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Navigating through troubled waters: contestation and participation in decentralized marine governance – Moorea, French Polynesia

Jean WENCÉLIUS, Tamatoa BAMBRIDGE, Matthew Lauer

Introduction

Promoting community-based fisheries and resource management (CBFRM) has been, over the past decades, the spearhead of international strategies and policy orientation/design across the Pacific. While not a recent trend – advocacy for CBRM has been strong since the 1990's (REFS) – the lessons provided by the limited success of state-led efforts to manage natural resources, of human-free conservation programs as well as the rich body of academic work dealing with Traditional Resource Management (TREM) and Local Ecological Knowledge (LEK) has given momentum to the idea of how critical it is to devolve resource management to local communities. International agencies, conservation NGOs and private foundations, through the design of policy decision making strategies, stress the importance for states to enable CBRM initiatives. Furthermore, academic work has shown that empowering communities in resource management and ensuring stakeholder engagement are critical to the success of resource conservation strategies (REFS). Yet, when considering implementing CBFRM in the field, this seemingly simple – and now nearly self-evident – recommendation raises a set of essential and somehow controversial questions we wish to address in this paper through a case study of the design and revision of Moorea's (French Polynesia) decentralized marine management.

Our first line of enquiry concerns the assessment of CBFRM initiatives and how their success is evaluated. The golden standard of such assessments most often resides in discrete ecological metrics of success such as increase in fish biomass or, more rarely, quality of marine habitats (REFS). Socio-cultural indicators may also be used – such as the degree of involvement and engagement of stakeholders – to evaluate the outcomes of resource

conservation regimes (REFS). Some studies have argued that in the face of short-term absence of ecological effects, local compliance and participation may, in the long run yield significant positive ecological effects (REFS). Both types of metrics, however different they may be, share a common denominator: success or failure are defined from the external standpoints of experts. Conversely, less attention has been given to documenting how stakeholders themselves frame success and failure. In contexts presenting high social, economic and cultural heterogeneity of actors – as is the case of Moorea – perceptions of the outcomes of management initiatives, as well as the metrics used to assess the latter, may significantly vary from one stakeholder to the other – according, for instance, to the stakes they have in the resource under protection. One could argue that accounting for local assessments of conservation initiatives is paramount for designing adaptive management regimes which should be able to adjust both to biological and social dynamics. However, the main line of argument we wish to develop is that a careful examination of how stakeholders talk about the success or failure of the conservation initiatives in which they engage – or against which they resist – provides a formidable opportunity for revealing the web of connections – or lack of – between stakeholders and their environment, their political institutions and/or their peers.

The use, in the CBFRM framework, of the core concept of community – which often goes unquestioned – participates in blurring the diversity of stakeholders in the field and minimizing how divergent or conflicting their goals and stakes may be. Social scientists have criticized the depiction of communities as well-defined, homogeneous units “that speak[s] with a single voice” (Watts 2000: 37). While this does not do justice to many CBFRM initiatives seeking to promote the representation of diverse interests and stakeholders in the design of their governance regimes, it does reveal a general tendency to silence the political intricacies at play in the devolvement of governance to local communities. This constitutes

the second line of enquiry we wish to develop. Devolving management is an intrinsically political move, it operates a transfer of decision-making power from one institution to one or several other institutions or actors. While CBRFM governance regimes are often portrayed as apolitical and guided by scientific or environmental rationales, it would be a mistake to consider that they operate in a political void: some authorities are empowered over others (e.g. municipalities in regard of central governments) and some stakeholders may gain power, prestige or status over others. We argue that cropping-out the political dimension of natural resource management can only provide a distorted image of the social interactions actually playing out in the field and of how connections between local stakeholders, local authorities and central government are constantly reshaped and renegotiated. Moreover, opening up CBRFM governance regimes to political debate – and its corollaries: defining priorities, setting out goals, finding balance among stakeholders’ representation – may be an essential condition for designing conservation mechanisms addressing the preoccupations of the greatest diversity of stakeholders.

In this paper, we provide an empirical case study of the decentralized marine management regime of the French Polynesian island of Moorea named *Plan de Gestion de l’Espace Maritime* (PGEM). Implemented in 2004, it went through a lengthy participatory process from 2016 to 2021 and gave concomitantly rise to vibrant citizen engagement and overt political contestation. Through ethnographic fieldwork, participation to meetings and household surveys – carried out from 2018 to 2021 – we have been able to document the socio-political dynamics at play during the revision process. Rather than delineating the factors which may lead to assess the outcomes of the initial PGEM from an external point of view we delve into the manners through which local authorities, scientists, stakeholders and fishers discursively frame the PGEM as a success or a failure. We also analyze how the PGEM is at the crux of a fragile and constantly renegotiated political interplay between local

stakeholders, the municipality and the French Polynesian government. Finally, we examine how PGEM and its revision served as a vehicle for the cultural revival of Polynesian cultural and identity through the voicing of political contestation in a neo-colonial context.

Material and Methods

Study site

Moorea is a high volcanic island of the Windward Society archipelago located roughly 20 km west of Tahiti on which is located Papeete, the capital of French Polynesia (FP), and home to over two thirds of the country's population (ISPF 2017). French Polynesia, as a French Overseas territory (*Collectivité d'Outre-Mer*), depends on the French state for its military defense, foreign affairs, higher education, health and monetary policy. From 1984 to 2004, it has increasingly gained in autonomy from the French state; French Polynesian parliament, government and president have jurisdiction over the local economy, cultural affairs as well as the management of terrestrial and nearshore environments¹. The economy of French Polynesia has been driven since the 1960's by the large influx of financial flows and infrastructural development stemming from France's nuclear testing programme implemented in the atolls of Mururoa and Fangataufa located in the Tuamotus archipelago. As the nuclear-testing era was coming to a stop, the French and FP governments agreed upon investing in the tourism industry as a strategic economic sector which would enable French Polynesia to weather the decline of nuclear-related subsidies and gain greater economic independence from France (Charte du Développement 1993).

The island of Moorea along with the small island of Maiao form the municipality of Moorea-Maiao. Moorea island is further administratively subdivided into five districts: Afareaitu, Haapiti, Paopao, Papetoai, Teavaro (Figure 1). It is the second most populated island of French Polynesia (17,463 inhabitants in 2017) and is the 2nd most visited island in

¹ The open ocean and the exclusive economic zone fall under the joint jurisdiction of France and French Polynesia.

terms of international tourism (IEOM 2017). These figures, however, do not account for the importance of local tourism driven by the influx of residents from the more urban island of Tahiti visiting Moorea over weekends and holidays. Moorea's demography has exploded over the past few decades (the population doubled from 1988 to 2017), as quick ferry navigation between Moorea and Tahiti has attracted people working in Papeete to take up residence in Moorea and to shuttle back and forth between both islands. This, in conjunction to increased tourism-related activities, has led to fast changing environmental conditions due to increased anthropogenic pressures on both marine and terrestrial environments. The galloping artificialization of Moorea's coastline provides an illustrative case of these trends (Calandra et al. 2021).

