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Australian Centre for International Agricultural Research

# **Final report**

project

# Strengthening and scaling community-based approaches to Pacific coastal fisheries management in support of the New Song

### Pathways (short title)

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### 2 Executive summary

The sustainable supply of coastal fish in the Pacific region has gained new prominence in policy and political domains. Despite their importance, there is growing evidence that the status quo in coastal fisheries will lead to inadequate supplies of fish in the face of population growth and declining production.

The overall aim of the project was to improve the wellbeing of coastal communities in the Pacific region through better food and nutrition security and more productive and resilient fisheries. Building on innovations and lessons learned in FIS/2012/074 and related projects, the project continued to refine models of community based fisheries management and scale up the geographic coverage of CBFM in target countries. Within this overarching goal, the project pursued activities in the social inclusion and gender, nutrition, and livelihoods dimensions of the role of fish and fisheries in coastal communities.

The project was implemented in Kiribati (KIR), Solomon Islands (SLB), and Vanuatu (VUT) in partnership with national agencies, civil society organizations and coastal communities. Beyond these focal countries we contributed to the Pacific Community (SPC)-led New Song for coastal fisheries – pathways to change: the Noumea strategy. The New Song provided a framework for integrating regional and national initiatives to improve coastal fisheries.

The project strengthened the organizational, institutional and relational capacity of national agencies in all three countries. Resourced by project funds and increased national investments in CBFM, project partners were able to support revisions to legislation and national policy development. CBFM is now an integral part of national policy in all three countries. Beyond national agencies, the project strengthened the broader policy and social environment to facilitate CBFM scaling. Field activities in the latter half of the project were constrained or terminated as the project adapted to COVID-19.

The project directly engaged with 129 communities and established 52 new fisheries management plans. 370 communities across the three countries received information on CBFM. A mix of quantitative and qualitative methods were used to evidence outcomes from community engagements. Management plans were reviewed in 21 communities and a further 273 surveyed to measure CBFM uptake in coastal communities in other places. Baselines of catches and fishing activities created in 22 communities revealed the complex and dynamic nature of fishing in coastal communities – more than 300 species of fish and a smaller number of invertebrate species were caught by a diverse range of methods and habitats ranging from lagoonal sand flats to sea mounts.

The project contributed to the SPC-led Regional framework for Action on Scaling-up CBFM and developed a novel theoretical framework for scaling in support of national programs. At project's end, KIR, VUT and SLB are committed to developing national programs. In KIR and VUT CBFM teams were established within national agencies and increasingly embedded in agency planning and operational procedures.

Livelihoods-related activities planned in the project were curtailed following the mid-term review and then further scaled back by COVID-19. Activities in the field focussed on solar powered freezers in SLB. A novel diagnostic tool was developed and a theoretical framing for analysis of livelihood diversification was published.

The project made significant contributions to a renewed focus on integrating gender and social inclusion into national fisheries policy. All project activities were viewed through a gender lens and the capacity of individuals (including project staff) was enhanced through a series of SPC outputs and training workshops.

The project (FIS/2016/300) has transitioned into a next phase (FIS/2020/172) with no loss of in-country staff. Ongoing activities have resumed post-COVID-19 and momentum for national programs of CBFM continues to build within a regional scaling program.

# 3 Background

Fish is the most accessible and widely consumed animal source food for coastal people in the Pacific region. The sustainable supply of coastal fish has been of concern in the technical literature for some time (e.g. Bell et al. 2009)<sup>1</sup>, but has gained new prominence in policy and political domains, with last year's recognition of coastal fisheries as one of six regional priorities within the Framework for Pacific Regionalism.<sup>2</sup> Despite their prominence, there is growing evidence that the status quo in coastal fisheries will lead to inadequate supplies of fish in the face of population growth and declining production.

The overall aim of the project was to improve the wellbeing<sup>3</sup> of coastal communities in the Pacific region through better food and nutrition security and more productive and resilient fisheries. The loss of benefits from coastal fisheries would mean the majority of people in KIR, SLB and VUT (and countries beyond) face increased poverty and vulnerability, and greater food insecurity. The cost of replacing the food provision and employment benefits provided by these fisheries would be in the millions of dollars and place significant demands on national economies. The challenge is stark: within 15 years, an estimated extra 115,000 tonnes of fish per year will be needed across the region for good nutrition (Bell et al. 2009).

The impact of these issues is felt well beyond the domain of fisheries. Many Pacific Island countries (PICs) are affected by the double burden of malnutrition (undernutrition and overweight/obesity) (Andrew et al. 2021). As a result, the rise of non-communicable diseases (NCDs), childhood stunting and anaemia have major implications for economic growth, aid policy and development. The public health implications of inadequate fish provide an opportunity to better integrate fisheries into the wider rural development discourse and to gain the momentum needed for change.

Climate change in the region is projected to have significant impacts, including rising sealevels, more violent tropical cyclones and droughts. Fish stocks in the tropical regions of the Pacific are expected to be directly affected by any changes that may occur in the ocean's ecosystem.

Building on lessons learned in FIS/2012/074 and related projects, we know that transformational change requires many pathways for influence. Innovations in community-based approaches<sup>4</sup> are necessary to overcome remoteness and the inability of central

<sup>&</sup>lt;sup>1</sup> Citations for publications are listed sections 10.1 and 10.2; explanatory notes and website links are given as footnotes.

<sup>&</sup>lt;sup>2</sup> http://www.forumsec.org/resources/uploads/embeds/file/2016\_Communique\_FINAL\_web.pdf

<sup>&</sup>lt;sup>3</sup> Although widely used in the development literature, the definition of 'wellbeing' remains contested and its measurement difficult. Broadly, wellbeing refers to 'quality of life' and so has many dimensions and is largely culturally defined (Coulthard et al. 2011, McGregor et al. 2015). McGregor (2008) provides a widely used definition: "Wellbeing is a state of being with others, which arises where human needs are met, where one can act meaningfully to pursue one's goals, and were one can enjoy a satisfactory quality of life." Because 'improved wellbeing' is an overarching outcome of the New Song, the project will address the methodological challenges of defining and measuring wellbeing in a Pacific context.

<sup>&</sup>lt;sup>4</sup> Community-based approaches to fisheries management come in many forms and have many names (and acronyms). This document follows ACIAR terminology and uses **community-based fisheries management** (CBFM) to describe our approach. Although names differ, the essence of the approaches is the same: a focus on communities and a wide definition that encompasses ecosystem and social dimensions, not just the sustainability of harvests. CBFM is a particular form of **co-management**, which is defined as a partnership between the government and a community of resource users where resource users decide on a system of rights and rules while the State provides legal legitimacy to enforce this system (Pomeroy and Berkes, 1997; Nielsen et al., 2004;). Co-management can take different forms, for example in urban settings where the community of resource users will include more than one community and tenure is contested, the State may play a larger role. In this document we use the term to refer to such contexts.

agencies to effectively serve their people. While necessary, community-based fisheries management (CBFM) alone is insufficient: progress needs to be made in places where customary tenure has broken down or is not recognised, as well as outside the fisheries sector, and at national and regional scales. Coastal fisheries need to be better integrated into the Pacific food system with all its feedback loops between trade, supply and demand, and the choices people make about their diets. Conceptualised as an innovation (Rogers 2003), CBFM has not reached the critical mass of adopters needed for it to have widespread impact on national fisheries and economic development. The project therefore focused on the many communication channels and social networks needed to scale out and normalise its implementation.

The project contributed to the Pacific Community (SPC)-led New Song for coastal fisheries – pathways to change: the Noumea strategy<sup>5</sup> (hereafter referred to as New Song). The New Song was endorsed by the SPC Heads of Fisheries and by the 11th Ministerial Forum Fisheries Committee (FFC) Meeting, in July 2015. Within the broader context of the SPC Strategic Plan<sup>6</sup>, the New Song provides a framework for integrating regional and national initiatives to improve coastal fisheries.

The New Song remains a key component of the new 'Regional Roadmap for Sustainable Pacific Fisheries' endorsed by Pacific Islands Forum Leaders in 2015. The New Song calls for a stronger, coordinated approach to coastal fisheries management. Its pathways for change outline actions that national governments and all stakeholders will need to commit to in support of a community-driven approach. CBFM and a focus on gender and other forms of social differentiation as an important pathway to accelerate development are central to the project.

Influence outside the fisheries sector and at provincial, national and regional scales requires a broad coalition of partners with common purpose. With the New Song as a strategic unifying document and supported by a range of development investments in KIR, SLB, and VUT, there has never been a better window of opportunity to meet the challenge of providing enough fish for income and nutrition.

# 4 Objectives

The long-term ambition of the project was to contribute to the New Song vision of sustainable well-managed inshore fisheries, underpinned by community-based approaches that provide food security, and long-term economic, social and ecological benefits to our communities.

The aim of the project was to strengthen the institutional structures, processes and capacity to implement and sustain national programs of CBFM in KIR, SLB and VUT. Aligned with an overall focus on CBFM, the project focused on the economic, social and gender equity dimensions of coastal fisheries and consumption of fish and was delivered through **five objectives**:

# Objective 1: Strengthen Pacific institutions to implement the New Song for coastal fisheries

In this objective, we focused on contributing to institutional strengthening of fisheries agencies (in particular) and building an 'enabling policy environment'. Activities included designing and implementing collaborative management arrangements, targeted training and

<sup>&</sup>lt;sup>5</sup> http://www.spc.int/DigitalLibrary/Doc/FAME/Reports/Anon\_2015\_New\_song\_for\_coastal\_fisheries.html

<sup>&</sup>lt;sup>6</sup> http://www.spc.int/images/publications/en/Corporate/Strategic-Plan-2016-2020.pdf

awareness activities, the collaborative development of policy reform, investment into multiagency networks, and direct investments into human resources of government and intergovernmental agencies.

#### **Objective 2. Scaling CBFM in Kiribati, Solomon Islands and Vanuatu**

In this objective, we engaged with communities to improve practice, and to strategically plan, implement and test strategies to realise outcomes at scale. Under this objective we addressed research questions 1-5. Activities in this objective fall into three categories; (1) national and regional level theories of change/impact pathways for scaling CBFM in each country and regionally, (2) testing different community engagement models, and (iii) continuation of support to existing communities using a relatively intense model of support.

# *Objective 3. Improve the opportunities, viability and performance of livelihoods in support of CBFM initiatives*

This objective was revised following the mid-term review and further constrained by COVID-19. In the field the project focused on solar freezer deployment and monitoring in SLB in collaboration with other bilateral projects, and developed a diagnostic approach for context specific assessment and planning to deliver livelihood initiatives. Significant scientific progress was made in the conceptualisation about development from the project learning, which is now being carried forward in a new project focusing on livelihood innovation (FIS/2019/124).

# Objective 4. Increase social and gender equity in coastal fisheries governance, utilization and benefit distribution

Three groups of interrelated activities focussed on: (i) CBRM and gender – employing transformative approaches that actively examine, question and change harmful gender norms and the imbalance of power between women and men; (ii) alternative livelihoods, markets and gender – where livelihood diagnosis was sensitive to gender differences in norms and aspirations, and certain livelihood activities had a deliberate focus on women and girls, and both managed and examined the intended and unintended consequences of this; and (iii) building the gender capacity of governments, NGOs and funders within countries in which we work to meet gender commitments made in regional policies.

# Objective 5. Promote food and nutrition security in the Pacific food system through improved management and use of fish

Activities in this objective were revised in response to COVID-19. Field-based work pivoted to a greater focus on regional and national analyses of secondary data ranging in scale from food environment analyses to national household expenditure surveys. Given the change in focus, much of the work completed under this objective was integrated with ACIAR project FIS/2018/155 on Pacific food systems.

### **5** Methodology

The project was implemented as a collaboration with regional and national networks and agencies in **Kiribati**, **Solomon Islands** and **Vanuatu** in support of their policy objectives. It was a continuation of work under the predecessor PacFish project (FIS/2012/074). Selection of these countries was guided by (then) AusAID and ACIAR priorities and confirmed during the scoping phase by expressed demand from national agencies. The emphasis placed on activities and outcomes differed among countries depending on their priorities and stage in development of coastal fisheries and CBFM. We partnered with NGOs and provincial and national agencies, and beyond the three focal countries, with regional organisations to scale

out CBFM to improve regional development outcomes from coastal fisheries. Regional scaling activities were integrated under SPC FAME's leadership.

In each country, we continued direct engagement with PacFish communities and further extended to new communities using a range of engagement techniques to increase effectiveness and efficiency. Community site selection was finalised with national agencies and other stakeholders as part of the participatory design process. In Kiribati we focused on atolls in the Gilbert Islands. We worked in a total of ten islands including Butaritari, Marakei, Abaiang (with Tobwan Waara project), North Tarawa, South Tarawa, Maiana (with LDCF project), Abemama (with LDCF project), Aranuka, Nonouti (with LDCF project) and North Tabiteuea. In Solomon Islands we focused on communities and provincial agencies in Malaita (with the ADB and PEUMP projects), Western and Isabel provinces (through MFMR secondment and network). In Vanuatu we expanded work to engage with communities in all six provinces, and aligned our expansion with work by other bilateral programs under VFD, including JICA's Grace of Seas phase III. Supplementary funding further strengthened certain programs of work spearheaded by the Pathways (with Swedbio and PEUMP projects).

Details of study methods are provided in the relevant reports and publications listed in Section 10.1 and will not be repeated here. More broadly, our research strategy builds on approaches proven to be effective in current and previous projects that seek to accelerate development progress along the impact pathway. Four principles encapsulate our approach, and are common to all five objectives:

### Partnership

The project built on proven partnerships and networks that spanned communities, national agencies and regional intergovernmental bodies. In addition to Memoranda of Agreement among the five implementing partners, we developed formal relationships with provincial governments (e.g. Malaita and Western Province in Solomon Islands) and non-fisheries agencies (e.g. Solomon Islands Ministry of Health). Regionally, The Pacific Community (SPC) was the critical partner. The project worked closely with SPC FAME to support its regional CBFM regional scaling agenda and to pursue fisheries management science issues. Evidence of partnerships and broader networks of institutions and agencies is provided in the following sections of the report, particularly in Objective 1.

### Multi-scale activities

While isolated advances in knowledge can lead to local outcomes, impactful research must be embedded in wider governance and political processes by engaging diverse community, civil society and public-sector partners at multiple scales. Lessons learned from previous CBFM projects have re-emphasized the importance of multi-scale approaches to influencing change. We worked with communities, provincial and national governments and regional and international organizations to influence policy and practice. At the largest scale, by working through SPC and national agencies, we influenced policy in regional and global forums, such as Heads of Fisheries and Forum Fisheries Committee (FFC) Ministerial meetings. Evidence of multi-scale activities and outcomes are provided in the remaining sections, particularly in Objectives 1 and 2.

### **Communication**

To be truly effective and stimulate social change, participatory and non-participatory research processes must adopt appropriate knowledge-sharing and learning tactics with project partners. In the initial stages of the project, a detailed and multi-pronged communication strategy (including peer-reviewed journal outputs, national translation

outputs<sup>7</sup>, manuals on best practice, and community-awareness materials) will be developed with key stakeholders and partners. The strategy will identify the range of target audiences and suitable traditional and new means of communication to inform and educate and to raise awareness of the project and its outcomes (see also Section 4.3.1).

### Capacity development

'Capacity development' has become central to the international development discourse and is fundamental to ACIAR's mission (ACIAR 2018). The diversity of definitions for the term reflects the breadth of purpose and modality of capacity development support programmes. Here we use a derivative of the IOC-UNESCO (2020) definition of capacity development as 'the process by which individuals and organizations obtain, strengthen and maintain capabilities to set and achieve their development objectives'. The definition encapsulates different dimensions and scales of the capacity challenge as well as the purpose of investments.

Building on framings of capacities and capacity development promoted by United Nations, CIDA and others (e.g. Morgan 1997, Foster-Fishman et al. 2001), we recognized four scales or dimensions of capacity, and therefore four inter-related pathways for capacity development:

**Institutional capacity** refers to the broad social system within which people and organizations function, and the capacity of rules, laws, policies, power relations and social norms that enable and empower (or not) people and organizations to achieve their objectives. In some framings this is referred to as the 'operating environment' or 'enabling environment'.

**Organizational capacity** refers to the internal structures, policies and procedures that determine an organization's effectiveness. Examples include leadership, trust, accountability, and the capacity of communities to implement CBFM.

**Individual capacity** refer to the skills, experience and knowledge that allow each person to achieve shared objectives. Examples include leadership, technical skills, and ability to work collaboratively.

Further, given the multi-scale collective action nature of the project and its ambitions to scale-up CBFM to national programmes, we recognize a fourth dimension:

**Relational capacity**. Following Foster-Fishman et al. (2001), relational or collaborative capacity refers to social connections and relationships among actors, particularly within governance networks. Relational capacity operates across the first three dimensions, and is a critical capability within the context of enabling and catalysing CBFM. Examples with respect to the first three capacities are provided as the last example in the dimensions headlined above, and also include: trust among people and organizations, policy coherence and other relations among institutions, and shared resourcing among agencies.

In this report we organize reporting on capacity development using these four broad pathways. This categorization was used by Blythe et al. (2021) to categorize dimensions of capacity in an analysis of collaborative governance in Malaita. Consistent with the definition used, the project viewed capacity development as a dialog in which partners pursued a shared agenda.

While recognizing the overlapping nature of capacity and capacity development, we report on dimensions of our work in several sections. In Section 7.1 we report on Objective 1 and

<sup>&</sup>lt;sup>7</sup> The term 'translation output' encompasses policy briefs, policy practice briefs, or other materials intended to present scientific findings in a way that is useful to policymakers.

summarize results for organizational, institutional and relational capacity; in Section 8.2 we summarize the activities, outputs and outcomes with respect to individual people.

### Programmatic Approach

The project worked in collaboration with national partners and a range of bilateral projects. In Kiribati and Vanuatu these various streams of work were aligned with and supported the national coastal fisheries roadmaps; regionally they were aligned with the SPC-led New Song. Activities and outputs of our project were therefore implemented in a complex landscape that makes isolating the impacts of our work difficult, and simple attribution<sup>8</sup> of development outcomes problematic. In this report we position ourselves as being accountable for activities and outputs we were contracted to implement, and responsible for contributing to outcomes and impacts. In some instances attribution of causal links is relatively uncomplicated, but in most instances we contributed with others.

The easiest mapping of co-contributions is with respect to co-funded activities, outputs and immediate outcomes produced with bilateral and other discrete projects. In the report we explicitly acknowledge co-funding and shared contribution where appropriate. Specifically, we acknowledge collaboration with:

- In Vanuatu, Wan Smolbag and funding from the Swedish government (SWEDBIO project SU 481 6.1.1-0082-18).
- In Vanuatu and Solomon Islands, the European Union and Swedish government (Locally Managed Marine Areas/Pacific-European Union Marine Partnership project CPS20-125).
- In all three focal countries, ACIAR/DFAT projects FIS/2012/174 and FIS/2018/155. The former project, PacFish is the pre-cursor to the current project and several outputs/outcomes reported in the current project represent the completion of work begun in that project. FIS/2018/155 is a food systems project run in parallel with the current project. Several outputs in Objective 5 (nutrition) were co-funded, particularly following the COVID-19 response in both projects.
- In Solomon Islands, SwedBio project SU 481 6.1.1-0024-16 implemented by WorldFish enabled action research on livelihoods with West 'Are'are Rokotanikeni Association. ADB project SOL-5733 implemented by WorldFish enabled catch monitoring.
- The CGIAR research program FISH enabled international exchange.
- In Kiribati, the Global Environment Facility-Least Developed Countries Fund and UNDP project 'Enhancing National Food security in the Context of Climate Change project' (also known as LDCF project).
- In Kiribati, the New Zealand Aid Programme to the Joint Kiribati Sustainable Fisheries Development and Management Programme also known as 'Tobwan Waara'.

Project partners also drew financial and other support from a wide range of institutional donors. For the purposes of this report we acknowledge that much broader web of contribution and note the challenge it presents for simple attribution of outcomes and impacts.

<sup>&</sup>lt;sup>8</sup> By attribution we mean crediting a causal link between what we did and outcomes and impacts; see also Mayne and Stern (2013) and Belcher and Palenberg (2018) for a discussion of attribution and evaluation in development practice.

# 6 Achievements against activities and outputs/milestones

Activity	Outputs/ milestones	Completion date	Comments
1.1. Strategic planning events and lessons exchanges with regional and national NGO and government agencies to deliver on New	1.1.1 Regional ToC developed in collaboration with partners following the FFC to integrate project activities among implementing partners	Q1 2018	Completed. The workplan for the regional Coastal Fisheries Working Group was presented to the meeting in April 2018 and subsequently approved by SPC/CFWG. See Andrew, N. (2018). Discussion Paper on regional implementation/activity plan for the CFWG/New Song. Second Meeting of the Coastal Fisheries Working Group, Pacific Community. [ <b>PRJ-2018-TO-Andrew</b> ] <sup>9</sup>
Song	1.1.3 National implementation plans for New Song in KIR, SLB, and VUT	KIR - Q4 2018 SLB - Q3 2018 VUT - Q3 2018	<ul> <li>Completed.</li> <li>KIR - Three workshops were conducted in October, December 2018 and January 2019 with Senior Coastal Fisheries Division staff to produce the National Roadmap for Coastal Fisheries in Kiribati (2019-2036) (KIR-2019-TO-MFMRD). The document was finalised and printed in 2019 and officially launched on 21/02/2020. A 4-page summary of the roadmap (KIR-2019-TO-MFMRD 2) was developed to accompany the full document and printed at SPC.</li> <li>SLB - The MFMR Corporate Plan, MFMR Strategy and MFMR Annual Operational Plan have been developed with support from the project. Seconded staff Faye Siota, contributed to the alignment of the National implementation plan for New Song to the MFMR Annual Operational plan.</li> <li>The Project activity plans were drafted following a Theory of Change workshop (in August 2018) and subsequent co-funded meeting was hosted to design and draft a CBRM scaling strategy (in March 2019).</li> <li>VUT - A 3 year project workplan was formulated according to the project proposal and monthly workplan meetings implemented by in-country team in order to monitor implementation progress and identify pending activities.</li> <li>Two subsequent drafting workshops were held in May and September 2018 to co-finalise coastal fisheries roadmap with VFD staff. The Roadmap was signed in March 2019 and printed in June 2019.</li> <li>VFD (2019c). Vanuatu National Roadmap for Coastal Fisheries: 2019 – 2030. [VUT-2019-TO-VFD]</li> </ul>

#### **Objective 1: Strengthen Pacific institutions to implement the New Song for coastal fisheries**

<sup>&</sup>lt;sup>9</sup> Bold references relate to corresponding field trip or workshop reports as part of the project M&E data. The naming convention is: [country code]-[yyyymmdd]-[FTR/WR/MR]-[location], in which FTR = 'field trip report'; WR = 'workshop report'; MR = 'meeting report'.

Activity	Outputs/ milestones	Completion date	Comments
			VFD (2019d) Vanuatu National Roadmap for Coastal Fisheries: 2019 – 2030 (4-page summary). [VUT-2019-TO- VFD 2]
			See also discussion of the process:
			Raubani, J., Steenbergen, D. J., & Naviti, W. (2019). A roadmap for managing Vanuatu's coastal fisheries in the future. SPC Fisheries Newsletter, 158: 2. [VUT-2019-TO-Raubani]
			Letters of Intent to Collaborate were completed with bilateral projects in VFD to facilitate bilateral project collaboration towards the New Song objectives - July 2018 (MOE, WSB, bilateral programs within VFD)
	1.1.4 National ToC reviewed and up to date for mid-term review		See activity 2.1.3.
	1.1.5 Participation in CFWG on an annual basis	Q4 2017	Completed. CFWG were attended by Neil Andrew in Q4 2017 and Q2 2018. Delvene Boso attended the Q4 2018 and Q1 2019 meetings. In 2020, Neil Andrew attended as an observer. Tooreka Teemari, Director of the Coastal Fisheries Division of Kiribati MFMRD, chaired the meeting. The CFWG was disbanded in 2020 as a result of a review by SPC members.
1.2. Work with national agencies to strengthen legislative and policy capacity to enable and support coastal fisheries co- management in KIR, SLB, and VUT	1.2.1 National government agency inshore policies completed or updated	KIR - Q3 2019 SLB - Q4 2019 VUT - Q1 2019	Completed. KIR - A national workshop organised by MFMRD and SPC to discuss Kiribati coastal fisheries regulations and by- laws took place on 8-9 May 2018. Further collaborative work between ANCORS, SPC, MFMRD and the Office of the Attorney General continued throughout 2018, with a specific visit to SPC in October 2018. Ongoing advice was given on the draft Coastal Fisheries Regulations until the official version was passed by Cabinet on 16/08/2019 and launched on 21/02/2020. Part II of the Regulations is about CBFM. MFMRD (2019j). Fisheries (Conservation and Management of Coastal Marine Resources) Regulations 2019. MFMRD Memo Paper: 331/19. Tarawa, Kiribati. [KIR-2019-TO-MFMRD 3] SLB - The overarching MFMR In-shore Fisheries Policy strongly emphasises CBRM and community-based approaches under all strategic policy objectives. Project staff (seconded position Faye Siota) worked within the MFMR to support the development of Standard Operating Procedures SOP) for the development and gazetting of CBRM plans. A stakeholder meeting was held in Q3 2018 to review SOP and provide it to MFMR Management for final comments and vetting (see report SLB-20180704-WR-SOP workshop). It was finalised in 2022. The project team was also involved in a national consultation for the Solomon Islands national ocean policy (SINOP), which was launched in 2019. The project team also supported MFMR in the development of a national strategy for CBRM including its scaling, which is to be launched in 2022. VUT - The National Coastal Fisheries Strategy was developed during a consultation with stakeholders held in Port Vila in 2018 (see VUT-20180517-WR-CFS02 and VUT-20180926-WF-CFS 03). It was signed in by the Minister on 20 <sup>th</sup> March 2019, witnessed by the Director General of Fisheries. This strategy guides VFD management implementation in coastal zones until 2030. It seeks to operationalise the New Song and build on other regional planning initiatives like Melanesian spearhead group.

Activity	Outputs/ milestones	Completion date	Comments
			A review of VFD inshore policies by SPC (Jason Raubani and Ariella D'Andrea) and ANCORS (Ruth Davis) was planned for 2020, however this was delayed due to COVID-19 travel restrictions. This activity is being considered as part of VFD workplan for 2022/23, and Pathways-2 will support this.
	1.2.3 Needs assessment for legislative review in the context of supporting community-based approaches to fisheries management published in KIR	Q4 2019	Completed. The legislative review was completed by ANCORS and SPC following a workshop in May 2018 and the development of the Kiribati Coastal Fisheries Regulation with MFMRD and the Attorney General Office (see Davis and D'Andrea article in the SPC Fisheries Newsletter #156 [KIR-2018-TO-Davis]).
	1.2.4 Standard Operating Procedure (SOP) for CBFM developed to align with KIR Coastal Fisheries Regulations as a tool for Island Councils to implement the Regulations		Partially completed. Fisheries (Conservation and management of coastal marine resources) regulations 2019 were adopted by Cabinet (see 1.2.1). Following this endorsement, SOP were drafted to advise communities, Island Councils and fisheries officers on the procedures under the new regulations. Changes to the draft SOP followed an amendment to the Fisheries Act 2010 approved by Cabinet in Dec 2021 to explicitly recognise community efforts in fisheries management and define authorised officers. Draft currently in review by Office of the Attorney General. Information and awareness on the SOP will take place during FIS/2020/172.
	1.2.6 Training completed of MFMRD in policy/law drafting to support CBFM in KIR	Q4 2019	Completed. First training on drafting by-laws was held at SPC in June 2018 with senior staff of CFD and staff from Office of the Attorney General. Four MFMRD officers were trained by SPC and ANCORS in Noumea during a 10-day attachment in November 2019. The attachment also covered communication/dissemination of regulations to communities. An SPC article reported on the attachment: "Enhancing fishery officers' communication skills", SPC Newsletter 160: 27-28.
	1.2.7 Papers on the role of legal and regulatory systems in the successful implementation of CBFM in Kiribati	Q4 2019	<ul> <li>Completed. Published as:</li> <li>Teemari, T., Muron, C., and D'Andrea, A. (2020) Kiribati takes a major governance step towards sustainable coastal fisheries. SPC Fisheries Newsletter #161 - January–April 2020, pp. 9-13. [KIR-2020-TO-Teemari]</li> <li>Schwarz et al. (2020). Nudging statutory law to make space for customary processes and community-based fisheries management in Solomon Islands. Maritime Studies [SLB-2020-PP-Schwarz].</li> </ul>

Activity	Outputs/ milestones	Completion date	Comments
	and Solomon Islands		
	1.2.8 Remote learning course in policy/law drafting to support CBFM developed in collaboration with SPC		Not completed. SPC received funding from NZ MFAT to work with the University of California, Hastings College of Law (UC Hastings) to develop a new online training course on legislative drafting for coastal fisheries. ANCORS has maintained ongoing conversation with SPC about ways to complement the release of the course, looking at pooling resources to update or complement the course through virtual workshops and provisions of material through examples of enabling legislation during FIS/2020/172.
1.3. Work with sub-national agencies to strengthen human resource, fiscal and policy capacity to implement CBFM and to complete COVID-19 needs assessments to support Provincial and national agency policy development	1.3.1 Targeted training, counterpart activities, awareness raising on CBFM such as co-developed education and awareness materials; 'train the trainer' activities for sub-national agency staff	2017-2021	Completed. KIR – Island-based staff (as subnational fisheries staff) received training by the CBFM team on CBFM facilitation, CBFM principles of community engagement, 2019 Coastal regulations and catch monitoring. Training was provided during visits of Fisheries Assistants in Tarawa as well as during a joint refresher course for subnational staff (held with MFAT project Tobwan Waara) at the end of 2020. Formal training was followed up by on-the-job training of subnational staff through direct engagement in fieldwork by the Pathways team. In partnership with MELAD, 6 Fisheries Extension assistants employed under the LDCF project were trained (see KIR-20180807-WR- FA Training). On-the-job training of these officers was conducted through direct engagement in joint field work activities with the Pathways team. In 2021, two USP graduates undertook work attachments with the CBFM team. One of those is now attached to the CBFM team via a job contract with MFMRD in 2022 as part of FIS/2020/172. SLB – In Solomon Islands, WorldFish completed activities with Malaita Provincial government supporting the provincial fisheries officers to deliver awareness and provide advice to fishing communities. Grace Orirana gave a presentation on CBRM+ at the 9th Premier's Conference in Auki, Malaita on 30 November 2017 (high-level meeting attended by the premisers and executives of all 9 provinces of Solomon Islands). Two visual aids were published in Q4 2018 on Coral reef conservation in Langalanga Lagoon and Mangrove management in West Are'are lagoon (see SLB-2018-IM-WorldFish 1 and SLB-2018-IM-WorldFish 2). A training of trainers (40 trainee primary and secondary teachers) was held with MFMR at SINU in October 2018 (see SLB-20180927-WR-SINU CBRM Training of Trainers). In March 2020, the project team was invited to provide input on the Malaita fisheries ordinance. The workshop sought input on the amendment of the Malaita Province Fisheries Ordinance to better accommodate ambitions of scaling CBFM. See also WorldFish

Activity	Outputs/ milestones	Completion date	Comments
			of CBFM plans in Kwamera (Tanna) and Mission Bay (Futuna). A training on enterprise development and management was delivered in collaboration with the Cooperative Department in Sara (Santo) and the provincial fisheries officer in Luganville (Clay) in 2019. Provincial fisheries officers were closely involved in establishing data collection procedures to monitor fish in and out of solar freezers. Provincial Fisheries Officers were trained through participation in events such as the FishSMARD meeting in Port Vila in May 2019 (see <b>VUT-20190515-WR-FishSMARD</b> ). Mentoring of two provincial fisheries officers (as a more formal capacity development arrangement) was begun in 2020, in partnership with PEUMP and Wan SmolBag.
	1.3.2 Networking to build sub-national agency capacity including enforcement capacity: government enforcement strategy developed with community input	KIR - Q2 2018 SLB-Q2 2018 VUT - Q1 2019	Completed. KIR - Local enforcement were discussed during island forum meetings organised in 2018 in 4 islands (see 2.8.2 for details). Awareness on enforcement were presented to Mayors of the 10 project islands during a stakeholder meeting (August 2019). Brochures were developed with the MCS&E Unit and SPC to assist with raising awareness about the Coastal Fisheries Regulations (https://www.spc.int/DigitalLibrary/Doc/FAME/Brochures/ Anon 21 Guide Regulations KIR.html). Those brochures have consistently been used in island forums and MFMRD teams to raise awareness about coastal fisheries rules in communities. In 2021, the CBFM team and two CBFM community representatives were trained in carrying out enforcement for CBFM plans. SLB - In Western Province, a NGO/ Provincial/ National government network was formed under the project to support governance capacity with a focus on enforcement. In 2019, three meetings were held with the Western Province network gathering development, environment and fisheries agencies and funders (but no enforcement capacity) to discuss how to strengthen HR and review capacity to implement CBRM. The continuation of the Western Province network was supported by matching funds from CEPF. In 2021, WorldFish staff relocated to Gizo, Western Province, a different approach was taken. The Malaita network (MPPD) is not operational. A networked approach was used: all project activities in Malaita were implemented with the Malaita Provincial Government (see 1.3.1 for detailed examples). In 2020, billboards about fish trade were launched at Auki market and during this regulations to the Police and the market management team (including security guards) and especially what to look out for (e.g. undersize fish and prohibited species). The project also renewed the collaborative structures with provincial governments in Western Province and Malaita Frovince after the election in April 2019 (see 2.8.2). These were important milestones for embedded programming. <b>VUT</b> – Pathways work fe

Activity	Outputs/ milestones	Completion date	Comments
			in 2021 Pathways supported the national coastal fisheries symposium that was held in Tafea province as part of the annual national agriculture show (first time that it was held outside of the capital Port Vila). The Tafea provincial fisheries officer played a large role in organizing and facilitating discussions between fisher groups at this event, with support from the VFD Pathways staff.
	1.3.4 Island council workshop to facilitate improved SSF enforcement capacity in KIR at the council and	Q2 2018	Completed. The CBFM team took a step-wise approach to match the development of the Coastal Fisheries regulations. Prior to the endorsement of the regulations, CBFM Island forum meetings were held to discuss the legal/enforcement support of MFMRD for community-based fisheries management rules (1 <sup>st</sup> meeting in North Tarawa in Q4 2018 followed by island meetings in Marakei, Maiana, Aranuka, Nonouti, North Tabiteuea). Following the endorsement of the regulations, the CBFM team directed its awareness efforts towards the new rules and CBFM requirements to project communities. Training of community authorised officers in enforcement
	CBFM islands		and basic evidence gathering with MCS&E Unit started in 2021 (see 1.3.2) and is continuing as part of FIS/2020/172.
			In 2021, in collaboration with MELAD LDCF project, the CBFM team also provided assistance in the review of Island bye-laws as part of the development of Island-based management plans (inclusive of fisheries activities and CBFM).
	1.3.5 Support the development and strengthening of	Q2 2018	A joint coastal fisheries regulation workshop with SPC on 8-9 May 2018 explored a legal pathway to support CBFM. This discussion led to the development of Part II CBFM within the Fisheries (Conservation and management of coastal marine resources) regulations 2019.
	KIR sub-national regulatory frameworks to support CBEM		In 2021, ANCORS and the CBFM team provided input to the Director of Fisheries for her proposed amendment of the Fisheries Act, which was endorsed by Cabinet in December 2021. The amendment supports a community role in fisheries management as well as define "authorised officers" who can carry out enforcement duties.
			Finalisation of the CBFM community guidelines (or SOP), based on the new Amendment will be undertaken as part of FIS/2020/172 (see activity 1.2.4)
	1.3.6 Multi-sector	Q4 2018	Completed.
	New Song integration into KIR policies/ strategies held		MFMRD created a national CBFM Taskforce led by MFMRD and involving 7 other ministries working in communities. The Taskforce focuses on creating collaborations between ministries involved in community-based approaches to natural resource management and aims to create synergies, collaborations and coordination among these various ministries (see <b>KIR-20181002-WR-CBRM Taskforce</b> ). The taskforce met in 2018 and 2019 but the meeting in 2020 was cancelled due to Covid-19.
			The taskforce was then absorbed under the Sustainable Coastal Fisheries Action group through the Commonwealth Blue Charter.
	1.3.7 Tools and techniques developed and distributed to subnational	Q2 2020	Completed. KIR - the CBFM team provided Fisheries Assistants (FAs) on project islands with a guide to keep in contact and regularly check up with communities. The FAs relayed information or requests back to the CBFM team.

Activity	Outputs/ milestones	Completion date	Comments
	fisheries officers to complete f2f and phone-based needs		<b>SLB</b> - Provincial fisheries officers were provided with a phone survey tool designed to gauge local impacts of COVID-19 in communities, specifically around population movement, food production, adequacy of food supply, changes to fish catches and sales, food prices and changes to fishing rules and management.
	assessments		VFD – Provincial fisheries officers were involved in coordinating and implementing a phone-based survey with community leaders, to gain information on immediate impacts of COVID-19 and TC Harold, in April 2020 (relating to food security, access to fish, effectivity of fishing rules and governance in these times etc.). The results of this survey informed VFD's longer term COVID-19 response to communities in 2020 and 2021, and initiated a process to design and develop an SOP for CBFM response to disasters.
			With supplementary funding from PEUMP-LMMA, a PFO support plan was co-developed with the Tafea PFO in 2021. This plan set out a trajectory of growth for the PFO (including mentored work planning, trainings and support to carry out community activities) to more effectively support communities as part of his day-to-day duties and accountabilities.
	1.3.8 COVID-19	Q2 2020	Completed. Reported as:
	needs assessments completed in KIR, SLB and VUT		Locally Managed Marine Area Network, WorldFish, Wildlife Conservation Society and ANCORS (2020) Rapid and preliminary assessment of the impact of COVID-19 on Pacific Island coastal fishing communities. SPC Fisheries Newsletter #161 - January–April 2020, pp. 19-20. [PRJ-2020-TO-LMMA]
			Eriksson et al. (2020a) Changes and adaptations in village food systems in Solomon Islands. A rapid appraisal during the early stages of the COVID-19 pandemic. Penang, Malaysia: WorldFish. [SLB-2020-TO- Eriksson]
			Eriksson et al. (2020b) Coastal fisheries in a pandemic: Solomon Islands and Vanuatu experiences. Dev Policy Blog, 29 July 2019. https://devpolicy.org/coastal-fisheries-in-a-pandemic-solomon-island-and-vanuatu-experiences-20200729/ [PRJ-2020-TO-Eriksson]
			Ferguson et al. (2022) Local practices and production confer resilience to rural Pacific food systems during the COVID-19 pandemic. Marine Policy 137: 104954 <u>https://doi.org/10.1016/j.marpol.2022.104954</u> [SLB-2022-PP-Ferguson]
			Ride et al. (2021). Catching Fish in COVID-19 Currents: Food Security and Governance in Rural Communities in Solomon Islands. In: Campbell, Y., Connell, J. (eds) COVID in the Islands: A comparative perspective on the Caribbean and the Pacific. Palgrave Macmillan, Singapore. <u>https://doi.org/10.1007/978-981-16-5285-1_21</u> [SLB-2021-PP-Ride]
			Steenbergen et al. (2020) COVID-19 restrictions amidst cyclones and volcanoes: A rapid assessment of early impacts on livelihoods and food security in coastal communities in Vanuatu. Marine Policy, 121, 104199 https://doi.org/10.1016/j.marpol.2020.104199 [VUT-2020-PP-Steenbergen]
1.5. Co-design, refine and operationalise CBFM institutional	1.5.1 Review existing government fisheries strategies and alignment with New Song -	KIR - Q3 2019	Completed. KIR - The National Roadmap for Coastal Fisheries in Kiribati (2019-2036) includes guiding principles, cross-cutting enabling condition and key activities in line with all 8 New Song outcomes. The Roadmap was finalised and printed in 2019 and officially launched on the 21st February 2020. [KIR-2019-TO-MFMRD]

Activity	Outputs/ milestones	Completion date	Comments
structures to in ensure post- re project sustainability of New Song initiatives in KIR, SLB, VUT	including recommendations	SLB - Q1 2019	SLB - Complete analyses a) three countries [PRJ-2019-PP-Song], b) national only for gender [SLB-2018-TO- Boso 1] c) Gap analysis for the prioritisation of CBRM scaling planning (van der Ploeg et al. 2020) [SLB-2020-TO- van der Ploeg]
		VUT - Q1 2019	<b>VUT</b> - The Coastal Fisheries Roadmap was completed and signed in March 2019. It is in line with the 8 New Song outcomes. A Coastal Fisheries Roadmap implementation workshop was facilitated by Pathways staff in November 2019 (see <b>VUT-20191023-WR-CFR Implementation</b> ) to operationalise phase 1 (years 1-3) of the Roadmap.
1.6. Participation in COVID-19 and TC Harold (VUT only) response planning and activities to	1.6.1 Participation in national government planning meetings for COVID-19 and post-disaster response	Q2 2020	Completed. Project in-country staff have participated in national government planning meetings for COVID-19 and post-disaster (i.e. TC Harold) response.
support national NGO and government agencies	1.6.2 Multi-sector forum to integrate fish-related COVID- 19 responses at whole-of- government forum in KIR (related to 1.3.6)	Q1 2020	Completed. Project in-country staff participated in MFMRD's COVID-19 community response planning meetings.

### Objective 2: Scaling CBFM in Kiribati, Solomon Islands and Vanuatu

Activity	Outputs/ milestones	Completion date	Comments
2.1 Create (or update) national and project ToC for scaling	1 Create (or bdate) national nd project ToC2.1.2 National project activities identified in national CBFM ToC (see 2.1.3)KIR 201BFM in KIR, LB, VUT2.1.3)SLI 201	KIR - Q4 2018 SLB - Q3	Completed. KIR - A CBFM ToC workshop was organised in November 2018 to plan and align project activities with other MFMRD programs as well as the pending Coastal Fisheries strategy (see KIR-20181108-WR- CBFM ToC).
SLB, VUT		2018	<b>SLB</b> - A CBFM ToC workshop was held in August 2018 with in-country team and partners to review and update the ToC previously developed in earlier project. Joint activities were identified and project activity plans generated and shared amongst the team through a draft ToC report.
		2017	<b>VUT</b> – This was completed in Q4 2017 with the development of a ToC as part of the National Coastal Fisheries Roadmap. As a CBFM project, Pathways feeds into the Roadmap's ToC and contributes to its 3-year short term strategic milestones.

Activity	Outputs/ milestones	Completion date	Comments
	2.1.3 Participatory ToC developed for CBFM in KIR, SLB and VUT in collaboration with national agencies, international partners and other stakeholders	KIR - Q1 2019 SLB - Q3 2018 VUT - Q1 2019	Completed. KIR – The ToC was developed in Q3 2018 during the project inception workshop and refined at the annual Stakeholder workshop in Q4 2018. It was completed for both CBFM and national coastal fisheries roadmap in Q1 2019. SLB - A CBFM ToC workshop was held in August 2018 with in-country team and partners to review and update the ToC previously developed in earlier project. VUT – The ToC was drafted in November 2017 and latter segments were completed in collaboration with VFD and SPC during the roadmap follow-up workshops in May & September 2018. It was finalised in 2019 and incorporated into the Coastal Fisheries Roadmap.
2.2 Support national annual participatory and non- participatory assessments of CBFM and progress against ToC and/or other CBFM and coastal fisheries targets	2.2.2 Support SPC and national agencies in development of coastal fisheries report cards for KIR, SLB and VUT to include Covid-19 metrics from 2020		Partially completed. Project staff supported SPC to revise the coastal fisheries report card documentation and data gathering as part of the CFWG. Connie Donato-Hunt and Neil Andrew contributed to a CFWG indicator working group. The ambition of the project to support the regional reporting through dashboards was contingent on SPC processes. This activity was not a priority from 2020 onward under COVID-19.
2.3 Establish new CBFM sites in each of VUT, KIR and SLB with participatory action research spanning social and fisheries outcomes	2.3.2. Five new community management plans from each of SLB, KIR, VUT implemented with ongoing monitoring to ensure continuous CBFM implementation to safeguard supply of fish	KIR - Q4 2018 SLB - Q4 2018 VUT – Q2 2021	Completed. KIR – A total of 20 new management plans were endorsed by communities and implemented. 6 management plans were reviewed across 3 islands in 2021. The new coastal regulations make specific reference to ongoing monitoring in CBFM plans. Each new CBFM plan explicitly set out a schedule for review (ranging from 3 to 5 years or following decision from the Director of Fisheries) to ensure that the rules remain fit for purpose. SLB - 15 community management arrangements were developed through the 'Malaita Model' (a model for scaling), co-funded by ADB. The monitoring of CBFM plan implementation with CBFM plan reviews took place in 10 communities during 2020-21. During 2020-2021, improved management and more equitable governance over fisheries systems was achieved through the provision of technical support in reviews of management plans and committee work with 10 communities in Western and Malaita Provinces. VUT – A total of 3 new single community management plans and 2 new multi-community management plans (respectively involving 3 and 6 communities) were endorsed by VFD and communities, and implemented. 7 management plans were reviewed across three provinces in 2020-2021. New management plans have further incorporated mechanisms and arrangements with ongoing monitoring by

Activity	Outputs/ milestones	Completion date	Comments
			the community and VFD, on progress, needs and challenges to ensure support. The new CBFM plans further explicitly set out a schedule of reviews (every 3 yrs) to ensure plans are relevant and up-to-date.
			KIR/SLB/VUT – To facilitate cost effective and timely reviews of CBFM plans, a CBFM Plan Review facilitation guide was developed and published as:
			WorldFish and UOW (2021) Community-based Fisheries Management Plan Reviews – Facilitation Guide. Noumea, New Caledonia: Pacific Community. 20 p. <u>https://purl.org/spc/digilib/doc/v33gz</u> [PRJ- 2021-OO-WorldFish and UOW]
			WorldFish and UOW. 2021. Community-based Fisheries Management Plan Reviews – Data collection worksheets. Noumea, New Caledonia: Pacific Community. 16 p. <u>https://purl.org/spc/digilib/doc/7euui</u> [PRJ-2021-OO-WorldFish and UOW 2]
2.4 Train	2.4.1 Facilitate co-	KIR – Q1	Completed.
communities, sub-national and national staff to support delivery and monitoring of activities	development (communities, and provincial and national agencies) of 'participatory' education tools on coastal fisheries management including gender dimensions. Also includes technical advice and awareness materials to communities and sub-national agency staff on fisheries management measures (e.g. opening closed areas to relieve food shortages, health and safety of foods materials)	evelopment2019;communities, andongoingrovincial andational agencies)f 'participatory'2018ducation tools onSLB - Q2banagementVUT - Q1banagementVUT - Q1banagement2019banagementVUT - Q1banagement2019banagementVUT - Q1banagement2019banagementbanagementbaterials tobommunities andbanagementbanagementbaterials tobommunities andbanagementbasebanagementbasebasec.g.pening closedc.g.pening closedc.g.pening closedc.g.base to relievebod shortages,base th and safety ofbods materials)	<b>REG</b> – in 2020, The Pathways project team, including national agency staff, developed the 'gender addendum', as a guide to gender inclusive facilitation for community-based resource management. See Kleiber et al. 2019 <b>[PRJ-2019-TO-Kleiber 3]</b> and SPC Women in Fisheries Information Bulletin article, Kleiber et al. 2019 <b>IPR I-2019-TO-Kleiber 4]</b>
			<ul> <li>KIR – Four posters, 3 brochures and 1 CBFM video developed: MFMRD (2019b). Approaches to Te Mwaneaba: CBFM's breaking communication barrier in our community. [KIR-2019-IM-MFMRD 1]; MFMRD (2019d). Marine Protected Area description guide. [KIR-2019-IM-MFMRD 2]; MFMRD (2019e). Stories of change. [KIR-2019-IM-MFMRD 3]; MFMRD (2019f). Te Aua [The mullet]. [KIR-2019-IM- MFMRD 4]; MFMRD (2019g). Te Bun [The Ark shell]. [KIR-2019-IM-MFMRD 5]; MFMRD (2019h). Te Nouo [The Trochus]. [KIR-2019-IM-MFMRD 6]; MFMRD (2019i). Te Waro [The Mantis shrimp]. [KIR- 2019-IM-MFMRD 7]; MFMRD (2019k). Coastal Fisheries Division – Community-based Fisheries Management. DVD [KIR-2019-IM-MFMRD 8].</li> </ul>
			<ul> <li>SLB - In June 2018, WorldFish arranged a workshop with Rokotanikeni women's group in Hauhui to share lessons learned from the first three pilot freezers. During this event the Provincial Fisheries Office also delivered a training module on fish hygiene and handling, during which interested members of the public were welcomed to join. The "Fish handling sheets" (published in 2017 SPC/WorldFish) were used to deliver messages about fish handling practices and 100 copies of the complete set were distributed to Rokanikeni members and the public (see SLB-20180606-FTR-WARA freezer handover). In July 2021, WorldFish and partners arranged a CBFM facilitators training workshop, with a focus on "train the trainers" (see SLB-20210727-WR-Auki CBRM training). 39 participants from communities around Malaita participated in the 4-day activity. These community facilitators have now gone home to their villages and are supporting the Provincial Fisheries Officers with information and awareness activities within their communities, as well as in adjacent areas.</li> <li>VUT - The Wan SmolBag CBFM play and related awareness materials developed were used as part of</li> </ul>
			post-play community workshops (see 2.4.6). Wan SmolBag <i>Twist mo Spin</i> play was made into a DVD production with technical support from Pathways. (see <b>VUT-2021-TO-Wan SmolBag</b> ). Five pull-up

Activity	Outputs/ milestones	Completion date	Comments
			banners created with CBFM information for use in public outreach events [VUT-2021-IM-VFD 1], [VUT-2021-IM-VFD 2], [VUT-2021-IM-VFD 3], [VUT-2021-IM-VFD 4], [VUT-2021-IM-VFD 5].
			In April 2020, VFD provided technical advice regarding the opening of tabu erias of two communities in Aniwa. This opening was required following restrictions on travel to Tanna due to COVID-19 government regulations, effectively stopping trade and food purchases for people on Aniwa. The tabu erias were opened for two weeks, before easing of travel allowed people to travel to Tanna again and only bamboo fishing and diving were permitted. In 2021 the Pathways team was approached by Kwamera community on how to deal with a sea urchin outbreak. The team provided information on the biology and ecology of sea urchin and proposed options for management measures. Through the PFO, these measure were undertaken in the community. During the resource monitoring subnetwork meeting in Q4 2021, Kwamera leaders reported that the outbreak had been contained.
	2.4.2 Compilation and publication of CBFM information kits and training of communities in KIR, SLB, VUT	KIR – Q1 2019	Completed. <b>REG</b> - Fish handling sheets were developed and released in Q2 2018. They were published in English and then translated into Bislama for broader dissemination. Published as:
		raining of ties in KIR, VUT – Q3 2020	Li, O., et al. (2018). Handling seafood in the Pacific Islands: Information sheets for fishers, vendors and consumers. Noumea, New Caledonia: Pacific Community. [PRJ-2018-IM-Li]
			ALL - Communities participate in training in CBFM principles on an ongoing basis during most community engagements. For example, initial contact with a new community invariably includes awareness session on biology and ecology of coastal fisheries, general CBFM principles, MPAs, etc. The project implements a participatory action research model which has communities and researchers/project team working alongside each other on activities - a mutual learning modality.
			<b>KIR</b> - The CBFM Unit provided support, input and feedback to CFD's Training Unit project to develop a teacher resource pack as a collaboration with SPC, Ministry of Education and MFAT Tobwan Waara projects. <u>https://coastfish.spc.int/publications/information-sheets/kit-for-teachers/499</u>
			Visual aids: Four posters were developed by Fisheries Assistant trainees on important Kiribati marine species including <i>te aua</i> (the mullet) <b>[KIR-2019-IM-MFMRD 4]</b> , <i>te nouo</i> (the trochus) <b>[KIR-2019-IM-MFMRD 6]</b> , <i>te waro</i> (the mantis shrimp) <b>[KIR-2019-IM-MFMRD 7]</b> and <i>te bun</i> (the ark shell) <b>[KIR-2019-IM-MFMRD 5]</b> (see 2.4.1). Brochures include: Culturally sensitive approach to CBFM (Te Maneaba approach) <b>[KIR-2019-IM-MFMRD 1]</b> ; Types of MPAs and spawning closures <b>[KIR-2019-IM-MFMRD 2]</b> ; CBFM and stories of change <b>[KIR-2019-IM-MFMRD 3]</b> . A video was also locally produced featuring community representatives to raise awareness on CBFM from a community's point of view <b>[KIR-2019-IM-MFMRD-8]</b> .
			Brochure on the coastal fisheries rules: <u>https://www.spc.int/DigitalLibrary/Doc/FAME/Brochures/Anon_21_Guide_Regulations_KIR.html</u> . The guide has been used by the CBFM team to raise awareness about fisheries threats (such as overfishing and destructive fishing gears) and fisheries management. Other CFD Units and bilateral partners use the guide and associated visual aids produced by SPC (see activity CM 10).

Activity	Outputs/ milestones	Completion date	Comments
			<b>SLB</b> - Rather than create a manual, the chosen approach is to package documentation (from prior to Pathways). This will later be augmented with nutrition toolkit, gender facilitation tools, gender toolkit, livelihood diagnosis, etc.
			With project staff, Provincial Fisheries Offices deployed 8 FADs in Malaita Province in 2018. Two awareness meetings were co-delivered in every community, in which the FAD was specifically linked to community-based fisheries management. Communities: Adaitolo (Suava Bay), Onepusu (Toibaita), Mandalua and Gwanatafu (West Fataleka), Fote and Bio (West Kware'ae), Ta'arutona (West Are'are) and Ambitona (East Kwaio). One guest lecture was provided in 2018 by WorldFish staff to SINU students. Delvene Boso gave a presentation titled "Community Based Resource Management – the coastal fisheries management approach in SI".
			WorldFish (2020a) Community Based Resource Management (CBRM) In Malaita Province. Fact Sheet. 2pp. [SLB-2020-IM-WorldFish]
			WorldFish (2020b) What WorldFish does in Malaita Province. Fact Sheet. 2pp. [SLB-2020-IM-WorldFish 2]
			WorldFish (2020c) FAD Deployment in Malaita. Fact Sheet. 1p. [SLB-2020-IM-WorldFish 3]
			WorldFish (2020d) What WorldFish does in Western Province. Fact Sheet. 2pp. [SLB-2020-IM- WorldFish 4]
			WorldFish (2020e) Follow the Fish. Fact Sheet. 2pp. [SLB-2020-IM-WorldFish 5]
			<ul> <li>VUT – All 33 sites received awareness information/materials by way of posters brochures etc., and with community meetings organized around laws, rules and regulations of coastal fisheries.</li> <li>Wan SmolBag CBFM theatre production toured communities in Southern sites (see 2.4.6 and 2.4.7); including post play workshops held to exchange learnings and disseminate information. Three comics on key species to accompany the Wan SmolBag theatre play have been completed (see VUT-2019-IM-Wan SmolBag, VUT-2019-IM-Wan SmolBag 3, and VUT-2019-IM-Wan SmolBag 4). The play was also turned into a DVD production in 2021 (see VUT-2021-TO-Wan SmolBag).</li> </ul>
			Identified an inventory of info materials; existing materials were collated into a packet of information relevant and important for CBFM. CBFM info kits were finalised, printed and ready for distribution by Q3 2020. They have been (and will be used) as a tool during community awareness activities, .e.g as during the implementation of the CBFM scaling survey in SANMA and TAFEA in 2021. Outputs include: SPC CBFM posters, Bislama translated "fish for healthy nutrition" poster, WSB-developed comic books, fish handling information briefs, and CBFM fact sheets on resources and management by SPC.
			VFD (2018a). Pathways Project: "Strengthening and scaling community-based approaches for coastal fisheries management in Vanuatu". Brochure. <b>[VUT-2018-IM-VFD 1]</b>
			VFD (2018b). Vanuatu Fisheries Department: Fisheries project information booklet. <b>[VUT-2018-IM-VFD 2]</b>

Activity	Outputs/ milestones	Completion date	Comments
	2.4.3 Compilation and publication of CBFM information kits and training of sub-national and national staff in KIR, SLB, VUT	KIR - Q2 2018 SLB - Q1 2018 VUT - Q1 2018	Completed. KIR – Visual aids produced by the team and SPC were widely shared with bilateral partners and with subnational staff working on project islands. (see 2.4.2). The compilation of training material and visual aids in a Kiribati manual will be the focus of FIS/2020/172. <b>SLB</b> - Support and materials were provided to provincial fisheries officers in Masupa (April 27, 2018), Masihuro, West Are'are Lagoon (from 8 to 11 November 2017), in North Malaita, including in Mana'ere and Bita'ama (October 2017), to enable them to conduct awareness meetings with communities interested in setting up a LMMA. Visits to communities were conducted alongside Provincial Government staff and hands-on, continual training was provided to two National CBRM unit staff at MFMR through WorldFish staff secondment. <b>VUT</b> - Training in data collection and size regulation enforcement around seafood tourism trade with authorized officer in Hog Harbour, Santo in Q3 2018. Training of four new VFD CBFM officers in CBFM principles and community engagement, two in July 2018 and two in March 2020. Distribution to and training of subnational staff on use of the CBFM info kits from Q3 2020, as part of scaling survey implementation, Vanua Tai meetings and PFO extension support activities in communities.
	2.4.4 Training materials in community monitoring produced with national partners with follow-up training sessions in KIR, SLB, VUT	KIR – Q2 2019 SLB – Q4 2018 VUT – Q2 2019	<ul> <li>Completed.</li> <li>KIR - Catch monitoring training packages were produced and 3 KIR CBFM project officers were trained in June 2019. Ten officers were then trained as catch monitors; with ongoing refresher before rounds of data collection were undertaken.</li> <li>SLB - Trainings were conducted in 2018 with community fishers to collect landings data. CPUE data was collected in 12 villages. Training was conducted previously with community monitors (see activity 2.3.1). Next, the focus was on scientific method and training in analytic interpretation for the completion of the paper by Smallhorn-West et al. 2022. [SLB-2022-PP-Smallhorn-West]</li> <li>VUT - Catch monitoring training packages were produced and 4 VUT CBFM project officers were trained in June 2019. Following that, the team trained 10 VFD observers and 10 community members in implementing the protocol (Nov2019). Enumerator refresher training in March 2020 for 5 VFD observers [VUT-20200302-WR-Fish. mon. refresher training], and subsequent refresher trainings in Nov 2020 and April 2021 (involving 5 observers each time).</li> </ul>
	2.4.5 Develop and test a CBFM game as a tool for capacity development in Pacific CBFM	Q4 2019	Partially completed. The concept of the tool was tested for feedback during Pathway inception meeting and was well received by CBFM field officers. Tool was developed and refined with input from staff and communities in the three countries. A prototype of the game was finalised in November 2019 [ <b>KIR-2019-OO-Pathways</b> ] and delivered to MFMRD. The game was not further tested by KIR staff due to reprioritisation of activities following COVID-19.

Activity	Outputs/ milestones	Completion date	Comments
	2.4.6 Co-develop with Wan Smolbag theatre group a CBFM/gender play to be toured through VUT communities	Q1 2019	Completed. Wan SmolBag theatre group collaborated with project team to develop a CBFM play [VUT-2019-TO-Wan SmolBag] and poster [VUT-2019-IM-Wan Smolbag 2]. See coconut crab comic [VUT-2019-IM-Wan SmolBag 3], sea cucumber comic [VUT-2019-IM-Wan SmolBag 3], parrotfish comic [VUT-2019-IM- Wan SmolBag 4] and workshop guide produced by Wan SmolBag [VUT-2019-TO-Wan SmolBag]. Co- funded with Swedbio (WSB component).
	2.4.7 Successful tour of Wan Smolbag CBFM play and related CBFM workshops through VUT communities	Q4 2019	<ul> <li>VUT - Touring in Southern community sites completed in Q2 2019. The second part of the tour to Northern sites has been cancelled due to Covid-19 travel restrictions. WSB instead produced a film of the Twist mo Spin play (see VUT-2021-TO-Wan SmolBag). This was completed in 2021 and shown/distributed publicly since Nov 2021. The movie has been accepted into the selection of the international film festival in San Francisco 2022, and will be screened to international audiences there. See also:</li> <li>Wan SmolBag (2019f) 'Twist mo Spin': Using theatre for social change in fisheries (video): 10 minutes</li> </ul>
			<ul> <li>[VUT-2019-TO-Wan SmolBag 2]</li> <li>Wan SmolBag (2021) Twist mo spin [movie]. A Wan Smolbag production in collaboration with Vanuatu Fisheries Department, with financial and technical support from Swedbio, Pathways project (ACIAR FIS/2016/300) and PEUMP-LMMA. DVD: 48:33 minutes. [VUT-2021-TO-Wan SmolBag]</li> </ul>
2.5 Establish co- management in at least one location identified as challenging for CBFM (i.e. in urban settings where tenure is unclear)	2.5.1. Management plans from Langalanga lagoon	Q1 2019	<ul> <li>Completed. Work in Langalanga lagoon begun under PacFish was continued in the current project and the Rarata (OKRONUS) management plan was ratified. This area of work at the artificial islands in Langalanga also prompted much discussion with partners and communities about vulnerability to climate change, as these man-made islands in Langalanga and other places around Malaita are often used as "canaries in the coal-mine" under the headlines of "sinking islands". The project work at these islands was published as:</li> <li>Van der Ploeg, J., Sukulu, M., Govan, H. et al. (2020) Sinking Islands, Drowned Logic; Climate Change and Community-Based Adaptation Discourses in Solomon Islands. <u>Sustainability</u> 12, 7225, doi:10.3390/su12177225 [SLB-2020-PP-van der Ploeg]</li> </ul>
	2.5.2. Paper on "Do networks build collaborative governance capacity?"	Q4 2019	<ul> <li>Completed. Reported as:</li> <li>Bennett, G. (2018). Network Building. Building a network to meet local and national development aspirations in Western Province. Melanesian Geo. online publication July - December 2018: 2. [SLB-2019-TO-Bennett]</li> <li>Blythe, J., P. Cohen, H. Eriksson and D. Harohau (2022) Do governance networks build collaborative capacity for sustainable development? Insights from Solomon Islands. <u>Environmental Management https://doi.org/10.1007/s00267-022-01644-5</u> [SLB-2022-PP-Blythe]</li> </ul>
	2.5.3. National or provincially specific translation outputs	Q2 2019	Completed. Provincial government policy practice brief published as:

Activity	Outputs/ milestones	Completion date	Comments
	on co-management models		WorldFish (2018). Supporting community-based resource management in Solomon Islands: The role of provincial governments. Penang, Malaysia, WorldFish. Program Brief. [SLB-2018-TO-WorldFish]
	2.5.6. Paper on 'Reconciling resilience and development at the nexus of food security and livelihood strategies in Langalanga lagoon, Solomon Islands'	Q2 2019	<ul> <li>Completed.</li> <li>Eriksson, H., R. Sulu, J. L. Blythe, J. Van der Ploeg and Andrew, N. (2020) Intangible links between household livelihoods and food security in Solomon Islands: implications for rural development. Ecology and Society 25 (4):18. <a href="https://doi.org/10.5751/ES-11709-250418">https://doi.org/10.5751/ES-11709-250418</a> [SLB-2020-PP-Eriksson]</li> </ul>
2.6 Test (qualitatively and quantitatively) the impact of four strategies for scaling up and CBFM in VUT, KIR and SLB	2.6.1. New community engagement approaches tested with at least 18 communities in each of KIR, SLB and VUT, evidenced through surveys to determine efficacy of efforts to scale CBFM as a measure to improve food security of coastal communities, the Pacific Panel Study, and CBFM Plan Review through remote and f2f methods	2018	Completed. We are now at a point in time where the planning and strategy from scaling CBFM has moved beyond the deep community-by-community engagement models. The region and the project countries have adopted goals to reach further and have wider impacts, with strategies to achieve those goals focusing on information and awareness. In practical terms this has also shifted emphasis of the role of external projects away from old CBFM blueprints to instead support change processes now underway with new community engagement approaches. A strategy was developed within the project to solidify our thinking on what scaling CBFM in Pathways looks like <b>[PRJ-2019-OO-Pathways]</b> . A collaborative exercise then took place to develop a scaling survey tool to assist countries understand the spread of CBFM uptake (both in project and non-project sites). The tool was developed as a partnership between UoW, SPC and LMMA as well as in-country partners <b>[PRJ-2021-OO-Pathways]</b> . The tool was used in the three countries and carried out in 273 sites (42 communities across 4 islands in KIR; 68 communities of one province in SLB; and 164 communities across 2 provinces in VUT). <b>KIR</b> – In 2019, scaling modalities for CBFM implementation were developed in partnership with the MFMRD Coastal Fisheries Division in line with activities in the national roadmap and to take CBFM from a pilot initiative to CBFM implementation. Modalities included the trial of shared management such as the zonal approach in North Tarawa (3 zones working under the lead of a CBFM village each) and the whole-of-island approach in Butaritari (which is ongoing). Moving from a pilot phase to CBFM implementation required the work in KIR to focus on providing information through a stakeholder workshop in 2019, the Coastal Fisheries Summit and community visits. The project also established partnerships with other bilateral projects which enable CBFM to operate beyond the project target islands. The modality of work included a step-wise approach of information & awareness a

Activity	Outputs/ milestones	Completion date	Comments
			Delisle, A. (2020) A large Ocean State seeks Change. SAMUDRA Report 84: 16-19. [KIR-2020-TO- Delisle]
			Nikiari, B. et al. (2020) Kuuma's journey toward a sustainable coastal fishery. SPC Fisheries Newsletter 163: 40-44. <b>[KIR-2020-TO-Nikiari]</b>
			<b>SLB</b> – In Solomon Islands, the role of Provincial Fisheries Officers (PFOs) to spread and support CBFM is clearly stated in the 2015 Fisheries Management Act. The project has sought to support that with an increasing focus on enabling their work towards "lighter touches" of information and awareness outreach formats. Support and materials were provided to provincial fisheries officers to conduct awareness meetings on CBRM in Masupa (April 27, 2018), Masihuro, West Are'are Lagoon (from 8-11 November 2017), and North Malaita, including Mana'ere and Bita'ama (October 2017). These meetings aimed to support communities setting up a LMMA and fell under the 'lite touch' scaling model. The "Malaita model" was tested in 15 communities in Malaita Province, as well as other scaling strategies such as "Look and learn", and those without direct engagement (i.e. mass media). In 2019, five communities in Isabel Province requested support and seconded staff at MFMR led engagement in this province. A total of 65 coastal communities in Malaita Province received technical support and awareness for CBRM (2286 people attended) between November 2020 and September 2021. The events were delivered with the Malaita Provincial Fisheries Office under the project's integration for sub-national institutional strengthening. At these events the project scaling survey was also implemented with focus groups to survey for information reach and CBFM practices. Outputs from the survey will be delivered under the framework of Pathways-2
			<b>VUT</b> - A site selection workshop was held with VFD in Q1 2018. Then scoping and CBFM awareness was completed in Q4 2018 for potential expansion sites across provinces (aligned with VFD priority areas and in some cases in response to community requests). This scoping sought to understand on-the-ground contexts, challenges, needs and interests, to identify 25 expansion sites for project focus. A scaling ToC was completed in Q4 2018 to specify the strategies applied to each site and scheduling of their implementation. A VUT scaling strategy was drafted and integrated with project-level scaling strategy. The <b>community-oriented activities</b> for the scaling strategy are categorized in 3 categories:
			<ul> <li>(i) Informing through public communication channels formed the lightest form of engagement activity (1-way communication whereby target catchment includes project sites and beyond) – outputs 8 articles in public media outlets about CBFM developments (since project start, ongoing), information stands at public fisheries events (ongoing), more than 30 WSB public performances of the CBFM play in Southern provinces and Port Vila (completed by Q4 2019), information videos with 1 on fish-based nutrition (completed Q1 2019) and 1 on community theatre (completion planned for Q3 2019), and CBFM information kits were developed and distributed since Q2 2020.</li> <li>(ii) Communication engagements that seek to catalyse interactive information exchange to increase understanding and connect communities horizontally and vertically with support networks (2-way communication whereby target catchment focuses primarily on project sites but may also include others based on existing links with bilateral project initiatives elsewhere) – participatory scoping completed for all 25 expansion sites, 15 project sites cross the southern provinces (Tafea and</li> </ul>

Activity	Outputs/	Completion	Comments
	milestones	uale	
			<ul> <li>Shefa) engaged in the post-"WSB CBFM play" workshop and in that received information materials. In sites showing interest to improve livelihood returns from fisheries, participatory diagnoses was completed in 6 project sites across Vanuatu.</li> <li>(iii) Joint action engagements that build on collaboration with communities through PAR, livelihood enhancement activities, CBFM plan development, data collection and co-monitoring (target catchment focused on subsets of project sites that have shown interest, ability and commitment to collaborating). These engagements are implemented with (A) <u>a single-community focus</u>: 4 communities engaged in CBFM plan development independent from one-another (Tafea, Shefa, Penama and Torba province (by Q4 2021)), over 30 communities in solar freezer monitoring across all provinces (including 12 project sites) started in Q2 2019), 2 in fish-based nutrition PAR in Sanma and Tafea (activities remain ongoing), and 1 in livelihood improvement intervention in Shefa province (completed in Q1 2019); and (B) through <u>community cluster approach</u> involving joint ventures between up to 3 communities: 2 clusters developing a rural fish distribution hub in Sanma Province (implementation started in Q2 2019, and management ongoing) and 2 clusters of PacFish sites around CBFM plan strengthening, review implementation in Malampa and Sanma provinces (completion in Q3 2021). Clustering is based on small islands (e.g Aniwa, Futuna and Maskelynes), or on strong traditional ties between communities (NW Malekula), or based around developing fish distribution points connecting fish supply communities with rural consumer villages (Western Santo).</li> </ul>
			Of the 33 project sites, 18 were 'intensive' sites (i.e. have a CBFM plan) and the remainder were 'lite touch' sites. The engagement of new communities (beyond the 33 project sites; that is, 'ultra lite touch' sites) follows the national CBFM scaling strategy that is in draft and being tested for Vanuatu.
			Data collection through new tools:
			WorldFish and University of Wollongong (2021) Community-based Fisheries Management Plan Reviews – Facilitation Guide. Noumea, New Caledonia: Pacific Community. 20 p. <u>https://purl.org/spc/digilib/doc/v33gz</u> [PRJ-2021-OO-WorldFish and UOW]
			WorldFish and University of Wollongong. 2021. Community-based Fisheries Management Plan Reviews – Data collection worksheets. Noumea, New Caledonia: Pacific Community. 16 p. <u>https://purl.org/spc/digilib/doc/7euui</u> [PRJ-2021-OO-WorldFish and UOW 2]
			Pathways Project (2021a) CBFM Scaling Survey Tool: Field manual, instructions and questionnaire. ANCORS, UoW, Australia. Internal project document. <b>[PRJ-2021-OO-Pathways]</b>
	2.6.3. Paper and translation output on 'Overcoming the CBFM scaling conundrum:		Output not completed.

