

Past experiences and the refinement of Vanuatu's model for supporting community-based fisheries management

Jason Raubani,^{1,4} Hampus Eriksson,^{2,3} Pita Thomas Neihapi,^{1,4} Rolenas Tavue Baereleo,^{1,4} Moses Amos,⁴ Kalo Pakoa,¹ Sompert Gereva,¹ Graham Nimoho⁴ and Neil Andrew^{2,3}

Abstract

Co-management of marine resources using a community-based approach has become a central strategy in Pacific Islands to address overfishing and food security. Vanuatu has a long history of customary coastal management. Under Christianity these practices were weakened and gave way gradually to a westernised approach that focused on central management. Implementation of centralised management proved challenging given the strategy's weak capacity to function well across large islands inhabited by people of different origins and tribal identities. In the 1990s the Vanuatu Fisheries Department shifted towards a community-based approach to managing fisheries, and this remains a key strategy for coastal fisheries in Vanuatu, and since then multiple initiatives have been implemented under it. The recent history of community-based approaches provides an opportunity to reflect on past experiences so that the process of co-managing fisheries resources in Vanuatu can evolve, and so that the Vanuatu Fisheries Department can be a suitable co-management partner for modern purposes. Lessons derived from this exercise are relevant to other fishery agencies and organisations involved with community-based fishery management approaches in the Pacific.

Introduction

Coastal fisheries play a critical role in food security and subsistence in Pacific Island nations. Regional analyses paint a worrying picture of the future for coastal fisheries and their ability to feed people in the Pacific, unless there is significant improvement in management and productivity (Bell et al. 2009, 2016). To realise their full potential, fisheries management must be tailored to the realities of Pacific Island countries. Govan (2014) provides three compelling arguments for why, in some contexts, top-down centralised management models need re-thinking: 1) regulation radiating from central management agencies are unlikely to function well across countries with small isolated populations living in remote locations; 2) government agencies have a weak capacity for management and enforcement under these geographical realities; and 3) there is often a strong local foundation for governance and community rights, where local institutions have evolved to suit local conditions. Governance models that build on customary management, local practices that regulate use, and access and transfer of resources appear best suited to some Pacific Island contexts (Ruddle 1998; Cinner and Aswani 2007; Jupiter et al. 2014).

These realities are now well recognised in the Pacific, and a greater level of participation through community-based fisheries management (CBFM) was, for example, articulated in the Apia Policy (SPC 2008) and is a central theme in the "Melanesian Spearhead Group roadmap for inshore fisheries management and sustainable development" (Melanesian Spearhead Group 2015). In March 2015, this direction for the management of coastal fisheries in the Pacific was further strengthened through a planning meeting with regional Pacific stakeholders and governments. The meeting output, "A new song for coastal fisheries: Pathways to change", articulates the dynamic requirements of management throughout the region, focusing on co-management as a key strategy for achieving coastal fisheries management objectives (SPC 2015). This regional policy direction sends a powerful message about where the management strategy is heading at the regional level. However, higher-level policy often does not provide enough detail for effective translation into deployment of resources for implementation and management actions at the country level. Therein resides a great challenge for countries' fishery management agencies and communities in the implementation of decentralised co-management regimes.

¹ Vanuatu Fisheries Department, PMB 9045, Port Vila, Vanuatu.

² WorldFish, PO Box 438, Honiara, Solomon Islands

³ Australian National Centre for Ocean Resources and Security (ANCORS), University of Wollongong, NSW 2522, Australia

⁴ Pacific Community, BP D5, 98848 Noumea, New Caledonia

In Vanuatu, traditional tenure and customary law have provided the historical structure for regulating resource use and access. With increased western influence and cultural penetration of the early missionaries, customary beliefs became eroded, and fisheries management gradually transformed into a more centralised regime. Many communities retained, until recently, some of their customary laws during this transitional period (Hickey 2006; Johannes 2002). In 1980, a newly independent Vanuatu re-enforced centralised management by enacting the Fisheries Act as the supreme law for the conservation, management and development of its fisheries resources. Under the act, policy formulation, implementation, enforcement and conservation were the responsibility of the state. Over time, the three shortcomings noted above became increasingly evident and, as a response, the focus of the Vanuatu Fisheries Department (VFD) gradually shifted towards supporting community-based approaches to fishery management (Johannes 1998; Léopold et al. 2013a, b).

Within the broad decentralised management narrative are many complexities associated with how it may evolve and what may be required to enable the co-management process (Berkes 2006; Govan 2009). The ability of communities to revitalise ownership and authority of management rely on internal properties such as strong community structure and legitimacy, and external properties such as clear boundaries (Abernethy et al. 2014; Ostrom 2007). Through customary law these properties appear favourable in Vanuatu (Johannes 1998). However, communities may not be able to achieve ownership and authority where 1) natural resources are highly contested, 2) traditional tenure has eroded, and 3) modernisation is encroaching. Implementation must, therefore, be attuned to context and sensitive to community conditions beyond technical advice and structural support that VFD and other management partners can offer.

