

Reflecting on four years of community-based fisheries management development in Vanuatu

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Since 2017, the Vanuatu Department of Fisheries (VFD) has been collaborating with partners to implement its component of a regional project to strengthen community-based fisheries management (CBFM). Known as the Pathways Project (hereafter referred to as the project), its overall aim is to improve the wellbeing of men, women and children in coastal communities through more productive and resilient fisheries, and better food and nutrition security. This four-year project is the second in a series of investments into strengthening CBFM in Kiribati, Solomon Islands and Vanuatu.⁴ It is led by the University of Wollongong (UoW) in Australia in collaboration with the Pacific Community (SPC), WorldFish and respective national fisheries agencies.

In Vanuatu, the project is the largest of several bilateral projects under VFD's coordination that seeks to strengthen the coastal fisheries sector, and supports a team of five VFD-CBFM officers. The team is collaborating with over 30 communities across all six provinces in the country. As such, these collaborations vary in character and intensity, with some requiring higher degrees of on-the-ground support and others only distanced support. While some communities are advanced in their CBFM efforts (e.g. have and use CBFM plans, have *tabu* areas formally gazetted and/or are monitoring resources), others are just starting to apply management measures. The project's activities are institutionally embedded in VFD. This means the project coordinates implementation to fit with programmes and other bilateral projects run through VFD. In doing so, the project directly contributes to VFD's obligations to development goals in the National Sustainable Development Plan. The project employs a "research for development" approach, which uses collaborative research and co-learning with communities, to accelerate development. All work seeks to produce outputs that are readily usable and impactful on practice as part of a collective learning process.

With the project concluding in December 2021, it is timely to reflect on its contribution to CBFM development in Vanuatu. Given the broad scope of CBFM, implementation utilised a range of pathways to achieve change. It is the sum of outcomes along those various pathways that come to shape outcomes for CBFM development, both in terms of practice across coastal communities and as policy and management along scales of governance. Without being able to capture here the full range of project activities, we have selected five action areas for which we present outcome briefs. We start with [Pita Neihapi's](#) account of the project's efforts to strengthen CBFM institutions,

highlighting national policy impacts and impacts on management practices in communities. [Regina Ephraim](#) continues by presenting capacity development initiatives that were undertaken for VFD staff. Herein she focuses on capacity building areas of gender-sensitive CBFM and nutrition-based management, as well as regional professional networking initiatives allowing knowledge and skills exchange among officers. In the third outcome brief, [Vasemaca Malverus](#) reflects on innovative strategies that were developed with partners for improving how CBFM information gets disseminated to coastal communities. [Abel Sami](#) presents several programmes that were developed to improve the collection, management and application of data as part of national monitoring efforts. He highlights, in particular, VFD's uptake of a solar-powered freezer monitoring programme that was piloted by the project. Finally, [Douglas Koran](#) reports on measures taken to quickly mobilise resources, funding and technical advice in support of disaster relief efforts, also underlining the importance of CBFM in improving the resilience of coastal communities.

We acknowledge work by many parallel initiatives undertaken in the CBFM arena, and other influences on CBFM progress. Attributing change to interventions is, therefore, difficult and we have done so conservatively. Where directly observed or measured changes are immediate, such attribution is more straightforward. In cases where actions are connected to broader change, we strongly acknowledge that the project forms one of many drivers of change, and claim a *contribution* rather than full *attribution*.

From 2022 onwards, the project will transition into a third CBFM investment phase until 2025. With the solid foundations of CBFM, strong collaborations in place, and strategic long-term policy visions now guiding coastal fisheries de-

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⁴ The first phase, known as PacFish, was led by WorldFish through Australian Centre for International Agricultural Research project FIS/2012/074; 2014–2017.

velopment in Vanuatu, the next phase of support will focus on scaling up CBFM through a self-sustaining, well-coordinated national CBFM programme. To this end, VFD will extend its CBFM support to coastal communities through both its own decentralised structures and through partners (e.g. non-governmental organisations and other civil society organisations). Pathways-2 aims to work towards complete absorption of CBFM capacity into VFD and its partners.

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Forestry, Fisheries and Biosecurity Director General Moses Amos, VFD Director William Naviti, and former VFD Director Kalo Pakoa for their leadership and support, and our many colleagues at VFD for their continuous efforts in developing Vanuatu's coastal fisheries. We acknowledge also the important roles of provincial government bodies and the councils of chiefs. The project's implementation drew from VFD collaborations with other government line agencies (National Statistics Office, Ministry of Health, Office of the Registrar Cooperatives and Business Development Services, and Department of Environmental Protection and Conservation), and with the Japan International Cooperation Agency-funded Grace of the Seas project III and Wan Smolbag. In expanding project implementation, additional funding was co-sourced with Wan Smolbag, including from the Swedish government (SWEDBIO project SU 481 6.1.1-0082-18), and the European Union and Swedish government (Locally Managed Marine Areas/Pacific-European Union Marine Partnership project CPS20-125). We finally thank Lisa Wraith, Aurelie Delisle and Brooke Campbell for their edits and comments to the outcome briefs.

