



## Trends in South Pacific fisheries management

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### ABSTRACT

While categorized as Small Island Developing States, South Pacific Island nations are the custodians of major ocean areas containing marine resources of high commercial and environmental significance. Yet, these resources are threatened by climate change, overfishing, Illegal, Unreported and Unregulated (IUU) fishing, as well as habitat destruction. The study, carried out in the early stage of the interdisciplinary research project SOC-Pacific (<https://socpacific.net>), aims to: a) identify the main policies on which fisheries management is currently based in the South Pacific, particularly in Fiji, New Caledonia and Vanuatu; b) investigate the evolution over time of key issues covered in these policies and related to coastal and/or offshore fisheries sectors; c) trace disconnections on the matter between legally binding instruments and non-binding strategies. A list of more than 200 documents relevant to regional fisheries management was gathered and separated into legally binding instruments and non-binding strategies. Legal instruments focused more on offshore issues (tuna fisheries and IUU fishing) and increasingly covered IUU fishing issues, confirming that tuna fisheries have an established hard policy arena. In strategies pertaining to coastal fisheries, community involvement appears as a key topic and a clear overall trend towards increasingly addressing climate change was spotlighted. Sustainability, community involvement, climate change, and food security issues are more covered in strategies than in legal instruments. Topics mostly addressed in relation to coastal areas are not substantially covered in legal instruments, suggesting that establishing binding measures might not be deemed as beneficial as strategies in coastal fields.

## 1. Introduction

### 1.1. South Pacific fisheries management

Both coastal and oceanic (in particular tuna) fisheries play a very important role in South Pacific Island economies, including a crucial role for local livelihoods and regional food security, government revenues and national GDP [1–3]. The sustainability of these fisheries, however, is threatened by climate change, overfishing, Illegal, Unreported and Unregulated (IUU) fishing, marine pollution and habitat destruction [4–7].

Adding up to the challenge of governing South Pacific fisheries are: the large size of the region's marine spaces - both Exclusive Economic Zones (EEZs) and Areas Beyond National Jurisdiction (ABNJs) -, fishing activities by Distant Water Fishing Nations (DWFNs), as well as the combination of scarce data [8,9] and low government capacity for management and enforcement concerning coastal resources [10,11].

The increasing pressure on these fisheries is addressed in two separate thrusts. For offshore fisheries, mainly comprising highly migratory stocks, it is dealt with through a regional ocean governance framework, based on the development of various regional and sub-regional organizations, supplemented by diverse national approaches under the

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**Table of abbreviations**

ABNJ	Area Beyond National Jurisdiction	IUU	Illegal Unreported and Unregulated (Fishing)
CBD	Convention on Biological Diversity	LDC	Least Developed Country
CBFM	Community-based fisheries management	MSG	Melanesian Spearhead Group
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora	NGO	Non-Governmental Organization
CMM	Conservation Management Measure	PICTs	Pacific Island Countries and Territories
CMS	Convention on the Conservation of Migratory Species of Wild Animals	PIF	Pacific Islands Forum
CROP	Council of Regional Organizations in the Pacific	PNA	Parties to the Nauru Agreement
DWFN	Distant Water Fishing Nations	RFMO	Regional Fisheries Management Organizations
EEZ	Exclusive Economic Zone	SDG	Sustainable Development Goal
FAME	Division of Fisheries, Aquaculture and Marine Ecosystems	SIDS	Small Island Developing States
FAO	Food and Agriculture Organization	SPC	Pacific Community
FFA	Pacific Islands Forum Fisheries Agency	SPREP	Secretariat of the Pacific Regional Environment Program
FFC	Forum Fisheries Committee	SPRFMO	South Pacific Regional Fisheries Management Organization
FLNKS	Front de Libération De Nationale Kanak et Solcialiste	UN	United Nations
HoF	Heads of Fisheries	UNCLOS	United Nations Convention on the Law of the Sea
IATTC	Inter-American Tropical Tuna Commission	UNFSA	United Nations Agreement for the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks
		WCPFC	Western & Central Pacific Fisheries Commission

umbrella of global management efforts<sup>1</sup> (Fig. 1). For coastal fisheries, efforts appear concentrated at national, if not community level, though they are greatly influenced by regional and sub-regional guidance and non-binding policy.

In terms of regional fisheries management, the most important organizations are: the Pacific Community (SPC), the Pacific Islands Forum Fisheries Agency (FFA), the Secretariat of the Pacific Regional Environment Program<sup>2</sup> (SPREP), and the Pacific Islands Forum (PIF). SPC was created in 1947 as the first regional organization in the South Pacific, and hosts the Fisheries, Aquaculture and Marine Ecosystems (FAME) Division, the Heads of Fisheries (HoF) Meetings<sup>3</sup> and regional projects.<sup>4</sup> FFA and its Forum Fisheries Committee (FFC) lay a focus on national EEZs and related tuna fisheries.<sup>5</sup> SPREP assists towards sustainability and biodiversity around coastal and marine resources.<sup>6</sup> PIF is a regional governance forum at the highest political level that provides broad guidance and political commitment. These regional organizations are brought together under the umbrella of the Council of Regional Organizations in the Pacific (CROP) and the Marine Sector Working Group (MSWG) for technical coordination on marine affairs.

<sup>1</sup> The international arena comprises e.g. the United Nations (UN) and Food and Agriculture Organization (FAO) along with the Agreement for the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (UNFSA), the Convention on the Law of the Sea (UNCLOS), the Convention on Biological Diversity (CBD), the Convention on the Conservation of Migratory Species of Wild Animals (CMS), the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the 2030 Agenda for Sustainable Development including the Sustainable Development Goals (SDG), particularly SDG 14 (Life below water).

<sup>2</sup> Formerly the environment program of SPC and an autonomous organization since 1993.

<sup>3</sup> These meetings bring together “heads of SPC member country and territory fisheries agencies, or their appointed deputies” ([89]; p.2).

<sup>4</sup> E.g. RESCCUE, INTEGRE and PROTÉGÉ that combine environmental/fisheries management with climate change adaptation, sustainability and stakeholder involvement considerations. Members can also reach out to SPC, i.e. Fiji and New Caledonia have inquired for special studies on how to improve tuna fisheries in their EEZs.

<sup>5</sup> FFA is furthermore important for fisheries surveillance and to prepare for negotiations in other organizations, e.g. some that include DWFNs.

<sup>6</sup> SPREP (2017), Strategic Plan 2017–2026. See [https://www.sprep.org/attachments/Publications/Corporate\\_Documents/strategic-plan-2017-2026.pdf](https://www.sprep.org/attachments/Publications/Corporate_Documents/strategic-plan-2017-2026.pdf) (Accessed 14/01/2020).

Furthermore, particularly for tuna fisheries in the region, Regional Fisheries Management Organizations (RFMOs) such as the Western and Central Pacific Fisheries Commission (WCPFC),<sup>7</sup> the South Pacific Regional Fisheries Management Organization (SPRFMO), and the Inter-American Tropical Tuna Commission (IATTC)<sup>8</sup> are important and, in contrast to e.g. FFA, include both Pacific Countries and Territories (PICTs) and DWFNs.<sup>9</sup> Concerning the South Pacific region, it is established that FFA, SPC and WCPFC are the main regional bodies that influence the direction of fisheries management. Among these, only WCPFC can create binding legal instruments. FFA and SPC often collaboratively develop management documents, e.g. the *Regional Roadmap for Sustainable Fisheries*<sup>10</sup> that they co-produced in 2015, and advise on regional policy issues, which might then be adopted by their member countries and territories at their annual meetings, and even taken up by PIF for endorsement by the Forum leaders (e.g., this was the pathway for development of the *Roadmap for Sustainable Fisheries* and the *Noumea Strategy - A New Song for Coastal Fisheries*,<sup>11</sup> in the following ‘Noumea Strategy’). Additionally, there is an increasing potential of sub-regional cooperation in fisheries management that should not be underestimated [12,13], including the Melanesian Spearhead Group (MSG) and the Parties to the Nauru Agreement (PNA).

This regional fisheries management sector is part of a complex regional ocean governance framework that has progressively developed through four stages, namely ‘atomization’ (isolated arising of

<sup>7</sup> WCPFC is the only RFMO which comprises all three study areas (see Convention for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean (‘WCPFC convention’), Article 3).

<sup>8</sup> IATTC and SPRFMO focus on different areas than the study sites. IATTC: tuna in the Eastern Pacific; SPRFMO: South East Pacific jack mackerel (particularly *Trachurus murphyi* and *T. symmetricus*), whose main distribution does not cover the three study areas [90], and jumbo flying squid (*Dosidicus spp.*), mainly occurring in the Eastern Pacific [91,92].

