

## CONTRIBUTED PAPER

# Partner support and interactions with communities show mixed effects on governance of community-based resources

Eleanor Roxburgh<sup>1</sup>  | Morena Mills<sup>1</sup> | Sangeeta Mangubhai<sup>2,3</sup> |  
Alifereti Tawake<sup>4,5</sup> | Margaret Vakalalabure<sup>6</sup> | Hugh Govan<sup>5,7</sup> |  
Arundhati Jagadish<sup>8,9</sup> | Tanya O'Garra<sup>1</sup> 

<sup>1</sup>Centre for Environmental Policy,  
Imperial College London, London, UK

<sup>2</sup>Wildlife Conservation Society Fiji,  
Suva, Fiji

<sup>3</sup>Talanoa Consulting, Suva, Fiji

<sup>4</sup>Fiji Locally Managed Marine Area  
Network, Suva, Fiji

<sup>5</sup>Locally Managed Marine Area Network  
International Trust, Suva, Fiji

<sup>6</sup>World Wide Fund For Nature—Pacific,  
Suva, Fiji

<sup>7</sup>School of Law and Social Sciences,  
University of the South Pacific, Suva, Fiji

<sup>8</sup>Nature Conservation Foundation,  
Mysore, India

<sup>9</sup>The Betty and Gordon Moore Center for  
Science, Conservation International,  
Arlington, Virginia, USA

## Correspondence

Eleanor Roxburgh, Centre for  
Environmental Policy, Imperial College  
London, London, UK.  
Email: [eroxb@icloud.com](mailto:eroxb@icloud.com)

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## Abstract

Community-based natural resource management is recognized as an effective area-based conservation approach. Accordingly, conservation organizations worldwide are providing support to local communities seeking to sustainably manage and use their local natural resources. However, there is little understanding of how different types of support provided by partner organizations influence local community governance of these resources. Our data, collected from Fiji using key informant interviews, demonstrates that there is no clear association between partner support and effective community governance of marine resources. While no associations were evident when investigating the effects of partner support on participation and perceived fairness of decision-making at the village level, some significance was identified when investigating responses by social group. We did find a clearer signal, however, with regards to the types of interaction between partners and communities, such that regional meetings were associated with increased community knowledge of the boundaries of the customary fishing grounds and village meetings were associated with increased ecosystem monitoring. Our work underscores the need to evaluate how different types of support from partner organizations, and the manner in which they interact with communities, impact community-based conservation initiatives.

## KEYWORDS

community interactions, community-based natural resource management, financial support, locally managed marine areas, monitoring support, partner inputs, training support

## 1 | INTRODUCTION

Community-based natural resource management (CBNRM) is considered essential to achieving global biodiversity conservation targets (CBD, 2022), while

supporting human well-being and social development (Diz et al., 2018). CBNRM is a collaborative effort that involves conservation and development organizations and government agencies working with local resource users to incorporate conservation strategies and

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traditional management in common property systems. This approach aims to support local livelihoods while achieving biodiversity conservation objectives (Dressler et al., 2010; McGinnis & Ostrom, 1996; Schabel et al., 1996).

Supporting (from hereon, “partner”) organizations aim to improve local capacity to foster better community governance of local resources, which are conserved or safeguarded by communities (Bennett et al., 2021; Pillora & Mckinlay, 2011; Totikidis et al., 2005; White et al., 2022). The extent to which partner organizations can engage with communities is limited by resources, and they consistently face decisions about what types of support can be offered, to whom and for how long. Given limited resources, and the need to scale-up CBNRM to contribute to biodiversity targets, it is critical that we identify which types of interaction and support (partner inputs) are particularly effective at improving governance of local natural resources and subsequently, delivering both environmental and social benefits.

While many studies have identified factors that improve the practice of CBNRM, including increased participation of communities and local institutions in decision-making (Agrawal & Gibson, 1999; Dyer et al., 2014; Galvin et al., 2018; Musavengane & Simatele, 2016), enhanced consideration of local context (Waylen et al., 2010), and capacity sharing (Brooks et al., 2013; Kearney et al., 2007), to date, little research has been conducted to assess the effect of specific partner inputs on community governance of local natural resources across multiple villages.

A review of the available literature on community-based management (including Community-Based Conservation (CBC), CBNRM, and variants of these, e.g., Community-Based Fisheries Management) revealed partner inputs that have been found to influence community governance of local natural resources. Community training of fishers and youth in Tanzania has been found to improve management capabilities of local institutions and management staff (Howe, 2001). Partner organizations positively influenced CBNRM in Botswana by enabling communities' better access to financial incentives, by including communities in decisions about the income distribution from wildlife utilization, compared to Zambia where the Government retained control over such decisions (Chisanga, 2016). The provision of alternative income-generating schemes coupled with financial support in Bangladesh improved community governance through better compliance with seasonal fishing closures and participation of formal fishing groups in fisheries management (Pemsl et al., 2008). Community

engagement has been shown to be integral to the success of both co-management and community-based initiatives (Ndonye, 2021; Pomeroy & Berkes, 1997), particularly alongside financial incentives (White et al., 2022)—although engagement of specific social groups is rarely addressed.

While these studies provide useful insights into what types of support might positively influence community-based management, it is challenging to extrapolate these findings—which are all based on small samples of communities—to wider contexts. Our study complements this literature by drawing on a large dataset of Fijian communities with similar governance contexts—such as tenure, culture, and traditional values—to provide a more comparable analytical environment.

Our goal in this study is to explore how partner inputs influence CBNRM over time, across various communities and social groups. As governance is a critical component of CBNRM (MA, 2003), we are particularly interested in how different types of support and interaction from partner organizations relate to the presence of key enabling principles underlying community governance of CBNRM. To do this, we focus on coastal communities in Fiji who often work with external partners to improve the management of their fisheries. Communities are provided with different types of support by partners, including the provision of resource management training and technical skills; support for compliance monitoring; and economic support, which can take the form of advice about how to access funds or direct financial or infrastructure contributions (e.g., markers to delimit boundaries; reflection and learning events). Partners also use a range of communication channels to interact with communities, which generally engage leaders or village representatives, village-level meetings, and, where possible, other communities in the district or province.

We collected data on (i) the types of support received by villages (e.g., training, economic, compliance monitoring), and (ii) the interactions used by partners to communicate with village members (e.g., one-to-one phone-calls, village meetings). We also elicited information on the governance of customary fishing grounds (known as *iqoliqoli*), using indicators based on “governing principles” for common pool resources (Ostrom, 2009). These include clearly defined boundaries, congruence between appropriation and provision rules, collective choice arrangements, monitoring of resource and resource users, sanctions for rule-breaking, and conflict-resolution mechanisms. Using this data, we analyze the relationship between different types of support and interactions provided by partners, and community governance of marine resources.