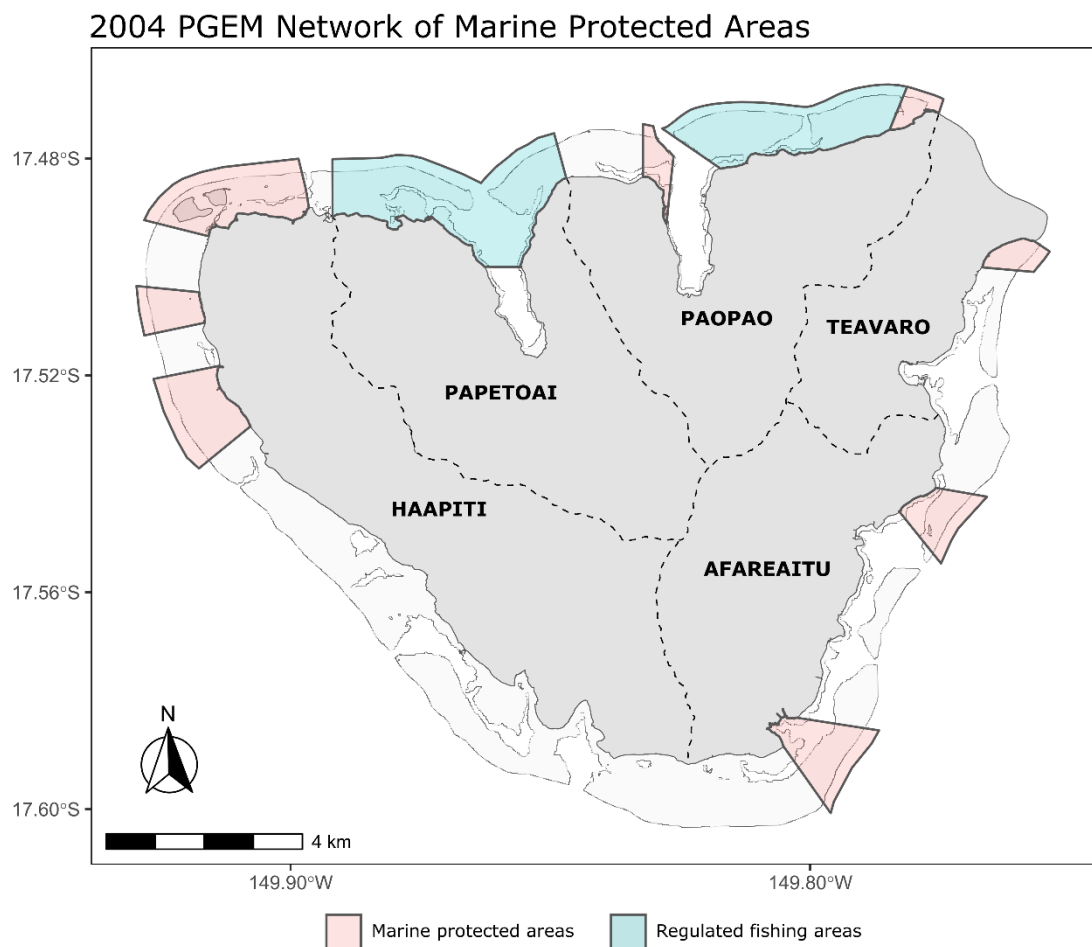


Figure 1 – MPA network of the initial PGEM

Tourism, construction, agriculture and to a lesser extent reef fishing are the key economic sectors of Moorea (ISPF). Three international-class hotels offering over-water accommodation are located on the north shore of the island and an important number of locally held bed and breakfasts are dispersed around the island. The hotel sector as well as nautical and terrestrial recreational activities offered to tourists (e.g., jet-skiing, whale-watching, scuba-diving) provide substantial employment opportunities for households, yet over 30% of individuals over the age of 15 are unemployed and over 55% of households live below the French defined poverty line. In this context the local reef fishery constitutes an important buffer for many families for subsistence purposes, whether it be through the auto-consumption or through the marketing of reef fish and invertebrates. Furthermore, the local fishery is a cultural keystone of Polynesian society as reef fish is an essential component of the local gastronomy. The potential for conflict-use between tourism- and fishery-related activities, as well as the increasing anthropogenic stressors the island of Moorea is going through, are essential to understand the socio-political dynamics at play in the management of Moorea's nearshore marine environment.

Decentralized Marine management in Moorea

In the mid 1990's the French Polynesian government developed a legal framework and tool for the decentralization of marine management destined to empower local authorities (i.e., municipalities) and communities. This tool – coined PGEM, *Plan de Gestion de l'Espace Maritime* (litt. Marine Management Spatial Scheme) – was conceived as the marine-based mirror of a pre-existing urban planning framework (PGA – *Plan de Gestion de l'Aménagement*) which any municipality can implement to regulate terrestrial developments and activities within their jurisdiction². The parenthood between these two tools is evidenced by their being managed by the same authority: French Polynesia's urban planning department.

² The PGA is a zoning tool enabling municipalities to spatially define residential, commercial, industrial, and agricultural areas and to regulate how constructions and activities are undertaken in each of these zones.

French Polynesian lagoons and coast³ fall under the public domain and, hence, under the jurisdiction of the French Polynesian government. In the absence of a PGEM, municipalities have little authority over what happens in the lagoon adjacent to their jurisdiction. A PGEM is ultimately a zoning tool allowing them, in concertation with the French Polynesian agencies (i.e, Departments of Urban Planning, Tourism and Fisheries) and local civil society, to delimit perimeters over the lagoon in each of which specific regulations regarding navigation, recreational activities or fishing may be defined. Once zoning and related regulations are defined within a foundational text approved by the French Polynesian government, a PGEM is piloted by a steering committee – presided by the mayor – which composition is defined by the text itself. Any new project or business wishing to carry out an activity on the marine public domain must first file a demand to the PGEM’s steering committee before securing clearance from the appropriate French Polynesian administration. This decentralization of decision-making from FP to municipal authorities has its limits, as the decision of the steering committee is only consultative, in the sense that FP administrations may overrule the committee’s decisions.

The design of the PGEM as a planning tool resulted from the conjunction of both France’s desire to develop a pioneer network of marine protected areas (in mainland France as well as overseas) and of French Polynesia’s policy to promote the country’s tourism industry by advertising the beauty of French Polynesia’s marine environments (REF). Indeed, as early as 1994 the French Polynesian government had envisioned to implement a PGEM in three of the most visited islands of French Polynesia: Bora-Bora (Leeward Society Islands), Fakarava atoll (Tuamotus Archipelago) and Moorea⁴. It took Moorea ten years to design and implement a PGEM – enacted in 2004 – with the strong collaboration of the FP Fisheries Department

³ The shoreline considered as public domain is delimited by a 3-meter-wide strip in-land from the high-tide limit of the lagoon.

⁴ While the project of a PGEM never saw the day in Bora-Bora, Fakarava implemented a PGEM in 2007. It was then dismantled in favor of the implementation of natural protected areas administered by FP’s Department of Environment in order to proceed to their registration as a UNESCO Biosphere Reserves.

(Direction des Ressources Marines - DRM) and the guidance of the French Marine Biology Research Station based in Moorea (CRIOBE) both stressing the need to protect lagoon resources from overfishing (Aubanel 2004). Beside the instrumental roles of both institutions, the ‘successful’ implementation of the PGEM was due to the presence of several dynamic community groups and environmental NGOs which were voicing growing concerns about the state of marine resources and actively opposing increasing developments around the island (e.g. construction of over-water bungalow projects, dredging of sand in the lagoon of Moorea). These groups were eager to dispose of a legal tool enabling them to have greater oversight upon the management of Moorea’s lagoon. From the onset, the PGEM was the result of diverging, if not conflicting strategies. The protection and management of Moorea’s lagoon was seen by fisheries scientists as a conservation tool, by the FP government as a way to promote the tourism industry and, quite contradictorily, as a means to regulate tourism development for environmental activist as well as local cultural groups.

Even though Moorea’s PGEM has heavily regulated fishing activities through the setting-up of 8 marine protected areas (MPA) and two regulated fishing zones⁵, the regulations enacted in 2004 cover a wide array of topics including anchoring, navigation speed, seawall construction and recreational nautical activities (e.g., jet-skiing, shark-feeding and whale watching). Its steering committee was designed to include 15 members (representing a total of 13 votes) four of which represented local stakeholders and associations: fishers, cultural associations, environmental NGOs and tourist operators (Table 1 for more details). A member representing the two marine biology research stations located in Moorea – CRIOBE and the Gump Research Station historically managed by a consortium of University of California campuses – also seats in the committee. While the steering committee is the decision-making organ of the PGEM, the effective day-to-day management is operated, on the one hand, by a

⁵ One prohibiting the harvesting of invertebrates, the other defining minimal size of harvested fish.

specifically appointed team of municipal staff members (hereafter, referred as the ‘municipal PGEM cell’) and, on the other, by a local NGO named *Association PGEM* founded by local community members who had proven very active in the past in both cultural and environmental associations.

	Initial PGEM		Revised PGEM	
	Members	Nb of votes	Members	Nb of votes
Municipality	Mayor of Moorea	1	Mayor of Moorea	1
	5 District Mayors	5	5 District Mayors	5
Fishery	1 Rep. of reef fishers	1	5 Rep. of reef fishers	5
Tourism industry	1 Rep. of the hotel industry	1		
	1 Rep. of recreational activities	1	5 Rep. of the tourism industry	5
Culture	1 Rep. of cultural organizations	1	1 Rep. of cultural organizations	1
Environment	1 Rep. of environmental organizations	1	1 Rep. of environmental organizations	1
Science	1 Rep. of scientific institutions	1	1 Rep. of scientific institutions	1
FP agencies			1 Rep. of Fisheries service (DRM)	
	1 Rep. of Urban Planning (SAU)	1	1 Rep. of Urban Planning (SAU)	4
	1 Rep. of Environment Agency (DIREN)		1 Rep. of Environment Agency (DIREN)	
			1 Rep. of Maritime Affairs (DPAM)	
TOTAL	15	13	23	23

Table 1 – Composition of the initial and revised PGEM steering committees

After ten years of existence, the Municipality as well as the French Polynesian government decided to launch a process of revision of the PGEM and initiated in 2016 a wide-scale consultative and participatory campaign which lasted over 5 years before giving birth to a revised version of the PGEM enacted by the French Polynesian government in September 2021. The revision process was governed by an appointed committee named CLEM (Commission Locale de l’Espace Maritime – Local Commission of the Marine

Methods

To document the PGEM revision process, the socio-political interactions and dynamics it gave rise to, as well as the perceptions different stakeholders around the island have of local marine management, we make use of several sources of information and datasets collected in Moorea since 2018.

We draw mainly upon the ethnographic fieldwork carried out in Moorea from April 2018 to September 2021 focused on documenting reef fishing practices, local ecological knowledge of marine resources and perceptions of the local marine management. During this long-term

fieldwork, we attended to a total of 53 meetings dealing either specifically with the PGEM revision or more broadly with Community-Based Fisheries Management in FP and across the South Pacific. Meeting discussions and participant interactions were documented in detail. Moreover, each meeting provided the opportunity to conduct informal discussions and open-ended interviews with the different stakeholders who had participated. Finally, being embedded in the local community for over three years, first author had the opportunity to gain fine-grained insight into the socio-political positioning of the most active stakeholders engaged in – or opposing – the PGEM revision. We also draw on household surveys conducted from 2019-2021 (N = 121). Sampling was designed to target primarily reef fishers around the island in order to document, among other topics, their perceptions and engagement into marine management. Semi-structured interviews were carried out with 121 fishers using mostly open-ended questions leaving room for respondents to develop their points of view (interviews lasted between 45 min to 3,5 hours).

Revising a failed PGEM

The PGEM revision process, in itself, begs the question of why local authorities and stakeholders felt the need to modify the existing management tool. It's lengthy process – the decision to revise the PGEM had been taken in 2014 and the final revised document was approved in September 2021 – has provided a unique opportunity for governmental, municipal and local actors to reflect upon the successes and failures of the initial marine management plan and upon the orientations the new management strategy should take.