Strengthening institutions that support CBFM

Pita Neihapi, SPC-FAME and VFD-CBFM team leader, VFD

Community-based fisheries management (CBFM) builds on collaborative arrangements between government and communities, and is the primary form of management applied across Vanuatu's highly dispersed, dynamic and diverse coastal fisheries (Tavue et al. 2016; Raubani et al. 2017). Over the last decades, initiatives to develop CBFM have focused on direct support to communities. Yet for that support to have a lasting impact, it is equally important to develop enabling environments made up of strong organisations, supporting rules and collaborations among service-providing stakeholders. The policy backdrop for Vanuatu's coastal fisheries is guided by key national policies, including the National Sustainable Development Plan, the Vanuatu Fisheries Act and the National Fisheries Sector Policy. The Vanuatu Department of Fisheries (VFD) oversees the coordination of policy and management over coastal fisheries, through the formal government layers outlined in Vanuatu's Decentralisation Act (CAP-230), from national to province and area. At the community level, government-supported management is implemented through fishers associations, authorised officers, resource (e.g. TAILS) monitors, and various management committees.

One of the Pathways Project's first priorities was to respond to VFD's interest in instituting long-term strategic planning that could translate higher policy objectives into effective implementation. VFD, furthermore, noted the particular

need to improve collaborations with other line agencies and civil society groups, as well as technical skills to support CBFM implementation. At a grass-roots level, the project supported community groups in resource management planning (through establishing CBFM plans), adaptive management (through facilitating CBFM plan reviews), and strengthening local organisations (through establishing fisher associations). The project, through its VFD-CBFM team, was well placed to address these gaps, with an on-the-ground presence in communities in all provinces, and productive partnerships with civil society groups. Key examples of how the project supported institutional strengthening for CBFM – at the national, subnational and community levels – are illustrated below.

Strengthening policy coordination and implementation

With support of the project and SPC-Fisheries, Aquaculture and Marine Ecosystems (FAME) Division, VFD developed its first National Coastal Fisheries Roadmap 2019–2030.⁵ This 10-year strategy aligns actions with a series of short-, mid- and long-term milestones towards reaching a vision for coastal fisheries. The roadmap was developed over a two-year period starting in 2017 and endorsed in 2019 by the Honourable Hosea Nevu, Minister for the Ministry of

⁵ <https://purl.org/spc/digilib/doc/bhawm>

Agriculture, Livestock, Forestry, Fisheries and Biosecurity (MALFFB) (for more details on process and content see Raubani et al. 2019).

The roadmap has become an integral tool for VFD to develop annual implementation plans that ensure activities contribute towards realising key policy goals. Fisheries Development Officers, for instance, have used the roadmap to integrate targets outlined in the NSDP into designing and implementing fishing aggregation device programmes. Bilateral projects, such as Pathways, have been guided by focal priorities of the roadmap. Utilising subnational government structures to expand governance reach, for example, was a key driver in developing area-level CBFM plans instead of single community plans. This led to the development of Vanuatu's first two area-level CBFM plans, for Aniwa and Futuna islands (Tafea Province). Similarly, senior VFD officers planned training schedules for 2020 based on priorities set in the roadmap, including the roll-out of fish value-adding training and catch monitoring training. At a strategic co-ordination level, VFD has used the roadmap to highlight remaining gaps for development, to coordinate external funding and align scopes of new proposed projects. In the design of the next phase of Pathways, for example, VFD used the roadmap to ensure proposed ideas meaningfully contribute towards the national vision for coastal fisheries. As noted by VFD's Deputy Director Coastal: "the roadmap links our practice to high policies and is an important guide for coastal fisheries implementation [...] all my advice to the

Director on coastal fisheries development is informed by this document".

New collaborations with other government line agencies that have mandates beyond fisheries were initiated under the project, such as the Ministry of Health and the Office of the Registrar of Cooperatives and Business Development Services (ORCBDS).⁶ Collaboration efforts with the Ministry of Health promoted fish as an important nutritional source of protein and micronutrients, and resulted in the joint production of a "fish for nutrition" awareness video for public dissemination (see also "[Capacity development](#)" [outcome brief](#)). Collaboration with ORCBDS led to the development of a cooperative training manual tailored for community fish markets, and has since been used in community fish market trainings (see also "[Fisheries monitoring](#)" [outcome brief](#)). To galvanise knowledge and experience from various initiatives led by government and non-governmental stakeholders, project staff also initiated an annual CBFM symposium. This annual event allows for updating on activities, progress and achievements, as well as reflecting on best practice among programmes, government departments and community groups involved in CBFM. The VFD-CBFM team hosted the first series between 2018 and 2020, and in 2021 VFD expanded its scope by utilising the National Agriculture Week, to host a three-day national coastal fisheries symposium, entitled Fish Toktok on Tanna, in August 2021.

Strengthening CBFM institutions on the ground

Institutional strengthening in communities focused in part on co-developing management tools. The project worked with 20 communities across all six provinces to co-develop or revise CBFM plans. New CBFM plans were co-developed in 13 communities. In seven communities, the project facilitated reviews of CBFM plans, using a participatory review tool⁷ co-developed with colleagues in the project from WorldFish and SPC. These reviews resulted in adaptation of management through revisions of rules, committees, and/or closure area delineations.