Activity	Outputs/ milestones	Completion date	Comments
	experience from the Solomon Islands'		
	2.6.4. Local/national media coverage	Q1 2018	Completed. Numerous media articles and other outputs such as radio interviews have been completed. We highlight examples below and a full list may be found in Appendix 3.
	(radio, newspapers etc.) of look and		Kiribati Ministry of Environment Lands and Agricultural Development. (2020) <i>Mamautari broadcast</i> MFMRD (2018, 8 June) <i>Kaongara radio program</i> . Kaongara
			VFD (2019). Growing a Pacific 'community-of-practice' for coastal fisheries management. Daily Post. Retrieved from http://dailypost.vu/news/growing-a-pacific-community-of-practice-for-coastal- fisheries-management/article_af3d2aa0-1e5f-5f8d-9a54-5d47918f700c.html
			VFD (2020). Reflecting on three years of community management of reefs in the Meskelyne Is. Vanuatu Daily Post. Retrieved from <u>https://dailypost.vu/news/reflecting-on-three-years-of-community-</u> <u>management-of-reefs-in-themaskelyns/article_6a48bbae-c6e9-11ea-9bc5-</u> <u>5780150e8dea.htmlNnnn</u>
			Saeni, B.W. (2019, 25 January). Fishing body praised for achievement. Solomon Star
			Ha'arabe, C. H. (2019, 10 March). World-Fish advocates for local women. Solomon Star, p. 5
	2.6.5. Paper	Q3 2019 ling for SLB,	Completed. Published as:
	comparing scaling out strategies for CBFM in KIR, SLB, and VUT		Pathways project (2019). Scaling CBFM in the Pathways Project (internal project document) 52pp. [PRJ- 2019-00-Pathways]
			Delisle, A. (2020) A large Ocean State seeks Change. SAMUDRA Report 84: 16-19. [KIR-2020-TO- Delisle]
			<b>SLB</b> – Lessons and planning from project scaling strategies incorporated into national MFMR's CBRM scaling strategy, (MFMR 2022).
			<b>VUT</b> – Providing a grounding of the scaling theory paper (output 2.10.1), a paper looking back at the growth of CBFM from 1980s to now, and looking forward to what this means for the scaling strategy in Vanuatu, is published as: Steenbergen et al. (in review) Tracing innovation pathways behind fisheries comanagement in Vanuatu. <u>Ambio</u> . <b>[PRJ-2022-PP-Steenbergen]</b>
2.7 Support ACIAR-project communities to implement adaptive fisheries management, to self-sufficiently govern CBFM in	2.7.3 Participatory qualitative and quantitative data reported in field trip reports and communicated to national agencies	Q4 2018	<ul> <li>Completed.</li> <li>KIR - Field trip reports following visits to project sites were shared with MFMRD as well as other incountry project partners. Monthly progress reports were shared with MFMRD during Heads of Unit meetings.</li> <li>SLB - All field trips are documented in field reports, logged and stored centrally. Reporting on all field activities was conducted on an ongoing basis through seconded staff and Country Director meetings with MFMR. WorldFish began working with the CBRM Section of MFMR to develop a CBRM database. This will be continued and finalised in Pathways-2 (FIS/2020/124).</li> </ul>

Activity	Outputs/ milestones	Completion date	Comments
VUT, including cross-sectoral concerns			<b>VUT</b> - Fieldwork reports were documented regularly and shared with VFD and project partners.
2.8 Facilitate regional, national and sub-national learning symposia and exchange of experiences in CBFM	2.8.2. Workshop and networking events, with strong community representatives, to facilitate transfer of experiences and lessons learned with particular focus on successes with gender and post- disaster response including COVID-19	KIR – Q4 2017 SLB – Q4 2017 VUT – Q4 2017	<ul> <li>Completed.</li> <li>KIR - Lessons learned from the first phase of CBFM in Kiribati were shared during Coastal Fisheries</li> <li>Summit (awareness of MFMRD and invited Ministries), Fisheries Awareness Week in November 2017 and 2020 (awareness of wider community), and a stakeholder workshop in August 2019 with mayors and representatives from 10 islands. Island forums in Butaritari, North Tarawa, Maiana, Abermama, Nonouti and North Tabiteuea were also held throughout the project to allow experiences from elected community representatives of active CBFM sites to be shared with non-active CBFM sites on the same island.</li> <li>The CBFM team held a booth for the public and for MPs during the launch of the <i>National Roadmap for Coastal Fisheries in Kiribati (2019-2036)</i> [KIR-2019-TO-MFMRD] on 21/02/2020.</li> <li>Supported the International Women Day event in North Tarawa in 2021 with community representatives, elected officials, CFD and MWYSSA staff to highlight the role of women in fisheries and fisheries management [KIR-2021-TO-NIKIAT].</li> <li>SLB - A 'National Symposium on Resource Management' was held for the first time in Solomon Islands in Q4 2017. This was a major event and had one day dedicated to community-based management led by project staff. Published as: Boso, D., A. Vave-Karamui, R. Masu, et al. (2018) Proceedings of the 1st Solomon Islands sword/fish. Proceedings: 43. [SLB-2018-TO-Boso 2]</li> <li>In 2018, three networking events (see 1.3.2) were co-hosted and/or contributed to in Western Province to share experiences. Alliances were strengthened through a range of engagements with national and provincial partners. The project team was part of the national thrust to gain momentum around the details of a national CBFM scaling strategy. Renewed collaborative structures with provincial governments in Western Province and Malaita Province were agreed after the election. These meetings were led by Delvene Boso and also attended by former WorldFish DG Gareth Johnstone.</li> <li>In 2019, WorldFis</li></ul>

Activity	Outputs/ milestones	Completion date	Comments
			the event focused on indigenous aquatic foods and rural women in Guadalcanal. The team organised a cooking competition in collaboration with the Guadalcanal Provincial Government and rural women's associations. This was a fun and engaging way to elevate the profile of both indigenous foods and rural women as part of an effort to focus on restorative practices for traditional agriculture and indigenous foods.
			<b>VUT</b> – During the life of the project the CBFM forums organised through Pathways have expanded in scope and participation and become more embedded in VFD. The first "lesson learnt workshop" was organized in Nov 2017 in Port Vila and brought together provincial, area and community reps to share experience and lessons from work on CBFM over 3 years.
			As part of the partnership with WSB and the CBFM production touring, community workshops were held for knowledge exchange (see 2.4.7).
			A national CBFM Community forum was held in August 2019 as part of the mid-term review. Community representatives discussed CBFM implementation in their locations and transferred experiences and lessons learned. The CBFM Stakeholder Symposium (Nov 2019, see <b>VUT-20191021-WR-National CBFM Symposium</b> ) brought together representatives of national agencies, NGOs and bilateral project who work with coastal communities in resource management and conservation to share, learn from each other, build networks and collaborate.
			Another National CBFM Symposium was held in 2020, to include discussion of COVID-19 and TC Harold responses. This symposium was the first iteration that explicitly involved area level and community level stakeholders into a national forum. Area councillors presented reports from ground level CBFM status and actively engaged in strategic planning and policy session alongside fisheries officers.
			In September 2021 the national coastal fisheries symposium was held for the first time in province, in Tafea (Tanna). This was organised in conjunction with the national agriculture week that was held that week, and which brought in provincial governments from arcos the country to participate in the symposium, in addition to university, NGO and CSO stakeholders.
			<b>REG</b> - Aurelie Delisle and Dirk Steenbergen were part of the team with SPC and LMMA who conceived and organised the "Scaling-up Community-based Fisheries Management in the Pacific Region Workshops". They facilitated several sessions. See full workshop materials and participants here: https://fame1.spc.int/en/meetings/255
			Lalavanua, W., Govan, H, Steenbergen, D. (2021) Scaling-up community-based fisheries management in the Pacific: Key outcomes of subregional workshops. SPC Fisheries Newsletter #165, May – August 2021 [PRJ-2020-TO-Lalavanua 2]
			SPC (2021b) Scaling-up Community-based Fisheries Management in the Pacific. Melanesia sub-region: Summary workshop outcomes report. 10pp. New Caledonia: Pacific Community. Online <u>here</u> . [PRJ-2021-TO-SPC 3]

Activity	Outputs/ milestones	Completion date	Comments
			SPC (2021c) Scaling-up Community-based Fisheries Management in the Pacific. Micronesia sub-region: Summary workshop outcomes report. 10pp. New Caledonia: Pacific Community. Online <u>here</u> . [PRJ-2021-TO-SPC 4]
			SPC (2021d) Scaling-up Community-based Fisheries Management in the Pacific. Polynesia sub-region: Summary workshop outcomes report. 10pp. New Caledonia: Pacific Community. Online <u>here</u> . [PRJ-2021-TO-SPC 5]
	2.8.3. Print and radio media coverage of lessons learning events and findings in VUT, SLB, KIR	Q4 2018	<ul> <li>Completed. For example:</li> <li>Radio broadcast about the MFMRD launch of their Ministry Strategic Plan and Coastal Fisheries Regulations and Coastal Fisheries Roadmap (Q1, 2020)</li> <li>WorldFish convened a regional panel at World Small-scale Fisheries Congress (Q4 2018) to share lessons on CBRM and share on the role of policy change.</li> <li>Vanuatu Daily Post article on the CBFM Forum (6th September 2019)</li> <li>FishSMARD article (25th May 2019)</li> <li>Articles in the Kiribati MFMRD newsletter and MFMRD radio broadcasts Press releases</li> <li>MFMRD newsletter covered the Stakeholder meeting in 2018</li> <li>See Appendix 3 for a complete list of local/national media coverage.</li> </ul>
	2.8.4. CBFM lessons learned and best practice guidance developed and published in appropriate form for VUT, SLB, KIR	KIR - Q4 2018 SLB - Q4 2017 VUT - Q4 2018	Completed. <b>REG</b> - First cross-country workshop building a community of practice around CBFM was held in July 2018 in Tarawa. Aimed to bring project staff together to share lessons around CBFM, to strengthen relationships across country programs, share stories, and ultimately to build a peer-to-peer network or 'community of practice' of people working in or interested in CBFM. Representatives of the Kiribati and Vanuatu project teams attended, but unfortunately due to flight issues, the Solomon Islands team was unable to attend but were represented by Anna Schwarz. An outcome of the workshop was the initiation of the network "Fish SMARD" (Sustainable Management Approaches and Resource Development) which will meet annually and communicate in the interim via a Facebook group, Slack channel and email. The first FishSMARD meeting was held in May 2019 in Vanuatu and brought together 15 project and fisheries agency staff from KIR, SLB and VUT. [See <b>PRJ-20190515-WR-Fish SMARD 2019</b> ] <b>KIR</b> - The CBFM Unit provided support, input and feedback to CFD's Training Unit project to develop a teacher resource pack as a collaboration with SPC, Ministry of Education and MFAT Tobwan Waara projects. <u>https://coastfish.spc.int/publications/information-sheets/kit-for-teachers/499 (see activity 2.4.2)</u> At the international level, the CBFM project (including the Kiribati and Australia based country leaders) was showcased as a case study on the Commonwealth Blue Charter website (Sustainable Coastal Fisheries Action group co-led by Kiribati) <u>https://thecommonwealth.org/case-study/case-study-community-based-fisheries-management-kiribati-going</u>

Activity	Outputs/ milestones	Completion date	Comments
			SLB - MFMR has developed community training modules on resource management with project support. The National Symposium (held in 2017) report was finalised, disseminated in hard copy and published online (see Boso et al. 2018). Gender guidance on CBRM was included in Pathways Gender Agenda (Kleiber et al. 2019)
			<b>VUT</b> - Bislama translated information packs for communities working on CBFM were printed in collaboration with SPC and first were distributed to 12 communities in Feb and May 2018. Seafood handling guides and CBFM brochures translated into French and Bislama in Q4 2018. The were disseminated during activities in 2019. See Neihapi et al. 2019 [ <b>VUT-2019-TO-Neihapi</b> ] which details alternative modes of dissemination and community awareness using theatre.
			<ul> <li>Neihapi, P., A. Sokach, D. Koran, J. Devine, J. Dorras, N. Andrew and D. J. Steenbergen (2019).</li> <li>"'Twisting and spinning' theatre into coastal fisheries management: Informing and engaging communities to address challenges." Women in Fisheries Information Bulletin 30: 24-29. [VUT-2019-TO-Neihapi]</li> </ul>
2.9 Conduct	2.9.2. National workshops to collate lessons, with partners, on CBFM spread	KIR - Q4 2018	Completed.
collaborative research (with			KIR – Information was shared through the CBFM Taskforce (see KIR-20181002-WR-CBRM Taskforce
SPC, FAO, LMMA) to		SLB - Q1 2019	the Commonwealth Blue Charter. The CBFM team regularly updates SPC and national partners on the status and location of community-based fisheries initiatives.
ceiling and		VUT - Q4 2018	Visualisation of CBFM activities is scheduled to be included in a map-based platform by MFMRD in 2022. Two CBFM officers will continue to provide input to MFMRD on this activity during FIS/2020/172.
accelerants of CBFM spread			SLB – A workshop was co-hosted with Conservation International on CBFM spread in March 2019 [SLB-20190304-WR-Scaling Workshop]. After the workshop MFMR and WorldFish collaborated to further develop the national CBRM strategy, wherein scaling is a major feature [for example, SLB-20190722-WR-Scaling CBRM Writeshop]. The strategy was recently launched.
			<b>VUT</b> - In February 2018 a site selection and CBFM scaling workshop was run with VFD staff to determine strategies for scaling CBFM and appropriate sites for expansion. This produced a scaling strategy which will guide scaling in VUT. A Scaling ToC workshop was completed in Q4 2018 (see <b>VUT-20171109-WR-CFS ToC 01</b> ) and Q1 2019 (see <b>VUT-20180228-WR-site selection</b> ), and collaborative scaling plan completed at national scale.
			REG – see SPC subregional CBFM scaling workshop outputs in 2.8.2.
	2.9.3. Paper on blue sky thinking around scaling CBAM in the Pacific, integrating review of '10 years on: the status and potential of Locally		Not completed.

Activity	Outputs/ milestones	Completion date	Comments
	Managed marine areas in the Pacific – revisiting Govan et al. 2009'		
	2.9.4. Paper on 'Ceiling of spread: the geographic and institutional limits of community-based approaches to fisheries management'	Q1 2019	Completed as Andrew et al. (2019). Coastal proximity of populations in 22 Pacific Island Countries and Territories. <i>PLoS ONE</i> . <b>[PRJ-2019-PP-Andrew]</b> . This work will be extended in FIS/2022/121 to estimate the numbers and locations of coastal communities in SLB, VUT, and KIR.
	2.9.5. Journal article on predictors of drivers of local-level management of inshore fisheries; a national assessment across villages in SLB	Q1 2019	Completed. Brewer et al. (2021). Large-sample-size assessment of socioeconomic predictors of community-level resource management occurrence. Conservation Biology. [SLB-2021-PP-Brewer]
	2.9.6 Journal article on scaling efficacy in Pacific communities		Partially completed. Survey data collected in 273 communities across the three focal countries to measure CBFM uptake in coastal communities. Paper(s) and provincial/island level CBFM status factsheets using the scaling survey results will be published under FIS/2020/172.
2.10. Advance knowledge of CBFM spread to improve scaling up strategies within the context of Pacific regionalism	2.10.1. Paper on scaling non- technical innovations (CBFM) with reference to PROMIS framework and other policy translation framings	Q2 2019	<ul> <li>Completed. Published as:</li> <li>Lawless, S., A. Song, P. J. Cohen, A. et al. (2020). Rights, equity and justice: A diagnostic for social meta-norm diffusion in environmental governance. Earth System Governance. https://doi.org/10.1016/j.esg.2020.100052 [PRJ-2020-PP-Lawless] (see also 4.6.2)</li> <li>Steenbergen, D.J., Song, A.M. &amp; Andrew, N. (2021) A theory of scaling for community-based fisheries management. <u>Ambio</u>. <u>https://doi.org/10.1007/s13280-021-01563-5</u> [PRJ-2021-PP-Steenbergen]</li> </ul>
	2.10.2. Conference panel and paper on 'Status, challenges and potential of	Q4 2018	Completed. Panel session at the World Small-scale Fisheries Congress. See CGIAR Research Program on Fish blog post (23/11/18) <u>https://fish.cgiar.org/news-and-updates/news/senior-pacific-officials-commit-promoting-small-scale-fisheries-national</u> Song et al. (2019). The Pacific ways. SAMUDRA report, 8. <b>[PRJ-2019-TO-Song]</b>

Activity	Outputs/ milestones	Completion date	Comments
	multi-scale coastal fisheries policy implementation in the Pacific'		Song et al. (2019). Multi-scale policy diffusion and translation in Pacific Island coastal fisheries. Ocean and Coastal Management 168: 139-149. <b>[PRJ-2019-PP-Song]</b>
	2.10.3. Paper on "Political geography on IUU coastal fishing by "Blue boats"; governability through regionalism"	Q2 2019	Completed. Published as: Song et al. (2019) 'Blue boats' and 'reef robbers': a new maritime security threat for the Asia-Pacific? Asia Pacific Viewpoint. <b>[PRJ-2019-PP-Song 2]</b>
	2.10.4. Paper / 'working paper' / 'glossy' on options for scaling: presenting a research framework and the conceptual thinking around scaling CBFM in the Pacific'	Q2 2021	<ul> <li>Completed.</li> <li>SPC, LMMA and UOW (2021) Scaling-up community-based fisheries management in the Pacific region. [Information Paper]. Noumea, New Caledonia: Pacific Community. 4p. [PRJ-2021-TO-SPC] Document prepared by Steenbergen, et al. Online <u>here</u></li> <li>Lalavanua, W. (2021) Draft Pacific Framework for Action on Scaling-up Community-based Fisheries Management. Working Paper 4 for the 13<sup>th</sup> SPC Heads of Fisheries Meeting, 1-4 June 2021. [PRJ-2021-TO-Lalavanua] Online <u>here</u>.</li> <li>SPC (2021) Pacific Framework for Action on Scaling up Community-based Fisheries Management: 2021–2025. Noumea, New Caledonia: Pacific Community. 20 p. [PRJ-2021-TO-SPC 2] Online at: <u>https://www.spc.int/DigitalLibrary/Doc/FAME/Reports/SPC_21_Framework_for_action.html</u></li> <li>Lalavanua, W., and Smith, A. (2021) A regional commitment supporting communities in sustaining coastal fisheries in the Pacific. SPC Fisheries Newsletter #165, May – August 2021, pp.18-19. [PRJ-2021-TO-Lalavanua 3]</li> </ul>
	2.10.7. Paper on interdisciplinarity in agriculture research for development, using CBFM as a case study	Q1 2019	Completed as Andrew and Fleming. (2019). "Reflections on interdisciplinarity in agricultural research for development." Agricultural Science 30/31(2/1): 82-91. <b>[PRJ-2019-PP-Andrew 2]</b> Karcher, D.B., et al. (2022) Lessons from bright-spots for advancing knowledge exchange at the interface of marine science and policy. Journal of Environmental Management, 314, 114994. <u>https://doi.org/10.1016/j.jenvman.2022.114994</u> <b>[PRJ-2022-PP-Karcher]</b>
Activity	Outputs/ milestones	Completion date	Comments
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3.7. Establish national programme for FAD monitoring in VUT using ICT-based network of community monitors (in collaboration with SPC)	3.7.1. Network developed and monitoring ongoing	Q3 2018	Completed. A network of community monitors was established under ACIAR FIS/2015/031 and was expanded and continued under an ADB funded project. The establishment of a TAILS monitoring network at 18 landings sites was completed [joint project with SPC, VFD, WorldFish and Conservation International with ADB funding] and ongoing monitoring is maintained by VFD through their data program in the TAILS+ system as coordinated by the research division in collaboration with SPC.
3.8. Sharing lessons on best practice for nearshore FAD	3.8.1. Regional workshop on nearshore FAD fish catch monitoring	Q3 2019	Completed. WorldFish and SPC hosted a workshop with regional experts to develop the regional guidelines for monitoring based on experiences. The workshop was held at SPC Noumea on 14-16 May 2019 and a manual was subsequently developed. See report <b>PRJ-20190514-WR-FAD Think Tank</b> and SPC Fisheries Newsletter article <b>PRJ-2019-TO-Kinch</b>
design, implementation and monitoring	3.8.2. Regional nearshore FAD technical manual	Q3 2019	Completed. Published as Sokimi W., Blanc M., Colas B., et al. (2020). Manual on anchored fish aggregating devices (FADs): an update on FAD gear technology, designs and deployment methods for the Pacific Island region. Noumea, New Caledonia: Pacific Community. 56 p. [PRJ-2020-TO-Sokimi]
3.9. Analyze HIES data on income and expenditure to characterize fishing participation, income and livelihoods in Pacific coastal communities	3.9.1. Livelihood diversity baselines established and reported in relation to nutrition, gender and economic development for 12 Pacific countries with standardised HIES design		Currently in preparation for submission Q3 2022. Roscher, M., Eriksson, H., Sharp, M., et al. (in prep). Characteristics of coastal fish-based livelihoods in Pacific Island Countries and Territories.
3.11. Assess impact of loss of tourism on fishery sustainability and food security in	3.11.1. Brief or options paper published on impact of loss of cruise ship tourism on food security, economic development and	Q3 2021	<ul> <li>Completed. Conference presentation: Neihapi, P. and Steenbergen, D.J. (2021) A coastal community's response to tourism collapse in Vanuatu, Royal Geographic Society 2021 Annual Conference, London England, 31<sup>st</sup> August - 3<sup>rd</sup> September 2021.</li> <li>Movono et al. (2021) The agency of local people in the Pacific: indigenous responses to the global pandemic. DevPolicy Blog, 25<sup>th</sup> November 2021. <u>https://devpolicy.org/pacific-indigenous-responses-to-the-global-pandemic-20211125/</u> [VUT-2021-TO-Movono]</li> </ul>

### Objective 3: Improve the opportunities, viability and performance of livelihoods in support of CBFM initiatives

Activity	Outputs/ milestones	Completion date	Comments
coastal communities	sustainability in VUT		
3.12. Develop and refine a standardized livelihood diagnostic tool for use in communities	3.12.1. Refined livelihood diagnosis tool published as part of a manual on enhancing supplementary livelihoods	Q2 2019	Completed. The livelihood assessment guide was published as Govan et al. (2019) A new idea for coastal fisheries: asking the right questions to enhance coastal livelihoods. Noumea, New Caledonia. 23 pp. <b>[PRJ-2019-TO-Govan]</b> Pacific Community (2020b) A new angle on coastal fisheries development in the Pacific. Noumea, New Caledonia: SPC Policy Brief. <u>http://www.spc.int/DigitalLibrary/Doc/FAME/Brochures/Anon_20_New_Idea_Angle_web.pdf</u> <b>[PRJ-2020-TO-SPC]</b>
3.13. In-country team networking and exchange of experiences with livelihood initiatives	3.13.1. Workshop and networking to facilitate transfer and co-develop applied skills in SLB, KIR and VUT	Q4 2017	Completed. A training event "Enhancing fishers' livelihoods in the Pacific" was held in Port Vila (November 2017) with participants from Solomon Islands, Kiribati, Vanuatu, Timor Leste. It was co-funded by Swedbio project.
3.15. Complete participatory livelihood diagnosis and prioritization in two CBFM communities in SLB and VUT	3.15.1. Outcomes from participatory livelihood diagnoses published	2020	<ul> <li>Completed. Following the mid-term review this area of work was reduced and focused on a set of publications to support the integration of the policy and practice spaces of CBFM and livelihoods. Published as:</li> <li>Eriksson, H., R. Sulu, J. L. Blythe, J. Van der Ploeg and Andrew, N. (2020) Intangible links between household livelihoods and food security in Solomon Islands: implications for rural development. Ecology and Society 25 (4):18. https://doi.org/10.5751/ES-11709-250418 [SLB-2020-PP-Eriksson]</li> <li>Eriksson, H., Blythe, J.L., Österblom, H. and Henrik, P. (2021) Beyond social-ecological traps: fostering transformations towards sustainability. Ecology and Society 26(1):13. https://doi.org/10.5751/ES-12198-260113. [PRJ-2021-PP-Eriksson]</li> <li>Roscher, M., Eriksson, H., Harohau, N., Mauli, S., Kaltavara, J., Boonstra, W., van der Ploeg, J. (2022) Unpacking pathways to diversified livelihoods from projects in Pacific Island coastal fisheries. Ambio. Mar 2022. https://doi.org/10.1007/s13280-022-01727-x [PRJ-2022-PP-Roscher]</li> <li>Roscher, M., Allison, E., Mills, D., Eriksson, H., Hellebrandt, D., Andrew, N. (2022) Sustainable development outcomes of livelihood diversification in small-scale fisheries. Fish and Fisheries. https://doi.org/10.1111/faf.12662 [PRJ-2022-PP-Roscher 2]</li> <li>Eriksson, H., Steenbergen, H., Batalofo M., et al. (in prep). Integrating community driven development and community-based resource management for a sustainable blue economy in Western Melanesia.</li> <li>VUT - Livelihood diagnoses were carried out in 6 sites where livelihood improvement interventions were planned (see, for example, VUT-20180907-WR-Futuna livelihood diagnosis). These were carried out with a gender</li> </ul>

Activity	Outputs/ milestones	Completion date	Comments
			Following revisions after the mid-term review, livelihood activities in VUT were prioritised down to one site/intervention: the fish distribution site in Sara. The project facilitated the establishment of a fish distribution market through the local cooperative, to address lack of fish consumption in inland communities. This was the result of a livelihood diagnosis process carried out 2018. This process identified a need for more fish consumption in Sara given that all fish caught on the coast are normally transferred straight to Luganville for sales. In addition this was seen as an opportunity to reenergise an existing cooperative group which over time had lost drive and members. In collaboration with the Department of Cooperatives a training curriculum was developed that included a fish component to coop structures. A training was completed for the Sara fish market cooperative (solar freezer maintenance and record keeping, good governance) in Q3 2019 (see <b>VUT-20190705-WR-Sara Good Governance</b> ). Following this, Sara was granted two start-up funds to get going (5000 Vt from Pathways and 20,000 Vt from the Cooperative department), and were topped with small donations from local leaders. The cooperative built the fish market and bought a scale and dishes. Since its establishment the cooperative has consistently bought fish from neighbouring coastal fishing villages. Monitoring of sales is maintained through a national freezer logging program that traces fish coming in and going out, and this has shown consistent flow of fish into Sara. Furthermore, the cooperative has registered members in the community as shareholders, and in the first weeks following the set up the member base grew to 33 members (from a previous stagnation at 20). Dividends are paid out at the end of each year, where shares are based on how much each member spends at the cooperation in April 2020, the cooperative team took proactive action in removing and then reinstalling solar panels and freezers to protect it from the storm. As such no dama
3.16 Invest in livelihood options prioritized under 3.15 to test their improvement with CBFM communities and	3.16.1. Develop and support a fishing business with village-residing youth in Langalanga, through the youth group of a CBO called OKRONUS.	Q4 2018	Completed. In partnership with SPC Youth At Work, the participants of the fishing business in Langalanga were organised and received support. The work was led by Meshach Sukulu as part of a time-bound youth focused activity in partnership with SPC. None of the youth are currently active in continuing with fishing business, as COVID impacted on plans and rural practices and economies.
SLB	3.16.2. Support and evaluate a prioritised livelihood activity with West Are'are Rokotanikeni Women Association	Q2 2018	Completed. Developed a package of work specifically around freezing fish as this had been a prioritised activity in diagnosis workshop. Freezers were deployed to three pilot groups (see <b>SLB-20171023-FTR-WARA</b> Solar Freezer delivery), an additional 6 were delivered to new sites in June 2018 (see <b>SLB-20180606-FTR-WARA freezer</b> handover), and another 3 were delivered in Feb/Mar 2019 (see <b>SLB-20190223-West Are'are</b> ). Nine freezer committees have been formed. In total the committees have earned US\$6,200, 711 unique customers have used the freezers and nearly 4 tonnes of fish has been frozen. Activities were co-funded by Swedbio and have been included in the new project FIS/2019/124. Evaluation forthcoming and will be reported on in full in that project.

Activity	Outputs/ milestones	Completion date	Comments
			Batalofo, M., et al. (submitted ms). What can the experiences of rural women in Melanesia teach us about developing community economies with innovation in aquatic food systems? <u>Asia-Pacific Viewpoint</u> [SLB-2022-TO-Batalofo]
3.18 Summarise regional and national lessons in livelihood diversity and diversification to	3.18.1. SPC report and translation output	Q3 2020	Completed. The publication of the "New Idea" guide together with regional partners was a significant milestone publication for this project objective. The "New Idea" toolkit provides guiding questions to critically evaluate livelihood innovations. The tool helps extension officers and community organisers to guide discussions about livelihood ideas. The guide is named "A New Idea" to connect with "A New Song" policy and makes explicit reference to outcome #8 on livelihoods. The MFMR Scaling strategy in Solomon Islands incorporates this diagnostic guide. <b>[PRJ-2019-TO-Govan]</b>
guide investments			"A new angle on coastal fisheries development" <b>[PRJ-2020-TO-SPC]</b> is a policy brief-style document that summarizes key messages for the integration of development planning with the policies and strategies of CBFM. Importantly, it re-frames the interrelationship with livelihoods and CBFM – it places CBFM as one of 10 guiding principles of how to enhance coastal livelihoods. The document was developed across the range of partners in the project under the custodianship of SPC and is available freely from SPC's repository. It has been printed and shared at events in New Caledonia, Solomon Islands and Timor-Leste.
3.19 VFD activities within national disaster management program	3.19.1. Provision of funding to VFD for immediate response to Ambae evacuation and fishing resources delivered to communities	Q4 2018	Completed. Funding approved through PRC in September 2018 with \$15,000 transferred to VFD. FAD deployed and fishing gear provided to displaced Ambae communities and residents in Maewo in Q4 2018.
	3.19.2. Ambae evacuation scoping mission completed	Q4 2018	Completed. The first VFD assessment by CBFM team was completed in September 2018 (see <b>VUT-20180913-FTR-Maewo assessment</b> ), the second assessment team in late October 2018 deployed FADs for fish supply (see <b>VUT-20181024-FTR-Ambae disaster response</b> ), and the third response trip by VFD staff in November 2018 distributed gear and monitored FAD function. See also outputs: VFD (2019b) Vanuatu Fisheries Department Plan to Assist Ambae volcano evacuees on Maewo and Santo: 7pp. <b>[VUT-2019-OO-VFD 2]</b> and VFD (2019a) Needs assessment for Ambae volcano evacuees on Maewo and Santo: 4pp. <b>[VUT-2019-OO-VFD 1]</b>
	3.19.3. SOP developed within Coastal Fisheries Strategy for fisheries post- disaster response		Partially completed. A draft SOP has been developed, but the workshop to approve and update the draft was put on hold because of travel restrictions. This workshop will be between VFD and NDMO, and is necessary to fully draft and finalise this output. VFD has leveraged new funding initiatives through a WB coastal fisheries program (starting 2022) to support the final stages of completion. The final consultation and completion of the SOP is written into VFD's 2022 workplan and is expected to be completed in 2022 with ongoing support by Pathways-2 CBFM team under FIS/2020/172 [VUT-2020-OO-VFD draft]
	3.19.4. Paper on 'Disaster	Q3 2021	A paper describing community CBFM responses and associated support was developed as part of a collection of impact papers from the Project in Gereva et al. 2021. Koran (2021) describes how the project integrated a disaster

Activity	Outputs/ milestones	Completion date	Comments
	management in community-based fisheries'	ent in /-based	relief component that enabled the VFD-CBFM team to re-focus implementation and reallocate resources when needed. Two examples of CBFM related disaster response are illustrated; (i) Lopenpen volcano eruption on Ambae Island and (ii) Tropical Cyclone Harold and COVID-19. Movono et al. (2021) also examines disaster impacts and community-based responses to those, particularly in the context of collapse of tourism income for communities.
			based fisheries management development in Vanuatu. SPC Fisheries Newsletter #165, May-August 2021, pp. 55-67. <b>[VUT-2021-TO-Gereva]</b>
			Movono, A. et al. (2021) The agency of local people in the Pacific: indigenous responses to the global pandemic. DevPolicy Blog, 25 <sup>th</sup> November 2021. <u>https://devpolicy.org/pacific-indigenous-responses-to-the-global-pandemic-20211125/</u> <b>[VUT-2021-TO-Movono]</b>
3.20 Activities in support of	3.20.1 Flexible response fund: outputs TBD, to include for example gendered needs assessments, provision of fishing gear, FAD repair, solar freezer maintenance, and VUT only, aquaculture activities such as fingerling supply support	ele Q3 2020 nd: , to xample eds s, iishing ppair, e, and th as pply	Completed.
support of national agencies COVID-19 and TC Harold (in VUT) response, under guidance of national agencies			<b>KIR</b> - KIR did not draw on the project response fund. <b>SLB</b> - SLB did not draw on the project response fund, all COVID-19 activities were implemented under existing budgets. See SLB reports in Activity 1.3.8. Additionally, Ontong Java prioritised as most vulnerable and the project engaged with MFMR. Consultations were held during 2021 with constituents from Ontong Java residing in Honiara: <u>https://www.fisheries.gov.sb/news/item/17-mfmr-and-world-fish-organised-joint-meeting-with-moi</u> . Later during 2021, an MFMR delegation visited the two major settlements at Ontong Java to progress the discussions from the initial consultation. This work continues as a focus for MFMR and its partners and is geared strongly towards supporting with novel approaches towards improved value-capture from sea cucumbers for communities practicing CBFM.
			<b>VUT</b> - in supporting VFD's disaster relief efforts following TC Harold and COVID-19 state of emergency, the project 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 project supported a request from VFD to contribute 10 of the 40 solar freezers required to equip all Area Councils across Vanuatu with fish storage facilities, following a National Plan to maintain availability of fish protein to the people of Vanuatu during the COVID-19 state of emergency period. The 10 solar freezers were deployed to project sites and nearby communities along with solar freezer log sheets to monitor incoming and outgoing fish. See Koran article "Supporting disaster response" in Gereva et al. (2021) Reflecting on four years of community-based fisheries management development in Vanuatu. SPC Fisheries Newsletter #165, May-August 2021, pp. 55-67. <b>[VUT-2021-TO-Gereva]</b>

Activity	Outputs/ milestones	Completion date	Comments
4.1. In collaboration with SPC, assess gender capacity needs of national and provincial government and NGOs	4.1.1. Short report on 'Baseline assessment of gender capacity needs of fisheries agencies in SLB and VUT'	SLB - 2018 VUT – 2020	<ul> <li>KIR – Baseline assessment dropped following COVID-19.</li> <li>SLB - Baseline completed and led by SPC/WorldFish 2018 - see Boso, D. et al. (2018). Gender analysis of the fisheries sector: Solomon Islands. Noumea, New Caledonia, Pacific Community. [SLB-2018-TO-Boso 1]</li> <li>VUT - Baseline assessment completed by SPC under an MFAT project. An analogous study in 2019 on gender representation in Fisheries Institutions in Vanuatu (Mangubai and Lawless), complemented the SPC baseline. It established groundwork for collaboration with Pathways that led to the workshop on gender integration in fisheries held in Q1 2020 (see 4.2.2).</li> </ul>
4.2. Train fisheries staff on gender- accommodating and transformative approaches to fisheries management	4.2.2. Fisheries agency staff have received training (via workshops, counterpart staff arrangements, in- house presentations/discu ssion) to support fulfilment of Outcome 7 of the New Song	Q4 2018	<ul> <li>Completed.</li> <li>REG - A gender training was completed for five SPC/Fisheries project staff. Developed two outputs: a gender integration brief and translation output:</li> <li>Kleiber et al. (2019). Gender-inclusive facilitation for community-based resource management. An addendum to "Community-based marine resource management in Solomon Islands: A facilitator's guide" and other guides for CBRM. Penang, Malaysia: CGIAR Research Program on Fish Agri-Food Systems. Program Brief: FISH-2019-08 [PRJ-2019-TO-Kleiber 3]</li> <li>Kleiber et al. (2019). Integrating gender in Pacific coastal fisheries research: The Pathways project. Women in Fisheries Information Bulletin 29: 11-19. [PRJ-2019-TO-Kleiber 2]</li> <li>KIR - Gender training is supported by Director Coastal Fisheries Division and was planned for 2020 but was not able to take place due to COVID-19 travel restrictions. It will take place during FIS/2020/172.</li> <li>SLB - MFMR 'Gender 101' training was held in October 2019.</li> <li>VUT - 'Gender 101' training was held in collaboration with VFD in February 2020.</li> <li>Gomese, C. et al. (2020) Building capacity for gender work in fisheries and aquaculture: examples from the Pacific. SPC Women in Fisheries Information Bulletin #32, pp. 49-53. [PRJ-2020-TO-Gomese 2]</li> <li>Also Ephraim article "Developing CBFM capacity in fisheries agencies" in Gereva et al. (2021) Reflecting on four years of community-based fisheries management development in Vanuatu. SPC Fisheries Newsletter #165, May-August 2021, pp. 55-67. [VUT-2021-TO-Goreva]</li> </ul>

### Objective 4: Increase social and gender equity in coastal fisheries governance, utilization and benefit distribution

Activity	Outputs/ milestones	Completion date	Comments
	4.2.3. Information materials relating to gender and fisheries disseminated through regional information and communication channels	Q2 2019	Completed.
			Gomese, C., and Boso, D. (2019). Innovate for change, our fisheries future: A women in fisheries panel on International Women's Day in Solomon Islands. Women in Fisheries Information Bulletin #30, 47-50. <b>[SLB-2019-TO-Gomese]</b>
			Gomese, C. et al. (2020), Capturing the value of fisheries using photovoice SPC Women in Fisheries Information Bulletin #31, pp. 36-39. [ <b>SLB-2020-TO-Gomese</b> ]
			Delisle A., Mangubhai S. and Kleiber D. 2021. Module 6: Community engagement. In: Barclay K., Mangubhai S., Leduc B., et al. (eds). Pacific handbook for gender and social inclusion in small-scale fisheries and aquaculture. Second edition. Noumea, New Caledonia: Pacific Community. 26 pp. <b>[PRJ-2021-TO-Delisle]</b>
			WorldFish has also promoted the gender work through media such as YouTube, see Facilitating Inclusive Community-Based Management of Coastal Fisheries
			https://www.youtube.com/watch?v=VtjFRdem3tE&utm_source=E-Alert&utm_campaign=e792ec3b1b- EMAIL_CAMPAIGN_2018_05_21_COPY_03&utm_medium=email&utm_term=0_0a4d9ec4ca-e792ec3b1b- 87606913
			Danika Kleiber interviewed and provided content for blog <u>https://meam.openchannels.org/news/skimmer-marine-ecosystems-and-management/skimmer-missing-half-story-how-considering-gender-can</u>
			See also profiles of two partner agency staff:
			Anonymous. (2019a). Women in fisheries profiles - Rosalie Masu. Women in Fisheries Information Bulletin #30, 30, 43. [SLB-2019-OO-Anon]
			Anonymous. (2019b). Women in fisheries profiles - Tooreka Teemari. SPC Women in Fisheries Information Bulletin #30, 45. <b>[KIR-2019-OO-Anon]</b>
	4.2.4. Impact	2.4. Impact Q4 2018 seessment of ender capacity uilding efforts	Completed.
	assessment of		<b>REG</b> - Training evaluation completed in 2018 for Gender training provided in Wollongong.
	gender capacity building efforts		SLB – MFMR pre- and post-training evaluation completed (October 2019). A 6-month follow-up survey was administered to evaluate whether new knowledge has been used or useful to participants.
			Post training evaluation published as: Gomese, C. et al. (2020) Building capacity for gender work in fisheries and aquaculture: examples from the Pacific. SPC Women in Fisheries Information Bulletin #32, pp. 49-53. <b>[PRJ-2020-TO-Gomese 2]</b>
			<b>VUT</b> – VFD post-training evaluation was completed in Q1 2020. 6-month post-training survey was conducted in Q3-Q4 2020. Results formed part of an outcome story published as Ephraim article "Developing CBFM capacity in fisheries agencies" in Gereva et al. (2021) Reflecting on four years of community-based fisheries management development in Vanuatu. SPC Fisheries Newsletter #165, May-August 2021, pp. 55-67. <b>[VUT-2021-TO-Gereva]</b>

Activity	Outputs/ milestones	Completion date	Comments
4.3. Conduct national-level 'gender in environmental management and development' forum	4.3.2. Forum held between national agencies and local civil society organisations on how to support outcome 7 of the New Song in CBFM context	KIR – Q1 2021 SLB - Q1 2019 VUT - Q1 2020	<ul> <li>Completed.</li> <li>KIR - A special event showcasing Women in Fisheries organised by the North Tarawa women association and supported by the CBFM project team was held on Women's Day 2021 and was attended by women and men representatives from North Tarawa, representatives from CFD and MWYSSA. The event was then followed by a special celebration organised by a newly formed women association in Tabonibara, North Tarawa to highlight the roles that women can play in supporting and monitoring the implementation of local fisheries rules (see output 4.3.3).</li> <li>SLB - Completed. Project staff organised a panel for International Women's Day with leaders form environment, fisheries and development sectors.</li> <li>VUT - A panel of local gender experts was held during the Vanuatu gender training (Q1 2020) including representatives from UN Women, OXFAM, CARE and the Department of Women's Affairs. The panel shared their approaches to gender integration in their work programs and the tools they used. Lessons were shared with VFD to help them better implement their roadmap for coastal fisheries.</li> </ul>
	4.3.3. Lessons learned /outcomes discussion paper published as paper and/or media	Q1 2019	Completed. KIR – Nikiari, B., Uriam, T., James, L., et al. (2021) Women of Tabonibara lead fisheries management into the future. SPC Women in Fisheries Information Bulletin #34, pp. 27-31. [KIR-2021-TO-Nikiari] SLB - See media for SLB International Women's Day 2019 panel and publication 'Gomese, C., and Boso, D. (2019). Innovate for change, our fisheries future: A women in fisheries panel on International Women's Day in Solomon Islands. [SLB-2019-TO-Gomese] (See also output 2.8.2) VUT – see Ephraim article "Developing CBFM capacity in fisheries agencies" in Gereva et al. (2021) Reflecting on four years of community-based fisheries management development in Vanuatu. SPC Fisheries Newsletter #165, May-August 2021, pp. 55-67. [VUT-2021-TO-Gereva]
4.4. Analyse regional and national-level gender commitments in environment and development policies	4.4.1. Paper(s) building understanding of gender within environment, development and/or small-scale fisheries in the Pacific	Q1 2020	<ul> <li>Completed. Published as:</li> <li>Lawless, S., Song, A., Cohen, P., Morrison, T. (2021) Gender equality is diluted in commitments made to small-scale fisheries. World Development, 140, 105348 <a href="https://doi.org/10.1016/j.worlddev.2020.105348">https://doi.org/10.1016/j.worlddev.2020.105348</a> [PRJ-2021-PP-Lawless]</li> <li>Lawless, S., Cohen, P., McDougall, C., et al. (2022) Tinker, tailor or transform: Gender equality amidst social-ecological change. Global Environmental Change 72: 102434 <a href="https://doi.org/10.1016/j.gloenvcha.2021.102434">https://doi.org/10.1016/j.gloenvcha.2021.102434</a> [PRJ-2022-PP-Lawless]</li> <li>Lawless, S., Cohen, P., Mangubhai, et al. (2021) Commitments to gender equality have surged, but how deep do they run? A look at Pacific small-scale fisheries. SPC Women in Fisheries Bulletin #34, pp. 9-15. [PRJ-2021-TO-Lawless]</li> <li>Song, A.M. and Soliman, A. (2019) Situating human rights in the context of fishing rights – Contributions and contradictions. Marine Policy <a href="https://doi.org/10.1016/j.marpol.2019.02.017">https://doi.org/10.1016/j.marpol.2019.02.017</a> [PRJ-2019-PP-Song 3]</li> </ul>

Activity	Outputs/ milestones	Completion date	Comments
4.5. Support/co- host a women in SSF and CBFM	4.5.2. Multi- stakeholder workshop co-hosted	Q1 2020	Completed. Delvene Boso presented experiences and findings from assessment of gender in fisheries at the Regional panel discussion (with SPC) on gender within coastal fisheries. The workshops around the gender handbook modules were attended by Pathways team with SPC and members
regional forum	with SPC and appropriate partners		of PICs national fisheries agencies. Representation from some countries was cancelled due to travel restrictions.
	4.5.3 Workshop report (with recommendations)	Q1 2021	Completed. The soft launch of the 2nd edition of the Pacific Handbook was held virtually on 8 <sup>th</sup> March 2021. https://www.facebook.com/spc.int/videos/the-second-edition-of-the-pacific-handbook-for-gender-equity-and-social- inclusio/2907304356209451/
in SPC women in fisheries bulletin		See publication Makhoul N. (2020). New chapters for the Pacific Handbook on gender equity and social inclusion in coastal fisheries and aquaculture. SPC Women in Fisheries Information Bulletin #32: 46-48. [PRJ-2021-TO-Makhoul]	
	4.5.5 Complete	Q1 2019	Completed as:
	for gender equity	render equity social inclusion pastal fisheries aquaculture publish as SPC	aquaculture. Noumea, New Caledonia, Pacific Community. [PRJ-2019-TO-Barclay]
	in coastal fisheries and aquaculture and publish as SPC		Delisle A. et al. (2021). Module 6: Community engagement. In: Barclay K., Mangubhai S., Leduc B., Donato-Hunt C., Makhoul N., Kinch J. and Kalsuak J. (eds). Pacific handbook for gender and social inclusion in small-scale fisheries and aquaculture. Second edition. Noumea, New Caledonia: Pacific Community. 26 pp. [PRJ-2021-TO-Delisle]
			Mangubhai, S. et al. (2021). Module 3: Monitoring evaluation and learning. In, Barclay K., Mangubhai S., et al. (eds). Pacific handbook for gender equity and social inclusion in coastal fisheries and aquaculture. Second edition. Noumea, New Caledonia: Pacific Community. 11 pp. <b>[PRJ-2019-TO-Mangubhai]</b>
4.6. Undertake	4.6. Undertake 4.6.2 Increased	Q4 2019	Completed.
baseline survey unde	underlying gender		<b>SLB</b> - Baseline data on inclusivity in CBRM processes collected in 2019 in 11 communities in Malaita and Western Province.
CBFM communities in SLB	literature review, primary data collection and expert elicitation		Method published as: Johnson A.F., et al. (2021) Assessing inclusion in community-based resource management: A framework and methodology. Penang, Malaysia: CGIAR Research Program on Fish Agri-Food Systems. Manual: FISH-2021-21. [PRJ-2021-TO-Johnson]

Activity	Outputs/ milestones	Completion date	Comments
	4.6.4. Paper on 'Accounting for gender and cultural norms associated within SSF and agriculture initiatives; case studies from the Pacific'	Q4 2019	<ul> <li>Completed. Published as:</li> <li>Lawless S. et al. (2019). Gender norms and relations: implications for agency in coastal livelihoods. Maritime Studies. 18, 347-358. <u>https://doi.org/10.1007/s40152-019-00147-0</u> [PRJ-2019-PP-Lawless].</li> <li>Lawless S. et al. (2020). Beyond gender-blind livelihoods: considerations for coastal livelihood initiatives' SPC Women in Fisheries Information Bulletin #31 [SLB-2020-TO-Lawless].</li> <li>Another publication is in preparation:</li> <li>Gomese, C. and Ride, A. (in prep). Learning from positive deviance in gender and fisheries in Solomon Islands.</li> </ul>
4.7. Collect data on gendered fishing patterns in at least one community in each of KIR, VUT, and SLB	4.7.1. Participatory action research completed with male, female and youth co- researchers, fishery monitoring	Q2 2019	Completed. KIR AND VUT - Gendered fishing patterns collected over four rounds of data collection in 5 communities in 2019- 2021 during Pathways CBFM catch monitoring. Tioti, R., Li, O., Delisle, A. (2021) Seagrass, culture, women and hard decisions: A case study from Kiribati. SPC Women in Fisheries Information Bulletin #33, pp. 12-15. [KIR-2021-TO-Tioti] SLB - Data was collected in 2018 on market and fishing activities in Malaita Province and Auki market. Sex- disaggregated CPUE data collection in Western Province finished in 2019. See SLB-20190603-FTR-Leona fish monitoring. Data collection was completed using Photovoice method to understand non-catch values and roles along the fisheries value chain. A fishery monitoring tool was developed and tested. See SLB-20190516-FTR- Santupaele Photovoice consultation, SLB-20190521-FTR-Santupaele PV training, SLB-20190528-FTR- Santupaele PV Checkup, SLB-20190531-FTR-Santupaele PV camera collection, SLB-20190709-FTR- Santupaele PV data collection, SLB-20190710-FTR-Santupaele PV validation. See also publication 'Gomese et al. (2020). Capturing the value of fisheries using photovoice. Women in Fisheries Information Bulletin #31, 36-39 [SLB-2019-TO-Gomese]
4.8. Produce gender-sensitive diagnosis informing male- and female- targeted livelihood and nutrition interventions	4.8.2. Adapted and extended livelihood diagnosis tool and nutrition diagnosis tool that are sensitive to gender and longer-term intended and unintended, socially differentiated consequences	Q2 2019	<ul> <li>Completed. The tool "Supplementary Livelihood Options for Pacific Island Communities" was further developed using expert advice, reference to gender norm benchmarking data and participatory dialogue and published as:</li> <li>Govan, H. et al. (2019). A new idea for coastal fisheries: asking the right questions to enhance coastal livelihoods. Noumea, New Caledonia. 23 pp. [PRJ-2019-TO-Govan].</li> <li>Nutrition guidelines for including in the package of tools to support communities with nutrition sensitive planning continued during the project but was not completed. The guidelines were reviewed by gender specialist at WorldFish to ensure interventions are gender accommodating. During 2022 these guidelines are being discussed with MFMR and Provincial Government officers, with the goal of piloting practices and completing a guideline tool during 2023 as part of the One CGIAR Initiative of resilient aquatic food systems. The FIS/2016/300 project will be acknowledged as appropriate.</li> </ul>

Activity	Outputs/ milestones	Completion date	Comments
	4.8.3. Paper on 'Accommodating gender in livelihood investments'	Q1 2020	Completed. At the Women's Economic Empowerment Learning Forum in Fiji, May 2019, WorldFish staff member Margaret Batalofo and President of WARA Dr Alice Pollard presented research data on the process of co- identification of livelihood enhancing activities and its diagnosis. The emphasis was placed on how to create an enabling process that is strength-based and gender sensitive, and that seeks to support WARA members to take up economic activities according to their own ambition and at their own pace. Margaret presented together with Dr Alice and this was a significant achievement on the journey that Margaret is on to be a leader in women's economic development. An important output from this work is the summary of the action research that is led by Ms Margaret Batalofo, which is being completed and will be reported on in full in FIS/2019/124: Batalofo, M., et al. (submitted ms). What can the experiences of rural women in Melanesia teach us about developing community economies with innovation in aquatic food systems? <u>Asia-Pacific Viewpoint</u> <b>[SLB- 2022-TO-Batalofo]</b>
4.9. Apply gender- sensitive/transfo rmative tools in CBFM facilitation and activities to support and strengthen alternative livelihood and nutrition opportunities in CBFM communities	4.9.1. Adjust project activities to use gender sensitive/transforma tive tools in community engagement; report in trip report	Q4 2019	<ul> <li>Completed. Gender sensitive facilitation methods were identified with teams. A format of trip reporting that accounts for the use of these tools was developed in 2019 and implemented by teams in all community-level activities.</li> <li>Kleiber et al. (2019). Gender-integrated research for development in Pacific coastal fisheries. Penang: Malaysia, CGIAR Research Program on Fish Agri-Food Systems. [PRJ-2019-TO-Kleiber 1]</li> <li>Kleiber et al. (2019). Integrating gender in Pacific coastal fisheries research: The Pathways project. Women in Fisheries Information Bulletin 29: 11-19. [PRJ-2019-TO-Kleiber 2]</li> <li>Gomese et al. (2020) Reflections on integrating gender-sensitive facilitation techniques in fieldtrip reports. SPC Women in Fisheries Information Bulletin #32, pp. 28-30. [PRJ-2020-TO-Gomese]</li> </ul>
	4.9.4. Paper on 'Beyond equitable participation in CBFM: how project activities can impact on social dynamics'		<ul> <li>Partially completed. The methodology was published as a guide for practitioners:</li> <li>Johnson et al. (2021) Assessing inclusion in community-based resource management: A framework and methodology. Penang, Malaysia: CGIAR Research Program on Fish Agri-Food Systems. Manual: FISH-2021-21. [PRJ-2021-TO-Johnson] (see also output 4.6.2)</li> <li>Kleiber, D., et al. (in prep) Community-based resource management as inclusive fisheries governance.</li> <li>Another publication resulting from the reviews of management plans (CBRM review; see output 2.3.2) is in preparation and will be completed as part of FIS/2020/172</li> <li>Ride, A., et al. (in prep). Balancing the canoe: community-based resource management and gender in Pacific coastal fisheries. Target journal: Global Environmental Change</li> </ul>

Activity	Outputs/ milestones	Completion date	Comments
4.10. In CBFM and livelihood sites, monitor gendered livelihood portfolios with food security, nutrition, income and wellbeing outcomes	4.10.1. Report on approach/model for gender integration in fisheries projects: the Pathways case	Q1 2019	Completed. Published as Kleiber et al. (2019). Integrating gender in Pacific coastal fisheries research: The Pathways project. Women in Fisheries Information Bulletin 29: 11-19. <b>[PRJ-2019-TO-Kleiber 2]</b> '.

### Objective 5: Promote food and nutrition security in the Pacific food system through improved management and use of fish

Activity	Outputs/ milestones	Completion date	Comments
5.1. Participatory diagnosis to assess the underlying determinants of malnutrition and the role of fish at selected CBFM sites in SLB and VUT	5.1.1. Diagnosis completed and used to guide a ToC for fisheries-based interventions to improve nutrition of women and young children in Melanesia		Partially completed. Fieldwork was completed in 2019 using the protocol WorldFish (2019b). Generic Nutrition Approaches and Tools for Pathways nutrition research in Solomon Islands and Vanuatu [PRJ-2019-OO- Worldfish] but not subsequently repeated and analysed. This work will be finalised as part of FIS/2022/121. SLB - Fieldwork completed in Western Province (Leona, Santepale and Alea) and Malaita (Roturea, Poporo, Houporo, Taraoia, Siuni'eke, Nariekerea, Su'uri, Maka and Tawairoi). See SLB-20190223-FTR-West Are'are. VUT - Baseline data completed in Aniwa (Ikaukau) and Peskarus in Maskelynes see VUT-20181111-FTR-Aniwa nutrition) and in Maskelynes in 2019.
	5.1.2. Paper on 'importance of fish to nutrition and dietary diversity in rural communities in SLB and VUT'	Q3 2020	Completed. Published as: Farmery et al. (2020). Aquatic Foods and Nutrition in the Pacific. <i>Nutrients</i> . 2020; 12(12):3705. <u>https://doi.org/</u> <u>10.3390/nu12123705</u> [PRJ-2020-PP-Farmery]

Activity	Outputs/ milestones	Completion date	Comments
	5.1.3. Paper on 'Poor nutrition and diets in rural SLB communities: a mixed methods approach to framing the problem and its drivers'	Q2 2019	Completed. Published as: Albert et al. (2020). Malnutrition in rural Solomon Islands communities: a mixed methods approach to framing the problem and its drivers. Journal of Maternal Child Nutrition. <b>[PRJ-2020-PP-Albert]</b> .
	5.1.4. SPC article on 'Feeding fish to infants in SLB: insights from traditional and local practices"		Not completed.
	5.1.5 Paper on 'Balancing a healthy diet: The role of consumer purchasing behaviours and preferences'		Not completed.
	5.1.6. Paper on 'Poor nutrition and diets in Vanuatu communities: a mixed methods approach to framing the problem and its drivers'		Partially completed. Baseline surveys of dietary diversity were completed Solomon Islands (West Are'are) and Vanuatu (Aniwa and Maskelyne Islands) prior to COVID-19. As part of an agreed COVID-19 response, this activity was terminated. The follow-up surveys and publication of results will be completed as part of project FIS/2018/155.

Activity	Outputs/ milestones	Completion date	Comments
5.2. Analysis of nutrition value chains of SSF in SLB, VUT and KIR	5.2.1. Translation output on 'Guidelines for a nutrition-sensitive approach to coastal fisheries management and development in the Pacific'		Not completed. This output was a follow-up output based on 5.1.6. As part of an agreed COVID-19 response, this activity was terminated.
	5.2.6. Paper on 'Dietary diversity in PICS'	Q2 2021	Completed. Outputs reported as a series of national analyses in conjunction with FIS/2018/155. An integrated regional analysis of dietary diversity will be reported as part of FIS/2022/121. Reports for SLB, VUT and KIR are reported below. Here we report: Troubat et al. (2021a) [KIR-2021-TO-Troubat]; Troubat et al. (2021b) [PRJ-2021-TO-Troubat]; Troubat et al. (2021c) [SLB-2021-TO-Troubat]; and Vanuatu National Statistics Office (2021) [VUT-2021-TO-VNSO].
5.3. Develop and implement behaviour change communication Interventions (following 5.1.2) to improve dietary diversity of women and young children at selected CBFM/livelihood sites	5.3.1. Social behaviour change communication products e.g. DVD/poster on healthy diets in local language interventions. New products in 2020 to include 'nutrition in emergencies' practical materials (e.g. information on preservation of fish during disasters).		<ul> <li>Partially completed.</li> <li>KIR – A manual co-developed with the Coastal Fisheries Division training unit and Japan OFCF project was partially completed. The manual, called <i>Fish for Life</i>, is intended as a resource for school teachers and fisheries extension officers to provide information about nutrition and the importance of fish. The work on the manual is ongoing and will be finalised as part of FIS/2020/172.</li> <li>SLB – Discussion modules were piloted for nutrition sensitive guidelines that provincial fisheries officers use in their awareness (See 4.8.2). Information materials developed in PacFish were used in community engagement activities, for example in association with the delivery of solar powered freezers in Malaita.</li> <li>VUT - The nutrition DVD [VUT-2019-IM-WorldFish] was used in communities as a behaviour change tool. The nutrition posters developed under PacFish – "First 1000 days" and "Fish for good health" - were translated into Bislama by VFD project staff [VUT-2020-IM-Worldfish and VUT-2020-IM-Worldfish 2].</li> </ul>

Activity	Outputs/ milestones	Completion date	Comments
	5.3.2. Workshops for CBFM practitioners in SLB and VUT to increase capacity to undertake nutrition- sensitive approaches and awareness in fisheries management activities (Joint MHMS awareness workshop in SLB)		Partially completed. <b>VUT</b> - Training completed for 18 participants from VFD, Agriculture, Health, Wan SmolBag, and JICA in Q2 2019 on nutrition approaches and how to collect nutrition information and use of behavioural change communication materials ( <i>The First 1000 days</i> and <i>Benefits of fish</i> posters, and the nutrition DVD).
	5.3.3. Paper on lessons learned from behaviour- based nutrition interventions for improved dietary diversity		Not completed. This activity was planned for Q4 2020 in SLB and VUT but COVID-19 meant the nutrition interventions were terminated as part of a broader COVID-19 response.
	5.3.4. SPC brief on 'social dimensions of healthy food behaviours in the context of changing Pacific food systems'		Not completed. This activity and output was a derivative of 5.3.3, which was terminated.
5.4. Analyse relationships between livelihoods human health	5.4.1. FAO 'box' for SOFIA to influence global SSF guideline implementation	Q2 2018	Completed. Text box in FAO (2018). The State of World Fisheries and Aquaculture 2018 - Meeting the sustainable development goals. Available at https://www.fao.org/3/i9540en/i9540en.pdf.

Activity	Outputs/ milestones	Completion date	Comments
and ecological data using HIES and secondary	5.4.3. Paper on 'Acquisition and apparent	Q4 2021	Completed. This activity has been reported as a series national and regional outputs as below. Further outputs summarizing fish acquisition and apparent consumption at national and regional scales are reported as outputs in project FIS/2018/155.
data	consumption of fish		Troubat et al. (2021c). Food consumption in Solomon Islands. Honiara, FAO and SPC. [SLB-2021-TO-Troubat]
	Countries		Andrew,N. et al. (2022) [PRJ-2022-PP-Andrew]
			Farmery, A. et al. (2020) [PRJ-2020-PP-Farmery] see also Activity 5.1.2.
			Troubat N. et al. (2021b) Food consumption Marshall Islands [PRJ-2021-TO-Troubat]
			Vanuatu National Statistics Office (2021). Food security in Vanuatu. [PRJ-2021-TO-VNSO]
			Sharp M.K., et al. (submitted ms) Acquisition and apparent consumption of fish in 12 Pacific Island Countries. Fish and Fisheries. [PRJ-2020-PP-Sharp]
	5.4.4. Integrate CBFM and related health initiatives in KIR to reduce duplication and improve outcomes	Q1 2019	Completed. Integrated health and fisheries governance initiatives under one umbrella 'Healthy Reefs, Healthy i- Kiribati'. Cabinet paper approved Q2 2019 for integrated studies at 10 communities in the Gilbert group. Activities ranging from fish and invertebrate surveys to anthropometrics were completed in 2019 prior to COVID-19 closure of international borders. Analysis is ongoing and publications are pending based on further fieldwork. Publications will be completed and under FIS/2018/155 (see also 5.4.5).
	5.4.5. Paper on 'Linkages between coral reef health and fisheries governance' in collaboration with Harvard University and SPC (KIR only)		Partially completed. The broader collaborative team have published the research protocol for the analyses but the final analysis remains incomplete. Fieldwork for this activity was delayed by COVID-19, and international travel to Kiribati remains very limited. Baselines were created pre-COVID-19 but no longitudinal data exist. Within the broader research collaboration, this output will be completed in 2022 under project FIS/2018/155 and continued under FIS/2022/121. Protocol published as: Golden et al. (2022). Study Protocol: Interactive Dynamics of Coral Reef Fisheries and the Nutrition Transition in Kiribati. <i>Front. Public Health.</i> https://doi:10.3389/fpubh.2022.890381.