The implementation in 2014 of two European Union funded projects – operated by the Pacific Community – focusing on the management of natural resources and the resilience of coastal environments across the Pacific and particularly in FP (projects INTEGRÉ and RESCCUE) enabled the FP government as well as Moorea's municipality to seek out both the financial means and human expertise to reshape Moorea's management plan which

constituted one of the flagships of French Polynesia's policy for the sustainable management of nearshore marine environments. Even though it was a pioneer initiative of decentralized marine conservation, government, municipality and local stakeholders shared the diagnosis that the PGEM suffered from a lack of legal, financial and human assets and from severe criticisms voiced by local stakeholders and most notably fishers (Narcy et Herrenschmidt 2014).

Interviews carried out with the staff of the municipal department in charge of the PGEM indicated that after ten years of existence the tool had to be adapted to rapidly changing conditions: *“The number of recreational activities on the lagoon has exploded since 2004 and so has marine traffic and the number of people fishing. We need to be able to manage all of these new activities and conflicts they create between tourist operators, residents and fishers.”* Inquiring further into the reasons for revising the PGEM, the same person indicated that the first version of the PGEM didn't properly tackle some legal issues of jurisdiction overlap between FP agencies – notably the DRM – and the PGEM itself. Indeed, the initial PGEM had defined some fishing regulations (e.g., minimal mesh size for nets, minimal fish size) which normally can only be decided upon by the DRM. The PGEM may define zones where fishing is not allowed but it may not, outside of no-take zones, set out more restrictive regulations than those applied by DRM nation-wide. The final, and certainly most decisive, reason provided for the need to revise the PGEM was fishers' lack of engagement and compliance as well as their overt opposition to the management scheme: *“Fishers felt excluded from the PGEM, they felt it was designed against them and they distrust the PGEM. This is why, during the revision, we have made a huge effort to secure their participation and implication. It is clear now that the fishers are those which were the most heard during the revision.”*

From the perspective of FP agencies, the first PGEM is framed as a total failure. When first author first arrived in FP to carry out fieldwork in 2018 and presented his research project, a representative from the FP Department of Research suggested: “*You need to focus your study on the PGEM, it’s not working, fishers are not complying and ecological results are minimal. We need to understand why this is not working.*” Leaning on the ecological studies DRM had mandated CRIOBE to carry out in order to monitor the PGEM’s network of MPAs, a representative of the DRM indicated “*the lack of clear evidence of the ecological effects of the PGEM is probably one of the most severe blow to the PGEM. Maybe it is one of the reasons why the publication of the study has been delayed, it could be harmful to the revision process.*” Thiault (2014) and Thiault et al. (2019) have shown that biomass of harvested fish species was, compared to non-protected areas, slightly higher in MPAs but have highlighted that these effects did not meet-up to expectations considering much more significant effects documented in other published MPA analyses. They argue that the main reasons for the limited ecological success of the MPA network reside in the absence of fisher compliance and the lack of surveillance of the MPAs.

Early on after the implementation of the PGEM several academic studies, focusing on the socio-cultural dynamics revolving around the PGEM, have highlighted the heavy criticism residents and local community members voiced against the PGEM (Gaspar and Bambridge 2008, Walker 2009, Quesnot 2005). The main arguments articulated in these studies frame the failure of the PGEM to meet local expectations along three interrelated points which we will explore in the following sections: *i*) the lack of engagement and overt contestation of fishers, *ii*) the top-down nature of the governance regime of the PGEM geared toward the development of the tourism industry and *iii*) a tool which is ill-adapted to the local cultural context.

Reconnecting with fishers

Fishers' perception of the initial PGEM

Perceptions of the nature, goals and power-locus of the PGEM vary greatly across stakeholders. Results from our household surveys indicate that fishers do not have a clear understanding of the governance regime of the PGEM. When asked who they thought was operating the PGEM 52% percent mentioned the municipality, 39% the French Polynesian government, 9% the French State and the remaining 10% indicated they did not know (N = 121). Only 12 respondents mentioned more than a single institution (FP government and municipality) among which only 4 also mentioned local stakeholders and NGOs as actors of the PGEM's governance.

When asked whose interests the PGEM best served many respondents (43%) indicated that it served the interests of future generations by guarantying a healthier regeneration of marine resources. However, a majority also mentioned that it was geared toward the promotion of tourism (73%). The comments of one of our respondents provides an insightful illustration: *"The PGEM is to protect the hotels' beautiful o'iri [Lagoon triggerfish - Rhinecanthus aculeatus]. We have no problem with that, they can have it, it's no good to eat! But let us catch the other fish."* Moreover, 23 out of 121 respondents pointed to the fact that most MPAs were located near resorts or areas attracting recreational nautical activities. Along the same lines, nearly a third of interviewed fishers voiced a feeling of inequity in regard of the PGEM. Some mentioned how permanent no-take zones were intrinsically unfair arguing that fishers living across these areas have lost their fishing grounds and are forced to travel greater distances. Others indicated that regulations were only enforced for fishers, while uncomplying tourist operators were never sanctioned.

Overall, results indicate that local fishers consider the PGEM as a tool imposed by governmental authorities – whether municipal or national – which poorly represents local stakeholders and their interests. For those fishers who acknowledged the fact that fishers had

been consulted in the initial design of the PGEM⁶, several felt they had been duped as a fisher from Papetoai stated: “*We shared our knowledge to help the PGEM. We were promised that the protected areas would be Rāhui [pre-contact institution of temporary closures of marine or terrestrial environments] and fifteen years later they are still the exact same.*” Even though the current municipal staff indicates that such promises had never been made, these grievances highlight how transposing concepts which have emerged from Western conservation science – such as permanent no-take zones – into other cultural contexts may be source of misinterpretation particularly in cases where non-governmental community-driven institutions of management exist or have existed in the past.

The perceptions of the nature and goals of the PGEM outlined above translate into a general lack of support. Even though 83% of respondents agreed that some form of lagoon management should be undertaken, more than three quarters of the latter indicated that the PGEM was flawed and needed significant adjustments such as implementing rotational instead of permanent closures (e.g., *Rāhui* – see last section), ensuring better representation of fishers, limiting recreational nautical activities or including terrestrial issues such as the regulation of agricultural practices in the management scheme (adjustments mentioned respectively by 75, 43, 38 and 21 informants out of 121).

The creation of district-level fishing committees

Aware of the fishers’ widespread criticism of the initial PGEM, the team responsible for the revision sought, as a priority, to secure fisher participation. First and foremost, the number of fishers represented in the steering committee was increased from one to five (see Table 1). Then, one of the biggest innovations of the revised PGEM lies in the creation of district-level fishing committees. The latter have been set-up in each of the five districts and are opened to all fishers of a given district who, in direct concertation with the DRM, have the possibility to

⁶ Some fishing associations engaged into the initial PGEM and proactively demanded the establishment of MPAs, as is the case of the most southern MPA near Maatea.

design fishing regulations in their district's lagoon. Each district-level committees elects representatives who, in turn, form an island-level committee informing the PGEM steering committee of their decisions.

While the idea of ensuring greater representation of fishers within the steering committee was decided upon very early-on during the revision process, the design of the district-level committees emerged progressively during the revision. This new form of managing fishing regulations was a direct outcome of the involvement of burgeoning local fisher groups and associations founded at the early stages of the revision to defend the rights of fishers. From 2016 to 2017 three self-organized groups surfaced in Teavaro, Paopao and Haapiti. These groups adopted, vis-à-vis the revision of the PGEM, stances ranging from full engagement to overt confrontation.

As Hunter et al. (2019) highlighted, the initial design of an island-wide management scheme poorly represented the geographic, social and historical heterogeneity of the island which during the pre-contact and early contact period never formed a unified socio-political unit. Moreover, fisher groups – from Haapiti in particular – felt that the PGEM governance and management was trusted by a handful of community members from the north shore of the island reinforcing the idea that the PGEM inadequately represented all of the island's population. One resident from Haapiti indicated: *“How come it is only people from Paopao who make up the decisions and tell us what we should do here in Haapiti?”*

On the one hand, the creation of fishing committees enabled to address fishers' demand of being better represented in the decision-making process. On the other, it allowed to overcome issues of overlapping jurisdiction, outlined in the previous section, between the PGEM and the DRM. Henceforth, the prerogative of defining no-take zones would fall under the prerogative of the PGEM, while all fishing regulations outside of these areas would be

designed within the fishing committees and enacted by the DRM through a speedy administrative process allowing the implementation of flexible and adaptive regulations⁷.

