the position. Because our reality in Mexico is that you get the  
322 government positions because you are friend, or you are in the same political Party  
323 or you have an... election commitment and sometimes, they don't do things  
324 because they don't know how to do it, so we need to find out how we can train  
325 ourselves as a society (Representative F, BIA Tourist Sector).

326 High levels of corruption helped fuel the rapid tourism development in the State,  
327 particular along the coastal strip of the Riviera Maya:

328 Some of the constructions that are built along the coastline, like hotels and  
329 restaurants, don't have all the requirements that are stipulated in the law, so there's  
330 corruption because they [governmental officials] let them build as they want,  
331 where they want, whenever they want, with whatever they find. It's a well-known  
332 fact that hotels, well not all, I will not generalize but some of them, already have in  
333 their budget a specific amount for fines, because they already know they are not  
334 going to accomplish what is supposed to be, so they already have money line to  
335 pay for that (Interviewee D, ENGO).

336 Similarly, a spokesperson for one of the ENGOs operating in the area reveals:

337 For example, we know that our last Governor [R. Borge] sold land that had a level  
338 of environmental protection, and he sold the land to a family member (Interviewee  
339 D, ENGO).

340 It is not difficult to see how this political context makes it very challenging to  
341 effectively govern the environmental - and social - consequences of development, not  
342 least because the system of governance has displayed limited regard for the common  
343 good. However, since the early 1980s, pressures for democratization, economic crisis  
344 and the implementation of market-oriented economic reforms encouraged moves  
345 towards decentralization reforms. This has brought a strengthening of Mexican  
346 federalism, which have increased the competencies and capacities of states and  
347 municipalities (Cabrero Mendoza 2010). These reforms have transferred, in part, power  
348 downwards, including in environmental policy. Today, sub-national political actors,  
349 particularly governors and mayors, have access and control over important resources to  
350 provide public services. However, key aspects of decentralization, in particular the  
351 establishment of effective mechanisms to make public officials accountable and the  
352 enhancement of fiscal decentralization, have not occurred. In this sense, it can be argued

353 that the decentralization process in Mexico has been shaped by the interests of the  
354 political elite at the national level. In other words, decentralization served to strengthen  
355 the capacity of sub-national political actors to insert their interests into national politics.  
356 The local elites and *caciques* (local political ‘boss’ or leader) were able to take  
357 advantage of the decentralization not only to gain more political and economic power,  
358 but also to exercise impunity and corruption without federal controls (Nieto 2011).  
359 Furthermore, this has meant that resources are not allocated according to the interests of  
360 the citizens, which is one of the stated goals of decentralization (Salazar 2007). This  
361 concern about the failure to take account of the social needs of local people was clearly  
362 expressed by one CSO operating from Cancún:

363           We recently sent an urgent alert to the UN reporter on human rights of water and  
364           sanitation because of the lack of sanitation for local communities, bearing in mind  
365           that the government is expecting a lot of visitors from overseas and nationals as  
366           well but they are not taking into account that we don't have enough infrastructure  
367           in order to attend to the needs of the communities that are already living here  
368           (Interviewee N, Environmental CSO).

369 These factors also help to provide an explanation as to why legislation dealing with  
370 critical environmental stresses in Quintana Roo is often not adapted or made specific to  
371 the local context or to the geo-topographical specificity of the area. This is especially  
372 noticeable in the case of water management, including wastewater treatment, where a  
373 reoccurring theme from the research is the failure of centralized legislation to take  
374 account of the geologically specific feature of the Yucatan Peninsula karst aquifer  
375 system.

376           We have a Norm [standard]... that tells you about the quality of the water, how it  
377           should be. ... but there is no investment to change the law, to improve the law and  
378           to apply a different norm for the state of Quintana Roo which has different

379 conditions than the rest of Mexico because ... here we have a karstic system, so all  
380 our rivers are underground rivers (Interviewee D, ENGO).