Activity	Outputs/ milestones	Completion date	Comments
5.5. Regional multi- stakeholder workshops to develop and apply national scenarios for strategic planning – and foresight analysis of the changing availability, demand and use of fish	5.5.1. National workshops in SLB on nutrition and trade policy with a focus on fish	Q1 2020 and Q4 2021	Completed in revised form. These face to face regional workshops were planned for 2020-21 and were terminated as originally formulated as part of the COVID-19 reset. The workshops were replaced by (i) a virtual advisory group of regional experts, and (ii) workshops in SLB in November 2021. The advisory group included SPC, FAO, Vanuatu Ministry of Health & Ministry of Environment, Solomon Islands Ministry of Health & Ministry of Environment, Pathways team members, and regional experts from USP. The group met twice (March and June 2021), and supported a documentary policy analysis (see outputs below). Workshops were held in Honiara and Auki in November 2021, co-funded by FIS/2018/155 and FAO. Outcomes of the workshops are reported as part of a more comprehensive analysis of the Solomon Islands food system to be reported in FIS/2018/155.
5.6. Analysis of regional and national trade and nutrition policies to determine drivers of local nutrition security	5.6.1. Translation output on 'Supporting nutrition security of coastal communities through strategic policy reform'	Q3 2022	Completed. Reported as: Farmery A. et al. (2022) National assessment of the Solomon Islands food system <b>[SLB-2022-TO-Farmery]</b> Reeve, E. and Thow, A.M. (2022). Policies for healthy and sustainable food systems in the Solomon Islands. Food Systems Brief No.11. Pacific Community <b>[SLB-2022-TO-Reeve]</b> Mauli, S., et al. (submitted ms). Opportunities to strengthen fish supply chain policy to improve external food environments for nutrition in the Solomon Islands. <u>Sustainability</u> . <b>[SLB-2022-PP-Mauli]</b>
	5.6.2. Paper on intra-regional trade in fish	Q2 2022	Completed as: Thow, et al. (submitted ms). Intra-regional food trade among Pacific Island countries and territories: implications for food security and nutrition. <u>Globalization and Health</u> . [PRJ-2022-PP-Thow]
	5.6.4. Paper on 'Fish in the Pacific Food System'	Q4 2021	Completed. This work was reported as a series of regional and national analyses rather than a single output. Published as: Andrew, N. et al. (2022) <b>[PRJ-2022-PP-Andrew]</b> Farmery A. et al. (2020) <b>[PRJ-2020-PP-Farmery]</b> see also Activity 5.1.2. Troubat N. et al. (2021b) Marshall Islands <b>[PRJ-2021-TO-Troubat]</b>

Activity	Outputs/ milestones	Completion date	Comments
	5.6.5 Food security and nutrition profile of Solomon Islands and summary of likely impacts of COVID-19 on national and provincial scale, in conjunction with ACIAR project FIS/2018/155	Q1 2021	<ul> <li>Completed. Published as:</li> <li>Troubat et al. (2021). Food consumption in Solomon Islands – Based on the analysis of the 2012/13 Household Income and Expenditure survey. Honiara, FAO and SPC. 64 pp. https://doi.org/10.4060/cb4459en [SLB-2021-TO-Troubat]</li> <li>Pacific Community and FAO (2020) Solomon Islands Food Security Profile. Policy Brief. 4pp. [SLB-2020-TO-SPC] Online here</li> <li>Pacific Community (2020c) Solomon Islands pre-COVID-19 baseline metrics. Policy Brief. 4pp. [SLB-2020-TO-SPC] Online here</li> <li>Farmery et al. (2022) National assessment of the Solomon Islands food system [SLB-2022-TO-Farmery]</li> <li>Bogard, et al. (2021) A Typology of Food Environments in the Pacific Region and Their Relationship to Diet Quality in Solomon Islands. Foods. https://doi.org/10.3390/foods10112592 [PRJ-2022-PP-Bogard]</li> </ul>
	5.6.6 Food security and nutrition profile of Vanuatu and summary of likely impacts of COVID- 19 on national and provincial scale, in conjunction with ACIAR project FIS/2018/155	Q3 2021	<ul> <li>Completed. reported as:</li> <li>Vanuatu National Statistics Office (2021). Food security in Vanuatu. 2019–2020 NSDP Baseline Survey. 87 pp. [PRJ-2021-TO-VNSO]</li> <li>Pacific Community and FAO (2020) Vanuatu Food Security Profile. Policy Brief. 4 pp. [VUT-2021-TO-SPC] Online here</li> </ul>
	5.6.7 Food security and nutrition profile of Kiribati and summary of likely impacts of COVID- 19 on national and provincial scale, in conjunction with ACIAR project FIS/2018/155	Q2 2021	<ul> <li>Completed. Reported as:</li> <li>Troubat and Sharp (2021a). Food consumption in Kiribati – Based on analysis of the 2019/20 Household Income and Expenditure Survey. Tarawa, FAO and SPC. 84 pp. https://doi.org/10.4060/cb6579en. [KIR-2021-TO-Troubat]</li> <li>Pacific Community and FAO (2020) Kiribati Food Security Profile. Policy Brief. 4pp. [KIR-2021-TO-SPC] Online here</li> <li>Note that all of the post-COVID-19 reset outputs in this Activity were co-produced with project FIS/2018/155.</li> </ul>

### Cross-cutting objective: Communication

Activity	Outputs/ milestones	Completion date	Comments
CM 1. Develop a communication strategy in support of project activities and the New Song	CM 1.1. Multi- pronged communication strategy developed including traditional and social media, and scholarly articles	Q2 2018	Completed. Internal, agency and wider public strategies completed with ongoing support to in-country teams. Assistance was also provided to teams during the 2nd Fish-SMARD meeting in May 2019. The research community strategy operates as part of the project's deliverables and M&E activities. Pathways project (2018). Pathways multi-pronged communication strategy (internal project document) 16 pp. [PRJ-2018-OO-Pathways]
	CM 1.2. Mid-term review of communication strategy in the context of M&E indicators	Q1 2020	Completed. The communication strategy performed as intended, requiring minimal adjustment to continue ensuring adequate information flow to the internal audiences, donor and partner agencies, rural communities, the wider Australian public, and the research community. The #Slack app in particular was a great tool for managing and coordinating project-wide workflow among the team. Some changes were made to the original communication strategy in response to the COVID-19 pandemic. The travel restrictions and operating difficulties experienced during the pandemic necessitated a shift to more digital means of outreach; outreach to the broader audiences was also made less of a priority because the team needed to focus on ensuring other project activities continued to function despite repeated COVID-19 related travel restrictions in our partner countries.
CM 2. Six monthly project updates to DFAT Posts in KIR, SLB, VUT	CM 2. Six monthly project briefs received by DFAT Posts in KIR, SLB, VUT. Increased to more frequent briefings on changes to activities post-COVID	Q2 2018	Completed. KIR - In person briefs were presented to DFAT post in July, October and November 2018 and June, August and November 2019 and February 2020 with bi-weekly briefs with DFAT post since COVID-19. Online project briefs were provided to Kiribati High Commission every 2 months starting in March 2020. Ongoing communication with the new High Commissioner from February 2021 onwards. SLB - DFAT brief delivered in 2018 and Q1 2019. Communication with DFAT post occurred infrequently during 2019. In February 2020 we had in-person meeting with the High Commissioner and have followed up on two occasions, including a COVID response update. VUT - Consistent contact with High Commission representatives, and progress reports shared in Q2 and Q4 2018. In person briefs with DFAT post are ongoing. COVID response led to more frequent communications.

Activity	Outputs/ milestones	Completion date	Comments
CM 3. Quarterly project briefs to national partner agencies in KIR, SLB, VUT	CM 3. Six monthly project briefs received by national partner agencies	Q2 2018	Completed. KIR - Project briefs are provided by the CBFM team during staff meetings and reports have been provided to the Director of Coastal Fisheries in 2018 (August and December), 2019 (June, August, November) and 2020 (February). Reporting continued from 2020 onwards via attendance in CFD senior staff meetings. A summary presentation on CBFM progress was given to wider MFMRD senior officials during the assessment of all Units and Divisions in Q3 2021. SLB – Project briefs are conducted in person with MFMR teams and more formally through a ToC workshop with partners (Q3 2018). During 2019, we sought to develop a new format of program brief updates to partners in the form of a quarterly Newsletter. The first newsletter was disseminated in 2020 but was not prioritised after COVID- 19. VUT – An updated report was shared with VFD and project partners in Q2 2018 and Q2 2019 and a more detailed annual report shared in Q4 2018 and Q4 2019 [VUT-2019-OO-VFD 3] [VUT-2020-OO-VFD]. Reporting by project team to VFD and partners during COVID continued through periodic VFD-organized annual update meetings. The project team reported on catch monitoring work [VUT-2021-OO-VFD-Pathways; VUT-2021-OO-VFD-Pathways 3], CBFM support and scaling survey outputs back to VFD, while in draft (Q4 2020) and on completion (Q4 2021)
CM 4. Disseminate project news through donor newsletters	CM 4. Bi-annual articles published via donor media	Q1 2018	<ul> <li>Completed.</li> <li>Department of Foreign Affairs and Trade. (2018). National Daily Headlines: Australia increases support for coastal fisheries and food security in the Pacific. Retrieved from http://ministers.dfat.gov.au/fierravanti-wells/releases/Pages/2018/cf_mr_180124.aspx.</li> <li>Article titled "Communities help themselves to improve fisheries management" published in ACIAR Partners magazine (Issue 3, 2019). A case study from the project featured on DFAT's 'Australia and the Pacific: partnering to support sustainable oceans and livelihoods' website and downloadable PDF (<u>https://dfat.gov.au/geo/pacific/engagement/Pages/supporting-sustainable-oceans-and-livelihoods.aspx</u>).</li> <li>Activity not prioritised following COVID-19.</li> </ul>
CM 5. Disseminate project news through implementing agency media channels (e.g.	CM 5.1. Regular media releases published through project implementing agencies	Q2 2018	Completed. The project prioritised collaboration with SPC to publish articles in the SPC newsletter/bulletin as a means to disseminate project news and findings. A writing workshop was held at the Fish SMARD meeting in May 2019, where in-country team members were led through writing for SPC bulletins/the newsletter. Multiple project stories have since been published in the SPC Fisheries Newsletter and Women in Fisheries Bulletin. See Appendix 3 for list of media articles.

Activity	Outputs/ milestones	Completion date	Comments
UOW, WorldFish, SPC)	CM 5.2. Regionally reported stories of learning from exchanges	Q2 2018	Completed. FishSMARD update (Q2 2018, and Q2 2019) and other exchanges. Written articles in quarterly UOW ANCORS newsletter (The Anchor). FishSMARD article in the Vanuatu Daily Post (25th May 2019). Ongoing collaboration with SPC to publish articles in the SPC newsletter/bulletin. Activity was not prioritised following COVID-19.
CM 6. Raise	CM 6. Booth on	Q2 2019	Completed. Activity was not prioritised following COVID-19.
awareness about CBFM project in national- sponsored events in KIR, SLB, VUT	CBFM project held at least annually in national sponsored events in KIR, SLB, VUT	t held ally in isored 2, SLB,	KIR – CBFM team distributed posters, brochures, and the Nei Tengarengare DVD during the Coastal Fisheries Summit in Q2 2019. CBFM team held a booth and Q&A during the national launch of the National Coastal Fisheries Roadmap for Kiribati (2019-2036) on 21/02/2020.
			<b>SLB</b> - On March 8, 2019 a booth was held at International Women's Day Panel with information exchange and coverage by national media. In June 2018, staff joined MFMR and MECDM in awareness activities in Buala, Isabel Province (funded by another bilateral project).
			In 2019, a booth was set up at the launch of the Solomon Islands National Oceans Policy event. Faye Siota (project staff seconded to MFMR) gave a short talk on CBRM initiatives to HRH Prince Charles and Solomon Islands Prime Minister Manasseh Sogavare.
			VUT – Booths were held during World Environment Day (June 2018); National Agriculture Week in Santo (16-20 July); World Tuna Day (2 May 2018, 2019 and 2021); Public Service Commission Day service (4 July 2018). Pathways participated at VFD booths at Public Service Commission day (July 2019, 2020 and 2021) and SANMA Public Servants Day (August 2019, 2021) in Santo, National agriculture week in Tafea (Tanna, September 2021)

Activity	Outputs/ milestones	Completion date	Comments		
CM 7. Raise awareness about the project in international events (e.g. conferences,	CM 7. Side events, panel sessions at international	Q3 2018	New Song panel during the World Small Scale Fisheries Congress in October 2018 in Thailand.		
			<ul> <li>Dirk Steenbergen presented work at a conference on codification of rules in the Pacific in July 2018, based on a co-authored paper on law codification in relation to CBFM work in VUT (paper in process)</li> </ul>		
	meetings held		<ul> <li>Dirk Steenbergen presented a seminar as part of the UoW Vice Chancellor seminar series on CBFM scaling strategies about VUT in October 2018, as project awareness raising</li> </ul>		
meetings)			<ul> <li>Dirk Steenbergen presented work at the 3WSSFC in Chiang Mai in October 2018, based on a co- authored paper with van de Ploeg and Eriksson on collective action institutions in CBFM</li> </ul>		
			<ul> <li>At the Third World Small-scale Fisheries Congress, Andrew Song gave a plenary on Pacific policy coherence; Kalna Arthur (VFD) on work in Vanuatu, specifically focussing on TAILS; Grace Oriana presented on the lite touch approach to scaling CBFM in Solomon Islands.</li> </ul>		
			<ul> <li>Two presentations (Sarah Lawless, JCU project-associated PhD student, and project gender-specialist Danika Kleiber) at the Gender Aquaculture and Fisheries Congress in Thailand in October 2018.</li> </ul>		
			<ul> <li>People and the Sea conference, MARE Amsterdam - project staff who presented include Dirk Steenbergen, Hampus Eriksson, Ruth Davis, Jan van der Ploeg, Danika Kleiber.</li> </ul>		
			<ul> <li>Collaborated with UK television broadcasting company ITN Networks to film a segment for the IMarEST documentary titled "Our Oceans, Our Future" showcasing Pathways activities in Vanuatu. This documentary was aired at the Royal Institution, London on the 20<sup>th</sup> November 2019 (attended by 75 people) and is part of a 12 month campaign being shared across websites and social media.</li> </ul>		
			<ul> <li>Chelcia Gomese, Anouk Ride and Aurelie Delisle presented 'Balancing the canoe: CBRM and gender in Pacific coastal fisheries' at the Cultivating Equality Conference (virtually) in October 2021</li> </ul>		
				<ul> <li>Pita Neihapi and Dirk Steenbergen, presented 'A coastal community's response to tourism collapse in Vanuatu' at the Royal Geographic Society Annual conference Aug 2021 (virtually).</li> </ul>	
				<ul> <li>Senoveva Mauli (ANCORS PhD candidate) presented Community Based Fisheries Management and Rural Development strengthen the practice of indigenous food systems governance in Solomon Islands. Global Food Conference, Lisbon, Portugal, December 2021.</li> </ul>	
					<ul> <li>Lisa Wraith, Seya Brighton, Pita Neihapi and Dirk Steenbergen presented on "Bringing M&amp;E data to life through Prezi", ACIAR brown bag lunch, 7<sup>th</sup> September 2021</li> </ul>
				<ul> <li>Pita Neihapi and Dirk Steenbergen presented on 'Drawing on immersive ethnography perspectives to implement CBFM in Vanuatu', ACIAR seminar series, 21<sup>st</sup> October 2021</li> </ul>	
			<ul> <li>Aurélie Delisle (on behalf of Tooreka Teemari) presented on 'Scaling CBFM in Kiribati' during the ACIAR organized 'Multi-stakeholder partnerships for scaling innovation' as part of the UN Food Systems Summit on 25 May 2021 (virtually)</li> </ul>		
			Activity was not prioritised following COVID-19.		

Activity	Outputs/ milestones	Completion date	Comments
CM 8. Develop and disseminate short educational videos	CM 8. Short educational videos developed and made publically available in each country	2019	<ul> <li>KIR - Video footage in Butaritari and North Tarawa was recorded during visits to the sites in July and August 2018. CBFM video [KIR-2019-IM-MFMRD 8] completed in 2019. Video is now used by the CBFM team during awareness raising activities by MFMRD and bilateral project partners. The video provides information on CBFM implemented in Kiribati villages to communities interested in the project.</li> <li>SLB – Videos were produced for research and public audiences on livelihoods (e.g., "Small fry are beautiful" on YouTube <a href="https://www.youtube.com/watch?v=pklzLTprAmQ">https://www.youtube.com/watch?v=pklzLTprAmQ</a>). The livelihoods work in Solomon Islands was featured as a WorldFish exposure story (with embedded video footage) which reached high views and global impacts: <a href="https://worldfish.exposure.co/cool-women-of-malaita">https://worldfish.exposure.co/cool-women-of-malaita</a>. This later featured in the CGIAR Farming First Innovations for Sustainable Food Systems initiative: <a href="https://farmingfirst.org/food-systems#section_3">https://farmingfirst.org/food-systems#section_3</a>. The WorldFish-led fish handling sheets produced in partnership with SPC were also further disseminated and the Bislama translations were well received in Vanuatu. The Australian Foreign Minister re-tweeted an ACIAR post about this as a "very important" initiative: <a href="https://twitter.com/MarisePayne/status/1247331256309649409">https://twitter.com/MarisePayne/status/1247331256309649409</a></li> <li>VUT - Video footage and interviews were collected for 3 short videos on nutrition and fisheries. Nutrition video [VUT-2019-IM-WorldFish]; Wan SmolBag Twist mo Spin theatre play and workshops [VUT-2019-TO-Wan SmolBag] and short 10-minute promotional version [VUT-2019-TO-Wan SmolBag 2]</li> <li>Activity not prioritised in 2020 following COVID-19.</li> </ul>
CM 9. Publish regular project stories using national media outlets (radio, websites, TV, newspapers) in KIR, SLB, VUT	CM 9. Regular project stories published via national media outlets in KIR, SLB, VUT, with a focus on disseminating COVID-19 related material such as safety at sea or safe fish handling segments on radio or through national newspapers	Q2 2018	Completed. KIR - Activities of the CBFM project were published using different national media outlets, including newspaper articles, national radio broadcasts, regular updates on the MFMRD national radio broadcast segment, articles in the MFMRD newsletter, and posts on Facebook. The team also developed a web page on the project hosted on MFMRD website: https://www.mfmrd.gov.ki/?page_id=681. SLB - Multiple project stories published - see media outputs list in Appendix 3. VUT – Multiple project stories published – see media outputs list in Appendix 3.

Activity	Outputs/ milestones	Completion date	Comments
CM 10. Design and disseminate project brochures/poste rs about project outcomes in KIR, SLB, VUT	CM 10. Brochures/posters published in KIR, SLB, VUT	KIR – Q2 2019 SLB - Q1 2018	KIR - Brochures and posters were developed (fish handling sheets, SPC information sheets, 3 pamphlets and 4 posters) and trialled in communities. Two community posters/brochures to assist with role of communities under the new Coastal Fisheries Regulations were produced in collaboration with the SPC PEUMP program. The brochures and posters have been used to raise awareness of communities about the regulations by MFMRD and bilateral project partners program. <u>https://www.spc.int/DigitalLibrary/Doc/FAME/Brochures/</u> Anon_21_Guide_Regulations_KIR.html
		VUT - Q4 2018	<b>SLB</b> - 'Conserving Corals' and 'Managing Mangroves' posters were published. The project supported development and erection of billboards were set up at Auki market showcasing prohibited species and size restriction for seafood sold at the market. The project also supported development and erection of a billboard at Gizo market with MFMR and PFO to promote sustainable fishing and good marketing practices (see <b>SLB-2021-IM-MFMR</b> ).
			VUT - Brochures designed in country and completed, with dissemination in-country. Translations in Bislama and French completed by Q4 2018. Three Wan SmolBag comics created on sea cucumber [VUT-2019-TO-Wan SmolBag], blue fish [VUT-2019-IM-Wan SmolBag 4], and coconut crab [VUT-2019-IM-Wan SmolBag]. Five pull-up banners created for use in public outreach events [VUT-2021-IM-VFD 1], [VUT-2021-IM-VFD 2], [VUT-2021-IM-VFD 3], [VUT-2021-IM-VFD 4], [VUT-2021-IM-VFD 5].
CM 11. Raise project profile in Australia (newspapers, radio, social media)	CM 11. Annual project stories communicated in Australian media outlets	Q1 2018	Television interview with Dirk Steenbergen (25/01/2018); Interview with Neil Andrew and Hampus Eriksson on ABC Illawarra (10/07/2018); 5 articles in "The Anchor", the ANCORS newsletter distributed to alumni around the world July-September, October-December 2018 issues. Article by Paul Jones in "The Stand", the UoW magazine about the Ambae volcano and Pathways activities (23/01/2019) - shared on the ACIAR Facebook page (7/02/2019). Articles by Paul Jones about the Ambae volcano and Pathways activities in the Illawarra Mercury (21/01/2019), The Guardian (23/01/2019), The Sun Herald (20/01/2019). Article about the Wan Smolbag "Coastal Fisheries Play" published in the Vanuatu Daily and shared on the ACIAR Facebook page (21/03/2019). Article titled "New research collaboration to support pacific communities to prepare for the future published in UoW media (23/03/2020). Article titled "How theatre is helping Vanuatu protect its fisheries" published in The Stand (UoW magazine) (17/09/2019). Photo-series titled "Troubled waters: telling the story of fish in Vanuatu theatre" published in The Guardian (15 September 2019). Interview with Aurelie Delisle on UoW Podcast titled "Can you tell me how?" (19/09/2019). The published podcast episode was listened to 2879 times as of 5/05/2020. Activity not prioritised following COVID-19.

### Cross-cutting objective: Capacity building

Activity	Outputs/ milestones	Completion date	Comments
CD 2. Increase scientific capacity of national project and partner staff in KIR, SLB and VUT	CD 2.1. Recruit/retain nationals to in- country project teams	Q1 2019	Completed.
	CD 2.2. Two Pacific nationals engaged in project activities enrolled in Masters or PhD programs	Q3 2018; activity ongoing	<ul> <li>Completed.</li> <li>Ms Senoveva Mauli (Solomon Islands) and Mr Jeremie Kaltavara (Vanuatu) were enrolled in the UOW PhD (Law) program in March 2019. Both successfully presented their thesis proposal in 2020. Ms Mauli hosted by WorldFish in Honiara, and Mr Kaltavara hosted by SPC in Port Vila, both with regular visits to UOW for intensive research planning and writing periods with supervisors. Both are due to complete in 2023.</li> <li>Five Pacific Islander students undertook a Masters of Fisheries Policy at ANCORS sponsored by the project and co-funded by ANCORS. Three graduated in December 2021 and one will graduate at the end of 2022; one withdrew.</li> <li>Enly Saeni (graduate student at the East-West Center of the University of Hawaii) conducted fieldwork on the gender dimensions of FADs. Project staff provided logistical, financial and supervisory support.</li> <li>Daykin Harohau was approved for an upgrade from Masters to PhD and his research was linked to this project - project staff provided logistical, financial and supervisory support. He completed his field work through the provision of a (non ACIAR) grant from WorldFish, attended Crawford research leadership training and Nvivo training supported by project, and was nominated to attend 2 week leadership training for the John Alright Fellowshins.</li> </ul>
	CD 2.3. Targeted training of project staff on CBFM techniques and scientific research	Q1 2020	Completed by milestone KIR and VUT - Staff participated in a week's training in Wollongong in June 2019 on research methods, questionnaire design, writing of performance stories. KIR and VUT staff also participated in a one-week training in Q1 2020 on catch monitoring data analysis.
CD 3. Develop in-country capacity in developing and publishing project outputs	CD 3.1. National staff or partners included in at least 75% of project outputs (assessed annually)	Q2 2018	Overall, national staff or partners are primary or co-authors on 86% of project outputs.

Activity	Outputs/ milestones	Completion date	Comments
CD 6. Broker partnerships between Australian and Pacific institutions (focus on USP and SINU) to deliver training in coastal fisheries governance in support of the New Song	CD 6.1. Options paper prepared on modular short- course training for practitioners (Govan and Aqorau)	Q4 2019	Completed. Published as: Abuinao, W., Piturara, J., Govan, H. (2019) Future Pacific Ocean managers: Scoping skills and knowledge needs. SPC Fisheries Newsletter 159: 38-44. <b>[PRJ-2019-TO-Abuinao]</b>
	CD 6.2. Record of understanding developed between Australian and Pacific institutions	Q4 2018	Completed. WorldFish and Solomon Islands National University have signed an MoU and hosting agreement - which includes researcher training, guest lectures (including project materials) and collaborative research associated with the project. Two James Cook University research students are engaged through an MoU with WorldFish in research in Solomon Islands on coastal fisheries. Solomon Islands students and project staff are enrolled in formal degrees or short trainings (nVivo and Gender in fisheries) at JCU in Q2 2018.
CD 8. Develop CBFM training materials for sub-national fisheries staff in KIR, SLB, VUT to support CBFM activities	CD 8.1. Training material for sub- national fisheries staff developed for KIR, SLB, VUT	2018	<ul> <li>Completed.</li> <li>KIR - Existing materials from the in-country teams were shared during training events in 2018 and 2020; including CBFM video and pamphlets as well as material on general CBFM principles and facilitation skills. Also refer to output 2.4.2.</li> <li>SLB - Existing materials were shared in presentations and lessons with students and with SPC Youth at Work participants in collaboration with MFMR and at the Nusa Tupe research station. Project staff provided CBRM training for 40 science teacher trainees (primary and secondary) at Solomon Islands National University (SINU). Four guest lectures were delivered in 2019 by WorldFish staff to SINU Fisheries Department students, including Fish-based Livelihoods (Hampus Eriksson), CPUE and data collection methods (Janet Oeta), Nutrition (Jillian Wate), and Seagrass and mangroves (Ronnie Posala).</li> <li>VUT - Training packet for PFOs in preparing workplans and tracking progress in Excel was developed in collaboration with the Vanua Tai network (under the sister program supported by PEUMP funding) PFO support plans have bene signed and are being implemented, initiating an ongoing mentor program with Tafea PFO.</li> </ul>

Activity	Outputs/ milestones	Completion date	Comments
	CD 8.2.Training delivered to sub- national fisheries staff in KIR, SLB, VUT with pre- and post- evaluation	2018	Completed. <b>REG</b> - Each country has a modality of implementing field activities accompanied by extension officer or existing MFMRD staff (KIR), provincial officers (SLB, Malaita), area officer (VUT). This is intended to build capacity on CBFM principles in practice. Apart from in-field practical training, no further training was delivered from Q2 2020 onwards, due to COVD-19 reprioritisation. <b>KIR</b> - Training of subnational staff and staff of bilateral project partners have been ongoing since 2018. A refresher course for subnational staff (with special CBFM sessions) happened at the end of 2020. A special session was dedicated to scaling CBFM. Subnational staff, project partner staff and subnational staff trainees continued to receive on-the-job training by participating in joint activities in the field. The team also provided on-the-job learning to two USP graduates undertaking work attachments with the Ministry. <b>SLB</b> – A main thrust of work in Solomon Islands during 2019 was in the space of gender. Gender training events were held with national partners, provincial level officers in Honiara, Western Province, Malaita. WorldFish has become the go-to partner for gender training, awareness making and technical support for several partners in Solomon Islands drawing on the materials and research carried out in the project. During 2020, WorldFish together with MSSIFR and SPC through its PEUMP program hosted multi-day gender awareness and training workshops for all MFMR staff. <b>VUT</b> - In-house VFD training facilitated by Pathways team has mobilized peer-to-peer training among VFD officers based on expertise. An example is the recent GIS training workshop that was organized by the Pathways team, and which invited other interested VFD staff. As a result, the team can delineate Tabu areas with a GPS and make maps themselves instead of having to rely on a VFD GIS specialist to come to the field (or delaying implementation of CBFM to wait on his availability). This has allowed for swift mapping of
			completed in an adjusted form through collaborations with Tafea PFO as part of the subnational strengthening pilot program, supported through supplementary PEUMP funding
CD 9. Develop and deliver postgraduate subjects in fisheries governance (inclusive of CBFM, gender, nutrition)	CD 9.1. Subjects designed, delivered at ANCORS. Subjects to include material on small- scale fisheries' response to disasters incl. Covid19 (with global, subnational and local case studies)	Q4 2021	Completed. Two postgraduate subjects ('Social dimensions of fisheries management and policy' and 'Governance of coastal fisheries') have been finalised and are offered through the Master of Fisheries Policy and the Master of Maritime Studies at ANCORS. Subjects are offered via online mode and have been on offer since 2022. Both subjects present content based on the latest theories and scientific literature as applied to fisheries with numerous examples taken from small-scale fisheries. The subjects also present applied examples/case studies directly taken from the CBFM project including topics on co-governance, adaptive governance, scaling CBFM, GESI, Human rights and MEL in fisheries.

### Cross-cutting objective: Monitoring and evaluation

Activity	Outputs/ milestones	Completion date	Comments
ME 1 Ensure effective project implementation	ME 1.1. Inception meetings held and operational plans agreed	Q1 2018	Completed. Pathways inception meeting was held in March 2018 in Nadi. KIR - In-country inception meeting was held in Q3 2018 following recruitment of the full CBFM team. SLB - An inception meeting was held with in-country staff and workplans were finalised in Q2 2018. VUT - An inception meeting was held in Q4 2017. This meeting also allowed for the start of strategic planning for coastal management in VUT. In February/March 2018 workplans were finalized with the in-country teams.
	ME 1.2. Project management meetings held on an annual basis	Q4 2017	Completed. Project Reference Committee (PRC) meetings were held in December 2017 and September 2018. A PRC meeting was planned for February 2020 but did not go ahead due to members' availability. A whole-of-team planning meeting was held as part of the Phase 1 review in lieu of first Project Implementation Team meeting and agreement was reached on changes to the project. Project Implementation Team meetings were held in January 2018, and then October 2019 to discuss project response to the mid-term review. In 2020 and 2021 the Project Implementation Team continued to meet virtually on an <i>ad hoc</i> basis.
ME 2 Develop a programmatic approach to Pacific coastal fisheries M&E	ME 2.1. In collaboration with partners and led by SPC, New Song results framework reviewed and revised as needed post HoF and FFC	Q4 2017	Completed. The New Song results framework was revised following the 2017 HoF meeting that reviewed indicators for the New Song.
	ME 2.3. CBFM monitoring program developed and tested in KIR and VUT in collaboration with SPC and national agencies	Q2 2019	<ul> <li>Completed. The fishery monitoring protocol was developed and tested for use in KIR and VUT in 2019. Published as:</li> <li>Andrew et al. (2020) Developing participatory monitoring of community fisheries in Kiribati and Vanuatu. SPC Fisheries Newsletter #162, May – August 2020, pp. 32-38. [PRJ-2020-TO-Andrew]</li> <li>Nikiari et al. (2020) Piloting a community-driven catch monitoring approach in Kiribati. SPC Fisheries Newsletter 163: 34-39. [KIR-2020-TO-Nikiari 2]</li> <li>Sami et al. (2020) A novel participatory catch monitoring approach: The Vanuatu experience. SPC Fisheries Newsletter #162 – May – August 2020, pp. 39-45. [VUT-2020-TO-Sami]</li> <li>UOW (2021a). Catch Monitoring Manual for CBFM in the Pacific Region. Module A: Technical Manual for Catch Monitors. Australian National Centre for Ocean Resources and Security, University of Wollongong, Australia. URL: purl.org/spc/digilib/doc/chkpw [PRJ-2021-OO-UOW 1]</li> <li>UOW (2021b). Catch Monitoring Manual for CBFM in the Pacific Region. Module B: Training Workshop Manual. Australian National Centre for Ocean Resources and Security, University of Wollongong, Australia. URL: purl.org/spc/digilib/doc/chkpw [PRJ-2021-OO-UOW 1]</li> </ul>

Activity	Outputs/ milestones	Completion date	Comments
	ME 2.5. First round of training and sampling completed, and then up to five communities sampled in each country to provide data on ecological effects of CBFM (first in Q3 2019 and then six monthly thereafter)	Q2 2019	Completed. KIR - Training completed in June 2019 at ANCORS and followed by training of 10 national agency staff in August 2019. Catch data collector refresher training were held informally before each round of data collection. Data has been collected in 5 CBFM communities, through 4 rounds - R1 in Nov 2019, R2 between Mar 2020 and Aug 2020 due to Covid, R3 between Sep 2020 and Dec 2020, R4 between Feb 2021 and Aug 2021. The CBFM officers used their training in data analysis (see CD 2.3) to compile community-friendly graphs and resources to report on the catch monitoring data collected during each round. VUT - Training was completed in June 2019 at ANCORS. Following that, the team trained 10 VFD observers and 10 community members in implementing the protocol. An enumerator refresher training was held for 5 VFD observers each prior to each round of data collection, i.e. Nov 2019 2020, Aug 2020, Nov 2020 and April 2021 [VUT-20200302-WR-Fish. mon. refresher training]. Data has been collected in 5 CBFM communities, through four rounds (Nov 2019, Aug 2020, Nov 2020, May 2021). Data from previous rounds was presented back to the community in Nov 2020 and May 2021 – see, for example, VUT-2020-OO-VFD-Pathways 5. The data collection protocol in Vanuatu was evaluated in a Pathways Vanuatu-ANCORS catch monitoring evaluation workshop on 9 Nov, 2021 (co-located virtual workshop between Australia and Vanuatu) and feedback and results are being fed back into future rounds (VUT-20211109-WR-catch monitoring evaluation).

Activity	Outputs/ milestones	Completion date	Comments
	ME 2.6. Analyses of	Q2 2021	Completed. Reported as:
	mixed method fishery monitoring in KIR, SLB and VUT completed		KIR and VUT - 4 KIR and VUT project staff were trained in data analysis of catch monitoring data in Q1 2020. Data analysis of each round of catch monitoring data was compiled into a Powerpoint presentations for reporting to communities during the following round of data collection, and to the national agency. Country level summarising fact sheets (including data from all rounds) are under production for KIR and VUT and will be finalised in FIS/2020/172. Publications of results will be a priority in FIS/2020/172.
			Results presented to as part of the Fish Toktok symposium to stakeholders [VUT-2021-OO-VFD-Pathways 2] and senior VFD staff [VUT-2021-OO-VFD-Pathways; VUT-2021-OO-VFD-Pathways 4]
			KIR – Evidence of uptake of data analysis skills by the trained officers was displayed throughout the reporting of results to the 5 catch monitoring communities through presentations. One of the presentations was recorded and a video short clip was produced:
			https://www.facebook.com/NEITENGARENGARE/videos/catch-monitoring-in-tanimaiaki/565929357670081
			SLB – Published as:
			Smallhorn-West, P., van der Ploeg, J., Boso, D., et al. (2022a) Patterns of catch and trophic signatures illustrate diverse management requirements of coastal fisheries in Solomon Islands. <u>Ambio</u> . <u>https://doi.org/10.1007/s13280-021-01690-z</u> [SLB-2022-PP-Smallhorn-West]
			Fact sheets and Provincial fisheries profile in preparation; to be completed under FIS/2020/172.
			In addition, the project made an investment in the opportunity to re-sample catches to compare with a baseline from a decade ago in a location where CBRM has been ongoing. Published as:
			Smallhorn-West, P., Cohen, P.J., Kukiti, E., et al. (2022b) Ten years of dynamic co-management of a multi-species reef fishery. <u>Coral Reefs</u> . <u>https://doi.org/10.1007/s00338-022-02294-z</u> [SLB-2022-PP-Smallhorn-West 2]
			In addition, the project made contributions to better define the social-ecological processes that are influenced by LMMAs and other ways to think about partial protection of reefs
			Smallhorn-West, P., Cohen, P.J., Morais, R.A., et al. (2022c) Hidden benefits and risks of partial protection for coral reef fisheries. <u>Ecology and Society</u> 27(1):26. <u>https://doi.org/10.5751/ES-13112-270126</u> [PRJ-2022-PP-Smallhorn-West]
ME 3 Complete characterization of coastal communities in PICs to create baseline for	ME 3.1. Data tables and maps created in SPC database PopGIS and available on SPC website	Q4 2017	Completed. Beta version of PopGIS maps is available on SPC website.

Activity	Outputs/ milestones	Completion date	Comments
scaling activities and progress toward New Song outcomes	ME 3.2. Registers of expressions of interest by communities for support for CBFM established in KIR, SLB and VUT	Q4 2017	Completed. KIR - A register of community interest was drafted by MFMRD during the Coastal Fisheries Summit in November 2017. It was intended that the register would be made operational by the national CBFM taskforce in Q3 2018. However, instead a Cabinet Paper was required to formally approve site selection. SLB - MFMR maintain a register of community interest. Project seconded staff supports maintaining and responding to this. VUT - VFD maintain a log of priority sites with data canvassed from community engagements of provincial and area fisheries officers. The registry of community interest has been maintained but was not formally integrated into the VFD systems, however with the development of tracking and monitoring systems as part of CBFM national program development in 2022 onwards, current data of community requests will integrated.
ME 4 Panel study repeated in SLB, KIR and VUT	ME 4. Repeated data-collection for analysis against baseline collected in FIS/2012/074	2021	Partially completed. The Panel Study was not repeated in KIR & in VUT. Repeat data collection was completed in 8 communities in SLB in 2021. See Appendix 2 for analyses on panel study baselines across the three project countries.
ME 5 Workshop on outcome harvesting conducted across project objectives and	ME 5. Information for outcome evaluation collated	Q2 2021	Completed. A workshop was held in Q2 2019 in Wollongong with KIR and VUT country teams with training on writing performance stories for outcome harvesting. Virtual workshops were held with each individual country team to talk through and record stories of change from community-level activities in Q2 – Q3 2021. In Nov 2021, a Vanuatu catch monitoring evaluation (virtual) workshop was held to document and capture observations, community impacts and critical reflections from the project team about the project fishery monitoring protocol. <b>[VUT-20211109-WR-Catch monitoring evaluation]</b> .
countries			Broader (national, multi-community, or themed) outcome stories have been published as:
			presentation: 91 pp. [KIR-2021-OO-Pathways]
			<b>SLB</b> – See stories of change in Pathways project (2021c) Pathways project results: Solomon Islands. Interactive presentation: 36pp. <b>[SLB-2021-OO-Pathways]</b>
			<b>VUT</b> – Gereva, S., Steenbergen, D., Neihapi, P., Ephraim, R., Malverus, V., Sami, A., Koran, D. (2021) Reflecting on four years of community-based fisheries management development in Vanuatu. SPC Fisheries Newsletter #165, May-August 2021, pp. 55-67. (including 5 outcome briefs) <b>[VUT-2021-TO-Gereva]</b>
			See stories of change in Pathways project (2021d) Pathways project results: Vanuatu. Interactive presentation: 137pp. [VUT-2021-OO-Pathways]

Activity	Outputs/ milestones	Completion date	Comments
ME 6 Evaluation conducted against project / New Song outcomes	ME 6.1. Report cards for each of the project / New Song outcomes	Q2 2021	Completed. During 2021 the project invested in working with partners and communities to summarise the activities, data and stories of change from project implementation. Data and stories from 47 communities were incorporated into an interactive interface using the software Prezi, which allows for audiences and users to navigate through spatial layers of information at national, provincial/island and community levels. This interface has proven useful in workshop settings and as a convening activity for project evaluation. There is one Prezi file per country which cannot be appended for privacy reasons ([KIR-2021-OO-Pathways] [SLB-2021-OO-Pathways] [VUT-2021-OO-Pathways])
	ME 6.2. Summaries of progress towards project results framework for use in review	Q2 2019	Completed. Progress reports, project outputs and other forms of documentation were provided to the review team.
	ME 6.3. Annual reporting to ACIAR and DFAT to fulfil AQC reporting obligations	Q2 2018	Completed. Neil Andrew attended DFAT AQC meeting in April 2018 and 2019. Annual reports were submitted to ACIAR in May each year except 2021, since this annual report would be subsumed into the final report. Ad hoc reports were prepared to assist in DFAT and ACIAR COVID-19 response reporting.
	ME 6.4. Develop a project M&E Plan to guide the measurement of results	Q3 2018	Completed. The Pathways M&E Plan was presented and approved by the Project Reference Committee in Q3 2018. It was refined in October 2019 following the mid-term review recommendation to more clearly define the end-of-project outcomes.

## 7 Key results and discussion

The text below refers to key project outputs that underpin outcomes. Citations for project outputs include the unique identifier (e.g. [KIR-2019-TO-MFMRD] for the output. All project outputs are listed in Section 10.1.

# 7.1 Objective 1: Strengthen Pacific institutions to implement the New Song for coastal fisheries

In this Section we report on institutional strengthening activities, outputs and outcomes. Building on framings of institutional strengthening summarized in Section 5, here were report on three interrelated dimensions of capacity at scales above that of individuals: **institutional**, **organizational**, and **relational** capacity. The capacities of individuals and their roles as reflected at the larger scales are reported in Section 8.2. End of Project (EOP) Outcomes relevant to national agency and project staff (EOP Outcomes 1d and 1e) are reported here:

# 7.1.1 EOP Outcome 1a. A long term, coherent and cohesive approach to strategic planning is evident in coastal fisheries agencies (KIR, VUT only)

Activities implemented to achieve this EOP outcome focused on strengthening the institutional and relational capacity of national and regional agencies. Activities included national policy documents, strengthening the legal basis for CBFM, and supporting SPC in building regional momentum. Below we summarize key outcomes across subsets of these activities.

### National coastal fisheries roadmaps in KIR and VUT (Activity 1.5)

Following years of significant investment into CBFM by the project, national partner agencies in KIR (MFMRD) and VUT (VFD) developed national policy roadmaps to guide investments in sustainable management **IKIP**.

in sustainable management **[KIR-2019-TO-MFMRD, KIR-2019-TO-MFMRD2, VUT-2019-TO-VFD, and VUT-2019-TO-VFD 2]**. The roadmaps are the first of their kind in KIR and VUT and represent important national implementation plans for the regional New Song policy.

Following a theory of change process in late 2017, VFD and MFMRD developed draft roadmaps through several planning and drafting stages and subjected them to extensive stakeholder consultation in 2018. The main objective of the consultation process was to present the draft roadmap to all relevant government and non-government



stakeholder groups in order to incorporate broader interests, views and activities towards finalising the draft. This consultation provided an opportunity for coastal fisheries

stakeholders to discuss the various programmes and activities being implemented within the coastal zone.

The roadmaps provide long-term visions for coastal fisheries management. Reflecting on the VUT roadmap, Gereva et al. (2021) [VUT-2021-TO-Gereva] noted that:

"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."

#### National CBFM forums

In KIR, at the onset of the project, community representatives, MFMRD and bilateral partners with plans to work on coastal fisheries identified that collaboration among different projects and Ministries operating in communities across Kiribati was lacking. As a result, a proposal to form a coordinating body was put forward to Cabinet and approved in August 2018 leading to the creation of the National CBRM Taskforce chaired by MFMRD. The primary aim of this Taskforce was to:

"... centralize all community-based projects conducted by various Ministries and NGOs to ensure that they are all well-coordinated, there are no duplications and resources are used effectively and efficiently" (speech by Tooreka Teemari, Director of Coastal Fisheries).

The first meeting of the taskforce was held in Q3 2018 [**KIR-20181002-WR-CBRM Taskforce workshop**]. Through the taskforce, MFMRD engaged with NGOs and 7 other

Ministries on common issues around the delivery of communitybased resource management initiatives. The taskforce further met in Q3 2019 but the 2020 meeting was cancelled due to Covid-19. The National CBRM Taskforce was then absorbed under the Sustainable Coastal Fisheries Action group created under the Commonwealth Blue Charter and championed by Kiribati (later joined by the Maldives). The interactions of



different Ministries during those early meetings led the CBFM team to establish joint activities with projects operating under MELAD.

In VUT, in 2018 the project initiated the first national CBFM symposium that brought together domestic stakeholders from government non-government and civil society groups involved in

CBFM. The objective focused on facilitating information exchange and catalysing partnership-building between CBFM stakeholder groups. After a successful first symposium, the forum was organised on an annual basis by the VFD Pathways team. The first three iterations (2018, 2019 and 2020) were held in Port Vila over single day events (see reports in Vanuatu Daily newspaper below). These three initial workshops strongly contributed to the establishment of productive partnerships, including the one between the VFD-Pathways team and Wan Smolbag. The symposia gained increasing scope and interest with each iteration to the point in 2020 when VFD adopted the concept and expanded it from a single to a multi-day event. In 2021, VFD utilised the platform provided through the annual agriculture week to launch the first iteration of 'FisToktok' the first multi-day coastal fisheries symposium held over 4 days. Hosted by VFD, participation included groups like the Vanua Tai network, the Vanuatu National University and secretary generals from each province. This laid the foundation for the formalisation of partnerships



like that between VFD and the national university. Subsequent iterations of *Fis Toktok* are planned for Santo in November 2022.

In Solomon Islands, the project contributed to a significant event in the history of national CBRM policy and practice: the first Solomon Islands resource management symposium from 2-6 October 2017. The symposium was hosted by the Ministry of Environment, Climate

Change, Disaster Management and Meteorology (MECDM) and MFMR in collaboration with WorldFish, Ecological Solutions Solomon Islands (ESSI), the Solomon Islands Community Conservation Partnership (SICCP), the Secretariat of the Pacific Regional Environment Program (SPREP). The symposium brought together more than 300 representatives from ministries, provincial governments, civil society organizations, women's and youth groups, and communities from all over the country to share experiences on natural resource management. Over four days, more than 60 presentations were given. To this day, this symposium is referred to as a milestone for stepping up coordinated efforts and sharing of planning. The symposium proceedings were later published as a WorldFish report that synthesised the messaging and collective vision for a national CBRM movement (Boso et al. 2018) [SLB-2018-TO-Boso 2]. Several follow-up stakeholder meeting were held. For example, in Q3 2018 to



review SOP and provide it to MFMR Management for final comments and vetting [**SLB-20180704-WR-SOP workshop**]. The nudging of statutory law in Solomon Islands has energised the CBRM movement there and enabling environment is more fit-for-purpose because of it (Schwarz et al. 2020) [**SLB-2020-PP-Schwarz**] - see also below).

### Supporting regional institutions

SPC FAME was the lead regional partner in the project. The project supported FAME in a range of initiatives designed to improve the evidence based under CBFM, capacity to implement and support national programs, gender, and to scale up CBFM in the region. These activities and outcomes are described in the following sections of this report.

In addition, SPC led the development of 2015 Regional Roadmap for Sustainable Fisheries, regional report cards provide annual high-level reporting on the current status of Pacific coastal within the roadmap. The project supported the development of key indicators for the report cards. The Report Card for 2016 is the first to report against indicators for each of the Roadmap result areas. In subsequent years, SPC FAME has produced annual report cards based on the template established in 2016 (see <a href="https://fame1.spc.int/en/publications/">https://fame1.spc.int/en/publications/</a> roadmap-a-report-cards). Project staff supported SPC to revise the coastal fisheries report card documentation and data gathering as part of the CFWG.

### Strengthening national and regional policy and legislative capacity (Activity 1.2)

In KIR, a number of activities have been held throughout the project to strengthen the national policy environment around CBFM. During the course of the project, new legislation was passed to manage coastal fisheries and support CBFM. A legislative review first started with SPC in Q4 2017 with comments provided to a draft coastal fisheries regulation. As part

of the legislative review, a joint legal drafting workshop was held in May 2018 between MFMRD, the Attorney General Office, ANCORS and SPC to discuss how to legally support CBFM (Davis and D'Andrea 2018) [KIR-2018-TO-Davis]. As result of the legislative review, the workshop and ongoing consultations, Kiribati Fisheries (Conservation and management of coastal marine resources) regulations were developed and endorsed by Cabinet in 2019 (Teemari et al. 2020) [KIR-2020-TO-Teemari]. Part II of the Coastal regulations specifically details mechanisms for the support of CBFM and for the creation of community-based fisheries management plans as well as detailed management rules (MFMRD 2019j [KIR-2019-TO-MFMRD 3]. To further support this activity, the project team provided input to the Director of Fisheries for her proposed amendment of the Fisheries Act 2010. The Amendment Fisheries Act 2021 was endorsed by Cabinet in December 2021 and supports



a community role in fisheries management, allows for Marine Protected Areas to be included in management plans as well as define "authorised officers" who can enforce rules of a community CBFM plan.

Staff from MFMRD and the Attorney General benefited from training with SPC and ANCORS on drafting by-laws in June 2018 and during a 10-day attachment in Nouméa in November 2019 to increase skills in communication and dissemination of regulations to communities. To increase the capacity of national fisheries staff in drafting legal documents, the Coastal Fisheries and Aquaculture Programme of SPC received funding from the New Zealand Ministry of Foreign Affairs and Trade to work with the University of California, Hastings College of Law (UC Hastings) to develop a new online training course on legislative drafting for coastal fisheries. ANCORS has maintained ongoing conversation with SPC about ways to complement the release of the course, looking at pooling resources to update or
complement it through virtual workshops and provisions of material through examples of enabling legislation during FIS/2020/172.

Schwarz et al. (2020) **[SLB-2020-PP-Schwarz]** reflected on the evolution of CBFM in SLB and on the nexus between customary and national law. In SLB, the MFMR Corporate Plan, MFMR Strategy and MFMR Annual Operational Plan were developed with support from the project. The overarching MFMR In-shore Fisheries Policy strongly emphasises CBRM and community-based approaches under all strategic policy objectives. Project staff (seconded position Faye Siota) supported the development of Standard Operating Procedures for the development and gazetting of CBRM plans. It was finalised in 2022. The project team was also involved in a national consultation for the Solomon Islands national ocean policy (SINOP), which was launched in 2019. The project team also supported MFMR in the development of a national strategy for CBRM including its scaling, which is to be launched in 2022.

In VUT, the project supported a VFD-led review of the coastal fisheries regulations, which laid specific attention on aligning the regulatory framework further to needs of CBFM as set out in the National Coastal Fisheries Roadmap's short terms goals. Initiated at the end of 2019, with the support of SPC, this process was paused in 2020 due to COVID-19. In early 2022 VFD re-engaged the process, requesting all department staff to review regulations. The project staff provided guidance to the Director and Manager of the Policy and Management Division on how and where to structure adjustments. The endorsement of amendments are pending finalisation by VFD.

# 7.1.2 EOP Outcome 1b. Integrated approach to CBFM across multiple sectors, national and subnational government, and stakeholders

### National forums

In KIR, national stakeholders were able to share information during national events such as the Coastal Fisheries Summit and Fisheries Awareness Week in 2017 and 2020, all strongly attended by community representatives. The project facilitated a stakeholder workshop in August 2019, with Mayors and community representatives from 10 islands in attendance with MFMRD staff. This event was informed by the project but led by community representatives. The stakeholder workshop provided opportunities for exchange and lessons to be shared among mayors and community representatives. Another stakeholder was postponed due to COVID-19 but is planned during FIS/2020/172.

In VUT, the project actively supported VFD at national events and fora, including World Tuna day and Public Service Day. These are important public interface platforms for VFD to showcase initiatives and socialise CBFM to the broader public. The project developed information materials and rollout banners for use by VFD staff at stands, and supported other VFD department staff in communicating VFD's programs and informing the public of ways to engage with the department.

#### Sub-national stakeholder forums

In SLB, WorldFish completed substantial counterpart activities with Malaita Provincial Government supporting the provincial fisheries officers to deliver awareness and provide advice to fishing communities setting up their own rules, such as shared information resources, advice and shared-presentations, shadowing, and shared trips. Grace Orirana gave a presentation on CBRM+ at the 9th Premier's Conference in Auki, Malaita on 30 November 2017 (high-level meeting attended by the premiers and executives of all 9 provinces of Solomon Islands). Two visual aids were published in Q4 2018 on Coral reef conservation in Langalanga Lagoon and Mangrove management in West Are'are lagoon (see **SLB-2018-IM-WorldFish 1** and **SLB-2018-IM-WorldFish 2**). A training of trainers (40 trainee primary and secondary teachers) was held with MFMR at SINU in October 2018 (see

**SLB-20180927-WR-SINU CBRM** Training of Trainers). In March 2020, the project team was invited to provide input on the Malaita fisheries ordinance. The workshop sought input on the amendment of the Malaita Province Fisheries Ordinance to better accommodate ambitions of scaling CBFM. See also WorldFish (2018) [**SLB-2018-TO-WorldFish**].

In Western Province, a NGO/Provincial/ National government network was formed under the project to support governance capacity with a focus on enforcement. In 2019, three meetings were held with the Western Province network gathering development, environment and fisheries agencies and funders (but no enforcement capacity) to discuss how to strengthen HR and review capacity to implement CBRM. The continuation of the Western Province network was supported by matching funds from CEPF. In 2021, WorldFish staff relocated to Gizo, Western Province to head up activities there. She has facilitated several meetings of the network.

In Malaita province, a different approach was taken. The Malaita network (MPPD) was not operational (see lessons learned in **[SLB-2022-PP-Blythe]**). A networked approach was used: all project activities in Malaita were implemented with the Malaita Provincial Government (see 1.3.1 for detailed examples). In 2020, billboards about fish trade were launched at Auki market and during this event several branches of provincial government were brought together. The PFO explained the fisheries regulations to the police and the market management team (including security guards) and especially what to look out for (e.g. undersize fish and prohibited species).

In KIR, throughout the project, CBFM island forums were held in all ten project islands to raise awareness about CBFM among representatives of the respective Island Councils. Topics included supporting communities involved in CBFM, coordination, the role of Island Councils in supporting CBFM on their island as well as awareness about the Fisheries (Conservation and management of coastal marine resources) regulations 2019 and its legal requirements. Feedback received during these events highlighted the need to develop Standard Operating Procedures (SOP) to assist communities and Island Councils to follow the requirements of the new regulations for CBFM. The development of the "CBFM community guidelines under the Coastal Fisheries regulations" has been an ongoing joint activity between the CBFM team, ANCORS, SPC and the Office of the Attorney General and will continue during FIS/2020/172. Additionally, Island Councils and communities requested training of community authorised officers in enforcement and basic evidence gathering. Under the new Fisheries Act 2021, the CBFM team is working with MCS&E Unit of MFMRD to provide this training in partnership with SPC. In 2021, in collaboration with MELAD LDCF project, the CBFM team provided assistance in the review of Island bye-laws as part of the development of Island-based management plans (inclusive of fisheries activities and CBFM) in Maiana, Abemama and Nonouti.

In VUT, Pathways work fed into VFD's mandate towards implementing the decentralisation act. The Coastal Fisheries Roadmap framework explicitly makes note of this in Action Area #1: Governance. Pathways contributed here to integrating subnational capacity building in Vanuatu coastal fisheries management. At the community level, the project implementation helped to strengthen (and in some cases establish) fisher associations in community sites such as Tafea, Torba, and NW Malekula. Also, at provincial/area level, Pathways activities strengthened and supported VFD's (new) procedure to integrate provincial fisheries officers and area secretaries in all field community-oriented work (for on-the-job training and capacity building). The project also supported the VFD-Wan SmolBag partnership by attaining supplementary funding through a regional PEUMP-LMMA initiative. This funding resourced further the pathways project team and Wan SmolBag staff to strengthen the community resource network of Vanua Tai and incorporate them into the national coastal fisheries governance program. Project staff supported and participated in two sub-network meetings of the Vanua Tai network, that aimed to build sub-national fisheries officers capacity and bring them closer to the Vanua Tai network. Further, in 2021 Pathways supported the national coastal fisheries symposium that was held in Tafea province as part of the annual

national agriculture show (first time that it was held outside of the capital Port Vila). The Tafea provincial fisheries officer played a large role in organizing and facilitating discussions between fisher groups at this event, with support from the VFD Pathways team.

#### Strengthening community capacity for collective action

Ensuring communities act collectively (i.e. address issues that require community-wide support and engagement) and are able to engage with government and/or external partners is imperative to mobilising grassroots knowledge and capacity towards action. Nudging and harnessing community capacity forms a foundational principle of CBFM engagement.

In many instances in KIR, the positive engagement of the CBFM team with communities led to collective action beyond fisheries management. In the country, several communities the CBFM team works with are made of multiple historical wards such as in Kuuma in Butaritari Island and in Nanikaai in South Tarawa. Those wards operate independently of one another which leads to grievances on representations, conflicts and transaction costs during information and awareness. Through working with the project, these communities decided to come together, join their efforts and strengthen their community institutions to increase the success of their efforts in managing natural resources. Other evidence of strengthened community capacity include communities organising themselves to apply for additional resources from external projects to assist with their fisheries management efforts. Additional resources range from information about FAD fishing, MPA demarcation and enforcement and applying for small grants. These examples highlight collective action in communities committing to the success of their management efforts.



# Story of Change: CBFM brings about change in community governance systems, Kiribati

A year or so after the management plan was established (in 2017), the community came together to form a united *unimwane* or elders association for the community. They combined the names of the two elders associations of the two wards into one. The separation of the wards within the community had meant it was hard to hold community-wide meetings. People from the southern ward couldn't go to the meeting house of the northern ward.

To mark the occasion, they performed a combined wards dance at a community meeting. It was symbolic and very moving for the community. The move to combine the wards has had an impact on fisheries management - they have been better able to work together on implementation of their CBFM plan. There have been impacts beyond fisheries management as well. The community is working now as one village so that guests and visitors from outside are taken care of by the single association. There are joint decisions not just on fisheries management, but also for example on agriculture management with regards to a primary resource like coconut or kopra.



## Story of Change: Trust and co-investment in CBFM, Kiribati.

Under the Pathways project, now there is great support in the community for CBFM and a strong relationship with the CBFM team. There is a level of trust, and that has become more prominent since catch monitoring data collection started in 2019. The community knows the team very well and has no problem sharing their issues and concerns. The CBFM team helped the community develop a small grant application – it was successful! This helped boost the team's regard in the community. The community also

requested assistance with coral replanting. The request came from the community to the CBFM team in the

first instance. The team acted as a conduit and put the community in contact with the MFMRD aquaculture unit. There is evidence that the community now see CBFM as a partnership, rather than an external project funding activities. In early 2021, this community requested support from the CBFM team to help them review their management plan to finalise it in line with the new Coastal Fisheries Regulation requirements. They sent their boat as transport, at no charge to the team when in the past there had been. This co-investment in CBFM activities is a sign that the community is fully vested in the work, has strong trust and regard for the CBFM team, which bodes well for the long-term sustainability of CBFM in the community.

In VUT, VFD articulated specific interest in strengthening fisher associations as a governance body in communities through which VFD can channel support - see National Roadmap (VFD 2019c [VUT-2019-TO-VFD]). The project assisted in the formation of fishers associations, and other organizational bodies, in all the communities that were part of developing CBFM plans. Next to coordinating management implementation these proved very important in coordinating support in post-disaster contexts also when pressure on resources spiked (Steenbergen et al. 2020 [VUT-2020-PP-Steenbergen]). The formation of CBFM plans therefore served a far greater purpose than agreeing to a set of rules and how to enforce those. With all the collaborative planning, consultation, information and awareness work, design and final implementation that is involved in these processes, outcomes reflect far broader impact. To illustrate one example, on Futuna island the formation of the area level CBFM plan instituted several structural changes. Firstly, the swift collective decision to apply new restrictions following effective information dissemination campaigns (see impact story below).



#### Story of Change: A 10 year ban placed on parrot fish following Wan Smolbag CBFM play "Twist Mo Spin", Vanuatu.

In 2019, the Pathways-supported Wan Smolbag theatre group toured Futuna as part of its southern provinces tour of the CBFM play entitled "Twist Mo Spin". This play sought to highlight the importance of managing fish for life on the island and was followed up by an interactive workshop with the audience to tease out island-specific challenges and have people give that thought. This had immediate impact on fisheries management in Futuna. At the time, one community had just started the consultation process

for their CBFM plan. Given the construction-driven demand for sand on the island, there was much discussion around sand mining and sand depletion on the island. From watching the play and participating in the workshops, people learnt the importance of species like parrot fish for the reef (in breaking down sediment into sand), immediate action was taken to set restrictions on parrot fish consumption. A 10-year ban was placed on parrot fish after discussion among fishers revealed a noticeable decline over the years due to increased household consumption of parrot fish.

Secondly, the parallel processes that were underway by the project to strengthen intercommunity networks in Tafea province, gained particular traction in Futuna following their CBFM plan development process. Whilst the island had a long standing membership to the national community network of resource monitors, Vanua Tai, the island council sought to formalise it and gain recognition as a subnetwork to the larger national network. As one of authorised officers on Futuna noted during a provincial subnetwork meeting, "Our CBFM plan shows how organized we are within and between our communities, [...] it allows us to finally formalise some longstanding other networks, like our *Fenua Tai* island network".

Lastly, one community on the island independently made the decision to extend the development of their resource governance after completing the CBFM plan, by enacting community byelaws (see impact story below). These structural changes to how people work

together in how they use and manage resources indicates following co-design process for CBFM, far exceed the material output of a CBFM plan.



#### Story of change: Community proactively drafts by-laws to legitimise their own traditional rules and rights, Vanuatu.

This community is located atop steep cliffs of over 50m that drop into the sea, with difficult access to landing sites. As such, fishing is more difficult here, and thus occurs at a smaller scale than other parts of the island. Despite this, the community showed strong initiative to establish rules around fishing. A major reason for this was because much of the community resides on the larger island of Tanna and in Port Vila, and during holidays community members return. During these times fishing spikes and resources are under intense pressure, with most not following any

particular (traditional) rules. The community has a very strong custom governance structure in place, which elders have noted is at risk of dilution with the next generation not living full time on the island, nor practicing custom to the same extent as in the past. The community council made an effort to attend the first CBFM consultation for, and in, a neighbouring community after hearing of this through the island council. Community elders recognised the opportunity to strengthen their existing governance system (in the face of change), and have it recognised and function within the modern national legislation. The community leadership addressed this in several ways:

- Community leaders independently drafted their own by-laws (the only community on the island to do so), as opposed to locally agreed rules. The intention here was to legitimise their rules (and their rights as custodians) with formal government recognition, as by-laws. When the Pathways team came to this site to assist in developing the CBFM plan, the community had already drafted the rules. These were endorsed as part of the final signing of the CBFM plans that collectively made up the overarching island level plan.
- The community had existing rules around access to particular (sacred) sites. They used the formalization of the CBFM plan to have these rules codified, recognized and incorporated in their plan, so as to strengthen those traditional rules in the face of contemporary challenges that are increasingly eroding application of custom rule of law. Their CBFM plan incorporated local language as a deliberate statement to emphasize local ownership and importance of their traditional identity.
- There had been a coconut crab tabu area designated under national law some 5 years prior, as a national government initiative. The community incorporated this into their CBFM plan, granting enforcement and management responsibility to the community as owners and custom custodians.

The Solomon Islands Government has made notable progress in developing new legislation and policies to manage the country's marine resources in a sustainable way, most notably the Protected Areas Act (2010) and the Fisheries Management Act (2015). The key challenge is to ensure that these intentions are turned into action. The project supports this in several ways (MFMR 2021), but a big emphasis has been on the support for communities through networks of PFOs and community champions to provide information and awareness. Often, other communities' positive experiences provide catalysts for reflection and adoption of new practices. Demonstrating positive examples is an established way of supporting adoption at scale: people are more likely to adopt a new practice if they have seen benefits from others doing it before. But different communities have different challenges and priorities. So what is demonstrated or communicated matters. The project has engaged with learning and promoting diverse benefits of CBRM. For some communities the process of identifying challenges, prioritising them and then reaching consensus together can be a major achievement. Re-connecting over common challenges that may have been left to divide opinions in communities. Recognising "management over ownership" for shared resources can become an important milestone where there has been disputes in the past

(Sukulu et al. 2016). The Fisheries Management Act (2015) seeks to enable the gazetting of communities' management plans so that they take on a certain legal status. Even though several plans have been developed none have been gazetted due to government constraints. Across Malaita, the project teams have enabled the spreading of good examples and supported the development of inclusive management committees. The process is generating value and strengths for communities, showing that it isn't always a formalised or gazetted plan that matters most.



# Story of change: CBFM strengthens the ties between tribes within the community, Solomon Islands.

Elders in the community witnessed enhanced community cooperation in the managed area. Setting up the managed area helped bring people together. When the management plan was implemented, everyone worked together in enforcement, looking out for poachers. The process has also strengthened the ties between communities on the island. This community originally learned about CBFM from a neighbouring community, and have since become a learning site for other communities on the island.



# Story of change: Holistic approaches to resource management, Solomon Islands.

Following establishment of their CBFM plan, this community is now looking at terrestrial management also. They have already started work with the provincial forestry office, who visited the community in early 2021. The community have proposed land boundaries as well but will need to confirm with land owning tribes. They have started nurseries for replanting and are envisaging a 'Ridge to Reef' approach to capture management in both land and sea.

Uncontrolled construction of log ponds associated with the logging industry have a significant impact on coastal ecosystems that support fishing (van der Ploeg et al. 2020) **[SLB-2020-PP-van der Ploeg]**. Logging and the associated practices of transporting the logs leads to environmental damage and habitat loss. It also causes massive erosion, which has a detrimental effect on water quality. This supra-local threat has proven difficult for Solomon Island communities to manage in ways that works for them long term. Often CBRM is viewed as inadequate to impact the situation positively. It is really a task for the Solomon Island Government to enforce environmental protection law upon multinational companies that run these operations. But small examples have emerged where the CBRM process has provided communities with a common goal and framework for their environmental protection and use. Understanding how collective action at the community level can interact with positive governance over supra-local drivers of change and extraction (e.g. logging or beche-de-mer) is an area of growing demand and interest.



#### Story of change: The management plan protects against destructive activities, Solomon Islands.

In June 2021, a logging company officer came to this community to seek approval from the community to put a log pond within the area. The people in the community referred to the management plan to deny the initiative. The company asked the committee chair if there was a specific rule registered in the plan. The chair responded that there was a 5 million SBD fine per year for any

pollution in the area, which was a falsehood he felt he had to do to protect their management plan initiative. "This story demonstrates the understanding and knowledge the community had as a way of using the management plan to protect their resources from destructive human activities, especially for logging which is very common around the province," said Faye Siota, WorldFish. A rule was later added to prohibit log ponds around the borders of the managed area.

#### Coherent responses to natural disasters

Natural disasters are not uncommon in Pacific countries, particularly in SLB and VUT, which consistently rank amongst the most vulnerable countries to natural disasters (see annual World Risk reports by Institute for International Law of Peace and Armed Conflict (IFHV)). In the course of the project disasters befell all countries, with droughts experienced in KIR, volcanic eruptions in VUT (Ambae 2019), and the tropical cyclone Harold across SLB and VUT (April 2020) to name a significant few. Experience showed that national responses to unexpected events in the form of delivery of immediate relief is often late, uncoordinated or inappropriate (see experiences of TC PAM in VUT during previous phase FIS/2012/074). Fisheries resources have proven to be a critical resource for food in isolated communities when gardens are destroyed or connectivity infrastructure is damaged.

The project invested to support national agencies in their capability to respond to immediate needs of those affect by natural disasters. While government agencies are hampered by their ability to mobilise resources efficiently to make immediate assessments possible, the project carried out critical damage and needs assessments. During the evacuation of all residents from Ambae island in VUT following the eruption of the island's volcano, the project supported firstly an immediate assessment on Ambae and Maewo, and then supported VFD in developing a detailed fisheries support plan for the evacuees displaced to the neighbouring island of Maewo (VFD (2019a, b) [VUT-2019-OO-VFD 1; VUT-2019-OO-VFD 2].

Based on these experiences, the project established a disaster response fund within the incountry project financial structure to allow swifter responses to augment the deployment of government funds. This proved critical in the response to TC Harold in April 2020, with project funding supporting a VFD assessment in villages in remote NW Malekula and Ambae. More structurally, the project also invested in aligning departmental processes and procedures for disaster response with larger national disaster response protocols and systems. In VUT the project supported the co-design of a standard operating procedure (SOP) that lays out a systematic approach to coordinating immediate fisheries responses. This process involved co-design with representatives from the National Disaster Management Office (NDMO), as the central coordinating institution for disaster response. It led to an advanced draft of a fisheries disaster response SOP (VFD (2020b) **[VUT-2020-OO-VFD (draft)]**. This draft is the result of several project facilitated consultations, and is expected to be refined and completed in the subsequent phase. It has been included in VFD's annual business plan for 2023. The multipronged approach of facilitating swift immediate response while in parallel establishing the structural machinery for streamlined resourcing is enabling VFD to more effectively provide support to people in disaster effected areas along the coast.

#### Supporting national and regional responses to COVID 19

In SLB, the project contributed to WorldFish's rapid response to the national agencie's requests for research to prioritise actions in support of livelihoods and health. The team developed a phone survey that was used to systematically check-in with communities and to document their patterns of disruptions and responses. Within 3 months WorldFish published one of the first reports on the situation in the Pacific focusing on village food systems (Eriksson et al. 2020a) [SLB-2020-TO-Eriksson]. MFMR incorporated this report in their national coordination planning with other Ministries. Subsequently, provincial support structures followed through on some of the recommendations made, such as a FAD program that picked up pace during 2020-2021. Our efforts were also noted through an invitation to support Australia's policy to a response in the Pacific at the DevPolicy blog (Eriksson et al. 2020b [PRJ-2020-TO-Eriksson]), in which we highlighted the role of aquatic foods as a social protection mechanism and that rural societies appear resilient and should be supported through their own prioritised ways. The survey we developed was shared among partners through the SPC Fisheries Newsletter to support a regionally harmonised way of collecting information (LMMA et al. 2020 [PRJ-2020-TO-LMMA]). Through this sharing we were able to generate a harmonised dataset for Federated States of Micronesia, Fiji, Palau, Papua New Guinea, Solomon Islands, Tonga and Tuvalu (Vanuatu decided to retain its data and Kiribati did not use the survey). The combined cross-country dataset was published in collaboration with 19 national and regional institutions focusing on food system resilience during COVID-19 through local practices (Ferguson et al. 2022) [SLB-2022-PP-Ferguson]. The dataset from Solomon Islands was also incorporated in a book that was framed around COVID-19 and small island developing states and their general societal challenges as a response to the pandemic (Ride et al. 2021 [SLB-2021-PP-Ride]).

In KIR, during COVID-19, the CBFM team directly liaised with CBFM community representatives either by phone or during field work activities if travel restrictions allowed. This direct contact with community members allowed the CBFM team to provide updates to the Director of Coastal Fisheries on community needs during COVID-19 and formed part of MFMRD COVID-19 community response.

In VUT, provincial fisheries officers were involved in coordinating and implementing a phonebased survey with community leaders, to gain information on immediate impacts of COVID-19 and TC Harold, in April 2020 (relating to food security, access to fish, effectivity of fishing rules and governance in these times). This survey, drew on the initial survey carried out in SLB, however expanded with specific needs by VFD around the access and support needs from communities by VFD. The results of this survey were published in Steenbergen et al. (2020) [VUT-2020-PP-Steenbergen], and informed VFD's longer term COVID-19 response to communities in 2020 and 2021. This furthermore initiated a process to design and develop an SOP for CBFM response to disasters, which involved representatives from National Disaster Management Office (NDMO) to ensure the design of tools and instruments streamlined with existing processes, protocols and procedures under the national disaster response frameworks. During COVID-19, the project furthermore provided direct liveinformation from communities to the VFD representative who act on the Ministerial food security cluster under MALFFB. This body was formed to ensure food security vulnerabilities in rural areas were adequately addressed during the pandemic. Being the only CBFM program still actively engaging with communities throughout the pandemic, project staff formed critical conduits of information from the field to support strategic decision making by this cluster.