One of the outcomes of having CBFM plans was communities' ability to better control impacts of peaks in demand for fish following disasters, in preparations for religious events, and/or during Christmas holidays. The Ikaikau community on Aniwa Island, for example, sought advice from VFD following the 2020 COVID-19 inter-island travel restrictions before opening one of their tabu areas when food stocks on the island ran low. In accordance to their CBFM plan, harvesting was subject to measures around gear use and species targeting, as regulated by the tabu area committee. The tabu area returned to closed status after two weeks, when travel



MALFFB Minister Honourable Hosea Neve, Director General Moses Amos and Deputy Director Coastal Sompert Gereva during the ministerial endorsement of the National Coastal Fisheries Roadmap. Image: © VFD 2019

⁶ These interdepartmental collaborations within the government differ from other partnerships established by Pathways, and are reported on elsewhere (e.g. with Wan Smolbag, see also "[Information dissemination](#)" [outcome brief](#)).

⁷ <https://purl.org/spc/digilib/doc/v33gz>

restrictions eased and trade resumed. In another example, the Kwamera community in Tafea Province applied their CBFM plan during a *kastom* tabu area opening associated with the annual yam harvest on Tanna. The tabu area committee deliberated with the community tribes and opened their tabu area for a day rather than the normal two weeks. John Sapa, a tabu area committee member and *kastom* elder, noted at the time of opening, “Since actively managing our resources it has allowed us to cooperate with neighbouring communities and come up with the ways to continue *kastom* fishing today [...] as a result today we caught fish of sizes similar to the ones our elders used to catch”.

The VFD-CBFM team’s work with communities to develop CBFM plans has facilitated entry points for other VFD divisions and FDOs to (re-)engage with those communities. After going through the process of co-developing CBFM plans, some communities have gone on to establish fisheries governance structures (e.g. fishers associations, committees and appointment of authorised officers) in their work with other divisions.

Developing CBFM capacity in fisheries agencies

Regina Ephraim, CBFM officer, VFD

National coordinating institutions need adequate capacity in order to support CBFM across many communities. This responsibility falls on VFD and its staff as the overarching point of coordination on matters of coastal fisheries, as defined in Vanuatu’s Fisheries Act (No.10/2014). As dynamic as the coastal fisheries sector is, so too are the skill requirements and competencies needed to support it. As such, demand for certain skillsets within VFD change over time. Equally important is that there are mechanisms in place for skills to be passed on from one staff member to another, thus broaden-

Lessons learned

Efforts by the project to strengthen institutions for CBFM growth have highlighted the importance of enabling environments at several levels. Future investments seeking to support the scaling out of CBFM activities, therefore, require a focus not only on improving management practices across larger areas, but also on ensuring there are mechanisms and structures in place that enable a CBFM support programme to be self-sustainable. It is important that programmes be able to adjust in ways that maintain CBFM’s growth trajectory under changing social, economic, political and/or environmental conditions. Critical building blocks for this include (but are not limited to) productive collaborations (e.g. public-private, interdepartmental and regional), effective governance tools (e.g. up-to-date policies, rules and regulations, and long-term planning), technically sound and locally appropriate management (e.g. co-developed CBFM plans), and mechanisms for inclusion of diverse interests in decision-making.

ing the base of technical capacity within VFD without solely depending on singular moments of training. To address this, the Pathways Project sought not only to contribute to building the technical capacity of VFD staff, but also to establish means by which skills, experience and knowledge can be passed on to and among CBFM officers. Two aspects of the broader capacity building program under the project are presented below: 1) capacity development activities undertaken in core areas of need, and 2) networking activities to allow for the transmission of skills, knowledge and experience.

Developing capacity in gender-sensitive and nutrition-based CBFM

Several independent assessments (SPC 2019; Mangubhai and Lawless 2021), found that more integration of different social groups in fisheries management and decision-making was needed, in particular women. Under VFD’s guidance, the project sought to address this need. In doing so, three VFD staff members participated in an initial speciality training in December 2018 on gender integration in CBFM, offered through WorldFish. Participants learned about gender-sensitive approaches for community extension work. Then, in February 2020, the project supported a “Gender and social inclusion in fisheries and aquaculture” workshop at VFD. This brought together gender experts, VFD staff and participants from other government line agencies to learn why women’s involvement in fisheries management is important and how their true participation can be achieved. In parallel, the project put to practice these



Women’s group from Naone community on Maewo Island presenting during a community meeting on resource mapping. Image: © Pita Neihapi, 2020

inclusivity principles during extension work by, for example, instituting monitoring and reporting measures that capture the extent of women's participation, and applying inclusive facilitative measures to allow diverse voices to be heard during planning and management discussions.

The gender training held at VFD contributed to significant changes in practice among staff in VFD. Following participation in the training, one senior staff member made deliberate efforts to encourage a female principal officer to organise and facilitate mini workshops, with the explicit intention to build her leadership confidence within a majority-male division. Other VFD staff have taken measures to ensure there is a gender balance in VFD meetings and outreach activities, and have provided an opportunity for women to have their interests and concerns heard during meetings. Initiatives of the project are part of broader drivers of gendered approaches in fisheries, which are seeing VFD moving from applying gender-blind to gender-aware practices, with activities increasingly designed to reach women.