381 In addition, waste management that relies upon landfills are particularly problematic in  
382 this high permeability karstic area. In this system, pollution stress on groundwater  
383 resources threatens both water supply and the entire groundwater-dependent ecosystem  
384 (Bauer-Gottwein et al. 2011).

385 The devolution of administrative responsibilities downwards without the  
386 corresponding strengthening of the system of administrative oversight and  
387 accountability have heighten weaknesses in vertical and horizontal integration between  
388 the levels of government within the country's multi-level governance system. Such  
389 fragmentation across governance levels has had a negative impact upon policy  
390 implementation and enforcement. As one representative from an association of dive  
391 operators said:

392 The operations of the water sports businesses are overseen by the three different  
393 governmental levels of control (federal, state, municipal). The diving shops are  
394 located inland, under the jurisdiction of the municipality, but some of the "rules"  
395 related with crossing to the beach and going into the ocean are under the state  
396 control; and as soon as you go into the water, it becomes a coastal federal control  
397 matter, because in Mexico, all public waters are under federal jurisdiction. So, we  
398 have to be nice with all of them, at the same time, and that's a problem because if  
399 we have an issue, sometimes they just leave the ball in the other court  
400 (Representative F, Association of Dive Operators).

401 Corruption can mingle with institutional fragmentation to make for a very complex  
402 context in which to seek to ensure appropriate governance of the system. A CSO  
403 concerned with the application of the rule of environmental law in Mexico explains how  
404 the two problems can intertwine:

405 For example, have heard about “The RIU” Hotels? [RIU Hotels & Resorts, a  
406 Spanish hotel chain] they came here probably 10 or 15 years ago and they start  
407 building without permission, building big hotels. You can find probably 5 RIUs all  
408 over Cancún. Some of them were built without permission; they built more rooms  
409 than those allowed, and they have more floors. The thing was that the municipal  
410 government provide the permit to build a hotel, even though they were not allowed  
411 to give that kind of permits because the coast is of federal jurisdiction and it should  
412 be a federal permit. So, things like that happen (Interviewee N, Environmental  
413 CSO).

414 Again, the interactions within the system of public administration are visible, as  
415 corruption feeds into the problem of capacity shortfall, especially noticeable in relation  
416 to the way in which public offices are filled. As a member of one CSO detailed:

417 High level public officers don’t have the capacity or the abilities or the  
418 qualifications to be in that position. This is corruption of course because if you  
419 review the authorizations to permits, you realized that they don’t even consider the  
420 basic requirements according to the law. They are in that position because they are  
421 from the same political party of a very high-level officer, or because they are  
422 relatives, or friends. That happens all the time and we have seen also that this is an  
423 issue of lack of accountability... (Interviewee D, Environmental CSO).

424 In short, the State of Quintana Roo is struggling to address the environmental  
425 consequences of the rapid economic change that it has experienced in recent times,  
426 change that have seen demographic, economic and social shifts, and which have  
427 brought considerable stress on the highly vulnerable ecological system of the region.  
428 Environmental degradation has been documented over the last decades: coral reef  
429 degradation (Almada-Villela et al. 2002; Gardner et al. 2003), as well as macroalgae  
430 proliferation due to nutrient pollution from inadequate sewage treatment and coastal  
431 development (Mcfield et al. 2018), are some of the more critical impacts on the marine  
432 ecosystem. Also, habitat destruction and mangrove cover decline are occurring at local  
433 and regional scales due to land-use change driven by growing coastal urbanization (Ellis

434 et al. 2017; Brenner et al. 2018). Hardly any government agency has the capacity to  
435 manage the public services for a State with the highest population growth in Latin  
436 America (Boggio Vázquez 2008). But, in the case of Quintana Roo, these  
437 environmental management problems are made all the more difficult by a system of  
438 governance that is highly centralized at the Federal level and whose deep corruption  
439 plays out at the local, place-based scale.