#### Story of Change: Community relies on its CBFM plan in times of crisis, Vanuatu.

This community is located close to a popular tourist site, which was a popular destination for cruise ships prior to COVID-19. The community's CBFM plan was implemented in 2017 and has since helped the community overcome several unexpected shocks. In 2018, a sudden increase in population occurred after Ambae volcano erupted and displaced many people from Ambae island, a portion of which settled in the area. The population's temporary growth had a significant impact on resources. The community were to be able to rely on the CBFM plan, a legitimate means

to restrict Ambae newcomers in fishing the tabu area. Then in 2020, the community experienced a double burden. First was the loss of income with cruise ship tourism crashing due to the onset of COVID-19 and second was the damage caused by TC Harold in March 2020. When Covid-19 hit and tourism abruptly stopped, many households which relied heavily on tourism had to find other activities. Since garden crops were not readily marketable due to the destruction of gardens by TC Harold, women turned to gleaning, line-fishing, collecting invertebrates and canoe fishing. This again added pressure on the reef. However, despite these three significant pressures, impacts were mitigated, aided largely by having the 2017 CBFM plan in place.



#### Story of Change: Food scarcity attributable to COVID-19 is minimised through CBFM, Vanuatu.

The foundation for management has contributed to the community's ability to deal with acute shocks and slower shifts. As an example of overcoming a sudden shock, when COVID-19 induced lockdowns were announced across the province in 2020, all travel was stopped, effectively isolating Aniwa for two weeks and discontinuing supply of food to the island. This led to a spike in fishing demand. With the CBFM plan in place, and in communication with the Pathways team, a controlled opening of the tabu area was permitted. During this opening people could fish by following restrictions on gear use

and guidelines on species targeting (focusing harvest on species that are known to rebound well). This tabu area opening allowed for protein supply during this period and prevented intensification of fishing on reefs.

# 7.1.3 EOP Outcome 1c. Increased ownership and investment by national fisheries agencies for CBFM / enabling environment created

#### Strengthening national fisheries organizations

Over the life of the project there has been an increase of 11% of national agency staff allocated to coastal fisheries in VUT. In SLB, MFMR has grown significantly in capacity over recent years (Figure 7.1). Since the late 1990s, CBFM had been gaining traction and by the 2000s was an innovation around which the ministry began organising towards through its focus on coastal fisheries. In 2007, 27 positions were allocated to roles aligning with coastal fisheries activities although not all were filled. By 2020, the MFMR was staffed by around

130 people with seven separate divisions arranged to optimize delivery on its clearly articulated mandate. Fifty-six of these staff (including divisional leaders) were assigned to activities related to coastal fisheries. The new staff had skills and qualifications relevant to coastal fisheries management and research, policy and aquaculture. Now 25% are women and more than 85% had a minimum of an undergraduate university degree in a relevant field of study.



Figure 7.1. MFMR national staff in technical divisions focused on coastal fisheries management and community development. All years represent filled positions to the extent it could be ascertained from available data. 2007 is an overestimate of filled positions as it was not possible to disaggregate the data into filled and vacant posts, nor were data on staff qualifications available. Figure from Schwarz et al. (2021).

Understanding that these increases are the result of a series of investments in the sector, investments by Pathways in agency capacity have translated to significant institutional growth. From the beginning of the project, in-country CBFM staff in KIR and VUT became full-time Fisheries officers paid by the project. In KIR there were initially four officers and this was augmented by MFMRD staff funded by the MFMRD recurrent budget. Because project staff were embedded in MFMRD, project and government activities were aligned and the project team implemented joint activities with, for example, the aquaculture unit, training unit, extension unit and MCS&E unit. This modality of work has been carried out since the first phase of the project and has resulted in a coordinated approach to CBFM delivery in communities. A CBFM unit has been created within MFMRD, including with the funding of a dedicated CBFM officer funded by GoK. MFMRD sought approval to fund the full CBFM unit from recurrent funds in 2020, but was turned down by Cabinet. The project will continue to work with MFMRD to create a fully staffed CBFM unit as part of FIS/2020/172.

In VUT, the project began with a single CBFM officer. An initial priority was therefore to expand the team, and in 2018 two additional ni-Vanuatu were recruited. These staff were trained and integrated into VFD work programs as part of their role in implementing project work. In 2019 one staff member was promoted and absorbed into VFD following recognition of her contributions to CBFM (she has subsequently been replaced). In 2020, with the growth in VFD's demand for CBFM technical support, a further two staff were recruited, trained and integrated into specific implementation roles. This forms the current foundation for what VFD recognises as its CBFM unit. The planned restructuring of VFD during the subsequent phase (FIS/2020/172), has tabled this unit to be absorbed into a revised organisation of VFD, thus becoming subject to national budgetary support (pending formal

approval of a proposed restructure in 2022). In addition to strengthening of technical expertise in VFD, the project has supported VFD to develop and deliver important strategic policy documents that establishes a long term vision of sustainable development in the coastal fisheries sector (e.g. National Coastal Fisheries Roadmap). Steenbergen et al. (2022) **[PRJ-2022-PP-Steenbergen]** outline the institutional developments within VFD over the last decade that have primed its current transition into implementing a national CBFM program (a focus for FIS/2020/172). In this, they highlight the rapid growth since 2017, which in part is driven by Pathways' dedicated focus on catalysing CBFM growth nationally.

In SLB, the project piloted the first seconded staff member into the CBRM unit at MFMR. The Ministry has come very far in its capacity and structure to operate as an effective ministry and partners need to stand behind them and consider the best ways of enabling their services in support of CBRM scaling. The seconded staff member, Faye Siota, integrated with the CBRM unit team and their work planning, thereby adding capacity and technical skills to their team. Faye was able to operate as a networked officer, supporting CBRM awareness and management planning support in Isabel province, where WorldFish does not have an office. Refer to Section 8.2 for a longer description of the impact of the WorldFish secondment at MFMR. The model of secondment validated a mechanism of integration that we are promoting to other partners to consider. In FIS/2020/172, the project has a seconded Provincial networking officer (Grace Orirana) and a Data officer (commencing 1 October 2022) responding directly to the capacity needs and requests of MFMR.

### Spotlight: Engaging Provincial staff in Solomon Islands.

Engaging PFOs and staff from MFMR in all field activities has become a key way of work for WorldFish's CBRM engagement in the provinces. In this modality, WorldFish staff are accompanied by one or more PFOs and a MFMR staff in the field. In practice, PFOs have a role in leading field preparations and logistics, leading awareness talks in communities, facilitating focus group discussion for the scaling CBRM surveys and joining in team reflections.

This engagement has been described as positive by both project staff and PFOs. Project staff member Faye Siota commented on having the PFO join visits to the community, stating *"it was beneficial as he has wide experience and understanding of the communities around the province with regards to fisheries, so he is capable of absorbing and adapting new tools and ideas to the local context."* 

Fisheries Research Officer Jill Houma from the Malaita Provincial Fisheries Division reflected on the arrangement: *"I have learnt a lot from working in partnership with WorldFish, especially on the tools and methods used to collect information, and the many different gender tools/approaches that we use to ensure inclusivity. Working together with WorldFish provides [our office] the opportunity to reach a lot of coastal communities in Malaita. This helps us become aware of the current status of fisheries resources and the threats in the different regions. The connection I established with some of the WorldFish staff during field trips helps me better understand how to communicate CBRM to villagers... and has also helped me develop confidence in public speaking. Working as a team helps to tackle technical questions that are usually asked during awareness programs. Personally, working with WorldFish as a research organization inspires me to look for opportunities for further studies."* 

## Fishery monitoring in KIR and VUT

MFMRD and VFD have long understood the importance of evidencing the implementation and uptake of CBFM. There is limited baseline information available at the community level to characterise the complexity and diversity of community fisheries or to monitor progress towards community resource management goals. Conventional coastal fisheries monitoring methods, i.e., creel and underwater surveys, are designed primarily to serve biological stock assessment or ecological assessment goals. While such methods may generate valuable scientific data for national government monitoring and evaluation programs and for wider scientific understanding, they not readily translatable to more local scales for resource use decision-making in communities. Finding ways to better capture the essence of communitylevel capture fisheries in ways that give communities more tools and confidence to manage their local fisheries resources is therefore an important undertaking. The project is working with MFMRD and VFD to develop fully digital applications of the method into their national monitoring programs.

"Realizing the significant of this important catch monitoring tool, I have decided that it will be better for our research officer are trained and first become engaged in this monitoring tool with Pathways in their next fieldtrip (...). Only then after completion of this trail, I believe the Government will take on board as an important data monitoring too to incorporated and implement into its future planning in managing our resources." [June Brian Molitaviti – Research and Aquaculture Manager, VFD]

"I'm so passionately and delighted in working with the enumerator and communities (fishers), in collecting information on CBFM Catch monitoring tools. I believe from the 5 sites where we survey, they really appreciated the communities reports and the community's leader take initiative to make decisions on to manage their resources and I have notice few changes in some communities in managing their resources. On the other hand, I have slowly integrated the tools into Vanuatu fisheries Department (VFD), Which will not only focus on the communities resources management but also look at National Level in managing the resources." [Abel Sami – Pathways team, VFD]

"Catch Monitoring has been an important tool to CBFM as it provided CBFM communities with both the opportunity to best monitor the progress of their fisheries management activities and also empowerment toward the safeguarding of CBFM management measures" [**Rooti Tioti – CBFM team**, **Pathways**]

The project has developed an approach to community-level coastal fishery monitoring in Vanuatu and Kiribati that supports the evaluation and adaptation of CBFM plans. Ten communities (five communities each in KIR and VUT co-developed the method: in VUT, Kwamera (Tanna), Pescarus (Maskeylyn/Malakula), Ikaukau (Aniwa), Takara (Efate), and Hog Harbour (Espiritu Santo); and in KIR Tabonibara (North Tarawa), Kuuma and Tanimaiaki (Butaritari), Ribono (Abaiang), and Autukia (Nonouti).

The mixed-method approach captures quantitative and qualitative evidence on: catch and effort, the context of the fishing, photographs of the catch, and perceptions from fishers and enumerators of the fishing trip (Li 2020, Andrew et al. 2020, Nikiari et al. 2020, Sami et al. 2020, UOW 2021a, b, VFD 2021f, g) [KIR-2019-OO-Li; KIR-2020-TO-Nikiari 2; PRJ-2020-TO-Andrew; VUT-2020-TO-Sami; PRJ-2021-OO-UOW 1; PRJ-2021-OO-UOW 2; VUT-2021-OO-VFD-Pathways; VUT-2021-OO-VFD-Pathways 2]. At time of writing the program has identified and measured 50,010 fish to a species level. See Appendix 1 for a detailed summary of three rounds of analysed catch monitoring data, and Section 8.2 for a summary of the training associated with the fishery monitoring program. Once fully developed (see below), the method, including tablet applications, training manuals, and ID software will be available on SPC FAME's CBFM website.

## 7.1.4 Lessons learned and recommendations

#### Project modality and governance

The project modality used in KIR and VUT proved highly effective in promoting long-term sustainability of project outcomes and goals. Contractual relationships with GoK and GoV were effective in disbursing funds and accountabilities, and building long-term organizational, institutional and individual capacity to implement CBFM. In SLB, the modality differed because of the long-term WorldFish program integrated with MFMR. At MFMR's request, WorldFish operated accounts and disbursed operating funds - operating as an integrated partner with MFMR exemplified also by the seconded staff member. Project workplans were agreed with national partners and project leadership. In FIS/2020/172 this

process of deeper integration and shared programming under national leadership will continue in all three countries. Similar benefits of national embedded programs has also been noted for ACIAR FIS projects in Timor-Leste, where the model is similar.

In all three countries, integration of bilateral projects became increasingly important as climate change and geopolitics changed the development aid landscape. We found that the national roadmaps and related policies were effective in aligning bilateral projects behind and in support of national ambitions rather than being implemented independent of them. We recommend the subservience of project objectives to national goals and strategies be central for development oriented bilateral projects.

The governance structure of the project, notably the steering committee with the inclusion of ACIAR and DFAT, and close relationships with national agencies enabled the project to adapt to natural disasters in VUT and COVID-19. Both, but particularly the latter, caused significant disruptions to schedules. Funds were able to be diverted to new activities quickly. We recommend analogues of this tiered form of governance be considered for all research for development projects.

### COVID-19

Much of the efficacy of the project's way of working was reinforced by COVID-19 and the serendipitous rise of cloud-based video conferencing services such as Zoom. The established professional relationships among project staff in different locations meant that Zoom proved an effective platform for planning and reviewing activities. In-country staff effectively managed their own work programs with a much lighter degree of supervision. In many ways COVID-19 accelerated the transfer of decision-making authority and ability to work independently.

### Fishery monitoring

The fishery monitoring method developed in KIR and VUT was designed to shift the burden of time and expertise required from the field to the laboratory. By doing so, a far broader range of enumerators can adequately collect data, including community members, Provincial Fisheries Officers and domestic NGOs (e.g. Vanua Tai) which means that it is more appropriate for a national CBFM program with many communities. Important lessons have been learned in developing the method; below we summarize two lessons and recommend ways forward:

Firstly, while creating a step change in efficiency and practicality in the field, the method produced a significant and unsustainable burden on laboratory/office-based staff. Further, with more than 350 species of fish in the catches, the level of dedicated expertise required is rare in the region. Under SPC FAME's leadership we are addressing these challenges in FIS/2020/172 by: (i) developing a digital application of the survey instrument, (ii) developing semi-automated summary reports for communities and national agencies, (iii) developing an Artificial Intelligence application to automate fish ID and measurement from photographs, and (v) building a community of practice in the region to accelerate machine learning and share lessons in implementing fishery monitoring programs at scale.

A second major lesson was the confirmation of the importance of invertebrates in catches, particularly in KIR, and the enormous challenge of adequately describing catches thereof. Some taxa, such as crabs and gastropods are amenable to identification and measurement

from photographs, but others such as octopus, encrusting bivalves, and sipunculid worms are less so. Further, the sheer numbers of individuals and the fact that many taxa are shucked or contain no external skeletal elements make quantifying catches difficult (see photograph). We were not able to address this issue in the current project and so have prioritised this work within FIS/2020/172 to be completed in collaboration with SPC FAME. The foundation for this work will be the hundreds of photographs archived from the current project.



# 7.2 Objective 2. Scaling CBFM in Kiribati, Solomon Islands and Vanuatu

PICTs face their biggest coastal fisheries management challenge in realising ambitions to scale CBFM up and out. This is conveyed in the various regional policy directives of the last decade, including foremost in the 'New Song'. The project set out to address critical questions in this challenge, and in doing so, supported SPC and national agencies. It has made direct critical contributions to policy formation, nationally and in the region; in addition to developing and testing CBFM innovations across community networks. Below we outline the impact pathways of work undertaken towards knowledge production, policy formation and practice change around scaling CBFM. We first present the scholarly basis from which our contributions have stemmed, including reflections on approaches to supporting CBFM and the theorising of scaling CBFM. From here we show how this informed policy discussion and design processes in country, but also across the region (e.g. the Pacific framework of action for scaling up CBFM). We furthermore look back on outcomes from expansions of CBFM in KIR, SLB and VUT along the three end of project outcomes (EOPOs) under this objective.

## 7.2.1 Reflecting on approaches behind supporting CBFM growth: a point of departure

Core to the project is the ambition to proceed beyond multidisciplinary modalities, toward inter- and transdisciplinary research endeavours. As part of this, the project explored various definitions of research inter- and transdisciplinarity, and their value to research for development (RforD) in conceptualizing and informing responses to complex problems at the interface between society and nature. This is illustrated by Andrew and Fleming's (2019) [**PRJ-2019-PP-Andrew 2**] essay that explores alternative typologies of agricultural RforD and the relations between interdisciplinarity and the people-centred pluralism that has emerged from the development literature. They argue for the relative value of RforD in conceptualizing complex problems, in offering more fit-for purpose project

design. Their conclusion that approaches to development (and CBFM) need to be creative, grounded, integrative, reflexive, and alert to power to guide good RforD, provided important direction to the way the project engaged in collaborative implementation of management support, research and technical advice. In a similar vein, the engagements across the science and policy interface are critical to influencing decision making and informing, or in some cases transforming, practice with evidence-based intervention. Drawing in part from project experiences of CBFM implementation in Vanuatu, Karcher et al. (2022) **[PRJ-2022-PP-Karcher]** analyse bright-spots from a wide range of marine fields, contexts, and locations to provide insights into how knowledge exchange at the interface of science and policy can be improved. The analysis reveals how diverse successes of science translation to policy and practice were enabled by factors related to the actors, processes, support, context, and timing. Particularly, the importance of involving diverse actors and managing positive relationships was a key lesson for success.

Networks, and the collaborative partnerships that materialise through them, form a critical vehicle for the project's scaled approaches to CBFM. Such substantial investments in governance networks seek to build capacity for addressing complex sustainable development challenges. However, enthusiasm for establishing governance networks is not always matched by empirical evidence on their effectiveness. This challenges governments in knowing whether investing in governance networks is worth the time and effort; a weighing-up that is particularly critical in contexts of limited resources. Blythe et al. 2022 [SLB-2022-PP-Blythe] examine this dilemma through their evaluation of the extent to which a governance network in Solomon Islands, called the Malaita Provincial Partners for Development, contributed to four dimensions of collaborative governance capacity: individual, relational, organizational, and institutional. While governance networks are not the be all and end all, this research advocates for continued empirical efforts to establish when, how, and in what contexts collaborative networks are effective for building collaborative capacity for sustainable development. Bennet (2018) [SLB-2019-TO-Bennett] does this in part by outlining experiences of network building and impacts of partner relationships in Western province of the Solomon Islands under the project. He documents how participants in early meetings and workshops held in the province echoed the importance of working together to build an effective and collaborative network to address the province's environmental and development goals. WorldFish's involvement offered opportunity to facilitate the process with a first inception meeting that solidified the Western Province Coalition. Participants at the meeting identified learning from other networks in SLB as an important part of building a strong network in Western Province. In response to this identified need, WorldFish, with the support from the Western Provincial Government (WPG) brought together stakeholders from the various organizations' that support the idea of working in partnership to implement natural resource management and sustainable development in Western Province. A number of successful impacts have arisen since, including the establishment of the network that allows the sharing of expertise and resources, and discussion on ways in which partners can learn to work more effectively together into the future.

## 7.2.2 Understanding and conceptualising the challenge of scaling CBFM

An important first step towards understanding the challenge of scaling CBFM in the Pacific, and so to the justification for it, is to comprehend the spatial spread of people along coastlines (and on islands) and how this translates to their exposure and vulnerability. The 22 Pacific Countries and Territories (PICTs) are poorly represented in global analyses of vulnerability to seaward risks. Andrew et al. (2019) [**PRJ-2019-PP-Andrew**] combined several data sources to estimate populations to zones 1, 5 and 10 km from the coastline in each of the PICTs (Figure 7.2). They found that regional patterns in the proximity of Pacific people to the coast show that 97% the population of the Pacific resides within 10 km of the coast and slightly more than half live within 1 km of the coast (excluding Papua New Guinea).



Figure 7.2. Proportions of households within 1, 5 and 10 km from the coast in 22 PICTS.

A subsequent dimension to understanding scaling challenges involves comprehending conditions under which CBFM may occur. Brewer et al.'s (2021) [SLB-2021-PP-Brewer] large-sample-size assessment of socioeconomic predictors of CBFM occurrence in SLB. assessed the effects of key community characteristics (human population size and density, market integration, and modernization) on the probability of occurrence of fisheries management practices, including gear, species, and spatial restrictions. In contrast to prevailing views, a positive and statistically significant association was found between both human population size and market integration and all three management practices. Human population density, however, showed a statistically significant negative association and modernization a varied and limited association with occurrence of all management practices. The method offers a way to remotely predict the occurrence of resource management practices based on key socioeconomic characteristics. It could be used to improve understanding of why some communities conduct CBFM activities when statistical patterns suggest they are not likely to and thus improve understanding of how some communities of people beat the odds despite limited market access and high population density. These are important questions for national agencies grappling with decision making around optimal investment of resource to ensure most effective support across remote and extensive landscapes.

Following these characterising observations of the landscape in which scaling should occur, a critical gap to our understanding remained around how 'scaling' actually occurs. The basic amplifying of local community led sustainability outcomes remains an enduring challenge among development and conservation efforts. The broad ambition and imperative to move from 'small and few' to 'large and many' has been captured in the need to have impact at scale. Scaling has become integral to the vocabulary of rural development and often features prominently in programme design and theories of change (ToC), wherein successful ideas or practices need to be 'brought to scale'. More profoundly, scaling has become a critical research frontier that requires new transdisciplinary methods, relationships and modes of working. The literature on scaling has flourished in recent years as researchers and development practitioners grapple with the complexities and accountabilities of scaling.

Perspectives of knowledge, practice and innovation transfer by diffusion have usefully highlighted challenges in this field. In their diagnostic analysis of what shapes the diffusion of social meta-norms across different scales of environmental governance Lawless et al. (2020) [**PRJ-2020-PP-Lawless**] provide a synthesis that bridges political and sociological theory and underscores the critical role of agency in the diffusion process. They identify eight drivers of diffusion along a spectrum from prescriptive drivers (which leave little space for norm negotiation) to discursive drivers (which provide an enabling space for norm interpretation). These drivers intersect with a parallel spectrum of actor responses, ranging from complete resistance to social meta-norms at one end, to complete internalization of social meta-norms at the other. This diagnostic of integrated drivers and responses seeks to advance conventional diffusion theory by providing a better account of discursive forces in this process.

Song et al. (2019) [**PRJ-2019-PP-Song**] used diffusion perspectives on policy development in Pacific Island coastal fisheries. Acknowledging that multi-scale diffusion remains a challenge with little certainty in outcomes, they focus their study on examining intermediary dynamics occurring within national policy apparatus that can influence domestic uptake of policy innovation. Through analysing the anticipated spread of two supranational policies on coastal fisheries in the Pacific region – the 'Small-Scale Fisheries Guidelines' and 'the New Song' – in KIR, SLB and VUT, they find supranational-to-national policy coherence across most prescribed policy themes, except for emergent social themes such as 'gender' and 'human rights–based approaches'. They furthermore show that multi-scale policy diffusion is a translational process mediated by national-level staff, and managers' policy images offer nuanced and dynamic insights into why some policies are slow to take root while others take different shape to their agreed meanings. It highlights how analysts and policymakers must consider and mobilise translational approaches in order to understand and facilitate successful domestic implementation of international agreements.

Despite the attention to 'scaling' in the literature it remains a stubborn problem; transformative change is not the norm and development trajectories are too seldom overturned. In response to this Steenbergen et al. (2020) [PRJ-2021-PP-Steenbergen] lays a strong conceptual foundation for scaling CBFM. Drawing on literature of agriculture innovations (Wigboldus et al. 2016, 2017) they advance the conceptualization of 'scaling up CBFM' and provide a framework that takes into account process-driven and structural change occurring across multiple levels of governance, as well as different phases of scaling. It highlights the fundamental interplay between targeted action at the niche (e.g. community) scale and cumulative conditioning of an environment to enable change or drive 'regime shifts'. Successful scaling is hypothesized to require engagement with all aspects of the governing regime, and therefore, is an enterprise that is larger than its parts. The framework presents a normative perspective on transition towards a desired situation; in this case widespread CBFM practice instead of reliance on centrally-governed fisheries management. Where Figure 7.3 introduces the main elements of the conceptual framing around scaling CBFM, Figure 7.4 builds on this by depicting the structural and processdriven changes involved in both direct (e.g. project interventions) and indirect (e.g. spontaneous adoption by communities) introductions of CBFM innovations.



**Figure 7.3**. The theoretical scaffold of scaling CBFM, indicating the core conceptual elements that make up the framework for scaling CBFM.



**Figure 7.4**. A conceptual framework for scaling CBFM that draws from PROMIS framing of scaling innovations. The figure depicts (spontaneous and deliberated) processes and structures transitioning a regime towards a desired outcome based on a generic vision of 'implementing CBFM principles'; namely inter- and intra-connected sets of networks involving stakeholders doing and/or supporting CBFM that enables decentralized, polycentric governance of coastal fisheries over a defined large (national) space.

The framework provides a set of non-sequential areas of inquiry that direct us to (i) reflect on the potential positive and negative consequences of a scaling initiative (i.e. who benefits, who lags, are there ethical concerns, are there alternatives?); (ii) identify push and pull factors and their relative strengths and efficacy; (iii) understand regime-specific path-

dependent 'stickiness' that may exert influence on scaling; (iv) examine the dynamics of scaling through combined process- driven and structural-driven changes; (v) assess, and potentially track, the relative 'position' of a scaling initiative in terms of degrees of structuration and phases of scaling; and (vi) consider impacts of external drivers on scaling trajectories. Such considered inquiry is imperative to allow subsequent translation into pragmatic tools and strategic guidance that can inform development of coherent (national) scaling programs. It can highlight potential entry points for design of effective monitoring mechanisms that drive mutually-responsive policy design and ground-level implementation.

## 7.2.3 Research-driven impact addressing the scaling-up challenge

For many PICTs, including KIR, VUT and SLB, scaling-up CBFM from a few communities to many or most places requires overcoming the geographic isolation of communities, addressing great diversity in ecology and environmental circumstances, securing the political support for CBFM, and integrating CBFM into governance processes (Figure 7.5). Considering this and drawing on insights from the various conceptualisations of scaling above, the project developed a strategic directive to guide implementation (Pathways project (2019b) [**PRJ-2019-00-Pathways**]. It departs from the acknowledgment that sustained scaling-up strategies will require more effective use of those investments. Sustainable management must account for a range of dynamic threats and influences, including catchment management and external shocks, such as natural disasters and pandemics. Much of this thinking has come to be formative to the regional policy that emerged with project involvement in regional policy design (see section on National and Regional CBFM policy shifts towards scaling). Figure 7.5 shows two broad categories of activities that collectively contribute to CBFM scaling, and are outlined in the following two sections.



**Figure 7.5**. Suggested pathways for scaling-up CBFM, illustrating two broad categories of activities, including (i) community-oriented CBFM support action (orange) and (ii) enabling environment action (green). See section below for further details on national and regional policy documentation that has adopted this thinking.

The project's targeted expansion of engaging with 60 communities by end of the project was more than doubled by the end of the project, with 129 communities involved in project activities (KIR – 61; SLB – 34; VUT – 34). Furthermore, 370 communities were reached

through dissemination of CBFM information material, well over the targeted 120 communities (KIR – 87; SLB – 99; VUT – 184). While the project sought to also integrate existing material into it dissemination efforts, it exceeded its planned target of developing 30 new information materials (n. = 31). To further catalyse information dissemination, the project also supported and/or organized nine regional forums/workshops/ events with CBFM information sharing (target was seven). In terms of implementing CBFM, scaling targets were also exceeded, with, for example, more than 50 CBFM plans developed; well over the targeted nine (KIR – 20; SLB – 19; VUT – 13). The project target for the number of communities implementing CBFM principles was 100, however at the project's conclusion the total is estimated at 227 (KIR – 40; SLB – 43; VUT – 144). These figures are the quantitative reflection of innovative approaches and design around support delivery for CBFM by the project, which are further outlined in the sections below.

### Innovating scaled approaches for CBFM support

In utilising vocabulary of the theory for scaling, innovations for scaled CBFM approaches were developed, tested and refined in niche scales; primarily through collaborative, colearning processes with communities. In understanding that impact towards scaling CBFM occurs through multiple innovation pathways, the project applied scaled thinking to various key activities highlighted here.

### Development theatre as an innovative channel for information dissemination

In Vanuatu the project partnered with a theatre company, Wan SmolBag (WSB), to innovate scaled approaches to delivery of CBFM information and awareness raising. Creative communication is central to WSB's mission, and with support of the project are establishing themselves as leaders of 'development theatre' - a community-based initiative that aims to encourage civic action and dialogue through live performance. They have achieved considerable success in the Pacific through community theatre, printed publications, television and local movie productions, and many of their performances encourage communities to engage in more sustainable social, cultural and environmental practices across rural and remote regions in Vanuatu.

Like many areas in the Pacific, Vanuatu's literacy rate remains low (Sloman 2011). The use of interactive and culturally sensitive material in both stage productions and printed

publications means that messages are conveyed more effectively to a wider audience. A process of codevelopment of a script and messaging objective involving teams of Pathways, VFD and WSB initiated the partnership and led to the play 'Twist Mo Spin'. In early 2019, a cast of 13 actors and community facilitators toured the play extensively through Tafea province. It engaged audiences on important social, economic and political aspects of life in remote coastal communities, and championed critical messages around fish-based nutrition.



livelihoods, and inclusive decision-making. It furthermore encouraged more sustainable practices in coastal fisheries management Neihapi et al. (2019) [**VUT-2019-TO-Neihapi**]. Following the play were a series of interactive workshops that challenged people to reflect on the play's themes and consider the role leadership and community governance plays in ensuring the longevity of coastal fisheries through effect resource management.



With the onset of COVID-19 in 2020, and acknowledging the widespread success of the play, the partnership pivoted resources to produce a film of the play for global distribution (Wan SmolBag (2019) [VUT-2019-TO-Wan SmolBag; VUT-2019-TO-Wan SmolBag 2; VUT-2021-TO-Wan SmolBag]. This initiative was driven also to ensure continued uptake over time and to fit within and be used among national CBFM scaling instruments into the future. The film has since been distributed, and has even gained international recognition in its featuring at the International San Francisco Film

festival and the Korean Ocean Film festival, both in 2022. Champions of social change, Wan Smolbag have used their reputation as a trusted source of inclusive and culturally appropriate information to positively influence their audiences, and since touring their play have developed creative new multi-media materials, including comic books and DVDs, that will help keep the messages in 'Twist Mo Spin' alive in local conversation beyond the project's lifetime.

In SLB, WorldFish supported a local youth drama group tour around the area in 2019, to a group of communities in Malaita and targeted nearby communities who had divers who would sell their catch in Auki. The play compared past and present status of the resources, and was effective in at getting the message across. In one community 160 people attended. In 2020, a cluster of neighbouring communities developed a CBFM plan with support of another project. They first heard about CBRM and its benefits from the youth drama group.



### Appropriate and informative material for CBFM

Under the same partnership with WSB, new ways of conveying information and messages were discussed and piloted under the project in Vanuatu. Using local illustrators, and drawing on stories from communities that were yielded during fieldwork, a series of three comic books were developed (Wan Smolbag 2019a.c.d [VUT-2019-IM-Wan SmolBag; VUT-2019-IM-Wan SmolBag 3; VUT-2019-IM-Wan SmolBag 4]). Importantly these comic books focused on topics noted to be of importance in communities, often specifically species-oriented but also broader topics like management of plastics. Through story-telling and embedding CBFM messages in narratives that speak to local frames of reference, the comic books have become important instruments that Provincial fisheries officers in Vanuatu use and readily distribute in their engagements with communities. The comic books have also been disseminated through their inclusion in CBFM information kits, which are distributed during



fieldwork. In such CBFM information kits the comic books feature among other material that exist, including for example material produced in partnership with SPC (technical biological information sheet on fish and CBFM) and other information sheets as presented below.

In Vanuatu, VFD interfaces with the public at national events like Public Service Day, World Tuna Day and Agriculture Week. These form important platforms for information dissemination and an opportunity for civil society to engage directly with VFD staff. The project contributed in developing information material on, for example, the content and function of existing CBFM plans, the process by which communities can request assistance to develop them, and VFD's national vision for development of coastal fisheries [VUT-2021-IM-VFD 1; VUT-2021-IM-VFD 2; VUT-2021-IM-VFD 3; VUT-2021-IM-VFD 4]; VUT-2021-IM-VFD 5]. As a result, VFD has developed a strong library of information material that is easily deployed for public events. In the second half of the project these information material were made available at various VFD information booths. In KIR, at the onset of the project, the team decided to invest in developing information and awareness products that had been requested during the previous phase of the project FIS/2012/074. The lessons learned from the engagement in the five pilot communities and during stakeholder events highlighted that some key messages explaining the key concepts of community-based fisheries management in the context of Kiribati would be useful to interested communities. Three brochures were developed on (i) the local inclusive approach to CBFM respecting of Kiribati traditions 'Te Mwaneaba approach' (MFMRD (2019b) [KIR-2019-IM-MFMRD 1]; (ii) marine protected area (MFMRD (2019d) [KIR-2019-IM-MFMRD 2] (iii) inspiring changes within and among communities in 'Stories of change' (MFMRD (2019e) [KIR-2019-IM-MFMRD 3]). To fulfil a lack in supporting community information on the best management practices of key species targeted in Kiribati (for example mantis shrimp), four posters were published and used in information and awareness sessions (MFMRD

(2019f-i) [KIR-2019-IM-MFMRD 4; KIR-2019-IM-MFMRD 5; KIR-2019-IM-MFMRD 6; KIR-2019-IM-MFMRD 7]. A video featuring community representatives from the five pilot CBFM communities was also produced locally to provide their perspectives on the CBFM approach to other interested communities [KIR-2019-IM-MFMRD 81. These communication tools help to raise the profile of the CBFM project among the wider I-Kiribati population and among



elected officials during key national events but also helped the team with additional resources during engagement and information sessions with community members working on developing their community plans. Further information and awareness materials are being planned in FIS/2020/172.

Other channels of facilitation for increased engagement in matters of CBFM were trialled in Kiribati and led to the development of Nei Tengarengare 'Bingo': a game for healthy fisheries (Pathways project (2019a) [**KIR-2019-OO-Pathways**]). The Bingo game was developed but not taken any further due to COVID-19 reprioritisation of activities.



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#### Seafood handling information sheets: Handling seafood in the Pacific Islands

A series of five information sheets were developed as a collaboration between Swedbio, WorldFish and the SPC (Li et al. 2018, 2019) [**PRJ-2018-IM-Li**; **PRJ-2019-IM-Li**]. The purpose of these information sheets is to ensure community members can purchase and enjoy the freshest, cleanest and

healthiest fish possible, and fishers and vendors can maintain the saleability and value of their fish for as long as possible. The sheets are also serve to inform prospective fishers and vendors of the considerations associated with building fish-based livelihoods (e.g. running solar-powered freezers). The first three information sheets contained illustrated advice and reminders specific to the activities of fishers, vendors and seafood customers. The information sheet for fishers contained information about why it is necessary to preserve the cleanliness and freshness of their catch, and how to do so while at sea before the fish is passed on to the vendors. The



information sheet aimed at vendors includes information about how to preserve the freshness and cleanliness of fish at the point of sale, improving the longevity, appeal and saleability of the catch. The information sheet for customers gives advice on how to identify vendors with good practices, how to evaluate a fish's freshness, and how to maintain the freshness and cleanliness of their fish during transit. The final two information sheets focus on the cold chain and freezing fish respectively. The sheet about the cold chain goes into more detail about what the cold chain is, why it is necessary to maintain, how to maintain it. the need for hygiene even if the cold chain is being maintained, and how to evaluate the freshness of fish. The sheet about freezing fish included detail about which temperatures needed to be achieved, how to freeze fish safely and appropriately, the equipment necessary to do so, how to package fish for freezing, techniques for ensuring the frozen fish maintain their freshness, rotating stocks of frozen fish, how to select and care for fish before they are packaged for freezing, and further considerations specific to freezing fish. These information sheets are available in English, Bislama, Tuvaluan and Tetum, and are hosted on the SPC FAME digital library to ensure broader availability and distribution. As part of the One CGIAR Initiative on Aquatic Foods together with FIS/2019/124, these sheets will also be translated to indigenous local languages (e.g. Makasae in Baucau) to enable grassroots partners awareness and information sharing.

## Simple briefs and fact sheets to define roles and responsibilities in CBFM practice and scaling

The program in Malaita, SLB was quick to adopt the directives in the 2015 Fisheries Management Act, wherein it states explicitly that it is the role of provincial government fisheries officers to support communities in the CBRM planning. In order to ensure that message was understood by all partners, in particular big international NGOs that tend to do their own thing, we worked with PFOs to develop a brief that articulates PFO roles and practical guidance for support (WorldFish 2018) [**SLB-2018-TO-WorldFish**]. This brief helps define roles and responsibilities at the provincial level. Paired with this product we also sought to update the general interest public and partners about CBRM in the province through a fact sheet that illustrated some of the ongoing CBRM activities and priorities ahead (WorldFish 2020a [**SLB-2020-IM-WorldFish**]). Partners then asked WorldFish and the PFOs to provide a wider picture about the work that is going on in the Province relating to coastal fisheries, which was summarized as a fact sheet for the general public and partners (WorldFish 2020b [**SLB-2020-IM-WorldFish 2**]). This was very well received by partners so an identical fact sheet was made for the work that was going on in the Western Province (WorldFish 2020d [**SLB-2020-IM-WorldFish 4**]) We also responded to the request to summarize the state of affairs of FADs in Malaita province (WorldFish 2020c [**SLB-2020-IM-WorldFish 3**]). Over the years there has been several initiatives working with FADs, but there was a noticeable lack of information about where and how these FADs are operating that the fact sheet helped clarify.

#### **CBFM** review tools

One of the priorities of the project was to evaluate adaptability of CBFM. We are predominantly focused on its scaling, but there is a need to also evaluate the performance, adaptability, and inclusivity of CBFM plans at communities. The project recognised the paucity of tools to use for this purpose, particularly in relation to inclusivity. In order to enable a harmonised cross-country dataset for CBFM reviews we developed a tool (WorldFish and UOW 2021a [**PRJ-2021-OO-WorldFish and UOW**]) with an accompanying data collection worksheets (WorldFish and UOW 2021b [**PRJ-2021-OO-WorldFish and UOW** 2)]. The toolkit was a key element of the project's thrust to learn about adaptability and inclusivity through participatory reviews. We published this through the SPC channels as a wide reaching mechanism for sharing the tool broadly.



The tool was first piloted in three communities in SLB and three communities in VUT. Testing indicated that the tool was flexible and culturally appropriate, building on 'tok stori' traditions. The approach elicited participation of disadvantaged groups such as youth and market or fisher women (rather than women with leadership roles that were more accustomed to meetings), but the tool itself needed clearer instructions and more methodical ways to record data from the discussions. A refined version of the tool included tips about promoting inclusive discussions, data collection sheets and a clearer set of guidelines on how to collect data. In total, 21 communities completed the review exercise in KIR, SLB and VUT.

### Area/Island level plans

In conjunction with scaling thinking, the modality by which CBFM plans were developed in the project shifted from convention single community plans toward multi-site plans, the scale of which differed per country. In VUT, plans pivoted towards Area level, while in KIR, an island level governance scale was deemed a more appropriate unit.

In VUT, the project established the first two area level plans in the country These include the Aniwa Area- and the Futuna Area CBFM plan, both in the southern province of Tafea. Extensive consultations and participatory design processes laid the foundation for each of the plans, which have been endorsed by VFD. Each plan first sets out area level rules and agreements before detailing sub-plans per community. In doing so, CBFM becomes nested within community networks. The Aniwa plan involves three villages, while the Futuna plan includes a total of six villages. This modality has become the strategic *modus operandi* for VFD's delivery of CBFM moving forward and will further guide new CBFM development into the next phase of FIS/2020/172. In addition the area level approach has coincided with the strengthening of Vanua Tai subnetworks, whereby the Futuna villages have gone on to formalise and have their network recognised as a separate resource monitoring network, made possible on the basis that they have their own Area-level CBFM plan in place.

In KIR, two islands expressed interest in developing combined management plans at a larger scale. The team worked with Butaritari Island communities and Island Council to develop a whole-island fisheries management plan which would strengthen the rules of each community management plan on the island. Work is ongoing and will cover 11 villages. In North Tarawa, the Island Council opted for the development of zonal management plan where villages with similar context and close to one another could support their own initiative. North Tarawa was divided into three zones (north, central and south) which cover a total of 13 villages. The south zone has developed common rules while work is ongoing in both the north and central zone.

#### Monitoring CBFM impact at scale

Critical to garnering support for CBFM and for catalysing scaling of CBFM is effective monitoring of progress and the ability to show impact by management interventions. As part of the project's strategic approach to scaling (Pathways project (2019b) [PRJ-2019-OO-Pathways]) we designed a survey tool by which to measure the state of CBFM in coastal communities across a landscape (e.g. province or island). The objective for this tool was to provide not only baseline information on active and non-active communities (given this was the first time such a comprehensive survey was implemented for any of the three countries), but also as a monitoring tool when applied in repeat rounds, so as to measure changes in CBFM coverage over a landscape. An implementation field manual was developed and delivered as part of a package for implementation (Pathways Project 2021a [PRJ-2021-OO-Pathways]). The survey was carried out across 68 communities of one province in Solomon Islands, 42 communities across 4 islands in Kiribati (2 lite touch islands and 2 islands where the project had never



gone to), and 86 and 78 coastal communities respectively across two provinces in Vanuatu. In addition, the survey tool was shared, adopted and implemented by collaborating initiatives in the region supporting CBFM scaling, including LMMA who have since started implementing the survey in countries like PNG.

Moving forward into the subsequent phase (FIS/2020/172), country teams are drawing from this data to (i) develop CBFM status fact sheets for use by national agencies and CBFM status. As part of these initiatives, teams have committed to implementing the survey across other landscapes, for example outer island groups in Kiribati, the four remaining provinces in VUT and other provinces in SLB. Lastly, the survey has been identified by national agencies like VFD in the development of their national scaling strategy a useful tool to monitor and track the spread of CBFM.

### Pacific Framework of Action for Scaling-up CBFM

The regional policies (e.g. 'a New Song for Coastal Fisheries' and 'Future of Fisheries Roadmap') stress the importance of local community involvement to achieve sustainable

coastal fisheries, supported by governments and other partners SPC, LMMA and UOW (2021) [**PRJ-2021-TO-SPC**]. A key emphasis of these policies is to scale-up CBFM; this means moving from small pockets of effective coastal fisheries management to meaningful proportions of the coastal environment.

In response to this, SPC initiated a process to develop policy directive that would be useful for member countries to provide a framework to help conceptualize scaling-up, assess progress and develop priority strategies (Lalavanua 2021 [**PRJ-2020-TO-Lalavanua**]). The collaborative design process built strongly forth on the strategic thinking and theorising of scaling as conceptualised in the project's research activities. The co-development of the framework involved a series of subregional consultation workshops, in addition to a final drafting workshop (SPC 2021b,c,d [**PRJ-2021-TO-SPC 3; PRJ-2021-TO-SPC 4; PRJ-2021-TO-SPC 5**]), that eventually resulted in the endorsement by member countries of the Framework of Action



(Lalavanua et al. (2021a) [**PRJ-2020-TO-Lalavanua 2**], Lalavanua and Smith (2021b) [**PRJ-2021-TO-Lalavanua 3**], SPC 2021a [**PRJ-2021-TO-SPC 2**]).

Strategies to scale up CBFM to meaningful proportions of coastlines in PICTs are framed in the document in terms of developing enabling CBFM environments and taking direct community-oriented actions. The relative emphasis placed on these two strategies will differ among PICTs, as will the pathways used to implement activities within them, together forming national scaling-up strategies that may achieve and sustain the benefits for local communities and the environment.

In developing <u>enabling environments for CBFM</u>, governments have a critical role in creating and maintaining the legal and regulatory environment and conditions conducive to fostering CBFM at national, subnational and village scales. Without this work, CBFM activities are more likely to remain small and localised, and dependent on external agents and time-bound projects. Activities by government agencies are significant in scaling-up CBFM and this includes adopting, and most importantly implementing or enforcing laws, regulations, and policies. Other significant activities include setting agency work plans to ensure implementation aligns to laws and policies and supporting national fora to better coordinate government and non-government agencies. Prioritizing and ensuring adequate investment of staff and operational budget is key in implementing these activities and for sustaining management. It is important for government agencies to ensure that efforts and resources are also invested in areas where communities are relatively powerless and in particular controls on export commodities and the various threats to coastal ecosystems damage from outside the fishing sector or areas beyond the control of local communities. Although governments at national and sometimes subnational levels are mandated to complete these tasks, and are accountable for their delivery, there are many other national and provincial institutions that can support them in these roles, including for example, churches, women's and youth groups and schools.

Implementing <u>direct CBFM actions</u> (i.e. community-oriented CBFM actions) involves establishing or strengthening local management practices through sets of activities that range from distanced community engagement (i.e. lightest forms of participation like information provision) to active community engagement (i.e. active participation like collaborative management, design and implementation). Three broad categories of community engagement are distinguishable: two that focus on communication (informing and awareness and interactive consultation) and a third category that involves active engagement with and in communities to affect change. Within each category there are many pathways by which people can be reached and/or involved, each with its own assumptions, partners, costs and opportunities. The order of the three categories simultaneously represent (1) low-to-high intensity of engagement and (2) broad-to-narrow coverage of impact

## 7.2.4 EOP Outcome 2.a. Increase in communities implementing CBFM principles (KIR + SLB + VUT)

Pathways directly engaged with 129 communities (KIR-61, SLB-34 and VUT-34) and established 52 new fisheries management plans, of which 41 communities have single community plans and 9 communities fall under collective plans at area council (VUT) / island or community network level (KIR). 370 communities across the three countries received information on CBFM. The project employed two key surveys to measure progress towards this outcome, as outlined in the previous sections: firstly, CBFM plan reviews were carried out in 21 communities across the three countries that had plans which were due for review (see also 7.2.3 & 7.4.4). This exercise involved a 'deep-dive' into how management plans are performing in select project sites – are they being implemented, what's working, what's not, does the plan need revising, how can the plan be supported in future? Secondly, a scaling survey was carried out in 273 sites to measure CBFM uptake not only in project sites where we have directly engaged, but also in coastal communities along the longer coast lines or across other islands (i.e. sites where community-to-community 'organic' diffusion may have taken place, or where communities may have started implementing CBFM principles based on a radio segment they heard) (see 7.2.3).

In KIR, the team not only worked with Pathways communities but established partnerships with other partners such as the UNDP-GEF funded project (LDCF) and the MFAT institutional strengthening programs. Pathways project leveraged these partnerships to reach more islands in the Gilbert group. The Pathways CBFM team trained Fisheries Extension Assistants (FEA) based in three LDCF islands to conduct initial awareness with communities on CBFM. In Abemama, following an awareness session, the Island Council reached out to request a visit from the CBFM team. The team visited once to provide more detailed information about CBFM and fisheries management. One of the communities, Abatiku, was very interested and had already discussed setting up management rules. On a second visit, the Pathways team found that Abatiku community members had independently drafted a vision and ideas for their coastal fisheries management plan. Some of the rules of the first draft of their management plans were immediately put into action (e.g. cleaning the

shore, ban on small mesh size nets) while an election for a CBFM committee was carried out to celebrate the finalisation of the management plan.

In SLB, the strengthening of the national CBFM program of work supported provincial-level efforts. Initially this focused in Malaita where WorldFish had an established program. In late 2018, scaling efforts expanded to Isabel province through WorldFish seconded staff, Faye Siota, who was tasked within the Ministry as the contact person for CBFM in Isabel. Previous generations of the project had been unsuccessful in CBRM engagements in Isabel province. Faye's work in the province led to a growth in number of communities engaging with the CBFM process, and, importantly, engagement with the Isabel Provincial Fisheries Officer. The PFO has since requested further support to engage in awareness raising activities at a larger scale. Four new communities have requested support since first engagement in Isabel.

In VUT, calls for information and support by civil society linked to Pathways activities saw a marked increase over the course of the project. Firstly, following the rollout of the CBFM play 'Twist Mo Spin', VFD received phone enquiries about information on *tabu erias* and fisheries management which prior to that had not occurred. Secondly, there were two instances of note whereby communities with CBFM plans reached out to VFD for technical assistance or advice as part of their management activities, as illustrated in the following two stories.



## Story of change: CBFM plan implementation, Vanuatu.

In February 2020 this community contacted VFD following observation of a sea urchin outbreak in their *tabu eria* since implementing fishing restrictions in 2019. Technical advice about the ecology and management of sea urchin was provided for the tabu eria committee to develop their own plan for eradication. Their plan was discussed and approved in subsequent phone calls. Periodic updates will indicate whether there is decrease in sea urchins by anecdotal observation and followed up on subsequent visits to the community by the Pathways team and the provincial fisheries officer.



# Story of change: *Tabu eria* management plan implementation, Vanuatu.

The communities on Aniwa island have twice contacted VFD in early 2020 with regards to requesting advice for tabu eria openings. In March 2020, VFD was informed by the communities of their intention to open their tabu eria following the death of a chief. All the island's tabu erias were opened for one day to allow fishing with handline, diving and bamboo fishing only. This was to provide fish for the funeral ceremonies. In April 2020 VFD was contacted once again for advice regarding the intention to open tabu

erias of two of the three communities and on particular measures to consider in those openings. This second opening was required following restrictions on travel to Tanna due to COVID-19 government regulations, effectively stopping trade and food purchases for people on Aniwa. The tabu erias were opened for two weeks, before easing of travel allowed people to travel to Tanna again and only bamboo fishing and diving were permitted. *Image: Imatu tabu eria billboard* 

# 7.2.5 EOP Outcome 2.b. CBFM contributes to social, economic and ecological benefits in communities (KIR + SLB + VUT)

The project undertook a number of data collection efforts to rigorously measure the benefits of CBFM in communities. Anecdotal and qualitative evidence was collected more diverse captures and improved availability of key species in project sites. A time series of quantitative measures in KIR and VUT were developed. Quantification of trends in catches are presented in the catch monitoring section (see Appendix 1 for more details). Over all rounds of fishery monitoring in VUT and KIR, 329 qualitative surveys and 455 quantitative surveys were completed. This exercise recorded 454 catch photos of a total 7,893 fish, of 313 species, with a total of 2,997 kg of catch recorded over 10 sites in KIR and VUT.

In SLB, 14 rural youth from villages in Malaita were trained in catch monitoring methods during 2017-2018. Consequently, longitudinal catch monitoring data collection completed at 12 coastal communities in Malaita representing differing habitats, analysed and published with sub-national staff (Smallhorn-West et al. 2022a) [SLB-2022-PP-Smallhorn-West]. A major finding is the diversity of fisheries that CBFM is meant to support: different fisheries have different management requirements. This has practical application as scaling activities through awareness and information must be tailored to diverse contexts. For example, fisheries in the mangroves are very different and can be managed with different tools than those within fringing reefs or on the weather coast. The Malaita provincial fisheries officers, guided by the research on fisheries profiles that the project has published, now tailor their information packages to suit the habitats of communities prior to their field visits.

The Pacific Panel Study measured a range of possible metrics of well-being, including key rankings on perceptions of asset ownership, personal health, and security. Baselines have been summarized and a follow-up round to measure change was implemented in SLB in late 2021 (see Appendix 2 for more details). The CBFM Plan Reviews in 2020 and 2021 across all three countries also yielded a deeper understanding of the social and economic benefits of CBFM in select communities.



# Story of change: Reappearance of the tusk fish in Vanuatu (ecological change).

In Vanuatu, the Peskarus CBFM plan has been in operation since 2017, under PacFish. We implemented the Pathways fishery monitoring protocol in September 2019. Local community members gathered around the team collecting catch data from a fisher who had been out on the reef fishing ground, adjacent to the tabu area managed under the CBFM plan. One fisher in the crowd noticed one species – a tusk fish (wrasse) – that he hadn't seen for the past 10 years.

"Today I am so happy to see one with a good size in the catch. I believe with the help of the CBFM plan, we slowly have the species coming back". Image: Catch monitoring digital photo data from Peskarus, Vanuatu. Photo credit: Abel Sami



## Story of change: Increase in silver biddy in Kiribati (ecological change).

In Kiribati, the Tabonibara CBFM plan has been in operation since 2015, under PacFish. We implemented the Pathways fishery monitoring protocol in September 2019.

"The ability of community members to recognise the benefits of their management rules first hand strengthens and empowers villagers to look after their marine resources" - Beia, catch monitoring coordinator.

While the CBFM team was collecting catch data, team members regularly updated the communities and their leaders about what they could immediately see. For example, one of the biggest concerns of the community in 2015 was the status of silver biddy in the lagoon. The catch monitoring team reported that the average size of silver biddy harvested in Tabonibara far exceeded the fish size limit in the new Coastal Fisheries Regulations (min. 15cm fork length).

"It is great to see, people now can harvest silver biddy in great numbers and in healthy size in the lagoon not like in the past where everyone only harvests it during spawning season to get the most of it." - Beia, catch monitoring coordinator.

Fishers from the neighbouring village of Marenanuuka also reported that they've witnessed the number and size of silver biddies increasing in the lagoon and showed appreciation towards the people of Tabonibara for their efforts.

Image: Catch monitoring digital photo data from Tabonibara, Kiribati. Photo credit: Beia Nikari

## 7.2.6 EOP Outcome 2.c. Regional information sharing and capacity development in CBFM (KIR + SLB + VUT + REG)

Capacity development outcomes with respect to individuals are summarized in Section 8.2.

## 7.2.7 Lessons learned and recommendations

The theorising efforts as well as the practical innovation activities implemented by the project have cumulatively advanced knowledge on scaling CBFM, both in the Pacific policy and planning practices as well as more broadly. We land on critical lessons including that scaling needs to be framed as a multilevel transitional process, wherein innovations to be scaled shape and are shaped by the socio technological, economic and political environment they need to function in. Scaling, furthermore, is part of the CBFM development process and not a secondary after thought once something is perfected and ready to go to scale, as the way it is often treated in conventional development design. Parallels to this extend to knowledge production, whereby the project strongly positions knowledge production as a collaborative, interactive and iterative process of co-creation (rather than translation from one end to another).

In the Pacific, CBFM has matured to a point that national programs need to be developed, particularly following the higher level directives negotiated under the Framework for Action on Scaling-up CBFM. A singular direct focus on community work will serve only needs and outputs during project timeframes. KIR, VUT and SLB are each entering a stage whereby CBFM can be more deeply institutionalise in the policy landscape, through national CBFM programs that can cater for a legacy beyond time bound bilateral investments. This growth is illustrated in Steenbergen et al. (2022) [**PRJ-2022-PP-Steenbergen**]. This paper traces back the developments and CBFM initiatives behind the growth of CBFM in Vanuatu. It present a journey towards a point of institutionalisation that sees the current CBFM regime in Vanuatu 'ready' for the establishment of a national CBFM program. This paper brings together extensive ni Vanuatu expertise who were involved in many of the pivotal CBFM projects over the years. It forms the first comprehensive review of CBFM development in Vanuatu. The

theory of scaling for CBFM guides the analysis of regime shifts over time. They discuss planning for sustained spread under a national program by categorizing multiple drivers of change through three intervention pathways focused respectively on developing (i) an enabling environment, (ii) institutional and individual capacity, and (iii) focused innovative action in smaller targeted constituencies. They argue that local fisheries co-management institutions balance competing interests, and so differ among places and that the realization of a national program therefore requires patchworks of siloed projects to be knitted together into coordinated programmatic approaches that strategically integrate activities. Similar observations of 'readiness' for institutionalisation are reflected in the growth of CBFM in Kiribati, as documented by Delisle (2020) [KIR-2020-TO-Delisle]. The growth in KIR is particular impressive with the concept only just having gained roots as early as 2016/17.

In designing CBFM programs that effectively coordinate across various stakeholders, Figure 7.6 indicates the actor groups, sectoral interests and external forces that exert pressure and/or provide opportunities to community network stakeholders to action CBFM. These include roles for government-, civil society and non-government actors, impacts of natural disasters, sectoral engagement with rural development and involvement of the private sector.



**Figure 7.6**. Depicting community networks as active agents of CBFM on the ground, being influenced by various external drivers of change. Such drivers of change need to be recognized, harnessed and managed within a national CBFM programs

# 7.3 Objective 3. Improve the opportunities, viability and performance of livelihoods in support of CBFM initiatives

## 7.3.1 Introduction

The project incorporated an objective focusing on livelihoods, because livelihood diversification supporting CBFM practices feature as a goal in national (e.g. MFMR 2020)

and regional (SPC 2015) policies for coastal fisheries. Through CBFM approaches, resource management planning has moved towards activities that enable positive change in tune with how people tend to live their lives in rural Pacific Islands. But while CBFM substitutes western models of central agency and data-driven fisheries management for the Pacific, approaches to coastal livelihood development are still rooted in western principles of top-down and capital-intensive investments. This project objective sought to reduce that disconnect by testing approaches that integrate development planning with CBFM practice.

A livelihoods framing around sustainable development helps to think and plan around contemporary development narratives while governing marine resources through CBFM in Pacific Islands, although it does not solve the main challenge of defining a process through which development outcomes can be achieved with or without external support (Eriksson et al. 2020 [SLB-2020-PP-Eriksson]). This work was part of a global special feature led by the project around integrated livelihood, gender and indigenous knowledge planning in the journal Ecology and Society (Eriksson et al. 2021) [PRJ-2021-PP-Eriksson].

Scoones frames the challenge (2009:185):

'Although livelihoods analysis frameworks and methods definitely offer a way of uncovering complexity and diversity in ways that has often not been revealed before, the important question is: what happens next? Which option is best, and for whom?'

This questioning captures the essence of what the project sought to do to make the connections between CBFM and livelihood development.

Following the mid-term review of the project the scope of this objective shifted, most notably about reducing the effort in livelihoods *action* work. Three focus areas were agreed:

- 1. The in-country action work continued at reduced capacity (mainly monitoring) in VUT under the project to reach EOP Outcome 3.c, but no further sites were sought.
- 2. The in-country action work was replaced with monitoring of activities in SLB under the project to retain EOP Outcome 3.c, which then shifted to a new project (FIS/2019/164). This new project also expanded in scope based on the learning from 2016-2019 in this project and SwedBio and features Timor-Leste.
- 3. Emphasis on EOP Outcome 3.a and 3.b to generate practical tools and accompanying policy material.

# 7.3.2 EOP Outcome 3.a. A participatory approach to livelihoods with practical tools available for partners to take to scale (KIR + SLB + VUT + REG)

The project helped redefine the practice of fisheries development and what it means in practice for Government service delivery. We did this by asking "What happens when people share their ideas for development?". This approach is in line with the strength-based approach CBFM. The project focused on making the tools and techniques developed during the project accessible to higher levels of government and regional agencies through co-publication with partners. From our learning, the project created two products in a series; "A new angle" and "A new idea" with a unique identifiable layout. Both documents support planning and services by Governments and development partners (Figure 7.7).



**Figure 7.7**. Two key products for regional use: "A new idea for coastal fisheries": a diagnostic framework to help ex ante evaluation of development ideas (left), "A new angle on coastal fisheries": a policy brief to help frame that CBFM is a livelihood innovation and that supporting livelihoods means supporting CBFM (right).

"A new angle on coastal fisheries development" [PRJ-2020-TO-SPC] is a policy briefstyle document that summarizes key messages for the integration of development planning with the policies and strategies of CBFM. Importantly, it re-frames the interrelationship with livelihoods and CBFM – it places CBFM as one of 10 guiding principles of how to enhance coastal livelihoods (Figure 7.8). The document was developed across the range of partners in the project under the custodianship of SPC and is available freely from SPC's repository. It has been printed and shared at events in New Caledonia, Solomon Islands and Timor-Leste.

#### **Guiding principles**

#### Strengthen community-based fisheries management

The foundation of improving rural livelihoods is ensuring that the marine resources on which people depend remain in good health. People may need support to revive stewardship, assert territorial rights, respond to emerging threats, or rehabilitate their fisheries (see box 2).

#### Build on what people have

Support communities to articulate their needs and aspirations, and identify activities that people can do themselves to improve their lives and that fit local conditions and cultural values (see box 3). A participatory approach aims at strengthening people's own initiatives and ideas, rather than introducing a predetermined livelihood activity or simply donating materials.

#### **Target interventions**

Interventions to develop coastal fisheries should be directed at people most in need. This means working with groups of people who fish, or process and trade fish. Externally driven projects often fail to reach people that depend directly on fisheries.

#### Promote appropriate technology

Grassroots innovations that require little money and can be easily maintained and repaired by people in the village will be more sustainable and profitable than overly ambitious ones. Activities that reduce expenditures and labour, increase the availability of healthy food or improve safety can have a huge impact on people's lives. In fact, small-scale improvements of subsistence activities, such as selling fish at the local market, can benefit more people than ambitious income-generating projects that target export markets.



#### Consider gender

Women play an important role in coastal fisheries, particularly in gleaning and in the processing and marketing of fish. But most externally driven development projects tend to focus exclusively on men. By challenging gender inequalities, more inclusive and equitable development outcomes can be achieved.



#### Strengthen existing groups

Initiatives in which people have control over decision-making and planning are more likely to succeed than donor-driven projects. Community co-financing, in the form of matching funds, pooling resources or providing about, ensure that better choices are made. It is therefore, essential to work with established and reputable community-based organisations, such as tribes, churches, women savings clubs, youth groups of fishing associations, which have the experience, capacity and leadership structures to foster collective action.

#### Share information

There is a weath of information available on developing coastal fisheries, which can help identify the best interventions (see box 4). Informing and engaging other stakeholders, such as village leaders, land owners and neighbouring communities, is essential to ensure broad local support and avoid conflict. National fisheries agencies need to ensure that people in remote communities have access to market information, scientific and legal knowledge, and technical expertise.

#### Build partnerships

Efforts to develop coastal fisheries should not be designed as small, isolated and non-replicable projects. By working in close collaboration with other government agencies, provincial governments and civil society groups, activities can be sustainable over the long term and benefit a larger number of people. Participatory processes and innovations are not compatible with rigid time frames, predetermined activities and fixed budgets, but require flexibility, creativity, open communication, experiential learning and, above all, long-term engagement. Many initiatives fail due to practical problems that could have been easily overcome.

#### Improve public services



Social and economic development obviously requires more than community-based approaches. Investments in public infrastructure, such as wharfs, roads and markets, are needed to improve the well-being of fishing communities. Likewise, it is secrital to enforce existing environmental legislation and protect indigenous people's rights. Where necessary, design transparent and accountable decision-making processes for high-value coastal export commodities such as beckn-de-mer, which are robust to political interference, in order to ensure public confidence in national fisheries agencies.

#### Designing local solutions for local problems



Small-island developing states in the Pacific face a unique set of governance and development challenges. To unlock the economic potential of marine resources, the region must carve out its own approach to coastal fisheries development. The development trajectory of other countries may be of little pertinence to the Pacific. Wuch can be gained by building on the traditional values of Pacific communities, such as self-reliance, cooperation and stewardship of land and sea.

Figure 7.8. Ten guiding principles for enhancing coastal livelihoods in the Pacific.

"A new idea for coastal fisheries: asking the right questions to enhance coastal livelihoods" is a practical diagnosis tool to evaluate livelihood ideas (Govan et al. 2019

[**PRJ-2019-TO-Govan**]). It makes practical use of a diagnostic approach to consider how an idea depends on and impacts on natural resources, equipment, people and skills, markets, and finances. The tool was originally developed in 2011 and was updated with elements from the learning of this project after its testing. The piloting of the tool in Solomon Islands and Vanuatu is also the data for a scientific publication in preparation (Eriksson et al. in prep), on "Integrating community-driven development and community-based resource management for a sustainable blue economy in Western Melanesia". The tool has been printed and distributed to Government agencies in Solomon Islands, Vanuatu, Kiribati, and Tuvalu by SPC. It has also featured in meetings and workshops focusing on practical ways to think about Government service attuned to CBFM planning.

An aligned, but separate stream of work under this Objective sought to draw together diverse practices and learning from decades of FAD work in the Pacific. In the inception

workshop of the project, partners decided to synthesise practices and learnings to-date, rather than exploring new or different ways of deploying more FADs. We were guided by this early learning at the project start which was summarized in Albert et al. (2019) [PRJ-2019-TO-Albert]), and Kinch et al. (2019) [**PRJ-2019-TO-Kinch**]. The requirement for an updated technical manual emerged from a regional FAD expert consultation held in 2016, where Pacific FAD practitioners came together to share knowledge and experiences in FAD designs, innovation and implementation. The work, led by SPC, brought together regional expertise on FADs to update the SPC 2005 FAD manual by drawing on experience and lessons learned by FAD practitioners across the Pacific over the past decade. The result is a comprehensive manual of FAD suitability, choice, and construction (Sokimi et al. 2020 [PRJ-2020-TO-**Sokimi**]). The practitioners that participated in the process of knowledge sharing and summarizing included individuals from regional organisations, national and provincial governments, nongovernmental organisations, and fisher associations



and communities. As the title suggests, this manual provides an update on FAD gear technology, designs and deployment methods for the Pacific Islands region. The SPC 2005 FAD manual contains important and relevant technical information for FAD practitioners. This information has not been repeated here but there are references to the 2005 manual throughout where relevant.

# 7.3.3 EOP Outcome 3.b. A participatory CBFM approach is used in livelihoods/ rural development sector and support programs (KIR + SLB + VUT)

These new materials from the project have been distributed to fisheries agencies in the region through SPC with evidence of uptake in strategy planning and practice. For example, the MFMR 2022 CBRM scaling strategy makes specific reference to the "New Idea" tool and adopts language and planning for its use. The project has supported governments and their development partners, which are continuing to seek ways to support rural development.

The project has exemplified development support activities in ways that align with CBFM scaling practice, focusing on lighter touchers that are strength based and focus on training and information as key innovation enablers. Provincial government staff members that

participate in project activities have also benefited from the process, as exemplified by this quote from Malaita Provincial Fisheries Officer Matthew Isihanua:

## *"I have learned a lot from this project about how to implement and monitor community projects."*

The modality of working in the project and the impacts that it is achieving are resonating across sectors and agencies with strong awareness among partners about project activities. This model has now been transferred within FIS/2019/164 to Timor-Leste and Senior Staff Alda at the Directorate General of Fisheries and Aquaculture have been quick to absorb the planning. During 2022, new programs of work with Municipality Officers in Baucau and Lautem are being established. This example is also evidence of adoption of the model promoted by the project outside of the project countries.



#### Story of change: The establishment of a fish market following scoping meetings, Vanuatu.

In September 2018, during Pathways' scoping visit, the community indicated one households' challenge is accessing fish. Being located inland and 50km from the island's main fish market, people in the community primarily lived off livestock farming with scarce access to fish. Following the scoping meetings, the community, with support from Pathways, carried out a livelihood diagnosis process using the SLOPIC tool. This helped clarify what activity was feasible and viable to pursue as a means to address this. The community decided to

establish a fish market, and in doing so, revitalise its community cooperative. In March 2019, the establishment of a fish market not only facilitated households' access to fish but also enabled fishers from neighbouring communities to reduce distribution costs by selling their catch at their community market instead of the island's main fish market. Pathways project support saw the installation of a solar freezer and subsequent maintenance training in July 2019, in addition to training on fish handling and seafood safety.
### 7.3.4 EOP Outcome 3.c. Improved livelihoods in select project communities (SLB + VUT)

This work was carried forward in the Fish Innovation project (FIS/2019/164), which is now summarizing impacts and generalizing learning for livelihood support programs. Here follows some key data that has come from the analyses in that project and that indicate improved livelihood outcomes for participants of the action research, as well as broader the community. In total, there are 12 women's groups operating enterprises around the solar freezers. Across the 12 zones operating solar powered freezers there were 711 unique customers, 440 of which were female (Figure 7.9).



**Figure 7.9**. Cumulative curve of the solar powered freezer customers over time, disaggregated by gender (red is women). The logbooks also contained an additional 50 incomplete names of unique customers that were excluded from this figure.

The women's groups operating solar powered freezers collected a total of SBD\$50,503.5 in fees, but income from fees varied and so did time of operation (Figure 7.10). Four different zones collected over \$6,000 in fees, one collected over \$7,500. All but two zones collected over \$2,000 in fees and the average fees collected per zone was over \$4,200. The duration of operation for the solar powered freezers as well as the rate at which fees were accumulated also varied across the zones. The women in remote Malaita have operated microenterprises using solar powered freezers. During the first 12 months, 8 out of the 12 zones were saving above the target level (set to save enough for a replacement freezer in 5 years). The disruptions to operations from the technical faults of the freezers, impacted negatively on use and savings. Had it not been for these issues, it is reasonable to expect that most enterprises would have been financially sustainable through time.



Figure 7.10. Cumulative fees collected for each zone across time. Where each cumulative curve stop is where that zones solar freezer stopped operating, or where our data collection ended. Data from participatory logbooks.