Since the 1990s, various forms of CBFM have been supported and practiced in Vanuatu, and have built on community cooperation with VFD and non-governmental organisations (NGOs). This long history offers an opportunity to learn from two decades of projects and to evaluate challenges and opportunities to adjust VFD's engagement models as CBFM advances. Tavue Baereleo et al. (2016) touched on the historical context of CBFM in Vanuatu, and summarised its present-day application. Here, we examine community emphasis and engagement processes in past projects to complement more technical reports on rules and outcomes (e.g. Dumas et al. 2010, 2012; Léopold et al. 2013a, b), and in-depth

narratives on traditional management practices (e.g. Hickey 2006), so that lessons can be drawn for how VFD and other partners can better engage with CBFM. The objectives of this article are to:

- review the history of recent past coastal fisheries projects that have supported community fishery management; and
- synthesise insights for VFD to support future CBFM in Vanuatu.

Methodology

This article draws on policy documentation, legislation, project reports and peer-reviewed articles to identify themes in the evolution of CBRM in Vanuatu. Written materials were obtained from VFD and the public domain. Although every effort has been made to paint a complete picture of recent projects, some documentation may have been overlooked. This article also draws on output from the most recent public consultations concerning fishery and mangrove management held by VFD in 2013–2014.

Review of recent coastal fisheries projects and support for CBFM

Twenty-five projects related to coastal fisheries in Vanuatu between 1986 and 2014 were identified (Table 1). Of these projects, 16 focused on technical support, capacity building and/or resource assessments.¹ A further nine projects were oriented towards working with communities on single-species conservation, or specifically ecosystems management. From these we identified seven projects or initiatives that were particularly important in shaping today's approach towards supporting communities, in providing lessons for engagement, and influencing how VFD works with CBFM.

European Micro Project

The engagement of community-based fisheries under VFD can be traced to 1986 through a micro-project funded by the European Union. This project was implemented through a rigid top-down approach, initiated jointly by the European Department of Fisheries under the Lomé Convention, to which Vanuatu is a signatory. The project sought to increase local employment opportunities from fisheries resources, engage with 100 villages and establish 70 individual fishing enterprises. These enterprises employed around 500 fishermen throughout the archipelago. As part of the Lomé conventions, the main fisheries component was deep-sea fishing, so the target then of the VFD

¹ The following projects serve as examples: Pacific Regional Oceanic and Coastal Fisheries Development Programme, Scientific Support for the Management of Coastal and Oceanic Fisheries in the Pacific Islands region, EFITAV: Efficiency of Tabu Areas in Vanuatu, and the Coral Reef Initiative for the South Pacific.

was to build the capacity of subsistence fishermen to enable them to venture into small-scale fishing enterprises (Walelign and Russell 1989). Under the project, VFD undertook training for vessel operations and maintenance, fishing techniques and fish conservation as new approaches offered to communities. This project became a point of departure for VFD to engage communities for capacity development.

Trochus rehabilitation programme

In the early 1990s a further focus on communities in coastal fisheries management occurred through the trochus rehabilitation programme. The decline of the trochus fishery was caused by several factors, including weak management and the limited inner reef and lagoons available for fishing in relation to fishing effort (Bell and Amos 1993). Urgent measures were needed to sustain the fishery. In response, VFD instigated a trochus rehabilitation programme (Amos 1991). The project worked with communities facing depletion of trochus stock and attempted to strengthen resource management within them. From 1990 to 1993, various projects were established to cater for the rehabilitation programme. VFD led studies in collaboration with external partners such as OSRTOM Fisheries Service and South Pacific Aquaculture Development Project (SPADP) to strengthen the biological information required to improve legislation in terms of harvest size and quotas (Amos 1991). Amos (1995) reflected on the VFD's community engagement and highlighted its shortcomings in communicating and implementing fishery controls. It was concluded that there was an overemphasis on enforcing rules that were poorly explained, and insufficient effort to create space for dialogue between VFD and communities. This project demonstrated that knowledge alone was not enough to achieve management outcomes with communities, and that further capacity must be built around community engagement.

Wan Smolbag

In 1995 the renowned theatre group Wan Smolbag celebrated the "Year of the Sea Turtle" by launching a campaign to reduce turtle mortality and egg harvesting. As part of the campaign, a famous play was written, "The Plague of the Sea Turtle", to raise awareness and promote the conservation of marine turtles. The play reached schools, villages and communities throughout the country (Johannes and Hickey 2004). The play and campaign inspired villagers to set up turtle monitoring efforts by selecting a turtle monitor. The purpose of the village turtle monitor was to encourage conservation, protection of turtle nests, and help with the tagging programme instated by the South Pacific Regional Environment Programme (Johannes and

Hickey 2004). Communities responded positively to the awareness programme by installing signs and notices at protected areas. Over 200 monitors in 100 coastal villages had been established by 2003 (Johannes and Hickey 2004). Wan Smolbag arranged annual meetings for capacity training and sharing among fellow monitors of constraints and lesson learned. It has become an important network for monitoring collaboration and strengthening. With increased conservation needs for other species at the village level, the turtle monitors are now also playing an important role of resource monitors to help monitor and advocate conservation for both land and sea resources in need of protection. This network has become increasingly important for local resource conversation initiatives throughout Vanuatu. A valuable lesson for VFD from the turtle monitoring programme was the opportunities that come from working in partnership with NGOs and extension services to augment VFD's capacity.