440 At least two decades ago, the Federal Government recognized the potential for  
441 corrupt practices in Quintana Roo around large tourism developments. This is seen, for  
442 example, in statements made by the then Environment Secretary that public officials  
443 must act within the law when giving construction permits, and that hotels investors must  
444 also fact legal consequences if they start building without the required permit (May and  
445 Guillén 2003; Proceso 2004). However, despite these pronouncements, there has been  
446 limited progress to date in ensuring the application of the law and in instilling good  
447 governance practices into planning decisions (Morris 2018).

448 Having detailed the environmental challenges of the State, attention is now  
449 turned to how and in what ways these challenges are being addressed.

#### 450 *Hybrid Governance Arrangements*

451 It is in the context of the inability and even unwillingness of the State to address  
452 environmental degradation that private, local non-state actors have begun to mobilize.  
453 These include CSOs, ENGOs, SMEs and BIAs. These actors have begun to play an  
454 important role in the governance of the environment in Quintana Roo. The role played  
455 by private investors in changing land-use and environmental planning in order to  
456 facilitate the development of the tourism sector in the coast of Quintana Roo has been  
457 well documented (Manuel-Navarrete and Pelling 2015). Furthermore, BIAs, including  
458 Chambers of Commerce, have exhibited strong capacity to shape economic policy in the

459 region, especially through lobbying (Boggio Vázquez 2008). However, our research  
460 paints a more complex picture than one that simply displays local business interests as  
461 merely being at odds with environmental protection and regulation.

462 In part, the engagement of local private actors is driven by a reactive response to  
463 the growing threats caused by pollution, in particular in the marine environment. BIAs  
464 linked to the tourism sector have developed in the area primarily to represent the  
465 interests of the sector, such as providing commercial, financial and legal advice to their  
466 members. They have also become an important provider of professional training for  
467 employees in the sector. Business self-interest thus plays a key role in the organizations'  
468 mobilization on environmental issues, as is evidenced by the following comment:

469 If we work trying to get a sustainable destination, we are working on having our  
470 business. A better business. Because if we finish our resources, human resources,  
471 economic resources, natural resources, we're not going to have any more business.  
472 We're going to go broke (Representative G, BIA Tourist Sector).

473 Similarly, the need to protect the environmental resource base of economic (tourism)  
474 activity is reflected in the comment made by an association dealing with coastal and  
475 marine tourism:

476 ... we need to protect the ecosystems we are using to do our activities... because  
477 we need to have healthy places to offer to people in the water sports sector  
478 (Representative F, Association of Dive Operators).

479 There are strong echoes here of an ecological modernization agenda, which stress the  
480 synergy between environmental protection and economic growth. In this view, actions  
481 to protect the environment can protect businesses, including through cost reductions  
482 that, in turn, improve profitability (Baker 2015). This is presented rather starkly by one  
483 of the main hotelier associations in the State:

484 ... I'm going to teach you how to save water because you're going to save money,  
485 it's going to be good for your finance and you're going to take care of the  
486 environment. So, we started working for the first two years with 12 hotels, and the  
487 third year we started working with 100 hotels (Representative G, BIA Tourist  
488 Sector).

489 Over time, this action can become significant, particularly at a place-based scale,  
490 not only in mobilizing new environmental advocates but also in improving  
491 environmental management:

492 We changed our speech and said hey, we're going to take care of the environment  
493 but also, you're going to save energy, water and gas, diesel, and you're going to  
494 recycle, - you are throwing your money to the garbage, literally, because you're not  
495 recycling, so we reached them with the economic part, and then their eyes shine -  
496 oh that's very good! I like that. And we reach them like that, so I think that was  
497 how hotels are working in the environmental management system in an area; I  
498 think that it's a huge achievement (Representative G, BIA Tourist Sector).