Nutrition-based fisheries management was introduced through VFD because fish, as a source of protein and micronutrients, is vital towards ensuring food security and addressing

the chronic under nourishment among prime groups in coastal communities, such as women and children. In 2018, an awareness workshop on the importance of approaching fisheries management from a nutrition perspective was held for all VFD staff. This led to a body of collaborative research coordinated by colleagues from WorldFish, and sought to better understand the nutritional intake of people in the remote coastal communities of Ikaukau (Tafea Province) and Peskarus (Malampa Province). Findings from this work were reported to VFD staff during a follow-up workshop in 2020, and further informed the development of posters and an awareness film on the importance of fish for nutritious, balanced diets.

Findings from the fish-based nutrition work were also taken up into practice by a VFD outreach team that integrated them into management measures around *tabu* areas. Proposed measures were informed by first gaining an understanding of nutrition needs in the community, so that the *tabu* area could better serve needs for food security. This complemented previous management approaches based on justifications of sustainability, technical fisheries science and/or biodiversity conservation, which were all harder to convey to community members. The nutrition information video was also widely used in workshops and distributed to all Fisheries Development Officers for use in their outreach work. Similar to the gender trainings, the project's nutrition work complemented other food security initiatives by VFD, including the supply of packaged fish during disaster response. Collectively, these are driving VFD to strategise activities from a nutrition perspective.

Establishing a regional community of practice

Building on the project's in-country CBFM teams in Solomon Islands, Kiribati and Vanuatu, offered the opportunity for networking among officers from different countries.



An elder woman speaking out during a CBFM meeting in Newora, Efate. Image: © Dirk Steenbergen, 2019



Community resource assessment during the FishSMARD visit to Takara. Image: © Pita Neihapi, 2019

Although there are many regional collaborative initiatives, these often involve senior staff. Fewer opportunities exist for younger field-active officers to collaborate with colleagues in the region. In order to learn how other countries conducted CBFM, a meeting was organised in Kiribati in 2018 that brought together the three country teams. During this meeting, the teams collectively proposed to establish a regional community-of-practice of CBFM officers, named Fish-SMARD (Sustainable Management Approaches and Research for Development). Fish-SMARD was established to allow for peer-to-peer learning among officers, provide an opportunity for exchange of knowledge and skills, and provide the means for consultation with officers in other countries. The VFD-CBFM team led this effort in the network's early stages by hosting the first Fish-SMARD workshop in May 2019. This brought all the project's in-country staff together to share ideas, practices, methods and success stories, and organise for capacity development training in proposal writing (prioritised by teams prior to the meeting). The VFD-CBFM team showcased the CBFM community play, *Twist Mo Spin*, developed in partnership with Wan Smolbag theatre group (see also "Information dissemination" outcome brief below). This first meeting also involved a community CBFM site visit to the Takara community on North Efate to show first-hand insights into CBFM practices in Vanuatu.

Inspired by the *Twist Mo Spin* play, the Kiribati team returned home with the idea to collaborate with a well-known choir in Kiribati to spread CBFM awareness there. Furthermore, using guidelines from the proposal training, the Kiribati team assisted two communities with successful community grant applications. The Solomon Islands team started a dialogue with Wan Smolbag, for them to

run training sessions in Solomon Islands on using theatre to communicate CBFM (postponed due to COVID-19 travel restrictions). The workshop forged stronger relations among all in-country team members, forming a network that functions as an extension of the teams and allows for innovative ideas to spread. An online communication platform was set up to allow for communication, and sharing of articles, awareness materials, monitoring and reporting tools and experiences. The visit to Takara inadvertently also re-energised the community, and led to their request to VFD for a review of their outdated CBFM plan (amended and endorsed in late 2020 with the project's support).

Lessons learned

Key to ensuring impactful capacity development started with a thorough collaborative assessment with VFD staff on gaps and needs, resulting in clearly defined priority areas as part of VFD's broader coastal fisheries management work. The trainings provided through the project contributed as one of several simultaneous drivers of change that steered larger shifts in both gendered practices and applications of nutrition-based fisheries management. The Fish-SMARD network, and the cross learning that it facilitates, serves to improve CBFM practices in Vanuatu by introducing new ideas from other countries, as it did for the other country teams. Experience in Vanuatu shows that a dual focus is required for capacity development to be effective: namely that correct and relevant technical training is provided with a simultaneous focus on ensuring new knowledge, skills and/or experiences are applied, shared and taken up by others in or around the institution.

Innovating strategies for information dissemination

Vasemaca Malverus, CBFM officer, VFD

Ensuring coastal communities have access to accurate and relevant information about their marine environment is crucial to enabling people to make informed resource management decisions. VFD's ambitions to strengthen CBFM in communities draws attention to the need for the *right* information to reach the *right* people in the *right* ways. With conventional information dissemination often relying on community meetings and generic information tools (e.g. information posters), it is a challenge for national agencies such as VFD to ensure that people across the board are well informed.

The Pathways Project, therefore, set out to find more effective information dissemination alternatives. This involved developing 1) content that is relevant and appropriate to the cultural, demographic and linguistic framing of ni-Vanuatu

worldviews, and 2) more engaging modes of delivery. Across all the project's information dissemination initiatives, much of the work relied on collaborations between VFD and private (civil society) sectors (e.g. Wan Smolbag theatre group, Vanua Tai resource monitor network), and the Pacific Community (SPC). This deliberate approach ensured new, previously untapped, dissemination channels could be used to maximise the distribution and reach of information flows. To strengthen these partnerships, joint fundraising was undertaken to further develop promising and innovative dissemination initiatives under the VFD-Wan Smolbag partnership.⁸ Below we outline two of the project's main packets of information dissemination work that have advanced how CBFM information reaches and impacts communities in Vanuatu.