International Waters Programme

During the period 2000–2006, the International Waters Programme was active and implemented in 14 Pacific Island countries. By supporting national and community-level actions, the emphasis of the programme was to address marine and freshwater quality, habitat modification and degradation, and unsustainable use of living marine resources. In Vanuatu, the project supported initiatives promoting community conservation areas in both terrestrial and marine areas to strengthen and reinforce the customary taboos established for the protection of land crabs and mangrove habitats. Signboards publicised closures and project staff worked with the Malampa provincial tourism development officer to encourage ecotourism at the site. They worked with 16 communities in the central part of Malekula, including the two offshore islands of Uri and Uripiv. The project emphasised participatory processes for cooperative action and co-management of resources. It built its initiatives on partnerships across local and national levels and was able to evaluate these processes. The broad geographical implementation has supported a substantial lessons-learned document (Aitaro et al. 2007). In Vanuatu, the project emphasised the formation of partnerships and further capacity requirements of national agencies to lead community engagement processes.

Mangrove ecosystems for climate change adaptation and livelihoods

The mangrove ecosystems for climate change adaptation and livelihoods (MESCAL) project was implemented in Solomon Islands, Samoa, Tonga, Fiji and Vanuatu by the International Union for Conservation of Nature. The project's over-riding goal was to increase resilience to climate change for

the people of Pacific Island countries through adaptive co-management of mangroves and associated ecosystems. It was both a research and development project, the activities of which included demonstration sites, capacity building, governance systems in place for mangrove management, economics, and carbon sequestration (Waqalevy 2012). The project worked with 17 communities in Vanuatu, 16 on Malekula and 1 on Efate through a “participatory learning and action” approach. This approach enabled a more structured government engagement with communities than had been implemented in the past, building on participatory action research and the co-development of action plans for prioritised issues.

Japan International Cooperation Agency “Grace of the Sea” project

The “Grace of the Sea” project was hosted and facilitated by VFD in two phases, between 2006–2009 and 2012–2014.² Baseline surveys generated a substantial socioeconomic dataset of 23 coastal communities in Tafea, Malampa, Shefa provinces, along with descriptive situational analyses for multiple community resource management initiatives (Nimoho

et al. 2013). From these data the project sought to identify and prioritise support for community-based coastal resource management, and worked with livelihoods and income generation activities. Livelihood initiatives developed a new design for fish aggregating devices (FADs) that could withstand cyclones, developed a fishery for a new species (diamondback squid), and conducted training in shell crafting techniques and a fish café. These activities were accompanied by initiatives on CBFM and the development of community management plans. The project further built broad capacity for fisheries monitoring, control and surveillance (MCS) by taking advantage of Part 18 of the Fisheries Act (Government of Vanuatu 2014), specifically on Authorized Officers to assist community based fisheries management. As a whole, the project’s broad approach to scientific data collection, livelihood development initiatives, MCS and community engagement raised community-based management capacity and the engagement experience with VFD. It also served as an example of the breadth and diversity of prioritised actions among communities, beyond regulating the use of marine resources. Not all of these prioritised actions were within the scope of what VFD could assist with, emphasising the need for cross-sectoral partnerships for community support.

Table 1. Recent past projects that shape the community-based fisheries management model for the Vanuatu Fisheries Department.

Project	Duration	Documentation	Project scope
European Union Micro Project	1986–1989	Walelign and Russel 1989	Capacity building in the fishing and post-harvest sectors for trade and economic development across 100 villages in Vanuatu. Emphasis on community engagement and training.
Australian Centre for International Agricultural Research (ACIAR)	1988	Fletcher 1988	Ecological and biological assessment of coconut crab in Vanuatu to consider future management measures.
South Pacific Aquaculture Development Project	1990–1991	Amos 1991	Trochus stock rehabilitation with hatchery-reared juveniles in partnership with resource-owning communities as a tool for management of wild fishery.
RAMCID Vanuatu Fisheries (ACIAR)	1996	RAMCID 1996	Technical assessment and review of Vanuatu Fisheries Department initiatives.
The socioeconomic assessment of the native forest preservation proposal in Vanuatu: Implications of forestry management (ACIAR)	1997	Tacconi and Bennett 1997	Developing an approach to the Convention of Biodiversity by involving local communities, provincial government and national governments in establishing protected areas and developing a framework for local communities.
Local and Indigenous Knowledge System (LINKS) project	2001	Johannes and Hickey 2004	A review investigating traditional and indigenous resource management techniques that enable communities to survive and sustain themselves in a changing world while maintaining environmental integrity.
International Waters Project (IWP)	2002–2008	Hickey 2006	Focus of IWP project in Vanuatu on working in collaboration with communities to promote the management of land crabs by strengthening traditional resource management through forms of taboos. IWP aimed to increase community involvement and responsibility for community-based resource management and conservation by traditional resource management.