<sup>9</sup> E.g. WCPFC convention, Article 34.

<sup>10</sup> See [https://www.ffa.int/system/files/Roadmap\\_web\\_0.pdf](https://www.ffa.int/system/files/Roadmap_web_0.pdf) (Accessed 13/01/2020).

<sup>11</sup> The Noumea Strategy was created in a regional workshop with representatives from SPC members, CROP members, coastal communities and NGOs and approved by the 9th SPC HoF meeting and the 93rd FFC meeting. See <https://coastfish.spc.int/component/content/article/461-a-new-song-for-coastal-fisheries.html> (Accessed 02/03/2019).

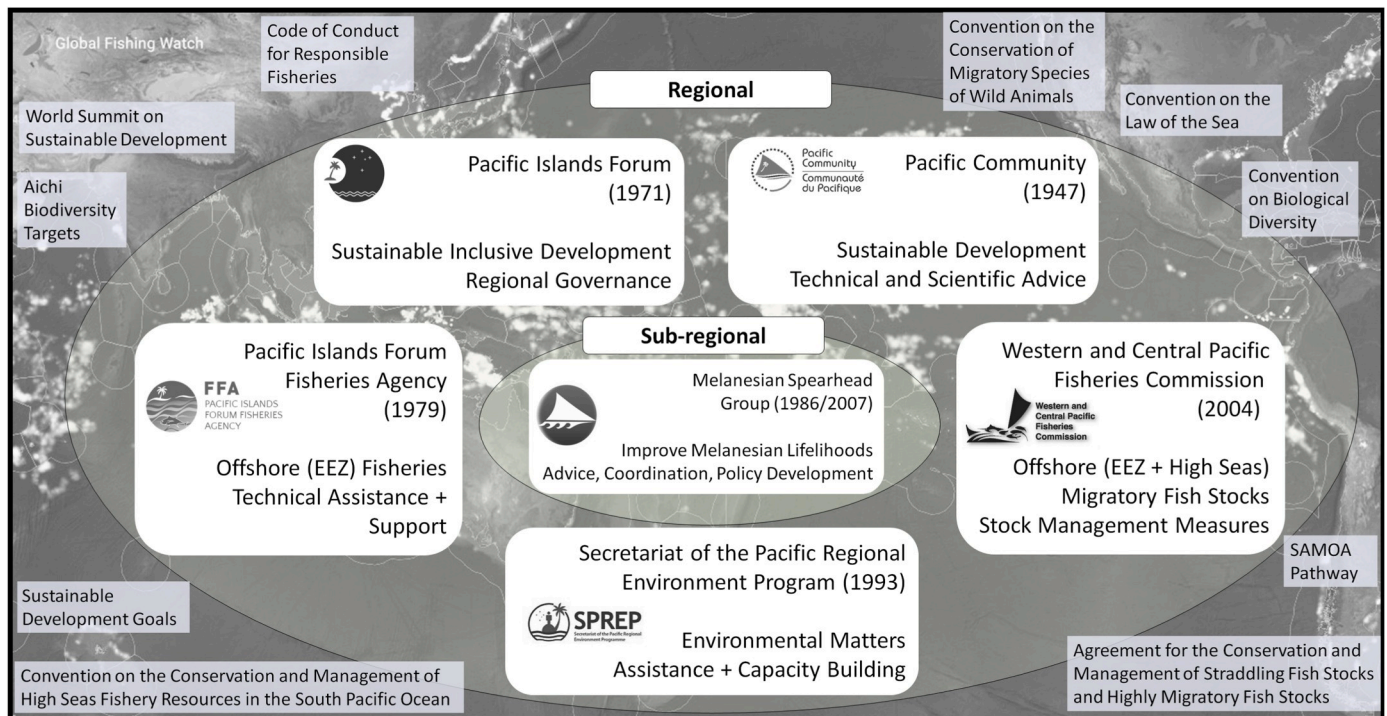


Fig. 1. Overview of the South Pacific governance framework, highlighting some of the main fisheries management-related organizations surrounded by key stones of the international agenda.

agreements and conventions, 1947–1979), ‘competition’ (e.g., between organizations as well as between divisions within larger organizations, 1980–1989), ‘specialization’ (after institutional framework reviews, 1990–2009) and ‘integration’ (with many evolving ocean management endeavors, 2010–2017) [14]. The most recent stage, ‘integration’, is characterized for example by the launch of the *Framework for a Pacific Oceanscape*<sup>12</sup> at the 41st Pacific Islands Forum Leaders Meeting in Vanuatu,<sup>13</sup> aiming to “protect, manage, maintain and sustain the cultural and natural integrity of the ocean for our ancestors and future generations and indeed for global well-being” (*Framework for a Pacific Oceanscape*, p.2), and by the appointment of a Pacific Ocean Commissioner by Forum Leaders as a regional cooperation-oriented and ocean-focused role. Throughout the evolution of this regional ocean governance framework, its fisheries management component has been marked by the emergence of many diverse organizations operating at different levels: RFMOs, technical agencies, Non-Governmental Organizations (NGOs), sub-regional alliances, etc., as well as both partial overlaps<sup>14</sup> and collaborations<sup>15</sup> between them. Some of these organizations specifically focus on fisheries management, others do not (Table 1). One motivation for the present paper was to further investigate how the trend towards ‘integration’ in ocean governance documented by Quirk [14] is translated, in terms of policy documents, into this regional ocean governance framework’s fisheries management component, with a particular attention paid to three study areas: New Caledonia, Fiji and Vanuatu.

## 1.2. Focus areas and their fisheries

Vanuatu, Fiji and New Caledonia are geographically relevant case studies for this analysis, as they form a triangle with contiguous and extensive EEZs (Fig. 2). All three are categorized as Small Island Developing States (SIDS),<sup>16</sup> yet reflect contrasted contexts. Vanuatu is scheduled to graduate in 2020 from the category ‘Least Developed Countries’, which refers to low-income countries confronting severe structural impediments to sustainable development, highly vulnerable to economic and environmental shocks, with low levels of human assets.<sup>17</sup> It is considered of medium human development [17], while Fiji has a significantly higher level of human development [18]. The World Bank considers that Vanuatu has a lower middle income level, and Fiji has an upper middle income level, while New Caledonia has a high income level.<sup>18</sup> New Caledonia is indeed a French overseas territory, and its fisheries management agencies are relatively well resourced compared to those of Vanuatu and Fiji [3,19].

The importance of the offshore fishery production within these three study areas’ EEZs varies, but is limited compared to many other PICTs [20] and comprises tuna longlining as an important fishing method [21, 22]. Regarding the Western and Central Pacific, the most important target tuna species in the region are skipjack tuna (*Katsuwonus pelamis*), yellowfin tuna (*Thunnus albacares*), bigeye tuna (*T. obesus*) and albacore tuna (*T. alalunga*) [23]. With respect to tuna, Vanuatu’s foreign-based

<sup>12</sup> See [https://www.sprep.org/att/publication/000937\\_684a.pdf](https://www.sprep.org/att/publication/000937_684a.pdf) (Accessed 21/01/2020).

<sup>13</sup> See <http://www.forumsec.org/wp-content/uploads/2017/11/2010-Forum-Communique-Port-Vila-Vanuatu-4-5-Aug.pdf> (Accessed 21/01/2020).

<sup>14</sup> E.g. between SPC for fisheries and SPREP for protected species; there both cooperation and competition for funding and leadership exist.

<sup>15</sup> E.g. collaboration of FFA, SPREP and SPC, of FFA with WCPFC, as well as SPC’s scientific support and data management for WCPFC.

<sup>16</sup> See <https://sustainabledevelopment.un.org/topics/sids/list> (Accessed 19/07/2019).

<sup>17</sup> See Least Developed Country Category: Vanuatu Profile, <https://www.un.org/development/desa/dpad/least-developed-country-category-vanuatu.html> (Accessed 19/07/2019).

<sup>18</sup> See <https://data.worldbank.org/country/vanuatu>; <https://data.worldbank.org/country/fiji>; <https://data.worldbank.org/country/new-caledonia> (Accessed 19/07/2019).