The first fishing committee meetings were held in late 2017. During these meetings fishers collaborated with DRM agents to design, in some cases, sophisticated fishing regulations. The degree of investment of fishers greatly varied around the island. In Haapiti and Papetoai where contestation of the PGEM was strongest, the participation of fishers did not take root before the final few months of the revision in 2021. In Paopao and in Teavaro, however, the presence of recently formed fishing groups combined to the assistance of the members of the *Association PGEM* from the north shore of the island led to dynamic interactions and innovative designs. In 2017, the Teavaro committee asked the DRM to organize a meeting with fisheries scientists from CRIOBE to discuss minimal sizes of harvested fish. The workshop attracted dozens of fishers who brought along fish they had caught earlier the same day so that they could be measured and presented to the DRM agents and CRIOBE scientists. This ground-breaking workshop served as a benchmark for the DRM which is now seeking to set out country-wide regulations enforcing minimal size of harvested fish. In this meeting, one of the preoccupations of fishers was to make the demonstration that a cultural keystone species, the *pahoro* – initial phase parrot fish – caught with nets which mesh-size is smaller than the 40mm country-wide minimum had reached a sufficiently sustainable size to ensure the species' healthy reproduction. The outcome of this workshop was, for fishers, a complete success. They secured from the DRM the promise to make an exemption for Moorea – and more particularly for the district of Teavaro – allowing the use of 35mm mesh-sized nets for *pahoro* fishing. The DRM requested that fishers from Teavaro define a select number of spatially delineated areas of the lagoon where this type of fishing

⁷ The regulations enacted by the DRM would require the sole signature of their minister, allowing to circumvent the burdensome and lengthy process of modifying the PGEM which, as is illustrated in this paper, may takes several years to deliver results.

could take place within predetermined time slots (see Figure 2) arguing how necessary it was to ensure a tight surveillance on the use of these nets.

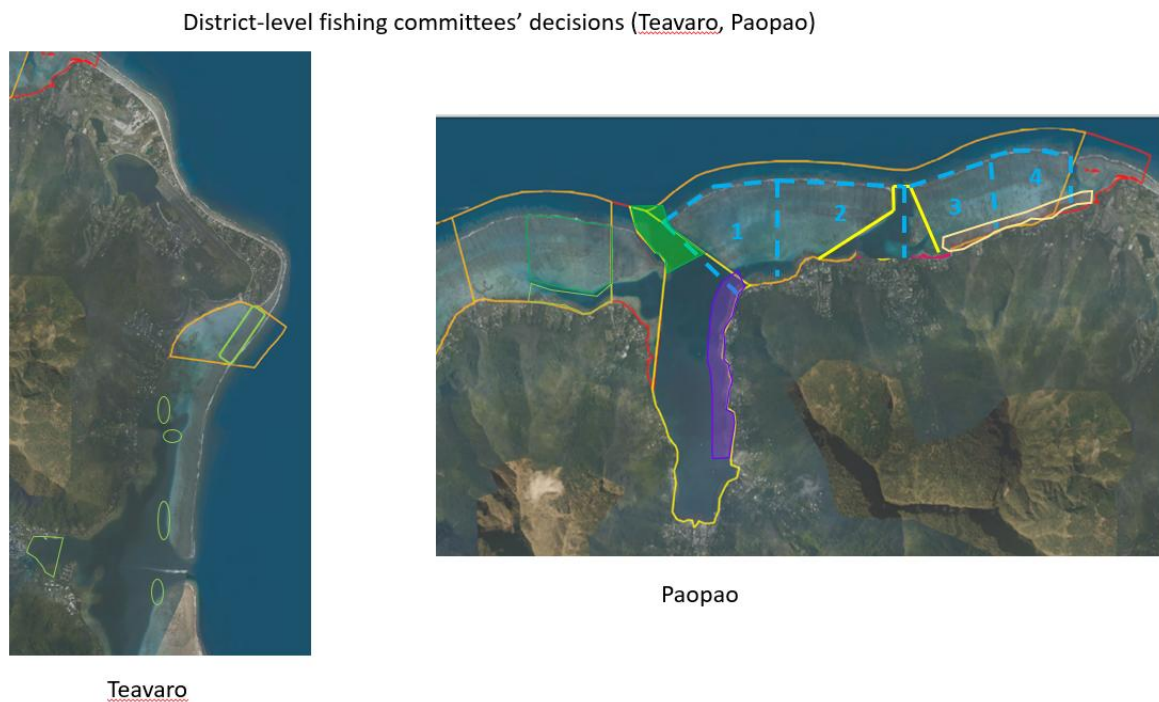


Figure 2 – District-level fishing committee's decisions

The Paopao fishing committee also figured as one of the most active fishing committee and designed an innovative management plan for inner-lagoon fishing. The committee's participants were fierce detractors of night spear-fishing considering it as the most deleterious fishing practice, all the while reckoning how important it was for the livelihood of many unemployed families and youths. Instead of trying to ban the practice altogether, the committee designed a system of rotational closures in the lagoons adjacent to two of the district's villages: Maharepa and Tiaia (Figure 2). The two pass-to-pass lagoons were cut up in four distinct areas – running from shore to reef crest – among which one area at a time would be closed to night spearfishing. The ban would then shift from one zone to the other, moving eastward, every two years forming a full cycle over a period of eight years. The outcome of the negotiations between the Paopao fishing committee and the DRM agents is boasted with pride by the latter considering it as one of the symbols of the success of the

PGEM revision. In 2019 a DRM official confided: *“This system of district-level fishing committees is quite new for everybody, for the fishers, but for us too. Moorea, right now, is kind of our experimental lab, we are trying out new forms of governance which, we hope, will be transposable to other islands across French Polynesia.”*

Throughout the revision process, the idea of the fishing committees gained traction among fishers. In the districts where fishers were the most reluctant to engage in the revision process, the word spread that in neighboring districts fishers had been heard by the DRM and the PGEM and had managed to implement some of their ideas. We witnessed the growing popularity of the fishing committees firsthand. In January 2019 we attended our first fishing committee meeting in Afareaitu. Five fishers were present, they had been handpicked by the municipal PGEM cell as the representatives of the committee, but the word hadn't spread out to other fishers. The meeting was driven by the DRM agent and the fishers nodded their way throughout the meeting to the powerpoint presenting the new governance regimes of fishing regulations. No negotiations or debate had taken place and the outcome of the meeting offered nearly no change to pre-existing fishing regulations in that district. Two years later, in February 2021, we attended the last fishing committee meeting held before the finalization of the revised PGEM. Over 20 fishers participated to the meeting and only one of the fishers initially handpicked by the municipality was present. After the DRM agent's presentation of the current fishing regulations approved by the Afareaitu fishing committee heated debates took place indicating that nothing had changed compared to the initial PGEM. Once the designs which had resulted from the Teavaro and Paopao fishing committees had been presented, the participants and the DRM initiated a process of negotiation. The most interesting debate surrounded demands from fishers to open-up the Afareaitu MPA to day-time spearfishing. The DRM agent quite insistently advised against it: *“This area was picked as an MPA in the first PGEM because fishers had indicated that it was an important fish*

nursery. [...] *You need to be thoughtful about future generations, are you really sure you want to go through with this? Who is in favor?*” The question was followed by an awkward silence as participants seemed startled by being given the power to make the final decision. A few fishers hesitantly raised their hands, after what the majority of participants enthusiastically joined in. The DRM agent acknowledged the vote and asked the staff-member taking notes to modify the powerpoint, thus, enacting fishers’ decision.

Two days later, the process occurred quite similarly during the fishing committee in Papetoai. The meeting seemed quite disastrous as many participants were vociferously demanding to abandon any form of fishing regulation in their lagoon. The DRM agent nonetheless proceeded to presenting the designs made by fishers in other districts. Participants were dumbstruck by the lenience the DRM had shown in allowing smaller mesh-sized nets for *pahoro* fishing. No later than the next day, one of the participants – appointed as representative of the fishers from Papetoai – called the municipal PGEM cell and asked to convene a new meeting with the DRM, he had consulted other fishers and they were ready to craft, with the DRM, new fishing regulations for their lagoon. Both cases illustrate how the setting-up of fishing committees was a breakthrough in the tradition of marine management in Moorea. The surprise expressed by fishers in their ability to craft regulations indicates how the PGEM may gain in legitimacy in the eyes of fishers as it provides tools (i.e., the fishing committees) allowing them not only to voice their grievances but also to implement their demands in the field. The DRM agent in charge of the fishing committees quite explicitly expressed this view when we asked him his opinion about the decisions made by fishers in Afareaitu and in Teavaro: *“Well, I have to admit that, in terms of conservation, we are taking a couple step backs. The total area of no-take zones has been significantly reduced. But the whole idea of these committees is to get fishers on board, to have them participate, and to make them realize that we do consider their point of view. We hope that in the end they will*

realize we aren't their enemy. Once we have them on board and create trustful relations, which is in good course, we will be able to work as a group towards what we believe to be more sustainable fishing practices."

The limits of participation and representation

Despite the growing engagement of fishers in the district-level fishing committees, overall participation of – and representation of – fishers are not unproblematic. In our household survey, 68% of interviewed fishers were completely unaware of the very existence of fishing committees. This reveals something which is quite a common trend in participatory conservation programs, that participation is mainly the work of elite community leaders or people who are used to getting involved in the public sphere (e.g., through their engagement in associations or NGOs). Reaching out to every-day people and fishers is perceived as a limit. Municipal staff members indicated that they had sought to communicate about the PGEM and its revision through churches, public postings, and social media. However, they also mentioned that they relied heavily on fisher representatives to spread out the word and invite fishers to meetings.

This raises the question of the legitimacy of representation. Who are the representatives? How are they appointed? For which reasons? As mentioned earlier, fisher representatives were first handpicked by the municipality. When asked to the municipal PGEM cell staff member what constituted a legitimate representative in her opinion she shared: *"We seek out people who have multiple functions and who are recognized through different communities. Look at the case of Tutea⁸, he is a respected and knowledgeable fisher, he is a parish deacon and has a strong foothold in the municipality as a councilman."* Once the fishing committees started to meet, the appointment of committee representatives was voted upon at the end of each meeting by show of hands.

⁸ For purposes of anonymity, names have been modified.