We acknowledge that partner support to communities managing their local natural resources may not always result in positive outcomes. For example, CBNRM initiatives can negatively impact communities that are not engaging in the program, such as in Fijian locally managed marine areas (LMMAs) where communities share fishing grounds. Conflict can occur where some communities participate in CBNRM and others do not (Robertson et al., 2020). Furthermore, a prevalent negative social outcome found in the wider literature on community-based management literature (specifically CBC) is the unequal distribution of benefits across the community (Cassidy et al., 2023; Gibson & Marks, 1995), which Galvin et al. (2018) identified in approximately half of the cases in Africa that were studied. The power of partner organizations has also been criticized in disproportionately determining outcomes and priorities of CBC initiatives (Cockerill, 2018), but conversely, may be attributed greater impact than merited given global experiences of indigenous resource stewardship (e.g., Zanjani et al., 2023) and findings in Oceania that CBNRM is observed to occur without any discernible external inputs (Abernethy et al., 2014; Brewer et al., 2022). We hope to contribute to these discussions by exploring how different types of partner support and interaction influence community governance of local resources across a large number of villages in Fiji.

## 2 | METHODS

### 2.1 | Study site

Coastal communities in Fiji have a long history of customary use and management of their fishing grounds. A history of colonialism, top-down regulation, and globalization has meant that many of these traditions have been weakened or undermined (Govan, 2009); however, over the past few decades, there has been increasing recognition of the importance of traditional systems of knowledge and management. This has led to the implementation of CBNRM initiatives in which local communities aim to revive and strengthen their traditional management systems while also incorporating modern fisheries knowledge and techniques (Network, 2024). Furthermore, local tenure and the recognition of traditional owners by the Fiji Fisheries Act allow for customary fisheries management (Clarke & Jupiter, 2010).

Within Fiji's inshore waters there are 410 traditional fishing grounds or *qoliqoli* within which the power to enforce fishing laws and regulations lies with the Ministry of Fisheries though local iTaukei communities have

rights to manage, access, and utilize the resources within them and some powers may be delegated to fish wardens from the *iqoliqoli* rights holders (Sloan & Chand, 2015). In 2014, 78.2% of Fiji's inshore waters within *qoliqoli* was considered managed within LMMAs (Mangubhai et al., 2019). Communities implement resource governance in different ways within their customary fishing grounds, with different rules on what fish can be caught and which fishing gear can be used, for example. These governance decisions depend, in part, on existing fisheries laws and regulations, but community decisions may also be influenced to extend their management and have more restrictive rules than those imposed by the Ministry of Fisheries.

Among the CBNRM initiatives are the Fijian Locally Managed Marine Areas (FLMMA), currently estimated to cover 350 communities (FLMMA, 2020 database) with an area exceeding 10,000 km<sup>2</sup>. These marine areas are governed by traditional communities and supported by the FLMMA network, composed of government, NGO, and academic partners with a shared Secretariat. The FLMMA network has been dedicated to improving marine resource governance and upscaling the number of LMMAs in Fiji since 2001. Although this is the most extensive CBNRM initiative in Fiji, many non-FLMMA villages have partnerships with supporting organizations.

### 2.2 | Data collection

Data for this study was collected from 146 villages between October 2019 and March 2020 as part of a broader impact evaluation of FLMMA (O'Garra et al., 2023). The sampling frame included all villages within 1 km from the coast from the main islands of Viti Levu, Vanua Levu, Kadavu and the Lomaiviti group. More distant islands were not included due to logistical and budget constraints. This research was approved by the Middlesex University Ethical Review Board (application number 8030) on 17 July 2019. Consent was obtained from the village chief before any interviews were conducted, followed by individual consent from key informants. Villages were selected using matching, which was used to select FLMMA and non-FLMMA villages so that they were comparable regarding potential confounders. For more details about sampling and data collection see (O'Garra et al., 2023). Both FLMMA and non-FLMMA villages reported different levels of marine resource governance and partnerships with supporting organizations.

To understand how partner inputs (i.e., support provided and interactions with communities) might

influence CBNRM in these villages, we collected data using key informant interviews conducted with five social groups; specifically, we interviewed leaders, women, fishers, *yaubula* (resource management) committee members and youth. We collected data from both the leader and resource management groups concerning the types of support provided by both past and current external partners (“partner support”) and partner-community interactions. These serve as the explanatory variables in our models.

Of the villages involved in this study, only 83 had a resource management committee at the time of data collection. Given that management of the customary fishing grounds is generally coordinated by the resource management committee, we assume that members of this social group will have more accurate information regarding the types of support and interactions with partners for marine management. Hence, for the 83 villages with resource management committees, we use responses provided by their committee members to characterize the types of support and interaction provided by partners. For villages without resource management committees, we used leader responses instead. Thus, our main explanatory variables comprised a combination of resource management committee and leader responses. We control for variability in responses across these social groups by including a dummy variable representing villages with resource management committees in all our models. Additionally, we assessed the sensitivity of our results to this decision by assessing the comparability of our main results with results produced using the leader-only data. Results of these sensitivity analyses are reported in Supplementary Information (Suppl. Inf.) Section 2.2.

As for our measures of community governance (the dependent variables in the models), which, as noted, are intended to operationalize Ostrom's common pool governance principles (McGinnis & Ostrom, 1996; Ostrom, 1990), we collected data from different social groups depending on the topics that the different groups were likely to be most knowledgeable about. Details are provided in the following sections.

### 2.3 | Characterizing the types of support provided by partner organizations

We elicited information on different types of support typically provided by partner organizations, ranging from support in compliance monitoring (e.g., for enforcement), training (e.g., raising awareness, help setting up a resource management plan), and economic support (such

**TABLE 1** Grouped types of support and interaction provided by partner organizations to marine villages in Fiji (explanatory variables).

| Partner input | Indicator               | Description                                                                                                                                                                                  |
|---------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Support       | Training                | Training, education and awareness; help writing a resource management plan; technical support in setting up a LMMA                                                                           |
|               | Economic                | Financial; fundraising; livelihood support; provision of infrastructure                                                                                                                      |
|               | Compliance monitoring   | Monitoring of compliance for enforcement                                                                                                                                                     |
|               | Overall support indices | Principal component analysis provided indices of present and past support                                                                                                                    |
| Interaction   | Individual meetings     | Partner interactions with a village via meetings with leaders or resource management committee members, either in person and/or via telephone                                                |
|               | Village meetings        | Partner interactions with the village via village workshops and/or village meetings                                                                                                          |
|               | Regional meetings       | Partner interactions with a village via meetings that took place at the regional level outside of the village, such as district or provincial meetings, and/or workshops outside the village |

*Note:* All indicators are binary, indicating whether the support or interaction type is present in a village.

as the provision of financial and livelihood support) (Table 1).