499 It is here that we see a move from re-active to more proactive engagement, which shifts  
500 actions beyond the *ad hoc* to a more considered intervention. Consistent with its role as  
501 an organization formed to provide institutional support to its members, the above  
502 mentioned hotelier association explains:

503 We provide the guidance for the hotels to implement good practices in the hotels,  
504 using a framework of management system for sustainability in the hotels operation  
505 (Representative G, BIA Tourist Sector)

506 The informant goes on to clarify the significance of these good practice guides:

507 So, even if these documents are not mandatory, for the law in Mexico, inside the  
508 association ... we take it as mandatory for our members (Representative F,  
509 Association of Dive Operators).

510 In relation to these guidelines, transfer of good practice has also occurred beyond the  
511 local membership, outwards in a transboundary manner:

512 We have a good practices booklet for the operations in the Mesoamerican reef. We  
513 work together in workshops with people from Honduras, Belize and Guatemala,  
514 the four countries share the Mesoamerican reef, and we got the good practices for  
515 diving, snorkeling and for boat operations (Representative F, Association of Dive  
516 Operators).

517 Even more significantly, institutionalization embed members in a global system of  
518 private governance:

519 We started with this vision, then we moved to promote the GSTC<sup>1</sup>, the criteria [of]  
520 global sustainability and promoting best practices, mainly for hotel operations.  
521 What we try to do is to implement a management system based on these criteria ...  
522 in order to manage the sustainability in the hotels (Representative G, BIA Tourist  
523 Sector). (Footnote 1)

524 This provides an excellent example of the rise of private governance and the resulting  
525 variety of norm and rule systems, from reporting schemes to certification and  
526 environmental management standards, which they endorse. As mentioned in the  
527 opening sections of this paper, this form of private governance goes beyond mere co-  
528 operation, as it involves rule implementation by private actors (Pattberg 2005). Our data  
529 also suggests that, while several of the associations have introduced voluntary codes of  
530 practice to govern the environmental behavior of their member's economic operations,  
531 they are also concerned to promote better *public* regulation of such activity. While this  
532 can be driven by fear that some operators gain competitive advantage by not having to  
533 abide by such codes of practice, a logic of collective action well researched by Ostrom  
534 (2009), this desire for government regulation is also of deeper significance. It shows  
535 that the argument that private self-regulation merely provides an *alternative* response to

536 the lack of effective norms and rules by the state is insufficient, because here private  
537 governance co-mingles with a push for public governance, creating complex forms.

538         Speaking about this Association's efforts, for example, to control diving with  
539 Bull Shark, an increasingly popular tourist activity that is strongly promoted in Playa  
540 del Carmen, but raises several concerns related to altering the feeding pattern of sharks  
541 and, by encouraging them to congregate at the same site, increases the risk of shark kills  
542 by fishers, our informant explains:

543             We have got good practices, for diving with the sharks. It's not mandatory. We are  
544 looking for ... the government to support and put in the law rules or something to  
545 go mandatory (Representative F, Association of Dive Operators).

546 Similarly, a hotelier association reveals:

547             And we are also working on trying to enhance the water quality legislation for the  
548 karstic system, so that's what we are doing with the NGOs and with Healthy Reefs,  
549 we have a collaboration agreement signed (Representative G, BIA Tourist Sector).

550 Working within the system of public administration, one informant from a dive operator  
551 association explains to us that this often involves sharing experience and expertise,  
552 especially in relation to rule making:

553             We work together, with the three different levels [of public administration], and we  
554 are participating with them, we try to help them when they are looking for new  
555 rules ... and we offer our experience and, yeah, our support ... we work with them  
556 and we keep the goal to be nice with the municipality and the federation  
557 (Representative F, Association of Dive Operators).

558 While the desire for a level play field may motivate this request for a regulatory  
559 framework to govern such dives, and involvement in rule making may also be driven by  
560 a desire to ensure that any new regulations align with their interest, it would be cynical,  
561 and indeed unjustified by our data to suggest that this regulatory push by BIAs is

562 motivated only by narrow self-interest. Our data also shows that BIAs are concerned to  
563 ensure sustainable tourism more broadly understood, through practices that take account  
564 not only of economic, but also the social and cultural dimensions of development. As  
565 the representative from the hotelier association argues:

566 ... now, we're talking to have a destination management office, that includes all  
567 the vision of ... sustainable development, working on the culture... to set up an  
568 organization that could manage the tourism, but with the destination vision that  
569 includes economic, environmental, culture, but also having the responsibility to  
570 work together to have a plan (Representative G, BIA Tourist Sector).