Yet, in some cases, fishers still feel they are not well represented. The case of the Paopao fishing committee provides an illustrative example. The committee, piloted mainly by a handful of net fishers, set out to implement strong regulations against night spearfishing. However, in none of the Paopao district meetings we attended to, did we ever encounter a night spearfisher. After one of the district committee's meetings we met a young spearfisher from Paopao – whom we had informed of the date and location of the meeting – and asked him why he hadn't come to the meeting. He replied: *“We don't get along with the committee representatives. They are net fishers and they keep harassing us about the fish we catch at night. If we showed up at the meeting I know it would have been a disaster.”*

The implementation of the fishing committee did provide a meaningful solution to ensure better representation of fishers by scaling-down decision-making at the district level. However, the issues raised in terms of widespread participation and legitimate representation indicate that even when considering fishers alone at the scale of a district, well-bounded communities are near impossible to identify as the stakes people have in the lagoon and its resources vary enormously, even in relatively small geographical units. Nonetheless, the very existence of the fishing committees enabled a shift in the distribution of power and a quite drastic one when considering how bewildered fishers were to be heard. The rebalancing of decision-making power has been a core process of the PGEM revision highlighting its inherently political dimension.

The politics of marine management: rebalancing power among stakeholders

Managing natural resources, deciding who may access them and how, is forcibly the outcome of political decisions which, through policy, prioritize some goals – and consequently the interests of some stakeholders – over others. Here we examine the political dynamics underlying the implementation of the PGEM and its revision namely by illustrating

shifts in the distribution of decision-power making which it operated among local stakeholders but also between local and central authorities.

Crafting policy, defining goals

The first major step the revision process had set out to achieve was to define the goals and priorities of the new management scheme through a consultative process. In this task, the municipal PGEM cell received the assistance from participatory conservation experts hired through EU-funded RESCCUE and INTEGRE projects. Even though we have mainly focused on the local fishery until now, the much greater diversity of issues the PGEM is destined to address – and consequently the multiplicity of stakeholders who are concerned – called for the better definition of overall management goals. One of the fighting battles of the municipal PGEM cell was to better stress upon Moorea's population that the PGEM was not all about fishing, as stated by one of the staff members: *“People think the PGEM is all about the MPAs. Fishers when they refer to an MPA say ‘This zone is PGEM’. What they don't get is that the whole lagoon is PGEM. MPAs are just one of the many tools used by the PGEM.”* This is why public PGEM meetings were systematically kicked off with a power-point image representing all the different activities the PGEM sought to regulate among which: over-water resort bungalows, scuba-diving, jet-skiing, ray-feeding, snorkeling and fishing.

The outcome of the consultation workshops held from 2016 to 2017 were synthesized in a document (unpublished powerpoint) outlining the main goals which had emerged through the debates. The ten identified goals, represented as a ten-tentacle octopus (animal representing the link between the marine environment, humans and gods – see last section), cover a range of objectives of different nature: *i*) regulating specific activities embracing the diversity of stakeholders (sustainable and equitable fishing, mindful recreational nautical activities, regulating sailboat), *ii*) reaching island wide socio-ecological goals (the promotion of local culture, the conservation of the coast as well as marine species and landscapes, users' security

and access to the sea) and *iii*) implementing collaborative governance (participatory management and reinforced communication) (Figure 3).

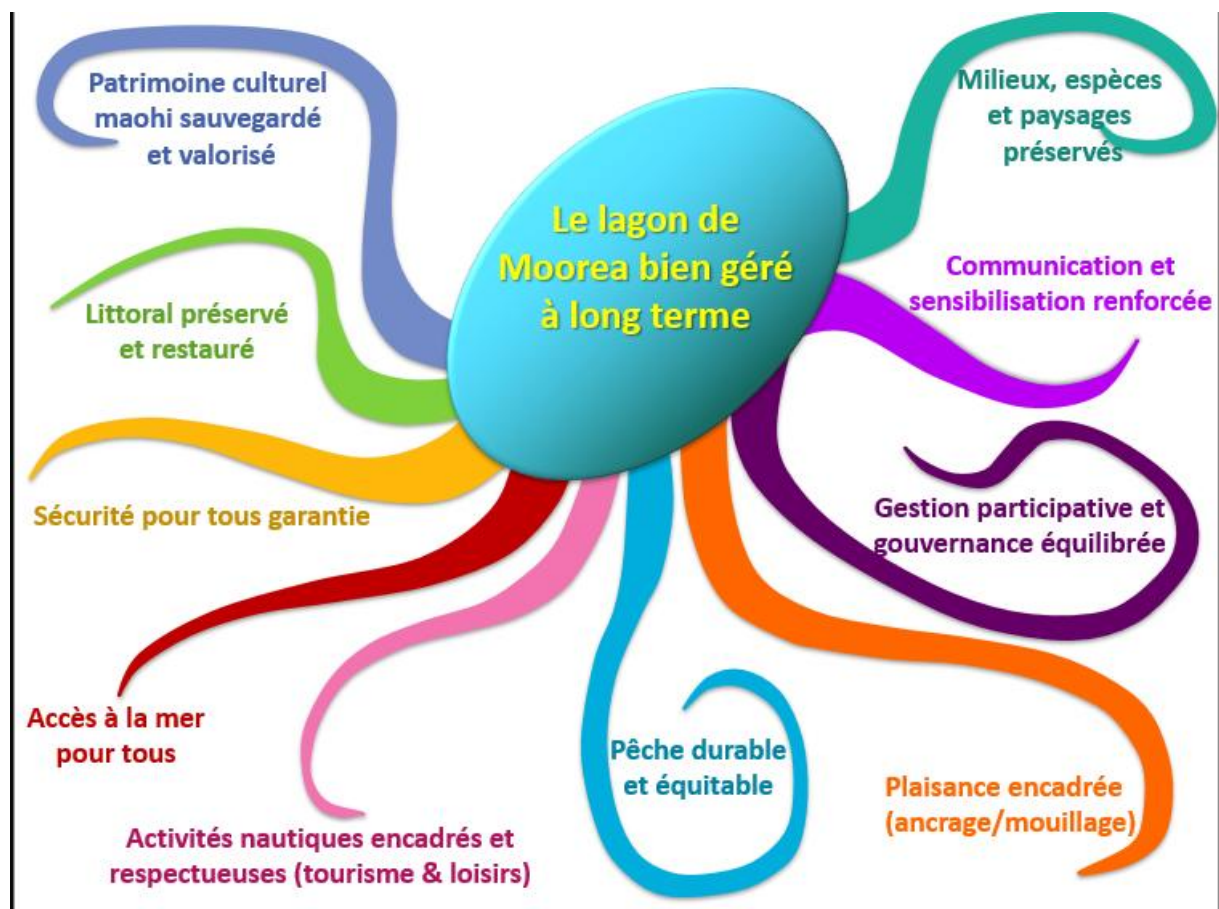


Figure 3 – Goals defined through consultative and participatory workshops

The objectives were then translated into goal-oriented zones. The revision of the PGEM proposes mainly three such zones (Figure 4). An important shift in vernacular occurred mainly through dropping the notion of MPAs entirely⁹. There are no longer any zones which are defined uniquely as no-take zones. Both the ‘Environmental Protection Zones’ and the ‘Environmental, safety-driven, sustainable tourism zones’ effectively ban fishing while not portraying the ban as the main purpose of these zones. The total area of permanent and non-negotiable no-take zones has dropped from 11.9 to 6.3 square km. Most of the pre-existing

⁹ The spatial representation of the PGEM is no longer a unified map from which the network of 8 MPAs appear as the most obvious feature. Instead, four maps have been designed: a map representing the overall spatial zoning (featuring mainly the three goal-oriented zones), a map representing the specific zoning for fishing regulations, another one focusing on the zoning for recreational activities and a last one combining all the spatial information laid out in the previous maps.

MPAs have been transformed into Marine Managed Areas (MMAs) labelled as ‘Zones for sustainable and equitable fishing’ in which regulations are defined by the fishing committees. The regulations set-out by the fishing committees and the DRM may shift through time without having to modify the entire PGEM. The strong desire of the municipal PGEM cell to shift the vernacular from MPAs to MMAs was well illustrated by the political blunder created by the publication of a newspaper article summing up the results of a scientific study carried out by scientists from CRIOBE on the ecological effects of the first PGEM. The newspaper article put much emphasis on one of the conclusions of Thiault et al.’s (2019) paper indicating that the limited ecological effects of the MPAs resulted from poor compliance and surveillance, suggesting that better results would be obtained by enforcing stricter MPAs. Even though the authors of the scientific paper hadn’t taken the initiative of advertising their study in the newspaper, it created friction between the municipality and CRIOBE. The municipal PGEM cell expressed their distress to the director of CRIOBE indicating how the news was undermining the revision and its desire for promoting more flexible zones than strict MPAs.