² See: <http://fisheries-gos.gov.vu>

Table 1. continued

Project	Duration	Documentation	Project scope
PROCFish/c/CoFish (European Union)	2003	Friedman et al. 2003	First comprehensive multi-country comparative assessment (finfish, invertebrates and socioeconomics) using identical methodologies at each site and build reef fisheries resource and indicators profile to provide information for management planning and update national and regional database.
Projet d'Organisation des Producteurs Agricoles pour la Commercialisation Associative II (POPACA II)	2003	Hickey and Firiam 2004	Extend geographical range of small-scale commercial and/or artisanal fishing project to increase the supply of fish to satisfy the high market demand and increase economic benefits of commercial and artisanal fishery in the Shepherd Outer Islands (Emae, Tongoariki, Buninga, Mataso, Makira).
ACIAR	2004	Lindner 2004	Impact assessment of research on the biology and management of coconut crabs on Vanuatu.
Reef Check	2004	Hill 2004	Community capacity building for Efate communities on coral reef health and aquarium species monitoring for aquarium trade sector management and resource management.
Coral Garden Project (Mac Arthur Foundation)	2004–2007	Foundation of the Peoples of the South Pacific (FSPI) 2007	Strengthen the capacity of key institutions such as the local government, NGOs and local communities in Vanuatu and support community-based coastal management and sustainable livelihood.
University of Iceland Community Fisheries Management final project	2006	Raubani 2006	Desktop review of the community fisheries management system in Vanuatu using the Arnason design principle. Emphasis on finding practical ways to improve the current systems to be more efficient, strong and sustainable.
PROCFish/c/Cofish (European Union)	2008	Pakoa et al. 2008	Underwater assessment to collect baseline information to describe the status of the resources, especially the trochus and sea cucumber fisheries and provide recommendations for management.
Millennium Challenge Account	2009	Raubani and Gereva 2009	Technical report investigating the level of impact of damage by the development the newly implemented marina located at the Undine Bay area.
Coral Reef Initiative in the South Pacific (CRISP) project	2009	Dumas et al. 2009	Community capacity building done in Emau communities to improve monitoring capacity and provide relevant information for their reef resource management.
CRISP project	2009–2010	Dumas et al. 2010	Technical evaluation of the result of village-based management of invertebrates on Emau Island.
Mangrove Ecosystems for Climate Change Adaptation and Livelihoods	2010–2014	Waqalevy 2012	Research and a development initiative that included community demonstrations sites and capacity building activities for mangrove management.
Global Environment Facility, Small Grants Programme, United Nations Development Programme	2011	Raubani 2011	Capacity training for communities and resource owners on simple coconut crab stock assessment and monitoring surveying methodology.
Bislama project	2011–2012	Ham et al. 2012	Resource assessment project determining the stock of sea cucumber throughout Vanuatu through updated survey technology and formulating a five-year management plan.
Efficiency of Tabu Areas in Vanuatu (EFITAV) project	2012	Dumas et al. 2012	Technical study assessing the capacity of tabu areas through comparative stock assessment of inside vs outside of tabu areas, and determining their effectiveness for sound decision-making on resource management at the community level.
Gestion traditionnelle (GESTRAD) project	2013	Kaltavara et al. 2013	Study to update policy on community-based fisheries management by assessing existing management and capacity at sites throughout Vanuatu.

Table 1. continued

Project	Duration	Documentation	Project scope
Vanuatu Fisheries Department, French Research Institute for Development, and the French National Center for Scientific Research. Funded by the French Ministry of Foreign Affairs (Pacific Funds) and the Government of Vanuatu (Vanuatu Fisheries Department)	2013	Léopold et al. 2013b	Study that examined the effectiveness of past community-based fisheries management and proposed practical management regulations based on community and national governance capacities.
Grace of the Sea Project (Japan International Cooperation Agency)	2006–2009 (Phase 1) 2012–2014 (Phase 2)	Nimoho et al. 2013	Community capacity building project integrating initiatives on management and livelihoods.
European Development Funds 10 (EDF 10)	2014	Arthur 2014	Review report identifying gaps and barriers hindering Vanuatu's fisheries sector development and service delivery to the public sector.
Strengthening Coastal and Marine Resources Management in the Coral Triangle of the Pacific project - Phase 2 (Asian Development Bank)	2014	Dumas et al. 2014	Community technical capacity building for crown-of-thorns starfish clean-up procedures at Luganville on Santo.

Stakeholder consultations

Since 2013, VFD has completed a series of stakeholder consultations. These are seen as opportunities for VFD to inform the public about their activities and the services available to communities. The consultations were also occasions in which stakeholders shared their views and contributed to influencing VFD's model of engagement. Consultations included key stakeholders, such as community leaders, area secretaries, councillors, the provincial government and government extension officers. The consultations provided rich sources of information from communities regarding CBFM. Several types of consultations have been carried out as part of different initiatives. For example, from May to July 2010 mangrove use and management consultations were held in six provinces. At these consultations, key mangroves areas that needed to be managed and protected were identified, and mechanisms for management and government support considered in partnership with communities. During 2013–2014, fisheries regulation consultations were carried out in six provinces. The consultations highlighted varying priorities, depending on the local major fishery target species. However, the outcomes were similar in that communities wanted to see the government help them manage their fishery resources.

A synthesis of insights for supporting future CBFM in Vanuatu

Current fisheries management in Vanuatu is based on a mixture of customary and traditional knowledge, and contemporary western concepts. CBFM in Vanuatu has its roots in the lessons learned from community interactions during the rehabilitation project for the trochus fishery during the late 1980s, in which VFD provided technical support to communities (Amos 1991, 1995). Johannes (1998) noted that VFD "catalysed a striking upsurge in tradition-based marine resource management" in villages during the early 1990s, building on the resourcefulness of communities and strong customary marine tenure. Hickey and Johannes (2002) further noted that "since 1993 the Department [VFD] began to focus less on fisheries development and more on fisheries extension work".