We collapsed the eight individual “partner support” variables into three broad categories: training, economic and compliance monitoring (Table 1). In our analysis, we distinguished between support received from past partners (who used to support the village, but do not do so any longer) and support received from current partners. This allowed us to control for any effects on governance principles that are due to past influences, recognizing that some sites received longer support through multiple partners. It is also possible that past support may influence the type of support provided by current partners, although statistical analyses reported below suggest this is not the case. Additionally, we created “current support” and “past support” indices using Principal Component Analysis (Suppl. Inf. Section 1.2). These combine the individual types of support into single measures,

which may yield additional insights into how overall support affects governance.

## 2.4 | Characterizing interactions between partner organizations and communities

The type of interaction between partners and community members varied according to the social groups involved, and so were grouped accordingly. We note that telephone meetings are usually held with village chiefs, leaders or heads of the resource management committees, and these were grouped as “individual meetings.” District and provincial meetings, and workshops outside the village brought together few members from each village, typically the leaders and resource committee members, so were grouped as “regional meetings.” Meetings and workshops targeted at a specific village were grouped as “village meetings” (Table 1).

Only partner-community interactions that have taken place in the last 12 months (“current interactions”) were used in the analysis. While we did collect data on past interactions, due to ambiguity in the wording of the question regarding timing, these data are considered unreliable. Additionally, we consider that regularity and type of past interactions are likely to be recalled with low accuracy, compared to types of support provided by partners in the past, which are more tangible. For these reasons, responses about past interactions are not used in our analysis.

## 2.5 | Governance principles

The success of CBNRM depends on effective community governance (Bennett et al., 2021; Pillora & Mckinlay, 2011; Totikidis et al., 2005). To characterize the enabling governance conditions of customary fishing grounds, we collected information based on Ostrom's common pool resource governance principles (McGinnis & Ostrom, 1996), with a focus on: clearly defined boundaries, congruence between appropriation and provision rules, collective choice arrangements, monitoring of resources and resource users (from hereon “monitoring”), sanctions, and conflict-resolution mechanisms (Table 2). The principles represent conditions that enable communities to collectively govern common pool resources. We use “presence of sanctions” rather than graduated sanctions—as in Ostrom's principles—because of local sensitivities associated to this question. We sourced conflict resolution mechanism categories from

(Sanginga et al., 2007). These included: avoidance, mediation and negotiation, arbitration, and adjudication. Only two of these categories were used for analyses, as avoidance and adjudication were rare in responses (0.7% and 3.4%, respectively).

We also acknowledge the possibility that governance is endogenous, such that villages with higher (or lower) levels of pre-existing governance were selected (or self-selected themselves) to receive partner support. However, if this were the case, we would expect to see biased process selection, potentially resulting in a higher number of significant relationships if there were endogeneity toward higher pre-existing governance. We acknowledge that governance of common pool resources may be influenced by a range of additional factors, such as group heterogeneity (although this is still contested, for example, Varughese & Ostrom, 2001) and social capital (Baylis et al., 2018). Our models include a measure of trust, an important component of social capital (Woolcock & Narayan, 2000), which we expect partly captures the broader effects of social capital. We do not include a measure of heterogeneity, as the villages in this study have been matched, and so villages are similar linguistically, by economic status, by religion, and by livelihood activities.

## 2.6 | Identification of associated effects

All of the governance outcome variables analyzed in this study are binary; hence, we used linear and logit regressions to analyze the effects of partner support and interactions on these dependent variables. Models included a number of controls, chosen because of their potential influence or reflect an intent or need to improve a village's governance of resources. These include the presence of a resource management committee (*yaubula*) and membership in the FLMMA network, both of which might be expected to influence how well a village governs its resources. We also included some socio-demographic controls, specifically island group, distance to nearest road, distance to nearest municipal market, distance to nearest village, and population density. These factors capture major influences on resource governance reported in the literature (e.g., Dietz et al., 2003), such as outside pressures (proxied by roads and markets) and extent of social interactions (population density).

The models were run in R 4.0.5 (Team, 2021), using the packages “lm” and “lme4,” for linear and logit regressions, respectively. We converted the odds ratios generated by the logistic regressions to marginal effects using the package “mfx.” Marginal effects provide a sense of magnitude of the effect of the support and interaction

**TABLE 2** Variables constituting governance principles, based on Ostrom's principles from McGinnis and Ostrom (1996).

| Governance principles                                   | Indicator (social group)                                                                              | Description                                                                                                                                                        |
|---------------------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Clearly-defined boundaries                           | Knowledge of <i>iqoliqoli</i> boundary rules (W, F, Y)                                                | Whether a majority of village social groups know the fishing ground boundary (binary)                                                                              |
| 2. Congruence between appropriation and provision rules | Perceived fairness of actual rules (All)                                                              | At least 50% of social groups believe the rules are at least “quite fair” (binary)                                                                                 |
|                                                         |                                                                                                       | At least 50% of participants within each social group believe the rules are at least “quite fair” (binary)                                                         |
| 3. Collective choice arrangements                       | Participation of a village in the making of marine resource rules for the local fishing grounds (All) | At least 50% of social groups participate at least “moderately” in making marine resource rules for local fishing grounds (binary)                                 |
|                                                         |                                                                                                       | At least 50% of participants within each social group participates at least “moderately” in the making of marine resource rules for local fishing grounds (binary) |
|                                                         | Perceived fairness of decision-making (All)                                                           | At least 50% of social groups believe decision-making is at least “quite fair” (binary)                                                                            |
|                                                         |                                                                                                       | At least 50% of participants within each social group perceive decision-making as at least “quite fair” (binary)                                                   |
| 4. Monitoring of resources and resource users           | Presence of fish wardens (All)                                                                        | Whether the village has fish wardens (binary)                                                                                                                      |
|                                                         | Catch is monitored (RM)                                                                               | Whether there is monitoring of catch (fisheries, fish and invertebrates) (binary)                                                                                  |
|                                                         | Ecosystem is monitored (RM)                                                                           | Whether there is monitoring of ecosystems (health of coral reef and cutting down of mangroves) (binary)                                                            |
|                                                         | Who monitors the <i>iqoliqoli</i> ? (RM)                                                              | Whether village people monitor the fishing ground for the purposes of management (binary)                                                                          |
|                                                         |                                                                                                       | Whether fish wardens monitor the fishing grounds for the purposes of management (binary)                                                                           |
|                                                         | Monitoring of compliance? (RM)                                                                        | Whether there is monitoring of compliance with rules (binary)                                                                                                      |
| 5. Sanctions                                            | Enforcement (L)                                                                                       | If caught breaking rules in the usual fishing ground, do rule-breakers receive a penalty at least sometimes? (binary)                                              |
| 6. Conflict resolution mechanisms                       | Mediation and negotiation (L)                                                                         | Whether conflicts are resolved through mediation and negotiation (binary)                                                                                          |
|                                                         | Arbitration (L)                                                                                       | Whether conflicts are resolved through arbitration (binary)                                                                                                        |