⁸ A Swedbio-funded project (2018–2020) and a Locally Managed Marine Area and Pacific-European Union (EU) Marine Partnership-funded project (2020–2022) (see also acknowledgements).

Disseminating information through theatre

To increase participation and interaction, the Project explored creative, more engaging means of information dissemination. The VFD-CBFM team worked with Wan Smolbag (WSB) to collaboratively research, create and tour a CBFM theatre production for communities, entitled *Twist Mo Spin* that would be accompanied by an interactive workshop. The storyline sought to communicate the importance of fish and sustainable management of coastal fisheries, and integrated broader themes that strongly influence management in communities such as gender in fisheries, social life in community, intergenerational dynamics, local governance, and food security (see Neihapi et al. 2019 for more details).



A scene in the *Twist Mo Spin* play, during a community performance on Tanna. Image: © Paul Jones, 2019

Over 3000 people have watched the play live in more than 20 communities across Tafea and Shefa provinces. In Port Vila alone, over 1000 people watched the play at the WSB centre. A common sentiment from community audiences conveyed that theatre presented far fewer barriers and engaged more people to enjoy, learn and contribute, whereas people felt reluctant to participate in past awareness activities. There were also cases where the play influenced local management. On Futuna Island (Tafea Province), discussions during and after the workshop resulted in a community placing an immediate 10-year fishing ban on parrotfish. The Waisisi community in Tafea Province noted that the facilitated discussions during the workshops helped them come to a consensus on a few key local resource management issues, while Loukatoi and Lenakel communities (Tafea Province) independently established *tabu* areas motivated by the play. Fisheries Development Officers (FDOs), who accompanied the touring crew where possible, saw the play as helpful in informing communities about national rules for example,⁹ particularly because the play's language and thematics made it easy to understand. The Tafea FDO, noted how “the play has unlocked an understanding of the importance of managing our resources in communities, and understanding the role of key species in the environment and the need to properly manage them”. The production's success has led to additional funding to develop the play into a film that is openly available, including for use by FDOs.⁹ The film was launched in July 2021 in Luganville (Santo), and will be featured in the 2021 National Agriculture Week on Tanna as part of VFD's three-day national coastal fisheries symposium programme.

Developing appropriate information materials and distribution channels

The VFD-CBFM team invested in making existing technical CBFM information materials more accessible and usable. Partnering with SPC-FAME and WorldFish, several posters and CBFM materials were translated into Bislama (e.g. a seafood handling guide, nutrition and deep bottom fisheries awareness posters, and technical fisheries info sheets). The translated seafood handling guide has contributed to improvements in market vendors' practices. A VFD officer in the Seafood Agency division stated, “Although some vendors are not adhering to the guide completely yet, overall there is much improvement in the fish quality displayed at the road side vendors in Port Vila [...] people are now layering ice and fish when filling eskies.”

Under the VFD-CBFM team's collaboration with Wan Smolbag (WSB), CBFM information materials were developed in a format that is appealing, accessible and understandable for community members who have difficulty reading. Six pictorial comic books, addressing different as-



A page from the comic book on sea cucumber management. Source: Wan Smolbag, 2019

⁹ Workshop evaluations indicated that in most communities, the majority of people did not know or understand national rules around size limits and species prohibitions prior to the play and workshop.

pects of CBFM through a story, were developed and made available to distribute and/or use in facilitating discussion in communities.

Display boards were developed and installed in eight communities to inform people of new rules and where tabu areas were established. The display board consists of a map, specific community rules and a mother-tongue phrase encapsulating the community's CBFM plan. For some communities, such as Kwamera (Tafea Province) where most people only speak Tannese (their mother tongue language), the phrase they chose was a key message understood by everyone in the community.

In ensuring reach and delivery to intended social groups, the project simultaneously utilised various channels to disseminate information, such as by leveraging VFD's various extension work activities, public events and social media platform. This included providing more than 3000 copies of information materials to all VFD divisions (to use in their extension work), using an extensive CBFM survey across over 160 communities in Tafea and Sanma provinces to distribute information material, and organising information booths at events such as the annual National Agriculture Festival. Another way that the reach and delivery of information was achieved was by leading a CBFM-themed radio call-in (*tok-bak*) show, involving a panel of community representatives and VFD-CBFM officers to discuss tabu area management. The *tok-bak* show offered a high-exposure platform in which the general public could call in to comment, pose questions and join the discussion. One caller from Santo voiced her concern and encouraged more communities to establish tabu areas, as she spoke of a community in Big Bay (Sanma Province) that benefited hugely from their management measures. Following the *tok-bak* show, the community of Mele (Efate) sought advice and support from the VFD-CBFM team to set up a CBFM committee.