Supporting communities to govern resource use through CBFM continues to evolve in Vanuatu and is characterised by strong engagement by VFD. It is notable, however, that despite the fact that CBFM is a core model for coastal fisheries management at VFD, most CBFM programmes and activities are dependent on donor funding (Léopold et al. 2013b).

The projects identified have worked in partnership with more than 50 communities in the Shefa, Tafea,

Malampa and Sanma provinces. They have been delivered in partnership between regional agencies (e.g. Foundation of the Peoples of the South Pacific, Pacific Community), research organisations (e.g. French Research Institute for Development, French Research Institute for Exploitation of the Sea), NGOs (e.g. Wan Smolbag), and other Vanuatu state agencies (e.g. the Department of Environmental Protection and Conservation). The projects have built capacity and support networks for community-based approaches to resource management and conservation. The history of these projects contributes to shaping today's coastal fishery management model with VFD. Each of the past projects in Vanuatu that have focused on community capacity building and resource management have generated insights for community-based approaches, both for VFD and NGOs as management partners (e.g. Aitaro et al. 2007; Amos 1995; Hickey and Johannes 2002; Johannes 1998; Léopold et al. 2013a; Nimoho et al. 2013). Building on this history, four broad thematic areas may be identified as opportunities to further evolve the model: sensitivity to community context, documenting and analysing the CBFM process, seeking partnerships, and a deliberate emphasis on gender.

Sensitivity to community context

In many modern Pacific Island settings, as the human population increases, migrates, urbanises and competes for declining resources, boundaries delimiting the extent of community managed areas are unclear or contested (e.g. Sulu et al. 2015). Clear boundaries are widely cited as being an important precondition for self-governance of natural resources (Ostrom 2007). The management process must be sensitive to these local conditions, as they have the potential to influence CBFM interest, uptake and success. In some locations, CBFM might not be the suitable approach because overlapping use of resources and the social conditions under which people live makes community cooperation difficult to sustain. Even where CBFM appears to be an appropriate model, it might not achieve all the desired or prioritised community objectives (Jupiter et al. 2014; Léopold et al. 2013b). With the relatively long history of CBFM in Vanuatu it is possible, at least in theory, that the more organised communities have already been identified and supported. In addition, some communities have a long history of engagement by NGOs or projects and this influences the point of departure for change, as well as offering an opportunity to form coalitions and networks. A community's history of external engagement can influence expectations. For example, past activities may not have lasted beyond a project's lifetime so there is a cynical view of external management partnerships (see Léopold et al. 2013a). An evolving issue is, therefore, how to be sensitive

to such histories in the engagement approach, and how to adjust the model when the process does not start with a 'clean slate' (Tavue Baereleo et al. 2016).

Documenting and analysing the CBFM process

Outcomes from CBFM initiatives are experienced differently among and within communities (Maliau et al. 2009; Pomeroy et al. 1997). Variable outcomes from CBFM can, at least in part, be explained by social process and the complex realities of governing common resources affected by social norms, perceptions, and historical dynamics of resource control (Blythe et al. 2017). In order to evaluate and better refine the community engagement model in Vanuatu, improvement must be made in the documenting process (e.g. representation, gender, leadership, legitimacy). It is important to understand the needs and capacities that communities harbour within themselves, to generate a better qualitative picture of the management process and role that either VFD or NGOs can realistically play as partners in marine resource management. Research has shown that CBFM outcomes often depend on internal community processes, not just the external support a community receives (e.g. Abernethy et al. 2014; Steenbergen and Visser 2016). For example, leadership has been highlighted as a critical factor influencing fisheries management outcomes more broadly (Gutierrez et al. 2011). The proposition, as VFD and other CBFM partners in Vanuatu move forward with participatory community engagement, is to strive for further qualitative documentation that helps track and understand the change process and what influences perceived outcomes in communities. Interviews with community members and systematic recording of observations through trip reports complements more quantitative information on community attributes and fisher catch monitoring. This type of information is valuable to adjust the VFD engagement model to lessons learned from different partner communities.

Seeking partnerships

The community support context is broader than just regulating use of marine resources (Gillett et al. 2008; Pomeroy et al. 1997), and a community diagnosis process can identify and prioritise issues outside fisheries management (Eriksson et al. 2016). For example, communities in Solomon Islands prioritise thematic areas such as habitat restoration, alternatives to firewood for fuel, and development of information material for awareness alongside larger resource governance issues (Sulu et al. 2015). It is unreasonable to expect VFD or individual NGOs to have the range of technical capacities needed to address all concerns or community-prioritised activities. For this purpose, broader partnerships that cover the full breath of prioritised

issues and concerns are needed. There are several international and national NGOs operating in Vanuatu. This environment offers opportunities for innovative partnerships to support communities across several sectors. The JICA project serves as an example because it did not take a narrow interpretation of the community-support approach to managing fisheries, but instead worked on livelihood enhancement and small-scale fishery innovation as prioritised by communities (Nimoho et al. 2013). Community support staff at national agencies have a role in facilitating the co-management process and delivering services (Govan 2013). However, staff turnover and inadequate operational resources for coastal fishery extension services is a common theme in the region (Govan 2013, 2015). Seeking partnerships offers scope for adding further capacity to VFD's work through networks of agencies and NGOs active in the field of CBFM. Through such partnerships there are also opportunities to share lessons learned across the multiple cases where different organisations are working.