Note: Social groups in brackets: (L: leaders; F: fishers; RM: resource management committee; All: leaders, fishers, women, youth).

variables and are easier to interpret than odds ratios. All marginal effect results are demonstrated as one unit change of the explanatory variable. Given the exploratory nature of this study, results are presented without adjustments made for multiple comparisons.

We assessed the sensitivity of our results to how we operationalized some of the key variables. First, we re-analyzed participation in marine resource rules, perceived fairness of decision-making and of rules, using linear regressions on the average response provided by the four main social groups, which were elicited using 5-point Likert scales (not including the resource management committee). We opt to present the binary responses in the main text because the average is dominated by the leaders' positive responses on all counts (see Suppl. Inf.

Table A3), whereas the binary variables allow us to examine the participation and perceived fairness of the majority of social groups. We also analyzed these variables as separate social groups to identify whether there are differences in response by social group.

Second, we assessed whether past support variables were influencing current support variables by re-running all “support” models without the past support variables; this resulted in little change in the sign and size of the coefficients and had only modest effects on significance levels. In addition, we used the “Variance Inflation Factor” (VIF) to assess whether there is multicollinearity in the models, removing each variable that showed collinearity with a VIF value that exceeded three (James et al., 2013), and then re-ran the model. Finally, we ran

the models with just leaders' responses to ensure presenting the *yaubula*-leader combination would not influence results (see Suppl. Inf. Section 3.2).

### 3 | RESULTS

#### 3.1 | Description of sample

We collected data from 146 villages from four island groups, categorized as: Viti Levu, Vanua Levu, Kadavu, and Lomaiviti, grouping the last two due to the small size of the samples. Of these 146 villages, 86 currently have a relationship with a partner, 39 have never had a relationship with a partner, and 18 are supported by multiple partners. Of the villages with partner organizations, 31 villages are members of the FLMMA Network, and 62 villages have a resource management committee. Civil society partners fall into five categories: international NGO, national NGO, government body, private, and research. Of the 146 villages within this study, the distribution of partner organizations that currently have relationships with villages in Fiji includes 58 villages supported by government agencies, 38 villages supported by international NGOs, 24 villages supported by national NGOs, six villages supported by private organizations, and one village supported by a research organization. It should be noted that villages may have more than one type of partner supporting them. The duration of support a current partner provided to a village varied considerably, with an average of 8 years (7.972 years, standard deviation: 6.617), and the earliest recorded support in this study starting in 1984.

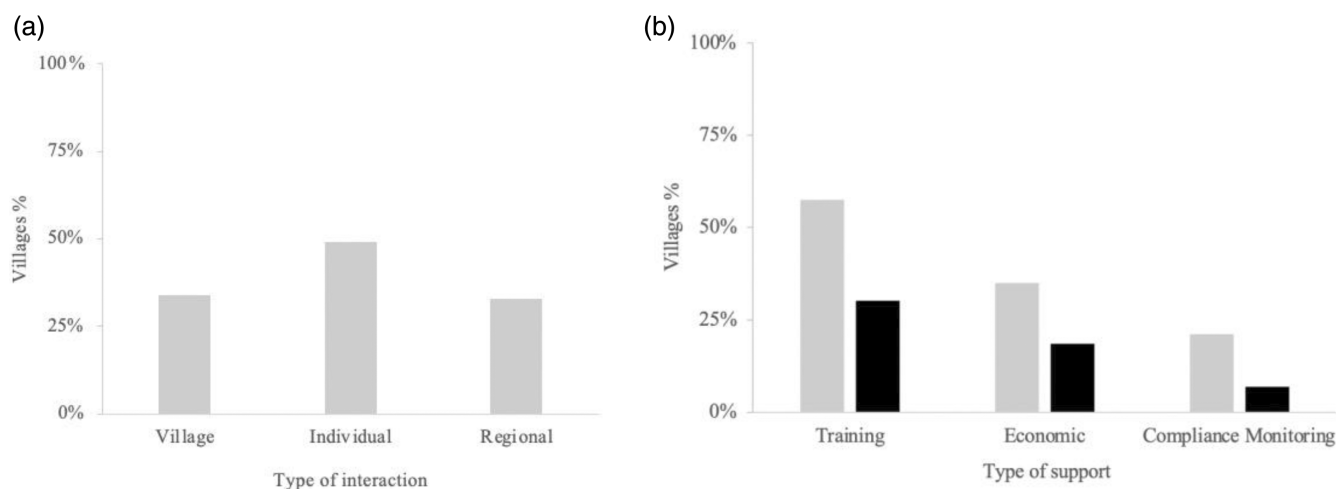
The distribution of the support types provided by past partners relative to current partners has not changed, but

the number of villages receiving the different types of support has increased, with compliance monitoring support showing the greatest increase in villages currently receiving relative to past partner inputs (Figure 1a). Training support was received by 30% of villages from past partners, but now 58% of villages receive this type of support from current partners. Financial support was, and is still, the next type of support that villages receive most, second to training. The percentage of villages receiving financial support from past partners was 18%, with this increasing to 35% with current partners. Compliance monitoring support has always been the type of support least provided to villages, with only 7% of villages receiving it in the past, but this has increased to 21% of all villages receiving it from current partners. The most common interaction type used by current partners was individual meetings (found in 49% of villages), followed by village and regional level meetings, at 34% and 33% of villages, respectively (Figure 1b).