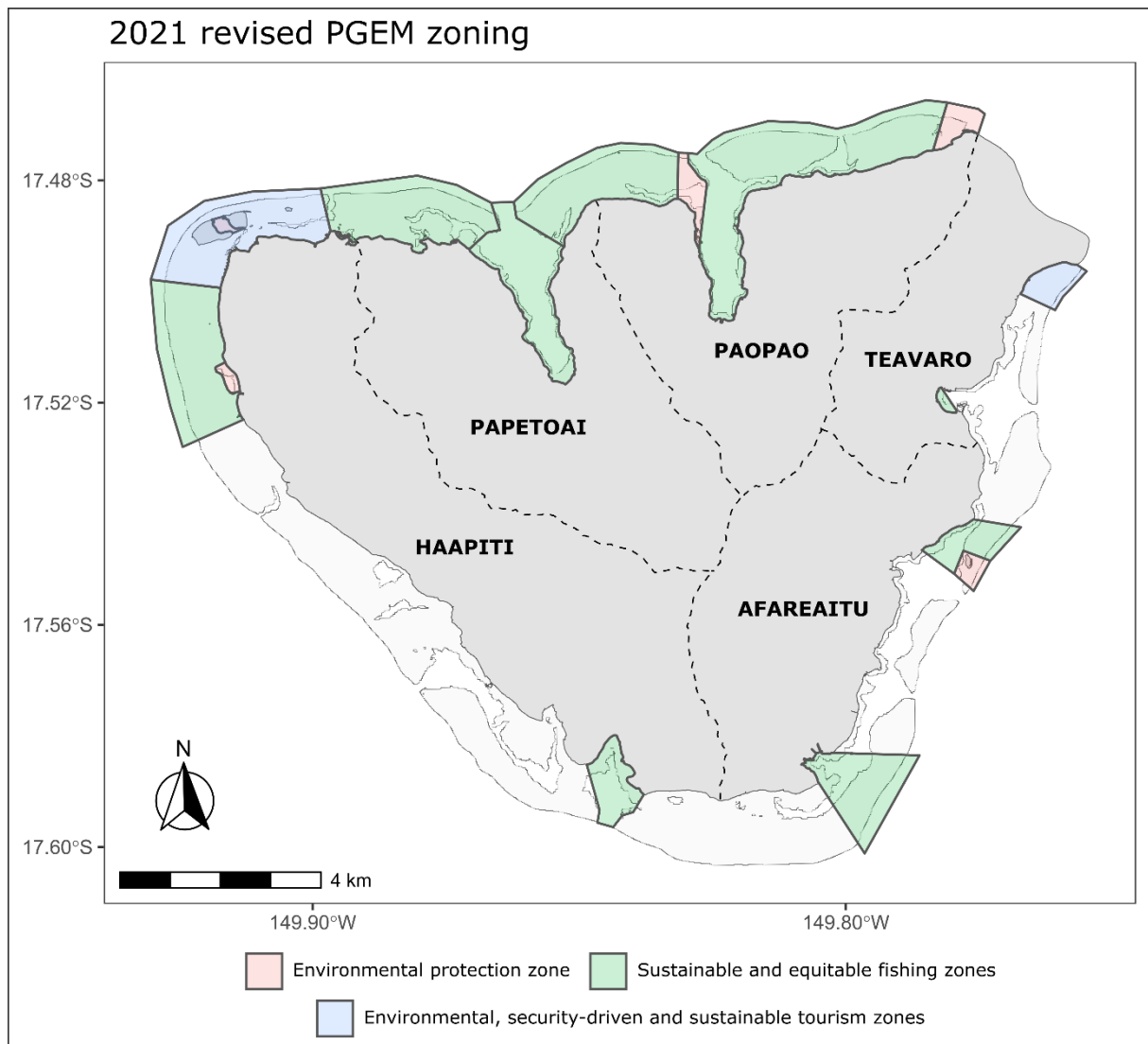


Figure 4 – Goal-driven zones proposed for the revised version of the PGEM

Defining goals through stakeholder consultation and the shifts in vernacular we have just described reflect the political choice to reconfigure the balance of power among stakeholders and the degree to which their interests, opinions and perceptions weigh in the design of the new PGEM. Transforming MPAs into MMAs is not simply a question of semantics, it puts greater emphasis on the roles of fishers and community members in the governance regime while restraining the position of scientists.

Shifting the position of scientists

We have mentioned in the first section, the instrumental role played by scientists from CRIOBE in the design of the first PGEM. While certainly overstating the actual role they

played, many residents and fishers perceived the PGEM as a tool crafted by CRIOBE and considered this scientific institution as the vessel of the intervention of the French State in the management of Moorea's lagoon. While the aim is not to discuss the extent of CRIOBE's role in the design of the initial PGEM, the revision process clearly operated a shift in the positioning of scientists from front- to back-seat participants.

First, even though a representative from scientific institutions did seat in the PGEM revision committee (CLEM), scientists were set aside during the revision process in the field and did not play a leading role in workshops and meetings that were held throughout the process. As one of CRIOBE's scientists shared with us: *"The team leading the PGEM pushed us scientists aside. Not only did they not want us to play an active role, but they also simply didn't want us to take part in the revision."* Second, the revised text of the PGEM implemented important constraints on scientific activity in the lagoon requesting prior approval of scientific projects from both the PGEM steering committee and the district fishing committees. This increased oversight over scientific activities has been a source of concern for both research institutions on the island fearing that it may constitute a significant impediment to their work. Concern was fueled by the experience of a scientific team from CRIOBE which, even though the new regulations had not yet been enacted, had played ball and presented one of their projects to Haapiti's fishing committee which had turned them down by refusing and opposing their project. The new positioning of scientists vis-à-vis the PGEM translated into a feeling of incomprehension as a staff-member from the Gump Research Station mentioned: *"I don't understand why the PGEM distrusts us. We aren't here to harm, the work we are doing here is for the greater good."*

The reconfiguration of the role played by scientists in the revision of the PGEM also transpired through the work carried-out by the fishing committees. Even though a representative from the island's scientific institutions is invited to seat in each of the fishing

district committee's and that one committee had actively requested their participation (e.g. workshop on minimal fish size mentioned earlier), neither scientific institutions weighed into the decisions made by fishers. In early 2021, during the final round of fishing committee meetings held before finalizing the revised text of the PGEM, the scientific representative attended to four out of the five district committee meetings, but had not taken part in any of the debates or discussions. After the last meeting, the representative reported back to fellow scientists from CRIOBE to present the decisions made by fishers. A team of CRIOBE scientists, considering that the new regulations were too complex and would, hence, be inefficient, asked to meet with the municipal PGEM cell in order to express their concern and provide their opinion and expertise. However, the outcome of the meeting was fruitless as the municipal PGEM cell regretted that such opinions and concerns had not been voiced during the fishing committee meetings in front of fishers who would have had the opportunity to consider – or not to – the position of the scientific community. While the shifting positioning of scientists is illustrative of how the PGEM revision sought to reconfigure decision-making power among local stakeholders, its most delicate task has been to navigate through the priorities of organizations from the civil society, of the central FP government and the local municipal authorities.

Dancing a three-way tango: central government, municipal authorities, and civil society

From the point of view of environmental and cultural activists, the PGEM is framed as a success. Indeed, they argue that the initial PGEM addressed their demands of gaining greater decision-making power in overseeing developments on the public marine domain of the island. The PGEM steering committee's representative of environmental NGOs argued that the PGEM provided an unprecedented arena in which the voice of citizens, through their representatives, could be heard by the FP government and agencies. Further, he indicated:

“The French Polynesian government can no longer promote development projects in Moorea

in the dark. Having to go through the PGEM committee first, new projects are under the spotlight allowing citizens to know what is going on and they can give their opinion.” The number of projects declined by the PGEM over the years – over 200 demands ranging from seawall constructions to creation of new nautical recreational activities were refused from 2004 to 2014 – is used as a metric of success. The role of the PGEM as a counterweight to the FP government’s desire to support growing tourism development on Moorea is solidly anchored into the foundational struggle – which occurred in 2000 when the first PGEM was being designed – of residents against the extension of over-water resort bungalows as well as the dredging of coral rubble and sand from the lagoon. The members who had led this struggle are now the fiercest advocates of the PGEM. In 2021, during a PGEM revision meeting in Teavaro during which occurred a heated debate around the project of a new luxury seafront residential development, one of the elders and strongest supporters of the PGEM declaimed: *“My dear companions, you need to rise up. Don’t let yourselves be discouraged. Remember how a handful of us had confronted the anti-riot police in Pihaena in front of the Hilton? [...] We have the power to be heard. [...] We can fight this new project.”* Having documented and heard this same narrative (of which we have provided only an abridged version) in three other PGEM revision meetings leads us to consider it as having become, over the years, part of PGEM’s founding mythology as a tool enabling the empowerment of local citizens vis-à-vis the FP government.

However, community members supporting the PGEM do regret that the steering committee only has a consultative voice in determining the outcomes of development projects. They would wish for the committee’s decisions to be final so as to avoid the FP agencies to overrule them. One of the committee members indicated that, during the revision process, they had sought out legal advice to find a way to achieve this, but they have failed to do so. This same person nuanced this sense of failure by adding: *“At first, it took some time*

for FP agencies to play ball, but now they almost systematically follow the steering committee's decisions. After all, Moorea is important politically. It's the second most populated island and securing votes here is important to the government." This statement indicates that the efficiency of the PGEM as a counterweight to central authorities' policies and orientations depends on a certain degree of alignment between the interests of organizations from the civil society and of the local municipality. However, as will illustrate below, this is not systematically the case.

Some consider that the initial PGEM backfired against the FP government by presenting obstacles to central government designed policies and by coercing inter-agency collaboration. One of the PGEM's supporter who had actively participated to the revision process from the begin, claims that some FP agencies had hoped for the PGEM revision to fail in order to revoke the PGEM entirely in favor of other single-agency piloted legal frameworks geared towards more-specific environmental or fisheries-related purposes, as has been the case in Fakarava. He also argued that the FP government actively sought to undermine the revision process by lending a friendly ear and supporting the *Association Rāhui* which was the fiercest detractor of the PGEM. Members of the *Association PGEM* proactively sought out legal advice in order to demonstrate that the PGEM enacted in 2004 could not be easily dismissed, and particularly not through the sole decision of the FP government. The intricate political interplay between central government, local municipality and civil society which plays out around the marine management of Moorea transpired in the revision process and the numerous delays which disrupted its completion. During both the territorial elections (elections of the members of FP parliament – held in April-May 2018) and municipal elections (held from March to June 2020), FP authorities and municipality decided to put on hold any PGEM revision field related work arguing that they did not wish the revision to 'pollute' the political debate. This, however, has only delayed the ability for the revised

PGEM to balance the priorities of the central government, the municipal authorities and the civil society into a stabilized version presented by the CLEM in March 2021.