Improving community-based coastal fisheries monitoring

Abel Sami, CBFM officer, VFD

Timely and accurate data are critical to VFD, both for strategic decision-making about where to allocate resources, and to show how CBFM can improve the wellbeing of coastal people at large. The latter is particularly important in justifying to political stakeholders the need for greater allocation of national budget to coastal fisheries management. Coastal fisheries monitoring has proven challenging in Vanuatu. Past initiatives such as the Good Receiving Notes (GRN) system, implemented in the 1990s, relied on fuel subsidies to incentivise fishers to record fishing effort and catch composition. Forms were detailed and lengthy, and fishers often only completed them when they needed fuel, resulting in inconsistent data. GRN, furthermore, fell short of capturing mixed reef fisheries data (central to CBFM), which had

Engaging with community networks such as the Vanua Tai network of resource monitors, coordinated through WSB, also cultivated interest in CBFM and offered dissemination opportunities. Some members had seen their neighbouring communities participating in CBFM activities and used the Vanua Tai annual meeting as an opportunity to request more information from VFD. The VFD-CBFM team hosted a dedicated CBFM day during the meeting and provided awareness materials for interested resource monitors to take back to their community.

Lessons learned

Key collaborations between VFD and other stakeholder groups outside the field of fisheries have proven critical. Bringing in new perspectives breaks the status quo of conventional awareness meetings in community. These collaborations have also been instrumental in translating or "ni-Vanuatising" information material (utilising local partners' cultural knowledge). As described by the VFD-CBFM team leader, "WSB has the ability to explain issues in ways that reach the layman and translate information into more understandable materials for communities [...], so WSB's experience and knowledge of ni-Vanuatu rural life are important assets in our partnership". Taking a culturally sensitive approach ensures information presented is understandable to the intended audience. Therefore, text-based information is best paired with fun identifiable elements (e.g. drama, illustrations) and should incorporate thematics that people can relate to (e.g. health and social relations). Similarly, digital media is set to play a bigger role and improve information access as people increasingly have mobile phones and as networks continually expand.

to be separately captured through trade monitoring at central markets (Amos 2007). When the GRN system was discontinued in 2010, VFD worked with SPC to implement a regionally developed tablet-based catch monitoring programme called TAILS. After a three-year pilot project across 19 communities, in 2019 VFD allocated a four-year budget to tailor TAILS to Vanuatu's needs and to implement it in 53 communities.

The Pathways Project supported the scaling up of TAILS by providing tablets, funding for enumerator training, extensions to new sites, and technical data management support through a ni-Vanuatu PhD researcher¹⁰ and a CBFM data coordinator. These advisors became part of a VFD data team

¹⁰ Jeremie Kaltavara is a University of Wollongong PhD candidate based in Port Vila, Vanuatu, studying the distribution and trade of coastal finfish in Vanuatu.

whose mandate was to strengthen the department's data management. They led the process of establishing a memorandum of understanding between VFD and the National Statistics Office in 2020, allowing access and integration into national data systems. As part of this broader support package, the VFD-CBFM team also developed and tested new means of data collection and fisheries monitoring. Two of these initiatives are outlined below.

Introducing a “catch mat” CBFM monitoring programme

To demonstrate that CBFM interventions are contributing to changes in the community (e.g. fisheries productivity and/or fishing behaviour) the Pathways Project developed a methodology to capture such changes in places where CBFM plans were being implemented. The objective was to measure effectiveness of CBFM interventions in five communities. The tool was also designed to enhance participation in local adaptive management processes, minimise burdens on participating fishers, and contribute meaningfully to VFD's data section. For full details see Andrew et al. (2020) and Sami et al. (2020).

Enumerators' fieldwork diaries and debriefs with the CBFM data coordinator revealed two major design aspects that impacted monitoring. First, a large majority of fishers across all sites reported that the catch mat photo method was less burdensome than previous monitoring programmes. Data collection at landing sites took on average less than 10 minutes, thus allowing fishers to proceed quickly, and more fishers to be monitored when several boats simultaneously landed their catches. As noted by one participating fisher from Peskarus (Malampa Province), “I have been fishing for more than 30 years and have never come across photos taken of catch mats that can be used to estimate weights and lengths of fish [...] our fishers are happier to work with the enumerator now”. Second, the visual nature of the monitoring

method was important. Providing timely return of findings in visual formats became effective periodic check-ins on management. A tabu area committee member in Kwamera (Tafea Province) reflected, “I was very disappointed with what I saw on the presentation today, but it is the reality. 100% of our fishing was on the reefs; we need to limit fishing there and encourage fishing to the deep [pelagic] areas to avoid over fishing our reefs”. In cases like Kwamera, the graphic, visual reporting functioned as red flags for leaders and tabu area committees to adjust management measures. Whereas the first feedback meetings involved mainly leaders, later rounds saw enumerators in all sites challenged to accommodate demand from fishers to participate.

Findings were periodically presented to all VFD divisions. Discussions identified potential applications for VFD. First, to help establish baselines for monitoring tabu area management and, second, as a source of data that can feed into strengthening existing national datasets on stock status in selected locations. The Research and Aquaculture Division, for example, requested CBFM catch monitoring data to assist in developing fisheries management measures for some economically important species, and to supplement their rabbitfish and parrotfish stock assessments. High participation levels in the monitoring programme has prompted other VFD divisions to establish community collaborations, as in the case of Kwamera (Tafea Province), where additional fisheries initiatives have begun (e.g. aquaculture development and the national TAILS+ monitoring).