#### 3.2 | Effects of partner inputs on governance

We found that, overall, most support and interaction variables have mixed effects on governance (Figure 2; see Tables A6–A17 in Suppl. Inf.). We also found that none of the interaction or support variables influenced village-level perception of fairness of decision-making, village-level perception of fairness of rules, the monitoring of catch, monitoring by villagers, or the use of conflict resolution mechanisms.

We start by discussing the association between the types of support provided by current partners (results



**FIGURE 1** Summary of support and interactions from partner organizations. (a) Percentage of villages that interacted with partners by interaction type; (b) Percentage of villages receiving support from current (gray) and past (black) partners by support type.

| Governing principle                 |                                            | SUPPORT            |                    |                      |            | INTERACTIONS |         |          |
|-------------------------------------|--------------------------------------------|--------------------|--------------------|----------------------|------------|--------------|---------|----------|
|                                     |                                            | Training (present) | Economic (present) | Monitoring (present) | Index pres | Individual   | Village | Regional |
|                                     | <b>Response variables</b>                  |                    |                    |                      |            |              |         |          |
| Clearly-defined boundaries          | Knowledge of <i>iqoliqoli</i> rules        |                    |                    |                      |            |              |         |          |
| Congruence of rules and local needs | Perceived fairness of rules (vl)           |                    |                    |                      |            |              |         |          |
| Collective choice arrangements      | Participation in making rules(vl)          |                    |                    |                      |            |              |         |          |
|                                     | Perceived fairness of decision-making (vl) |                    |                    |                      |            |              |         |          |
| Compliance monitoring               | Presence of fish wardens                   |                    |                    |                      |            |              |         |          |
|                                     | Catch is monitored*                        |                    |                    |                      |            |              |         |          |
|                                     | Ecosystem is monitored*                    |                    |                    |                      |            |              |         |          |
|                                     | Village people monitor*                    |                    |                    |                      |            |              |         |          |
|                                     | Fish wardens monitor*                      |                    |                    |                      |            |              |         |          |
|                                     | Rules are monitored*                       |                    |                    |                      |            |              |         |          |
| Sanctions $\delta$                  | Likelihood of enforcement                  |                    |                    |                      |            |              |         |          |
| Conflict resolution mechanisms      | Mediation & negotiation                    |                    |                    |                      |            |              |         |          |
|                                     | Arbitration                                |                    |                    |                      |            |              |         |          |

DATA: N=83; \* data from villages with resource management committees.  $\delta$  Referred to as

“graduated sanction” in Ostrom’s principles; see Section 2.5 for explanation of why we only use “presence of sanctions”.

Significance: 0.05 0.1 0.1 0.05



Effect: positive negative

**FIGURE 2** A heatmap demonstrating the direction of associated relationships between partner inputs and governing principles, using two significance levels:  $p < .05$  and  $p < .1$  (Suppl. Material A6–A8; A12–A14). Data:  $N = 83$ ; \*data from villages with resource management committees.  $\delta$  Referred to as “graduated sanction” in Ostrom’s principles; see Section 2.5 for explanation of why we only use “presence of sanctions.”

associated with support provided by past partners are found in Suppl. Inf. Tables A6–A8) and the effects on governing principles (Figure 2). Training support is associated with mixed effects: we find a 32% decrease in the likelihood of enforcement (i.e., that the rule-breakers receive penalties) ( $p = 0.012$ ), but an increase in the likelihood that it is the fish wardens who carry out monitoring (29%,  $p = 0.093$ ). Regarding the other support types, economic support is associated with a 36% decrease in the likelihood that rules are monitored ( $p = .033$ ), whereas compliance monitoring support is associated with a 43% increase in the likelihood that rules are monitored ( $p = .006$ ).

Regarding the index representing overall support (produced using a principal components analysis, see Suppl. Inf., Section 1.2), we found that these *overall* measures of support were positively associated with one of the governance principles (see Suppl. Inf. Table A7). Specifically, we found overall current support had a positive association with the likelihood that a village had fish wardens (13%,  $p = .054$ ). Thus, despite the range of mixed (positive and negative) effects of the different types

of support on governance principles, in overall terms (i.e., using the indices of support), any significant effects were modestly positive.

Finally, we turn to the effect on governance principles of the type of interactions used by partner organizations (Figure 2); we found that village-level interactions (meetings and workshops) are associated with an increase in the likelihood that ecosystems are monitored (31%,  $p = .041$ ). Interactions with communities via individual meetings were associated with a 25% increase in the likelihood that fish wardens carry out the monitoring ( $p = .068$ ). Regional-level interactions are associated with a 22% greater likelihood that villagers know more about the fishing ground boundary ( $p = 0.030$ ).

### 3.3 | Additional analyses by social group

In addition to analyzing at the village level, we recognize that participation and perceived fairness of rules and decision-making may differ among social groups. Therefore, we analyzed the effect of support and interaction

types on the disaggregated social groups (Figure 3). We found that economic support and interactions at the village and regional level had no impact on participation or perceived fairness as governing principles.

Both current training and compliance monitoring support demonstrated a range of influences on governing principles of participation in making the rules, when focusing on individual social groups. Training support provided by current partners was associated with a positive influence on the participation of fishers (25%,  $p = .033$ ) and of youth (19%,  $p = .030$ ) in making marine resource rules. Compliance monitoring support provided by current partners was associated with a positive influence on the perceived fairness of decision-making by leaders (20%,  $p = .034$ ), but a negative influence on the participation of fishers (−18%,  $p = .084$ ) and of youth (−24%,  $p = .007$ ) in making marine resource rules.

There is also weak evidence that overall support (shown by the index; Figure 3) demonstrates a positive association with the likelihood that fishers (11%,  $p = .070$ ) and women (17%,  $p = .074$ ) participate in the making of fishing ground rules.

Individual meetings are the only type of community interaction to have an association with a governing principle when broken down by social group, showing an association with the likelihood that fishers participate in the making of rules (26%,  $p = .024$ ).

## 4 | DISCUSSION

Conservation organizations have partnered with communities for decades, providing a range of support and interacting with communities in different ways. Although the types of support and interaction between partners and communities are likely to vary considerably depending on the context, the practices used by partners, the characteristics of the partner and village, and the resources available, there is little understanding of whether—on average—certain types of support or interaction are more effective in encouraging improved community governance of natural resources.