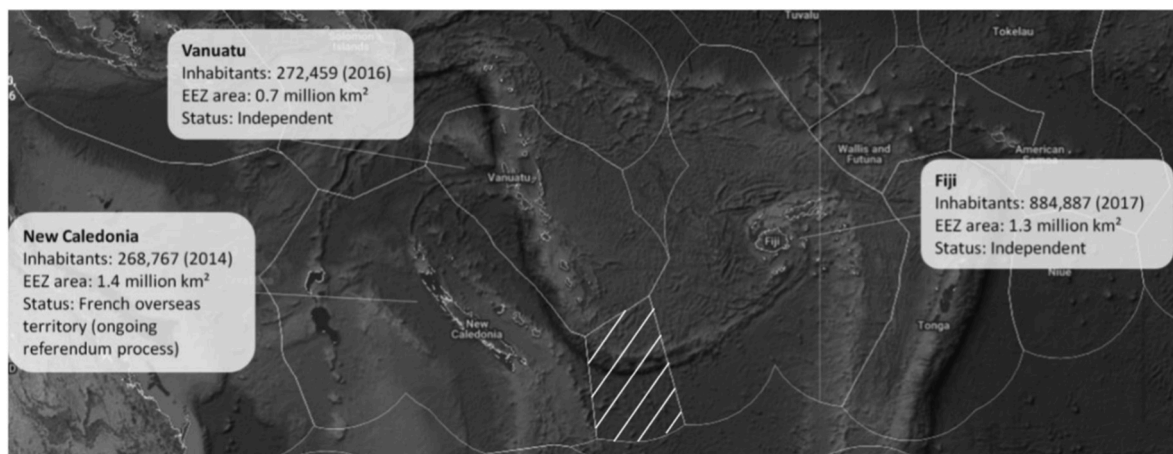


**Table 1**

Main organizations playing an instrumental role in fisheries management in the South Pacific, with involvement/membership of Fiji, New Caledonia and Vanuatu as the main geographical areas of this paper. X: “member”, (X): “member through France”<sup>a</sup>, \*: “participating territory” (WCPFC term), \*\*: “FLNKS party”. Darker grey highlights that fisheries are the main focus of the organizations concerned, while otherwise that it is not the only focus.

	Regional							Sub-regional	
	CROP				RFMO			MSG	PNA
	PIF	SPC	SPREP	FFA	WCPFC	SPRFMO	IATTC		
Fiji	X	X	X	X	X			X	
New Caledonia	X	X	X		(X)*		(X)	X**	
Vanuatu	X	X	X	X	X	X	X	X	

<sup>a</sup> Regarding international conventions, New Caledonia is by default considered as a signatory when France is, but it can be noted that New Caledonia (and other French territories) is increasingly integrated in the regional oceanscape (e.g. became a PIF member in 2016). Sectoral integration can be put in parallel with the diplomatic integration of French territories - New Caledonia, Wallis and Futuna and French Polynesia in regional discussions and forums [15]. This has been reassessed by the establishment of new Delegates from French territories into Pacific Island countries last year [16].



**Fig. 2.** Exclusive Economic Zones and short presentation of the focus area (with disputed area between Vanuatu, New Caledonia and France shaded). Source: <https://globalfishingwatch.org/map/> (accessed July 15, 2019), modified by the authors.

offshore fleets are far more important than in Fiji's and New Caledonia's waters, where locally based<sup>19</sup> offshore fleets account for most catches ([20]; see Table 2).

Coastal fisheries play a key role in terms of national nutrition and food security in all three study areas [3,9,24–26]. However, Fiji has the second largest production in the region after Papua New Guinea, while New Caledonia and Vanuatu rank in the middle among the PICTs [20]. These coastal fisheries are often underreported [27] and lacking monitoring data [8,9] while increasingly accessible [28] and overexploited

[3,8,9]. Altogether, this could be an issue for national nutrition and food security as severe deficits are predicted for coastal fisheries in the South Pacific owing to demographic growth, habitat degradation and climate change [2].

### 1.3. Research background

The study presented here is an exploratory work conducted in the early stage of the research project “A Sea of Connections: Contextualizing Fisheries in the South Pacific Region” (SOCPacific; <https://socpacific.net>), which aims to explore some of the socio-cultural, policy and geopolitical connections within which fishing practices and fisheries management endeavours occur in the South Pacific region, with a specific geographical focus on Fiji, Vanuatu and New Caledonia [29]. With new organizations, alliances, objectives, policies, tools, etc. constantly emerging, the fisheries management landscape of these three study areas is challenging to navigate. This study therefore intended to find, list and then analyze the main fisheries management related policy documents relevant to the South Pacific region (hereafter *policies* or

**Table 2**

Annual marine fish harvest in year 2014 (in mt) in Fiji, New Caledonia, Vanuatu and the mean of PICTs (data: [20]).

	Fiji	New Caledonia	Vanuatu	Mean of PICTs
Coastal Commercial	11,000	1350	1106	2443
Coastal Subsistence	16,000	3500	2800	5008
Offshore Locally based	17,079	2876	568	19,115
Offshore Foreign-based	0	0	10,942	6513

<sup>19</sup> In this regard the practice of reflagging and chartering of formerly foreign vessels under South Pacific state flags needs to be acknowledged, as these vessels do not further belong to the country of origin but might still follow its economic interests [93].

documents), with a specific focus on Fiji, New Caledonia and Vanuatu<sup>20</sup>. It was clear from the very beginning that this study would not aim for an exhaustive listing of policy documents (probably an impossible task in this ever-evolving policy landscape). In 2019, a literature and policy review was thus conducted to provide a multi-level overview of this complex and dynamic policy landscape (which, to the authors' knowledge, was not yet available). It focused on both the coastal and offshore fisheries sectors, that appear characteristically different from each other,<sup>21</sup> but are of incremental importance to PICTs as the two sides of the same coin [7]. This review was guided by the following research questions, addressed in this paper:

- a) What are the main policies on which fisheries management is currently based in the South Pacific, in particular in Fiji, New Caledonia and Vanuatu?
- b) Do these policies reveal an evolution over time in terms of key issues covered (in relation with the coastal and/or offshore fisheries sectors), in particular at the turn between the above-mentioned 'specialization' and 'integration' phases?
- c) Are there disconnections on the matter between legally binding and non-binding policies?

## 2. Methodological approach

### 2.1. Policy documents

The identification of important policy documents was based on the cross-referencing of multiple reports and scientific papers related to fisheries management in the South Pacific – such as Wright et al. [30]; Hanich [12]; Pratt & Govan [31]; Govan et al. [19]; Sloan & Chand [32]; Muldoon et al. [33,34]; Govan [35] and Quirk & Harden-Davies [36] – as well as the environmental law data base *ecolex* ([www.ecolex.org](http://www.ecolex.org)). Documents in English and French were reviewed, recognizing the two main languages used in policy documents of the three study areas. The listed documents reach back to 1940, but considering data availability and our research questions, the majority was developed after 1990, and documents which were generated or updated annually or bi-annually were considered only in their latest version.

### 2.2. Content analysis and core topics

Once the list of policy documents was generated, each document was checked for: (a) its spatial scope and governance level (global, regional, sub-regional, national<sup>22</sup>) as well as (b) fisheries sector addressed (coastal and/or offshore). We also conducted a qualitative analysis articulated around a set of key topics: 'tuna fisheries', 'IUU fishing', 'climate change', 'sustainability', 'food security', and 'community involvement'. These topics were identified on the basis of the above-

mentioned *Regional Roadmap for Sustainable Fisheries*, and align with current research priorities and challenges in South Pacific fisheries management (e.g. Ref. [7,29,35,37,38]). Furthermore, most of them were often addressed by the PIF leaders' statements over the last decades.<sup>23</sup> The rationale of this identification process is further presented in Table 3 below.

The investigated policy documents were searched for these key topics<sup>24</sup> as well as related keywords (e.g., "fishers", "village" or "people" for "community involvement"). Thereby, the 'community involvement' includes all engagement in the management process, meaning both community-based fisheries management (CBFM; restricted to coastal fisheries) and community consultation (options for coastal and offshore fisheries). Decisions whether a topic was substantially addressed in a specific document were taken case by case. Substantial cover was not approved where keywords i) had a different meaning than intended (e.g. international *community*), ii) only referred to a specific topic other than marine resources (e.g. agriculture), iii) occurred as a reference to other documents/names, iv) appeared only as a rare side note in long documents and were clearly not at the core of a document and/or were very broad (e.g. 'climate change' in the *Noumea Strategy*). The sum of documents addressing a particular key topic was used as a proxy to illustrate and quantify the attention given to this topic in the policy landscape considered. Our hypothesis was that among these topics some would be mainly related to offshore fisheries ('tuna fisheries' and 'IUU fishing') or, in contrast, to coastal fisheries ('community involvement'), but others would be related to issues shared by both sectors ('climate change', 'sustainability' and 'food security').