It is also worth noting the significant effort of staff member Margaret Batalofo in overseeing all this action research. Ms Batalofo has submitted her first first-authored paper summarizing the data and learning from this initiative (Batalofo et al. [SLB-2022-TO-Batalofob, which will be reported on in full in the FIS/2019/124 project.

#### 7.3.5 Lessons learned and recommendations

What transpired over the years of the project was a journey of participatory action research, critical reflection among partners, and a scholarly engagement with the theoretical underpinnings of "livelihood diversification" as it relates to policy and practice.

Livelihoods framings will continue to feature heavily as a school of thought to understand how people live their lives. Livelihood diversification will probably also continue to feature as a policy goal for coastal fisheries. But its application as a practical way of thinking for government service and development planning is very limited. The rich literature documenting the *pattern* of livelihood diversity for resilient lives has been muddled up with a normatively positive process of livelihood diversification. These framings, and those around alternative livelihoods projects, where the focus of two journal article outputs. The first one, which included the PhD cohort of the project, utilized a common diversity framework to clarify some of this ambiguity by distinguishing three diversification pathways (Roscher et al. 2022a [PRJ-2022-PP-Roscher]). These pathways were illustrated using an ideal-typical Pacific Island coastal household and supported by examples provided in the literature that detail livelihood diversification projects in the Pacific. The article nuanced livelihood diversification: different diversification activities will mean different things to different people depending on their current livelihoods (Figure 7.11). Better recognition of these diversity properties, or diversification pathways, can help sharpen the focus of external projects and how they engage with diverse groups of people in communities.







Disparity

roving the production of an already established Adding a new activity within an established activity through a livelihood enhancement sector of the livelihood portfolio Adding a new activity in a new sector not previously in the livelihood portfolio

Figure 7.11. The three livelihood strategies adapted from the sustainable livelihoods approach (Scoones 1998) and their associated property of diversity (balance, variety, and disparity) from the common diversity framework (Stirling 2007). Increasing any or all of these three properties can increase the diversity of the overall livelihood portfolio and theoretically contribute to more resilient livelihoods

The second part of this stream of research was to then gauge through a literature review how global livelihood diversification projects are approached and how they have fared (Roscher et al. 2022b) [PRJ-2022-PP-Roscher 2]. Our examination of the peer-reviewed literature found substantial differences in how livelihood diversification is pursued, and in the realized outcomes from the process of diversification. Studies describing diversified livelihoods were almost as likely to report that livelihoods were not improved or that outcomes were mixed (54% combined) as they were to report improved livelihood outcomes (45%). Furthermore, one of the main theoretical drivers behind the support for diversified livelihoods—ecological conservation benefits—was unexplored in over 70% of studies. Of the minority of studies that did explore ecological outcomes, most reported that ecological conditions had not improved. These findings indicate conceptual ambiguity around livelihood diversification and a lack of empirical evidence supporting its theoretical underpinnings. There remain important questions about the impacts of diversification on multidimensional poverty and ecological conservation. Future research on and investment in diversification should be both more deliberate of what diversification means and more rigorous in the evaluation of its impacts.

This work has generated the theoretical and practical underpinnings of FIS/2019/164 Fish Innovation project where livelihoods is a theme of research, and government service, training, peer-to-peer exchange, and demonstrations are foci of action. This shift in practice is much more in tune with how scaling CBFM is thought of through information and awareness. It represents a move towards strengthening an enabling environment for innovation in fish-based livelihoods and distribution of aquatic foods, which are evidently powering community economies in island food systems. In this regard, the project played a critical role in the national planning for coastal fisheries development and its integration with CBFM.

### 7.4 Objective 4. Increase social and gender equity in coastal fisheries governance, utilization and benefit distribution

#### 7.4.1 Introduction

Coastal fisheries provide food for Pacific Island communities and support their livelihoods and cultures. In the Pacific Islands region, women and men engage in all aspects of coastal fisheries – often in distinct ways, with distinct opportunities, benefits and challenges (Chapman 1987; Weeratunge et al. 2010). Substantial evidence from research and development demonstrates that understanding coastal fisheries accurately (Weeratunge et al. 2010; Kleiber et al. 2014, 2015), managing coastal fisheries effectively (Seniloli et al. 2002; Hilly et al. 2011; Amos 2014; Schwarz et al. 2014), and improving livelihoods and development outcomes through, and within, coastal fisheries requires that research and development activities recognise, accommodate and engage with gender-related expectations, barriers and dynamics (Lawless et al. 2017).

At the regional level, the Pacific New Song for Coastal Fisheries (SPC 2015), seeks to support 'more equitable access to benefits and decision-making within communities, including women, youth and marginalised groups', and recognises that:

"... gender relations have a significant effect on the course of development and so the voice of women and youth must be heard and acted upon effectively in all future [community-based resource management] strategies. In addition to playing a greater role in decision-making, women and youth must have more equitable access to the benefits flowing from coastal fisheries."

In this objective, we focused on three groups of interrelated activities:

- CBFM and gender actively examine, question and change harmful gender norms and the imbalance of power between women and men for inclusive CBFM;
- (ii) alternative livelihoods, markets, nutrition and gender where livelihood diagnosis and nutrition work is sensitive to gender differences in norms and aspirations, and certain livelihood activities have a deliberate focus on women and girls, all the while managing, reporting and examining the intended and unintended consequences of this; and
- (iii) building the gender capacity of our in-country partners within countries in which we work to meet gender commitments made in regional policies.

### 7.4.2 Defining a pathway for gender integration within coastal fisheries research projects

At the onset of the Pathways project, the team sought to deliberately integrate gender through all the project's objectives, a dedicated gender objective (objective 4) and tailored research activities.

The team developed an approach to gender integration focused on meeting three main goals (Figure 7.12):

- 1) increasing our research quality by dedicating time on gender focused research supporting integration,
- finding appropriate avenues to empower women by increasing the recognitions of the diverse roles women play in coastal fisheries and in providing an enabling and conducive environment to the engagement of women at different scales of governance, and

 developing tools and methods which facilitate equitable nutrition, livelihoods and governance outcomes.



# Figure 7.12. Gender-integrated' and 'gender-focused' research work together for continual improvements towards gender integration and coastal fisheries research quality. Figure adapted from WorldFish (2018). Reproduced from Kleiber et al. (2019b) [PRJ-2019-TO-Kleiber 2].

Integration took the form of including (i) sex-disaggregated data in our data collection protocols, (ii) examining gender integration into coastal fisheries policies, (iii) examining barriers and opportunities for fair involvement in decision-making at multiples scales, (iv) identifying strategies to allow for more inclusive governance processes and institutions, (v) and examining gender roles, norms and social relations in the case of livelihood and nutrition activities. All of this work provided a baseline for quality research and development and was further enhanced by capacity development activities, constant reflexion on improving inclusivity in the team's processes and in CBFM as well as gender-integrated monitoring and evaluation.

#### 7.4.3 In-country gender capacity building activities

The project invested in a number of initiatives aimed at building the capacity of both project staff and fisheries practitioners and managers to consider and integrate gender as part of their work.

#### Gender training workshops and assessment

To support the integration of gender in all project activities, the project invested in a series of training to increase the capacity of local staff to meaningfully integrate gender in their work and engage with gender research. These trainings were specifically tailored to the needs of the fisheries officers and responded to capacity gaps identified at the Ministry level in SLB (Boso et al. 2018 [SLB-2018-TO-Boso 1]) and in VUT. In KIR, a specific assessment of gender in the fisheries sector was planned as a joint activity with the SPC but had to be postponed due to Covid-19 related travel restrictions.

An initial training was conducted in November 2018 for 30 members of the project team (both in-country staff and Australia-based staff). The three-day workshop was co-delivered by research partners the Royal Tropical Institute and was designed to build foundational knowledge of key gender concepts and rationale (Kleiber et al. 2019a [**PRJ-2019-TO-Kleiber 1**]).

This initial training was followed by in-country gender training in Solomon Islands in October 2019 and Vanuatu in February 2020 (Gomese et al. 2020b [**PRJ-2020-TO-Gomese 2**]). A total of 33 participants were trained across the two countries, including 18 women and 15 men. In both countries, the training aimed to increase participants' capacity to integrate gender in fisheries and provided opportunities for an increased dialogue between fisheries practitioners and gender experts including representatives from national women's agencies and non-government organisations. Insights from both training were published in Gomese et al. (2020b), which provided a list of tips for a successful gender training in fisheries agencies and an immediate assessment of gender attitudes pre- and post-training. Overall, more positive attitudes towards gender were found following the training in both countries, although women's attitudes were already more progressive than the attitudes of men participants (Figure 7.13)



**Figure 7.13**. Average gender attitudes were more progressive following the training. Note, the questions for the Solomon Islands training were slightly different from those used in the Vanuatu training.

To assess the medium-term uptake of principles explored during the project-facilitated gender training, we conducted a six-month post-training evaluation to assess integration of gender in the work of participants in both SLB and VUT. In VUT, participants reiterated their positive attitudes and understanding towards gender integration in fisheries. In practical terms, the six-month follow up assessment highlighted that most trainees have made efforts to change practice in their workplace as a result of the training. Most past attendees mentioned that they mainly tried to be more gender-inclusive during outreach activities by finding ways to increase women participation in meetings and providing a platform for women's interests and concerns to be shared and heard. This result highlighted a move from gender-blind to towards gender-aware activities, currently aimed at reaching women (see Ephraim article in Gereva et al. 2021 [VUT-2021-TO-Gereva]).

#### Gender sensitive facilitation

To further support fisheries officers in integrating gender into their work, we developed a gender-sensitive facilitation tool to help in-country facilitators use, reflect on, and adapt gender-inclusive strategies in their work with communities (Kleiber et al. 2019c [**PRJ-2019-TO-Kleiber 3**], 2019d [**PRJ-2019-TO-Kleiber 4**]). The development of this tool involved the project's gender researchers and more importantly insights on culturally fit, gender-sensitive approaches of facilitation across SLB, KIR and VUT as shared by in-country team members. In practice, the tool was then modified to be used as a checklist for project staff as a means

to plan, document gender-sensitive methods used during community engagement meetings and reflect on how gender is shaping project outreach. Examples of gender-sensitive facilitation techniques varied from "not asking women to cater", "reaching and speaking with community leaders about the approach", "finding suitable meeting time for different groups" to "holding single-sex meetings with or without joint reflection" and "active facilitation of less vocal groups". The use of this checklist has been mainstreamed in the three countries and added to the field trip report template. Gomese et al. (2020a) [**PRJ-2020-TO-Gomese**] reviewed the use of the revised field trip report template for trips between 2017 (prior to the update) and 2019 (following the update). In SLB, her review of 58 field trip reports highlighted the most common gender-sensitive facilitation strategies used in the field and highlighted an increase in the reporting of gender-sensitive facilitation techniques in 2019 when using the new revised template. Although her review mentioned difficulties to collecting some data, it made a strong case for the necessity to conveniently provide practical tools, tips and checklists to fisheries practitioners that will allow them to take notice, observe and reflect on the gender aspects of their work.

#### Training material

In order to provide tailored training meeting the needs of fisheries officers in the region, the project team invested in producing training materials. The project supported the completion of the SPC-led Pacific Handbook for gender equity and social inclusion in coastal fisheries and aquaculture (Barclay et al. 2021 [**PRJ-2019-TO-Barclay**]). The second edition of the Handbook, launched on International Women's Day in 2021, supplemented the existing five standalone modules by three additional modules on 'community engagement', 'coastal fisheries management' and 'livelihoods' (Makhoul 2020 [**PRJ-2021-TO-Makhoul**]).

The Pacific handbook was designed to provide guidance to fisheries practitioners and managers on strategies for integrating gender and social inclusion as part of their work. The handbook was designed to be practical in nature and achieved this through the inclusion of case studies from the region, tools, tips, checklists as well as touching on main misconceptions about gender and social inclusion in the fisheries sector.



The project contributed via the provision of illustrative case studies to different modules and on the production of two standalone modules: Module 3 'Monitoring, Evaluation and

Learning' (Mangubhai et al. 2021 [**PRJ-2019-TO-Mangubhai**]) and Module 6 'Community engagement' (Delisle et al. 2021 [**PRJ-2021-TO-Delisle**]).

#### 7.4.4 Advancing gender research in small-scale fisheries

Another focus of the project was to enhance and contribute to knowledge on gender in small-scale fisheries. We investigated three main areas of research. We looked at the integration of gender in small-scale fisheries policy instruments in the Pacific region to understand motivations behind the inclusion of gender and identify gaps for improved integration and gender outcomes. We looked at our practice in the livelihoods, nutrition and governance spheres to better consider gender opportunities, barriers and unexpected outcomes of our work. We finally looked at gender dynamics within communities to better account for catalysts of change.

#### Gender in policy settings

Commitments to gender equality and equity are ensured in many international policies and are found within Pacific regional and national policies, including those applying to fisheries. Fisheries programs increasingly commit to moving beyond gender-blind approaches to achieve gender outcomes. However, the reasons and approaches to achieving gender equality and equity will vary and so their possibilities in achieving meaningful change. Understanding the rationale motivating the realisation of gender outcomes in fisheries policy instruments is thus a key research area.

Gender equality can be pursued for instrumental (i.e. improved productivity, environmental management) as well as for intrinsic reasons (i.e. an inherent value in fairness) (Figure 7.14) (Lawless et al. 2021 [PRJ-2021-PP-Lawless] and translation output Lawless et al. 2021 [PRJ-2021-TO-Lawless]). Understanding the motivations behind gender equality commitments can assist in the development of strategies that would meaningfully integrate gender in coastal fisheries in the Pacific. A review of 76 policy instruments in the Pacific region found a narrow interpretation of the concept of gender within fisheries policy instruments as opposed to a more normative conceptualisation of gender in development policy instruments. Commitments towards gender equality as a principle were mainly for instrumental reasons rather than intrinsic reasons. They were mainly applied to improving an organisation's standard processes as opposed to direct investments in men and women dependant on coastal fisheries. The results of this investigation suggest a dilution of gender commitments in the current Pacific fisheries policy setting thus limiting the potential for action and in improving gender outcomes. Similar results were found by Lawless et al. 2022 [PRJ-2022-PP-Lawless] based on semi-structured interviews and policy reviews. To assist with their deeper analysis of motivations behind gender equality commitments, Lawless and colleagues (2022) developed the "Tinker-Tailor-Transform" approach to "deepening understanding of the rationales for pursuing gender equality and assessing the intentions and impacts of gender investments". For each assessment typology, they provided a rationale for gender equality and examples of indicators to assess gender intentions and impacts. Their analysis demonstrated the difference that exist between gender commitments on paper and their dilution in practice in a large majority of small-scale fisheries programs. Organisations tended to favour the "Tinker" approach to gender narrowing their potential for impact. This assessment typology provides a tool for agencies to reflect on and potentially confront their motivations and approaches to impacts on gender and consequentially adjust or re-design their initiatives.





Figure 7.14. Different frames used to pursue gender equality.

Beside gender, another tenet of the people-centred approach promoted in the Pacific Framework for Action on Scaling-up CBFM is the human-rights based approach. However, current understandings of the operationalisation of human rights principles into practices in the fisheries sector are lacking. In their essay, Song and Soliman (2019) [PRJ-2019-PP-Song 3] looked at clarifying main concepts of the human-rights based approach to limit misunderstandings and confusion. They then analysed and discussed the application of the human-rights based approach at the intersection of human rights and fishing rights and found four main points of contention (i.e. 'universality of human rights vs exclusivity of fishing rights; rights vs attendant duties; prioritising among human-cum fishing rights; and individual vs communal rights') that policy-makers should be aware of if they aim to apply the principles of the human-rights based approach in fisheries. Song and Soliman finally offered two suggestions on the best application of a human-based rights approach in support of communal fishing rights and of the fishing rights of small-scale fisheries. This better understanding of the approach and its potential functions would allow policy-makers to most effectively use the human-rights based approach for the benefits of those populations most marginalised and vulnerable.

#### Research influencing on-the-ground practice

Targeted research during the project aimed to influence on-the-ground change in our practice to CBFM governance, livelihoods and nutrition activities. Research under this theme helped adapt our practice and create tools and ideas to be more inclusive in our approach as well as being mindful of men and women's different contexts, opportunities when designing livelihood or nutrition initiatives in order to improve outcomes.

Using the GENNOVATE methodological approach in their study on gender in livelihoods, research undertaken by Lawless et al. (2019) [**PRJ-2019-PP-Lawless**] [**SLB-2020-TO-Lawless**] suggested that failure to take into consideration the influence that gender norms and relations play in how women and men experience agency would limit the potential that livelihood initiatives have in bringing sustained benefits to all from their program. Based on those insights, we adjusted the tool "Supplementary Livelihood Options for Pacific Island Communities" (Govan 2011) and published it as Govan et al. (2019) [**PRJ-2019-TO-Govan**]. This tool allows practitioners in the Pacific region to move from gender-blind livelihood programs and instead account for gender differences in the design and application of their programs to contribute to improved sustained and equitable livelihood outcomes.

Research was also undertaken to inform our understanding of inclusive CBFM processes. Research was conducted on who and how people are included in the CBFM processes in the Pacific ('participatory exclusions' research), with particular attention to gender. In Solomon Islands, baseline data was collected in 2019 in 11 communities in Malaita and Western Province from 660 participants (331 M / 329 F). Publication of the results of this research has been delayed and are being prepared in Kleiber et al. (in prep.) but contributed to the development of a methodological approach and guide by Johnson et al. (2021) [**PRJ-2021-TO-Johnson**]. The framework provides a guide on how to collect information on inclusion in CBFM by using quantitative surveys with some measures of empowerment, semi-structured interviews, and gathering data on aspects of the communities themselves. The research and guidance document are based on the "steps of inclusion" framework developed by Kleiber et al. (2019a) [**PRJ-2019-TO-Kleiber 1**]. (Figure 7.15).



Figure 7.15. A broader understanding to inclusion. Source: Kleiber et al. 2019a [PRJ-2019-TO-Kleiber 1]

We also used the "steps of inclusion" framework to evaluate levels of inclusivity in participation in CBFM processes and in CBFM Committees as we assisted communities in the three countries review their management plans using the Community-based Fisheries Management Plan Reviews (facilitation guide) [**PRJ-2021-OO-WorldFish and UOW**], [**PRJ-2021-OO-WorldFish and UOW**]. [**PRJ-**0.].

Table 7.1. Composition of CBFM	committees by gender	r and age following the C	CBFM review
process			

		Before review		After review			
	# of men	# of women	# of youth	#of men	#of women	# of youth	
Kiribati (n=3)	17 (90%)	1 (5%)	1 (5%)	19 (61%)	9 (29%)	3 (10%)	

Vanuatu (n=5)	38 (88%)	4 (10%)	1 (2%)	53 (77%)	7 (10%)	9 (13%)
Solomon Islands (n=8)	92 (71%)	38 (29%)	No data	72 (69%)	33 (31%)	19 youth

#### Catalyst for change

Behavioural changes are incremental. Our work and research assist us in catalysing changes in our practice and in our community partners. Research conducted by Gomese et al. (2020c) [**SLB-2020-TO-Gomese**] using the empowering PhotoVoice approach, harnessed the insights from 275 photos captured by 6 participants (3 M/3 F) to bring light to women's and men's roles in fisheries and understand non-catch values and roles along the fisheries value chain. This innovative method was found effective, although more useful to triangulate other research on gender, community-based resource management or fisheries. However, it allows people in communities to share and discuss their contributions with one another and is a method with the potential to be used for outreach and increasing the profile of women's roles in fisheries in the Pacific.

Changes were also observed in communities through the inclusion of women's inputs into the design of fisheries management plans. Thanks to a more inclusive approach to CBFM engagement, the Kiribati team tailors its inclusive approach with the input of community leaders prior to conducting community meetings on fisheries management. Tioti, Li and Delisle (2021) [KIR-2021-TO-Tioti] reported on the example of this process in one community in the Southern Gilberts. In Tekaman, North Tabiteuea, the team allowed discussion to take place about the use of the traditional fishing method of te uaakeang, a traditional fishing method exclusively used by women. Community members had concerns about the impacts of this method on seagrass habitats. Traditionally, a decision about this method would likely be made unilaterally by community leaders. Facilitation from the Kiribati CBFM team using inclusive facilitation techniques allowed for different user groups to openly share their views and answer questions from each other. As the primary user of this traditional fishing method, women were at the centre of this process. A number of women provided input about the method, its importance, its relevance and its changes. A decision to ban the method, reach out to MFMRD to conduct further research and work collaboratively with the community to ensure women impacted by the ban would not be left out. Team reflections about this process also allowed us to challenge preconceived notions of women being closer to nature or always acting as care-takers as well as reluctance to impact on women-only fishing practices as being contradictory to an inclusive approach. In contrast, being inclusive allowed the team to ensure an open process, discussion about potential impacts and ongoing monitoring of the situation.

Long-term changes come from within communities themselves. In Kiribati, one of the original CBFM pilot sites saw changes in the role that women play in the ongoing sustainable management of their coastal fisheries. Nikiari et al. (2021) [KIR-2021-TO-Nikiari] reported on how women in Tabonibara, North Tarawa, collectively came together to form an association whose role is to promote women's contributions to sustainable fisheries management and to be part of enforcing the rules set up by the community. This initiative was led by village women themselves and garner support from leaders and men in the village and on the island. The decision of this women association to focus on enforcement activities, to use their role as women, mothers and wives to raise awareness about the rules in their community was a change witnessed by the Kiribati team. They noted that most often women tended to be involved in discussion surrounding fisheries management and setting up community rules but tended to be less involved in other activities beyond that. These reflections are important for ongoing CBFM practice during Pathways-2 (FIS/2020/172) to catalyse on this change.



## Story of change: The first women's association around fisheries management in Kiribati.

A women's association was developed and launched in April 2021, as a joint initiative of the Pathways project and FAO Ridge to Reef project. This represents the first women's association in Kiribati with a focus on fisheries management. One of the reasons behind establishing the women's association was to have a direct engagement channel with women in the community and to build another layer of support for the management plan. During the first meeting, at the women's associations request, the team conducted further awareness on the silver biddy management measures, on

waste management, and about women's roles in enforcing the management plan. The association provides another channel to strengthen engagement with women, a platform for women to discuss what they would like to do, and an institution through which they can get involved in implementation of their plan. The CBFM team leader was impressed with the women's willingness to step up and take on the role of enforcement.

The behaviour changes highlighted in Kiribati could potentially be linked to pre-conditions inherent to this specific community. This is the research space that Gomese and Ride (in prep.) are investigating in their study on positive deviance. Based on insights from the participatory exclusions research (see above and Kleiber et al. (in prep.)), they realised that a community in Ambitona, in East Malaita, Solomon Islands, exhibited higher levels of womens' participation in decision-making processes. Guided by the work of Agarwal (2001) on exclusions and influence of marginalised groups, they set to understand the characteristics and factors contributing to the more equitable gender norms exhibited in Ambitona. The understanding of such factors could help guide interventions to support other communities to adopt sustaining equitable practices in small-scale fisheries management.

## 7.4.5 EOP Outcome 4.a. Gender sensitive and transformative approaches to CBFM are developed that can be taken to scale (KIR + SLB + VUT + REG)

The Pathways approach integrated gender into all objectives of the project, a dedicated objective (objective 4) and produced innovative new tools to assess then improve CBFM inclusion [**PRJ-2019-TO-Kleiber 1**; **PRJ-2019-TO-Kleiber 2**]. Our approach recognised that the knowledge, views, and objectives of all people who use fisheries need to be included for CBFM to be effective.

Integration has taken the form of including sex-disaggregated data, or gender reflexive data, as a baseline for quality research and development (for example data collected in field trip reports [**PRJ-2020-TO-Gomese**], catch monitoring data [**KIR-2021-TO-Tioti**], inclusion in CBFM processes and management committees [**PRJ-2021-TO-Johnson**; Ride et al. (in prep.)]. In practice this has been done through updating project field trip report templates to include questions that document gender sensitive methods used by project staff while in communities, and reflexivity on how gender is shaping project outreach. This has been further supported by a gender-sensitive <u>facilitation tool</u> published to help facilitators use, reflect on, and adapt gender-inclusive strategies in their work with communities [**PRJ-2019-TO-Kleiber 3**; **PRJ-2019-TO-Kleiber 4**]. The use of this tool proved insightful for the incountry CBFM team. As reflected by Vasemaca Malverus, CBFM project officer in Vanuatu:

"The additional checklist in our report allows us to think and prepare our engagement better. It is at the front of our mind"

To further support the integration of gender, the Pathways project facilitated a series of trainings and associated training facilitator's guide to increase the capacity of local staff to

engage in gender research [**PRJ-2020-TO-Gomese 2; VUT-2021-TO-Gereva**]. These trainings were specifically tailored to the needs of the fisheries officers and reflected findings from Pathways governance research [**PRJ-2021-PP-Lawless**; **PRJ-2021-TO-Lawless**].

We also contributed to the SPC-led *Pacific Handbook for gender equity and social inclusion in coastal fisheries and aquaculture* by providing case studies and two modules [**PRJ-2019-TO-Barclay; PRJ-2021-TO-Delisle; PRJ-2021-TO-Makhoul; PRJ-2019-TO-Mangubhai**]. This handbook is now used as a key resource for the newly created USP course on gender. Module 6 of the Pacific Handbook on Community engagement [**PRJ-2021-TO-Delisle**] is also used as a resource for the Certificate IV in Coastal Fisheries and Aquaculture Compliance to cover the module "Interacting with the community" (USP code CEFA42). Participants to this course were primarily sponsored by SPC but will now be able to take the course through USP.

Our research also informed the design of a set of tools and research frameworks to assess inclusion in CBFM processes [**PRJ-2021-TO-Johnson**] and in CBFM Committee (Ride et al. in prep) and to determine which groups may be more vulnerable to exclusion. Specific research on gender norms and livelihoods [**SLB-2020-TO-Lawless**] also assisted in the revision of SPC tools aimed at fisheries practitioners designing and implementing livelihood activities in the Pacific region [**PRJ-2019-TO-Govan**].

### 7.4.6 EOP Outcome 4.b. Project implementation is gender sensitive (KIR + SLB + VUT)

Gender inclusive facilitation methods are now mainstreamed into all community activities following training of project staff in December 2018. Overall, women make up over 35% of participants in Kiribati and 36% in Vanuatu (target: 40%). In Solomon Islands, across all the activities in communities for which gender is recorded by WorldFish staff during 2017 – 2021, 47% of participants were women (target: 40%). This suggests equitable attendance at information sessions about CBFM among men and women, and participation of men and women in activities WorldFish facilitated or attended on decision-making about CBFM.

We paid careful attention to making training opportunities provided by the project available to all. On average across the three countries, 52% of project and partner agency staff attending our short courses were women (target: 40%). 75% of written project outputs include gender and fisheries (target: 75%).

Across the three countries, 98-100% of community-level project activities use gender sensitive facilitation techniques, such as making the meeting time available for women and men, allowing children in the meeting, having single-sex group work, and active facilitation of less vocal groups. These are reported in trip reports.



### Story of change: Inclusive facilitation techniques in practice, Kiribati.

In a village in Butaritari Island in Kiribati, the village leaders were keen to protect their coastal fisheries. Some of the other villages on the island had newly launched community marine protected areas and the village leaders were eager to use a similar approach to ensure the sustainable use of their coastal resources. They decided to create a marine protected area that was permanently closed to fishing, permanently closed to fishing and included a major part of the sand flats and inshore reefs in the vicinity of the village.

Therefore, many women and youth were forced to walk further to access these habitats. Men without boats were also negatively impacted as they could no longer access their fishing grounds. As a result, many men without boats did not comply with the rules. The CBFM unit worked with the leaders of the village to widen the participation of other members of their community. Following meetings with various

groups within the community, the community marine protected areas boundaries are being revised. *Image: Women's focus group in Butaritari* 



### Story of change: Fishery monitoring for all.

Coastal fisheries research is often gender blind. It tends to focus on men's fishing activities, such as boat and offshore fishing, while overlooking other critical fishing and value chain activities, such as gleaning and processing, which tend to be carried out by women in the Pacific. Results perpetuate the idea that fishing is what men do and reinforces the assumption that there is no need to include women in fisheries decisions (Kleiber et al. 2019). The Pathways fishery monitoring protocol implemented in Kiribati and Vanuatu is 'gender integrated'. In practice this means that we collect catch data from *all* fishers

including 'gleaners' (most often women and youth) who fish the intertidal zone and collect a large portion of invertebrates. Reporting their catch is important because it is largely destined for household consumption, and therefore has nutritional impact at the household level. In 2020 we reported our data to national agencies. It was the first time invertebrates are included in coastal fisheries data in both countries. We hope it will reinforce women's contribution to coastal fisheries and that their voices, concerns and solutions should be heard in fisheries management and decision-making.

Image: Catch monitoring digital photo data from Kiribati. Photo credit: Beia Nikiari

### 7.4.7 EOP Outcome 4.c. Increased national level commitment towards gender and social inclusion (KIR + VUT)

Coastal fisheries divisions in both Kiribati and Vanuatu have made a national commitment in their national roadmaps to broad social inclusion to minimise, for example, gender-based marginalisation [KIR-2019-TO-MFMRD, KIR-2019-TO-MFMRD2, VUT-2019-TO-VFD, and VUT-2019-TO-VFD 2]. As the first strategic planning documents of their kind in both countries, this is an important achievement, with clear messaging around requirements for gender integration in implementation flowing out of these plans.

In February 2020 Pathways supported the VFD to host the first Gender and Social Inclusion workshop. Both VFD staff and other stakeholders came together to share ideas and learn about gender sensitive facilitation techniques to be used in the office and in communities, so that all voices are heard. The Department's support of this workshop demonstrates increased national level commitment towards gender and social inclusion.

### 7.4.8 EOP Outcome 4.d. Increased capacity among fisheries staff to consider gender and social inclusion in their work (KIR + SLB + VUT)

Individual capacity development is summarized in Section 8.2 Capacity Development.

### 7.4.9 EOP Outcome 4.e. Increase in inclusive CBRM practice at the community level (SLB)

Our research addressed issues of inclusion in CBFM in the Pacific, with particular attention to gender and investigated who and how people are included in the CBFM processes (Kleiber et al. in prep.). We used the 'steps of inclusion' framework to reflect on the different levels of inclusion achieved during our engagement process. During our review of 21 CBFM plans, we found that different voices and inputs are not only heard but reflected in final community action plans towards their fisheries. Management committees are also more diverse and inclusive with an increasing representation of women and youth although men

still hold leadership roles (Ride et al. in prep.). Overall, 55% of CBFM community associations have women representatives in Kiribati, 95% in Solomon Islands and 57% in Vanuatu. The CBFM review process also highlighted a strong increase in women representation across the three countries (see Table 7.1 and story of change below).



## Story of change: Increased women's representation on the management committee, Solomon Islands.

At first the management committee was comprised of mainly (male) tribal leaders. That was a deliberate part of the engagement strategy – the team engaged them in the first place to make sure they were aware of and supportive of project activities and management. This is important in order for the concept to disseminate and be accepted in the community. Now the committee is more inclusive. The first committee was comprised of 23 men and only 2 women, as

representatives from the 6 communities. As of September 2021, the new committee membership stands at 9 women and 21 men. This is a 22% increase in women representatives on the committee. There are two women in particular who were really active in enforcing the rules. On several occasions they approached people who were fishing in the managed area during the day and informed them of the rules, and told them to throw their harvest back into the sea. Following the CBRM review process, conducted in October 2020, these women were appointed to the management committee in recognition of their effort in enforcement.

In Kiribati, inclusive approaches to community engagement favoured by the team allow for different voices to be heard and be reflected in community plans but have allowed for an open process of sharing and reflections to take place at community level. The example of Tekaman, North Tabiteuea, highlighted this open process to make a community decision on a women-led traditional fishing practice (see section 7.4.4). Through their training and reflections, the KIR project team showed their ability to adapt their practice to the context and norms observed at community level. For instance, in Nanikaai, the only CBFM community in urban South Tarawa, women have strong leadership roles. In this case, the team tailored their facilitation practice to capitalise on the knowledge different community groups have on each other's fishing practices and allowed for open plenary discussion to exchange opinions on management plan rules. The community then elected women in key leadership roles of the CBFM committee, in recognition of the role they play and knowledge they hold in the community.



### Story of change: Urban women in CBFM, Kiribati.

In this urban community, women have more responsibilities on the 'front line'. The women are active in community programs and have been voluntarily cleaning their beaches for the past 4 years. During the process of developing the CBFM plan, the project team noted that women are more active in the CBFM process and engage their views on implementation of their plan. Women dominate consultation meetings with about ~90% attendance. The Chair of the CBFM committee is a woman. The resources and fishing techniques that women

target are similar to those in the outer islands. However, in this community, women contributed to rules around finfish protection (which is a fishery that men engage in). In the outer islands, finfish protection rules mostly came from men. There was an instance when men's fishing methods were being discussed and a woman tried to contribute to the discussion but was told not to talk about something that she's not involved in, to be concerned with the species that women fish. This example not only shows the ruralurban differences but also that all parts of the community have excellent knowledge of fisheries, even those they aren't involved in. In Vanuatu, communities are increasingly being inclusive when it comes to decisions around the rules in their management plan. Inclusive practices are going beyond reaching men and women but also other marginalised groups such as youth. In Namasari, the personal involvement of a young year 10 student in the CBFM process was recognised by leaders of his village. The inclusion of a youth member to the Committee is aimed to allow for borader participation of youth in the management of the local fisheries. This trend has been witnessed in all countries during the CBFM management plan review process (see section 7.4.4).



#### Story of change: CBFM committee nominates year 10 student as vicetreasurer

In Namasari, a youth is the vice treasurer of the CBFM committee. This is significant since most youth don't have the confidence to be part of the CBFM process. The youth is a year 10 student who is interested in resource management. He took part in all the consultations leading to the management plan, and supported older community members with writing during the process. In recognition of his participation and active commitment to the process, he was nominated by the elders to the committee.

#### 7.4.10 Lessons learned and recommendations

Commitments towards gender equality have increased in the fisheries sector at the international, regional and national scales (see MFMR gender strategy and the national coastal fisheries Roadmaps in Kiribati and Vanuatu [KIR-2019-TO-MFMRD, KIR-2019-TO-MFMRD2, VUT-2019-TO-VFD, and VUT-2019-TO-VFD 2]). Those commitments are a step in the right direction but often do not translate in implementation and thus in increasing equitable outcomes on the ground. The work undertaken throughout the project targeted areas where gaps in knowledge and in practice could be filled to increase the likelihood of consistent delivery of gender equitable outcomes as a result of improved fisheries management.

The project contributed to improving the capacity of fisheries staff to integrate gender in their work. Tools and checklists were produced in partnerships with gender in fisheries practitioners, notably the *Pacific Handbook for gender equity and social inclusion in coastal fisheries and aquaculture* to give practical guidance to fisheries staff (see [**PRJ-2019-TO-Barclay; PRJ-2021-TO-Delisle; PRJ-2021-TO-Makhoul; PRJ-2019-TO-Mangubhai**]). The availability of these training materials through SPC enables uptake by countries in the region. Current initiatives to increase the knowledge and capacity of fisheries practitioners on gender and social inclusion include the use of these training materials in post-graduate and micro-credential courses offered by USP. Countries are keen to continue receiving training in this area, especially training targeted at subnational staff. Such trainings with a practical focus on applicable tools have already been provided in Solomon Islands as part of FIS/2020/172 and will continue to be facilitated in the other countries.

Project staff in the three countries have become better at integrating gender in their work and in devising inclusive community engagement strategies. This increased in-country staff capacity gained during the course of the project allowed teams to focus on improving gender and social inclusion in the CBFM decision-making process (Kleiber et al. in prep.). The composition of CBFM associations is more equitable than in the past (Ride et al. in prep.). However, we recognise that these efforts are currently a 'reach' strategy and inclusion in CBFM processes [**PRJ-2021-TO-Johnson**] will be monitored and evaluated for further impact via targeted research in FIS/2020/172. As a result of our strong engagement and reflexive practice with in-country teams, we identified a gap in our approach towards the inclusion of people living with disabilities. This gap forms the basis of activities in FIS/2020/172 towards a more disability-inclusive form of community engagement.

Research undertaken in the project provides a strong theoretical foundation to assist countries in fulfilling their national commitments towards gender equality in the fisheries sector ([**PRJ-2021-PP-Lawless**; **PRJ-2021-TO-Lawless**; **PRJ-2022-PP-Lawless**]). Notably, our research highlights the need for countries and projects to consider motivations behind their commitments and evaluate their on-the-ground strategies and activities. Currently, instrumental motivations and 'reach' strategies are more prominent in fisheries policy instruments in the Pacific rather than intrinsic motivations and 'transform' strategies. These approaches may however hinder meaningful progress towards better access to fisheries benefits by all. Further work should thus focus on enabling countries to translate their commitments into more effective implementation. Gender and social inclusion activities across the different pathways of FIS/2020/172 will continue to advance our knowledge in this field, especially through applying a gender and social inclusion lens to scaling activities.

### 7.5 Objective 5. Promote food and nutrition security in the Pacific food system through improved management and use of fish

#### 7.5.1 Introduction

Coastal fisheries play an integral role in the Pacific food system, yet the diminishing supply of fish coupled with the ongoing nutrition transition evident across the region is resulting in public health issues. Clearly, the nutrition transition cannot be addressed by conventional sectoral interventions and sustainable food systems have been identified as clear areas for action to improve nutrition. In this objective we span research from community to national and regional scales to gain a better understanding of the choices people make about their diets, supply and demand, trade and policy to identify barriers and develop interventions to improve food and nutrition security.

In order to promote food and nutrition security, context assessments are an essential first step in order to build on existing effort, knowledge and resources and thereby maximise effectiveness of programs and interventions. A desired outcome of this objective and project more generally was to improve nutritional security for women, men and children in the target countries as well as the Pacific region more broadly. The outcome was pursued through a mixture of field-based activities and regional analysis.

Field and in-country activities in this Objective scheduled for the latter half of the project were constrained or terminated as a response to COVID-19. Alternatives that utilized secondary data for national and regional analyses were agreed with ACIAR. Some activities and outputs planned under the precursor project FIS/2015/188 were completed as part of the current project.

Activities in this Objective were designed to provide a strategic research component within the project that provided a platform to better integrate nutrition and food system concepts into fisheries. This differentiation was amplified by COVID-19. For this reason, we report key results in a different format to other Objectives, focussing on the research outputs to a greater extent.

#### 7.5.2 Dietary diversity and malnutrition in Solomon Islands and Vanuatu

This section summarizes Activities 5.1 and 5.2. Building on pre-COVID-19 baselines established in this project, dietary diversity studies will be implemented in project FIS/2022/121.

#### Summary

SLB, like many Pacific Island nations, suffer from the burden of malnutrition. External drivers including population growth, declining agriculture and fisheries productivity and global food trade have contributed to the transition to greater reliance on imported foods. Albert et al. (2019) [PRJ-2020-PP-Albert] used a mixed-method approach to assess nutritional status and key determinants of malnutrition among women and young children in rural Solomon Island communities. Minimum dietary diversity for women of reproductive age (MDD-W) has been endorsed as a new global indicator to assess micronutrient adequacy of women's diets (FAO 2014). Typical daily diets comprised of fish, sweet potato (and/or rice) and slippery cabbage (a leafy green) usually boiled in coconut milk or baked. Dietary diversity of women and young children was poor, with diets likely to be inadequate in key micronutrients. Albert et al. highlighted three domains of opportunity to improve diets across multiple scales: improve nutrition-sensitive agriculture and fisheries to produce and distribute diverse, productive and nutrient rich foods; 2) nutrition education and empowerment, focusing on the first 1000 days of life, to influence and inform choices regarding food consumption; and 3) reducing the consumption of imported, energy-rich nutrient poor foods through national and regional policies.

In SLB and VUT, unpublished focus group discussions on knowledge and practices of communities toward fish as food for good nutrition showed that intra-household fish distribution favored men in Vanuatu and Solomon Islands in terms of type and quantity of food, including fish, 'kastom' or cultural beliefs and practices influenced who fish, what fish to catch, what fish to cook or sell, who consumes fish (incl. complementary feeding). Cultural beliefs shaped knowledge about nutrition and fish and expressed in the current practices. The key constraints highlighted across the communities in the two countries were around the permanent and periodic closures of fishing grounds for management and the seasonality of fish availability.

Mauli et al. (submitted ms) [SLB-2022-PP-Mauli] analysed the larger policy environment of malnutrition and food insecurity and their social and economic impacts. Enhancing domestic supply of fish, the main source of local protein, can contribute to improved nutrition and food security. This research aimed to improve understanding of the policy interface between the fisheries and health sectors, and identify opportunities to strengthen fish supply chain policy in order to improve domestic (particularly urban) access to fish in the Solomon Islands. The study design drew on theories of policy learning and policy change and analysed policies using a consumption-oriented supply chain approach (Kingdon, 1984; Sabatier, 1987; Hawkes, 2009). Analysis of policy documents and interview data indicated that there were strengths as well as opportunities in the existing policy context. In particular, CBFM approaches and explicit recognition of the links between fisheries and nutrition were key strengths. Challenges included gaps in implementation, variation in capacities across government actors and communities, and limited attention to domestic monitoring and enforcement. Improving effectiveness of resource management efforts may result in sustainable outcomes for both livelihoods and health, which will accomplish priorities at the national and sub national level and more so achieve Solomon Islands' commitments to the SDGs.

Baseline surveys of dietary diversity were completed in SLB (West Are'are) and VUT (Aniwa and Maskelyne Islands). WorldFish (2019) [**PRJ-2019-OO-Worldfish**] summarizes nutrition approaches and tools used in the surveys. These surveys will be repeated and updated as part of FIS/2022/121. Farmery et al. (2020) [**PRJ-2020-PP-Farmery**] used these baselines

to summarizes dietary diversity in SLB and VUT as part of a larger analyses of aquatic foods in the region. Results demonstrated that consumption depends on availability and the amount and type of aquatic food consumed, and its contribution to nutrition security varies within different geographic and socio-demographic contexts. More data are needed on locally relevant species and consumption patterns, to better inform dietary guidelines and improve public health both now and into the future. Advice on aquatic food consumption must consider the nutrient composition and quantity of products consumed, as well as accessibility through local food systems, to ensure they contribute to diverse and healthy diets.

#### 7.5.3 Behaviour change communication products

This section summarizes activity 5.3. The majority of activities and outputs in this activity were planned or deferred to 2020-2021 and were subsequently terminated or only partially completed as part of the COVID-19 response.

One new nutrition information output (a DVD) was produced and 34 communities received nutrition information. In VUT, a nutrition DVD [**VUT-2019-IM-WorldFish**] has been used in communities as a behaviour change tool. The nutrition posters developed under PacFish – "First 1000 days" and "Fish for good health" - were translated into Bislama and used to train 18 participants from VFD, Agriculture, Health, Wan SmolBag, and JICA [**VUT-2020-IM-Worldfish**; **VUT-2020-IM-Worldfish 2**].

In SLB, since 2018, MFMR has used and disseminated more than 100 nutrition posters (Nutritional Benefits of Fish, First 1000 Days posters, developed during the predecessor PacFish project) to over 30 communities, including clinics and schools.

In KIR, a manual co-developed with MFMRD and Japan OFCF project was partially completed. The manual, called *Fish for Life*, is intended as a resource for school teachers and fisheries extension officers to provide information about nutrition and the importance of fish. The work on the manual is ongoing and will be finalised as part of FIS/2020/172 (see above for examples of the illustrations being developed for the manual).



#### 7.5.4 Regional workshops to develop and apply national scenarios

This section summarizes Activity 5.5. Face to face regional workshops were planned for 2020-21 and were terminated as originally formulated as part of the COVID-19 reset. The workshops were replaced by (i) a virtual advisory group of regional experts, and (ii) workshops in SLB in November 2021. As implemented, the workshops were integrated into FIS/2018/151 activities and outputs.

The advisory group included SPC, FAO, Vanuatu Ministry of Health & Ministry of Environment, Solomon Islands Ministry of Health & Ministry of Environment, Pathways team

members, and regional experts from USP. The group met twice (March and June 2021), and supported a documentary policy analysis (see outputs below).

Workshops were held in Honiara and Auki in November 2021, co-funded by FIS/2018/155 and FAO. Outcomes of the workshops are reported as part of a more comprehensive analysis of the Solomon Islands food system to be reported in FIS/2018/155.

#### 7.5.5 Regional analyses of the Pacific food systems

This section summarizes Activity 5.6.1 to 5.6.4. Activities and outputs overlapped with and were co-funded by ACIAR project FIS/2018/155.

#### Summary

The Pacific food system has become progressively more integrated into global food regimes. In Andrew et al. (2021) [**PRJ-2022-PP-Andrew**] we explore this integration and its impacts on availability and consumption of food, population health, and vulnerability to external drivers. We describe major elements of the contemporary food system to provide a foundation for analysis of food system transitions and public health outcomes.

Although crop production has doubled in the last fifty years, it has not kept pace with population growth. This deficit is increasingly filled by imported foods, particularly staples, meat and sugar. Across all food commodities combined imports have steadily increased, on both a total and per capita. Disturbingly, there has been a systemic switch from the importation of healthy foods to unhealthy foods. This trend was most striking in Melanesia from ca. 2007 onward and has remained so since.

Australia remains the main source of imported food, principally because of the large quantities of wheat and wheat flour imported to the region. East and South East Asia is rapidly growing in importance as an exporter of shelf stable staples and ultra-processed foods to the region.

The burden of malnutrition and poor health outcomes are increasingly apparent. Three guarters of deaths in the region are attributed to NCDs. We propose seeds for transitioning the Pacific food system to a hybrid form that supports historical continuity with healthy regionally produced food. We frame this hybrid as a form of 'localised modernity' in which, the production and consumption of local foods takes greater importance, along with the importation of staple foods. Within this over-arching narrative, Farmery et al. (2020) [PRJ-2020-PP-Farmery] explore the role of aquatic foods in the region. National rates of aquatic food consumption in Pacific Island Countries and Territories are among the highest in the world, yet the region is suffering from extensive levels of diet-related ill health. We analysed nutrient composition data and trade data as well as consumption data from national and village level surveys for two Melanesian case studies, Vanuatu and Solomon Islands. Results demonstrated that consumption depends on availability and the amount and type of aquatic food consumed, and its contribution to nutrition security varies within different geographic and socio-demographic contexts. Advice on aquatic food consumption must consider the nutrient composition and quantity of products consumed, as well as accessibility through local food systems, to ensure they contribute to diverse and healthy diets.

Fish is the most important animal source food for people in the Pacific region. Concerns about the sustainable supply of fish are set against a background of poor public health outcomes in the region. The Pacific region is suffering an epidemic of diet related disease, with the consequent massive personal and economic burden borne by the people and economies of the region. Despite the benefits of consuming fish, and the fact that it is the world's most traded food commodity, seafood mostly appears in the scholarly literature and policy documents in the context of sustainability of supply rather than consumption and trade. In that context, the dearth of reliable information on catch, fishing effort and participation in coastal fisheries in the region is an impediment to policy development. Sharp et al. (submitted ms) **[PRJ-2020-PP-Sharp]** fill this gap for the Pacific region.



There are many reasons for the lack of information about the production, trade and consumption of fish, including the dispersed and remote nature of many fisheries, and understaffed and underresourced national agencies - all which is compounded by the complexity and diversity of fisheries themselves. Sharp et al. (submitted ms) utilized standardized HIES to provide the first comprehensive description of the acquisition and consumption of fish for 12 SIDS in the Pacific region. As part of a broader analysis of the Pacific food system, results were interpreted in the context of the role of fish in food and nutrition security, and its role as part of the livelihood portfolio of rural people as a source of income. Note that an earlier version of this manuscript was reported in FIS/2012/074. In the intervening period the HIES datasets have been significantly revised and the country coverage expanded.

Thow et al. (submitted ms) [**PRJ-2020-PP-Thow**] described, for the first time, trends and dynamics in intra-regional food trade. The paper provides insights into the implications of intra-regional food trade on implications for food security and nutrition, to inform future trade policy in the region. As multilateral trade negotiations have stalled over the past 20 years, global attention has turned towards regional trade to create new opportunities for specialization and comparative advantage.

In the Pacific region, food trade has historically been influenced by colonization and extraregional trade, which has negatively impacted food security and prompted a nutrition transition. Colonial trade patterns resulted in import dependence and dietary changes, moving away from healthy, traditional foods – including root crops, fish, and vegetable – to energy dense-nutrient poor imported foods such as sugar, wheat flour, rice and processed snack foods. Despite a recognition among Pacific Island leaders of the important of trade policy in promoting and improving nutrition in the region, intra-regional food trade remains minimal (rising from 0.3% in 1995 to 3.2% in 2018).



Fiji consistently exports the largest volume of intra-regional food imports into PICTs, primarily to Cook Islands, Kiribati, Nauru, Samoa, Tonga, Tuvalu and Wallis and Futuna. Fiji's intra-regional trade volume rose from 2,693 tonnes in 1995 to 49,900 tonnes in 2018. The main food commodities traded intraregionally in the PICTs is cereal grains and flours, which represented 51% of total intraregional food trade in 2018. Wheat flour comprised of 45% of total intra-regional food

trade. In 2018, processed and prepared foods including meat and vegetables accounted for 19% of intra-regional food trade, sweetened or flavoured beverages 8% and processed fish 5%. Fiji was the main exporter of unhealthy foods, in addition to being the major re-exporter and export hub for unhealthy food in the region.

Ongoing analysis in Sharp et al. (submitted ms) **[PRJ-2020-PP-Sharp]** confirms the key role of reef fish in the diets of Pacific people. This analysis of fish acquisition and consumption continues to be updated as HIES data are cleaned. This summary builds on that previously provided in ACIAR project FIS/2015/031 and will be fully reported in FIS/2018/155. Within this broad pattern there is great diversity in what and how people acquire fish. For example, the sourcing modes of fish (gifting, purchase or subsistence) help illustrate a complex fish distribution system often built on social institutions and informal trade. Although broadly similar, there were significant differences among estimates of national whole fish acquisition among countries (Table 7.2).

Table 7.2. Historical estimates of annual per capita fish consumption (kg/p.c./year) in 12 PICs. For tabulation all estimates are rounded to the nearest kg. Estimates are reported as per reference as either point estimates, a range, or mean ± SE for whole fish equivalent (WFE). Current estimates based on edible portion (EP) are also provided. – indicates no estimate. See cited reference for data sources, estimation methods and year of estimation. \* per capita food consumption based on Food Balance sheets from FAO (2007-2009 average) in kg/person/year.

Country	Gillett & Lightfoot (2001) (WFE)	SES (2004) (WFE)	Bell et al. (2009) (WFE)	FAO (2013) (WFE)	Needham & Smith (2015) (EP)	Gillett (2016) (WFE)	This study (2019) (WFE)	This study (2019) (EP)
СОК	47 to 71	79 ± 5	35	-	57	47 to 71	41 ± 5	34 ± 4
FSM	72 to 114	96 ± 6	69	-	44	72 to 142	108 ± 6	78 ± 4
Rural	-	-	77	-	-	-	133 ± 8	96 ± 5
Urban	-	-	67	-	-	-	66 ± 4	49 ± 3
NIU	49 to 119	50 ± 2	79		-	39 ± 5	30	
NRU	47	62 ± 3	56	-	24	47 to 64	88 ± 5	66 ± 4
PLW	84 to 135	79 ± 8	33	-	68	84 to 135	85 ± 4	69 ± 3
Rural	-	-	43	-	-	-	103 ± 15	85 ± 13
Urban	-	-	28	-	-	-	81 ± 3	66 ± 3

PNG	18 to 25	53 ± 2	13	-	17	18 to 25	33 ± 3	28 ± 3
Rural	-	-	10	-	-	-	34 ± 4	29 ± 3
Urban	-		28	-	-	-	25 ± 1.6	21 ± 1
SLB	32 to 33	118 ± 4	33	34	33	32 to 46	107 ± 6	72 ± 4
Rural	-	-	31	-	-	-	119 ± 8	80 ± 5
Urban	-	-	46	-	-	-	51 ± 2	38 ± 2
TKL	-	-	-	-	-	-	103 ± 10	77 ± 6
TON	25 to 30	85	20	-	35	25 to 35	51 ± 4	38 ± 2
Rural	-	-	-	-	-	-	53 ± 4	39 ± 3
Urban	-	-	-	-	-	-	45 ± 3	35 ± 2
τυν	85 to 146	$146 \pm 6$	111	-	41	-	72 ± 6	54 ± 4
Rural	-	-	147	-	-	-	90 ± 10	66 ± 7
Urban	-	-	69	-	-	-	55 ± 5	43 ± 5
VUT	16 to 26	30 ± 3	20	32	34	16 to 26	23 ± 1	17 ± 1
Rural	-	-	21	-	-	-	25 ± 1	19 ± 1
Urban	-		19	-	-	-	15 ± 1	13 ± 1
WSM	46 to 71	94 ± 4	87	47	47	46 to 129	44 ± 2	34 ± 2
Rural	-	-	98	-	-	-	48 ± 3	37 ± 2
Urban	-	-	46	-	-	-	27 ± 2	21 ± 2

### 7.5.6 National analyses of food security, poverty and food acquisition and consumption

This section summarizes Activities 5.6.5 to 5.6.7. The activities and outputs were co-funded and integrated with this in project FIS/2018/155, particularly after the COVID-19 reset in Q1 2020.

#### Summary

Led by SPC SDD, and implemented by Nathalie Troubat and Michael Sharp in collaboration with national statistics offices, the project contributed to a series of reports summarizing national food acquisition and consumption (Troubat and Sharp 2021a, b; Troubat et al., 2021, VNSO 2021) [KIR-2021-TO-Troubat; PRJ-2021-TO-Troubat; SLB-2021-TO-Troubat; PRJ-2021-TO-Troubat; PRJ-2021-TO-VNSO]. The reports are based on national household income and expenditure surveys (HIES) and utilize the FAO/WorldBank software ADePT-FSM to provide consistent food and nutrient consumption statistics from food consumption data collected in HIES. The reports provide, sometimes for the first time, comprehensive analysis of food security in PICTs, and are unique in their breadth of coverage and standardization of analysis. The national reports for Solomon Islands, Kiribati, Marshall Islands and Vanuatu were part of a larger and expanding series of national food security analyses.

Based on these in-depth analyses, a series of national profiles were produced to provide snapshots for a range of SDG-oriented indicators. Information is included on demographics, poverty, food security, food consumption, nutrition, and the adequacy of diets. At time of writing profiles had been completed for eight PICTs. National Poverty and Food Security Profiles are available at: <u>https://sdd.spc.int/food-systems</u>; three are cited here (SPC and FAO 2021a-c) [KIR-2021-TO-SPC; SLB-2020-TO-SPC; VUT-2021-TO-SPC].

Underpinning these analyses of food security and consumption is a database with detailed information on the nutrient composition of foods consumed in the Pacific region. The Pacific

Nutrient Database (PNDB) was created to facilitate the use of data primarily derived from Household Income and Expenditure Surveys, but also other data sources, to conduct poverty, nutrition and food security oriented analysis in the Pacific region. Through its concordance with international classifications and food groups, the database facilitates standardised consumption-oriented analysis. The database may be accessed on the SPC data hub (<u>https://microdata.pacificdata.org/index.php/catalog/755</u>) and the User Guide is published as FAO, SPC and UOW (2020) [**PRJ-2020-OO-FAO**]

As part of the project's pivot to contribute to the region's response to COVID-19, a series of baseline summaries were produced (SPC and FAO (2020a-c) [SLB-2020-TO-SPC 2; KIR-2021-TO-SPC; SLB-2020-TO-SPC; VUT-2021-TO-SPC]. The unprecedented impact of COVID-19 prompted a rush of initiatives to gather data on economic and social impacts and shocks resulting from the pandemic. A series of fact sheets was developed by SPC SDD in collaboration with national statistics offices. The fact sheets highlighted a range of metrics such as education and labour profiles, and the source and types of foods that were mainly consumed prior to the COVID-19 pandemic. The national COVID-19 Baseline Fact Sheets are available at: https://sdd.spc.int/food-systems.



**Figure 7.16.** Examples of food acquisition and consumption analyses, pre-COVID-19 baseline summaries, and Food Security Profiles. These, and companion outputs not resourced by the project, may be found at: <u>https://sdd.spc.int/food-systems</u>.

In addition to these national summaries, Farmery et al. (2022) [**SLB-2022-TO-Farmery**] summarized the national food system of SLB. This comprehensive analysis is one of the first of its kind globally. The report revealed falls in per capita agricultural production, sharply increasing importation of staple foods, and rising incidence of NCDs. National workshops recognized three broad pathways to key pathways for food system change may be recognized: 1) strengthen and connect the rural food system; 2) strengthen the national policy environment; and 3) advocate for food environments that make healthy food more accessible, affordable and convenient. These pathways are centred on different scales (provincial, national inward-looking and national outward-looking) but overlap and interact in important ways. Rural areas must be prioritized alongside urban areas, and strong connections forged between them for national prosperity. The pathways identified recognize areas of strength that are already being supported and that do not need to be "transformed" as much as they need to be strengthened to continue their positive trajectory.

An extensive literature describes the importance of food environments (FEs) as a driver of food choices and nutrition outcomes, yet existing FE frameworks do not adequately capture the diversity of FEs relevant to the Pacific Region. As part of the broader re-evaluation of Pacific food systems, Bogard et al. (2021) [**PRJ-2022-PP-Bogard**] developed a conceptual typology of FEs including six primary FEs relevant in the Pacific; wild; cultivated; kin and community; informal retail; formal retail; and food aid and services (Figure 7.16). We then apply this typology to food acquisition data from the SLB 2012/13 HIES to analyse the relationship between FEs and diet quality.



Figure 7.17. Conceptual typology of food environments in the Pacific Region and primary exchange mechanisms. Source Bogard et al. (2021) [PRJ-2022-PP-Bogard].

The cultivated FE accounts for 60% of the quantity of food acquired nationally, followed by wild (15%), kin and community (9%), and formal and informal retail FEs (8% each), with wide variation between urban and rural households, provinces and wealth groups. Reliance on different FEs is a significant predictor of diet quality and affirms the importance of subsistence fisheries and agriculture, and community and kinship networks. Integration of a FE typology such as the one presented here in commonly conducted household expenditure

surveys offers significant opportunity to advance our understanding of food system leverage points to improve nutrition and health.

#### 7.5.7 EOP Outcomes

In the absence of field activities in 2020-21 because of COVID-19, the original outcomes planned under EOP outcome 5 were only partially achieved. Baselines created in 2018-19 will be repeated in project FIS/2022/121 from 2024 onward. Below we briefly summarise outcomes for the three components of EOP 5.

## EOP Outcome 5.a. Approaches to nutrition behaviour change for CBFM communities and national and regional policy development are developed that can be taken to scale (KIR + SLB + VUT + REG).

Pathways has built a suite of tools and new information aimed to help communities and the national agencies supporting those communities to incorporate fish into their diet to address the burden of malnutrition (undernutrition, overweight/obesity) in the Pacific region, particularly for Solomon Islands and Vanuatu. This package includes diagnostic tools, informational materials, and a training of trainers package.

The two main tools at the community-level include a nutrition diagnosis and the dietary diversity tools. The tools were pilot tested and validated by researchers in 2018. The nutrition diagnosis takes place in a community over a number of days through a series of focus group discussions. It is aimed at understanding the ways fish are caught, processed (for sale and for household use), and cooked by households; the level of nutrition knowledge and attitudes in the community; and community perceptions on constraints and opportunities to improve nutrition. The diagnosis phase in Pathways was used to inform behaviour change communication products (informational posters in Bislama and a DVD in Vanuatu). These products will be further tested during an intervention in two sites in Vanuatu. VFD staff have received training in using these products during general CBFM community awareness sessions.

The dietary diversity tool, using 24-hour recall on food consumption and food frequency, is both a measure of nutrient intake and a means of monitoring and evaluating intervention outcomes. The diagnosis and dietary diversity tools were used in three sites in SLB that formed part of the solar freezer livelihoods intervention, to measure change in diets and nutrition.

## EOP Outcome 5.b. Improved integration of approaches to CBFM and nutrition security at the national level and among selected intervention communities (KIR + SLB + VUT)

At the national level, in the three project countries, there is evidence of integration of fish in nutrition policy and planning dialogues and in nutrition in fisheries planning. In Kiribati, the Ministry of Health is participating in the CBRM Taskforce that Pathways staff have twice facilitated. In Vanuatu, nutrition is now included in VFD annual business planning. Furthermore, collaboration with Ministry of Health has increased, with representatives now participating in VFD's annual national CBFM stakeholder forum and the Pathways-facilitated nutrition trainings, and with continued co-development of information material (e.g. nutrition video and translation of nutrition posters). In Solomon Islands, the WorldFish nutritionist and Fisheries staff have participated in the steering committee for development of the Food and Nutrition Security Policy being spearheaded by FAO.

At the community level, nutrition diagnosis and dietary diversity baselines were completed in 5 sites in Solomon Islands and 2 sites in Vanuatu. Endlines were not completed following to COVID-19 reprioritisation of activities.

### EOP Outcome 5.c. Project and national government fisheries staff have increased capacity to integrate food and nutrition in their work (KIR + SLB + VUT).

Capacity development of individuals is reported in Section 8.2 Capacity Development.

#### 7.5.8 Lessons learned and recommendations

The project highlighted and partially filled a number of significant gaps in evidence needed to support evidence-based food policy in the Pacific region. Although widely acknowledged anecdotally, the high demand for quantitative analyses of food system dynamics confirmed the importance of continued investment in the creation and curation of national and regional data products. As Sharp and Andrew (2021) concluded, investment in statistical production and statistical capacity is essential for PICTs to achieve the SDGs to end poverty and hunger, and to achieve good health. The Australian Government and SPC have committed to continued funding through projects FIS/2020/172 and FIS/2022/121.

Field-based analyses of dietary diversity in SLB and VUT confirmed major issues in diet quality in those countries and reinforced the importance of detail field-based studies to augment and fill gaps in the national scale household surveys.

COVID-19 severely disrupted planned activities in this Objective. In contrast to CBFM activities, national staff did not have sufficient skills in food system research to fill the gap created by the absence of Australia-based scientists. We note that these staff were also impacted by COVID-19.

### 8 Impacts

#### Project monitoring and evaluation

The initial Project M&E Plan was approved by the Steering Committee in Sept 2018, then revised at the end of 2019 following the mid-term review. Based on the project's Theory of Change (Figure 8.1), the M&E plan included a Results Framework that outlines the longer term development outcomes the project is working towards, end of project outcomes (by country), process indicators that monitor change along the way, and at least one change/outcome indicator (Table 8.1).

Figure 8.1. Impact pathway for project support to realising New Song outcomes and overarching outcomes.



Longer Term Dev't Outcome	End	OF PROJECT OUTCOMES			Kiribati	Solomon Islands	Vanuatu	REGIONAL
National	1.a.	A long term, coherent and cohe	esive approach	to strategic	$\checkmark$		$\checkmark$	
provide	1.b.	Integrated approach to CBFM a	$\checkmark$		$\checkmark$			
recognitio n and	1.c.	national and subnational gover Increased ownership and inves agencies for CBFM / enabling	akeholders nal fisheries reated	$\checkmark$	$\checkmark$	$\checkmark$		
support for sustainabl e national	1.d.	Increased capacity in CBFM ar and sub national levels	nong fisheries	staff at national	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
and sub-	1.e.	Increased capacity in CBFM ar	nong project st	taff	$\checkmark$	$\checkmark$	$\checkmark$	
CBFM programs	MONIT	ORING INDICATORS	Associated outcome	End of project target	Kiribati	Solomon Islands	Vanuatu	Regional
	1.1	# translation outputs(including national strategies) consider CBFM	1.a., 1.b.	>50		72		
	1.2	% project activities conducted in collaboration with one or more national agencies	1.b.	>50%	79%	91%	78%	N/A
	1.3	% increase in staff allocated to coastal fisheries in each	1.a, 1.c., 1.d.	50%	Data not available	87%	11%	N/A
	1.4	% trained reporting increased skills or knowledge		See section	on 8.2			
CBFM is	2.a.	Increase in communities impler			$\checkmark$			
effectively scaled out	2.b.	CBFM contributes to social, ec	$\checkmark$	$\checkmark$	$\checkmark$			
in Kiribati, Solomon Islands	2.c.	Regional information sharing a CBFM	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$		
and Vanuatu	MONIT	ORING INDICATORS	Associated outcome	End of project target	Kiribati	Solomon Islands	Vanuatu	Regional
	2.1	# communities directly engaged with (named communities)	2.a	60	61	34	34	N/A
	2.2	# communities receive info on CBFM (info kits, DVDs, and presentations)	2.a	120	87	99	184	N/A
	2.3	# information materials produced	2.a	30		31		
	2.4	# new CBFM management plans	2.a	9	20	19	13	N/A
	2.5	change in resource or resource use where CBFM principles are implemented	2.b.	increase (resource) or improvement (resource use)		See Appe	ndix 2	
	2.6	# communities implementing CBFM principles	2.a, 2.b.	100	40	43	144	N/A
	2.7	# regional forums / workshops / events with CBFM information sharing or capacity development	7		9			
	2.8	% trained reporting increased skills or knowledge	2.c.	75%		See section	on 8.2	
Opportunit ies,	3.a.	A participatory approach to live available for partners to take to	lihoods with pr	actical tools				$\checkmark$
viability and performan	3.b.	A participatory CBFM approach development sector and suppo	n is used in live rt programs	lihoods/rural	$\checkmark$	$\checkmark$	$\checkmark$	
ce of	3.c. Improved livelihoods in select project communities					$\checkmark$	$\checkmark$	

#### Table 8.1. Pathways Results Framework

Longer Term Dev't Outcome	END	OF PROJECT OUTCOMES			Kiribati	Solomon Islands	Vanuatu	REGIONAL	
livelihoods in support of CBFM	MONIT	ORING INDICATORS	Associated outcome	End of project target	Kiribati	Solomon Islands	Vanuatu	Regional	
initiatives are improved	3.1	# and type coastal livelihood diversification interventions for men and women	3.a., 3.b.	2	0	1+	1	N/A	
	3.2	# and type of livelihoods tools available	3.a., 3.b.	1		1			
	3.3	Change in income (participant level)	3.c.	Increase	See section 7.3.4				
Increase social and gender equity in	4.a.	Gender sensitive and transform are developed that can be taken	ative approach n to scale	es to CBFM	V	$\checkmark$	ν	V	
	4.b.	Project implementation is gende	er sensitive		$\checkmark$	$\checkmark$	$\checkmark$		
coastal fisheries	4.c.	Increased national level commit social inclusion	ment towards	gender and	$\checkmark$		$\checkmark$		
e, utilisation	4.d.	Increased capacity among fishe and social inclusion in their wor	eries staff to co k	nsider gender	$\checkmark$	$\checkmark$	$\checkmark$		
and benefit distribution	4.e.	Increase in inclusive CBFM pra	ctice at the con	nmunity level		$\checkmark$			
	MONIT	ORING INDICATORS	Associated outcome	End of project target	Kiribati	Solomon Islands	Vanuatu	Regional	
	4.1	% women attendees	4.b.	40%	35%	47%	36%	N/A	
	4.2	% written project outputs that include gender and fisheries	4.a., 4.b.	75%	75%				
	4.3	% project facilitated events at the community level use gender-sensitive facilitation techniques	4.b.	60%	100%	98%	98%	N/A	
	4.4	% project and partner staff attending short courses, workshops, and training that are women	4.c., 4.d.	40%	60%	51%	44%	N/A	
	4.5	% CBFM community associations have women reps	4.e.	75%	55%	95%	57%	N/A	
	4.6	% trained reporting increased skills or knowledge	4.d.	75%		See section	on 8.2		
	4.7	Change in participation, decision-making and access to benefits	4.c., 4.e.	Increase	See Section 7.4.5				
Promote food and nutrition	5.a	Approaches to nutrition behavior communities and national and r are developed that can be taken	CBFM development		$\checkmark$				
security in the Pacific food	5.b	Improved integration of approad security at the national level and intervention communities	ches to CBFM a d among select	and nutrition ed	$\checkmark$	$\checkmark$	$\checkmark$		
system through CBFM	5.c.	Project and national governmer increased capacity to integrate work	f have on in their	$\checkmark$	$\checkmark$	$\checkmark$			
	MONIT	ORING INDICATORS	Associated outcome	End of project target	Kiribati	Solomon Islands	Vanuatu	Regional	
	5.1	# nutrition information materials produced	5.a.	5	0	0	1	0	
	5.2	# communities received nutrition information	5.b., 5.c.	30	0	32	2	N/A	
	5.3	% trained reporting increased skills or knowledge	5.c.	75%		See section 8.2			
	5.4	Change in dietary diversity	5.a.	Increase	N/A - no n	utrition interv	entions com	pleted	

#### Panel Study

The Pacific Panel Study sought to inform impact evaluation at the whole-of-project level. Baseline data collection was completed, however, a follow-up round was only collected in SLB and not in VUT or KIR due to COVID-19 restrictions in 2020-21. The baseline data provides a rich picture of people's lives, particularly relating to CBFM and livelihoods. A detailed summary of the data is found at Appendix 2.