Our intention here was to generate preliminary insights that could be used to provide practical advice to

|                                     |                                                 | SUPPORT            |                    |                      |            | INTERACTIONS |         |          |
|-------------------------------------|-------------------------------------------------|--------------------|--------------------|----------------------|------------|--------------|---------|----------|
| Governing principle                 |                                                 | Training (present) | Economic (present) | Monitoring (present) | Index pres | Individual   | Village | Regional |
|                                     | <b>Response variables</b>                       |                    |                    |                      |            |              |         |          |
| Collective choice arrangements      | Participation in making rules - Leaders         |                    |                    |                      |            |              |         |          |
|                                     | Participation in making rules - Women           |                    |                    |                      |            |              |         |          |
|                                     | Participation in making rules - Fishers         |                    |                    |                      |            |              |         |          |
|                                     | Participation in making rules - Youth           |                    |                    |                      |            |              |         |          |
|                                     | Perceived fairness of decision-making - Leaders |                    |                    |                      |            |              |         |          |
|                                     | Perceived fairness of decision-making - Women   |                    |                    |                      |            |              |         |          |
|                                     | Perceived fairness of decision-making - Fishers |                    |                    |                      |            |              |         |          |
|                                     | Perceived fairness of decision-making - Youth   |                    |                    |                      |            |              |         |          |
| Congruence of rules and local needs | Perceived fairness of rules - Leaders           |                    |                    |                      |            |              |         |          |
|                                     | Perceived fairness of rules - Women             |                    |                    |                      |            |              |         |          |
|                                     | Perceived fairness of rules - Fishers           |                    |                    |                      |            |              |         |          |
|                                     | Perceived fairness of rules - Youth             |                    |                    |                      |            |              |         |          |

DATA: N=83; \* data from villages with resource management committees

Significance: 0.05 0.1 0.1 0.05

Effect: positive negative

**FIGURE 3** A heatmap demonstrating the direction of associated relationships between partner inputs and governing principles of participation and perceived fairness when disaggregated by social groups, using two significance levels:  $p < .05$  and  $p < .1$  (Suppl. Material A9–A11; A15–A17).

partners on what type of support and community interactions *on average* might be most effective. Our analysis, however, shows there is no clear signal in this regard. A majority of relationships presented as insignificant; examination of the results (Suppl. Inf. Tables A6–A17) suggests this is not due to wide variability in impacts (which would be demonstrated by a wide confidence interval, or standard error) but due to measures of impact (coefficients) being close to zero. Only a modest number of relationships were statistically significant, and most were mixed—although significant interactions between partners and villages were positive.

We suggest future research should examine nuances evidenced by our study, as demonstrated by the various mixed effects. Of note, training support was associated with increased participation of both fishers and youth in making rules, but demonstrated no such relationship for women. This may reflect a lack of direct mechanisms for women to participate in decision-making around their customary fishing grounds. iTaukei culture is both patriarchal and hierarchical, making it challenging for women to voice their opinions, particularly if they are in the presence of other male relatives or have differing opinions from men (Vunisea, 2008). However, the exclusion or limited inclusion of women is problematic as they hold different Indigenous knowledge (Kitolelei et al., 2022) and their practices may also impact the sustainable use of natural resources (Thomas et al., 2021). Nonetheless, we do find weak evidence that overall support (the support index) is positively associated with participation of women (and fishers), suggesting that training alone is not sufficient to enhance women's participation in decision making, and that multiple forms of support are needed.

Our results also highlight indirect effects arising from partner interactions. For example, individual meetings, typically held with the village leader, were associated with an increased likelihood that fishers participate in making rules. This presents an indirect influence which may be explained because these meetings provide an opportunity to increase the buy-in of the village leader or chief, meaning he understands the importance and ensures the fisher's voices are heard. Despite older literature, such as (Dyer et al., 2014), identifying community engagement as a key predeterminant of successful CBNRM, Ferguson et al. (*in review*) found that decisions are still taken by community leaders, which may explain why our study has found no impact from village-level interactions at the social group level. Targeted interactions with leaders could have a trickle-down effect leading to a more accepting community, as the social groups feel they have been consulted on decisions, even if they are not making the decisions themselves. However,

according to fishers, meetings with leaders decreased the likelihood of enforcement (result not reported in paper, see Suppl. Inf. Table A18) so this may not ring true for all elements of CBNRM. To better understand how to tailor interactions, partners should enable communities and key social groups to be active participants and lead engagement between partners and communities rather than passive recipients (Salerno et al., 2021). Similarly, communities should be able to design and choose the types of support they receive and actively engage in the monitoring and evaluation of the partnership.

We note that our analysis was limited by our use of binary indicators of the presence/absence of different types of support; this approach was dictated by limited resources and the need to keep the surveys (which were also used to collect extensive data for the impact evaluation analysis), reported in O'Garra et al. (2023) to a manageable length. As a result, we were unable to collect qualitative data. Despite this limitation, our exploratory analysis suggests that external partners must carefully consider how they engage with communities. However, there is considerable variability in the ways different partners engage with communities. To account for this, future studies could build on our exploratory findings by employing a mixed-methods approach to capture the nuances of implementation across different sites. For example, there may be more technical workshops in one site compared to others due to demand, engagement, or accessibility of the village to partner organization staff. To identify this variability, future studies could generate a ranking of “engagement strength” based on factors such as the number of staff involved, frequency of site visits, and expenditure on technical support. This information may provide key insights into how implementation strength of different types of partner support may influence governance principles, providing important answers to key questions such as: should we spend more effort on training or support for monitoring? How much financial support is needed? Should we increase staff per visit or frequency of visits? Equally with interaction types: which social group should we spend more time interacting with? What type of interaction contributes most to relationship building? Finally, we acknowledge that—given our focus on villages across Fiji—our results may not be generalisable to other contexts. More research is needed across geographies, cultures, and diverse resource systems to deepen our understanding of how partner inputs can support CBNRM.

Our exploratory study has demonstrated that there is no clear association between effective community governance of natural resources and the presence of different broad types of external support provided by partner

organizations, or the types of interaction between partners and communities. This is concerning since assumptions about the positive impact of support and interactions are common within the NGO sector. Further studies should investigate support and interaction types in more detail, identifying how variability in the “implementation strength” of different types of support (and interactions) influence governance principles, and how these influences vary with contextual variables (e.g., existing levels of awareness, strength of governance in villages). This can provide more in-depth insights into the relative effects of the simple (binary) provision of support versus the “intensity” of support. In turn, this can help answer key questions for partner organizations regarding the relative benefits of focusing efforts on more intensive support of one type (e.g., more time and financial investment to support monitoring of resources), versus distributing efforts over distinct types of support (e.g., broadscale information and awareness, provision of compliance monitoring, financial, training and other support). Likewise for the type and frequency of interactions that work best in different contexts. Future in-depth qualitative research could identify perceptions and attitudes of community members regarding the detail of what is provided, such as what the training consists of, what different workshops are used to convey and how different infrastructure of financial support impacts community governance.