### 2.3. Policies: differentiation of 'legal instruments' and 'strategies' as used in this study

Fisheries and ocean/coastal management have seen decades of productive efforts resulting in a range of regional policies as collected for instance by Govan ([35]; see Table 4). Thoenig [48] gives a common sense definition of 'policy' as the positions, actions and solutions a public authority or government mobilizes to intervene in a sectoral problem within its jurisdiction. Others highlight that a policy reflects a government's choice to do or not to do something [49], or a set of actions including law-making [50]. The present study considered available policy documents related to fisheries management and produced at the subnational, national, subregional, regional and global levels. Analyzing these policies, their framing and mandate, it appeared that few of them, despite well-defined and targeting specific problems, were legally binding. The latter – national laws and decrees as well as international, regional or sub-regional conventions, conservation and management measures and trade agreements – are hereafter gathered as '*legal instruments*'. Thereby, a legal instrument can be defined, implemented and enforced at a sub-state or supra-state level, like the *United Nations Convention on the Law of the Sea (UNCLOS)* with a global scope.

Other reviewed policy documents were roadmaps, frameworks, pathways, statements, codes of conduct, memoranda of understanding, action plans, guidelines, strategic plans, and other recommendation and advocacy documents. These policy documents, often government-endorsed, are hereafter categorized as '*strategies*' as, even if many may directly contribute to policy-making processes [51,52], they rather appear as a variety of non-binding or temporally limited 'soft policy' instruments [53]. Yet, the term 'soft policy' has been questioned as its ambiguity [54] leans to underestimating its significance as a key

<sup>20</sup> To better cover tuna policies, regionally important (tuna-related) agreements were included in this list even if the focus areas are not directly involved, but strategic planning of the Parties to the Nauru Agreement (PNA) was not included as none of these three countries/territories is part of PNA (see Table 1). Policies not applicable to the waters of the three study areas, such as IATTC Resolutions or SPRFMO Conservation Management Measures, were not included in the list of policies.

<sup>21</sup> Apparent in catch value [20], harvested species or the foci of management organizations, e.g. exemplified within the SPC FAME division composed of an Oceanic Fisheries Programme and a Coastal Fisheries Programme.

<sup>22</sup> Including a few sub-national documents (e.g. the Provincial Environmental Codes in New Caledonia) which appear important in terms of fisheries management but by themselves would have comprised a small sample size.

<sup>23</sup> Not in the pool of quantitative analysis. For annual reports only the most recent document was included to not bias the results, e.g. when an organization provides a management plan every year whereas another one provides a management plan only every 5 years (see 'Methods' section).

<sup>24</sup> Inclusive search strings, like "sustain\*", were used to include verbs, adjectives and nouns (sustain, sustainable and sustainability).

**Table 3**  
Overview and justification of identified core topics.

Key topics	Rationale
Tuna fisheries	<ul style="list-style-type: none"> <li>- One of the two cores of the <i>Regional Roadmap for Sustainable Fisheries</i>.</li> <li>- Outmost economic significance: in the western and central Pacific<sup>a</sup> it accounted for 54% of the global tuna catch in 2018 [39].</li> <li>- Central focus of offshore fisheries management, and regional agreements aim to increase economic gains from this sector (e.g., <i>Koror Declaration</i><sup>b</sup>, <i>Federated States of Micronesia Arrangement for Regional Fisheries Access</i><sup>c</sup>).</li> </ul>
IUU fishing	<ul style="list-style-type: none"> <li>- In the <i>Regional Roadmap for Sustainable Fisheries</i>, one of the six strategies towards more sustainable tuna fisheries is to further reduce IUU fishing.</li> <li>- Mitigation efforts at both the international and regional levels (<i>Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing</i><sup>d</sup>, <i>Conservation and Management Measure to establish a List of Vessels presumed to have carried out Illegal, Unreported and Unregulated fishing activities in the WCPO</i><sup>e</sup>), and also at the sub-regional and national levels [40,41].</li> </ul>
Climate change	<ul style="list-style-type: none"> <li>- The <i>Regional Roadmap for Sustainable Fisheries</i> states that inshore fisheries resources are enormously important for food security and livelihoods, but are under threat from the impacts of climate change (and so are offshore resources).</li> <li>- PICTs are indeed particularly vulnerable to (direct and indirect) impacts of climate change on both coastal and offshore fisheries (e.g. Ref. [4]).</li> <li>- Climate change has become “the key narrative within which all environmental politics – from global to local – is now framed” ([42]; p.41) and is high on the regional management agenda (e.g. <i>Framework for a Pacific Oceanscape</i>).</li> </ul>
Sustainability	<ul style="list-style-type: none"> <li>- The <i>Regional Roadmap for Sustainable Fisheries</i> puts a strong focus on sustainability, for both the tuna and coastal fisheries.</li> <li>- Sustainable development described as the key “to the protection of the region’s resources and environment for future generations” by Forum Leaders (21st South Pacific Forum in Port Vila 1990<sup>f</sup>, point 3).</li> <li>- Largely reoccurring topic at the global<sup>g</sup> and regional level [10,35], and in the legislation of Fiji (e.g., <i>Offshore Fisheries Management Decree [Decree no. 78 of 2012]</i><sup>h</sup>), New Caledonia (e.g., <i>Code de l’Environnement de la Province Nord</i><sup>i</sup>) and Vanuatu (e.g., <i>Fisheries Act No. 10 of 2014</i><sup>j</sup>).</li> </ul>
Food security	<ul style="list-style-type: none"> <li>- The <i>Regional Roadmap for Sustainable Fisheries</i> refers to food security in relation to both coastal and offshore fisheries.</li> <li>- PIF Leaders emphasize food security in relation to fisheries (40th Pacific Islands Forum in Cairns 2009<sup>k</sup>).</li> <li>- Important topic to fisheries science in the region, particularly with regard to population growth and environmental degradation [2,8,20,25]</li> </ul>
Community involvement	<ul style="list-style-type: none"> <li>- In the <i>Regional Roadmap for Sustainable Fisheries</i>, the first goal for coastal fisheries (the only focus area of classic ‘community involvement’/community-based management) is ‘Empowerment’: “Within 10 years, all [Pacific Forum Island Countries] will have put in place policies and legislation that provide for the involvement of coastal communities in the management of their fisheries resources.” (<i>Regional Roadmap for Sustainable Fisheries</i>, p.3)</li> <li>- Customary management is a flexible and promising tool in marine conservation [43], and stakeholder engagement globally considered the most critical factor in conservation success in marine protected areas [44].</li> <li>- In the South Pacific, community-based marine management for coastal fisheries has a longstanding history [45–47] and has been supported by NGOs and local associations.</li> <li>- Community involvement has also been promoted at the international level for decades, like in the <i>Agenda 21</i><sup>l</sup> with the objective of “[i]nvolvement of indigenous people and their communities at the national and local levels in resource management and conservation strategies and other relevant programmes [...]” (<i>Agenda 21</i>, Chapter 26, objective 26.3.c).</li> </ul>

<sup>a</sup> Convention Area of the Western and Central Pacific Fisheries Commission.

<sup>b</sup> See [https://www.pnatuna.com/sites/default/files/Signed%20KOROR%20DECLARATION\\_0.pdf](https://www.pnatuna.com/sites/default/files/Signed%20KOROR%20DECLARATION_0.pdf) (Accessed January 14, 2020).

<sup>c</sup> See <http://extwprlegs1.fao.org/docs/pdf/mul67613.pdf> (Accessed January 14, 2020).

<sup>d</sup> See [http://www.fao.org/fileadmin/user\\_upload/legal/docs/037t-e.pdf](http://www.fao.org/fileadmin/user_upload/legal/docs/037t-e.pdf) (Accessed January 14, 2020).

<sup>e</sup> See <https://www.wcpfc.int/doc/cmm-2010-06/conservation-and-management-measure-establish-list-vessels-presumed-have-carried-out> (Accessed January 14, 2020).

<sup>f</sup> See <http://www.forumsec.org/wp-content/uploads/2017/11/1990-Communique-Port-Vila-Vanuatu-31-Jul-1-Aug.pdf> (Accessed January 23, 2020).

<sup>g</sup> Sustainable Development Goals, Mauritius Declaration and Strategy.

<sup>h</sup> See <http://extwprlegs1.fao.org/docs/pdf/fij138492.pdf> (Accessed January 14, 2020).

<sup>i</sup> See [https://www.province-nord.nc/sites/default/files/parutions/code\\_de\\_l'environnement\\_mis\\_a\\_jour\\_le\\_16-02-18\\_.pdf](https://www.province-nord.nc/sites/default/files/parutions/code_de_l'environnement_mis_a_jour_le_16-02-18_.pdf) (Accessed January 14, 2020).

<sup>j</sup> See <http://extwprlegs1.fao.org/docs/pdf/van143413.pdf> (Accessed January 14, 2020).

<sup>k</sup> See <http://www.forumsec.org/wp-content/uploads/2017/11/2009-Forum-Communique-Cairns-Australia-5-6-Aug.pdf> (Accessed January 23, 2020).

<sup>l</sup> See <https://sustainabledevelopment.un.org/content/documents/Agenda21.pdf> (Accessed January 14, 2020).