A deliberate emphasis on gender

Social inequalities associated with gender affect access to resources, networks and assets, and this gender gap differentially influences the opportunities for development and well-being of men and women (Kantor et al. 2015). For example, a Solomon Islands case study found that women's adaptive capacity to maintain well-being was lower than that of men because they experienced reduced access to support and information, lower participation in community governance and social organisation, and learning and experimenting (Cohen et al. 2016). Women and men also often use different parts of the coastal seascape, owing to their differentiated access to resources and gender norms (Fröcklin et al. 2014). In Vanuatu, women spend more time on the reefs gleaning and fishing compared to men (Waqalevy 2012), exemplifying the importance of the deliberate inclusion of women in the management of those environments. A critical question in this context is whether the gendered seascape use is reflected in the way women participate in decision-making and are impacted by management as CBFM evolves at the local level. In past CBFM projects the deliberate representation of women in decision-making for management, and documentation of their views, has been limited. Anecdotally, it is often seen as more difficult to work with women in communities because they are typically regarded as cooks, whereas men attend decision-making workshops and meetings. These norms perpetuate women's limited participation in communal decision-making. Approaches that seek to catalyse critical questioning of norms and actions in response to them must also be sensitive, so as not to exacerbate them (Cohen et al. 2016). Seeking

partnership with established women's groups and networks in the village, such as the female resource monitors, the committees against violence against women (CAVAW) network, and the government Department of Women's Affairs can be a way in which VFD and partners can be more deliberate about gender, and involve women in rural areas in discussions around resource use and management (Vunisea 2008).

Conclusions

The rich history of CBFM in Vanuatu continues to be written in ways that are unique to the country. Lessons from more than 30 years of projects have coalesced into a national model for CBFM implementation. Léopold et al. (2013b) and others caution against simple prescriptions for CBFM and inflated optimism for long-term benefits. These authors also note the continuing dependence of external agents for durable impacts. CBFM is no panacea for sustainable coastal fisheries in Vanuatu. Limited government resources, geographical isolation, and the nation's diverse ethnic and cultural history, mean that the challenge to improve the Vanuatu model for CBFM will remain an important research and policy area. Government agencies will need to continue to evolve to more effectively play their part in this future.

Acknowledgements

This paper was funded by the Australian Centre for International Agricultural Research grant FIS/2012/074.

References

- Abernethy K.E., Bodin Ö., Olsson P., Hilly Z. and 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.
- Aitaro J., Alik L., Bakineti R. et al. 2007. Lessons for Pacific Island environmental initiatives: Experiences from International Waters Project National Coordinators. IWP-Pacific Technical Report (International Waters Project) no. 44. Apia, Samoa: Secretariat of the Pacific Regional Environment Programme.
- Amos M. 1991. Trochus reseeding experiment in Vanuatu. Noumea, New Caledonia: South Pacific Commission. 23rd Regional Technical Meeting on Fisheries, Noumea, New Caledonia, 5–9 August 1991. 14 p.
- Amos M. 1993. Traditionally based marine resource management systems in Vanuatu. *SPC Traditional Marine Resource Management and Knowledge Information Bulletin* 2:14–17.