The final steps of the revision as well as recent events have made apparent the fragility of this three-way tango. During the last CLEM meeting during which the final version of the revised PGEM was presented, the mayor of Moorea asked to modify the zoning of one of the flagship MPAs of Moorea – now labelled as a ‘Security, Environment and Tourism zone’ – in order to enable the project of one of the island’s luxury resorts to extend both on-land and over-water bungalows. The extension project, being located at the heart of the protected zone, would have been impossible given the regulations of both the initial PGEM and its revised version. Most CLEM members strongly advised against such a modification arguing that, firstly, it had never been mentioned in any of the 200 revision workshops and public meetings and, secondly, it would further delay the implementation of the revised PGEM as such a significant modification had to go through a lengthy process of public consultation which could last several months if not years. The CLEM ruled against the proposal and did not include it in the finalized version of the revised PGEM.

However, several months after the CLEM submitted the revised version of the PGEM to the FP government for final approval, the ‘*Conseil des ministres*’ (Board of ministers) – institutional organ responsible for enacting French Polynesian laws –enacted the final text after unilaterally introducing a zoning mechanism (*Zone de Développement Prioritaire* – Development Priority Zone) which could allow the FP government to promote development projects regardless of any regulations imposed by the PGEM. In practice, this was a way to open a window of possibility for the hotel extension to take place without modifying the zoning proposed in the revised version of the PGEM. The decision created an upsurge among environmental activists, cultural associations and residents of Moorea among which four organizations filed lawsuits against the FP government on the grounds that the ‘*Conseil des*

Ministres' could not legally enact substantial modifications to the revised version of the PGEM without prior consultation of the CLEM committee who had designed the text.

Local contestation against the government's decision and the hotel's extension project has been particularly strong as the development would occur along one of the island's most popular and scenic beaches. The local upsurge crystalized in a large-scale protest held on Temae beach on November 13th 2021. Over 2,000 participants attended the protest which was organized by a recently formed association of residents (seeking to oppose the increasing number of development projects around the island) and by the Protestant Ma'ohi church. The protest took the form of a cultural ceremony during which songs, speeches and dances were performed. Each of the island's six parishes of the Ma'ohi protestant church performed in turn and selected some of their members who declaimed one or several *'orero* (eloquent speech) and namely a particular kind called *'pari pari fenua'* which is a form of story-telling reminding the history of a particular place through the enumeration of ancestors, spirits and their links to terrestrial and marine landmarks. The crux of the protest was a ceremony named "*Tahei 'auti*", which can be translated as attaching the *'auti* which is a generic term for several species of the genus *Cordyline*, an important ceremonial plant in pre-contact Tahiti. Participants were asked to bring to the protest a woven rope of *'auti* so that each individual rope would be tied to one another forming a unique rope symbolizing the solidarity of Moorea's population. During the ceremony Hinano Murphy – a prominent community leader and founder of one of the main cultural associations on the Island – publicly presented the ceremony "*as a traditional and solemn ceremony through which all of us can reconnect with one another, reconnect with our land, reconnect with our culture.*"



Figure 5 – Temae Beach Protest – Nov 13th 2021 – Tahei ‘auti ceremony

In this particular case, the political arm wrestle which occurred around the PGEM revision between the FP government and civil society gave birth to vibrant forms of contestation which mobilized local cultural concepts rather than purely environmental ones. The protest was as much the expression of a willingness to oppose the galloping development of the island, as the voicing of the need to revitalize Polynesian cultural identity and way of life. As we will argue in the next section, rather than being peripheral, or anecdotal, the mobilization of culture and identity have been central to the socio-political dynamics underlying the revision of the PGEM.

Cultural (dis)connections of the PGEM

In the development and conservation literature example of studies emphasizing the cultural reasons for the failure of conservation management initiatives are manifold (Hooper, 2005). Here, rather than using such frameworks to understand the local dynamics of the

PGEM and its revision we offer to explore how local stakeholders themselves wield culture in the way they engage in or disengage from the PGEM.

Contesting marine management, contesting the neo-colonial order

Gaspar and Bambridge (2008) as well as Walker (2009) have argued how disconnected the PGEM was from the cultural background in which it operated. Indeed, the spatial zoning of the lagoon alone – disconnected from terrestrial issues – participated in perpetuating the land/sea divide the FP administration inherited from French colonial rule contrasting with pre-contact forms of management based on territorial units embracing land and sea (see section on *Rāhui* below). Moreover, the French name of the PGEM as well as its technocratic jargon have pushed people to assimilate it to a French tool as one fisher from Afareaitu expressed: “*What is PGEM? ‘Plan de gestion de l’espace lagonaire’! That’s France! They have nothing to do in our lagoon and that’s why nobody cares.*” Even though through interviews, very little respondents assimilated the PGEM governance to the French State (9% out of 121 informants) in public meetings the framing of PGEM as an extension of French rule is often evidenced, as was the case during a meeting in Papetoai: “*The lagoon is ours but with the PGEM we’ve left the French enter.*” This voicing of neo-colonial contestation also transpires during debates concerning use conflicts between fishers and residents, on the one hand, and tourist operators, sailboats or hotels on the other which are often framed as opposing local Polynesians to French foreigners.

Moreover, in some meetings, what may have seemed to be meaningless details (considering the larger implications of the PGEM) such as qualifying lagoon fishing as a mainly recreational activity or presenting as anecdotal a culturally important fishing practices (such as the beach netting of juvenile goatfish - *Mulloidichthys spp.*) amounted, for fishers and residents, to violent attacks to core aspects of Polynesian culture. Walker (2009) highlighted how the PGEM had displaced essential fishing activities carried out mainly by women

through the permanent ban to harvest and to fish in the nearshore environments protected by the MPAs. Hinano Murphy – a respected activist and founder of one of the main cultural associations of Moorea – corroborated such findings: *“MPAs which include the nearshore environment are culturally inappropriate. The shore and fringing reef are essential for women’s fishing activities. Men go further out and in high sea. Women use lines, nets and harvest invertebrates on the fringing reef. More importantly it is an essential environment for the upbringing of children. It is through women’s use of the shore that young children are able to connect with and to know their marine environment.”*

Previous studies have shown that the disenchanting worldview offered by western-inspired conservation regimes may be one of the reasons of their cultural inadequacy. One could argue that the vision of the marine environment – as a segmentation of space according to use – contrasts sharply with Polynesians’ understanding of their environment considered as the result of the entangled agencies of humans, non-humans and spiritual entities (Rigo 2004). During meetings, fishers sometimes quite explicitly drew upon the profound disconnections between the two sets of worldviews. In Papetoai, when discussing the limits of a zone considered to protect a nursery a fisher argued: *“Let me tell you how it works. Fish follow the rule of God. What you are showing me here is the rule of Humans. Do you think the fish are going to follow your rules. God commands the fish and we fishers are on the lookout of the signs he provides – in the wind, in the color of the flowers on land – to know where to catch the fish¹⁰.”*

However, such disconnections are not as absolute as the above statement may lead to think. In its first design, the artisans of the PGEM tried to weave in cultural meaning and to establish it upon existing local cosmogonies by tasking the steering committee’s representative of cultural and environmental associations the design of the PGEM’s logo and moto. The choice

¹⁰ Here provide note and reference on the syncretism between Christianity and Polynesian culture, most obvious in the Protestant Church.

of the logo was that of an octopus (*fe'e*) whose eight tentacles represented the eight main valleys of Moorea and who symbolizes, in local cosmogonies, the link between marine beings, humans and *Ta'aora* – the god considered as the creator of the world and of all the spiritual and living beings (Gaspar and Bambridge 2008). Furthermore, the acknowledgement of the municipal PGEM cell for Polynesian spiritual values transpires in their systematically proceeding to open and close their meetings with prayers performed by recognized community leaders. They also seek to circulate information concerning the PGEM during Sunday mass throughout the island's parishes. Finally, the municipality made it a priority to hire at the head of the revision team a very well-spoken Tahitian speaker with a strong foothold in the local Ma'ohi protestant church.

It is during encounters between community members and western scientists that the disconnections between western and Polynesian cosmogonies are the most regularly wielded. In a meeting held between fishers and scientists – geared towards the creation of synergies for the co-production of knowledge on the marine environment rather than management issues – one of the participants argued: *“Your knowledge is like the titanic and ours like Noah's arch. Our knowledge seems more rudimentary but which of these ships weathered the storm? [...] Our ancestors conquered the Pacific without resorting to inventing the compass, all of this because we have a deep knowledge of our environment and how it works”* Similarly after presenting our project on the interactions between fishing practices and coral reef dynamics to a fisher, he replied: *“Your project is very interesting, but as long as you don't take into account the spirits who govern the regeneration of resources, you won't achieve anything.”* These statements can be interpreted as a form of open defiance towards western science going hand in hand with a process of cultural revitalization of local culture and knowledge. The most interesting expression of these processes has been illustrated by a local group of fishers and residents – rooting for the implementation of a *Rāhui* in Moorea – who carried out fish

counts in the lagoon to produce their own ecological assessment of the effect of the PGEM's network of MPAs. The use of tools inspired by western science – underwater fish counts – indicates that defiance is less oriented against science itself as it is pitched against its local practitioners. Indeed, this group – as well as many participants to PGEM public meetings – have vocally criticized CRIOBE during the revision process questioning both its motives and their assessments of the state of marine resources. As a French Research Station, the guidance CRIOBE provided in the design of the first PGEM was interpreted by many as the symbol of France's intrusion into the management of local affairs.