571 Here there is also the sense that private governance is motivated by moral  
572 concerns, including the desire to provide voluntary 'beyond compliance' regulation.  
573 This can be driven by a sense of responsibility as it is by economic self-interest:

574 ... going into multi-interest meetings with the government, other private sectors  
575 organizations and working together ... some of the damage in the reefs, in the  
576 cenotes are because of the diving operations. So we work on that and we try to  
577 present a different face, telling them we are maybe more concerned to protect that,  
578 because we work every day in that site, so we are not damaging the areas, we are  
579 trying to protect them, and that's why we are participating in this kind of initiatives  
580 (Representative F, Association of Dive Operators).

581 The mutual nature of the relationship between public and private sector actors is  
582 also clear, especially the instrumental value that such collaboration brings to public  
583 administrators, including in the area of capacity enhancement, especially for  
584 implementation and enforcement. Speaking about their relationship with public  
585 officials, one of the associations dealing with dive operations explains:

586 They recognize our position, our participation. The people recognize us inside the  
587 government, the other private sectors do the same. They invite us, because they  
588 recognize [us] .... the people that is in the municipality right now, ... we have

589 worked with them for a long time ago, so it's easy for us to go and discuss the  
590 different topics and they ask us to participate in different projects and studies.  
591 (Representative F, Association of Dive Operators).

592 Giving an example, the informant goes on:

593 .... we have worked recently in the declaration of a Biosphere Reserve in the  
594 Mexican Caribbean ... and we really fought to get the Biosphere Reserve closer to  
595 our coast ... also to protect the coral formations in front of Playa del Carmen,  
596 which even if it's not a continuous barrier, there are still coral around  
597 (Representative G, BIA Tourist Sector).

598 Network operate both vertically – upwards through the system of public administration,  
599 but also outwards to other groups and actors operating in the area. Several interviewees  
600 from BIAs pointed out that they are increasingly working with environmental NGOs.

601 One association provided an example of their work:

602 For example, with Amigos de Sian Ka'an, we've worked together for more than 10  
603 years, to plan the Marine Protected Area project for the Riviera Maya. We did the  
604 workshops, we invited the fishermen, the government, the National Commission of  
605 Protected Areas... (Representative F, Association of Dive Operators).

606 In some cases, collaborative agreements have been signed between BIA and ENGOS.

607 For their part, ENGO have, as expected, themselves form relationships with government  
608 offices. Speaking of this, one ENGO representative explains how this can also extend to  
609 offices sharing information with them:

610 the National Commission of Protected Areas, CONANP, we work a lot with them,  
611 they provide some of the data, depending on how much they did about monitoring,  
612 (Interviewee D, ENGO).

613 In turn, the ENGOS reciprocate, particular in relation to training for monitoring of  
614 environmental quality and in relation to regulatory compliance:

615 we also give a lot of training to check [monitor] on the reef, so we do the training  
616 every two years to increase the number of people that are certified to check  
617 (Interviewee D, ENGO).

618 In addition, ENGOs play a key role in data collection:

619 We do the monitoring [Eco-Audits of marine and reef health] in all the cities,  
620 Cancún, Puerto Morelos, Playa del Carmen, Mahahual, Xcalac, Cozumel, Akumal,  
621 that's pretty much all the coast (Interviewee D, ENGO).