Developing a solar-powered freezer monitoring tool

Over the last decade, VFD has distributed more than 50 solar-power freezers to coastal communities. In supporting livelihoods and food security, freezers offer longer storage options for fish. Often initially distributed to manage post-disaster food shortages, freezers subsequently functioned as



An example catch mat photo from Peskarus (Malampa Province), showing a diverse reef species catch. Image: © Abel Sami, 2020



CBFM data coordinator assisting enumerators with the monitoring forms in Pellongk (Malampa Province). Image: © VFD, 2020

cooperative fish markets where fishers sell their catch or rent storage space. However, freezers were rarely effectively monitored to understand their usage in communities. As such, VFD prioritised more effective, centralised freezer monitoring so as to better understand and regulate the fish trade along established fish supply chains, running from community fish markets (primary markets) to provincial markets (secondary markets), and finally to central urban markets (tertiary markets).

In 2018, the VFD-CBFM team co-developed a simple, paper-based log sheet tool with the Research Division, consisting of three components that respectively monitor: 1) solar-powered freezer capacity, 2) incoming fish from fishers, and 3) outgoing fish to traders and consumers. In 2019, the tool was piloted for three months across six communities in two provinces. In parallel, the VFD-CBFM team worked with the Cooperatives Department (ORCBDS), under a collaborative agreement to co-develop tailored book-keeping training modules in Bislama for community market managers. An eight-day training course for fish market managers was held to develop basic accounting and management skills, and implement the monitoring tool. After the pilot, data was analysed and presented to VFD in December 2019, and whose feedback guided modifications to the forms. Finally, the VFD-CBFM team trained Fisheries Development Officers (FDOs) to lead implementation and coordination within their respective provinces, before a one-year roll out across 55 community freezers commenced in April 2020.

The analysis and reporting of the first year's data will be completed in September 2021. While these results will highlight outcomes, VFD has already gained valuable insights from the pilot phase. Tassariki (Noka fish market, Sanma Province), for example, is a well-known supply site for deep-bottom snapper and pelagic fish. Freezer monitoring results, however, clarified that the vast majority of supply came from six extremely remote communities along the western coast of Santo (1810 kg), with only 84 kg from Tassariki fishers. Furthermore, purchase records showed the market was frequented mostly by Tassariki community members (purchasing small amounts), followed by middlemen trading at the Luganville central fish market (purchasing large amounts) and finally by residents of nearby communities. Tassariki thus functions as a rural distribution hub rather than a primary supply site. Accordingly, VFD adjusted its fisher-oriented training plans there to a more market management orientation (i.e. fish handling).

Design-wise, the log sheets' simple format allows for higher data density and less risk of error by community enumerators than previous freezer monitoring tools. The latter proved particularly important in eight cases where enumeration duties had to be transferred to a new person. Whereas with previous tools such incidences meant data collection paused or terminated, collection continued with this tool. For participating communities that are also part of the national cooperative network, the monitoring assisted in book-keeping, which is important for annual auditing. Market managers also reflected how useful the monitoring tool is in tracing sales. This proved important in Sara community (Sanma Province), where purchase records were used to trace back the origins of a ciguatera fish that made several people sick. Fishers were consulted and the harvest area was identified as a source of ciguatera.



Freezer monitoring and reef fish stored in a community solar-powered freezer in Sara (Sanma Province). Images: © Dirk Steenberg, 2019



Lessons learned

For community-based monitoring to be effective, data collection tools should be not only simple and workable for enumerators, but also compatible for use by VFD to influence management and policy. Spin-off benefits from the various monitoring initiatives also saw collaborations deepened between communities and VFD, and increased participation in other community fisheries initiatives as frequent feedback of findings bolstered interest from communities.

Supporting disaster response

Douglas Koran, CBFM officer, VFD

Vanuatu is ranked as one of the most natural disaster-prone countries in the world (Richmond and Sovacool 2012). The majority of the population resides in coastal areas, and are vulnerable to unpredictable events that disrupt income flows and access to food. Fish has proven to be an important source of easily accessible protein, particularly in the aftermath of disasters when gardens and other food sources cannot deliver (Eriksson et al. 2020). VFD, therefore, plays an important role in post-disaster responses.

In Vanuatu, the National Disaster Management Office (NDMO) is mandated with the tasks of organising, coordinating and implementing disaster relief. NDMO coordinates various “clusters”, which are embedded within different government departments. Each cluster manages a different aspect of disaster relief. The Ministry of Agriculture, Livestock, Forestry, Fisheries and Biosecurity (MALFFB) hosts the Food Security Cluster, which also involves VFD. The NDMO follows response protocols, whereby immediate assessments inform the implementation of short-, mid- and

As VFD moves to scale up CBFM over the next few years, these monitoring modalities will be critical to supporting and informing CBFM’s scaling trajectory. Efforts to streamline these data collection initiatives into a centrally managed data system is likely to drive a transition from paper-based tools to digital systems involving tablets for data collection.

long-term recovery strategies. This system allows for a coordinated roll-out of relief that integrates the expertise and resources of various departments and stakeholders. This systematic approach delivers recovery coordination, but its support to communities in the immediate aftermath of disasters remains particularly challenging. The Pathways Project’s embeddedness in VFD, in combination with its widespread geographic presence throughout Vanuatu, means it is well-positioned for on-the-ground assistance and contributes to NDMO-coordinated efforts. This was evident in the previous phase of the project, when tropical Cyclone Pam passed over Tafea Province and project staff were the first on outer islands, like Aniwa. Learning from this, the project integrated a disaster relief component that enabled the VFD-CBFM team to re-focus implementation and re-allocate resources when needed. A disaster response account was set up to allow quick deployment of funds for VFD’s immediate relief response. Two examples of how the project supported VFD disaster response are illustrated hereafter.