#### Innovative reporting on project impacts

The project invested in recording performance stories or 'stories of change' as a method of evidencing impacts at the community level. SPC M&E colleagues provided training for in-country project staff at ANCORS in 2019. Trainer Terry Opa began the session stating, "We in the Pacific are natural storytellers. Recording stories of change is a good method for us to use." With ANCORS staff scribing, the country teams related stories from the villages and followed up to validate these stories with communities. Once collected, the stories were compiled into an interactive 'Prezi' presentation (Pathwavs project 2021b,c,d [KIR-2021-OO-Pathways; SLB-2021-OO-Pathways; VUT-2021-OO-Pathways]). Prezi is a tool to create interactive presentations that displays information spatially rather than in a linear way. Project sites are displayed on a country map, with a summary of projectand general fisheries-related information.

The three country presentations allow us to present community impacts in a logical and structured way - users can drill down from national, to provincial or island level, to individual communities, and so read those stories in the broader context of the project. These presentations are useful not only for the purposes of reporting to donors but also to report back to national audiences: to everyone from the communities we've worked with to our government counterparts, in a way that audiences might find engaging but useful too. The presentations can be distributed and displayed as a Prezi file (interactive) or a static PDF, viewed online as a live presentation, or embedded in a website.



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There is strong interest from national partners to grow and use the presentations. In-country teams are keen to use Prezi into the next project phase as the public face of a national CBFM

database; for intra- and inter-department coordination of community-based work; for presentations to decision-makers to show the breadth of work and momentum building behind CBFM in their countries. They are providing printed copies of the relevant community pages to project sites, to report back to these communities. In VUT, the VFD team used their Prezi presentation in the National Scaling Strategy workshop to show the breadth of work during Pathways and community-level impacts through stories of change. Feedback from VFD was all positive – they were really impressed that the tool could capture a massive amount of information and display it in a nicely presented and user-friendly way.

"This tool could be something that will help the VFD in terms of reporting and tracking of activities and a way forward to improve in exposing our works into a wider audience. [It could provide] assistance in profiling activities ...since reporting is sometimes being done but is rarely read." [Christopher K Arthur-Manager of Management and Policy].

"Acknowledge what Pathways team has done so far in helping the data section. There is a real need to have information's being put together into a centralized database that keeps track of VFD activities which can later be transferred in the existing tools (Prezi) to develop polices, reports, etc... at all institutional levels." [Lucy Joy-Principal Data Officer (National)]

"We are talking about up-scaling but I can already see what CBFM has being doing.... looking forward to see how this tool can boost our activities forward..." [June Brian Molitaviti- Manager of Research and aquaculture]

#### 8.1 Scientific impacts – now and in 5 years

To date, the project has produced a total of 168 outputs. Of the 38 peer reviewed scientific outputs (published, in-press, submitted or in preparation), 71% were led or co-authored by national collaborators. Of the other 130 outputs, 91% were led or co-authored by national collaborators. Thus far 94 outputs of all types have been led by national researchers. Below we highlight five significant scientific impacts

#### Gender transformative approach

The project further developed the theoretical underpinning of the gender transformative approach (GTA) to development [**PRJ-2021-PP-Lawless**; **PRJ-2021-TO-Lawless**; **PRJ-2022-PP-Lawless**]. Utilizing this framing, the project contributed to region-specific analyses of progress and gaps in the pursuit of greater gender equality.

The GTA seeks to interrogate and address social norms, behaviours, and social systems that underlie gender inequality. Explicit in the GTA, therefore, is an ambition to fundamentally change the deep and less visible processes that shape norms in how men and women live their lives. The challenge now and in five years, will be to operationalize this ambition within the complex social landscapes and diverse world views of countries where transformation is sought. We see this research frontier as a critical one that will require continued reflection by external agents as to their positionality, considerations of partners and agencies' values and worldviews on GTA, and extent to which the GTA's normative ambitions are, practically, applicable by national fisheries agencies. Addressing the operationalization challenge of the GTA, and evaluating progress forms a central part of the gender research objectives of FIS/2020/172.

Addressing this challenge requires a long-time horizon - while building agency in individuals may happen within project time-scales, changing power relations and transforming societal structures, norms and values is a long-term and profoundly political agenda

#### **Fishery monitoring**

The novel fishery monitoring method developed by the project has established a strong scientific groundwork towards a more differentiated framing of fisheries management evaluation for CBFM. Our approach places evaluation and management of community fisheries in tropical regions, typically those that are rural and subsistence oriented, closer within a natural resource management and rural development paradigm framing. This challenges the current dominant Maximum Sustainable Yield (MSY)-derived interpretations of sustainability for those fisheries and the scientific machinery attendant to them. It further has implications for the nature of evidencing used to evaluate sustainability and for the processes, roles and legitimacy of actors in the management process. Central to this discussion is the analytical framing of sustainability, who participates in the creation of knowledge, and how that knowledge is used – what institutions and people make rules and for whom.

Given this departure point the project developed a fit-for-purpose monitoring methodology that addresses a demand to measure and feedback impacts of CBFM; understanding (i) the diversity and variability of community-based fisheries in Pacific communities and (ii) the broad range of social, economic, cultural benefits being drawn from them. As outlined in previous sections the tested methodology shifts technicalities and data collection burdens (often associated with for example intensive creel surveys) away from fishers and communities and into the 'lab'. It furthermore prioritises timely feedback to communities to inform adaptive management in communities (Andrew et al 2020 [**PRJ-2020-TO-Andrew**], Sami et al 2020 [**VUT-2020-TO-Sami**] and Nikiari et al. [**KIR-2021-TO-Nikiari**]). The co-design, -testing and -implementation yielded impact not only in communities, but also with national agencies, as well as impacts to science beyond the project. VFD has approached Pathways, under the subsequent phase FIS/2020/172 to apply the 'catch mat' method to other monitoring contexts, including fisheries specific monitoring (e.g. seamount monitoring) and tabu area monitoring (opening and closure monitoring).

This initiative has in the process of development, garnered interest and support among several internationally recognised experts on fisheries MEL. It has catalysed new discussions that we have carried forward to pursue into the subsequent phase (FIS/2020/172), and which are challenging the appropriateness of classic fishery assessment tools for CBFM (given the different services community-based fisheries provide and the different interactions involved across these particular human-resource interfaces). This stands to be transformational in the way we think about monitoring CBFM (other institutional arrangements geared towards driving collective action around natural resource management).

Looking forward, the work by the project has opened up exciting innovation pathways for community-based fishery monitoring in the region and globally, particularly in considering the application of digital technology and emerging Artificial Intelligence (AI) applications. There are already significant investments underway as part of the FIS/2020/172, that are further developing the methodology to be tablet-based and integrated within existing online data management platforms coordinated through SPC, e.g. *Ika Savea*. Data collected through the project provides critical machine learning material to advance AI applications to an accuracy that makes it usable within the system. Ultimately, this transition will facilitate faster data feedback into monitoring of CBFM, effectively eliminating lags in data delivery to inform adaptive management. Experience has shown that when out-of-date data is fed back to communities, or if the period between data collection and feedback is too long, it compromises buy-in by communities. As such, this methodology shifts the way information is gathered, fed-back and applied for management by grassroots stakeholders, particularly in the context of national and regional scaling up ambitions.

#### Scaling CBFM theory

The project's internal concept document on scaling CBFM (Pathways project 2019b [PRJ-2019-OO-Pathways) marks the departure point of an evolution of thinking that spanned the duration of project. It outlines principles and approaches for scaling agriculture innovations in the coastal fisheries context as applied in the project. While focus of this conceptualisation was on our project, the logic and structure provided has come to be the basis of cataloguing and scheduling CBFM initiatives across the region. It set off a more detailed theoretical enquiry into what it means to scale CBFM (Steenbergen et al. 2021 [PRJ-2021-PP-Steenbergen]). In doing so, the project challenges diffusion theory that dominates conservation and tech-based scaling discussions. Instead, we posit integration of holistic thinking around socio-technical transitions, as developed by Geels (2019). The project initiated the first ever application of this approach to the context of CBFM, or any collective action institutions for that matter. A second step was the application of the resulting framework to the empirical setting of Vanuatu. This revealed the growth phases and drivers of change behind CBFM in Vanuatu since the 1980s (Steenbergen et al. 2022 [PRJ-2022-PP-Steenbergen]). Finally, and in parallel to this theorising of scaling, was the application of it in policy and practice, including the development of scientific tools (Pathways Project 2021a [PRJ-2021-OO-Pathways]) and its integration into regional policy design fora.

Looking forward beyond the project, this conceptualisation of scaling CBFM formed the design architecture for the subsequent phase (FIS/2020/172). Herein efforts seek to institutionalise CBFM into self-sustaining national programs that integrates stakeholder across sectors (e.g. government and non-government) and governance levels (e.g. national and subnational). This is a substantial leap forward from what the focus of discussions were in-country, in-region and in-academia around scaling at the start of this project in 2017.

The project has elevated the application of holistic approaches toward understanding scaling. It has shifted *objectives of scaling* from its conventional application as a secondary after thought to investments into innovation-development, into the heart of development processes. In doing so, persisting issues in development practice and science are laid bare, including that development initiatives are too often implemented with trivial understanding of what are dynamic socio-political environments in which they come to function (often as consequence to the common focus on the innovation itself). Furthermore, the project scaling perspective explicitly highlights the need for responsible forms of scaling. This involves development practices and processes that are reflective and reflexive; understanding, for example, that while scaling is assumed to be inherently positive it is necessary to recognize that can have negative impacts for some and/or can lead to unintended outcomes that could in fact compromise sustainability.

#### The Pacific Nutrient Database

The Pacific Nutrient Database (PNDB) represents a significant scientific outcome that will continue to guide the analysis of food acquisition and consumption in the region. The PNDB was created to facilitate the use of data primarily derived from Household Income and Expenditure Surveys. Through its concordance with international classifications and food groups, the database facilitates standardised consumption-oriented analysis. We anticipate that all analyses of nutrition and food security in the Pacific region will utilize the database. The PNDB was developed in conjunction with project FIS/2018/155 and will be further developed and reported as part of a suite of public domain analyses and databases in that project.

#### National assessments of food acquisition and consumption

The project contributed to a series of national food acquisition and consumption analyses for Solomon Islands, Kiribati, Marshall Islands and Vanuatu. These analyses provide,

sometimes for the first time, comprehensive analysis of food security in PICTs, and are unique in their breadth of coverage and standardization of analysis.

#### 8.2 Capacity impacts – now and in 5 years

As described in Section 5, the project recognises four dimensions of capacity, namely institutional, organisational, relational and individual. Section 7.1 provides examples of the first three dimensions including increased capacity of national agencies and communities to support CBFM. In this section, we focus on individual capacity.

The project enabled the development of individual capacities through several pathways. Capacity built was achieved through participation in formal trainings, mentoring and on-the job learning.

#### Increased scientific capacity through post-graduate training

The project invested in building the scientific and research capacity of in-country collaborators by providing PhD and Master scholarships to individuals from Kiribati, Solomon Islands and Vanuatu. Two PhD students (from SLB and VUT) and four Master students (from KIR, SLB, and two from VUT) took Masters degrees at UOW. Three of the students graduated with a Master in Fisheries Policy while one student will graduate in 2023. The two PhD students are expected to submit in 2023. The capacities built through post-graduate training not only contribute to an individual's own knowledge and increased career opportunities but also as a boost to the application of this new gained knowledge to problems faced in their home countries.

"The opportunity to undertake a PhD program with the project allowed me to take on a journey, which was very exciting ... it allowed me to work with top-class researchers in Pathways. I have learned a lot in the past four years...and the knowledge I gained from the knowledge developed in the PhD and with engaging with the team as a whole encourages me to go further and to do more work in the small-scale fisheries sector" [Jeremie Kaltavara, PhD student, Vanuatu]

"The Master of Fisheries Policy program has been a very special achievement for me. It provides me with a lens to see how fisheries policies and its principal drivers shaped fisheries development at the international levels to regional, sub-reginal and country level. Having successfully completing this program positions me for more opportunities within the country and abroad, as it builds my confidences and understanding to contribute to wider fisheries management development. Currently, I am see myself using Resource Management understanding to address food security and livelihood activities in Vanuatu and also using my knowledge around lack of adequate institution to support community-based fisheries, especially working with Vanua Tai network, fishers Associations, Tails monitors and area council level to strengthen community-based fisheries activities. I would also personal like to thank the Vanuatu Government and the Australian Government and the Pathways Project for this opportunity to be a candidate under this program". [**Pita Neihapi, Master student, Vanuatu**]

"It has been challenging bouncing between work, family commitments, unreliable internet connection (SI) and studies but i've managed to successfully complete my Masters ambition and this is an academic milestone achieved for my family, community and country as a whole. I am grateful to have been able to study online at the UOW, as it has broaden my knowledge and developed my understanding on the linkages of Fisheries Policy at different levels of governance and how this connects back to my work with communities and
national partners to improve fisheries and livelihood for people in SI. There are lessons from my studies which I have grasped that I believe can add value to our ongoing national efforts to support fisheries/resource management in SI. Also linking gaps (regional, national, provincial, community) which are lessons to learn from and for us (practitioners) to work hard towards improving." [**Faye Siota**, **Master student, Solomon Islands**]

### Increased capacity of project staff

Pathways organised in-house trainings aimed at project staff. Topics aimed to increase: (i) CBFM capacity **[EOP outcome 1.e]**; ability to consider gender and social inclusion **[EOP outcome 4.d]**; and ability to apply understandings of food and nutrition into activities **[EOP outcome 5.c]**. In-house trainings included gender and social inclusion, research methods, interviews and questionnaire design, monitoring & evaluation reporting, catch monitoring data collection and analysis, basic nutrition information. Through those trainings, project staff came away with the knowledge and skills to: 1) design their own survey appropriate to their research ideas; 2) design a plan for 'capturing' stories for M&E purposes; 3) collect catch monitoring data in communities, conduct data analysis and reporting; 4) train other catch monitoring data collectors in data collection approaches as well as to troubleshoot and adapt to possible challenges; and, consider gender and social inclusion in their work.

### Catch monitoring

Early on, the project invested in the on-going capacity development in the catch monitoring space. Formal in-house trainings in the form of workshops, supporting written materials allowed team members in KIR and VUT to conduct the project CBFM catch monitoring protocol. Based on the knowledge and skills developed, in-country teams were able to train catch monitoring data collectors in country (KIR= 8; VUT=10). The in-country data monitoring coordinator provided regular 'refresher' training to data collectors in country, which included junior government extension officers. They were also able to direct supporting staff, including junior government officers, in data analysis and reporting approaches. Importantly, they were also able to independently identify and resolve challenges that arose in data collection, data entry, data management, and reporting.

The project also further strengthened post-activity evaluation skills by holding a series of workshops with in-country staff and data collectors in late 2021 to review, discuss, and make recommendations for future community-level catch monitoring activities based on the lessons learned with the fisheries monitoring work.

Throughout the project, open lines of communication were maintained with the data coordinators in Kiribati and Vanuatu even when travel restrictions related to the COVID pandemic prevented international travel. Digital correspondence was used to help data coordinators continually refine the skills and accuracy of their data collectors, help data coordinators troubleshoot specific issues, refine the catch monitoring approach as a whole, and encourage the in-country data coordinators to explore their data more deeply.



### Story of change: Increased capacity and ability to train others

Eight MFMRD and VFD staff participated in training on the Pathways fishery monitoring protocol at the University of Wollongong in June 2019, one being Abel Sami. Abel returned to VFD and organised and implemented a training program for 10 community monitors and 10 VFD observers to collect catch data from fishers in their home locations. He has since overseen four rounds of data collection in five locations from 2019-2021. Data has been analysed by Abel and the team, and results are being fed back to the communities to support adaptive management. These data are the first point in evidencing the ecological benefits of CBFM. Abel has also been called in by other VFD divisions to run

trainings and provide technical assistance in designing and implementing data collection activities by the department.

#### Gender and social inclusion

As described in 7.4.3, in-house training on gender and social inclusion was provided to both Australia-based and in-country staff in Wollongong. Gender training were also provided incountry, starting in Solomon Islands to raise capacity for gender integration amongst Pacific fisheries practitioners. Further in-country training benefited from a Pacific-to-Pacific exchange of expertise. A follow-up gender training aimed at VFD staff (including CBFM project staff) was delivered in Vanuatu by Pacific Islander gender experts, to increase local connections between the gender and fisheries practitioners. As a result of this training, participants highlighted their positive attitudes and understandings towards gender integration in fisheries and their own work. Project staff used their training and materials produced during the project such as the Pacific Handbook and the gender checklist to review and tailor their community engagement protocols to be more inclusive and responsive to the needs of different community groups.



### Story of change: Becoming a gender leader in Solomon Islands

"I first starting working as the gender focal researcher in WorldFish in 2019, with very little experience in gender research. Throughout the year, I learnt a lot from my colleagues and from fellow gender experts what it meant to integrate gender the work that we do especially when working in communities. Working in this role has provided opportunities to write and publish gender related work. Last year, I have carried out my first gender strategic research using photovoice which was published on International Women's Day this year in the SPC Women and Fisheries Bulletin. This allowed me to not only sharpen my research design skills, but also exploring other participatory methods which is useful for community engagement and reflection.

The opportunity to lead gender research in Solomon Islands has equipped me for other roles such as being the National focal point for the Coral Triangle Initiative Women leader's forum that has enabled me to work with women, and men who are working in leadership roles in the marine, and environmental sector in Solomon Islands. Using the experience in WorldFish, I have co-facilitated gender trainings in Solomon Islands, and recently in Vanuatu. These trainings offered an insight into the work that relevant stakeholders are doing in their countries, but also an opportunity to learn and listen to stories from the men, and women themselves. I believe wearing the gender sensitive hat, should be everyone's' responsibility. We live in a world that is changing rapidly, but if we are going to change the world we live in, we have to change ourselves. And that means changing the way we think about men, women, and youth in our societies."

Chelcia Gomese, WorldFish Solomon Islands

### Food and nutrition

A workshop was completed in Vanuatu in 2019 with participants from five agencies to present information on nutrition approaches, how to collect nutrition information, and on the use of behavioural change communication materials (The First 1,000 days and Benefits of fish posters, and the nutrition DVD). Following on from the workshop, the CBFM in-country team was able to link the nutrition information to the importance of fish and sustainable fisheries management as part of their community awareness activities.

"The knowledge gain from the workshop especially around [the first] 1,000 days, was sometime used when talking to the communities or during public awareness. I try to weave the message around the first 1,000 days into my talk. To build strong human capacity for the country, fish plays an important role because fish contributes to the development of a human being during the 1,000 days. Therefore, resource management is very important as it contributes to maintaining fish stocks, ...[and so] provides continuous supply of fish to a community and hence, contributes to build a strong, resilient and resourceful community or country'.

I would say linking resource management and food security especially using the 1,000 days [poster] is very important as it depicts parents' reality on the ground. Parents can easily relate to it, as every parent wants a good future for their children. Therefore, as you talk, parents can easily see the importance of resource management". [Pita Neihapi, Pathways CBFM country co-leader, Vanuatu]

### Pathways' working model sustains the test of Covid-19

The modality of the Pathways approach does not only rely on traditional modes of training delivery, for example, where staff are lectured. On-the-job training and associated on-request support from the Australian-based staff have allowed in-country project staff to gain knowledge and skills which go beyond CBFM. For instance, the country co-leader model with a country leader based in Wollongong and one in the partner country has allowed in-country leads to gain exposure to government processes, HR processes, to improve their project management and financial record keeping skills.

The Pathways' working model is heavily based on the development of long-term relationships with national fisheries institutions and on investing in building the scientific and practical skills of local staff acting as both research partners and practitioners. This working model was key to the project continuing operating in the three countries during the Covid-19 pandemic. In-country teams were able to mobilise themselves and used the skills developed during the early stages of the project to continue with the roll-out of the program with on-going remote assistance of Australian-based staff. This collaborative model, as opposed to a 'parachute science' model of work, was independently praised as an inclusive approach of work with deep recognition of local Pacific Islanders expertise (Braun, 2021).

### Scientific reporting

Other skills gained through the mentoring of in-country staff included the ability to write reports and scientific articles. As noted above, the great majority of project outputs were coauthored by national project staff and 94 outputs of all types were led by national researchers. Of note, 11 articles published were first authored by in-country project staff who wrote articles for the first time (see articles by Batalofo, Gomese, Neihapi, Nikiari and Tioti). The development of research skills led in-country staff to seek further post-graduate training opportunities. For example, Ms Chelcia Gomese will undertake a PhD as part of FIS/2020/172 and Mr Rooti Tioti was awarded a scholarship to undertake a master's degree in food security policy & management at the University of Cork, Ireland.

### Knowledge transfer beyond project staff

The project invested in building individual capacities beyond those of in-country project staff. In-house trainings, mentoring and on-the-job learning targeted staff from national and subnational agencies [**EOP outcome 1.d**] as well as communities. The approach heavily relied on in-country project staff acting as trainers and mentors to other staff within their country's fisheries agency, working collaboratively with fisheries colleagues and increasing individual capacities at the community level.

### EOP Outcome 1.d Increased capacity in CBFM among fisheries staff at national and sub national levels

The project has followed a model of in-practice training. In Kiribati, the project team led indepth trainings in CBFM skills (including biology skills and community facilitation skills) to Fisheries Extension Assistants (working for the Ministry of Environment, Land and Agriculture Division) and MFMRD' Fisheries Assistants (FA) trainees. As a result, FA trainees accompanied the team on 70% of activities in communities. Along with cementing the theorybased fisheries biology and CBFM information gained during the training, this method has worked to build FA trainees' confidence in working with communities as well as skills in facilitation. The FA trainees developed information and awareness tools to assist communities in making decision on the management of important local aquatic resources (see section 7.2.3). The CBFM unit also trained four FA trainees (with four project staff) in the project's fishery monitoring data collection protocols. The FA trainees initially accompanied the CBFM unit to undertake the work and through continuous training are now able to perform the activity independently. For instance, upon taking her field-based position in North Tarawa, one of the trained FA trainees has continued to work closely with the CBFM team and is applying her skills to facilitate the delivery of community activities from other bilateral project in Kiribati.

In order to engage with the Solomon Islands Ministry of Fisheries and Marine Resources and build capacity for community-based management, Pathways has supported the secondment of a WorldFish staff member – Faye Siota – to the CBRM unit. Faye has operated as a team member of the CBRM unit in the Ministry. Management within the Inshore Division speak highly of the secondment arrangement, in particular, the benefits of the exchange of knowledge between NGO and government perspectives, and in building staff capacity in community engagement enabled through Faye's deep experience in working in communities with WorldFish.

#### Spotlight: Impact of WorldFish staff secondment at MFMR, Solomon Islands.

#### Fostering engagement

The Solomon Islands National Fisheries Policy 2019 -2029 states that community-based resource management (CBRM) is the most suitable management strategy for coastal marine resources in the country. However, the Ministry of Fisheries and Marine Resources CBRM Section, part of the Inshore Fisheries Division, was only conceived in 2017. During the development stage of the Pathways Project, the Ministry was engaged in developing the project outcomes and identified a need to build capacity within the Ministry. In response, the project funded secondment of a WorldFish staff member (Faye Siota) to the CBRM Section within MFMR for two years starting in early 2018.

We conducted interviews with two senior staff members in the CBRM Section to evaluate the strengths and weaknesses of the secondment arrangement and provide any recommendations for future secondment arrangements.

#### Facilitating knowledge exchange

Both staff spoke highly of the secondment arrangement, and the exchange of knowledge that it has facilitated. They were pleased that Faye had been working in CBRM previously and that her work aligned with that of the Ministry. Both staff noted the wealth of knowledge Faye brought to the team, highlighting how her experience with community management helped to improve MFMR engagement with communities. Staff spoke of a two-way knowledge exchange, with Faye sharing the NGO experience and perspective of CBRM, and MFMR staff sharing the government perspective. It was agreed by both interviewees that this inside knowledge of how NGOs operate has been useful not only for CBRM, but for understanding how to better engage and partner

with NGOs. Faye's suggestions on how to improve CBRM strategies have been well-received by the CBRM team.

#### Moving on projects

It was noted by both staff that Faye's secondment greatly sped up work in the CBRM unit. One interviewee noted that, "The CBRM team have a lot of work to do, and Faye helps to speed up the process. Things that have waited for a long time are now getting done". Specific outputs from Faye's secondment were mentioned by both staff. Discussing the development of protocols for the department, one staff member noted, "Faye helped to put together a brochure about fisheries regulations and prohibited activities, and she developed an SOP [standard operating procedure] for CBRM approaches. She wrote two – one SOP to gazette CFMP, and one on scaling up strategy, particularly around community visits".

The number of outputs delivered by the CBRM Section in 2018/19 was described as an unexpected outcome of the secondment. The CBRM team have also developed a facilitator's guide to engaging communities in management. Faye provided technical expertise on advising communities how to undertake resource management. The staff interviewed mentioned the success of two festivals, the Yam Festival and Kodilili Festival, as significant outreach events in large part due to Faye, saying that she, "came and talked to a lot of people who came to ask questions".

#### Building staff capacity

In addition to Faye's technical knowledge, both interviewees spoke of her mentoring skills and how this benefitted the team. One interviewee noted that, "...a lot of us are new, so we seek help from her... technical expertise and she also shares her experiences with us". Another officer stated, "...she has worked a lot with communities. Lots of our officers are juniors. Senior officers too don't really know how to work with communities. So Faye mentors them... I have learnt a lot from her. All the junior officers continue to learn from her... she has a good background from outside". It was highlighted that Faye's personality is an important factor in the partnership, as she is "... very open so we all closely interact with her, so we aren't afraid to ask her anything. ...[Her] interaction with officers is very, very good. We'd like it to continue". Staff also noted that they had all improved in facilitation of CBRM since Faye was seconded; "... we have developed a draft facilitator's guide, especially focusing on how to draw up basic community management plans". Faye's role in the development of this guide was highlighted, with one interviewee stating, "[Faye] helps the community talk about a management plan. She knows how to develop a simple management plan". Report writing was also mentioned as a skill Faye was assisting the team to develop.

#### Remaining challenges and moving forward

Overall, the secondment was overwhelmingly described as positive by the two senior MFMR staff interviewed. However, a few challenges were noted that should be addressed. Basic issues around office space were discussed, with both staff noting that the CBRM Section were not prepared for this secondment, and had not allocated any office space to Faye. It was noted the CBRM Section is currently split across multiple parts of the MFMR office, and this hindered effective collaboration and communication within their work. Both staff also discussed the lack of provision of a job description for the secondment, "we [government] need to specify what will be the work of the NGO person who comes in to work with us…", and "it would be good to specify what this person will come to do. The person should have specific work that isn't what the officers are already doing. Fill a gap…". The lack of clarity around the role of the seconded staff member also caused some friction within the team, with one interviewee noting that, "at the start, I didn't really know what she was here for. The top level [of management] organised the arrangement… first time she came here I wanted to know why she was here… but as time goes on… I've come to realise the importance of having her". These statements highlight the need to make sure anyone working with seconded staff are made aware of the process, and the role of seconded staff within the team.

Given the model has proved successful, Pathways-2 (FIS/2020/172) will implement two seconded positions within the CBRM Section. The job descriptions for these roles were co-developed with the Deputy Directors for the Inshore Fisheries Division and Provincial Development Division to fill gaps in current staffing roles.

In Vanuatu, there has been a marked improvement in the capacity, knowledge and resourcing of the CBFM team who are project staff, embedded within VFD. This resulted from training for team members in principles of CBFM and community facilitation (2018 and with repeated training in 2019 and 2020 for new recruits), research methodology (2019), gender (2018) and on-the-job training in the field. The team has disseminated those skills across the department by facilitation skills [2018], fish-based nutrition approaches [2018 and 2019], gender sensitive CBFM approaches [2020] and GIS mapping [2019]). All community-based work is carried out in presence of either the provincial fisheries officer or the relevant authorised

fisheries officer. The collaborative partnership with Wan Smolbag has further seen connections between VFD and civil society networks (like the Vanua Tai network) improve; evident for example in that all field activities explicitly include Vanua Tai community representatives where present.



# Story of change: Ikaukau's leading authorised fisheries officer, Vanuatu.

Ikaukau's authorised officer and main counterpart to the project, has played a significant role in the project's impact in Ikaukau. As a school teacher and as a chief, he holds legitimacy in the face of the community on several fronts; both socially and by custom status. Furthermore, being relatively young he maintains strong connection to youth groups in the community. The collaboration has been mutually beneficial, with the project building on his leadership's extensive reach into community and with him developing new skills through training and opportunities

to represent Ikaukau at national CBFM fora. He has enabled recruitment of enumerators from the community to carry out fish monitoring, has coordinated community participation in FAD training provided by VFD, has assumed leadership roles on committees and has past those on to younger community members. In addressing his main concern of being perceived by fellow community members as too central a focal point for the project, Pathways actively engages members from youth groups, other kin groups and women to play leading roles in implementing activities.

### Community of practice [EOP Outcome 2.c]

In 2018, a meeting of in-country project staff in Kiribati led to the formation of a CBFM community of practice 'FishSMARD' (Sustainable Management Approaches and Research Development for Fish). FishSMARD binds together a network of fisheries practitioners in the Pacific who are working to improve community-based fisheries management. It is an initiative to improve peer-to-peer dialogue, learning exchange and skills development. What sets FishSMARD apart from other such groups is that it is "by and for professional peers in the Pacific". The project then supported the second annual FishSMARD meeting. The 2019 meeting in Port Vila was a first of its kind, and saw fisheries officers from Kiribati and Solomon Islands engage with VFD staff. It provided opportunity for VFD staff from other units to not only learn from other countries, but also input into dialogues about how best to implement coastal fisheries management in their province or area. As part of the Pathways project, two staff from the MFMR CBRM Section travelled to Vanuatu to attend the Pathways FishSMARD CBFM practitioners' workshop. The Principal Fisheries Officer described this workshop as significant in building her understanding of how to facilitate effective CBFM. She stated that,

"... two of us went and we learn from other countries how others do CBRM, differences in each country, and how we can improve our CBRM from others' experience. One community we went to visit had a management plan – we were very impressed by how they did this. In the Solomons there is a gap in implementation we still see, and it's something we can look to change... helped build our capacity on how to work in communities, especially in relation to developing a management plan". [CBRM Principal Fisheries officer, MFMR, Solomon Islands] Although the Covid-19 pandemic prevented the third instalment of FishSMARD, the meetings are scheduled to start again in 2023 during FIS/2020/172 and will be organised by staff from Solomon Islands. There is a growing interest among current project staff members of FishSMARD to open the meeting for attendance to other fisheries staff from their country and to non-state actors. This spirit of collaboration has also been evident throughout project implementation with 79% of project activities in Kiribati, 91% in Solomon Islands and 78% in Vanuatu being conducted in collaboration with one of more national agencies (target:>50%). such collaboration allows for stronger ties within our national fisheries agencies. For example, the CBFM team in Kiribati regularly travelled with members of other units within Coastal Fisheries Division so as to expose staff to the project's community engagement approach. The CBFM team is now seen as an expert in community engagement and often plans joint activities to increase delivery of fisheries services to Kiribati communities.

This close collaboration between staff also took the form of mentor-mentee relationship. In Solomon Islands, following a training on gender and social inclusion, a chief project officer at MFMR reached out to Chelcia Gomese to learn more on the topic. Chelcia helped guide the interest in this topic which ultimately led to the officer writing her first article in the SPC Women in Fisheries Bulletin in 2022, with more planned in the future.

### Catalysing increased individual capacities at community level

Project activities also resulted in building individual capacities of community members in the three target countries through training and on-going relationship and trust building. As a result, individuals have taken on the role of community champion and help raise awareness in other communities.



#### Story of change: A 'champion' for CBFM

The chairman of OKRONUS managed area is well versed with CBFM and is a 'champion' for CBFM. He can now facilitate trainings on CBFM, nearshore FAD construction and deployment, FAD fishing techniques and on several occasions in the past he facilitated mangrove rehabilitation trainings for communities who were interested in mangrove replanting. During a recent CBFM training in July 2021, he gave a speech on the achievements and challenges expected when mobilizing communities to take on CBFM.



#### Story of change: Community networks developing beyond 'Pathways' project's involvement

There is evidence of horizontal (communitycommunity) communication and community networks developing, external to Pathways involvement. One Kwamera woman attended another project's gender workshop in Lembien, Tanna. During that workshop she shared experiences with the women there. She said that in Lembien, the women have to dive for octopus and shells in more exposed and dangerous waters because these resources are overharvested on the reef platform. She told them that in Kwamera, the tabu area is allowing them to still collect them on the reef flats.She told them she has seen the impacts of the tabu area after even a single year. The women from Lembien expressed an interest in coming to Kwamera to see the tabu area for themselves.

In Kiribati, where CBFM in its modern form was introduced during the pilot phase of the program, increased individual capacities among community members allow them to take ownership in the management of their coastal fisheries.



### Story of change: Improved knowledge in the community, Kiribati.

At first, this community had very little awareness of fisheries. They had heard of CBFM from two pilot communities from the previous project phase. They expressed concern about the decline of their resources but had no idea how to manage them. They said that 10-15 years ago, a traditional fishing practice was common in the community whereby coconut palm leaves were made into a net which the women held in a big circle to trap fish at night. The method required the participation of many women – to hold the net and torches. Each woman collected for themselves within the net, except goatfish which was shared amongst all the fishers at the

end of the night. Elder women reported that they used to catch many fish. Nowadays, local fishers use small gillnets. There has been a decline in fisheries compared to 40 years ago. The fish caught now are small sized, and in small amounts. The first awareness workshop in late 2018 led to improved knowledge in the community, so that they understood that they themselves could manage their resources.

Targeted training also allowed community members to gain skills beyond CBFM such as youth in Vanuatu taking on an increasing number of monitoring roles.



## Story of change: Youth assuming roles of community brokers

Pathways initial engagement was made possible through the village secretary, as the conventional contact point for external agencies. Early on, he made the point to bring in younger community representatives to play meaningful roles as community brokers. Pathways actively pursued this ambition and invested in elevating two young community members. Under guidance of village secretary, and in support of the Pathways project, they have grown to now assuming critical leadership roles in fisheries management related areas of the community.

As the fish market manager, one the woman youth leads the day-to-day management and bookkeeping of the community fish market. She enrolled in training offered through the project on bookkeeping, marketing and accounting (in collaboration with the Cooperatives department). She also represented Tassiriki at a national CBFM forum in Port Vila where she presented on lessons learnt in fish market management in Tassiriki. She also manages the solar freezer log sheet data collection for the community. The other youth was enrolled in fish monitoring training offered by VFD through the national TAILS+ program. He is now the community TAILS+ fish monitor for VFD.

### 8.3 Community impacts – now and in 5 years

In 2021, the Pathways team conducted a series of virtual meetings with in-country staff in order to record stories of change relating to project impacts at the community level. A total of 119 stories were finalised (KIR-24; SLB-33; VUT-62), with a further 23 to be tracked and developed during FIS/2020/172. Stories were coded by theme, with 35% of stories having two or more themes. The themes that emerged in these stories are tabled below.

THEME	NUMBER OF STORIES
CBFM Practice	24 (KIR- 6; SLB- 6; VUT- 12)
Community Governance	22 (KIR- 4; SLB- 5; VUT- 13)
Gender and Social Inclusion	11 (KIR- 2; SLB- 3; VUT- 6)
Improved Knowledge	7 (KIR- 2; SLB- 1; VUT- 4)
Improved Resources	17 (KIR- 2; SLB- 9; VUT- 6)
Livelihoods	19 (KIR- 1; SLB- 2; VUT- 16)
Government-Community Networks	25 (KIR- 7; SLB- 3; VUT- 15)
Community-Community Networks	21 (KIR- 6; SLB- 8; VUT- 7)
CBFM Champions	11 (KIR- 1; SLB- 6; VUT- 4)
Safeguards Against Shocks	6 (KIR- 0; SLB- 1; VUT- 5)

Stories of change are interspersed throughout this report, particularly in section 7, and further notable ones appear below. Recurring themes are summarised in this section.

### **CBFM** practice

At the community level, we collected stories to evidence the practice or ongoing implementation of CBFM in project sites. While some consider the signing of a CBFM plan as the milestone achievement, Pathways project goes beyond this to support ongoing implementation of CBFM. It is one thing to put signatures on a plan, but quite another for this plan to be put into action. This is paramount to realising longer term impacts. In-country teams maintain community engagements long after a plan is signed – through CBFM plan reviews, ongoing advice on technical questions, support in monitoring and enforcement, and regular 'check-ins'. The plan is only one step in a long journey of co-management. 24 stories were collected in this space, with strong evidence of ongoing CBFM practice at the community level. These stories include examples of adaptive management by the community themselves (4 sites) and as facilitated by the project during CBFM Plan reviews (8 sites).



### Story of Change: Adaptive management of the mangrove managed area, Solomon Islands

The tabu area was closed for three years, but the community discovered that this wasn't optimal for the ark clam shells. After three years, the community felt that the ark shells became too big, rot and spoil. Also, the mud would get hard around them. This was a lesson for the community and for WorldFish, who have since advised other communities wanting to undertake mangrove area management. The lesson is to open the area for harvest once shells get to a certain size rather than just closing for predetermined time.



### Story of change: Community problemsolving during CBFM implementation, Solomon Islands

In the CBFM Review in 2021, the community discussed a concern regarding the managed area rangers. They discussed selling marine resources to buy equipment to enable the rangers to monitor the managed area. A challenge for this community is that they are located far from a market where they would get good prices for big fish. The community discussed smoked fish as a business opportunity. In September 2021, a popular restaurant in Auki mentioned receiving a fresh supply of pelagic sailfish

caught at the community's FAD. This is a good example of the community problem-solving during implementation of CBFM.

Another interesting story told of the community adapting the management plan to accommodate new threats to local marine resources (solar lights).



## Story of change: Technology and CBFM, Kiribati

There was much discussion around the use of solar lights to catch land crabs and coconut crabs. The youth fought to ban the use of lights to catch land crabs and coconut crabs, which is a destructive fishing practice. Solar lights had been provided by the Taiwanese aid agency, but had been used to catch crabs. There was much discussion around this issue during community meetings that were held to draft the village management plan. This community saw the need to manage this technology and the ban became part of CBFM plan measures.

### 8.3.1 Economic impacts

Under the 'livelihoods' theme, several sub-themes emerged. The most common recurring theme was around fundraising from selling harvest from the managed area to be used for community purposes. Six stories reported on economic benefits from CBFM, in using funds raised from harvesting managed area resources to build a church (2), to build a village meeting house (1) and a market house (1), for church activities, to pay school fees or to feed children at the school (2). One community reported raising AU\$18,000 in 2021 which went towards school fees. Fundraising from harvest of managed area resources has also contributed to increased interest and awareness of CBFM in neighbouring communities (2).



### Story of change: Increased economic benefits from increased catches, Vanuatu.

There is evidence of increased economic benefits from CBFM in this community. Following the opening of the tabu area in 2020, youth groups from Presbyterian Sunday School and the Seventh Day Adventist Church respectively fundraised VT55,000 and VT35,000 by selling fish they caught. Other examples of communal fundraising initiatives, like the tea and bread sales for the Health Centre, which raised over VT29,000, were made possible with cash from selling fish. "One of the major benefits has been the increased size of fish being caught now in comparison to before the measures", says a

fisher woman from Peskarus, explaining how the income from selling fish has helped women in the community to feed their family, meet their church commitments, pay for their children's school fees, cover medical bills and build savings.



## Story of change: Harvest of resources from managed areas helps raise funds and interest in CBFM, Solomon Islands.

Occasionally the marine managed area in this community is harvested to raise funds for important community projects such as clinics and school. Having realised that money earned from harvest of resources within managed areas is an easy option to raise funds, the message of marine resources management has spread effectively to other neighbouring communities. In Malaita, two communities neighbouring this project site are interested in setting up CBFM.



\$2,000, which they use for community purposes.

### Story of change: CBFM revitalising milkfish pond, Kiribati.

Before the CBFM plan was in place, the pond wasn't utilised to its full potential, or there was poaching, so it wasn't productive. Once the management plan was finalised, in 2020, the Coastal Fisheries Division's aquaculture unit brought milkfish fries in. No-one is allowed to fish in the pond without the approval of the village. Since the plan was in place, the community has been enforcing their rules and maintaining the milkfish pond. When they harvest the milkfish they can earn around

Stories reported on the successful implementation of the livelihood diagnosis process using the Govan et al (2019) **[PRJ-2019-TO-Govan]** livelihood assessment tool. One community identified a livelihood activity to pursue and another determined an activity was not viable and so did not pursue it. Stories reported on alternative livelihoods established through the project for women experiencing hardship from restricted access to the reef flat (2 stories).



# Story of change: Pandanus leaves: an alternative income source for women, Vanuatu.

This community's CBFM plan restricts access to the reef flat, traditionally a source of marine resources harvested by women. To alleviate the CBFM plan's potential negative impact on women, the Pathways team facilitated connections that required a supply of pandanus leaves. In this community, each woman plants up to five pandanus trees around the house per year. This connection has provided access to an alternative income for the women of the community. In 2019, a total of 72 households were requested to weave mats. Each household weaved 5-7 mats. They earned in total about VT600,000 which were shared

amongst households depending on the amount and types of mats woven, which means each household received about VT10,000-VT15,000 which were used to pay for their basic needs.

In VUT, six stories reported on various impacts related to solar freezers interventions. The Pathways project either supplied the freezer (as part of TC Harold Recovery funds) or, where the freezer was already in place, supported training in management and operations of the market and technical support for freezer maintenance. Communities reported improved function of fish markets being operated out of solar freezers, as well as use of profits from their solar freezer operations to build new market houses, for solar freezer and fish market maintenance, and to maintain a road that linked the village to nearby villages and customers.



## Story of change: Community successfully overcomes challenges encountered with solar freezers, Vanuatu.

The fish market in this community grew over the life of the project. Two solar freezers were donated to the community in 2017-18 by another funding agency, however this was not paired with the necessary institutional support to make those freezers function optimally. Early investments by the project therefore sought to strengthen the management and operations of the market through training and technical advice. This improved function of the market. The community's fish

market team drove this further by using income from the fish trade to buy materials to build a larger and stronger brick fish market building. The community independently built the market, but experienced a setback when TC Harold damaged the newly installed roof in April 2020. With support from the project, they have been able to finish the fish market and transfer the solar-powered freezers to the new building, where they now function.

Stories reported increased nutrition benefits for neighbouring inland communities and at project sites (where CBFM restricts fishing) from livelihood (solar freezer) interventions (2 stories) and an unexpected public health benefit derived from solar freezer monitoring. Log sheets tracked sales and were used to identify the fish species which caused a ciguatera food poisoning outbreak. This information was passed on to fishers. Stories also reported improved fish distribution (a new market site for remote communities) and new fish distribution routes as a result of project livelihood activities.



# Story of change: Community connections to emerging fish supply chain, Vanuatu.

This community forms the main landing point for fish on the eastern side of the island, but has always been challenged in distributing fish over land from the landing site to the central market. For that reason, fishers from this community landed their fish on the western side of the island which involved long boat rides and high fuel costs. In 2018, another project supported transport of fish from across the island to the central market hub by providing a vehicle to the Provincial

fisheries officer to connect supply points to the trade hub. This included working with the community. Pathways' programmatic approach to fisheries development meant it sought coordination with the other project to link fishers from a neighbouring island to this emerging fish chain. The project worked with fishers from both islands to come to an agreement whereby fishers from one island could land their catch in another island and make use of the transport services over land to the central market for sales of their fish. As part of this, these fishers could also make use of the neighbouring islands cold storage against payment. The connection through the neighbouring island is now widely used by these fishers, with the exception of a small minority of fishers who have existing trading agreements with middlemen that require them to land fish on the western coast.

Finally, communities reported stories of local innovation building off the back of Pathways livelihood interventions. For example, one community used funds from the project intended to kick start a fish market instead to finance another fundraising activity which increased the initial project capital four-fold. Another used surplus fishing gear (provided to the community following TC Pam by the predecessor PacFish project) to start a gear shop. Profits from this enterprise supported the maintenance costs of their fish market.



#### Story of change: An example of how 'Pathways' enriches community commitment to CBFM, Vanuatu.

During the previous PacFish phase, solarpowered freezers were deployed to establish cool storage for a fish market. In 2017, Aniwa was hit by TC Pam which destroyed much of the infrastructure and gardens on the island. Relief measures provided gears and fishing material to enable fishing to feed everyone on the island. Following this period, and in transition into the Pathways phase in 2018, the authorised officer reported a significant surplus in gears that had not been used. He suggested using the surplus to establish a communally run gear shop to reenergise the fish market. With

training in bookkeeping and market management facilitated by the project, the gear shop has since continued operations and supports the fish market. The project furthermore assists in occasionally transporting gear orders for Ikaukau from shops in Port Vila during field visits, to save on transport costs. The revenue from the shop has enabled the fish market to cover unexpected costs, like when repairs were required for one of the solar-powered freezers. Half of the costs of reparation and spare parts were covered by the market, with the remaining costs covered by financial support from the project. As noted by Pita Neihapi, the Pathways country team leader, "we don't want the project to be simply giving out handouts; that has never worked. Instead we want to drive and support community commitment, so when the community wanted to pay for half that was a good sign for us."

### 8.3.2 Social impacts

Several sub-themes emerged in the stories of change relating to social impacts in communities.

### Community governance

Stories told of changes to community governance institutions and processes, of new community or island-wide CBFM governance institutions brought about by the project and the benefits of these (6 sites) to manage not only fisheries but also extending to other applications in community governance, terrestrial resource management, to protect community resources from outside threats or to manage outside interests coming into the community (5 sites).

CBFM processes were seen to enhance cooperation in a more diverse community towards a common goal (1 site) and to rebuild previously tense relationships between community leaders, chiefs and provincial government at an island level (2 sites).

Stories told how CBFM processes were enhanced by being built upon customary leadership or governance structures (3 sites), used to reinforce local customary governance systems (1 site), to codify existing traditional rules around sacred sites and therefore legitimise their rules with formal government recognition.

Stories also emerged wherein the CBFM plan transferred governance away from traditional institutions (Chief) to a committee (1 site) and allowed a mechanism for people to openly discuss and provide feedback to elders on CBFM processes (e.g. opening tabu area which had hereto been at the Chief's sole discretion) (2 sites).

See section 7.1 for more discussion of strengthened community capacity for collective action.

### Community-community networks

Stories of the spread of CBFM from project sites to neighbouring communities (12 sites) was a major theme, demonstrating growing horizontal community-to-community networks. Of these, some communities actively promoted CBFM or self-organised to raise awareness of their own rules (and thereby CBFM) in neighbouring communities (6 sites). Two stories evidenced the initiative of communities in bringing neighbouring sites together towards building a multi-site plan to work together on fisheries management (2 sites, in both KIR and VUT). Community CBFM 'champions' were important in promoting CBFM in other sites (2 sites). Development of an island-level CBFM plan also served to strengthen existing community-community networks (1 site).



### Story of change: A model community, Solomon Islands.

This site is a model community and a success story. The news about the community's success has spread through the region. Communities in the region have heard about this site, before WorldFish even goes there to do initial CBFM awareness sessions. One community said they wanted to start management because they saw this community's tabu area opening and successes. The management committee has also done awareness at the ward level; WorldFish supported them to travel to nearby communities.

One island in Kiribati has promoted community-community networks between the three project learning sites and the remainder of the island such an extent that every community on that island is aware of CBFM and there is a high level of motivation to be involved in CBFM.

Some communities have gone as far as setting up their own CBFM plans without project input. Island-level government and elders association meetings have included much discussion of CBFM. The Island Council has even instituted an agenda item for the three project sites to provide updates; this was one way that inter-community networks for CBFM was promoted. Likewise, in Vanuatu, CBFM has spread through presentations by community representatives of project sites at island-level Chiefs meetings or NGO network meetings (2 sites).



## Story of change: Island-wide collaboration, Kiribati.

In 2019-20, the CBFM team visited every village on this island and found that each one knows about Nei Tengarengare (the CBFM unit) because of stories they've heard and things they've seen in the three CBFM learning sites. There is a high level of awareness of sustainable management of marine resources and motivation to be involved in CBFM. In some sites, the community has gone as far as drafting a management plan and establishing MPAs themselves, based on what they've seen and learnt

from the three learning sites at Island Council meetings and the island's Tekinati Association (which is the Unimane association which has as much influence on the island as the Island Council, meets monthly and provides another channel of conversation between communities). There is also a high level of awareness of other villages' rules between the three CBFM sites but also amongst other villages on the island. The Island Council and Unimwane Association have worked hard to build community awareness of CBFM. There is an instituted agenda item at the Full Council meeting of the Island Council in which the three CBFM sites provide updates.

The energy and motivation in the three CBFM communities in this island is apparent in the CBFM team's visit in August 2021 for MPA demarcation, in collaboration with CFD Sustainable Fisheries Unit and the Island Council (who supported the planning process). When the team arrived, it took a short time to gather the village to work on constructing the demarcation buoys (mixing concrete, etc). The women came and did the cooking for the team. "The villagers were energised when we came, they all came to work", said Rooti Tioti, a CBFM officer. Compared to other islands where they'd done MPA demarcation, the communities in this island were more willing to do the work voluntarily, were more energised and eager to work with the Fisheries staff.

### Government-community networks

A social impact of the project has been strengthened government-community networks. Six stories captured evidence of increased trust between community and the CBFM team.

An unanticipated impact was seen in all three countries at the community level wherein the project's CBFM team became a conduit to other government units and departments. The project's CBFM team became the front line in communities representing the whole government as key community interlocutors for other Fisheries units (7 sites), other government departments (2 sites), other bilateral or multilateral projects (2 sites), and even to the private sector (1 site). These vertical networks between government and community lay the foundation for a more integrated approach to community development, for national CBFM programs with involvement of different government and nongovernment stakeholders. This impact will be further realised and tracked in FIS/2020/172.



### Story of change: 'Pathways', first VFD engagement since 1980, Vanuatu.

Pathways was the first VFD engagement in this island since the independence of Vanuatu in 1980. VFD has since established the first authorised officer. As noted by a leader in one project site, "having an authorised officer in the community connects us better to VFD [...], this will help us to manage our resources". This officer participated in an exchange of authorised officers on Santo, funded by another bilateral project. Pathways engagement with the community was

an entry point for other VFD programs to move into this remote island. There is now a community monitor participating in the national TAILS+ program, who was recruited at end of 2020. Furthermore in June 2021, the island's newly instated Fisheries Authorised Officer participated on a 3-day training in Santo on CBFM.



### Story of change: A community plays a key role in CBFM for South West Santo, Vanuatu.

Pathways involvement with this site has transitioned the community from its previous peripheral involvement with VFD activities to now playing a pivotal role. As a prime hub for fish trade, this community now connects fish chains from remote fishing villages on the west coast to markets and consumers along the southern coast and all the way to Luganville. VFD has acknowledged this community as a key strategic

point of management of coastal fisheries resources across South West Santo, and this is in part due to active engagement by the community.



## Story of change: Facilitative role of the CBFM team, Kiribati.

The CBFM team are often the front line in communities representing the whole government as key community interlocutors. In this community, the men wanted to cut down mangroves to use as timber for construction purposes, and then replant. The CBFM team informed them of the Ministry of Environment (MLEAD) regulations around the protection of mangroves and referred them to relevant officers at MLEAD for more advice on that issue.

### Gender and social inclusion

As discussed in Section 7.4, the project saw an impact at the community level in terms of increased representation of women in the CBFM management committee and increased women's involvement in CBFM practice (such as enforcement of rules). There were two stories from Vanuatu about youth involvement in the management committee and in key CBFM-related roles. It will be interesting to track whether these youths involvement equates to further involvement of youth in CBFM activities.



# Story of change: Increased women's representation on the management committee, Solomon Islands.

At first the management committee was comprised of mainly (male) tribal leaders. That was a deliberate part of the engagement strategy – the team engaged them in the first place to make sure they were aware of and supportive of project activities and management. This is important in order for the concept to disseminate and be accepted in the community. Now the committee is more inclusive. The first committee was comprised of 23 men and only 2 women, as representatives

from the 6 communities. As of September 2021, the new committee membership stands at 9 women and 21 men. This is a 22% increase in women representatives on the committee. There are two women in particular who were really active in enforcing the rules. On several occasions they approached people who were fishing in the managed area during the day and informed them of the rules, and told them to throw their harvest back into the sea. Following the CBFM review process, conducted in October 2020, these women were appointed to the management committee in recognition of their effort in enforcement.

The impact of women's inclusion in decision-making processes was seen to translate to rules in the CBFM plan that led to increased benefits for women.



#### Story of change: CBFM plan reflects a community's strong gender equity in governance, Vanuatu.

In this community, there is a strong cultural (kastom) governance system, with women and men both in leadership roles. During meetings, both women and men speak. In other parts of Vanuatu, although typically women are present at meetings, they don't speak. In this community, women's voices are strong and women hold positions on the CBFM committee. Accordingly, women's interests are strongly represented in the CBFM plan itself. For example, there are rules in

the plan about where fishers can catch parrotfish ('blufis') – only on the eastern side of the island and not in front of the village (western side). The reason for this is twofold: firstly, there have been some cases of *ciguatera* on the western side, and secondly, the women report that the fish are bigger on the eastern side and they prefer cooking these! Another example are the rules around night-diving. There had been an increased number of men night-diving in the river for freshwater prawns. Since night-diving is not an activity commonly carried out by women, their access to the resource was limited in comparison to men. The CBFM plan now stipulates that freshwater prawn fishing should occur during the day so that both men and women could benefit from fishing the river.

The project's gender sensitive facilitation techniques have also seen an impact at the community level. In one story, the CBFM Plan Review methodology (in which disaggregates groups - women, men, and youth – to discuss the materials then present back in plenary) was seen to give a more prominent voice to women and youth in decision-making processes.



## Story of change: CBFM plan used as a platform for inclusion, Vanuatu.

Examples of voices of women and youth featuring more prominently than in the past include when one women stood up during the CBFM plan review process, saying things that previously women have been scared or reluctant to speak up on. She was critical of the lack of involvement of influential (nonfisheries) people in the community in CBFM decisionmaking processes, and representation of the management committee leadership. To allow these voices a platform, the project facilitated the CBFM Review through discussions in subgroups (men,

women, youth) before presenting back in plenary. This method was seen to work well. The youth breakout group discussed the importance of including youth in the tabu area committee. There had been a youth representative on the committee to that point but that person had not been active, as he participated in seasonal picking scheme abroad shortly after his appointment. Compliance in the past by youth had been an ongoing challenge, so it was suggested that a new youth representative active on the committee would help increase youths' awareness of the rules. A new youth representative was appointed when the CBFM review process was completed. Another suggestion was made to include Church representatives on the committee now includes 5 Church representatives.

### **CBFM** 'champions'

Stories emerged in nine sites of key community members supporting CBFM within their community and beyond, as CBFM 'champions'. There is great value in CBFM messages coming from community members rather than project or ministry staff and these CBFM 'champions' were seen to not only deepen the efficacy and impact of CBFM in their own community, but also to spread CBFM to neighbouring communities. They demonstrated heightened knowledge of natural resource management principles and often communicated those principles to the rest of the community. In SLB, the 'Malaita model', was used wherein a representative from each project site was selected to attend a CBFM training week in Nusatupe, Gizo then facilitated CBFM activities in their community. This person became the CBFM 'champion' and have an ongoing relationship with project and provincial fisheries staff in CBFM implementation.



### Story of change: Chief Robbie, major advocate for CBFM in Vanuatu.

Chief Robbie from Takara on Efate island has been a major advocate for CBFM in Vanuatu. He is active in awareness programs – for example on a national radio talkback show with the Pathways team. They talked about the benefits of CBFM for communities after cyclones, and the importance of maintaining and sustaining resources for future

generations. In doing so, he drew examples from his own experience in Takara. He is an advocate for communities owning CBFM instead of viewing it as a VFD project or activity. As noted by Chief Robbie during his participation in a talkback show in 2020, "Communities own and manage their resources, and the communities therefore own their CBFM plan and should use it that way". During the show, a woman from Santo called in to support Chief Robbie's message.

Chief Robbie in Takara has been instrumental in facilitating horizontal and vertical networks. He is a Vanua Tai resource monitor and a VFD authorised officer. He is in touch with the Pathways team regularly. In early 2021, he requested a VFD assessment of the abundant lobster in the Takara tabu area, which he thought could be used to generate an income for the community or as a resource stock to transplant to other communities. Chief Robbie was also the driving force behind a Fisheries Forum held during the signing of the CBFM plan (in late 2020). He invited various VFD units including Compliance, Management, and Research to present awareness sessions about what they do. The forum promoted discussion around the issues between community leaders and VFD. These vertical networks are important for VFD and communities for communication and flow of information. By insisting on inviting representatives from the local Council of Chiefs to the signing ceremony, Chief Robbie also facilitated horizontal CBFM networks. The neighbouring Emau Chief later contacted Chief Robbie for more information on establishing and managing up a tabu area. He advised him to write to VFD for support and made the introduction to the Pathways team. Chief Robbie worked with Wiana community (Emau Island) in November 2020 to help establish a tabu area, which still required a management plan. Chief Robbie has hereby assumed a go-between position between the project team and the Wiana community through phone and face-to-face meetings. The Wiana community has since written a formal request letter to the director of VFD expressing need for support to develop their CBFM plan.

### 8.3.3 Environmental impacts

Appendix 1 provides a detailed account of environmental impacts in Kiribati and Vanuatu as evidenced through the project's fishery monitoring program. Environmental impacts in Solomon Islands are described in sections 6 (ME2.6) and 7.2.5 and in Smallhorn-West 2022a,b **[SLB-2022-PP-Smallhorn-West] [SLB-2022-PP-Smallhorn-West 2]**. 17 stories of change were collected with evidence of improved fisheries resources at CBFM sites.



### Story of change: An indicator of stock recovery, Solomon Islands.

A management committee member reported on the health of the stocks in and around the managed area, saying, "Even dogs and cats are catching fish along the shoreline of the managed area. I was sitting in my kitchen one day when my cat came running with an octopus in its mouth. To me this was an indication that the stocks are much recovered."



### Story of change: An abundance of tuna thanks to the tabu area, Vanuatu.

The tabu area established by this community has a natural channel that runs through the fringing reef and connects the shallow lagoon to the deeper pelagic zone. Seasonally, typically in April with the neap low tides, skipjack and other pelagic species will enter the lagoon through the channel to feed

on bait fish and other species and get trapped. When the tides goes out the fish are temporarily stuck in the lagoon. During these events, community fishers target the skipjack with nets. The community's management measures have helped increase the abundance of baitfish in the tabu area, which in turn is attracting more skipjack. In April 2019, the community caught 2000-3000 skipjack tuna in the tabu area in one fishing trip. The catch from this fishing is shared among households and, if the haul is large enough, it is shared with other communities. In this instance, the harvest was so abundant that once every household in the community had been given 4 skipjack, the committee decided to distribute 3 tuna to every household in the other two communities on the island. As noted by the island's TAILS monitor, "Every household on Maskelyne island ate tuna for breakfast, tuna for lunch, and tuna for dinner!"



### Story of change: Successful management of the silver biddy, Kiribati.

Management of silver biddy – closure during spawning – has seen positive impacts for this community and spill over effects in neighbouring communities. Catch monitoring data show that the average size of silver biddy caught greatly exceeds the size limit in the Fisheries Regulations (average size limit is 24.5cm; minimum size limit is 15cm). Communities in this area reported large schools of silver biddy close to shore. Fishers report spending less time fishing for their catch. The resources are more accessible to most fishers because they are now closer to shore and the abundance is greater. Fishers reported that now their catch is enough to support the whole family.



### Story of change: Marine species reappear, Solomon Islands.

Two months after launching the management plan in February 2018, a community member living close to the managed area started seeing schools of large trevally swimming past the island during high tide. Sometimes he would feed the trevally rice from his hand. It was thought that stocks in Langalanga lagoon were severely depleted due to heavy dynamiting, but this story sheds light on the situation: fish stocks are still present but continuous disturbance (heavy fishing and destructive fishing practices) was scaring the animals away. Thus after just

two months, schools returned to the reef areas. This story was corroborated by a local expert fisherman and management committee chairman. They went to repair a signboard/billboard that was in the centre of the reef-managed area and saw schools of large trevallies there. A local expert fisherwoman also reported that she started catching species that she thought were long extinct, and that fish catches from locations close to the managed area had started to increase. Another elderly woman in the village reported that her granddaughter had collected a bag of shells on the reefs just close to their house. She said that before the launching of the managed areas, she would return with a few shells or nothing at all. She believes this is a spill over effect.



## Story of change: Noticeable increase in number and size of marine resources, Solomon Islands.

There is observed increased in stock and size from the managed area. While this is a closed area, there are times the community opens the area for a day or two to harvest to cater for events such as Christmas celebrations, church openings or even weddings. The managed area is open for a short time and then closed again. From this, divers recorded an increase in the number of fish, beche-de-mer and shells, as well as an increase in sizes. These observations were shared during the review of the management plan with the community by the chairman.



### Story of change: Understanding dugongs: not a threat to the tabu area productivity but a sign of a healthy ecosystem, Vanuatu.

Dugong numbers around Maskelyne have been increasing, in part following the passing of national law that lists dugongs as a protected species. In one community, there was a perception that the dugong population was threatening the sea cucumbers and fish in their tabu area, i.e. 'eating' them. An NGO (in 2018) and the Pathways team (2019-2020) ran information sessions providing more advanced ecological information on how the

dugongs interact with the ecosystem, that an increased dugong population is a sign that the ecosystem is healthy and thriving – evidence that their management efforts are having a good effect. During these sessions other causes for observed instances of fish loss were explored together, identifying sedimentation impacts from mangrove loss as a likely reason.



### Story of change: Change in fisheries resources, Kiribati.

The community reported that they saw change not long after they had established their MPA in 2015. They saw many juvenile clams in and around the edges of the MPA and fish were in abundance. In recent trips, the community has reported finding some pearl species within the MPA. They were farmed there in the 1990s/early 2000s but they didn't expect to see these oysters since pearl farming efforts had been abandoned a long time ago. They are now interested in revitalising oyster pearl farming. The CBFM team have passed this information on to the

aquaculture unit for follow up. Others reported that the giant clam had been declining in one part of the MPA. There are many factors (e.g. change in sea temperatures) that could have caused this. The community wants to keep monitoring these areas and the community requested support from MFMRD to conduct a study of the affected areas. The CBFM team passed this request on to the research unit.

### 8.4 Communication and dissemination activities

A multimedia communication strategy targeting communities, national agencies, and a broader Australian and international audience was developed specifically for this project. Outputs included articles in newspaper articles and radio segments aimed at domestic incountry audiences; newspaper articles aimed at domestic Australian audiences; social media posts aimed at domestic in-country audiences and national and international agencies; and the filming of a 5:27 minute long segment presented in the online "Our Oceans: Our Future" film aimed at a broader international audience produced by The Institute of Marine Engineering, Science and Technology (IMarEST) and the London-based ITN Productions network, which premiered at the Royal Institution, London, and was part of a yearlong advertising campaign for IMarEST. Each of these outputs cited the contribution of the Australian government to project activities. We are confident that we have targeted and produced outputs for a significantly broad suite of audiences with news of our project activities, and raised the profile of our domestic and in-country partner teams and the support and contributions of the Australian government to our activities. Significant communications and dissemination activities are listed in Appendix 4. A total of 69 translation outputs (e.g. SPC Fisheries Newsletter) designed to directly influence policy makers were produced or are in preparation.



**Figure 8.3**. Images of articles published about Pathways project activities in in-country newspapers. Article in the Vanuatu Daily Post (left) and article published in the Malaita Star (right).



can still be viewed for free on vanua.tube.

#### Twist mo Spin by Wan Smolbag

Twist mo Spin was a Wan Smolbag Theatre production about the ties that communities have with their fisheries, the challenges fisheries face across Vanuatu, and how fisheries can become more sustainable.

The production toured many remote communities in Vanuatu during 2019. A photo essay about Twist mo Spin, collated by Paul Jones from the University of Wollongong, was published in the Guardian in September 2019. Paul Jones also filmed a short film about Twist mo Spin, which was published on YouTube during the same month. The Twist mo Spin film was accepted into the 19th Annual International Ocean Film Festival in San Francisco, which aired during April 2022, and

### **9** Conclusions and recommendations

Building on previous ACIAR/DFAT investments, the project contributed to improved wellbeing of coastal communities in the Pacific region through more productive and resilient fisheries. The project further refined models for CBFM engagement and scaling and greatly expanded the geographic spread of awareness and implementation in KIR, SLB, and VUT. By operating at scales from within communities, to provincial and island scales, and up to national and regional scales, the project has contributed to laying the foundation for national programs of CBFM in all three countries and in other PICs. The project made a significant contribution to the objectives of the New Song and to national objectives articulation in national fisheries and development roadmaps and policies. We recommend that ACIAR consider a continuation of investment in scaling CBFM in the Pacific region (noting this has already been done through project FIS/2020/172).

The great majority of the project's objectives were achieved despite COVID-19 curtailing activities in the second half of the contract. This outcome was achieved because of the adaptive capacity provided by the project's governance structure and partnership model and, secondly because of investment in well-trained national staff in each country. More broadly, we conclude that the implementation modality of pairing external expertise and training with staff embedded in national agencies as funded partners is effective in promoting long-term sustainability of organizational and institutional capacity. Recognizing the long-term nature of structural change and resourcing in fisheries agencies, we recommend commissioned agencies be required to explicitly reflect on their positionality and the legitimacy of their mode of implementation.

The project made significant contributions to the theoretical framing used to analyse gender norms and behaviours, and highlighted gaps in the rhetoric of addressing gender gaps between national ambitions and implementation. We also concluded that while building agency in individuals to address gendered power imbalances may happen within project time-scales, changing power relations and transforming societal structures, norms and values is a long-term and profoundly political agenda. The Gender Transformative Approach furthered in the project needs to be further critically assessed for its sustainable impact in the complex socio-cultural landscapes of the region. We recommend that project FIS/2020/172 address this challenge in programming its gender activities and, further, address the gaps recognized in a narrow focus on social inclusion to include a broader sweep of disadvantage.

We concluded that the concept of livelihood diversity and the role of diversification in the fisheries development literature has not been adequately interrogated. In a global review of the literature we found that too few studies had adequately evaluated the impact of diversification interventions and the evidence of sustainable impact was weak. We recommend that livelihood diversification projects be steered away from preconceived ideas about livelihood activities and instead focus on supporting services that provide information, awareness and demonstrations of good innovation examples.

The project confirmed and partially filled large gaps in the quantification and characterization of food insecurity and food acquisition and consumption in the region. We conclude that the majority of PICs, including KIR, SLB, and VUT are poorly positioned to be able to report against SDGs, national development targets and to monitor a range of public health indicators. We recommend ACIAR continue to invest in supporting SPC and national agencies to collect and analyse food security and public health data related to food system dynamics (noting that ACIAR has already committed to co-developing project (FIS/2022/121).