622 The results of the eco-audits are widely shared. These reciprocal arrangements help  
623 capacity building within the governance system overall, better supporting efforts to  
624 address environmental degradation. However, the relationship between agents and  
625 actors can nonetheless be complex, and many expressed their frustration with the slow  
626 pace of response and reform from government agencies. As one ENGO laments:

627 For example, about improving the wastewater management, we have been asking  
628 for that for five years and it's not in their priorities. It's recognized, the problem is  
629 recognized, but there's no money or... financial aid to improve that part, [we] want  
630 to see the changes needed very fast and sometimes they don't... (Interviewee D,  
631 ENGO).

632 Such frustration can bolster their own private efforts. Nevertheless, most of networking  
633 arrangements between private and public actors have, over time, become stronger. This  
634 thickening of the networks between public and local private actors add stability to  
635 collaboration, provides a means of strengthening input legitimacy for public policy, that  
636 is, it helps to better ensure that decisions are made in a way that involves those being  
637 governed (Scharf 2003). It also strengthens environmental governance, including  
638 through capacity enhancement especially for problem solving (Baker and Chapin 2018).  
639 The thickening can bring positive environmental outcomes:

640 For example, in Puerto Morelos, in Limones, we have 30% coral cover of  
641 Acropora, which is one of the most threatened species and it builds the reef. So that  
642 site was protected like two or three years ago, because it is so special, because they  
643 used to fish there and also do snorkeling activities, because it's very shallow, so it  
644 was used for that. Now, with all the data from CONANP, UNAM, and Healthy  
645 Reefs, CONANP realized that they have to protect it, so no fishing... nothing is  
646 allowed there, only research with a special permit, it's like the crown of Quintana  
647 Roo (Interviewee D, ENGO).

## 648 **Conclusion**

649 This paper explored the governance of complex, adaptive SES systems, focusing on the  
650 challenges of governance as new and rapid forms of economic development disrupts  
651 existing patterns of relationships within that system. It examined whether hybrid modes  
652 of governance can promote sustainability within the context of such dynamics. The  
653 paper provided an empirical study of the role of hybrid, public and private actor  
654 engagement in the State of Quintana Roo, Mexico. It detailed the motivations of private  
655 actors and asked if and how such hybrid governance enhances governing capacity, or  
656 governmentality, and the consequences of this for sustainability.

657 From the opening discussion we recall that the literature has identified key  
658 conditions that are critical for the governance of socio-ecological systems as: (1)  
659 flexibility in institutions to deal with changes, (2) openness of institutions so as to  
660 provide for broad participation, not least in local decision-making and administration,  
661 (3) effectiveness of multilevel governance, (4) social structures that promote learning  
662 and adaptability without limiting the options for future development.

663 The paper has addressed each of these conditions. Turning in particular to the  
664 conditions of openness and participation (2), the paper has identified the factors that  
665 motivate local, private actors to co-mingle with government authorities, and the  
666 willingness of such authorities to open up and reciprocate. The study has shown the

667 multiplicity of factors that motivate private actor mobilization, and that, while driven by  
668 economic self-interest, wider ethical concerns and a sense of moral obligation motivated  
669 by place attachment also mobilized these actors to engage in environmental protection.  
670 The resultant multi-actor initiatives were shown to constitute genuine attempts to build  
671 and improve upon the limits of State responses to environmental threats.

672         In relation to private, economic actors, we have shown evidence of self-  
673 interested engagement in environmental governance, including in relation to rule  
674 implementation, such as through voluntary codes of conduct, motivated by a desire to  
675 protect the ecological resource base of their businesses. These findings resonate with the  
676 current literature that contends that multi-actor governance has considerable effects  
677 through the imposition of voluntary environmental rules and standards; but we have  
678 also shown that the thick relationships that have developed between the actors allows  
679 for norm transfer. Networks have been shown to provide the conduits through which  
680 learning (4) can take place. This helps to explain, at least in part, the strong normative  
681 dimensions to BIA engagement. These networks have also been shown to extend  
682 learning into the system of public administration. This not only enhances the  
683 governability of the environment but serves to support government in their wider, public  
684 functions. Here, hybrid governance offers the potential to contribute to the much-needed  
685 institution building for the effective promotion of public goods. For their part, CSO and  
686 ENGOs come with an influx of finance, technology, information and other resources  
687 that provide data, ecological monitoring, training and evaluations of the 'fit' of  
688 regulation for the place-based context that they are designed to govern. Thus, the  
689 research has revealed the opportunities that hybrid governance brings, both in terms of  
690 instrumental but also normative benefits that can make a positive contribution to dealing

691 with specific environmental issues and, more generally, to the promotion of  
692 sustainability.