**Table 4**

Main oceanic/coastal fisheries policy instruments in the South Pacific region (data [35]); and their main focus; here L = Legal instrument and S = Strategy as defined in Section 2.3.

Instrument	Year	Objective/main focus
L South Pacific Forum Fisheries Agency Convention	1979	Establishment of the South Pacific Forum Fisheries Agency (FFA)
L Nauru Agreement Concerning Cooperation in the Management of Fisheries of Common Interest	1982	Purse-seine tuna fisheries management
S Pacific Islands Regional Ocean Policy	2002	Sustainable use of the ocean and its resources by Pacific Island communities and external partners
S Our Sea of Islands, Our Livelihoods, Our Oceania. Framework for a Pacific Oceanscape	2010	‘Integrated Ocean Management and Adaptation to Environmental and Climate Change’
S Regional Roadmap for Sustainable Fisheries	2015	Sustainable tuna fisheries and resilient coastal fisheries
S Melanesian Spearhead Group Roadmap for Inshore Fisheries Management	2015	Well-managed sustainable inshore fisheries, using community-based approaches that provide long-term economic, social, ecological and food security benefits to Melanesian communities
S The Noumea Strategy: A New Song for Coastal Fisheries – Pathways to Change	2015	‘Sustainable well-managed inshore fisheries, underpinned by community-based approaches that provide food security, and long-term economic, social and ecological benefits to our communities’

component of law-making [53] and compliance [55]. Hence, the term ‘strategies’ seemed more appropriate to the authors here, as it also allows for an emphasis on the processual and collective action dimensions of crafting future fisheries management efforts (incl. laws and enforcement measures).

The authors acknowledge that this distinction between ‘legal instruments’ and ‘strategies’ echoes the dichotomy between hard and soft laws that has been criticized by scholars of international law-making [53,56,57], e.g. for not considering the actual continuum between the two [58,59]. By no means shall this deny the crucial role of softer instruments in the arena of international governance [53,59] which is indeed important for a ‘soft’ Pacific Regionalism. In fact, the aim was not to evaluate the effectiveness of given legal instruments and strategies, as the differentiation of binding and non-binding norms not necessarily points to compliance [55], and enforcement is distinct from both the concept of ‘legally-binding’ and its precision [60]. However, the division of binding and non-binding policy documents appeared as a heuristic tool to explore the non-homogeneity of the South Pacific fisheries



management policy landscape, in which the many documents – produced by a range of organizations and agencies, some with and some without mandates for legally binding decisions – do not all have the same role: some aim at regulating and enforcing, whereas others articulate a broad vision for the future. Among the more than 200 policy documents we analyzed, we thus categorized 93 as ‘legal instruments’ (from 1940 to 2018) and 130 as ‘strategies’ (from 1983 to 2019) (See Supplementary Table 1).

## 2.4. Trends and disconnections

To trace potential disconnections in focus between ‘legal instruments’ and ‘strategies’, their relative coverage of the six above-mentioned key topics (using the binary information ‘addressed’ or ‘not substantially addressed’ for each document) was contrasted and used as a proxy. Microsoft Excel was used for listing and categorizing the policy documents, as well as for most of the quantitative analysis. For general overviews, relative shares of each kind of documents addressing specific topics were calculated as a fraction (e.g., xx % of the strategies address topic A). Categorical associations<sup>25</sup> were calculated using a  $\chi^2$ -Test in RStudio [61].

Such potential offsets were then further analyzed, specifically for their development over time, with two questions in mind: In the investigated policy documents, what are the recent trends in terms of topical coverage (e.g., increase or decrease)? On the matter, do we observe disconnections between ‘legal instruments’ and ‘strategies’? Identified trends and disconnections were then corroborated by qualitative examples. For this temporal analysis, 2010 was chosen as a pivotal year, as it marks the beginning of the ‘integration’ phase in South Pacific ocean governance according to Quirk [14]. This choice was confirmed by sufficient numbers of policies before (96) and after 2010 (127), allowing for a comparison between ‘integration’-grounded and older policy documents.

## 2.5. Outline of this paper

The following section will present and analyze the evolution of key topics in legal instruments (Section 3.1) and in strategies (Section 3.2) using a quantitative approach, corroborated by qualitative examples. Then, disconnections between legal instruments and strategies are shown and discussed (Section 3.3).

## 3. Results and discussion

### 3.1. Trends in legal instruments

Many of the legal instruments reviewed focus on offshore fisheries regulations (about 53% of all legal instruments), while only 16% of all legal instruments focus on coastal fisheries, and an additional 17% address both coastal and offshore fisheries (the rest being undefined). A significant number of these legal instruments address issues related to ‘tuna fisheries’ and ‘IUU fishing’, which has been increasingly regulated over the last decade (Fig. 3, ‘IUU’ coverage significantly associated with time<sup>26</sup>). These instruments are indeed mainly Conservation and Management Measures (CMMs) introduced by WCPFC, dealing with vessel inspection procedures, fishing practices, conservation of by-catch/non-target species, and IUU fishing. WCPFC’s main focus lies on highly migratory fish stocks in the Western and Central Pacific Ocean, which particularly includes tuna as well as swordfish, sharks and marlin. Its CMMs are described as binding in the compliance and enforcement section (*Convention for the Conservation and Management of Highly*

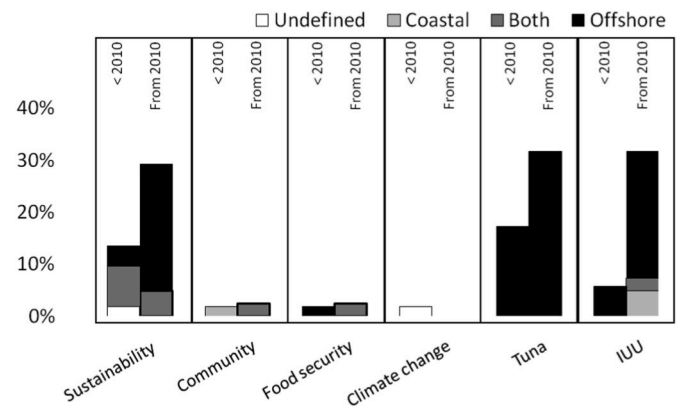


Fig. 3. Core topics covered by fisheries management related legal instruments before 2010 (n = 52) and from 2010 (n = 41) and respective shares of legal instruments with coastal (light grey), offshore (black), both coastal and offshore (dark grey), and undefined (white) scope of fisheries management.

*Migratory Fish Stocks in the Western and Central Pacific Ocean* (‘WCPFC convention’), Article 25). WCPFC was criticized to be ineffective in limiting fishing mortality with the example of yellow fin and big eye [62, 63], but results are still encouraging compared to other RFMOs worldwide [64]. Particularly the most recent status report by the SPC Oceanic Fisheries Programme draws an overall healthy state of tuna stocks in the western and central Pacific [39].

Regarding other trends in legal instruments, the increasing inclusion of ‘sustainability’ considerations, particularly for offshore aspects of fisheries management, also appear eye catching (Fig. 3). On a regional scale, this can be exemplified by the *Conservation and Management Measure to develop and implement a harvest strategy approach for key fisheries and stocks in the WCPO 2014–06* (‘CMM 2014–06’) [27] aiming for “long-term conservation and sustainable use of the highly migratory fish stocks” (CMM 2014–06, Preamble). On a national level, this is for instance illustrated in Fiji with the *Fisheries Act* (‘An Act to make Provision for the Regulation of Fishing [Cap 158 of 1942]’) that addresses ‘sustainability’ of neither offshore nor coastal fisheries resources, whereas *Offshore Fisheries Management Decree* [No. 78 of 2012]<sup>28</sup> states that “the objective of this Decree shall be to conserve, manage and develop Fiji fisheries to ensure long term sustainable use for the benefit of the people of Fiji” (*Offshore Fisheries Management Decree* [No. 78 of 2012], Part 2, Section 5(1)). The phrasing of the purpose of the *Vanuatu Fisheries Act* (‘An Act to repeal the Fisheries Act [CAP 315] and to make provision for the management, development and regulation of fisheries within Vanuatu waters, and for the control of fishing vessels entitled to fly the flag of Vanuatu outside of Vanuatu waters in a manner consistent with Vanuatu’s international obligations, and for related matters [Act No. 10 of 2014]’),<sup>29</sup> is very similar: to “conserve, manage and develop fisheries in Vanuatu in order to ensure its long term sustainable use for the benefit of the people of Vanuatu” (*Vanuatu Fisheries Act* [No. 10 of 2014], Part 2, Section 3(1a)). Here again, the notion of ‘sustainability’ is introduced in this new act, but was absent in the older, repealed versions of the Act (from 1982 to 2005). Comparable aspects are given for New Caledonia, e.g. in the

<sup>25</sup> That is, statistical relation of two categorical factors using a contingency table.