### **10 References**

### 10.1 List of publications produced by project

**Table 8.2**: Summary of type and number of project output.

Type of output	Total
Peer reviewed publications (incl. in review and submitted)	33
Other outputs, published or in press	130
Translation outputs*	72
Information materials*	31
Other*	27
'In preparation' peer reviewed papers	5

\* included in the 'Other outputs' category

### Peer reviewed publications (incl. submitted ms and working papers)

- Albert, J., Bogard, J., Siota, F., et al. (2020) Malnutrition in rural Solomon Islands communities: a mixed methods approach to framing the problem and its drivers. <u>Journal of Maternal Child Nutrition</u>, 16, e12921. <u>https://doi.org/10.1111/mcn.12921</u> [PRJ-2020-PP-Albert]
- Andrew, N.L., Allison, E., Brewer, T. et al. (2022) Continuity and change in the contemporary Pacific food system. <u>Global Food Security</u>, 32, 100608. <u>https://doi.org/10.1016/j.gfs.2021.100608</u> [PRJ-2022-PP-Andrew]
- Andrew, N. and Fleming, A. (2019) Reflections on interdisciplinarity in aquaculture and food systems research for development in Australia and the Pacific Region. <u>Agricultural</u> <u>Science</u>, 30/31, 2/1. <u>https://search.informit.org/doi/10.3316/</u> <u>informit.792521870875946</u> [PRJ-2019-PP-Andrew 2]
- Andrew, N.L., Bright, P., de la Rua, L., et al. (2019) Coastal proximity of populations in 22 Pacific Island Countries and Territories. <u>PLoS ONE</u>, 14(9), e0223249. <u>https://doi.org/10.1371/journal.pone.0223249</u> [PRJ-2019-PP-Andrew]
- Blythe, J.L., Cohen, P.J., Eriksson, H. et al. (2022) Do governance networks build collaborative capacity for sustainable development? Insights from Solomon Islands. <u>Environmental Management</u>, 70, 229-240. <u>https://doi.org/10.1007/s00267-022-</u> 01644-5 [SLB-2022-PP-Blythe]
- Bogard, J.R., Andrew, N.L, Farrell, P. et al. (2021) A Typology of Food Environments in the Pacific Region and Their Relationship to Diet Quality in Solomon Islands. <u>Foods</u>, 10(11), 2592. <u>https://doi.org/10.3390/foods10112592</u> [PRJ-2022-PP-Bogard]
- Brewer, T.D., Andrew, N., Gruber. B., et al. (2021) Large-sample-size assessment of socioeconomic predictors of community-level resource management occurrence. <u>Conservation Biology</u>, 36, e13800. <u>https://doi.org/10.1111/cobi.13800</u> [SLB-2021-PP-Brewer]

- Eriksson, H., Blythe, J.L., Österblom, H, et al. (2021) Beyond social-ecological traps: fostering transformations towards sustainability. <u>Ecology and Society</u>, 26(1):13. <u>https://doi.org/10.5751/ES-12198-260113</u>. [PRJ-2021-PP-Eriksson]
- Eriksson, H., Sulu, R., Blythe, et al. (2020) Intangible links between household livelihoods and food security in Solomon Islands: implications for rural development. <u>Ecology</u> <u>and Society</u>, 25 (4):18. <u>https://doi.org/10.5751/ES-11709-250418</u> [SLB-2020-PP-Eriksson]
- Farmery, A.K., Scott, J.M., Brewer, T.D., et al. (2020) Aquatic Foods and Nutrition in the Pacific. <u>Nutrients</u>, 12(12), 3705. <u>https://doi.org/10.3390/nu12123705</u> [PRJ-2020-PP-Farmery]
- Ferguson, C., Tuxson, T., Mangubhai, S., et al. (2022) Local practices and production confer resilience to rural Pacific food systems during the COVID-19 pandemic. <u>Marine</u> <u>Policy</u>, 137: 104954. <u>https://doi.org/10.1016/j.marpol.2022.104954</u> [SLB-2022-PP-Ferguson]
- Karcher, D.B., Cvitanovic, C., van Putten I., et al. (2022) Lessons from bright-spots for advancing knowledge exchange at the interface of marine science and policy. <u>Journal of Environmental Management</u>, 314, 114994. <u>https://doi.org/10.1016/ i.jenvman.2022.114994</u> [PRJ-2022-PP-Karcher]
- Lawless, S., Cohen, P.J., McDougall, C., et al. (2022) Tinker, tailor or transform: Gender equality amidst social-ecological change. <u>Global Environmental Change</u>, 72, 102434. <u>https://doi.org/10.1016/j.gloenvcha.2021.102434</u> [PRJ-2022-PP-Lawless]
- Lawless, S., Cohen, P.J., Mangubhai, S., et al. (2021) Gender equality is diluted in commitments made to small-scale fisheries. <u>World Development</u>, 140, 105348. <u>https://doi.org/10.1016/j.worlddev.2020.105348</u> [PRJ-2021-PP-Lawless]
- Lawless, S., Song, A.M., Cohen, P.J., et al. (2020) Rights, equity and justice: A diagnostic for social meta-norm diffusion in environmental governance. <u>Earth System Governance</u>, 6, 100052. <u>https://doi.org/10.1016/j.esg.2020.100052</u> [PRJ-2020-PP-Lawless]
- Lawless, S., Cohen, P., McDougall, C., et al. (2019) Gender norms and relations: implications for agency in coastal livelihoods. <u>Maritime Studies</u>, 18, 347-358. <u>https://doi.org/10.1007/s40152-019-00147-0</u> [PRJ-2019-PP-Lawless]
- Mauli, S., Tutuo, J., Mulcahy, G., et al. (submitted ms) Opportunities to strengthen fish supply chain policy to improve external food environments for nutrition in the Solomon Islands. <u>Sustainability</u> [SLB-2022-PP-Mauli]
- Ride, A., Eriksson, H., Tutuo, J., et al. (2021) Catching Fish in COVID-19 Currents: Food Security and Governance in Rural Communities in Solomon Islands. In: Campbell, Y., Connell, J. (eds) COVID in the Islands: A comparative perspective on the Caribbean and the Pacific. Palgrave Macmillan, Singapore. <u>https://doi.org/ 10.1007/978-981-16-5285-1\_21</u> [SLB-2021-PP-Ride]
- Roscher, M.B., Eriksson, H., Harohau, D., et al. (2022a) Unpacking pathways to diversified livelihoods from projects in Pacific Island coastal fisheries. <u>Ambio</u>, 51, 2107–2117. <u>https://doi.org/10.1007/s13280-022-01727-x</u> [PRJ-2022-PP-Roscher]
- Roscher, M.B., Allison, E.H., Mills, et al. (2022b) Sustainable development outcomes of livelihood diversification in small-scale fisheries. <u>Fish and Fisheries</u>, 23, 910-925. <u>https://doi.org/10.1111/faf.12662</u> [PRJ-2022-PP-Roscher 2]
- Schwarz, A-M., Gordon, J. and Ramofafia, C. (2020) Nudging statutory law to make space for customary processes and community-based fisheries management in Solomon Islands. <u>Maritime Studies</u>, 19, 475–487. <u>https://doi.org/10.1007/s40152-020-00176-0</u> [SLB-2020-PP-Schwarz]
- Sharp, M.K., Andrew, N.L., Romeo, A. et al. (submitted ms) Acquisition and apparent consumption of fish in 12 Pacific Island Countries. <u>Fish and Fisheries</u>. [PRJ-2020-PP-Sharp]

- Smallhorn-West, P., van der Ploeg, J., Boso, D., et al. (2022a) Patterns of catch and trophic signatures illustrate diverse management requirements of coastal fisheries in Solomon Islands. <u>Ambio</u>, 51, 1504–1519. <u>https://doi.org/10.1007/s13280-021-01690-z</u> [SLB-2022-PP-Smallhorn-West]
- Smallhorn-West, P., Cohen, P.J., Kukiti, E., et al. (2022b) Ten years of dynamic comanagement of a multi-species reef fishery. <u>Coral Reefs</u>. https://doi.org/10.1007/s00338-022-02294-z [SLB-2022-PP-Smallhorn-West 2]
- Smallhorn-West, P.F., Cohen, P.J., Morais, R.A., et al. (2022c) Hidden benefits and risks of partial protection for coral reef fisheries. <u>Ecology and Society</u>, 27(1):26. https://doi.org/10.5751/ES-13112-270126 [PRJ-2022-PP-Smallhorn-West]
- Song, A. M., Cohen, P. J., Hanich, Q., et al. (2019) Multi-scale policy diffusion and translation in Pacific Island coastal fisheries. <u>Ocean and Coastal Management</u>, 168: 139-149. <u>https://doi.org/10.1016/j.ocecoaman.2018.11.005</u> [PRJ-2019-PP-Song]
- Song, A.M., Hoang, V.T., Cohen, et al. (2019) 'Blue boats' and 'reef robbers': a new maritime security threat for the Asia-Pacific? <u>Asia Pacific Viewpoint</u>, 60, 310-324. <u>https://doi.org/10.1111/apv.12240</u> [PRJ-2019-PP-Song 2]
- Song, A.M. and Soliman, A. (2019) Situating human rights in the context of fishing rights Contributions and contradictions. <u>Marine Policy</u>,103, 19-26. <u>https://doi.org/10.1016/j.marpol.2019.02.017</u> [PRJ-2019-PP-Song 3]
- Steenbergen, D.J., Song, A.M. and Andrew, N. (2021) A theory of scaling for communitybased fisheries management. <u>Ambio</u>, 51, 666-677. <u>https://doi.org/10.1007/s13280-021-01563-5</u> [PRJ-2021-PP-Steenbergen]
- Steenbergen, D.J., Neihapi, P.T., Koran, D., et al. (2020) COVID-19 restrictions amidst cyclones and volcanoes: A rapid assessment of early impacts on livelihoods and food security in coastal communities in Vanuatu. <u>Marine Policy</u>, 121, 104199. <u>https://doi.org/10.1016/j.marpol.2020.104199</u> [VUT-2020-PP-Steenbergen]
- Steenbergen, D., Raubani, J., Gereva, S., et al. (2022) Tracing innovation pathways behind fisheries co-management in Vanuatu. <u>Ambio</u>. **[PRJ-2022-PP-Steenbergen]**
- Thow, A.M., Ravavu, A., Ofa, S., et al. (submitted ms) Intra-regional food trade among Pacific Island countries and territories: implications for food security and nutrition. <u>Globalization and Health</u>. [PRJ-2022-PP-Thow]
- Van der Ploeg, J., Sukulu, M., Govan, H., et al., (2020) Sinking Islands, Drowned Logic; Climate Change and Community-Based Adaptation Discourses in Solomon Islands. <u>Sustainability</u>. 12, 7225. <u>https://doi:10.3390/su12177225</u> [SLB-2020-PP-van der Ploeg]

### 'In preparation' papers

- Eriksson, H., Steenbergen, H., Batalofo M., et al. (in prep) Integrating community driven development and community-based resource management for a sustainable blue economy in Western Melanesia.
- Gomese, C. and Ride, A. (in prep) Learning from positive deviance in gender and fisheries in Solomon Islands. Target journal: to be determined.
- Kleiber, D., Johnson, A.F., Gomese, C., et al. (in prep) Community-based resource management as inclusive fisheries governance. Target journal: <u>Ambio</u>.
- Ride, A., Delisle, A., Eriksson, H., et al. (in prep) Balancing the canoe: community-based resource management and gender in Pacific coastal fisheries. Target journal: <u>Global</u> <u>Environmental Change</u>.
- Roscher, M., Eriksson, H., Sharp, M., et al. (in prep) Characteristics of coastal fish-based livelihoods in Pacific Island Countries and Territories. Target journal: <u>Marine Policy</u>

### Other outputs

- Abuinao, W., Piturara, J. and Govan, H. (2019) Future Pacific Ocean managers: Scoping skills and knowledge needs. SPC Fisheries Newsletter 159: 38-44. Online <u>here</u>. [PRJ-2019-TO-Abuinao]
- Albert, J. A., Schwarz, A.M., Guavis, C., et al. (2019) Guideline for nearshore FAD monitoring in the Pacific Islands region: A semi-quantitative approach. [DRAFT]. WorldFish Technical Report. Penang, Malaysia, WorldFish. TBC. [PRJ-2019-TO-Albert]
- Andrew, N., Campbell, B., Delisle, A., et al. (2020) Developing participatory monitoring of community fisheries in Kiribati and Vanuatu. SPC Fisheries Newsletter 162: 32-38. Online <u>here</u>. [PRJ-2020-TO-Andrew]
- Andrew, N. (2018) Discussion Paper on regional implementation/activity plan for the CFWG/New Song. Second Meeting of the Coastal Fisheries Working Group, Pacific Community. **[PRJ-2018-TO-Andrew]**
- Anonymous (2019a) Women in fisheries profiles Rosalie Masu. Women in Fisheries Information Bulletin 30: 43. Online <u>here</u>. **[SLB-2019-OO-Anon]**
- Anonymous (2019b) Women in fisheries profiles Tooreka Teemari. SPC Women in Fisheries Information Bulletin 30: 45. Online <u>here</u>. **[KIR-2019-OO-Anon]**
- Barclay, K., Leduc, B., Mangubhai, S. et al. (eds.) (2019) Pacific handbook for gender equity and social inclusion in coastal fisheries and aquaculture. Noumea, New Caledonia, Pacific Community. <u>https://coastfish.spc.int/en/component/content/article/494-</u> gender-equity-and-social-inclusion-handbook [**PRJ-2019-TO-Barclay**]
- Batalofo, M., Pollard, A., Ride, A., et al. (submitted ms) What can the experiences of rural women in Melanesia teach us about developing community economies with innovation in aquatic food systems? <u>Asia-Pacific Viewpoint</u> [SLB-2022-TO-Batalofo]
- Bennett, G. (2018) Network Building. Building a network to meet local and national development aspirations in Western Province. Melanesian Geo. Online publication July - December 2018: 2. [SLB-2019-TO-Bennett]
- Boso, D., Vave-Karamui, A., Masu, R., et al. (2018) Proceedings of the 1st Solomon Islands resource management symposium: A decade of learning. Honiara, Solomon Islands WorldFish. Proceedings: 43. [SLB-2018-TO-Boso 2]
- Boso, D., Cohen, P., Gomese, C., et al. (2018) Gender analysis of the fisheries sector: Solomon Islands. Noumea, New Caledonia, Pacific Community. [SLB-2018-TO-Boso 1]
- Davis, R. and D'Andrea, A. (2018) Institutional collaboration is key to regulating coastal fisheries in Kiribati. SPC Fisheries Newsletter 156:15. <u>https://coastfish.spc.int/en/publications/bulletins/fisheries-newsletter</u>. [KIR-2018-TO-Davis]
- Delisle, A. (2020) A Large Ocean State Seeks Change. SAMUDRA Report 84: 16-19. [KIR-2020-TO-Delisle]
- Delisle A., Mangubhai, S. and Kleiber, D. (2021) Module 6: Community engagement. In: Barclay, K., Mangubhai, S., Leduc, B., et al. (eds). Pacific handbook for gender equity and social inclusion in coastal fisheries and aquaculture. Second edition. Noumea, New Caledonia: Pacific Community. 26 pp. [PRJ-2021-TO-Delisle]
- Eriksson, H., Ride, A., Boso, D., et al. (2020a) Changes and adaptations in village food systems in Solomon Islands. A rapid appraisal during the early stages of the COVID-19 pandemic. Penang, Malaysia: WorldFish. Program Report: 2020-22. Online here. [SLB-2020-TO-Eriksson]
- Eriksson, H., Ride, A., Boso, D., et al. (2020b) Coastal fisheries in a pandemic: Solomon

Islands and Vanuatu experiences. DevPolicy Blog, 29 July 2019. <u>https://devpolicy.org/coastal-fisheries-in-a-pandemic-solomon-island-and-vanuatu-experiences-20200729/</u> [PRJ-2020-TO-Eriksson]

- Eriksson, H., Cole, S. and van der Ploeg, J. (2019) Commentary/Small fry are beautiful: rethinking development in small-scale fisheries. Re.Think <u>https://rethink.earth/small-fry/</u> [SLB-2019-TO-Eriksson]
- FAO, SPC and UOW (2020) Pacific Nutrient Database User Guide. Noumea, New Caledonia. 15 pp. <u>https://www.fao.org/3/cb0267en/cb0267en.pdf</u> [PRJ-2020-OO-FAO]
- Gereva, S., Steenbergen, D.J., Neihapi, P., et al. (2021) Reflecting on four years of community-based fisheries management development in Vanuatu. SPC Fisheries Newsletter 165: 55-67 (including 5 outcome briefs). Online <u>here</u>. [VUT-2021-TO-Gereva]
- Gomese, C. and Boso, D. (2019) Innovate for change, our fisheries future: A women in fisheries panel on International Women's Day in Solomon Islands. Women in Fisheries Information Bulletin 30: 47-50. Online <u>here</u>. **[SLB-2019-TO-Gomese]**
- Gomese, C., Siota, F., Ride, A., et al. (2020a) Reflections on integrating gender-sensitive facilitation techniques in fieldtrip reports. SPC Women in Fisheries Information Bulletin 32: 28-30. Online <u>here</u>. **[PRJ-2020-TO-Gomese]**
- Gomese, C., Kleiber, D., Mangubhai, S. et al. (2020b) Building capacity for gender work in fisheries and aquaculture: examples from the Pacific. SPC Women in Fisheries Information Bulletin 32: 49-53. Online <u>here</u>. **[PRJ-2020-TO-Gomese 2]**
- Gomese, C., Panasasa, C. and Sibiti, S. (2020c) Capturing the value of fisheries using photovoice. Women in Fisheries Information Bulletin 31: 36-39. Online <u>here</u>. **[SLB-2020-TO-Gomese]**
- Govan, H., Eriksson, H., Batalofo, M., et al. (2019) A new idea for coastal fisheries: asking the right questions to enhance coastal livelihoods. Noumea, New Caledonia. 23 pp. [PRJ-2019-TO-Govan]
- Johnson, A.F., Kleiber, D., Gomese, C., et al. (2021) Assessing inclusion in communitybased resource management: A framework and methodology. Penang, Malaysia: CGIAR Research Program on Fish Agri-Food Systems. Manual: FISH-2021-21. [PRJ-2021-TO-Johnson]
- Kinch, J., Albert, J. and Schwarz, A.M. (2019) The development of a semi-quantitative guideline for monitoring nearshore fish aggregating devices. SPC Fisheries Newsletter 159: 19-21. Online <u>here</u>. [PRJ-2019-TO-Kinch]
- Kleiber, D., Cohen, P., Gomese, C., et al. (2019a) Gender-integrated research for development in Pacific coastal fisheries. Penang: Malaysia, CGIAR Research Program on Fish Agri-Food Systems. **[PRJ-2019-TO-Kleiber 1]**
- Kleiber, D., Cohen, P., Gomese, C. et al. (2019b) Integrating gender in Pacific coastal fisheries research: The Pathways project. SPC Women in Fisheries Information Bulletin 29: 11-19. Online <u>here</u>. [PRJ-2019-TO-Kleiber 2]
- Kleiber, D., Cohen, P., Teioli, H., et al. (2019c) Gender-inclusive facilitation for communitybased resource management. An addendum to "Community-based marine resource management in Solomon Islands: A facilitator's guide and other guides for CBRM". Penang, Malaysia: CGIAR Research Program on Fish Agri-Food Systems. Program Brief: FISH-2019-08. [PRJ-2019-TO-Kleiber 3]
- Kleiber, D., Cohen, P., Teioli, H., et al. (2019d). Gender-inclusive facilitation for communitybased resource management. An addendum to "Community-based marine resource management in Solomon Islands: A facilitator's guide" and other guides for community-based resource management. Women in Fisheries Information Bulletin 30: 35-39. Online <u>here</u>. [PRJ-2019-TO-Kleiber 4]

Lalavanua, W. (2021) Draft Pacific Framework for Action on Scaling-up Community-based Fisheries Management. Working Paper 4 for the 13th SPC Heads of Fisheries Meeting, 1-4 June 2021. **[PRJ-2021-TO-Lalavanua]** Online <u>here</u>.

Lalavanua, W., Govan, H. and Steenbergen, D. (2021a) Scaling-up community-based fisheries management in the Pacific: Key outcomes of subregional workshops. SPC Fisheries Newsletter 165: 18-21. Online <u>here</u>. **[PRJ-2021-TO-Lalavanua 2]** 

Lalavanua, W., and Smith, A. (2021b) A regional commitment supporting communities in sustaining coastal fisheries in the Pacific. SPC Fisheries Newsletter 165: 18-19. Online here. [PRJ-2021-TO-Lalavanua 3]

Lawless, S., Cohen, P., Siota, F., et al. (2020) Beyond gender-blind livelihoods: Considerations for coastal livelihood initiatives. Women in Fisheries Information Bulletin 31: 15-18. Online <u>here</u>. **[SLB-2020-TO-Lawless]** 

- Lawless, S., Cohen, P.J., Mangubhai, S., et al. (2021) Commitments to gender equality have surged, but how deep do they run? A look at Pacific small-scale fisheries. SPC Women in Fisheries Bulletin 34: 9-15. Online <u>here</u>. **[PRJ-2021-TO-Lawless]**
- Li, O. (2019) Open-ended questionnaire manual: Kiribati: 13pp. [KIR-2019-OO-Li]
- Li, O., Eriksson, H., Bertram, I., et al. (2018a). Handling seafood in the Pacific Islands: Information sheets for fishers, vendors and consumers [Bislama]. P. Community. Noumea, New Caledonia Pacific Community. 12pp. **[PRJ-2019-IM-Li]**
- Li, O., Eriksson, H., Bertram, I., et al. (2018b) Handling seafood in the Pacific Islands: Information sheets for fishers, vendors and consumers. P. Community. Noumea, New Caledonia Pacific Community. 12pp. [PRJ-2018-IM-Li]
- LMMA, WorldFish, WCS and ANCORS (2020) Rapid and preliminary assessment of the impact of COVID-19 on Pacific Island coastal fishing communities. SPC Fisheries Newsletter 161: 19-20. Online here. [PRJ-2020-TO-LMMA]

Makhoul, N. (2020) New chapters for the Pacific Handbook on gender equity and social inclusion in coastal fisheries and aquaculture. SPC Women in Fisheries Information Bulletin 32: 46-48. Online here. [PRJ-2021-TO-Makhoul]

Mangubhai, S., Donato-Hunt, C., and Kleiber, D. (2021) Monitoring evaluation and learning.
 In Barclay, K., Mangubhai, S., Leduc, B., et al (eds). Pacific handbook for gender equity and social inclusion in coastal fisheries and aquaculture. Second edition.
 Noumea, New Caledonia: Pacific Community. 11 pp. [PRJ-2019-TO-Mangubhai]

MFMRD (2019a) A roadmap for coastal fisheries for Kiribati: 2019-2036. Kiribati, Ministry of Fisheries and Marine Resource Development. **[KIR-2019-TO-MFMRD]** 

MFMRD (2019b) Approaches to Te Mwaneaba: CBFM's breaking communication barrier in our community. 2pp. [KIR-2019-IM-MFMRD 1]

MFMRD (2019c) A Roadmap for Coastal Fisheries for Kiribati: 2019 – 2036. (4-page summary). [KIR-2019-TO-MFMRD 2]

MFMRD (2019d) Marine Protected Area description guide. Brochure. 2pp. [KIR-2019-IM-MFMRD 2]

MFMRD (2019e) Stories of change. Brochure. 2pp. [KIR-2019-IM-MFMRD 3]

MFMRD (2019f) Te Aua [The mullet]. Brochure. 1pp. [KIR-2019-IM-MFMRD 4]

MFMRD (2019g) Te Bun [The Ark shell]. Brochure. 1pp. [KIR-2019-IM-MFMRD 5]

MFMRD (2019h) Te Nouo [The Trochus]. Brochure. 1pp. [KIR-2019-IM-MFMRD 6]

MFMRD (2019i) Te Waro [The Mantis shrimp]. Brochure. 1pp. [KIR-2019-IM-MFMRD 7]

MFMRD (2019j) Fisheries (Conservation and Management of Coastal Marine Resources) Regulations 2019. MFMRD Memo Paper: 331/19. Tarawa, Kiribati. [KIR-2019-TO-MFMRD 3]

MFMRD (2019k) Coastal Fisheries Division - Community-based Fisheries Management. DVD: 12 minutes. Produced by Kiribati AT productions. **[KIR-2019-IM-MFMRD 8]** 

Movono, A., Neihapi, P., Scheyvens, A., et al. (2021) The agency of local people in the

Pacific: indigenous responses to the global pandemic. DevPolicy Blog, 25<sup>th</sup> November 2021. <u>https://devpolicy.org/pacific-indigenous-responses-to-the-global-pandemic-20211125/</u> **[VUT-2021-TO-Movono]** 

- Neihapi, P., Sokach, A., Koran, D., et al. (2019) Twisting and spinning' theatre into coastal fisheries management: Informing and engaging communities to address challenges. Women in Fisheries Information Bulletin 30: 24-29. Online <u>here</u>. [VUT-2019-TO-Neihapi]
- Neihapi, P. (2018) Pathways project six-month report Jan-Jul 2018. [VUT-2018-OO-Neihapi]
- Nikiari, B., Delisle, A., Uriam, T., et al. (2020) Kuuma's journey toward a sustainable coastal fishery. SPC Fisheries Newsletter 163: 40-44. Online here. [KIR-2020-TO-Nikiari]
- Nikiari, B., Uriam, T., Li, O., et al. (2020) Piloting a community-driven catch monitoring approach in Kiribati. SPC Fisheries Newsletter 163: 34-39. Online <u>here</u>. **[KIR-2020-TO-Nikiari 2]**
- Nikiari, B., Uriam, T., James, L., et al. (2021) Women of Tabonibara lead fisheries management into the future. SPC Women in Fisheries Information Bulletin 34: 27-31. Online <u>here</u>. **[KIR-2021-TO-Nikiari]**
- Pacific Community (2020a) Pacific Nutrient Database Version 1. Available at: <u>https://microdata.pacificdata.org/index.php/catalog/755</u> [PRJ-2020-OO-Pacific Community]
- Pacific Community (2020b) A new angle on coastal fisheries development in the Pacific. <u>http://www.spc.int/DigitalLibrary/Doc/FAME/Brochures/Anon\_20\_New\_Idea\_Angle\_web.pdf</u> [PRJ-2020-TO-SPC]
- Pacific Community (2020c) Solomon Islands pre-COVID-19 baseline metrics. Policy Brief. 4pp. [SLB-2020-TO-SPC 2] <u>http://purl.org/spc/digilib/doc/m3fvq</u>
- Pacific Community and FAO (2020a) Kiribati Food Security Profile. Policy Brief. 4pp. [KIR-2021-TO-SPC] <u>http://purl.org/spc/digilib/doc/yp55e</u>
- Pacific Community and FAO (2020b) Solomon Islands Food Security Profile. Policy Brief. 4pp. [SLB-2020-TO-SPC] <u>https://sdd.spc.int/digital\_library/solomon-islands-food-security-profile</u>
- Pacific Community and FAO (2020c) Vanuatu Food Security Profile. Policy Brief. 4pp. [VUT-2021-TO-SPC] <u>https://purl.org/spc/digilib/doc/9jscy</u>
- Pacific Community (2021a) Pacific Framework for Action on Scaling up Community-based Fisheries Management: 2021–2025. Noumea, New Caledonia: Pacific Community. 20 pp. [PRJ-2021-TO-SPC 2] <u>https://www.spc.int/DigitalLibrary/Doc/FAME/Reports/ SPC\_21\_Framework\_for\_action.html</u>
- Pacific Community (2021b) Scaling-up Community-based Fisheries Management in the Pacific. Melanesia sub-region: Summary workshop outcomes report. 10pp. New Caledonia: Pacific Community. Online <u>here</u>. **[PRJ-2021-TO-SPC 3]**
- Pacific Community (2021c) Scaling-up Community-based Fisheries Management in the Pacific. Micronesia sub-region: Summary workshop outcomes report. 10pp. New Caledonia: Pacific Community. Online <u>here</u>. **[PRJ-2021-TO-SPC 4]**
- Pacific Community (2021d) Scaling-up Community-based Fisheries Management in the Pacific. Polynesia sub-region: Summary workshop outcomes report. 10pp. New Caledonia: Pacific Community. Online <u>here</u>. **[PRJ-2021-TO-SPC 5]**
- Pathways project (2018) Pathways multi-pronged communication strategy (internal project document) 16pp. [PRJ-2018-OO-Pathways]
- Pathways project (2019a) *Nei Tengarengare* bingo (instructions and game cards): 55 pp. **[KIR-2019-OO-Pathways]**
- Pathways project (2019b) Scaling CBFM in the Pathways Project (internal project document) 52pp. [PRJ-2019-OO-Pathways]
- Pathways Project (2021a) CBFM Scaling Survey Tool: Field manual, instructions and

questionnaire. Australian National Centre for Ocean Resources and Security, University of Wollongong, Australia. Internal project document. **[PRJ-2021-OO-Pathways]** 

- Pathways project (2021b) Pathways project results: Kiribati. Interactive presentation: 91 pp. [KIR-2021-OO-Pathways]
- Pathways project (2021c) Pathways project results: Solomon Islands. Interactive presentation: 36pp. [SLB-2021-OO-Pathways]
- Pathways project (2021d) Pathways project results: Vanuatu. Interactive presentation: 137pp. **[VUT-2021-OO-Pathways]**
- Raubani, J., Steenbergen, D. J., and Naviti, W. (2019) A roadmap for managing Vanuatu's coastal fisheries in the future. SPC Fisheries Newsletter 158: 2. Online <u>here</u>. [VUT-2019-TO-Raubani]
- Reeve, E. and Thow, A.M. (2022) Policies for healthy and sustainable food systems in the Solomon Islands. Food Systems Brief No.11. FAO and Pacific Community. **[SLB-2022-TO-Reeve]**
- Sami, A., Neihapi, P., Koran, D., et al. (2020) A novel participatory catch monitoring approach: The Vanuatu experience. SPC Fisheries Newsletter 162: 39-45. Online <u>here</u>. **[VUT-2020-TO-Sami]**
- Sokimi, W., Blanc, M., Colas, B., et al. (2020) Manual on anchored fish aggregating devices (FADs): an update on FAD gear technology, designs and deployment methods for the Pacific Island region. Noumea, New Caledonia: Pacific Community. 56 pp. [PRJ-2020-TO-Sokimi]
- Song, A., Govan, H., Arthur, C., et al. (2019) The Pacific Ways: The geography, histories and cultures of the Pacific island region, and its 14 small island developing states, represent unique challenges and opportunities. The Pacific Ways: SAMUDRA report 81: 8-12. [PRJ-2019-TO-Song]
- SPC, LMMA and UOW (2021) Scaling-up community-based fisheries management in the Pacific region. [Information Paper]. Noumea, New Caledonia: Pacific Community.
   4pp. Document prepared by: Dirk Steenbergen, Watisoni Lalavanua, Hugh Govan, Caroline Vieux and Neil Andrew. Online <u>here</u>. [PRJ-2021-TO-SPC]
- Teemari, T., Muron, C., and D'Andrea, A. (2020) Kiribati takes a major governance step towards sustainable coastal fisheries. SPC Fisheries Newsletter 161: 9-13. Online <u>here</u>. **[KIR-2020-TO-Teemari]**
- Tioti, R., Li, O. and Delisle, A. (2021) Seagrass, culture, women and hard decisions: A case study from Kiribati. SPC Women in Fisheries Information Bulletin 33: 12-15. Online <u>here</u>. **[KIR-2021-TO-Tioti]**
- Troubat, N. and Sharp, M.K. (2021a) Food consumption in Kiribati Based on analysis of the 2019/20 Household Income and Expenditure Survey. Tarawa, FAO and SPC. 84 pp. https://doi.org/10.4060/cb6579en. [KIR-2021-TO-Troubat]
- Troubat, N. and Sharp, M.K. (2021b) Food consumption in the Marshall Islands Based on analysis of the 2019/20 Household Income and Expenditure Survey. Majuro, FAO and SPC. 77 pp. <u>https://doi.org/10.4060/cb7583en</u> [PRJ-2021-TO-Troubat]
- Troubat, N., Sharp, M.K. and Andrew, N.L. (2021) Food consumption in Solomon Islands Based on the analysis of the 2012/13 Household Income and Expenditure survey. Honiara, FAO and SPC. 64 pp. <u>https://doi.org/10.4060/cb4459en</u> [SLB-2021-TO-Troubat]
- UOW (2021a) Catch Monitoring Manual for CBFM in the Pacific Region. Module A: Technical Manual for Catch Monitors. Australian National Centre for Ocean Resources and Security, University of Wollongong, Australia. URL: purl.org/spc/digilib/doc/chkpw [PRJ-2021-OO-UOW 1]
- UOW (2021b) Catch Monitoring Manual for CBFM in the Pacific Region. Module B: Training

Workshop Manual. Australian National Centre for Ocean Resources and Security, University of Wollongong, Australia. URL: purl.org/spc/digilib/doc/4pfz6 [PRJ-2021-OO-UOW 2]

- van der Ploeg, J., Jupiter, S., Hughes, A., et al. (2020) Coral reef conservation in Solomon Islands: Overcoming the policy implementation gap. Penang, Malaysia: WorldFish; Honiara, Solomon Islands: WCS and LMMA network. Program Report: 2020-39. [SLB-2020-TO-van der Ploeg]
- VFD (2018a) Pathways Project: Strengthening and scaling community-based approaches for coastal fisheries management in Vanuatu Brochure. 2pp. [VUT-2018-IM-VFD 1]
- VFD (2018b) VFD: Fisheries project information booklet. 2pp. [VUT-2018-IM-VFD 2]
- VFD (2019a) Needs assessment for Ambae volcano evacuees on Maewo and Santo: 4pp. [VUT-2019-OO-VFD 1]
- VFD (2019b) VFD Plan to Assist Ambae volcano evacuees on Maewo and Santo: 7pp. [VUT-2019-OO-VFD 2]
- VFD (2019c) Vanuatu National Roadmap for Coastal Fisheries: 2019 2030: 19. [VUT-2019-TO-VFD]
- VFD (2019d) Vanuatu National Roadmap for Coastal Fisheries: 2019 2030 (4-page summary). **[VUT-2019-TO-VFD 2]**
- VFD (2019e) Pathways Project Annual Report 2018. 22pp. [VUT-2019-OO-VFD 3]
- VFD (2020a) Annual Report 2019 Pathways Project. [VUT-2020-OO-VFD]
- VFD (2020b) Standard Operation Procedures (SOP) for Information Management during Disasters [draft operating procedure]. [VUT-2020-OO-VFD [draft]]
- VFD (2021a) Aniwa Manejemen Plan. Pull-up banner (Bislama). 1pp. [VUT-2021-IM-VFD 1]
- VFD (2021b) Kwamera Manejmen Eria. Pull-up banner (Bislama). 1pp. [VUT-2021-IM-VFD 2]
- VFD (2021c) Nasonal Komiuniti-Bes Fisaris Manejmen Prokram. Pull-up banner (Bislama). 1pp. **[VUT-2021-IM-VFD 3]**
- VFD (2021d) Tul Blong Mesarem Aotkam Blong Komuniti-Bes Fisaris Manajmen. Pull-up banner (Bislama). 1pp. **[VUT-2021-IM-VFD 4]**
- VFD (2021e) Solar Freezers Fis Maket Hemi Stap Mekem Fis Hemi Mo Avelebol Long Komuniti. Pull-up banner (Bislama). 1pp. **[VUT-2021-IM-VFD 5]**
- VFD (2021f) CBFM Data Monitoring Round 1 & 2. Pathways project presentation to senior VFD staff, 24 February 2021. **[VUT-2021-OO-VFD-Pathways]**
- VFD (2021g) CBFM Data Monitoring. CBFM catch monitoring and solar freezer logsheets. Pathways project presentation at Fish Toktok symposium, 1 September 2021. [VUT-2021-OO-VFD-Pathways 2]
- VFD (2021h) Monitoring fish distribution & trade from communities. Pathways project presentation on one year trial of solar freezer log sheets to senior VFD staff, 30 November 2021. [VUT-2021-OO-VFD-Pathways 3]
- VFD (2021i) CBFM Data Monitoring. Pathways project presentation to senior VFD staff, 8 December 2021. [VUT-2021-OO-VFD-Pathways 4]
- Vanuatu National Statistics Office (2021) Food security in Vanuatu. 2019–2020 NSDP Baseline Survey. 87 pp. **[PRJ-2021-TO-VNSO]**
- Wan SmolBag (2021) Twist mo spin. A Wan Smolbag production in collaboration with VFD, with financial and technical support from Swedbio, Pathways project (ACIAR FIS/2016/300) and PEUMP-LMMA. DVD movie: 48:33 min. [VUT-2021-TO-Wan SmolBag]
- Wan Smolbag (2019a) Coconut crab management and lifecycle. Port Vila, Vanuatu, Wan SmolBag. Bislama comic: 21 pp. **[VUT-2019-IM-Wan SmolBag 1]**
- Wan Smolbag (2019b). Twist mo Spin (theatre play poster). 1pp. [VUT-2019-IM-Wan Smolbag 2]

Wan SmolBag (2019c) Sea cucumber management and life cycle. Port Vila, Vanuatu, Wan SmolBag. Bislama comic: 12 pp. **[VUT-2019-IM-Wan SmolBag 3]** 

Wan SmolBag (2019d) Bluefish management and lifecycle. Port Vila, Vanuatu, Wan SmolBag. Bislama comic: 20 pp. **[VUT-2019-IM-Wan SmolBag 4]** 

Wan SmolBag (2019e) Twist mo Spin. Theatre play and workshop DVD: 50 minutes. [VUT-2019-TO-Wan SmolBag]

Wan Smolbag (2019f) Twist mo spin. Theatre play. [VUT-2019-TO-Wan SmolBag 2]

Wan SmolBag (2019g) 'Twist mo Spin': Using theatre for social change in fisheries. Video: 10 minutes. [VUT-2019-TO-Wan SmolBag 3]

WorldFish (2018) Supporting community-based resource management in Solomon Islands: The role of provincial governments. Penang, Malaysia, WorldFish. Program Brief. [SLB-2018-TO-WorldFish]

WorldFish, Malaita Provincial Government and Government of Solomon Islands (2018a) Conserving corals. Auki, Solomon Islands, Worldfish. 2pp. **[SLB-2018-IM-**

WorldFish 1]

- WorldFish, Malaita Provincial Government and Government of Solomon Islands (2018b) Managing mangroves. Auki, Solomon Islands, WorldFish. 2pp. [SLB-2018-IM-WorldFish 2]
- WorldFish (2019a) Kakae fis blong wan helti Vanuatu (DVD): 16 minutes. [VUT-2019-IM-WorldFish]
- WorldFish (2019b) Generic Nutrition Approaches and Tools for Pathways nutrition research in Solomon Islands and Vanuatu. **[PRJ-2019-OO-Worldfish]**
- WorldFish (2020a) Community Based Resource Management (CBRM) In Malaita Province. Fact Sheet. 2pp. [SLB-2020-IM-WorldFish]
- WorldFish (2020b) What WorldFish does in Malaita Province. Fact Sheet. 2pp. [SLB-2020-IM-WorldFish 2]
- WorldFish (2020c) FAD Deployment in Malaita. Fact Sheet. 1pp. [SLB-2020-IM-WorldFish 3]
- WorldFish (2020d) What WorldFish does in Western Province. Fact Sheet. 2pp. [SLB-2020-IM-WorldFish 4]
- WorldFish (2020e) Follow the Fish. Fact Sheet. 2pp. [SLB-2020-IM-WorldFish 5] WorldFish (2020f) OI fes 1000 Dei [Bislama]. 1pp. [VUT-2020-IM-Worldfish]
- WorldFish (2020g) FIS Kakae blong kivim gudfala helt [Bislama]. 1pp. [VUT-2020-IM-Worldfish 2]

WorldFish and UOW (2021a) Community-based Fisheries Management Plan Reviews – Facilitation Guide. Noumea, New Caledonia: Pacific Community. 20 pp. <u>https://purl.org/spc/digilib/doc/v33gz</u> [PRJ-2021-OO-WorldFish and UOW]

WorldFish and UOW (2021b) Community-based Fisheries Management Plan Reviews – Data collection worksheets. Noumea, New Caledonia: Pacific Community. 16 pp. <u>https://purl.org/spc/digilib/doc/7euui</u> [PRJ-2021-OO-WorldFish and UOW 2]

### **10.2 References cited in report**

### References cited in the report and produced by the project are listed in Section 10.1.

- Agarwal, B. (2001) Participatory Exclusions, Community Forestry, and Gender: An Analysis for South Asia and a Conceptual Framework. <u>World Development</u>, 29, 1623-1648.
- Amos, M. (2014) Growing and empowering women in fisheries: Work in the Pacific region. SPC Women in Fisheries Information Bulletin, 25, 3-5.
- Braun, A. (2021) Covid-19 lockdowns show a world without parachute science. Hakai magazine, Victoria, Canada. <u>https://hakaimagazine.com/news/covid-19-lockdowns-show-a-world-without-parachute-science/</u>
- Belcher, B. and M. Palenberg (2018). Outcomes and impacts of development interventions: toward conceptual clarity. <u>American Journal of Evaluation</u> 39: 478-495.
- Chapman, M.D. (1987) Women's fishing in Oceania. <u>Human Ecology</u>, 15, 267-288.
- Foster-Fishman PG, Berkowitz SL, Lounsbury DW, et al. (2001) Building collaborative capacity in community coalitions: A review and integrative framework. A<u>m. J.</u> <u>Community Psychol</u>. 29: 241–261
- Geels, F.W. (2019). Socio-technical transitions to sustainability: A review of criticisms and elaborations of the Multi-Level Perspective. <u>Current Opinion in Environmental</u> <u>Sustainability</u>, 39, 187–201.
- Govan, H. (2011) How can we support communities to build on what they have for a better life? Supplementary livelihoods in the Pacific. Foundation for the Peoples of the South Pacific International, Suva, Fiji.
- Hawkes, C. (2009) Identifying Innovative Interventions to Promote Healthy Eating Using Consumption-Oriented Food Supply Chain Analysis. <u>Journal of Hunger and</u> <u>Environmental Nutrition</u>, 4: 336-356.
- Hillenbrand E., Karim N., Mohanraj, P., et al. (2015). Measuring gender transformative change: A review of literature and promising practices. CARE USA. Working Paper
- Hilly, Z., Schwarz, A-M. and Boso, D. (2011) Strengthening the role of women in communitybased marine resource management: Lessons learned from community training workshops. SPC Women in Fisheries Information Bulletin, 22, 29-35.
- IOC-UNESCO (2020). Global ocean science report 2020. Charting capacity for ocean sustainability. K. Isensee (ed.), Paris, UNESCO Publishing.
- Kingdon, J.W. (1984). Agendas, alternatives and public policies. New York: Longman.
- Kleiber, D., Harris, L.M. and Vincent, A.C. (2014) Improving fisheries estimates by including women's catch in the central Philippines. <u>Can. J. Fish. Aquat. Sci.</u>, 71, 1-9.
- Kleiber, D., Harris, L.M. and Vincent, A.C. (2015) Gender and small-scale fisheries: A case for counting women and beyond. <u>Fish and Fisheries</u>, 16, 547-562.
- Lawless, S., Doyle, K., Cohen, P., Eriksson, H., Schwarz, A-M., Teioli, H., Vavekaramui, A., Wickham, E., Masu, R. and McDougall, C. 2017. Considering gender: Practical guidance for rural development initiatives in Solomon Islands. Penang, Malaysia: WorldFish. Program Brief: 2017-22. 24 p.
- Mayne J. and Stern E. 2013. Impact evaluation of natural resource management research programs: a broader view. ACIAR Impact Assessment Series Report No. 84. Australian Centre for International Agricultural Research: Canberra. 79 pp.
- MFMR (2021) Solomon Islands Community Based Coastal and Marine Resource Management Strategy 2021-2025. Solomon Islands Government: Honiara, Solomon Islands. 28pp.
- Sabatier, P. (1987). Knowledge, policy-oriented learning and policy change: an advocacy

coalition framework. Science Communication, 8, 649-692.

- Schwarz, A.M., Eriksson, H., Ramofafia, C., et al. (2021) Three-Decades of Research Integration – Transforming to Collaborative Aquatic Food Systems Research Partnerships in the Pacific. <u>Frontiers in Sustainable Food Systems</u>, Volume 5, 757407, pp. 1-15.
- Schwarz, A-M., James, R., Teioli, H.M. et al. (2014) Engaging men and women in community-based resource management processes in Solomon Islands. Penang, Malaysia: CGIAR Research Program on Aquatic Agricultural Systems. 7p.
- SPC (2015) A new song for coastal fisheries pathways to change: The Noumea strategy. Noumea, New Caledonia: SPC. 14p.
- Seniloli, M. Taylor, L. and Fuliva, S. (2002) Gender issues in environmental sustainability and poverty reduction in the community: Social and community issues. <u>Development</u> <u>Bulletin</u>, 58, 96-98.
- Sharp, M.K. and Andrew N.L. (2021). Poverty, malnutrition and food security in Pacific Small Island Developing States. FAO, Bangkok.
- Sukulu, M., Orirana, G., Oduagalo, D., et al. (2016). "Management over ownership": Modern community cooperation in Langalanga Lagoon, Solomon Islands. Noumea: SPC Division of Fisheries, Aquaculture and Marine Ecosystem.
- Weeratunge, N., Snyder, K.A and Choo, P.S. (2010) Gleaner, fisher, trader, processor: Understanding gendered employment in fisheries and aquaculture. <u>Fish and</u> <u>Fisheries</u>, 11, 405–420.

### **11 Appendices**

## 11.1 Appendix 1: Fishery catch monitoring key results – Kiribati and Vanuatu

### 11.1.1 Introduction

There is limited baseline information available at the community level to characterise the complexity and diversity of community fisheries or to monitor progress towards community resource management goals. Conventional coastal fisheries monitoring methods, i.e., commercial creel and underwater surveys, are designed primarily to serve biological stock assessment or ecological assessment goals. While such methods generate valuable scientific data for national government monitoring and evaluation programs and for wider scientific understanding, these data are often not readily translatable to more local scales for resource use information and decision-making in communities. Finding ways to better capture the essence of community-level capture fisheries in ways that give communities more tools and confidence to manage their local fisheries resources is therefore an important undertaking.

Since 2019, the *Pathways* community based fisheries management (CBFM) project has been trialling an approach to community-level coastal fisheries catch monitoring in Vanuatu and Kiribati that supports the development, monitoring, evaluation, and adaptation of community-based fisheries management plans. The aim of this initiative is four-fold:

- 1. Catalyse local participation in CBFM, including in the implementation and monitoring of community management plans;
- 2. Collect locally-relevant baseline fisheries catch data in select project communities in support of management plans;
- 3. Assist communities to evaluate the performance of management plans in achieving defined objectives; and
- 4. Test sustainable approaches to community level fisheries monitoring.

This catch monitoring approach prioritises our relationship with communities, on mutual understandings of our role, and on the legitimacy of management institutions. Key in this was the process of engaging with communities, co-development of the monitoring program, their ownership of data generated, and reporting back and translating results to make them useful to the community. VFD, MFMRD and data collectors are also valued active participants in catch monitoring design, implementation and evaluation processes.

The *Pathways* catch monitoring 'program' encompasses a range of activities and learnings including monitoring planning and design, training and implementation; data collection and analysis; data management; community reporting and feedback; and evaluation and adaptive management. This report focuses predominantly on presenting the results and lessons from catch data collection activities in communities; however, it also briefly describes and references outputs from other activities undertaken within the broader program of catch monitoring work.

This report is arranged as follows: Catch monitoring methods and sampling coverage results are briefly summarised, followed by a summary and brief discussion of selected catch monitoring results from Vanuatu and Kiribati. Results and discussion are followed by a selection of lessons learned and recommendations for future improvements.
#### 11.1.2 Methods

This methods section is divided into three parts: 1) Overview of the *Pathways* catch monitoring approach as part of a wider program of work, 2) Overview of data collection approach, and 3) Sampling coverage results. Methods are briefly described here; for more details about the catch monitoring approach and methods see Andrew et al. (2020). For country-specific experiences with the *Pathways* catch monitoring approach, see Sami et al. (2020) (Vanuatu) and Nikiari et al. (2020) (Kiribati).

#### Catch monitoring approach

The overall *Pathways* catch monitoring approach positions the monitoring and evaluation process within, and subservient to, a deeper engagement with communities to support CBFM. A starting premise was that sustainability of process may be more determined by the willingness of community members to decide a course of action, and to develop and follow rules than by the statistical robustness of assessment data. The overarching purpose of the monitoring is to catalyse and support community-led conversations and to bridge worldviews of community members to those of national agencies and their partners.

The catch monitoring and evaluation program has before, in, and after community stages (Figure 1). Before visits to communities, data collection training of in-country *Pathways* staff took place during a multi-day catch monitoring co-design and capacity-building workshop held at the University of Wollongong, Australia in June 2019. In-country staff then ran regular training sessions throughout the course of the data collection activities in Kiribati and Vanuatu. Project staff also developed a technical survey data collection manual (UoW 2021a) and a data collection training manual (UoW 2021b) to assist catch monitoring coordinators and data collectors.

Monitoring data collection trips are "socialised" prior to, and during, visits to communities (Figure 1). Following visits to communities, completed surveys and photos are returned to incountry offices for data entry and storage. In-country teams developed context-informed strategies to keep paper forms in order and to minimise data loss. Photos were saved and filed using a co-developed electronic file coding system. Analysis tasks were split between UOW and in-country office teams for practical capacity and workload reasons. To build confidence with data analysis tasks, in-country staff were trained in basic MS Excel dataset maintenance and analysis skills and provided with ongoing technical support from Australia.

Importantly, summary results from collected data are reported back to each community during the subsequent round of data collection. Reports created by in-country staff contain information about general trends and catch composition, as well as information tailored to each community's specific management efforts (see e.g., Ikaukau CBFM data feedback 2020). Respecting that government agencies are partners in CBFM, reports are also prepared for national government agencies, based on an awareness of their own reporting, management and policy needs (see e.g., National CBFM data monitoring report 2021).

The next step is to work with communities and government to feed the data collected by this monitoring programme back into the management cycle, so that communities can use it to review their CBFM plans (or community rules) and make decisions about whether they are satisfied with their progress or if the plan needs adjusting. To assist in this undertaking, a summary report of all collected rounds of data is currently being prepared for both VFD and MFMRD, and in-country teams are currently collating and synthesising community report information and developing a template for community-level catch profile fact sheets. Country teams have also led data collection and reporting process evaluation workshops with data collectors that incorporate feedback from communities to support review processes (e.g., see Pathways Project 2021).





#### Catch data collection approach

Ten communities (5 communities each in Vanuatu and Kiribati) were selected for codeveloping and testing community-level catch monitoring methods. In Vanuatu, these communities were: Kwamera (Tanna), Pescarus (Maskeylyn/Malakula), Ikaukau (Aniwa), Takara (Efate), and Hog Harbour (Espiritu Santo). In Kiribati, these communities were Tabonibara (North Tarawa), Kuuma and Tanimaiaki (Butaritari), Ribono (Abaiang), and Autukia (Nounouti). These communities were selected for participation because of their geographical spread within the country, stated interest in participating, known differences in fishery profile, and existence of a CBFM plan.

In-country teams inclusive of national agencies coordinated data collection. In each country, snapshots of five communities' finfish and invertebrate fisheries were captured over up to four, two-week periods (i.e., data collection/ sampling 'rounds'), with a minimum of 10 consecutive data collection days in the field. Data were collected using four tools: 1) a catch and effort survey, 2) a fishing context survey, 3) photographs of catch on a standardised mat, and 4) catch monitor field notes. Data collection trips also included community reporting and feedback mechanisms. Specific details on the *Pathways* data collection tools, including blank surveys, are provided in (UOW 2021a). Further details about the sampling approach and rationale including trade-offs are included in Andrew et al. (2020).

In Vanuatu, data collection trips occurred in November 2019, July 2020, November 2020 and April 2021. In Kiribati, trips occurred at different times by island. Round 1 was July 2019 and between September and December 2019 depending on the island. Round 2 was either March 2020 or between July and October 2020. Round 3 was July 2020, November 2020 or between January and March 2021. Round 4 was either April 2021, June 2021, August 2021 or November/December 2021. The planned timing of data collection trips was originally bi-annually at a consistent time every year; however, this plan was interrupted by COVID-19 pandemic restrictions as well as the realities of weather, staffing, and inter-island travel logistics. This meant that some planned trips in data collection rounds 3 and 4 were either significantly delayed or cancelled altogether. These data collection delays have had 'knock-on' effects to analysis and reporting back activities; for this reason the summary results section below is for 2-3 rounds of data only. The final data collection round is still being processed and a final report is being prepared for each country government.

#### Sampling coverage results

Table 1 and 2 summarise the number of surveys collected across up to 3 rounds of data collection in Vanuatu and Kiribati, respectively. While an individual fisher may be catch surveyed multiple times during one, two-week data collection trip (i.e., round), fishing context surveys are conducted only once per fisher per round. 'Context' surveys therefore act as a proxy for the number of individual fishers engaged in each round.

TOOL	Catch surveys Fishi (#) surve		Fishing survey	ning context veys (#)		Catch photos (#)			Fishers engaged** Both surveys (#)						
										Fem	ale		Male	e	
ROUNDS	R1	R2	R3	R1	R2	R3	R1	R2	R3	R1	R2	R3	R1	R2	R3
HOG HARBOUR	23	18	21	16	14	13	41	23	27	6	2	3	10	12	10
IKAUKAU	50	56		21	33		40	68		0	14		21	19	
KWAMERA	47	84	77	24	40	36	61	108	95	9	19	15	15	21	21
PESCARUS	81	90	77	51	56	62	131	157	109	13	16	25	37	40	37
TAKARA	34	46		19	22		47	71		5	12		14	10	
TOTAL	235	294	175	131	165	111	320	427	231	33	63	43	97	102	68
*Fisher also INCLUDES invertebrate collectors; **Includes likely name duplicates due to covid-19 restrictions no data were collected															

# TABLE 1: NUMBER OF SURVEYS COLLECTED AND FISHERS\* ENGAGED IN CATCH MONITORING DATA COLLECTION ACROSS SURVEY ROUNDS IN VANUATU

# In Vanuatu, taking into account the effects of COVID-19 restrictions on round 3 data collection, *there is generally a stable or increasing trend in fisher engagement across data collection rounds in most monitored communities*.

Based on the estimated total population sizes of each of the 5 communities (i.e., including non-fishers) and a rough estimate that ~65% of the population in each of these communities fishes either full or part-time (A. Sami, personal communication), estimated community sampling coverage for data collection rounds ranged between 3% (Hog Harbour, all rounds) and 48% (Kwamera, round 3). An ideal sampling rate for each community is >50% of the known number of fishers in that community.

Because the 'real' number of full and part time fishers is currently unknown, the achieved sampling rate may be misleadingly low in terms of the 'true' representativeness of fishers' activities in monitored communities. While achieving a >50% fisher sampling rate in communities may not be practical because almost any beach could be a landing site and there are a finite number of data collectors, it is also clear that sampling coverage in communities could continue to be improved. In-country data coordinators and data collectors were proactive about addressing recruitment challenges as they became apparent throughout data collection rounds. Some of the lessons learned about fisher recruitment for surveys are discussed in the lessons learned section below.

In Kiribati, taking into account the effects of COVID-19 restrictions on round 2 and 3 data collection, *there is generally a stable or increasing trend in fisher engagement across data collection rounds* (Table 2). Kuuma and Ribono had increasing engagement trends regardless of COVID-19 effects, while the other three communities saw a slight drop in the number of surveys collected in round 3.

TOOL	Catc (#)	Catch surveys (#) Fishing context surveys (#)		Catch photos (#)			Fishers engaged** Fishing context survey o (#) Female Male				rey on	ly			
ROUNDS	R1	R2	R3	R1	R2	R3	R1	R2	R3	R1	R 2	R 3	R1	R2	R3
AUTUKIA	47	49	40	53	21	26	106	58	59	27	6	7	26	15	19
KUUMA	39	42^	77	29	31	50	68	89^	123	0	3	12	29	28	38
RIBONO	34	49	115	28	34	38	62	74	224	4	1	2	24	33	36
TABONIBARA	24	63	43	19	26	20	43	95	67	2	7	5	17	19	15
TANIMAIAKI	32	54^	41	18	43	26	53	96^	49	6	3	0	12	40	26
TOTAL	174	256	316	14 7	155	160	332	412	522	39	20	26	10 8	13 5	13 4
*FISHER ALSO INCLUDES INVERTEBRATE COLLECTORS; **INCLUDES LIKELY NAME DUPLICATES ^EXCLUDES PARTIAL ROUND DATA															

# TABLE 2: NUMBER OF SURVEYS COLLECTED AND FISHERS\* ENGAGED IN CATCHMONITORING DATA COLLECTION ACROSS SURVEY ROUNDS IN KIRIBATI.

The 2020 Kiribati Census reports that between 52% (Tarawa) and 76% (Nonouti) of households engage in fishing in monitored communities (<u>https://nso.gov.ki/population/</u>). Based on the conservative assumption that one member of each 'fishing household' fishes or collects, community sampling coverage ranges from 19% (Tanimaiaki, round 1, finfish surveys only) to over 100% (Autukia, all rounds, finfish surveys only), with an average coverage across all rounds of between 45% (Tabonibara) to over 100% (Autukia) for finfish only surveys. The >100% coverage is likely achieved from double-counting people because of variable spellings of the same person's name, which is common in Kiribati. This indicates generally good sampling coverage overall; however, Table 2 also shows that female representation in surveys is low and could be improved.

# 11.1.3 Catch Monitoring Results

A selection of catch results is presented below for both Vanuatu and Kiribati. Because of COVID-19 disruptions, either two or three out of four rounds of data are presented below. The final data collection round for all communities is still being entered, cleaned and analysed.

Featured results primarily focus on 'top' catch and effort trends and community perceptions of change, with a more detailed focus on finfish catch analysis. Key results are identified in text in **bold italics**. Figures and tables are accompanied by short analytic insights that focus on: i) characterising within-community fishery trends; ii) evidencing improvements in community fisheries and their management; and/or, iii) demonstrating new learning about sampling complexity. The term 'fisher' includes both sexes as well as invertebrate collectors unless otherwise specified below. For additional country-specific catch data results, see Sami et al. (2020) and Nikiari et al. (2020).

#### VANUATU

The infographic below provides a brief snapshot of the communities participating in fisheries catch monitoring and some of the key fisheries stats.



Infographic by Elle McNeill

#### Catch trends

#### Catches by count and weight

The total estimated weight of sampled finfish catches over 3 rounds (~6 weeks total) in Vanuatu was 3478 kg across 708 total fishing trips. This is a conservative weight estimate, as the absence of length/weight parameters for flying fish meant their weights were not calculated for this report. This issue appears to affect only lkaukau's catch estimates.

A total of 62 families and 416 species of finfish were identified from sampled catches. Overall, *high species diversity is apparent in sampled catches in all monitored communities*, suggesting high coastal finfish biodiversity across Vanuatu (Table 3).

Table 3: Overview of Vanuatu community catch numbers for finfish only across 3 rounds of data collection. Fisher data includes likely name duplicates. Only 2 rounds of data were collected for Ikaukau and Takara.										
Community	No. fishers surveyed	Fisher sex M/F	No. fish recorded	No. species identified	Total weight harvested (est. kg)					
Hog Harbour	33	29/4	1847	112	321					
Ikaukau	54	44/10	858	118	621					
Kwamera	79	38/41	2175	109	212					
Pescarus	151	107/44	5670	310	1809					
Takara	17	17/0	1519	144	515					

By community, the top 5 harvested finfish species by number as a percentage of total catch by number ranged between 20% in Takara to 42% in Kwamera. By weight, this percentage ranged from 15% of total catch by weight in Pescarus to 35% in Ikaukau. This further illustrates the considerable species diversity of sampled catches across all monitored communities.

Analysis of catch data shows that *the majority of sampled catches by number of individuals are reef-associated finfish* (Figures 2a,b). *This same trend holds true overall for catches by estimated weight* (Figure 3a,4a), except for Ikaukau where catches of pelagic species like deep slope snappers contribute considerably to sampled catch weight. This *suggests a strong preference for catching reef-associated finfish in all sampled communities*. However, this does not necessarily mean that pelagics are 'less' targeted.





**Figure 2a:** Total number of reef-associated finfish caught in Vanuatu, by sampling round and community. Excludes small pelagics.

**Figure 2b:** Total number of pelagic finfish caught in Vanuatu, by sampling round and community. Includes small pelagics.



Figure 3a: Total estimated weight of reef-associated finfish caught in Vanuatu, by sampling round and community. Excludes small pelagics.



**Figure 3b:** Total estimated weight of pelagic finfish caught in Vanuatu, by sampling round and community. Includes small pelagics but excludes flying fish (weight estimates unavailable).

Overall, *many of the reef and pelagic finfish species caught are of special economic interest to VFD* in addition to being important to communities. Many of the most caught species in Pescarus were also the most caught species overall, an indication that *Pescarus has significant harvest volumes relative to all other monitored communities*. Reef-associated finfish species like surgeonfish and parrotfish are typically located nearer to shore within CBFM plan managed areas and may be targeted for management under these plans. The most caught species by number was the Surge wrasse *Thalassoma purpureum* (1041 fish), largely in Kwamera, while the most caught species by estimated weight was the Bluespine Unicornfish *Naso unicornis* (90kg), largely in Pescarus. Two of the most caught reef associated finfish by both count and weight (and of economic interest to VFD) are: White-spotted rabbitfish *Siganus canaliculatus* (320 fish; 78kg; Most caught in Pescarus) and Yellowtail emperor *Lethrinus atkinsoni* (597 fish; 82kg; Most caught in Pescarus).

While they may not be included in CBFM plans, offshore pelagic finfish fisheries can also play an important role in community-level fisheries. This is because big pelagic species like wahoo, tuna, and deep slope snapper are often of higher economic value and can therefore contribute significantly to household income. The most caught pelagic species by estimated weight was Wahoo *Acanthocybium solandri* (9 fish; 161kg; of economic interest to VFD; Most caught by weight in Ikaukau and Kwamera). Two of the most caught pelagic finfish by both count and weight are Golden eye jobfish *Pristipomoides flavipinnis* (109 fish; 97kg; Most caught by count overall; Most caught in Ikaukau) and Longtail red snapper *Etelis coruscans* (22 fish; 104kg; of economic interest to VFD; Most caught by weight in Hog Harbour's catches by number. Ikaukau's catch by weight is made up mostly of a small number of larger, high-value pelagic species like wahoo, barracuda, and deep slope snappers. In Kwamera, roughly 19% of total catch by weight came from 2 large pelagic finfish.

In terms of sex-disaggregated trends, men caught upwards of 70% of the finfish catch in all communities except Kwamera, where women landed 52% of sampled finfish catches. In Takara, five male fishers were responsible for 70% of Takara's catch by number.

Analysis of catch data also reveal that *small amounts of an IUCN red listed species Cheilinus undulatus (Humphead or Maori wrasse) are caught from time to time* in Pescarus. Analysis of estimated lengths of harvested fish against standard species length parameters obtained from Fishbase (<u>www.fishbase.de/</u>) suggests that this species is being caught before reproductive maturity, in addition to being globally endangered, which is not ideal management practice.

Analysing the lengths of harvested finfish against standard biological parameters provides one important indication of whether fishing practices may be targeting fish that are reproductively undersized, i.e., they are too small/immature to reproduce yet, in communities with management plans. Catches of consistently small fish may also be an indication of growth overfishing, meaning that harvested fish are consistently 'sub-optimally' small in size for maximised potential economic value and food benefits. A precautionary approach to management suggests that communities may wish to discuss adjusting their fishing practices if their own observations, supported by sampling data results, suggest that small, immature fish sizes are consistently being caught using one or more gear types. Length at maturity analysis of the top 10 caught finfish overall identified to species level by number of individuals caught and by the most common method used to catch that species indicates that overfishing (recruit and/or growth) appears possible for Yellowtail emperor (L. atkinsoni), Darkfin hind (C. urodeta) and Thumbprint emperor (L Harak) in some communities (see e.g., Figure 5 and 6).



**Figure 5:** Lengths of Yellowtail emperor *L. atkinsoni* caught by handlining in total sampled catches. Standard length parameters (Fishbase): Lm between 23 and 28 cm (new Caledonia) (red line); CL 32.5 cm male/unsexed (purple line); Max 50 cm TL male/unsexed. *Recruit overfishing likely common based on Lm; growth overfishing possible based on CL; community discussion recommended in Pescarus.* 



Figure 6: Lengths of Darkfin hind *C. urodeta* caught by handlining in total sampled catches. Standard length parameters (Fishbase): Lm est. 17cm (red line); No CL; Max 28cm TL male/unsexed. *Recruit* overfishing likely based on Lm (48% below Lm), community discussion recommended, particularly in Ikaukau.

Invertebrate catches were analysed by high-level catch composition trends (Figure 7). *Gastropods were the most frequently targeted invertebrate overall* out of the 158 total surveys that reported invertebrate catches over two rounds of data collection. These gastropods were typically *Turbo* snails. Kwamera was the only community where sampling identified a sea cucumber fishery. Takara appears to have a stronger preference for harvesting octopus than other monitored communities.



**Figure 7:** Invertebrate catch composition by general animal 'classification', community, and fisher sex in data collection rounds 1 and 2 in Vanuatu. This figure shows the frequency of harvest by broad category and is not an indication of quantities or weights of harvest. Mollusk-Other' includes chitons and squid. 'Bivalves' are commonly small giant clams. Figure excludes catches where species were in a bag/bucket and either not visible in the photo and/ or not readily separable from other species. This affects Hog Harbour (6 fishing trips), Pescarus (4 trips) and Takara (3 trips).

In terms of sex-disaggregated invertebrate harvest trends, *in all communities but Pescarus, women were more frequent collectors of gastropods than men were*. However, analysis suggests that contrary to popular perception, *women are not the only, or even the dominant, invertebrate harvesters in some communities*. Across the 3 rounds of data collection, 52% of catch surveys/fishing trips that included invertebrate catch were by women, 47% were by men, and two surveys did not identify the sex of the invertebrate fisher. A different mix of men and women harvested all invertebrates except spiny lobster (men only) and marine plants (one woman). Pescarus had more surveyed male invertebrate collectors than females.

#### Catches by habitat

**Biodiverse reef habitats are heavily fished by estimated weight relative to other habitats**, particularly reef edge habitats in Hog Harbour, Kwamera, and Pescarus (Table 3). In Kwamera, 53.6% of total sampled catch by estimated weight (conservatively 208kg) comes from inshore reef edge habitat, while nearly 37% of Pescarus' total catch by estimated weight (conservatively 1.7 tonnes) is coming from reef edge habitat and 76% from all reef habitats. Mangrove catch makes up 27% of Takara's catch by number. Monitored communities report landing minimal harvest by weight from FAD fishing. In Kwamera, FAD-caught species were golden eye jobfish and ruby snapper, while in Pescarus, most FAD-caught species were reef-associated species like wrasse and emperors.

Looking at frequency of habitat fished (by number of fishing events) *fishers are using all available habitats* but *reef edge habitat is the most frequently fished overall*: over 70% of fishing events in Kwamera (there are 1 and up to 3 fishing events per fishing trip) and 64% of fishing events in Ikaukau occurred in reef edge habitat. Invertebrate harvests come from a mix of reef flat, reef edge, and mangrove habitats, with reef flats being the most common harvest habitat.

**Table 3:** Estimated weight of sampled finfish catch, in kilograms, by habitat in all communities across 3 rounds in Vanuatu. Excludes catch where habitat was left blank on the survey (mostly Kwamera and Pescarus). Boxed yellow cells represent most fished habitat by weight for that community.

Habitat	Lago	onMangrove	sOcean	Ocean	Reef	Reef flat	Reef fla	t Seagrass	Total
Community			(FAD)	(no FAD)	edge	(Lagoon)	(Ocean)	)	est. kg
Hog Harbour				80	184	30	27		321
Ikaukau				438	150	11	19		618
Kwamera			46	7	111	6	38		208
Pescarus	192	34	7	178	640	437	252	5	1745
Takara		50		260	102	78			490
Total est. kg per habitat	192	84	54	962	1187	562	335	5	3381

Table 3 and supporting information highlight the importance of having a good baseline understanding of how different habitats are collectively being used for fishing in communities. They also suggest that *management plans that focus on the ecosystem health of reef and reef edge habitat are well placed* to tackle community level finfish fishing pressure challenges, even as habitat use shifts slightly throughout the year. However, in some communities e.g., Takara, having management plans that also account for mangrove fishing and collecting is also important. Table 4 also highlights the limited presence of nearshore FAD fishing in sample data by both weight and frequency. This may be because FAD-caught species tend to be higher value and may therefore be taken straight to market. However, it may also be signalling that this fishing tool is being underutilised in monitored communities that have FAD access.