The aim of this study was to provide a preliminary exploratory analysis of the relationship between partner inputs and community governance within CBNRM. The results presented here find overall mixed associations between the presence of different types of support and interactions with governance. Although our recommendations are specific to Fiji, we hope this study serves as a cautionary note, encouraging partner organizations to assess the impact of their initiatives in order to foster more inclusive and equitable governance, as a key component of CBNRM. We highlight the need for further research on this topic; given the rapid decline of biodiversity worldwide, it is imperative to develop a robust understanding about how best to allocate resources to support communities in sustainably governing their natural resources.

## AUTHOR CONTRIBUTIONS

T.O., M.M., E.R., S.M., A.T., and M.V. designed the research; E.R., T.O., and M.M. performed the analysis; all authors wrote the paper.

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## CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

## DATA AVAILABILITY STATEMENT

Summary data that support the findings of this study are available within the paper and Supplementary Information. Raw data from the interviews are available on request from T.O. with reasonable restrictions, as respondents belong to the Indigenous iTaukei group and have additional protections under our ethical review process. Data and code used for the analysis will be made

available no more than 2 weeks after the data use agreement has been agreed and signed.

## ORCID

Eleanor Roxburgh  <https://orcid.org/0009-0008-5779-3749>

Tanya O'Garra  <https://orcid.org/0000-0002-8214-1872>

## REFERENCES

- Abernethy, K. E., Bodin, Ö., Olsson, P., Hilly, Z., & Schwarz, A. (2014). Two steps forward, two steps back: The role of innovation in transforming towards community-based marine resource management in Solomon Islands. *Global Environmental Change*, 28, 309–321. <https://doi.org/10.1016/j.gloenvcha.2014.07.008>
- Agrawal, A., & Gibson, C. C. (1999). Enchantment and disenchantment: The role of community in natural resource conservation. *World Development*, 27(4), 629–649. [https://doi.org/10.1016/S0305-750X\(98\)00161-2](https://doi.org/10.1016/S0305-750X(98)00161-2)
- Baylis, K., Gong, Y., & Wang, S. (2018). Bridging versus bonding social capital and the Management of Common Pool Resources. *Land Economics*, 94(4), 614–631. <https://doi.org/10.3368/le.94.4.614>
- Bennett, N. J., et al. (2021). Advancing social equity in and through marine conservation. *Frontiers in Marine Science*, 8, 1–11. <https://doi.org/10.3389/fmars.2021.711538>
- Brewer, T. D., Andrew, N., Gruber, B., & Kool, J. (2022). Large-sample assessment of socioeconomic predictors of community-level resource management occurrence. *Conservation Biology*, 36(2), e13800. <https://doi.org/10.1111/cobi.13800>
- Brooks, J., Waylen, K. A., & Mulder, M. B. (2013). Assessing community-based conservation projects: A systematic review and multilevel analysis of attitudinal, behavioral, ecological, and economic outcomes. *Environmental Evidence*, 2, 2. <https://doi.org/10.1186/2047-2382-2-2>
- Cassidy, L., Pricope, N., Stevens, F., Salerno, J., Parry, D., Murray-Hudson, M., Hartter, J., & Gaughan, A. (2023). Assessing long-term conservation impacts on adaptive capacity in a flagship community-based natural resources management area in Botswana. *Ecology and Society*, 28(4), 12. <https://doi.org/10.5751/ES-14487-280412>
- CBD. (2022). Kunming-Montreal Global Biodiversity Framework. In *Conference of the parties to the convention on biological diversity fifteenth meeting*. United Nations Environment Programme. [Preprint], (December).
- Chisanga, A. (2016). What explains success and failure in community based natural resource management? In *A comparison of Botswana and Zambia*. University of Gothenburg.
- Clarke, P., & Jupiter, S. D. (2010). Law, custom and community-based natural resource management in Kubulau District (Fiji). *Environmental Conservation*, 37(1), 98–106. <https://doi.org/10.1017/S0376892910000354>
- Cockerill, K. (2018). *The politics of collaborative governance: Community-based conservation in northern Kenya*. University of British Columbia.
- Dietz, T., Ostrom, E., & Stern, P. C. (2003). The struggle to govern the commons. *Science*, 302, 1907–1912. <https://doi.org/10.1126/science.1091015>
- Diz, D., Johnson, D., Riddell, M., Rees, S., Battle, J., Gjerde, K., Hennige, S., & Roberts, J. M. (2018). Mainstreaming marine biodiversity into the SDGs: The role of other effective area-based conservation measures (SDG 14.5). *Marine Policy*, 93, 251–261. <https://doi.org/10.1016/j.marpol.2017.08.019>
- Dressler, W., et al. (2010). From hope to crisis and back again? A critical history of the global CBNRM narrative. *Environmental Conservation*, 37, 5–15. <https://doi.org/10.1017/S0376892910000044>
- Dyer, J., Stringer, L. C., Dougill, A. J., Leventon, J., Nshimbi, M., Chama, F., Kafwifwi, A., Muledi, J. I., Kaumbu, J. M., Falcao, M., Muhorro, S., Munyemba, F., Kalaba, G. M., & Syampungani, S. (2014). Assessing participatory practices in community-based natural resource management: Experiences in community engagement from southern Africa. *Journal of Environmental Management*, 137, 137–145. <https://doi.org/10.1016/j.jenvman.2013.11.057>
- Galvin, K. A., Beeton, T. A., & Luizza, M. W. (2018). African community-based conservation: A systematic review of social and ecological outcomes. *Ecology and Society*, 23(3), art39. <https://doi.org/10.5751/ES-10217-230339>
- Gibson, C. C., & Marks, S. A. (1995). Transforming rural hunters into conservationists: An assessment of community-based wildlife management programs in Africa. *World Development*, 23(6), 941–957. [https://doi.org/10.1016/0305-750X\(95\)00025-8](https://doi.org/10.1016/0305-750X(95)00025-8)
- Govan, H. (2009). Status and potential of locally-managed marine areas in the South Pacific: Meeting nature conservation and sustainable livelihood targets through wide-spread implementation of LMMAs. In *Coral reef initiatives for the Pacific*. Coral Reef Initiative for South Pacific.
- Howe, V. (2001). Local community training and education in southern Tanzania—a case study. *Marine Policy*, 25(6), 445–455. [https://doi.org/10.1016/S0308-597X\(01\)00029-X](https://doi.org/10.1016/S0308-597X(01)00029-X)
- James, G., Witten, D., Hastie, T., & Tibshirani, R. (2013). *An introduction to statistical learning—with applications in R* | Gareth James | Springer.
- Kearney, J., et al. (2007). The role of participatory governance and community-based management in integrated coastal and ocean management in Canada. *Coastal Management*, 35(1), 79–104. <https://doi.org/10.1080/10.1080/08920750600970511>
- Kitolelei, S., et al. (2022). Fisherwomen's indigenous and local knowledge—the hidden gems for the management of marine and freshwater resources in Fiji. *Frontiers in Marine Science*, 9, 1–17. <https://doi.org/10.3389/fmars.2022.991253>
- MA. (2003). *Ecosystems and human well-being: A framework for assessment*. Island Press.
- Mangubhai, S., Sykes, H., Lovell, E., Brodie, G., Jupiter, S., Morris, C., Lee, S., Loganimoce, E. M., Rashni, B., Lal, R., Nand, Y., & Qauqau, I. (2019). *Fiji: Coastal and marine ecosystems*, Ch. 35. World Seas: An Environmental Evaluation.
- McGinnis, M., & Ostrom, E. (1996). Design principles for local and global commons. *The International Political Economy and International Institutions*, 2, 1–47.
- Musavengane, R., & Simatele, D. M. (2016). Community-based natural resource management: The role of social capital in collaborative environmental management of tribal resources in KwaZulu-Natal, South Africa. *Development Southern Africa*, 33(6), 806–821. <https://doi.org/10.1080/0376835X.2016.1231054>