<sup>26</sup>  $\chi^2$  (1, N = 93) = 9.08, p = 0.003.

<sup>27</sup> See <https://www.wcpfc.int/doc/cmm-2014-06/conservation-and-management-measures-develop-and-implement-harvest-strategy-approach> (Accessed 22/01/2020).

<sup>28</sup> See <http://extwprlegs1.fao.org/docs/pdf/fij138492.pdf> (Accessed 09/03/2019).

<sup>29</sup> See <https://malffb.gov.vu/doc/Fisheries%20Act%20No.10%20of%202014.pdf> (Accessed 09/03/2019).

Délibération n° 25–2009/APS du 20 Mars 2009 Relative au Code de l'Environnement de la Province Sud<sup>30</sup>, which aims to assure the long-term conservation of marine resources. For future works, the following questions therefore emerge: are there any other national policies developed in the region after 2010 using a comparable phrasing, and consequently, which influence has the international arena and the regional ocean governance framework in national policy-making processes?

### 3.2. Trends in strategies

The majority of the reviewed strategies address coastal areas or both coastal and offshore areas. The relatively high abundance of strategies addressing both coastal and offshore issues (Fig. 4, dark grey bars) may somewhat question the paradigm of clearly separated coastal and offshore management efforts, e.g. often stated to be more distinct than integrated in terms of technical support by regional institutions. Concerning the content of fisheries management strategies, the most covered topics overall were ‘sustainability’, but with a slight decline over time, and ‘community involvement’. Furthermore, it seems that three priorities are increasingly given momentum: ‘community involvement’, ‘food security’, and ‘climate change’, however to varying extents. These potential priorities will now be analyzed and exemplified by qualitative primary sources from fisheries management strategies.

#### 3.2.1. ‘Climate change’

Regarding the two time periods, “before 2010” and “from 2010”, ‘climate change’ is the topic with the highest relative increase in coverage in strategies, being significantly associated with the time period ( $\chi^2$  (1,  $N = 130$ ) = 8.00,  $p = 0.005$ ) and addressed about threefold more often after 2010 (Fig. 4). This timing echoes the dominant discourse portraying Pacific Islands as being on the frontlines of climate change. During the 2009 United Nations Climate Change Conference in Copenhagen,<sup>31</sup> Kiribati voiced that PICTs are highly

vulnerable to climate change impacts (see also [4,65]), in particular sea level rise [66], attesting to an increasing climate change awareness both in the Pacific region and globally. Just recently, Forum Leaders “reaffirmed climate change as the single greatest threat to the livelihoods, security and wellbeing of the peoples of the Pacific” ([67]; p.4) and adaptation to climate change is a reoccurring issue, particularly related to coastal fisheries.<sup>32</sup> However, the growing focus of PICTs on climate change can also be interpreted from a geopolitical perspective as the continuation of their effort to increase their influence in international negotiations and impose their agendas by asserting their importance as both heroes and victims of climate change [68–70]. Growing attention for ‘climate change’ can consequently be linked with institutional rationales and the securing of aid/resources from international donors (e.g. Ref. [71]). Furthermore, it appears that, in the domain of fisheries management as well as with regard to the development agenda, a focus on ‘climate change’ is now essential and expedient, even though this might contribute to depoliticize the longstanding and unresolved challenges faced by PICTs [72], for instance the under-resourcing of national fisheries management agencies. Finally, the expansion of climate change considerations to fisheries-related topics seems to confirm the progressive and dual ‘globalization of climate’ and ‘climatization of the world’ outlined by Aykut et al. [73] as a key narrative of environmental politics [42].

#### 3.2.2. ‘Community involvement’

The ‘community involvement’ focus mainly occurs in strategies with a pure coastal scope (33%) and much less in relation to the management of offshore activities (Fig. 4), which is not surprising. If so, ‘community involvement’ is often addressed in a broad context, e.g. in the Food and Agriculture Organization (FAO)’s *Code of Conduct for Responsible Fisheries*<sup>33</sup> and the *Vanuatu National Plan of Action to Prevent, Deter and Eliminate IUU*.<sup>34</sup> While best practice management should indeed include opportunities for meaningful stakeholder engagement – in both the coastal and offshore sectors – before legally-binding rules and non-binding strategies are developed, this often does not happen. In fact, civil society oversight of offshore fisheries is hardly mentioned in strategies. Regarding coastal fisheries, the ‘community involvement’ focus seems to be related to the crucial role of NGOs providing advocacy for and engaging in co-management (e.g. Govan et al., [9]). Moreover, it is worth noting that community involvement and fisheries rights are interrelated topics [74]: community-based management opportunities are usually limited to coastal fisheries with local recognized rights to access and use resources as well as to participate in decisions over controlling these uses. Accordingly, covering coastal and offshore fisheries in this study underlines problems around the definition of the term ‘community’, as well as the differentiation between community-based fisheries management endeavors and stakeholder consultation/participation processes.

In the South Pacific, ensuring sustainable use of coastal resources is increasingly thought as requiring “a greater prioritization of coastal communities and artisanal and subsistence fisheries” ([26]; p.283). In this context, ‘community involvement’ is central in several supra-national strategies, e.g. the sub-regional *MSG Roadmap for inshore fisheries management and sustainable development 2015–2024*<sup>35</sup> (in the following ‘MSG Roadmap’) and the regional *Noumea Strategy*. The *Noumea Strategy* states that “community-based ecosystem approaches to fisheries management [...] will play a central role in securing the benefits that flow from coastal resources” (Noumea Strategy, p.2), as

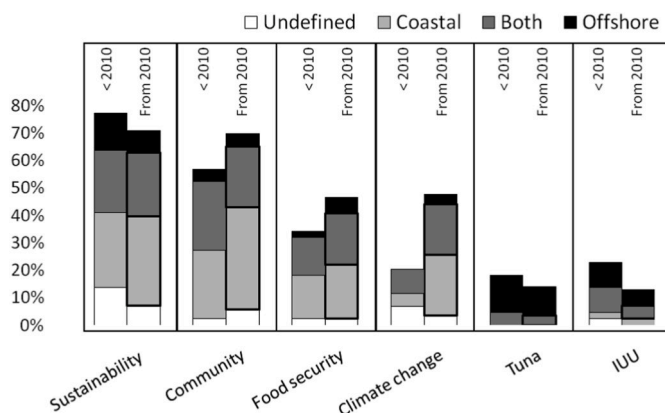


Fig. 4. Core topics covered by fisheries management related strategies before 2010 ( $n = 44$ ) and from 2010 ( $n = 86$ ) and respective shares of strategies with coastal (light grey), offshore (black), both coastal and offshore (dark grey), and undefined (white) scope of fisheries management.

<sup>30</sup> See <https://www.province-sud.nc/sites/default/files/758331/Code%20de%20l'environnement-version%20denv-2009-25%20APS%20M31.pdf> (Accessed 22/07/2019).

<sup>31</sup> This 15th Conference of the Parties (COP 15) to the United Nations Framework Convention on Climate Change brought together more participants than for any climate change conference before to develop a binding follow-up agenda for the expiring Kyoto Protocol but resulted in a non-binding accord exposing the limitations of established climate governance [94,95].

<sup>32</sup> E.g., Pacific Community Strategic Plan 2016–2020 and Melanesian Spearhead Group roadmap for inshore fisheries management and sustainable development 2015–2024.

<sup>33</sup> See <http://www.fao.org/3/v9878e/v9878e00.htm> (Accessed 14/01/2020).

<sup>34</sup> See <https://tinyurl.com/r7mtdcx> (Accessed 14/01/2020).

<sup>35</sup> See <https://tinyurl.com/vakczlu> (Accessed 13/02/2020).



“coastal fisheries management is not only about managing fish; it is about supporting people at the community level” (Noumea Strategy, p.6). On the other hand, the vision promoted by the *MSG Roadmap*, which endeavors to contribute to the building up of “[m]ultilateral consensus on the development and management of coastal fisheries” ([75]; p.141), highly resembles the phrasing of the *Noumea Strategy*: it aims for “sustainable inshore fisheries, well managed using community-based approaches that provide long-term economic, social, ecological and food security benefits to our communities” (*MSG Roadmap*, p.4). The substantial role of empowered ‘communities’, as both actors and beneficiaries in foreseen coastal fisheries management, becomes even more apparent when the roadmap formulates its guiding principles. One of them is indeed the “empowerment of coastal communities, with appropriate support from national and local government as well as regional agencies and other non-government stakeholders” (*MSG’s Roadmap*, p.4). Yet, this does not appear as a new trend: high coverage in the strategies suggests that ‘community involvement’ has been a priority for coastal fisheries management over the last decades. This echoes common literature, showing that locally managed marine areas and community-based marine resource management approaches have been promoted and (re-) implemented for around 30 years in the South Pacific [45,46,76–78]. However, it remains a challenging socio-political process [37,47,79] and Gillett ([8]; p. 54) points to problems where government fisheries agencies lack “enthusiasm to encourage and empower coastal communities to address problems with their coastal fisheries”. Indeed, while ‘community involvement’ might not be a new topic in coastal fisheries management, its incorporation into national legislation has recently posed challenges to PICTs.