Displaced residents from Ambae Island on nearby Maewo, following the eruption of Lopenpen volcano. Image: © Paul Jones, 2018

Lopenpen volcano eruption on Ambae Island

On 26 July 2018, following the eruption of Mt Lopenpen, the Vanuatu government declared a state of emergency on the island of Ambae (Penama Province) that would last for four months. This resulted in the evacuation of all residents to the neighbouring islands of Santo and Maewo. The VFD-CBFM team was one of the first on the ground, joining an NDMO assessment team on Maewo. The acute population increase on Maewo translated into a spike in the demand for fish, resulting in larger numbers of inexperienced fishers fishing the reefs. The team conducted awareness activities to inform people of local fishing rules and regulations, and on the risks of ciguatera poisoning, something the team's ongoing CBFM work found was particularly prevalent on Maewo's fringing reefs. The VFD-CBFM team also contributed to NDMO's work with an assessment of fisheries-related impacts and opportunities, findings of which fed the Ministerial Food Cluster's strategic response plan. To address immediate food insecurity concerns, access to fresh protein such as fish and other marine resources was critical. As such, funds from the project's disaster response account were mobilised to buy and distribute fishing gear to evacuees and their host households on Maewo and Santo. This set a basis for increased, but controlled, fishing capacity, later supplemented by additional VFD initiatives, including a fish aggregation device (FAD) deployment off Maewo, solar freezer installations, and the provision of hard-hull fishing boats for pelagic fishing. VFD's broader response used fisher associations, established through the VFD-CBFM team's earlier work in villages such as Talise, to coordinate the equitable distribution of relief help.

The activities undertaken by the VFD-CBFM team aligned with NDMO assessment work, and critically bridged the immediate period after the initial shock and before broader relief support arrived. The project-supported VFD response has also contributed to a shift in fishing practices there. Like most Maewo communities, fishers on Talise previously only fished along nearshore reefs. The post-disaster response (i.e. fishing gear and boats) has enabled more pelagic fishing to be done. This mitigates potential excessive fishing pressure on nearshore reefs that is expected with population increases, and in doing so, avoids not only ecological damage but also widespread ciguatera poisoning in the community.

Tropical Cyclone Harold and COVID-19

In April 2020, communities across northern Vanuatu faced the double burden of a national COVID-19 lockdown and restrictions, and the devastation left by the category 5 tropical Cyclone Harold (6 April 2020). Reaching communities across the five most effected large islands of (south) Santo, Malo, (northern) Malekula, Ambrym and Pentecost was made more challenging without inter-island travel being possible. In supporting VFD's disaster relief efforts, the project first designated a staff member to serve

on MALFFB's Food Cluster assessment team. The team conducted a loss and damage assessment survey on Ambrym, with specific attention to implications for food security and seafood safety. The VFD-CBFM team also carried out a rapid COVID-19 impact assessment by phone across communities working with the project, to identify priority needs (for details see Steenbergen et al. 2020). As part of a medium-term relief support package, the Project mobilised funds from the disaster response account to contribute to VFD's provision of solar-powered freezers and fishing gear. The project funded 10 of the 30 total freezers VFD deployed; 6 to Ambae communities and 4 to communities in northwest Malekula. Freezer distribution included onsite training on installation and maintenance by technicians, and freezer monitoring training for fish market managers (see also ["Fisheries monitoring" outcome brief](#)). The distribution of fishing gear sought to contribute to communities' ability to source food while air or sea cargo services were not functioning.

Natural disasters will certainly reoccur and it is highly likely that domestic COVID-19 travel restrictions be reinstated at some point. In addition to attending to immediate needs, work under the project has contributed to increasing communities' long-term self-sustainability and ability to deal with these acute shocks. Project sites with CBFM plans that were affected, for example, showed significant ability to provide food under such stress with management measures in place. One chief from Wiawi community (Malampa Province), reflected that his community's established tabu area meant they could deal better than other communities with the combined impacts of tropical Cyclone Harold and the added isolation from the COVID-19 restrictions. Fishers there were able to source sufficient amounts of fish to sustain needs in the community. After a solar-powered freezer was installed in Wiawi, a woman noted how availability of fish through the community fish market meant households now ate fish at times when normally they could not, "Before the freezer fish market, we only ate fish on days fishers went fishing, or the day after, but now in one day I can work in the garden to collect vegetables and eat fish" (see also the ["Institutional strengthening" outcome brief](#) for further examples).

Lessons learned

The project is an extension of VFD, and thus has aligned resources to be mobilised when needs change or unpredictable events occur. When natural disasters occurred, the project's ability to provide technical field assistance to VFD in the critical first days after disruption was possible because funds and human resources could be mobilised immediately. These experiences are informing current work towards developing a standard operating procedure that will streamline VFD's disaster relief response with internal coordination across divisions and bilateral projects, and external coordination by NDMO.

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