693         We have used the concept of ‘hybrid governance’ as a conceptual lens in this  
694 paper to explore the characteristics of SES governance in detail. This concept has  
695 enabled us to focus on the motivation for, and consequences of, private actor  
696 mobilization to better understand SES governance. While the literature on hybrid  
697 authority has, to date, been largely restricted to the examination of hybrid arrangements  
698 that involve formal partnerships, this paper has turned its attention to the richness and  
699 diversity of forms of *informal* relationship that emerge in practice. Adopting a wider  
700 understanding of hybrid governance arrangements has de-centered the focus that has  
701 hitherto existed in the literature on the Weberian state, that is, on public organisations  
702 and administration and its authority as it extends over various areas of public policy.  
703 Shifting attention to the relationships between the state and various other governance  
704 actors outside formal institutionalization has proved important, revealing in a new way  
705 the capacity of the system to responding to change (1), in this case, to the threat posed  
706 by environmental degradation.

707         In the Mexican context, the origins and rationale for multi-actor governance  
708 have to be placed in a political context – one of deep corruption and state failure, and  
709 where the system of multi-level governance is ineffective as a mechanism for the  
710 promotion of the common good (3). It is tempting to say that in this context, multi-actor  
711 mobilization acts as an alternative to condition 3 above, in effect amounting to a by-  
712 passing of the authority and involvement of the state. There is always the risk here that  
713 their mobilization and engagement results in a zero-sum game, where the state can use  
714 private governance as an excuse to retreat from its public obligations and  
715 responsibilities. However, our data reveals a more complex picture – where private

716 actor mobilization also seeks to engage with the state and the Federal authorities. This  
717 includes through efforts to enhance and promote better regulations, designed to co-exist  
718 with voluntary codes of conduct, to share data and resources, and to improve  
719 implementation capacity within the system of public administration.

720         The paper has provided empirical contribution, generating new data on the  
721 governance of coastal zone SES in the state of Quintana Roo, Mexico. The paper has  
722 also provided theoretical contribution. It goes beyond the literatures' focus on formal  
723 partnerships arrangement, to reveal the practices that exist outside of formal  
724 institutionalization. It is important to recognize that hybrid authority can exist through  
725 both formal and informal arrangements, not least so as to enable exploration of cases  
726 other than those characterized by western models of governance and public  
727 administration. Furthermore, while the literature has identified the conditions necessary  
728 for the governance of sustainable social-ecological systems, this paper goes beyond to  
729 show how these conditions are themselves interrelated and dynamic. These conditions  
730 need to be understood not simply as a list of characteristics of system governance, but  
731 as a set of conditions that are characterized by their own feedback dynamics. This was  
732 seen for example when lack of governance effectiveness (3), in turn stimulates openness  
733 (1), participation (2) and learning (4) across the system. It also shows how these  
734 conditions play out in context in ways to reveal both the opportunities provided by  
735 hybrid governance but also the potential risks involved in hybrid steering.

736

### 737 **Footnotes**

738 1. The Global Sustainable Tourism Council (GSTC) establishes and manages global sustainable  
739 standards, known as the GSTC Criteria, for the tourism sector. The GSTC Criteria form  
740 the foundation for Certification Programs that certify hotels/accommodations, tour  
741 operators, and destinations as having sustainable policies and practices.

742

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749

750 **Authorship contribution statement**

751 All authors contributed to the primary research, data analysis and writing of this article.

752

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