This ‘community involvement’ focus of (mainly coastal) fisheries management strategies has to be considered in the light of the fact that ‘community’ is a polysemous and very ambiguous term: it can be associated with different meanings by different stakeholders, in different contexts and on different scales. For instance, two international documents addressing ‘community involvement’<sup>36</sup> show the intention to consider specific communities, particularly indigenous and local communities, that therefore appear as separated/segregated stakeholder groups. In regional and sub-regional strategies, the terms ‘indigenous communities’ and ‘local communities’ appear much less common, but there are some references to Melanesian<sup>37</sup> or Pacific (Islands) communities<sup>38</sup> or to coastal<sup>39</sup> or fisheries communities<sup>40</sup>. On a national scale, the generic term ‘community’ is generally used, but in several examples with specific adjectives framing which part of the country’s population is meant, mentioning for instance rural<sup>41</sup> or village communities,<sup>42</sup> or using more specific expressions such as coastal village communities or mangrove-adjacent communities.<sup>43</sup> Here, communities are thought as localized, non-urban, connected to specific ecosystems, and potentially homogeneous entities. But other documents rather refer to various stakeholders within these entities, such as village councils, village/area

women committees, village/area youth committees, church groups and Island Council of Chiefs.<sup>44</sup> In some cases, documents appear to differentiate between communities, fishers associations and fishers.<sup>45</sup>

Even if it seems that a slight increase in specificity in the references to ‘communities’ from the international level to the national level could be interpreted, it has to be mentioned that the broad majority of the strategies reviewed use the term ‘community’ without further defining whom it includes (and therefore whom it excludes). The difficulties in defining ‘communities’ have already been shown related to resource management [80] and fisheries local action groups [81] and reoccurred in this study. In most strategies, the term ‘community’ is taken for granted, even though it might be understood as referring to different (more or less inclusive) groups of stakeholders, with in particular different connotations in the English and French languages.

### 3.2.3. ‘Food security’

The third topic with an increased coverage over time in strategies is ‘food security’, which seems to mirror the gloomy outlook concerning food security in many PICTs [2,25]. The fact that ‘food security’ is most frequently addressed in strategies developed in/for Vanuatu (namely in 57% of the strategies related to this country, compared to 41% for Fiji and no key role in New Caledonia) might reflect Bell et al.’s [2] prediction of the largest future deficits in coastal fisheries there, compared to Fiji and New Caledonia. In this regard, planning for more aquaculture in the region<sup>46</sup> is also discussed. As coastal fisheries are crucial to Pacific Islanders’ food security [2], but stocks are declining, and climate change will exacerbate these declines, there are increasing efforts to link coastal fisheries management initiatives with national sustainable development and climate change adaptation goals. Growing coverage of ‘food security’ in strategies is often interrelated with ‘climate change’, and might result, to some extent, from resource and institutional motives.<sup>47</sup>

### 3.3. Disconnections between legal instruments and strategies

In direct comparison between legal instruments and strategies, it is worth noting that a coastal scope is more than twice as frequent in the strategies (40%) as in the legal instruments (16%) reviewed. This seems to align with findings that coastal legislation is generally lagging behind offshore legislation in the South Pacific [3,9,26], particularly regarding ‘community involvement’ and indigenous fishing rights as discussed in, e.g., Rohe et al. [82]. Regarding the core topics, ‘tuna fisheries’ have a higher coverage in legal instruments, while four topics have a far higher coverage in strategies: ‘sustainability’, ‘community involvement’, ‘climate change’, and ‘food security’ (Fig. 5). These disconnections between legal instruments’ and strategies’ content are consistent on international, regional, sub-regional and national scales, respectively (Fig. 6).

#### 3.3.1. ‘Sustainability’

In the present study, about 73% of all strategies deal with ‘sustainability’, most often as an objective, but only 20% of the reviewed legal instruments do so. In the latter, however, this topic shows one of the

<sup>36</sup> The FAO Code of Conduct for Responsible Fisheries and Indigenous Peoples: an Operational Guide (2009) and the IUCN Guidelines for Protected Areas Legislation (2011).

<sup>37</sup> MSG 2038 Prosperity for All Plan and Implementation Framework (2015).

<sup>38</sup> Pacific Islands Regional Ocean Policy and Framework for Integrated Strategic Action (2005) or the SPREP Strategic Plan 2017–2026 (2017).

<sup>39</sup> SPC Aquaculture Action Plan (2007), A Regional Roadmap for Sustainable Pacific Fisheries (2015), Noumea strategy (2015), MSG roadmap.

<sup>40</sup> SPC Strategic plan for fisheries management and sustainable coastal fisheries in Pacific islands (2003).

<sup>41</sup> Fiji Green Growth Framework (2014), Vanuatu Aquaculture Development Plan 2008–2013 (2008).

<sup>42</sup> Proposed Community-Based Fisheries Management Programme for the Republic of Fiji (2002).

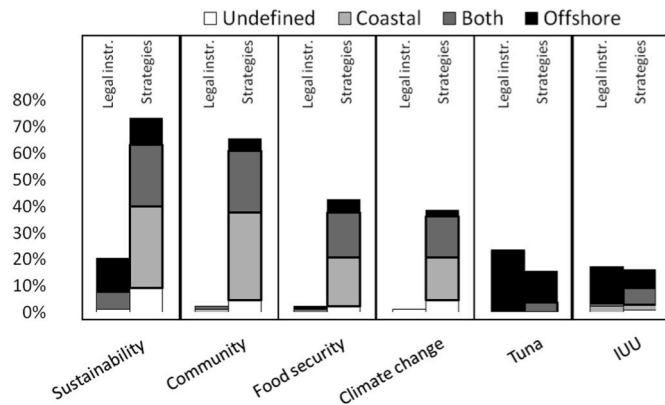
<sup>43</sup> Revised Mangrove Management Plan for Fiji - Draft (2013).

<sup>44</sup> National Integrated Coastal Management Framework and Implementation Strategy for Vanuatu (2010).

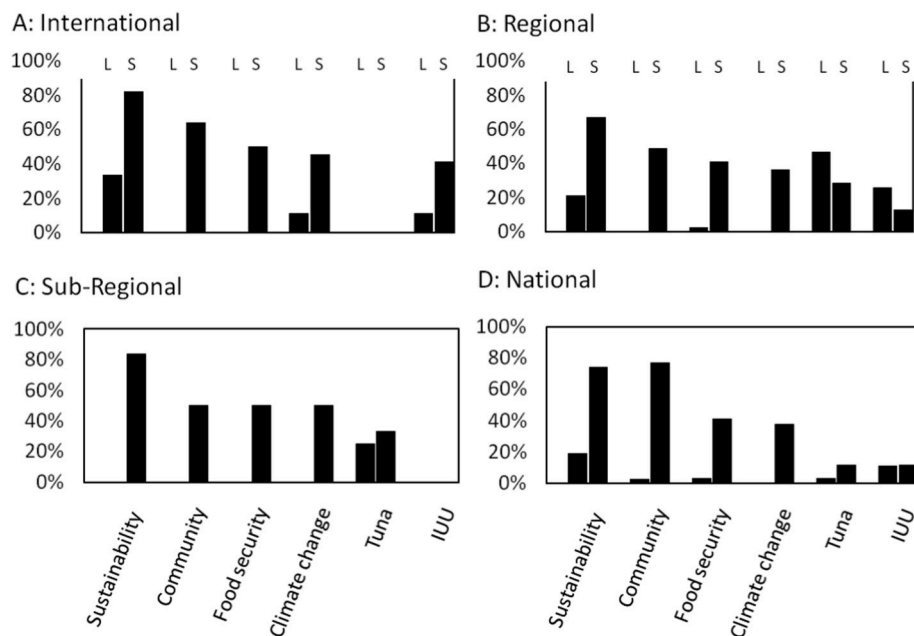
<sup>45</sup> Vanuatu National Plan of Action on Sea Turtles 2016–2020 (2015), Vanuatu National Deep-Bottom Fish Fishery Management Plan (2016) and Vanuatu national fisheries sector policy 2016–2031 (2017).