Overall, the overt confrontation of many residents, fishers and associations against the PGEM and its promoters often served as a vehicle of neo-colonial contestation fueled by a sense of dispossession and displacement. Such contestation has been the most visible through the growing demand around the island to shift the governance regime from its PGEM-form to one inspired by the pre-contact institution of *Rāhui*.

The resurgence and reinvention of Rāhui

The pre-contact institution of *rāhui* has received, over the past decade, growing scholarly attention (Bambridge 2016). The notion refers concomitantly to territorial units – pie-shaped territories running from mountain ridge to reef crest – and a form of natural-resource management consisting in placing specific species or spaces under a temporary ban. Estates were governed through a nested hierarchy of nobiliary elites – commonly referred as *arii* – who had the power to decree a *rāhui* in the estates they ruled. The notion goes hand in hand with that of *tapu* – a strong spiritually sanctioned prohibition – under which resources were placed for the amount of time determined by the *rāhui*. Most often, *rāhui* were destined to replenish marine or terrestrial resources in view of their future use for specific religious and political ceremonies. The institution progressively collapsed through Christianization and colonialization.

Under the double impulsion of Polynesian cultural renaissance and the promotion of CBFMR initiatives the concept of *rāhui* has reemerged across French Polynesia in the past decades. Marine management initiatives implemented as contemporary *rāhui* have recently blossomed in FP and particularly in Tahiti. The most notorious case is the one of the *rāhui* in Teahupoo implemented in 2014 and which has been framed as a success both in terms of observed ecological effects and stakeholder engagement. The growing popularity of the concept has also been evidenced by its introduction into 2017 revised version of the ‘Code de l’Environnement’ (collection of environment-related FP laws) as a legitimate form of natural resource management. Here, we seek to analyze how the concept of *rāhui* has been mobilized – and discursively constructed – as means of political and post-colonial contestation in the context of the revision of Moorea’s PGEM.

As mentioned in the first section of this paper, 75 out of 121 respondents from our household survey indicated that one of the main issues with the PGEM resided in the permanence of the MPAs; in place of which they would prefer rotational closures. Over two-thirds referred to such desired closures as *Rāhui*. In most cases, *Rāhui* appeared as an alternative to MPAs for the protection and replenishment of marine resources without any indication that their implementation would require a radical shift in the governance regime. Some of our informants even indicated, when asked what *Rāhui* was for them, that the PGEM was a form of *Rāhui* but that it simply did not shift in space nor in time (N= 13 out of 121).

For others, however, divergences between *Rāhui* and the PGEM rest upon profound differences of nature rather than degree. Such viewpoints have been expressed the most clearly by the work of the *Association Rāhui* founded in 2016 vociferously contesting the PGEM and promoting the implementation of a *rāhui* in its stead (Hunter et al. 2019). In the midst of the revision process, residents from the district of Haapiti founded the association and crafted a solid documentation for an alternative organization of marine management

founded upon *Rāhui*. They designed a regime of governance which they framed as being rooted in Polynesian tradition while being adapted to the contemporary context. Their main lines of argument were that the PGEM was an institution geared towards the promotion of tourism at the expense of fishers, residents and the marine environment all the while lacking transparency and shared governance. They suggested to get rid of the PGEM and to set-up in each of Moorea's five districts, *rāhui* committees named *toohitu* (which could literally be translated as 'council of the seven' and has been translated by the *Association rāhui* as council of the wise) mainly composed of fishers and community leaders. These committees would oversee the management of their district's lagoon and implement rotational closures according to their expertise, diagnosis of marine health and identified fishery-related needs. The mobilization of the concept of *toohitu* in their management design was used both as a way to root their project into Polynesian tradition all the while promoting a more democratic mode of governance. It provides insightful perspectives into the dynamism of what are called 'traditional' forms of governance as the institution of the *toohitu* itself emerged as a post-contact form of *rāhui* governance promoted by Christian missionaries as a way to downplay the political power of Polynesian nobiliary elite in the management of terrestrial and marine estates (Bambridge et Wencelius in press).

For this association, the notion of *rāhui* was used as a means of political contestation against the municipality and as a way to transfer decision-making power to the local fishers and residents. One of the association's leaders expressed: "*The PGEM is all about money, it is the municipality, the hotels, the tourist-operators who are imposing their rules to the population. The rāhui would come above all of these actors and the committees would make the decisions in each district. We want lagoon management to be carried out by the population and for the population, rather than slicing up the lagoon for different stakeholders.*" The proposals made by the *Rāhui association*, in 2016, were ground-breaking

– at that time only one fisher was represented in the PGEM steering committee and the idea of district-level fishing committees had not yet made its way – and gained traction among fishers, church officials and community leaders. The association threatened the revision process itself both through the popular support they reaped and by their lobbying efforts among French Polynesian government officials. It did, however, progressively lose steam as the district-level fishing committees made their way in the PGEM revision and as the core members of the association invested their efforts into direct political action during the 2020 municipal elections.

Aside from being depicted as a more democratic form of governance – a demand which the district-level fishing committees progressively addressed – *rāhui* has been discursively mobilized and constructed in opposition to the PGEM as an institution deeply rooted in Polynesian culture, identity and cosmogonies. A fisher we have interviewed in 2019, stressing the need to replace the PGEM by a *rāhui* indicated: “*Rāhui, is in the heart of Polynesians. The notion naturally calls for respect. People don’t respect the PGEM because it is French. We would simply need to implement a rāhui for people to respect it.*” Furthermore, it is the cosmological dimensions attached to the notion – namely the notion of the spiritual sanction which would befall upon people breaking the sacredness of *tapu* instated by a *rāhui* – which provides the concept with greater legitimacy than what we could describe as a disenchanting PGEM. Among the members of the *Association Rāhui* who have been the promoters of a very formal and institutionalized version of *rāhui*, some have insisted on the importance of its spiritual aspects and how it ties into the notion of *mana*, a concept fundamental to Polynesian forms of political and religious organization, which can be defined as the expression of power originating from spiritual or godly entities (Keesing 1984). One of the leaders of the association mentioned: “*We first need to get our rāhui set up and running with the approval of the FP government. Only then will we work on bringing the mana back into it.*”

*You know, our ancestors were able to lift huge stones without even touching it. We've lost this mana and this is why everything is going wrong. With a rāhui, mana will automatically come back and so will respect for nature [use of the Tahitian neologism *natura*].*" The spiritual dimensions of *rāhui* were depicted as even more central by a fisher from Teavaro indicating that *rāhui* is neither a territory nor an institution but rather lies in the intrinsic regenerative power of resources: *"I am angered by people using lightly the notion of rāhui. Everybody is saying 'I want a rāhui here, I want a rāhui there'. But rāhui is not a question of zone, it is in nature. Look at a mango tree: one season it provides fruits, the other it is barren. That is rāhui. But we have lost that in the ocean. We are no longer true Ma'ohi, we are Tahitians now and we no longer have the mana. We have to connect back with our ancestors with the spirits of nature before we can bring back rāhui on this island."* This depiction of *rāhui* would deserve more scrutiny and one could interpret the power of pre-contact nobiliary elite (*arii*) to enforce *rāhui* in their estates as originating from their ability to harness – as direct descendants of Polynesian deities – the regenerative power of resources through their connections to the spiritual entities governing the cycles of growth and reproduction. Rather than seeking to disentangle from the varied discursive constructions of *rāhui* an essentialized definition of the concept, we argue that the various ways in which the notion is mobilized all converge towards a demand for the revitalization of Polynesian culture and identity – fueled by a sense of neocolonial dispossession and acculturation – into the contemporary forms of marine governance.

The attachment to core cultural concepts such as *rāhui*, *tapu* and *mana* is widely shared across stakeholders and even among municipal and FP departmental officials. A DRM agent when asked what he thought about the proposals made by the *rāhui* association for the management of Moorea's marine environment indicated: *"As a Polynesian, I am myself very attached to the concept of rāhui and I am very happy to see such concepts reemerge."*

However, I regret that this group has sought to oppose the PGEM instead of collaborating in the design of the revised the PGEM.” Along very similar lines, a municipal staff member shared with us: *“I wish from all my heart that people, and mostly fishers, could refer to the PGEM as rāhui. Obviously, we are from the old time rāhui which is, in my opinion, no longer possible in Moorea, but it could be considered as a form of modern rāhui.”* The inability of the PGEM to be referred to as a *rāhui* over the years was expressed as a failure, contrasting with other institutional and formal modes of marine governance in Tahiti which, from their onset, have been labelled as *rāhui* both by community members, central and municipal authorities. We are inclined to argue that the term *rāhui*, as a label, confers to the governance regime it refers to both legitimacy and local support. As evidence, the growing empowerment of Moorea’s fishers through the implementation of district-level committees has, most recently in December 2021, given rise to the project of organizing these committees into an island-wide federation of fishers which will eventually be named *Tomite Rāhui no Aimeho Nui* (*Rāhui* Committee of Moorea).

Conclusion

References