- Amos M. 1995. Combination of fisheries management regulation, traditionally based management and wild stock enhancement using hatchery reared trochus juveniles as a precautionary management principle for *Trochus niloticus* resources in Vanuatu. Forum Fisheries Agency/South Pacific Commission workshop on the management of South Pacific inshore fisheries. Noumea, New Caledonia, 26 June–7 July 1995.
- Arthur C.K. 2014. Report on the review of current service delivery framework for the Vanuatu Fisheries Department. Vanuatu Fisheries Department, Port Vila, Vanuatu. 10 p.
- Bell L.A. and Amos M.J. 1993. Republic of Vanuatu fisheries resources profiles. Forum Fisheries Agency report 93/49. Forum Fisheries Agency, Honiara, Solomon Islands.
- Bell J.D., Kronen M., Vunisea A., Nash W.J., Keeble G., Demmke A., Pontifex S. and Andréfouët S. 2009. Planning the use of fish for food security in the Pacific. *Marine Policy* 33:64–76.
- Bell J.D., Taylor M., Amos M. and Andrew N. 2016. Climate change and Pacific Island food systems. Climate Change, Agriculture and Food Security and Technical Centre for Agricultural and Rural Cooperation. Copenhagen, Denmark and Wageningen, the Netherlands.
- Berkes F. 2006. From community-based resource management to complex systems. *Ecology and Society* 11(1):45.
- Blythe J., Cohen P., Eriksson H., Cinner J., Boso D., Schwartz A.M. and Andrew N. (in press). Community-based fisheries management: Strengthening post-hoc analysis through the social-ecological systems framework.
- Cinner J.E. and Aswani S. 2007. Integrating customary management into marine conservation. *Biological Conservation* 140:201–216.
- Cohen P., Lawless S., Dyer M., Morgan M., Saeni E., Teioli H. and Kantor P. 2016. Understanding adaptive capacity and capacity to innovate in social-ecological systems; applying a gender lens. *AMBIO* 45(3):309–321.
- Dumas P., Jimenez H. and Léopold M. 2009. Training in community-based monitoring techniques in Emau Island, North Efate, Vanuatu. Noumea, New Caledonia: Institut de recherche pour le développement (IRD). 38 p.
- Dumas P., Jimenez H., Léopold M., Petro G. and Jimmy R. 2010. Effectiveness of village-based reserves on reef invertebrates in Emau, Vanuatu. *Environmental Conservation* 37(3):364–372.
- Dumas P., Léopold M., Kaltavara J. and Ham J. 2012. Ecological efficiency of tabu areas in Vanuatu (EFITAV project). Final report, Programme Fonds Pacifique / Gouvernement de Nouvelle-Calédonie. Vanuatu Fisheries Department, Port Vila, Vanuatu. 37 p.
- Dumas P., Ham J. and Rocky K. 2014. Community-based management of crown-of-thorns outbreak in Santo (pilot project). Vanuatu Fisheries Department, Port Vila, Vanuatu. 16 p.
- Eriksson H., Adhuri D.S., Adrianto L., Andrew N.L., Apriliani T., Daw, T., Evans L., Garces L., Kamanyi E., Mwaipopo R., Purnomo A.H., Sulu R.J. and Beare D.J. 2016. An ecosystem approach to small-scale fisheries through participatory diagnosis in four tropical countries. *Global Environmental Change* 36:56–66.
- Fletcher W.J. 1988. Coconut crab ecology in Vanuatu. Australian Centre for Agricultural Research. 63 p.
- Friedman K., Pakoa K., Kronen M. and Chapman L. 2003. Vanuatu country report: Profile and results from survey work at Paunangisu Village, Moso Island Uri and Uripiv Island, and the Maskyline Archipelago. Noumea, New Caledonia: Secretariat of the Pacific Community. 357 p.
- Fröcklin S., de la Torre-Castro M., Håkansson E., Carlsson A., Magnusson, M. et al. 2014. Towards improved management of tropical invertebrate fisheries: Including time series and gender. *PLoS ONE* 9(3):e91161.
- FSPI (Foundation for the People of the South Pacific). 2007. Coral Gardens Initiative (2004 – March 2007) - Report to the MacArthur Foundation. Port-Vila, Vanuatu: Foundation for the People of the South Pacific. 50 p.
- Gillett R., Preston G., Nash W., Govan H., Adams T. and Lam M. 2008. Livelihood diversification as a marine resource management tool in the Pacific Islands: Lessons learned. *SPC Fisheries Newsletter* 125:32–39.
- Govan H. 2009. Achieving the potential of locally managed marine areas in the South Pacific. *SPC Traditional Marine Resource Management and Knowledge Information Bulletin* 25:16–25.
- Govan H. 2013. Strategic review of inshore fisheries policies and strategies in Melanesia: Fiji, New Caledonia, Solomon Islands and Vanuatu. Part 1: General overview. 39 p.
- Govan H. 2014. Monitoring, control and surveillance of coastal fisheries in Kiribati and Vanuatu. Part I: Priorities for action. Report for the Secretariat of the Pacific Community, Fisheries, Aquaculture and Marine Ecosystems Division. Noumea, New Caledonia.

- Govan H. 2015. Preliminary review of public expenditure of the fisheries agencies of Pacific Island countries and territories: Policy, operational budget and staffing support for coastal fisheries. Report for the Secretariat of the Pacific Community, Fisheries, Aquaculture and Marine Ecosystems Division. Noumea, New Caledonia.
- Government of Vanuatu. 2014. Fisheries Act No. 10 of 2014. Parliament of the Republic of Vanuatu, Port Vila.
- Gutierrez N.L., Hilborn R. and Defeo O. 2011. Leadership, social capital and incentives promote successful fisheries. *Nature* 470:386–389.
- Ham J., Léopold M. and Dumas P. 2012. Sea cucumber stock assessment. Vanuatu Fisheries Department, Port Vila, Vanuatu. 47 p.
- Hickey F. 2006. Traditional marine resource management in Vanuatu: Acknowledging, supporting and strengthening indigenous management systems. SPC Traditional Marine Resource Management and Knowledge Information Bulletin 20:11–23.
- Hickey F.R. and Johannes R.E. 2002. Recent evolution of village-based marine resource management in Vanuatu. SPC Traditional Marine Resource Management and Knowledge Information Bulletin 14:8–21.
- Hickey F. and Firiham A. 2004. Feasibility study for a fishing project in the Shepherd Outer Islands. Vanuatu Fisheries Department, Port Vila, Vanuatu. 100 p.
- Hill J. 2004. Reef Check Vanuatu Report, July–August. Townsville, Australia. 56 p.
- Johannes R.E. 1998. Government-supported, village-based management of marine resources in Vanuatu. *Ocean and Coastal Management* 40:165–186.
- Johannes R.E. 2002. The renaissance of community-based marine resource management in Oceania. *Annual Reviews in Ecology, Evolution and Systematics* 33:317–340.
- Johannes R.E. and Hickey F.R. 2004. Evolution of village-based marine resource management in Vanuatu between 1993 and 2001. *Coastal region and small island papers*, 15. United Nations Educational, Scientific and Cultural Organization. 46 p.
- Jupiter S.D., Cohen P.J., Weeks R., Tawake A. and Govan H. 2014. Locally managed marine areas: Multiple objectives and diverse strategies. *Pacific Conservation Biology* 20(2):165–179.
- Kaltavera J., Kaku R. and Léopold M. 2013. Up-scaling village-based management of reef resources in Vanuatu. Vanuatu Fisheries Department, Port Vila, Vanuatu. 36 p.
- Kantor P., Morgan M. and Choudhury A. 2015. Amplifying outcomes by addressing inequality: The role of gender-transformative approaches in agricultural research for development. *Gender, Technology and Development* 19(3):292–319.
- Léopold M., Cornuet N., Andréfouët S., Moenteapo Z., Duvauchelle C., Raubani J., Ham J. and Dumas P. 2013a. Co-managing small-scale sea cucumber fisheries in New Caledonia and Vanuatu using stock biomass estimates to set spatial catch quotas. *Environmental Conservation* 40:367–379.
- Léopold M., Beckensteiner J., Kaltavara J., Raubani J. and Caillon S. 2013b. Community-based management of near-shore fisheries in Vanuatu: What works? *Marine Policy* 42:167–176.
- Lindner B. 2004. Impact assessment of research on the biology and management of coconut crabs on Vanuatu. Impact Assessment Series Report No. 29. Canberra, Australia: The Australian Centre for International Agricultural Research (ACIAR). 63 p.
- Maliao R.J., Pomeroy R.S. and Turingan R.G. 2009. Performance of community-based coastal resource management (CBCRM) programs in the Philippines: A meta-analysis. *Marine Policy* 33:818–825.
- Melanesian Spearhead Group. 2015. Melanesian Spearhead Group roadmap for inshore fisheries management and sustainable development (2015–2024). Melanesian Spearhead Group Secretariat, Vanuatu. http://www.spc.int/DigitalLibrary/Doc/FAME/Reports/Anon_15_MSG_Roadmap.pdf
- Nimoho G., Seko A., Inuma M., Nishiyama K. and Wakisaka T. 2013. A baseline survey of coastal villages in Vanuatu. SPC Traditional Marine Resource Management and Knowledge Information Bulletin 32:2–84.
- Ostrom E. 2007. A diagnostic approach for going beyond panaceas. *Proceedings of the National Academy of Sciences of the United States* 104(39):15,181–15,187.
- Pako K., Friedman K., Tardy E. and Lasi F. 2008. Epi Island trochus and sea cucumber resource status and recommendations for management. Noumea, New Caledonia: Secretariat of the Pacific Community. 62 p.