<sup>46</sup> Vanuatu Aquaculture Development Plan 2008–2013 (2008), SPC Aquaculture and Marine Ecosystems Strategic Plan 2013–2016 (2013), Fiji Aquaculture Act (2016).

<sup>47</sup> Considering the importance of fish to local consumption and efforts to show the links between coastal fisheries management and achieving national policy goals for sustainable development and climate change adaptation, specifically to enable better resourcing and institutionalization of coastal fisheries management.



**Fig. 5.** Core topics covered by legal instruments (n = 93) and strategies (n = 130, highlighted with black frames) and respective shares of documents with coastal (light grey), offshore (black), both coastal and offshore (dark grey), and undefined (white) scope of fisheries management.



**Fig. 6.** Percentage of A: international, B: regional, C: sub-regional, and D: national legal instruments (L) and strategies (S) addressing the given core topics.

highest increases over time between the two time periods, “before 2010” and “from 2010” (Fig. 3) while, in contrast, ‘sustainability’ coverage over time declines in strategy documents (Fig. 4). That being said, the term ‘sustainability’ can have different meanings and can be used in different contexts. In the reviewed strategies, the term can mainly be found in reference to the use and management of marine resources (such as fish), (social/economic) development, or both. This array of meanings and tendency to be used vaguely relates to the finding that ‘sustainability’ is the topic with the highest fraction of undefined spatial scope (9%, Fig. 5). Some legal instruments and strategies also insist on the ‘long-term’ dimension of sustainability, thereby doubling the meaning of the term, which refers to “the quality of causing little or no damage to the environment and therefore able to continue *for a long time*” ([83]; the authors’ emphasis). More recent strategies also refer to the Sustainable Development Goals (SDGs), sometimes<sup>48</sup> specifically to SDG 14 (Life below water), which can surely play a key role in future ocean finance

assessment as a catalyst for change and sustainable investments [84].

### 3.3.2. ‘Climate change’, ‘food security’ and ‘community involvement’

While ‘climate change’, ‘food security’ and ‘community involvement’ appear as significant topics in less than 3% of the reviewed legal instruments each, they are addressed in 38%, 42% and 65% of the strategies, respectively. The imbalance might hint towards the increasing importance of integrating these topics in all fisheries management endeavors, starting with their inclusion in strategies and potential subsequent uptake by legal instruments. For instance, the goals of the *Regional Roadmap for Sustainable Fisheries* and the priorities for the next Heads of Fisheries meeting set by the Regional Technical Meeting on Coastal Fisheries [85] are to establish legislation for an increased involvement of coastal communities in coastal fisheries management. This can be interpreted as a realignment of fisheries management priorities urged by regional stakeholders, as well as by international donors.

However, the imbalance might also reflect that, unlike strategies, legal instruments set regulations to be followed and enforced but do not

systematically set out the context and general objective of these rules, such as current and predicted impacts of ‘climate change’ or the need to ensure and maintain ‘food security’ and ‘community involvement’. Hence, this deserves more research on how the inclusion of topics in strategies forms part of agenda-setting and policy-making processes. “Hard law is probably more likely to evolve from soft law than from (Utopian) plans to create hard law full-blown” ([51]; p.447) but it should not be assumed that legal arrangements always go from soft policy to hard policy. Soft law/policy can be an alternative to hard law/policy [53] and is demanded to be taken more seriously [53,57,59].

### 3.3.3. ‘Tuna’ and ‘IUU fishing’

‘Tuna fisheries’ appear more central in legal instruments than in strategies (Fig. 5) and a disconnected trend over time was found for both ‘tuna’ and ‘IUU fishing’, which increasingly gained attention in legal instruments but stagnated or decreased in strategies over time. On the one hand, this could be explained by the previously described dominant focus on coastal fisheries management in strategies. On the other hand, this is related to the fact that management of migratory tuna stocks –

<sup>48</sup> e.g. Fiji Ocean Policy Framework (2017) – DRAFT.

including the control of IUU fishing – has been a largely covered issue in past decades by nearly all fisheries-specific organizations in the region, which together have established a hard policy arena for tuna fisheries management. In various regional meetings with high legitimacy (by FFA, FFC, WCPFC, PIF etc.) both topics are still at the core of debates: In the South Pacific, the management of migratory fish stocks depend on regional cooperation, most visibly for tuna resources [12]. This emphasis on regional cooperation is reflected in the present study showing ‘tuna’ and ‘IUU fishing’ coverage being balanced between national legal instruments and strategies, while being disconnected in regional policies (more in legal instruments than in strategies) (Fig. 6D). This disconnection between the national and regional levels reflects that the hard policy arena related to offshore fisheries – including ‘tuna’ and ‘IUU fishing’ – is particularly strong on the regional level.

A slight underrepresentation of New Caledonia in our dataset (10 legal instruments, 13 strategies) does not mean there are no measures aiming to manage issues on offshore activities. For instance, the Natural Park of the Coral Sea, covering the whole EEZ around New Caledonia [86], is one of the largest MPAs in the world. It has triggered important debates on management issues like the inclusion of fisheries or no-take areas, involving needs and expectations for biodiversity conservation, fisheries sustainability and tourism development. Also, as a French overseas territory, New Caledonia has comparatively high fisheries management budgets [3,19], which for instance result in commendable observer rates in the WCPFC Regional Observer Program [87], and it was even stated to under-exploit parts of its marine resources [88].

#### 4. Conclusion

This analysis of 223 policy documents aimed to give an overview of the multi-level but ‘integrated’ South Pacific fisheries management framework that could be useful for scientists as well as for fisheries management practitioners. To do so, it has introduced a distinction between legally binding and non-binding policies to allow for an exploration of topical disconnections between those having a regulation and enforcement function (‘legal instruments’) and those rather articulating a broad vision for the future (‘strategies’).

Our review showed that, in legal instruments, issues related to ‘tuna fisheries’ were the most covered topic in legal instruments and ‘IUU fishing’ (often targeting tuna) was increasingly addressed over time, particularly at a supra-national level as migratory resources and related illegal, unreported and unregulated fishing activities cannot be managed without transnational cooperation. More generally, binding legal instruments are dominated by offshore topics as there appears to be no incentive to regional binding policies relating to mostly local stocks of coastal fisheries. Reviewed strategies more often cover coastal issues, in particular related to ‘community involvement’, ‘food security’, ‘sustainability’ and ‘climate change’ (whose coverage most strongly increased over time); topics rarely tackled through a hard policy arena. This suggests that, establishing binding measures might neither be easily achieved nor deemed as beneficial as strategies in coastal fields.

Temporal comparisons revealed that recent fisheries-management-related strategies focus on ‘climate change’ more frequently and more substantially over time, and that the ways this topic is articulated and interplays with ‘food security’ and ‘community involvement’ in recent, pending and future strategies appear as an important research pathway to be further explored through qualitative fieldwork methodologies (in particular interviews with the various stakeholders concerned). The degree and impact of implementation might vary greatly between the reviewed legal instruments and strategies, as well as among the legal instruments themselves and among the strategies that pertain to different levels and means of collective action. This appears as a research pathway worthwhile investigating in future studies, as does the role of international conventions in shaping the regional policy environment and, in turn, the influence of the latter on the development of national legal instruments and strategies over time. Also, regarding ‘community

involvement’ issues, particularly in the coastal realm where communities often significantly contribute to implement fisheries management efforts in collaboration with external partners, it might be interesting to pursue this policy review by exploring how these issues are (dis-) connected with gender considerations, in particular women empowerment endeavors. As far as the offshore realm is concerned, an extension of this work could aim to examine how transparency, accountability and equitability issues are dealt with in fisheries management related legal instruments and strategies, from national to international levels, and on the backdrop of different political statuses of Pacific Island Countries and Territories.

#### Declaration of competing interest

None.

#### CRediT authorship contribution statement

**Denis B. Karcher:** Conceptualization, Data curation, Formal analysis, Methodology, Visualization, Writing - original draft, Writing - review & editing. **Elodie Fache:** Conceptualization, Formal analysis, Funding acquisition, Methodology, Project administration, Supervision, Writing - original draft, Writing - review & editing. **Annette Breckwoldt:** Conceptualization, Formal analysis, Funding acquisition, Methodology, Project administration, Supervision, Writing - original draft, Writing - review & editing. **Hugh Govan:** Methodology, Supervision, Writing - original draft, Writing - review & editing. **Xochitl E. Elías Ilosvay:** Methodology, Writing - original draft, Writing - review & editing. **Juliette Kon Kam King:** Methodology, Writing - original draft, Writing - review & editing. **Léa Riera:** Methodology, Writing - original draft, Writing - review & editing. **Catherine Sabinot:** Methodology, Writing - original draft, Writing - review & editing.

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#### Appendix A. Supplementary data

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