- Ndonye, H. (2021). Stakeholder engagement and performance of community based conservation projects: A case of Laikipia conservation region conservancies. *Journal of Economics and Sustainable Development [Preprint]*, 12(4). <https://doi.org/10.7176/JESD/12-4-07>
- Network, L. (2024). Building on traditional practices. Available at: <https://Immanetwork.org/our-work-building-on-traditional-practices/>
- O'Garra, T., et al. (2023). National-level evaluation of a community-based marine management initiative. *Nature Sustainability*, 6(8), 908–918. <https://doi.org/10.1038/s41893-023-01123-7>
- Ostrom, E. (1990). Governing the commons: The evolution of institutions for collective action. <https://doi.org/10.2307/3146384>
- Ostrom, E. (2009). A general framework for analyzing sustainability of social-ecological systems Elinor. *Science*, 352(5939), 419–422.
- Pemsl, D. E., et al. (2008). Evidence and insights from case Studies-3.7. Community-based fisheries management project in Bangladesh.
- Pillora, S., & Mckinlay, P. (2011). Local Government and Community Governance : A Literature Review. Working Paper no.2 Australian Centre of Excellence for Local Government, An Australian Government Initiative [Preprint], (2).
- Pomeroy, R. S., & Berkes, F. (1997). Two to tango: The role of government in fisheries co-management. *Marine Policy*, 21(5), 465–480. [https://doi.org/10.1016/S0308-597X\(97\)00017-1](https://doi.org/10.1016/S0308-597X(97)00017-1)
- R Core Team. (2021). The exploration of the approach to data preparation for Chinese text analysis based on R language. *OALib*, 8(9), 1–8. <https://doi.org/10.4236/oalib.1107821>
- Robertson, T., Greenhalgh, S., Korovulavula, I., Tikoibua, T., Radikedike, P., & Stahlmann-Brown, P. (2020). Locally managed marine areas: Implications for socio-economic impacts in Kadavu, Fiji. *Marine Policy*, 117, 103950. <https://doi.org/10.1016/j.marpol.2020.103950>
- Salerno, J., et al. (2021). Adaptation and evolution of institutions and governance in community-based conservation. *Conservation Science and Practice*, 3(1), 1–11. <https://doi.org/10.1111/csp2.355>
- Sanginga, P. C., Kamugisha, R. N., & Martin, A. M. (2007). The dynamics of social capital and conflict management in multiple resource regimes: A case of the southwestern highlands of Uganda. *Ecology and Society*, 12(1), 1–17. <https://doi.org/10.5751/ES-01847-120106>
- Schabel, H. G., Western, D., & Wright, R. M. (1996). Natural connections: Perspectives in community-based conservation. *The Journal of Wildlife Management*, 60(3), 690–692. <https://doi.org/10.2307/3802091>
- Sloan, J., & Chand, K. (2015). *A review of near shore fisheries law & governance in Fiji*. Siwatibau & Sloan.
- Thomas, A., et al. (2021). Why they must be counted: Significant contributions of Fijian women fishers to food security and livelihoods. *Ocean and Coastal Management*, 205, 1–10. <https://doi.org/10.1016/j.ocecoaman.2021.105571>
- Totikidis, V., Armstrong, A. F., & Francis, R. D. (2005). The concept of community governance: A preliminary review. In *GovNet conferences* [Preprint]. Victoria University.
- Varughese, G., & Ostrom, E. (2001). The contested role of heterogeneity in collective action: Some evidence from community forestry in Nepal. *World Development*, 29(5), 747–765.
- Vunisea, A. (2008). The “culture of silence” and fisheries management. *SPC Women in Fisheries Information Bulletin*, 18, 42–43.
- Waylen, K. A., et al. (2010). Effect of local cultural context on the success of community-based conservation interventions. *Conservation Biology*, 24, 1119–1129. <https://doi.org/10.1111/j.1523-1739.2010.01446.x>
- White, C. M., Mangubhai, S., Rumetna, L., & Brooks, C. M. (2022). The bridging role of non-governmental organizations in the planning, adoption, and management of the marine protected area network in Raja Ampat, Indonesia. *Marine Policy*, 141, 105095. <https://doi.org/10.1016/j.marpol.2022.105095>
- Woolcock, M., & Narayan, D. (2000). Social capital: Implications for development theory, research, and policy. *The World Bank Research Observer*, 15(2), 225–249.
- Zanjani, L. V., Govan, H., Jonas, H. C., Karfakis, T., Mwamidi, D. M., Stewart, J., Walters, G., & Dominguez, P. (2023). Territories of life as key to global environmental sustainability. *Current Opinion in Environmental Sustainability*, 63, 101298. <https://doi.org/10.1016/j.cosust.2023.101298>

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