- Pomeroy R.S., Pollnac R.B., Katon B.M. and Predo C.D. 1997. Evaluating factors contributing to the success of community-based coastal resource management: The central Visayas regional project-1, Philippines. *Ocean and Coastal Management* 36:97–120.
- RAMCID (Fisheries Resource Assessment, Management and Computer Information). 1996. Third quarterly report. Vanuatu Fisheries Department, Port Vila, Vanuatu.
- Raubani J.J. 2006. Community fisheries management: Future consideration for Vanuatu. University of Iceland at Reykjavik. 47 p.
- Raubani J.J. 2011. Capacity building in coconut crab (*Birgus latro*) assessment and monitoring in Torba and Penama provinces. Vanuatu Fisheries Department, Port Vila, Vanuatu. 17 p.
- Raubani J.J. and Gereva S.R. 2009. Preliminary report: Undine Bay marine biodiversity assessment survey. Vanuatu Fisheries Department, Port Vila, Vanuatu. 16 p.
- Ruddle K. 1998. The context of policy design for existing community-based fisheries management systems in the Pacific Islands. *Ocean and Coastal Management* 40:105–126.
- SPC (Secretariat of the Pacific Community). 2008. Pacific Islands regional coastal fisheries management policy and strategic actions (Apia Policy), 2008–2013. Noumea, New Caledonia: Secretariat of the Pacific Community. 55 p.
- SPC (Secretariat of the Pacific Community). 2015. A new song for coastal fisheries – pathways to change: The Noumea strategy. Secretariat of the Pacific Community, Noumea, New Caledonia. http://www.spc.int/DigitalLibrary/Doc/FAME/Reports/Anon_2015_New_song_for_coastal_fisheries.pdf
- Steenbergen D. and Visser L. 2016. Caught between mediation and local dependence: Understanding the role of non-government organisations in co-management of coastal resources in eastern Indonesia. *Anthropological Forum*, DOI: <http://dx.doi.org/10.1080/00664677.2016.1148012>
- Sulu R.J., Eriksson H., Schwarz A-M. et al. 2015. Livelihoods and fisheries governance in a contemporary Pacific Island setting. *PLoS One* 10(11):e0143516. doi:10.1371/journal.pone.0143516
- Tacconi L. and Bennett J. 1997. Protected area assessment and establishment in Vanuatu. Arawang Information Bureau Pty Ltd, Canberra, Australia. 180 p.
- Tavue Baereleo R., Neihapi P., Cohen P.J., Raubani J. and Bertram I. 2016. What influences the form that community-based management takes in Vanuatu? *SPC Traditional Marine Resource Management and Knowledge Information Bulletin* 37:22–24.
- Vunisea A. 2008. The “culture of silence” and fisheries management. *SPC Women in Fisheries Information Bulletin* 18:42–43.
- Waqaevy V.P. (ed). 2012. MESCAL technical report, “Biodiversity assessment technical report for Eratap and Amal/Crab Bay”, Vanuatu Department of Environment and Conservation, Port Vila, Vanuatu. 146 p.
- Walelign T. and Russel J. 1989. The South Pacific and European Community. Commission of the European Communities, Brussels. 38 p.