# Catches by gear

*Ni-Vanuatu finfish fishers are using a wide variety of fishing methods*, including more 'traditional' techniques, e.g., bow and arrow, knife cutting, and local cane/bamboo rod (Table 4). The most frequently used fishing methods overall were mid-water handlining, gillnetting, local rod fishing, and day spearing. Inconsistent recording of fishing methods by different data collectors and the practical challenges of disentangling multi-gear catches from each other means that some caution must be used in comparing frequencies of similar gear types.

**Nearly all invertebrate fishing was done by hand collection (89%)**, with a small proportion (~3% total) collected by spear and snorkel (spiny lobster, octopus). The remaining ~8% of methods used to harvest invertebrates are either unidentified in the survey form or were part of mixed finfish/invertebrate catches; based on the species harvested it is likely that most of this 8% was also hand collected.

Importantly, fishing method data helps characterise the dynamic nature of fishing strategies within and between communities around Vanuatu. Some communities appear to consistently, predominantly use a particular fishing method throughout the year, e.g., Kwamera using local rod fishing or Ikaukau using handlining or trolling. Other communities may switch between gear types, e.g., Takara and Pescarus.

Table 4:	Frequency of finfish fishing methods used by community in Vanuatu. Boxed
У	vellow cells represent most frequently reported method used for that community
a	and boxed blue most frequent overall.

Community	Hog Harbour	Ikaukau	Kwamera	Pescarus	Takara	Total
Fishing Method						Count
Bow and Arrow			36			36
Casting net	668		1	134		803
Drop-stone fishing				11		11
Fishing rod (local cane/bamboo)		77	1667			1744
Gillnetting	344		19	1646	644	2653
Hand collecting		2	27			29
Handlining (bottom)	130	460	32	230	187	1039
Handlining (mid-water)	473	68	-	2077	295	2913
Handlining (Mixed)				43	-	43
Knife cutting		29	4			33
Spear (day)	21	32	205	1205	135	1598
Spear (night)	211	29	96	45	153	534
Trolling		158	1	111	40	310

In terms of management implications, the evident diversity of gear and habitat use suggests that **some caution should be exercised when using gear-specific management strategies.** This is because gear restrictions may not always significantly reduce overall fishing pressure when fishers are adaptable to switching to other gear types and fishing strategies. For example, banning the use of spearing might not significantly alleviate parrotfish harvesting pressure if people are still able to gill-net in reef channels.

# Effort trends

Basic measures of fishing effort such as reported transport type, travel and trip times, active fishing times, frequency of harvest success and days fished outside the sampling dates provide information about the amount of time that fishers (including invertebrate collectors) are devoting to fishing for food and livelihoods. By sex-disaggregating this data, we can also see some of the gendered similarities and differences in these trends. This information better characterises the complexity of fishing practices in different communities by highlighting that different groups of people have different trade-offs about the time they choose to spend time fishing versus switching to other activities. Being aware that these differences or similarities exist is important for effective and fair local management of fisheries resources and for the support of complimentary or supplementary livelihood activities. For ease of analysis due to the structure of the underlying datasets, measures presented in this section are inclusive of both finfish and invertebrates unless otherwise specified.

We have chosen not to include conventional harvest efficiency/rate of change measurements like catch-per-unit-effort (CPUE) in this report. This is because the short sampling time series, variable sampling coverage, and underlying diversity and complexity of what a multi-species, multi-gear 'fishery' is in this context do not support practical or meaningful calculations of harvest 'efficiency' for management benefit at this time. With more data points added over time, and by focusing on a subset of fishers, transport types, and gear, we may begin to observe trends in fishing generally getting 'harder' or 'easier' relative to the baseline

data collected here, make related inferences about species abundance, and apply this information to meaningful effect for community-level management.

#### Transport type and total trips

The most used form of transport from 708 sampled trips and 3 out of 5 monitored communities was 'no boat'(47% total), i.e., fishing on foot (Table 5). This highlights the importance of having a community-level fisheries monitoring design that is not overly vessel-centric. For example, Kwamera's fishery profile would look completely different if fishing on-foot was not adequately accounted for in data collection.

**Table 5:** Count of fishing transport type used per fishing trip and sum of total trips by community in Vanuatu. Inclusive of invertebrate harvesting. Boxed yellow cells represent most reported type used for that community.

	Fishing trar	nsport type	e		
Community	No Boat	Motor	Paddle	Sail	Total trips
Hog Harbour	34	15	13	0	62
Ikaukau	27	16	62	0	105
Kwamera	206	5	0	0	211
Pescarus	15	43	191	1	250
Takara	51	28	1	0	80
Total types	333	107	267	1	708

#### Trip hours and travel time to main fishing ground

Bearing in mind that the total sample of women (n=139) is nearly half that of the men's (n=267), overall, men tend to spend at least double the trip hours that women do on *fishing activities and have higher average trip times as well* (Table 6). Fishing/collecting trip times are defined here as the time spent between the day and time the fisher/ collector leaves to go fishing and the day and time they come back, inclusive of non-fishing travel and active fishing time. Multiple fishing methods may be used in a single fishing trip, e.g., handlining, trolling, and hand collecting.

**Table 6**: Sum of total fishing\* trip hours and average trip hours in Vanuatu, by fisher sex, number of fishers\*, and community.

	Tota (#)	l fishers	Trip hour (hrs:min)	rs sum		Average trip hours (hrs:min)			
Community	F	Μ	F	Μ	Total trip hrs	F	М	Avg total hrs	
Hog Harbour	11	32	236:00	258:35	494:35	18:09	5:16	7:58	
Ikaukau	14	40	95:20	652:47	748:07	5:57	7:15	7:07	
Kwamera	43	57	243:25	568:22	814:42	2:07	5:58	3:51	
Pescarus	54	114	402:00	1292:56	1694:56	6:11	6:59	6:46	
Takara	17	24	127:20	353:34	480:54	5:47	6:05	6:00	

The exception to this trend is Hog Harbour, where total trip hours were almost even by sex and women's average trip hours were more than triple the men's. One likely reason for this trend in Hog Harbour is that a handful of women went on multi-day fishing trips. According to the comments in the survey forms, trips were combined with other activities like gardening. Multi-day trips do not appear to be very common in monitored communities but they do happen- a small group of men also went on multi-day trips in Pescarus.

Pescarus had by far the most sampled fishers and fishing trip hours overall for both men and women, with an average trip time of 6 hours and 46 minutes. This suggests that fishing is a major activity for that community, particularly for men. By comparison, Kwamera had the second-most total trip hours but the shortest average total trip hours, with women spending an average of just over 2 hours fishing from 'start to finish'. This suggests that it does not take long for Kwamera fishers to harvest what they want, particularly the women. It also suggests that other livelihood activities may also be important in Kwamera, particularly for the women, who are active fishers relative to most other sampled communities.

Overall, fishers and collectors reported that travel time to their main fishing ground took a maximum of 7 hours and a minimum of zero time. *The average travel time to main fishing grounds was 33.6 minutes, with the most commonly reported travel time being 1 hour.* While this suggests that fishers/collectors are not spending excessive amounts of time traveling to their main fishing ground, the breakdown of transport types used (Table 6) suggests that traveling for 1 hour on foot to a main fishing ground may represent a significant effort on the part of the fisher. Moreover, it also suggests that the average fisher/collector is traveling beyond their immediate community fishing grounds to find the desired fish and invertebrates.

#### Active fishing time and harvest success

Active fishing time excludes time spent traveling to, from, or between fishing sites. Pescarus had the most active fishing hours (including collecting) overall across all three sampling periods by far, especially the male fishers (Table 7). Half of this time was spent mid-water handlining.

		,	
Community	F	м	Total
Hog Harbour	34.0	112.9	146.9
Ikaukau	69.0	400.7	469.7
Kwamera	160.5	99.0	259.5
Pescarus	278.4	737.9	1016.3
Takara	51.4	222.8	274.2

**Table 7**: Sum of total active fishing time (hrs),by sex and community in Vanuatu.

Bearing in mind the gender disparity in sampling, *in all communities but Kwamera, where female fishers and collectors spent 1.6 times more time actively fishing than men, male fishers spent 2.6 to 5 times more time actively fishing than females overall. In Kwamera, the difference appears to be largely attributable to a vibrant local cane/bamboo fishing rod fishery, with female rod fishers making up just over half of the community's total active fishing time. On average, most active fishing time was spent using the first reported fishing method in a multi-method fishing trip (at least twice as long as the next reported method). The exception to this trend was Ikaukau, where there was little difference between average hours spent on the first and second fishing method.* 

In terms of active time spent fishing for invertebrates only, the *minimum active time spent invertebrate fishing was less than 5 minutes and up to a maximum of 8 hours*. Average active fishing time was also variable between data collection rounds, sometimes by up to 3.5 hours within communities (e.g., Hog Harbour women averaged 4 hours in round 1 and 30 min in round 2), and between communities (e.g., Kwamera (~1 hr active time) versus Pescarus (~3hrs). The average active fishing time for invertebrates is generally similar between the sexes in Kwamera and Takara. Given that hand collection is used for over 90% of invertebrate fishing, the variability in maximum and minimum active fishing time suggests that there are at least two 'types' of invertebrate fishers in sampled communities: opportunistic invertebrate fishers and targeted invertebrate fishers. It also suggests that some communities have more available and accessible invertebrate fisheries than others do.

Not all active fishing attempts are successful; this is a natural part of fishing and often has nothing to do with the skill of the individual fisher. **Both men and women across the 5 communities were upwards of 81% successful at catching something when they used their first reported fishing method**. This trend is essentially reversed for the second method used in the same trip (i.e., only ~20% successful). This suggests that most fishers and collectors are going out with a 'planned' principal fishing method but are also opportunistically using a second and/or third fishing method.

#### Days fished outside sampling period

A few survey questions asked about fisher activities one week before the sampling period. This was done in order to capture a broader sense of fishing pressure in a given community and generally how much time in a week that men and women are spending on fishing in the sampled communities. Sampled fisher responses suggest that **men are almost exclusively the ones finfish fishing full time (4-6 days)**, and **most men and women fished less than 3 days a week or not at all in the week prior to the sampling period**. While it is difficult to determine without comparing days fished *within* the sampling period or knowing if *tabu* area restrictions were changed, the relatively high proportion of zero fishing days reported in the week before sampling could suggest that higher than 'normal' fishing pressure occurred during the sampling period. In contrast to finfish harvesting, **invertebrate collecting appears to be a mostly part time occupation**, i.e., one or two days per week. **Women were proportionately the most frequent collectors of invertebrates** in the week prior to sampling and the only ones to go collecting three times a week.

#### Community perceptions of change

Fisher perspectives on CBFM's role in coastal fisheries resource change have implications for continued engagement with local CBFM activities. If a direct positive relationship is assumed between fisher perceptions and their sentiments (i.e., perceptions of larger and more numerous fish caught equate to positive sentiments and vice versa), data can provide insights into a sampled community's general level of optimism about the status of their local fisheries resources and their likelihood of continued positive engagement in CBFM plan and monitoring activities. While it is not possible to detect biological change from perspectives only, these responses do add to the body of evidence that can.

#### Perceptions of change in size and number caught (finfish and invertebrates)

Sex-disaggregated fisher perceptions of changes in size and total number of finfish caught were collected across three rounds of data collection and all five sampled sites. Data show that *all communities differ in their perceptions of change since either the last survey or in the last 12 months* (Table 8).

**Table 8**: Perceived change general trends in fish number and size changes since the last<br/>survey in Vanuatu. Changes displayed represent majority view but not 100%<br/>unless stated. Scales: smaller, same, larger, don't know and less, same, more or<br/>don't know.

Community	Changes in fish size	Changes in fish number
Hog Harbour	Fishers, particularly women =	100% women=less or same
	smaller or the same	Men=more or the same
Ikaukau	Fishers=near-even split (smaller/same/larger)	Fishers=near-even split (less/same/more)
Kwamera	Fishers=larger	Fishers=more
Pescarus	Mixed responses	Mixed responses
	Women more likely to =larger	Women =near-even split more or less
Takara	Fishers=same	Men=Don't know or evenly split
		Women=same

Surveyed fishers were relatively evenly split about perceived changes in invertebrate size and number between data collection rounds. This is expected given the relatively short time scales for detecting potential biological change and changes in seasonal availability of species. At the very least, this result suggests that neither men nor women fishers have noticed any clear and obvious environmental or management measure-induced changes to invertebrate harvesting since sampling began. Relating these results to management decision-making highlights the importance of continuing to engage with a diversity of fishers (including men and women of different ages) because people have different perceptions of the state of their shared resources even within a community.

#### Perceptions of change to fishing and collecting since CBFM implementation

Overall, surveyed fishers were largely of the view (>50%) that both fishing and collecting activities in their communities had improved since the implementation of CBFM measures (Figure 8 and 9). This overall positive trend remained consistent across survey trips and did not obviously differ by sex except in Hog Harbour (women more uncertain or negative for finfish than men and more negative or same for invertebrates) and Takara (women more uncertain or same for finfish, mostly the same for invertebrates). Kwamera fishers and collectors were the most likely out of monitored communities to perceive CBFM as having improved harvesting, with no negative responses recorded for changes to invertebrate collection. Only Hog Harbour showed any notable difference in perception change within communities between data collection rounds (perceptions varied between response options): multi-round results are therefore presented collectively in Figures 8 and 9.





**Figure 8**: Perceived changes to **fishing** since CBFM implementation. Total number of survey responses: Hog Harbour (n=43), Ikaukau (n=53), Kwamera (n=96), Pescarus (n=157), Takara (n=24).

**Figure 9**: Perceived changes to **collecting** since CBFM implementation. Total number of survey responses: Hog Harbour (n=20), Ikaukau (n=44), Kwamera (n=95), Pescarus (n=124), Takara (n=30).

These perspectives suggest that surveyed fishers generally, and consistently, are feeling better off as a result of CBFM interventions, and there isn't an obvious difference in this sentiment by sex, except perhaps in Hog Harbour. However, the existence of *negative responses also serve as a reminder that CBFM is not universally perceived as a positive change*, and that efforts to be aware of, understand and respond to negative perspectives must be ongoing.

#### Perceptions of rule compliance

Information about how fishers are perceiving fisheries rule compliance in their community can help flag broad changes to these perceptions over time. *Four out of five monitored communities reported that people are generally following all or most fishing restrictions* across 3 rounds of data collection (Figure 10). Takara fishers (n=39) consistently reported that people were fully compliant across all 3 three rounds of data collection. Hog Harbour (n=35) had the lowest reported rule compliance and was the only community that reported '1' on the survey question compliance scale. Project staff attribute this to poor rule enforcement related to observed tensions and associated poor communications between the tabu area committee/ village leadership and fishers groups. Tensions were also linked to broader land tenure issues. Pathways and VFD staff have used this information to help them identify where to deliver additional awareness-raising presentations at the beginning of data collection rounds and to investigate the causes of low compliance.



**Figure 10**: Responses to the question: Are people following restrictions? In Vanuatu monitored communities. 1= no restrictions followed, 5=all restrictions followed.

#### Key reflections

Considerable diversity is evident in sampled catches across monitored communities in Vanuatu. This diversity extends to how and where fish and invertebrates are caught as well. However, a clear preference for fishing reef fish in reef habitats suggests that management plans that focus on the ecosystem health of reef and reef edge habitat are well placed to tackle community level finfish fishing pressure challenges, even as habitat use shifts slightly throughout the year. The diversity of gear use and cross-habitat fishing suggests that some caution should be exercised when relying on gear-specific management strategies, as the apparent ease of gear substitution may mute management impacts. Accounting for the amount of 'boatless' fishing in the design of catch monitoring activities is also important, particularly when considering the trade-offs of nearshore tabu area placement and the amount of time people are spending traveling on foot to fishing grounds. There is an indication that more discussions about avoiding over-fishing and not catching endangered species would be beneficial for some communities. Pescarus is evidently a major fishing community relative to the other monitored communities and based on the volume and type of species caught there is some evidence that fishing pressure is more strongly influenced by market demand than the other communities. Going forward it is likely worthwhile to collect market data for strongly market-connected communities like Pescarus because of the apparent relationship between market drivers and community-level fishing pressure.

Overall, surveyed fishers were largely (>50%) of the view that CBFM had improved the status of both fishing and collecting activities in their communities. Rates of compliance with fishing rules appear generally good and consistent through time thus far in monitored communities. While some communities like Takara seem to have settled into a steady routine of harvesting and management compliance after years of CBFM influence, other communities like Hog Harbour still appear to have mixed feelings about engaging in CBFM.

#### KIRIBATI

The infographic below provides a brief snapshot of the communities participating in fisheries catch monitoring and some of the key fisheries stats.



Infographic by Elle McNeill

#### Catch trends

#### Catches by count and weight

The total estimated weight of sampled finfish catches over 3 rounds (~6 weeks total) in Kiribati was 6,898kg across 521 fishing trips. A total of 44 families and 251 species of finfish were identified from sampled catches. These values are conservative for two reasons. First, the absence of length/weight parameters for flying fish meant their weights were not calculated for this report. This issue appears to affect only Ribono's catch estimates. Second, poor quality photos taken in Tabonibara and Autukia during rounds 1 and 2 meant that some fish could not be measured and identified in some cases.

Overall, *high species diversity is apparent in sampled catches in all of Kiribati's monitored communities*, but this diversity is less than Vanuatu's relative to Kiribati's total estimated catch weight, which was roughly double that of Vanuatu's (Table 9).

Fish	Fisher data includes likely name duplicates.											
Communities	No. fishers surveyed*	Fisher sex** M/F	No. fish recorded	No. species identified	Total weight harvested (est. kg)							
Autukia	49	44/5	1713	53	678							
Kuuma	92	88/4	9247	180	2517							
Ribono	114	111/3	7713	144	1650							
Tabonibara	55	55/0	2426	101	886							
Tanimaiaki	77	74/3	9507	119	1167							

**Table 9:** Overview of Kiribati community catch numbers for finfish only across 3 rounds of data collection. \*Fishers surveyed is from finfish surveys only.

 Fisher data includes likely name duplicates

By community, the top 5 harvested finfish species as a percentage of total catch by number ranged between 52% in Tabonibara and 77% in Autukia. By weight, the top 5 species caught made up between 38% of total catch by weight in Tanimaiaki to 78% in Autukia.

Snappers, emperors, goatfish, and mullet were commonly caught reef-associated species in all monitored communities. The most caught reef-associated finfish by number were Yellowfin goatfish *Mulloidichthys vanicolensis* (2537 fish; 250.6 kg; Most caught in Kuuma, Ribono, Tanimaiaki), followed by Humpback red snapper *Lutjanus gibbus* (2293 fish; 392.2 kg; Most caught in Kuuma and Tanimaiaki). The most caught reef-associated finfish by weight were Orange-striped emperor *Lethrinus obsoletus* and Humpback red snapper.

Small pelagic finfish species were a significant component of catches by number

**overall**, as well as by weight in some communities. The most caught species by number overall was Bluestripe herring *Herklotsichthys quadrimaculatus* (6874 fish), 69% of which was caught in Tanimaiaki, followed by Silverbiddies (Gerres sp.) (4574 fish; Most caught in Ribono and Autukia). By weight, the most caught species were Silverbiddies (711.3 kg; Most caught in Autukia), followed by the Orange-striped emperor (477.6kg; Most caught in Kuuma). Silverbiddies were among the top 5 species caught by number in all five communities and among the top 5 caught by weight in Autukia and Tabonibara.

The most caught pelagic fish (excluding small pelagics) by number were Bluefin trevally *Caranx melampygu*s (353 fish; 230.6kg; Most caught in Kuuma), followed by Bigeye scad *Selar crumenophthalmus* (180 fish; 11.2kg; Nearly all caught in Kuuma). The most caught pelagic fish (excluding small pelagics) by weight were Wahoo *Acanthocybium solandri* (19 fish; 254.4kg; all caught in Kuuma), followed by Bluefin trevally. Tanimaiaki's most caught species by weight was Yellowfin tuna *Thunnus albacares* (40 fish; 134.3 kg).

In terms of sex-disaggregated trends, men caught upwards of 95% of the finfish catch in all communities except Autukia, where women landed 10% of sampled finfish catches.

**Small amounts of shark fishing were also observed in surveyed catches**: Blacktip reef shark *Carcharhinus melanopterus* (11 sharks;17.3kg; caught in Ribono and Kuuma) and Grey reef shark *C. amblyrhynchos* (7 sharks, 121.2kg; caught in Tabonibara and Kuuma). The IUCN lists both species as "Near threatened", but neither shark is on the list of species warranting special protection under Kiribati's national shark regulation, and non-commercial shark catch by I-Kiribati nationals is permitted by law. Given both the cultural importance of shark fishing in Kiribati and the importance of these species to healthy marine ecosystems, responsible fisheries management practice suggests that communities should maintain an awareness of shark catches in communities and be prepared to have a community discussion if concerns over catch trends arise.

Lengths at maturity were analysed for the top 5 caught finfish overall identified to species level by number of individuals caught and by the most common method used to catch that species (excluding small-pelagics). Analysis indicates that **overfishing (recruit and/or** *growth) is likely happening for all top 5 species: M.vanicolensis, L. gibbus, L. obsoletus, Mulloidichthys flavolineatus, and Lutjanus fulvus* see e.g., Figure 11 and 12.



**Figure 11**: Lengths of Orange-striped emperor *L. obsoletus* caught by bottom handlining in total sampled catches. Standard length parameters (Fishbase): Lm between 23.7 and 25.7 cm (red line); CL 30 cm male/unsexed (purple line); Max 60 cm TL male/unsexed. *Recruit overfishing likely common based on Lm; growth overfishing possible based on CL; community discussion recommended in all communities except Autukia, and particularly Kuuma.* 



**Figure 12**: Lengths of Yellowfin goatfish *M. vanicolensis* caught by gillnetting in total sampled catches. Standard length parameters (Fishbase): Lm 24 cm (red line); CL 25 cm male/unsexed (purple line); Max 38 cm TL male/unsexed. *Recruit overfishing likely common based on Lm; growth overfishing possible based on CL; community discussion recommended in all communities.* 

As in Vanuatu, a precautionary approach to management suggests that communities may wish to discuss adjusting their fishing practices if their own observations, supported by sampling data results, suggest that small, immature fish sizes are consistently being caught using one or more gear types. However, having this many key species with indicators of apparent overfishing does present an additional challenge to management decision-making.

Invertebrate catches were analysed by high-level catch composition trends (Figure 13). **Bivalves were the most frequently targeted invertebrate overall** out of the 191 total surveys that reported invertebrate catches in data collection rounds 1 and 2. These were typically various species of clam. Kuma recorded almost no invertebrate collection in rounds 1 and 2, while Ribono and Tabonibara had the most numerous categories of invertebrates

collected. Autukia had over 100 invertebrate catch photos recorded over 2 rounds and over 70% of Autukia's total catch photos in round 1 were of invertebrates rather than finfish. Both Tanimaiaki and Tabonibara had rounds where over 50% of catch photos were of invertebrates. Sex-disaggregated trends were only possible for one round of data at the time of analysis. Approximately 59% of recorded collection in round 1 was by women. 33 trips recorded male invertebrate collection, most of which (~75%) was in Autukia (mostly bivalves).



**Figure 13:** Invertebrate catch composition by general animal 'classification' and community in data collection rounds 1 and 2 in Kiribati. This figure shows the frequency of harvest by broad category and is not an indication of quantities or weights of harvest. 'Bivalves' are commonly clams and 'Gastropods' are commonly *Strombus* spp. Figure excludes unidentifiable animals (1 instance in Ribono) and 'Other' species (2 instances in Ribono).

#### Catches by habitat

Lagoon and lagoon-side reef habitats are heavily fished by estimated weight relative to other habitats in all monitored communities (76% of total catch by weight) (Table 10). This is unsurprising given the abundance of lagoon habitat relative to other types of habitat in monitored communities. Only Autukia reported fishing in mangroves and milkfish ponds and only Kuuma reported any FAD catch, although Autukia did record 'local FAD' as a fishing method for catching Giant trevally *Caranx ignobilis* (Table 11). FAD caught species in Kuuma were Yellowfin tuna *T. albacares*, Skipjack tuna *Katsuwonus pelamis*, and Wahoo *A. solandri.* 

Table 10: Estimated weight of sampled finfish catch, in kilograms, by habitat in all<br/>communities across 3 rounds in Kiribati. 'Other' habitat includes rocks and on land.<br/>Table excludes catch where habitat was left blank on the survey (mostly Kuuma,<br/>some Ribono and Tabonibara).

Habitat Community	Lagoon	Mangro ves	Milkfis h pond	Ocea n (FAD)	Ocean (no FAD)	Other	Reef edg e	Reef flat (unkn)	Reef flat (lagoo	Reef flat (ocean	Total est. kg
Autukio	641	7	2				2		n)	)	667
Autukia	041	1	2				2			15	007
Kuuma	888			134	114		11	93	692	152	2271
Ribono	916				78	15	7		366	169	1638
Tabonibara	479						40		275	33	833
Tanimaiaki	371				189	0	39		398	170	1167
Total est.	3295	7	2	134	381	15	99	93	1731	540	6575
kg per											
habitat											

Lagoon and both lagoon and oceanside reef flats are the most frequently fished habitat by number of fishing events. Open ocean fishing is the fourth most frequently fished habitat overall, but this fishing is only occurring in 3 out of 5 monitored communities. The FAD in Kuuma is the least frequently fished habitat overall (19 times), followed by mangroves (21 times). Invertebrate harvests come from a mix of lagoon, reef flat, and mangrove habitats, with lagoon (50%) and mangroves (23%) being the most frequently reported harvest habitat.

Table 10 and supporting information contribute to a baseline understanding of how different habitats are collectively being used for fishing in monitored communities. They also suggest that *management plans that include lagoon, lagoon reef, and mangrove habitat are well placed* to tackle community level fishing pressure challenges, even as habitat use shifts slightly throughout the year. They also show that when nearshore FADs are well-placed and operational they can be used to diversify finfish harvesting options available to community members with boat access, e.g., for high economic value pelagic species in Kuuma.

#### Catches by gear

As in Vanuatu, *I-Kiribati finfish fishers are using a wide variety of fishing methods*, including a number of 'traditional' techniques like *te werewere*, eel traps, and *te taotao*, which are included as "Other" in Table 11. The most frequently used fishing method overall by far was gillnetting, followed by casting nets and mid-water and bottom handlining. All monitored communities were relatively frequent users of these methods, with the exception of Tabonibara, which reported infrequent cast netting. Most communities were frequent users of multiple gear types, except Autukia where over 90% of harvests were by gillnetting. Ribono reported the most "Other" gear types relative to the other monitored communities, as well as a small amount of 'local FAD' fishing. However, as with the Vanuatu dataset, inconsistent recording of fishing methods by different data collectors means that some caution must be used in comparing frequencies of similar gear types. Invertebrates were primarily harvested using hand collection (98%), with the remainder using spearfishing (Ribono only), rods (Octopus in Tanimaiaki) or unspecified.

Community	Autukia	Kuuma	Ribono	Tabonibara	Tanimaiaki	Total Count
Fishing Method						
Casting nets		2902	345	8	4971	8226
Drop-stone fishing					92	92
Gillnetting	1714	2061	5904	1445	2874	13998
Hand collecting	34				109	143
Handlining		7		14		21
Handlining (bottom)		2225	406	344	1187	4162
Handlining (mid-water)	5	809	1	137	298	1250
Local FAD	1					1
Other	3	22	375			400
Rod and reel		11			5	16
Scoop netting	72					72
Spear (day)	13	187	559	112	39	910
Spear (night)		186	76	429		691
Trolling			16	12		28

**Table 11**: Frequency of finfish fishing methods used by community in Kiribati. 'Other'includes a range of traditional techniques. Excludes unspecified methods. Boxedyellow cells represent most frequently reported method used for that communityand boxed blue most frequent overall.

In terms of management implications, it is clear that any management rules that involve gillnetting are likely to have a notable effect on catches in all 5 monitored communities.

# Effort trends

The same basic measures of fishing effort such as reported transport type, travel and trip times, active fishing times, frequency of harvest success and days fished outside the sampling dates provide were collected in Kiribati as they were in Vanuatu. As with the Vanuatu data summary above, measures presented in this section are inclusive of both finfish and invertebrates unless otherwise specified and CPUE is not calculated at this time.

# The most used form of transport from 745 sampled trips (i.e., inclusive of both finfish and invertebrates) and all monitored communities was 'no boat' (65% total), i.e., fishing

on foot (Table 12). This again highlights the importance of having a community-level fisheries monitoring design that is not overly vessel-centric. Paddle and wind-powered vessels were about as common as motorised vessels.

trip and sum of total trips by community in Kiribati.						
Incl	usive of inv	ertebrate	harvesting	<b>g</b> .		
Fishing transport type						
Community	No Boat	Motor	Paddle	Sail	Total trips	
Autukia	131	0	1	4	136	
Kuuma	70	42	31	13	156	
Ribono	114	21	25	38	198	
Tabonibara	74	7	25	23	129	
Tanimaiaki	90	18	16	2	126	
Total types	479	88	98	80	745	

 Table 12: Count of fishing transport type used per fishing

#### Trip hours and travel time to main fishing ground

Fishing/collecting trip times are defined here as the time spent between the day and time the fisher/ collector leaves to go fishing and the day and time they come back, inclusive of nonfishing travel and active fishing time. Multiple fishing methods may be used in a single fishing trip, e.g., gillnetting and hand collecting, but multi-method trips are less common in Kiribati than in Vanuatu.

Bearing in mind that the total sample of I-Kiribati men from the catch survey (n=472) is almost five times the size of the total sample of women (n=96), overall, men spent substantially more total trip hours fishing than women did in all monitored communities (Table 13). In looking at sex-disaggregated trends in average trip hours, women have longer average trip hours than men in Autukia, but men have much longer average trip hours than women in all other monitored communities, particularly Tabonibara. There were a couple of multi-day trips recorded for men in each community over the entire sampling period.

Table 13: Sum of total fishing\* trip hours and average trip hours in Kiribati, by fisher sex, number of fishers\*, and community. Fisher data includes likely name duplicates. Total fishers (#) Trip hours sum Average trip hours

			(hrs:min)	o oum		(hrs:mi	n)	
Community	F	М	F	М	Total trip hrs	F	М	Avg total hrs
Autukia	35	50	147:27	178:26	325:53	2:46	2:08	2:23
Kuuma	18	114	35:23	636:20	671:43	1:57	4:36	4:17
Ribono	4	143	10:20	818:19	828:39	2:35	4:13	4:11
Tabonibara	25	67	80:39	780:46	861:25	2:36	7:53	6:37
Tanimaiaki	14	98	34:22	414:43	449:05	2:27	3:42	3:33
* inclusive of in	vertehr	ate collecting	•					

Overall, fishers and collectors reported that travel time to their main fishing ground took a maximum of 10 hours and a minimum of zero time. There were also singular instances of travel times of 15 and 20 hours recorded but based on the associated fishing activities it is not clear if these were data entry errors. The average travel time to main fishing grounds was just over 45 minutes, with the most commonly reported travel time being 30 minutes. This suggests that fishers/collectors are not spending excessive amounts of time traveling to their main fishing ground; however, it also suggests that the average person is not fishing directly off the village beach. The breakdown of transport types used (Table 12) suggests that traveling for 30 to 45 min on foot to a main fishing ground may represent a significant effort on the part of the fisher.

#### Active fishing time and harvest success

Active fishing time excludes time spent traveling to, from, or between fishing sites. Ribono had the most active fishing hours (including collecting) overall across all three sampling periods, especially the male fishers (Table 14). More than half of this time was spent gillnetting.

Table 14: Total active fishing time (hrs),

by sex and community in

Kiribati.

Community	F	М	Total
Autukia	86.0	168.2	254.4
Kuuma	37.9	452.8	490.7
Ribono	8.7	544.3	553.1
Tabonibara	76.4	347.8	424.2
Tanimaiaki	37.1	340.0	377.1

Bearing in mind the gender disparity in sampling, *in all communities, male fishers spent much more time actively fishing than females*. Most active fishing time was spent using the first reported fishing method in a multi-method fishing trip. Multi-method trips were not common overall – there were only 15 instances of 2 methods trips in 745 trips.

In terms of active time spent fishing for invertebrates in round 1 only, the *minimum active time spent invertebrate fishing was 2 minutes and up to a maximum of 4 hours*. Average active fishing time, almost exclusively using the hand collection method, was just over 1.5 hours. Tabonibara had an average active invertebrate collecting time of 3 hours in the first round, which was more than double the average active time in three out of the other four monitored communities. Average active invertebrate fishing time for men overall was just over 1 hour 40 minutes across 29 trips with recorded active fishing times. Average active invertebrate fishing times for men overall was just over 1 hour 40 minutes across 48 trips was around 1.5 hrs.

In terms of recorded fishing (including collecting) success, women in all 5 monitored communities were 100% successful at either fishing or collecting using their first reported fishing method while men were upwards of 88% successful. A second method only appears to have been recorded on the survey if it was successful.

#### Days fished outside sampling period

A few survey questions asked about fisher activities one week before the sampling period. This was done in order to capture a broader sense of fishing pressure in a given community and generally how much time in a week that men and women are spending on fishing in the sampled communities. Sampled fisher responses suggest that *men are exclusively the ones finfish fishing full time (4-7 days)*. Unlike in Vanuatu, *some I-Kiribati are finfish fishing 7 days a week in 4 out of 5 communities*. However, full time fishers are in the slight minority: over 51% of men fished for finfish less than 3 days a week or not at all in the week prior to the sampling period and nearly all surveyed women fished for finfish only once or not at all (2 women reported fishing two days a week). While it is difficult to determine without comparing days fished *within* the sampling period, the relatively high proportion of zero fishing days reported in some communities in the week before sampling, e.g., Autukia and Ribono, could suggest that higher than 'normal' fishing pressure occurred during the sampling period.

With the caveat that the number of women responding to the '# days collecting' question was less than 10 people in all communities except Autukia (n=22), *Women were proportionately the most frequent collectors of invertebrates* in the week prior to catch monitoring sampling. As well, *invertebrate collecting appears to be mostly a part time occupation*, i.e., one or two days per week. Women were mostly the ones collecting more than three times a week. *There is also evidence that some people (both men and women) are dedicated invertebrate fishers who collect 6 or 7 days a week*. Women in

Autukia reported invertebrate collecting more compared to other communities – all 22 responding women collected at least once and up to 7 days a week.

#### Community perceptions of change

As in Vanuatu, fisher perspectives on CBFM's role in coastal fisheries resource change have implications for continued engagement with local CBFM activities. The following sections present and discuss responses to perception questions included in the fishing context survey.

#### Perceptions of change in size and number caught (finfish and invertebrates)

Sex-disaggregated fisher perceptions of changes in size and total number of finfish caught were collected across three rounds of data collection and all five sampled sites. Data show that *all monitored communities differ in their perceptions of change since either the last survey or in the last 12 months, and there is considerable variation within communities.* This is expected given the relatively short time scales for detecting potential biological change and changes in seasonal availability of species. It also highlights that fisher perspectives are variable within communities.

The majority of surveyed fishers in Autukia perceived finfish numbers to be more and fish to be larger than since the last survey. Surveyed fishers in other monitored communities gave mixed responses about fish sizes and numbers both across and within data collection rounds, with many perceiving no change in either fish size or number or a split between perceiving fish as being either larger or smaller or more or less.

Surveyed fishers were relatively mixed or perhaps only slightly more positive about perceived changes in invertebrate size and number between data collection rounds. The exception to this was in Tabonibara, where women (n=13) perceived catching fewer invertebrates in rounds 1 and 2 and were split between more or less in round 3, and Ribono, where men (n=67) mostly thought invertebrate catch numbers and sizes were the same. As in Vanuatu, relating these results to management decision-making highlights the importance of continuing to engage with a diversity of fishers within communities, including men and women of different ages, in order to be inclusive of different perspectives on the state of shared resources.

#### Perceptions of change to fishing and collecting since CBFM implementation

**Overall, surveyed fishers were largely of the view that both fishing and collecting activities in their communities had improved since the implementation of CBFM measures (>58% in 4 of 5 communities)** (Figure 14 and 15). There were no obvious trends in perceived change within communities between data collection rounds. While surveyed fishers in some communities like Autukia consistently reported perceiving improvements to both fishing and collecting resources (~78% said 'improved' for both), respondents in Ribono (which were >90% male) were more cautious in their optimism; 40% and 33% reported an improvement to fishing and collecting respectively, while the remaining responses were mostly split between 'same' or 'I don't know'. Given that Ribono only passed their management plan in 2020, this caution may be expected. A small number of fishers reported that fishing and/or collecting had gotten worse since CBFM implementation in all monitored communities, a reminder that fishing rules affect people differently within communities and **that CBFM is not universally perceived as a positive change**. Efforts to be aware of, understand and respond to negative perspectives must be ongoing. It is also a reminder that biological change takes time and seeing evidence of this change is not always easy.





**Figure 14**: Perceived changes to **fishing** since CBFM implementation. Total number of survey responses: Autukia (n=61), Kuuma (n=109), Ribono (n=96), Tabonibara (n=56), Tanimaiaki (n=75).

**Figure 15**: Perceived changes to **collecting** since CBFM implementation. Total number of survey responses: Autukia (n=71), Kuuma (n=79), Ribono (n=75), Tabonibara (n=38), Tanimaiaki (n=34).

#### Perceptions of rule compliance

Three out of five monitored communities consistently reported that people are generally following all or most fishing restrictions (Figure 16). Surveyed female fishers in Ribono (n=9) consistently reported that people were fully compliant across all 3 three rounds of data collection. Perceptions of compliance varied slightly between genders in Tabonibara, with female fishers (n=13) perceiving proportionately higher compliance overall than men (n=44). Overall compliance in Tanimaiaki varied between rounds but appeared to be improving in each subsequent round. This improvement trend could be an indication of improved awareness of rules over time due to repeated community engagement activities around catch sampling. The existence of a small number of '1' or '2' (i.e., poor) compliance scores in all communities except Autukia suggests that rule compliance is an ongoing, but minor, issue and that most surveyed people are aware of and engaging with community management plans.



Figure 16: Responses to the question: Are people following restrictions? In Kiribati monitored communities. 1= no restrictions followed, 5=all restrictions followed.

#### Key reflections

Overall, high species diversity is apparent in sampled catches in all of Kiribati's monitored communities. However, finfish diversity is less than Vanuatu's relative to Kiribati's total estimated catch weight, which was roughly double that of Vanuatu's. While monitored Kiribati communities share Vanuatu communities' preference for catching reef-associated finfish using a diversity of methods, small pelagic finfish species were a significant component of catches by number. Based on the data analysed so far, invertebrate fisheries, predominantly for bivalves like clams, appear to be significant in their frequency in some communities relative to finfish fishing, particularly in Autukia, but also in Tanimaiaki and Tabonibara. There is also evidence that a small number of people (both men and women) are dedicated fulltime invertebrate fishers. Management plans that include lagoon, lagoon-side reef, and mangrove habitat are well placed to tackle community level fishing pressure challenges, even as habitat use shifts slightly throughout the year. While gear-specific strategies that focus on cast and gillnets may have some effectiveness in managing what is caught in monitored communities, as in Vanuatu, I-Kiribati fishers' ability to substitute gears and switch fishing habitats suggests that some caution should be exercised in relying too heavily on gear-based management strategies alone. Data also suggest that when nearshore FADs are well-placed and operational they can be used to diversify finfish harvesting options available to community members with boat access, e.g., in Kuuma. Diversifying harvesting options may be important for monitored communities, as analysis indicates that overfishing (recruit

and/or growth) is likely happening for all top 5 caught finfish species. However, any diversification initiatives need to take into account the significant amount of 'boatless' and non-motorised fishing that is taking place, as well as people's travel times for fishing and collecting.

Overall, surveyed fishers were largely of the view that both fishing and collecting activities in their communities had improved since the implementation of CBFM measures (>58% in 4 of 5 communities). Relative CBFM newcomer Ribono was slightly more cautious in their optimism. Rates of compliance with fishing rules appear generally good and consistent or improving through time thus far in all monitored communities.

# 11.1.4 LESSONS LEARNED AND RECOMMENDATIONS

The following is a non-exhaustive summary of some key lessons learned and recommendations for future action that have emerged from the catch monitoring design or implementation process, from data collection activities, or from data analysis in either or both of Kiribati and Vanuatu.

# Sampling

#### Accounting for gender and age dimensions of data collection

After noticing that female fisher engagement numbers were low in round 1 data collection, the in-country team reflected on the possible reasons for this outcome. They subsequently recruited female data collectors and worked with communities to better understand female-specific fishing patterns, for example how fishing/collecting interacts with other livelihood activities like yam farming and gardening. This led to a notable increase in the number of female fishers surveyed in round 2 and 3 data collection in all communities except Hog Harbour. Recruitment of female survey respondents also appears to be an issue in most monitored communities in Kiribati. There have been female data collectors since the first round of data collection in Kiribati, so in-country team continues to investigate other reasons for these low recruitment numbers and to find solutions.

In Vanuatu, analysis of data also revealed a number of youth and children present in the dataset in some communities, particularly for sea cucumber fisheries. When this was discovered, the in-country teams were asked to remind data collectors of the project rules against collecting data from children for ethical and safety reasons. However, it also triggered discussions about options to appropriately engage young fishers in monitoring and management, since they are evidently part of the community fisheries profile in Vanuatu. These discussions are ongoing. Kiribati also had around two dozen children present in the dataset over three rounds of data collection, particularly in Autukia. Similar discussions will need to happen with in-country teams.

#### The importance of engaging key community members

In Vanuatu, designing catch monitoring sampling strategies without a strong baseline understanding of within-community fisheries characteristics has resulted in an adaptive, 'learning-by-doing' catch monitoring approach for the project team and community members alike. Two key lessons that have emerged from data collection experiences is the critical importance of: i) early identification of, and active engagement with, influential members of the community and ii) an active and engaged CBFM committee and Authorised Officer.

#### Avoiding non-random sampling bias

In both Kiribati and Vanuatu, a number of fishers and collectors were repeatedly targeted for resampling. Repeat sampling of the same person in general is normal, to be expected and, to some extent, desirable. When sample sizes are large relative to the population of fishers or whole village population, this can indicate that sampling coverage is representative. However, when sample sizes are relatively small, as they were in Vanuatu in particular, this

could be an indication of particularly strong convenience sampling, which could mean that data provide a less representative overall fishing activity profile for a community. In Kiribati, the frequency of multiple spellings of what appeared to be the same person's name meant that it was more difficult to detect whether sampling bias was likely taking place.

#### Avoiding perverse incentives to increase fishing pressure

Reponses to the fishing context survey questions about fishing and collecting outside the sampling timeframe combined with anecdotes from data collectors and in-country staff suggest that catch monitoring activities in communities may have resulted in pulse fishing in some communities in both Kiribati and Vanuatu. The rationale given was that community members wanted to get good fishing data, so they fished harder during the 10-14 day catch monitoring period. Market-based fishing pressure would have been less of a factor than usual as well because a number of sampling rounds happened during COIVD. While this level of enthusiasm to engage in catch monitoring activities can be considered a positive, the additional unintentional pressure placed on a community's' fisheries resources, and the associated skew in understanding about community fishing pressure, is undesirable. Future monitoring activity engagement with communities would benefit from discussions about why fishing 'normally' is preferable.

#### **Recommendations**

Developing community-specific strategies to improve sampling coverage in both Kiribati and Vanuatu that engage more women and key members of monitored communities would improve the representativeness of future catch monitoring data and its ability to support informed community fisheries management decision-making. Other factors to consider about improving sampling coverage are how to better account for late night and early morning fishing, landings across multiple sites, and multiple fishers coming ashore at the same time. Future monitoring activity planning would benefit from a review of sampling strategies and community engagement in the field to improve sampling coverage and lessen sampling bias and pulse fishing.

Data collection teams need to consider and discuss the trade-offs between having more representative sampling of community fishing and the ethics of surveying children who may not be aware of what they are consenting to participate in, particularly if they are unaccompanied by an adult.

# Analysis of results

#### The critical reliance on photo quality

One issue that became more apparent during analysis was the risk involved in relying on photos for key catch data parameters and the importance of having well trained and engaged data collectors and data entry people. While the vast majority of over one thousand catch photos were taken in such a way that animals could be clearly measured and identified to species, there were clusters of photos that were not of sufficient quality to identify and/or determine lengths to estimate weights. Both teams have regular refresher training for data collectors and this is clearly an important factor for successful catch monitoring approaches that rely on taking photos to collect data.

#### Evidence of need for more precautionary management of key finfish

Length at maturity analysis of most caught species in both Kiribati and Vanuatu suggest that recruitment and or growth overfishing is likely in many monitored communities. This in turn suggests that there is a need for more precautionary management of key species, while balancing the need to keep catching these species.

#### Relating fishing pressure to wider demand trends

The frequency and volume of fishing as well as the species targeted in Pescarus, combined with the community's proximity to markets for domestic sale suggest that there are external demand drivers that need to be better considered in this, and possibly other monitored communities', fisheries profiles.

The data do not currently suggest that markets are a strong influencer of fishing pressure in monitored communities in Kiribati. However, information collected in survey comments suggests that social and cultural events within and between villages can influence demand for certain species, particularly invertebrates.

#### **Recommendations**

Consider adding a small market survey in Vanuatu data collection activities or integrating market data from other fisheries data collection initiatives, e.g., TAILS or Census.

VUT- Out of an abundance of caution, it may be prudent for some communities, with the assistance of VFD, to:

- More closely monitor catches of wrasse and emperor species;
- Seek out more information about these species' life histories; and,
- Consider adopting precautionary size and/or effort limits in the future if this additional information suggests that management action is appropriate.

In Vanuatu, the issue of catching endangered species is likely easily resolved with targeted, non-punitive, awareness raising activities in communities about what marine species need special protection, why they are important to protect, and how community members can help in their protection. Maintaining positive community engagement is critical.

In Kiribati, all analysed most caught fish appeared to be undersized either in terms of reproductive capacity or potential marketable value. It is likely not practical to stop fishing these species entirely, but it may be worth considering practical strategies to reduce fishing pressure on these species, e.g., gear limits, increased use of nearshore FADs (bearing in mind there is limited motorised fishing in monitored communities).

# 11.1.5 CONCLUSION

The data included in this report, and the results of their analyses, illustrate how diverse the community-level coastal fisheries of Vanuatu and Kiribati are on multiple levels. This diversity extends beyond the number of finfish and invertebrate species caught into the many ways fishers are catching these species in multiple habitats throughout the year. Surveyed fishers (including invertebrate collectors) are also diverse, both within and between monitored communities. Sampled fishers consisted of highly versatile men, women and youth, who used different fishing strategies in different locations throughout the year. The amount of time communities, particularly between the sexes, indicating that fishing has different levels of importance and priority for different communities and community members. Fisher perspectives on observed biological and behavioural changes (if any) since the beginning of survey sampling in 2019 vary widely.

This diversity collectively suggests that few of the fishing activities conducted within the 10 monitored communities could be considered clearly defined 'fisheries' in the conventional sense of the term (hand-caught sea cucumber fisheries being one exception). Within planned fishing trips, fishing can often be opportunistic, with multiple species being targeted using multiple gears in different habitats. Combinations of finfish, invertebrates, and marine plants can be harvested during one trip. Given the challenge of managing this level of diversity, we suggest that the combination of spatial, temporal, and effort based measures found in community management plans is likely to continue to be the most effective approach for sustainably managing community-level coastal fisheries in both Vanuatu and Kiribati.

When it comes to evidencing improvements (or effects more broadly) in community fisheries and their management, collected data provide important baselines for comparing change going forward. There is also evidence of increasing community-level engagement in catch monitoring activities and CBFM rules compliance in most communities.

Catch monitoring data collection also generated valuable improvements to our understanding of how community-level catch monitoring may be practically undertaken and scaled out. Key learnings include: the practicalities of travel to and from remote communities; the need to balance flexibility with consistency of approach in data collection; the importance of having both male and female data collectors; the importance of identifying and continuously engaging key members of the fishing community; the value of repeated data collector training; the value of two-way feedback with both data collectors and the community; and, the practical effects of numerous community landing sites and small data collection teams on data representativeness.

# 11.1.6 REFERENCES

- Andrew,N., Campbell,B., Delisle, A., Li, O., Neihapi, P., Nikiari, Beia., Sami, A. Steenbergen, D., Uriam, T. 2020. Developing participatory monitoring of community fisheries in Kiribati and Vanuatu. SPC Fisheries Newsletter 162: 32-38.
- Nikiari,B., Uriam,T., Li, O., Tioti, R., Delisle, A., Vanguna, T., Tearawabwebwe, L., Karekennatu, I., Kamaie, T., Buren, M., Kinonoua, R., Teitiaki, K. 2020. Piloting a community-driven catch monitoring approach in Kiribati. SPC Fisheries Newsletter 163: 34-39.
- Pathways Project. 2021. Pathways Vanuatu-ANCORS Catch monitoring evaluation workshop summary. 9 Nov, 2021, co-located virtual workshop between Australia and Vanuatu. <u>PDF</u>
- Pathways Project Vanuatu. 2021. National CBFM data monitoring round 1 and 2. Presented at VFD, Port Villa, 24 Feb 2021, by Pathways Vanuatu team. <u>PDF</u>
- Pathways Project Vanuatu. 2020. Ikaukau CBFM round 3 data feedback presentation. Presented in Ikaukau, Aniwa, 11 Nov, 2020, by Pathways Vanuatu team, with support from VFD. <u>PDF</u>
- Sami, A., Neihapi, P., Koran, D., Malverus, V., Ephraim, R., Sokach, A., Joy, J., Li, O., Steenbergen, D. 2020. A novel participatory catch monitoring approach: The Vanuatu experience SPC Fisheries Newsletter 162: 39-45.
- UOW (2021a). Catch Monitoring Manual for CBFM in the Pacific Region. Module A: Technical Manual for Catch Monitors. Australian National Centre for Ocean Resources and Security, University of Wollongong, Australia. URL: <u>purl.org/spc/digilib/doc/chkpw</u>
- UOW (2021b). Catch Monitoring Manual for CBFM in the Pacific Region. Module B: Training Workshop Manual. Australian National Centre for Ocean Resources and Security, University of Wollongong, Australia. URL: <u>purl.org/spc/digilib/doc/4pfz6</u>

# 11.2 Appendix 2: Pacific Panel study – Summary of baseline survey results

#### 11.2.1 Background

We use a quantitative panel study with community members in Solomon Islands, Vanuatu, and Kiribati. Our goal is to follow a small number of men and women through time to build

knowledge around change in people's lives, particularly relating to CBFM and livelihoods. The main component of the panel study is a face-to-face interview survey instrument. The core purpose with this survey is to monitor a set of key metrics using a relatively short questionnaire. However, the survey also lends itself to more descriptive analyses and provide socio-economic explanatory variables to other studies in these communities. The survey is gender differentiated to encompass equal number of men (n=10) and women (n=10) in each community. This is how we generate insights around gendered access to, and benefits from, natural resources. With the panel study we seek to gain a little insight about many things that are related to outcomes that we seek in our project. In earlier iterations of tentative analyses, we have compiled these data to make basic infographic-style figures that have aided planning and discussions with partners about life in the village and change (Figure 1).



**Figure 1**. First iteration exploration from the piloting of the panel study during PacFish (FIS/2012/074) when the method was first developed.

# 11.2.2 Methods

The survey incorporates individual-level metrics from already existing instruments that are suitable for monitoring purposes. For example, the questionnaire is built on many of SPC's socioeconomic survey questions (Kronen et al. 2008), as this will extend the relevance of these data for historical and geographical comparison. The survey has been created using software KoBo toolbox and data is collected through the Open Data Kit (ODK) Collect app on tablets. Seeking in-depth answers to aid explanatory power takes time and effort, so questions have been sought that can act as rapid indicator metrics. Questions therefore frequently rely on simple likert scale responses using smiley faces:



A database has been constructed to archive panel study data. This section reports on the baseline panel study data collected during 2016-2018. Follow up data has been collected in Solomon Islands during 2020-2021. We will continue to build on these data to generate a longitudinal dataset that helps interpret changes in communities.

# 11.2.3 General information

There was a total of 553 survey respondents, comprising 51% from Solomon Islands, 33% from Vanuatu, and 15% from Kiribati (Table 1). As the survey was designed with the purpose of creating a dataset with equal sample sizes of men and women, genders of respondents were relatively balanced. Average ( $\pm$ SE) age of respondents was 37.1 ( $\pm$ 12) for women and 39.4 ( $\pm$ 12.5) for men.

Table 1. Number of survey respondents per	country according to gender. Average age (±SE)
of respondents is detailed.	

Country	Total of respondents	Female	Age average (±SE)	Male	Age average (±SE)
Solomon Islands	285	144	39 (±13)	141	42 (±13.8)
Vanuatu	183	85	34.9 (±10.3)	98	37.4 (±10.6)
Kiribati	85	42	35 (±10.3)	43	35.2 (±9.8)
Grand Total	553	271	<b>37.1</b> (±12)	282	<b>39.4</b> (±12.5)

# 11.2.4 Improved natural resource management

Questions in this section capture local management processes and how they are perceived to function. When asked if the community has any form of local fishery management (Q19), 98% of respondents from Kiribati and 94% from Vanuatu, confirmed the existence of local restrictions, whereas only 34% did in Solomon Islands. Restrictions in place mentioned by respondents were related to fishing gears (dynamite, gillnets), species (mud crabs, giant clams, sharks), species size, spawning season, and seasonal closures for cultural celebrations. Types of management schemes mentioned include community-based management, marine protected areas, and taboo closures (the latter being more prominent in Vanuatu).

To further explore the varying perceptions regarding Community Based Fisheries Management (CBFM), follow up questions for those respondents who confirmed the presence of local fishing restrictions (N=96 for Solomon Islands; N=169 for Vanuatu; N=83 for Kiribati) used a scale of "smiley faces" as options for multiple choice answers. These included: agreeability with restrictions (Q20), degree of restrictions compliance (Q21), existence of conflicts over restrictions (Q22), and influence of fishing restrictions over fish abundance (Q23) and catch (Q24).

Responses across the three countries showed that generally most participants (> 90% of men and women) approve of fishing restrictions, with all women in Kiribati strongly and unanimously approving them. Conversely, attitudes were more divisive when participants were asked about other people's rule compliance (Figure 2). Around three quarters of male respondents believed others followed fishing restrictions across all countries, whereas only half of women in Solomon Islands and Vanuatu did. Interestingly, women in Kiribati had very positive perceptions (93%) concerning others' compliance. When asked if there were any conflicts over fishing restrictions, the majority of participants in Kiribati (>78%) considered conflicts were non-existent or less prevalent, followed by Vanuatu (70%) and Solomon Islands (55%). In the latter, around a quarter of men and women were neutral regarding

conflicts, mentioning that small disagreements can arise but there were no major consequences. Conflicts mentioned involved disagreements over access to fishing grounds and lack of penalties for those that violated rules.

Regarding the influence of fishing restrictions on fish abundance and catches, more than three quarters of respondents perceived a positive change on fish populations and harvest following restrictions. They mentioned fish abundance and size had increased in areas with restricted fishing, while some stated catches were higher despite less time spent fishing. However, around 20% of women in Solomon Islands considered the change was negative for both variables. Some of these women commented that fish abundance had decreased and that catches were lower because of people breaking fishing rules.





Participants also gave their overall perception regarding fair access rights to fishing (Q25), with the majority reacting positively across all countries. Men, however, were slightly more inclined to confirm fair access (96%) than women (91%). To establish if respondents participate in committees or other meetings on fishery management, they were asked if they attended decision making meetings such as village council meetings (Q26). Across the three countries, participation was higher for males than females. The country with most attendance was Vanuatu (male: 84%, female: 73%) followed by Kiribati (male: 84%, female: 57%), and Solomon Islands (male: 60%, female: 56%). Among the reasons behind women's lack of attendance were unawareness of the meetings, having to stay home, and men in their household already attending (husbands or fathers).

Regarding broader perceptions around governance and the respondent's feeling about their participation in governance, respondents were asked how they felt they could influence fishing management (Q27), how they could influence other community related decisions (Q28), and if they trusted community leaders (Q29).

Across all countries, around half of male respondents strongly believed they could influence fisheries management decisions, whereas only a quarter of women did. More importantly, 23% of women felt they had no possibility to do so compared to 7.5% of men (Figure 3). The pattern intensified in Kiribati, where this proportion increased to almost half of the women. These women mentioned they felt like passive listeners in the decision making processes, who could voice their ideas only through their husbands or older male relatives. Following this pattern, more than half of male respondents agreed they could influence other community decisions, whereas less than a quarter of women did. Interestingly, 50% of both men and female participants in Kiribati felt that they could not influence other community decisions, with one participant believing they would be ousted of the village if they tried. On the other hand, most male and female participants trusted their community leaders across all countries, with 75% feeling satisfied with them.



**Figure 3**. Perceptions of male and female respondents regarding their influence in fisheries management in three Pacific Island countries. Numbers inside bars are percentages for each category.

#### 11.2.5 More resilient livelihoods

This section explored patterns regarding social networks and ownership/influence over productive assets. Participants were asked if they were members of an association, social group or community organisation (Q30). Vanuatu and Kiribati showed the highest engagement, with around 85% of respondents mentioning they were active members of diverse community associations. This figure was 73% for Solomon Islands. The most popular groups were church related, but people also mentioned being part of cultural, sports and fisher groups.

The highest proportion of respondents with boat owners in their household (Q31) was found in the Solomon Islands with 61%, followed by Kiribati and Vanuatu with 55% and 35% respectively. In general, the proportion of male boat owners was marginally higher than women's (Q32), with Kiribati displaying the lowest proportion of ownership (<65%). Most of the participants owned a boat in Solomon Islands (98%) and in Vanuatu (80%), with sole ownership showing more prevalence than joint ownership in both countries. When asked if anyone in their household cultivated a garden (Q33), all respondents in Vanuatu and the majority (>89%) in Solomon Islands confirmed they had garden plots, whereas less than 63% did in Kiribati.

Participants were asked to rank the three most important sources of income and food from eight and seven categories respectively. The rank was converted into scores for interpretation purposes, and a mean score was calculated to identify the relative importance of each category (the score is directly proportional to the importance). In terms of sources of income (Q42), fishing and farming were the most important livelihoods across all countries (Figure 4). Trading seemed to be of particular relevance in Kiribati. In terms of differences between genders, men favoured fishing over women, who were in turn more involved in farming. Other sources of income mentioned by participants included gleaning for molluscs in mangrove areas, tourism, and baking.



**Figure 4**. Relative importance of different sources of income for males and females in three Pacific Island countries. Mean (+/- S.D.) score was calculated using ranks provided by respondents.

Regarding sources of food (Q43), fishing was the most important source in Kiribati for men and women, whereas farming was the main source for people in Solomon Islands and Vanuatu (Figure 5). Across the three countries, stores seemed more important than markets for people to purchase food from. Males ranked livestock and bartering as sources of food higher than women did. Participants also mentioned other important sources of food such as gleaning in mangroves, family donations, and buying fish directly form fishers.


**Figure 5**. Relative importance of different sources of food for males and females in three Pacific Island countries. Mean score was calculated using ranks provided by respondents. Error bars are constructed using 1 standard deviation from the mean.

Across the three countries most respondents confirmed they had their own income (Q44), with the highest proportion found in women from Kiribati (90%) and the lowest found in women from Solomon Islands (81%). Around three quarters of respondents from Kiribati and Solomon Islands were satisfied with their income (Q46), whereas in Vanuatu this figure was lower (65%). Women in Kiribati and Solomon Islands were the respondents with least income satisfaction, with 10% and 12% respectively stating they were very unhappy with their earnings (compared to 7% of men in Kiribati and 3% of men in Solomon Islands).

#### 11.2.6 Improved household diets

This section explored food security and fish consumption. Participants were asked to identify the sources of the fresh fish they consumed (Q65). Men and female participants across the three countries seemed to have a similar patterns of sourcing their fresh fish. Freshly caught fish was popular across the three countries, with 86% of respondents identifying it as their main source. On the other hand, bartering seemed to occur only sporadically in Solomon Islands with less than 5% respondents acquiring fish in this way, while in Vanuatu only one participant obtained fish through bartering (in Kiribati it was non-existent). Buying fish was somewhat common but not as much as catching it, since less than 27% of respondents from Solomon Islands and 42% from Kiribati and Vanuatu purchased their fish. Finally, there were no respondents that identified small scale aquaculture as a source of fresh fish in any of the countries of interest.

# 11.3 Appendix 3 – Summary of communication and dissemination activities and outputs

Below we list communication and dissemination activities and outputs from a range of mediums including blogs, print media, posters and radio (see also Section 8.4). Where appropriate an author is named, otherwise the outputs are listed under the name of the media outlet. Only significant meetings, workshops and symposia are included.

#### Significant meetings, workshops and symposia

**Capacity Development Training of MFMRD Extension Officers, Kiribati**. **Ten participants** were trained from **15 to 17 August 2018**, including 6 LDCF pilot islands' Fisheries Extension Assistants (2 from Nonouti, Abemama and Maiana), and 4 MFMRD trainees. The topics covered were basic biology of marine species and habitats, coral reef biology and threats, ocean processes, threats to marine species and habitats, fisheries management tools and CBFM principles and community engagement protocols and behaviours. [KIR-20180807-WR-FA Training]

*First meeting of the CBRM Taskforce, Kiribati – Oct 2018.* It involved **19 participants (2 from ANCORS** and **17 people from 8 Ministries and 1 NGO**). The objectives of the meeting were to introduce the purpose of the National Taskforce, seek representation from different Ministries, discuss issues and gaps faced by Ministries in their community work, and discuss expected outcomes from the National Taskforce. [KIR-20181002-WR-CBRM Taskforce]

**Pathways towards a 5-year CBFM Strategy in Kiribati.** This workshop was held on **8 and 9 November 2018** with members of Kiribati in-country CBFM team and a facilitator from ANCORS. The workshop focused on a visioning exercise based on a 5-year timeframe (beyond the Pathways project) for CBFM in Kiribati. The in-country team was asked to visualise what they would like CBFM to look like in Kiribati in 5 years time. A total of 8 themes and associated outcomes and key actions were identified and formed the basis for a 5-year CBFM strategy in Kiribati. [KIR-20181108-WR-CBFM ToC]

**FAD Monitoring Think Tank:** This workshop was held from **14 to 16 May 2019** included **11 participants (6 women and 5 men)** from FAO, MFMR Samoa, Conservation International, VFD, Fishers Association Vanuatu, MIMRA Marshall Islands, WorldFish, NFA PNG, SPC and one consultant from Solomon Islands. The purpose of this meeting was to develop guidelines for nearshore FAD monitoring in the Pacific region. [PRJ-20190514-WR-FAD Think Tank]

**CBRM Standard Operating Procedure (SOP) Workshop, Solomon Islands:** This workshop was hosted on **4 to 5 July 2018**, by the Solomon Islands Ministry of Fisheries and Marine Resources with support from the World Wide Fund for Nature in Solomon Islands to present the Standard Operating Procedures to partners that are involved in Community Based Resource Management. There were **29 participants (15 women and 14 men)** from MFMR, WorldFish, TNC, WWF, Auki Fish, GPFish, MECDM and JICA [SLB-20180704-WR-SOP]

**CBRM training of trainers for Solomon Islands National University (SINU) teachers:** On **27 to 28 September 2018**, the MFMR and the Ministry of Environment, Climate Change, Disaster Management and Meteorology (MECDM), for the first time hosted a 'CBRM Training of Trainers' for the SI National University 3rd year students enrolled in teaching in the field of science. This training was funded by ADB and facilitated by the 2 line Ministries MFMR & MECDM. A total of **40 students** (Primary & Secondary teachers) acquiring academic merit were invited. [SLB-20180927-WR-SINU CBRM]

*Pathways towards a National CBFM Program for Vanuatu:* This workshop, facilitated by Pathways project staff was held from **9 to 10 November 2017**. It gathered **16 participants** 

(11 men and 5 women) from VFD, SPC, PMU (MALFFB), WorldFish and VCAP. The objective of the workshop was to formulate a vision for coastal fisheries in Vanuatu in 2030 using a Theory of Change methodology. [VUT-20171109-WR-CFS ToC 01]

**Pathways project site selection and alignment with bilateral initiatives in Vanuatu:** This workshop was facilitated on **28 February 2018** by the VFD-Pathways' team and gathered **8 participants (6 men and 2 women)** including senior staff from VFD, a representative from Ministry of Environment and from ANCORS. The purpose of the workshop was to identify key priority sites for the project. [VUT-20180228-WR-site selection]

**Pathways towards a National CBFM Program for Vanuatu: Developing the Activity Matrix:** This workshop was facilitated from **14 to 15 May 2018** by VFD, ANCORS and SPC and gathered **13 participants (8 men and 5 women)** from VFD, ANCORS, SPC, VCAP, PMU (MALFFB), and JICA. The objective of the workshop was to refine the draft coastal fisheries in Vanuatu and develop an activities matrix that sets out an operational direction for the strategy.[VUT-20180517-WR-CFS02]

*Futuna Island Livelihood Diagnosis Workshop 2018, Vanuatu:* This workshop was organised by VFD in **September 2018** and gathered **24 participants (23 men and 1 woman)** from three communities of Futuna island (Matangi, Mission Bay and Herald bay). The objective was to define a livelihood activity suitable for Futuna island using the SLOPIC tool exercise. [VUT-20180907-WR-Futuna]

**Pathways towards a National CBFM Program for Vanuatu: Review and Stakeholder consultations:** This workshop was held over 2 days in **September 2018**. The first day involved an internal review of the draft strategy, which included staff from VFD only. The second day involved a larger group of stakeholders and bilateral coastal fisheries management programs to consult them on their potential roles in implementing the coastal fisheries strategy. There were **26 participants (16 men and 10 women)** from VFD, SPC, C2O Pacific, Van Kirap, Wan Smol Bag, IUCN (MACBIO), UOW and JICA. [VUT-20180926-WR-CFS 03]

*Livelihood feasibility assessment – Namasari community, Vanuatu:* This workshop was facilitated by 2 Pathways officers in **October 2018** and gathered **19 participants** from Namasari. [VUT-20181026-WR-Gaua livelihood diagnosis]

Aniwa Livelihood Diagnosis Workshop, Vanuatu: This workshop was held on 19 November 2018 by VFD team gathered fewer than 30 participants from Imatu, Isavai and Ikaukau with half the participants being women. The men group chose setting up a fish market as their livelihood activity and the women chose weaving of mats and baskets from pandanus leaves. [VUT-20181119-Aniwa livelihood diagnosis]

*FISH SMARD 2.0 "Strengthening a CBFM Community-of-Practice in the Pacific":* This was a two-day workshop in **May 2019**. The main objective of the FishSMARD meetings was to develop a support network or 'community of practice' amongst the Pathways project staff, particularly between the three in-country staff teams. There were **17 participants** including 7 women (3 Pathways staff from Kiribati, 4 from Solomon, 3 from Vanuatu; 5 VFD staff and 2 ANCORS staff). [VUT-20190515-WR-FishSMARD]

**Sara Good Governance workshop, Vanuatu:** This workshop was held on **5 July 2019**. It was facilitated by two local trainers with the help of Pathways staff and targeted Sara's Management Committee. **19 participants** from the community were trained on how to adopt good governance practices to operate the Sara Women's Cooperative which was being turned into a Fishing Cooperative. [VUT-20190705-WR-Sara Good Governance]

**Community-Based Fisheries Management Stakeholder Info-sharing Symposium:** The project facilitated this symposium which gathered **26 participants** to share their work within the coastal fisheries space, to learn from each other and to build networks and collaboration. [VUT-20191021-WR-National CBFM Symposium]

**Development of an implementation plan for phase-1 of the Vanuatu National Coastal Fisheries Roadmap 2019-2030**: This workshop was organised for VFD staff, to develop an implementation plan for phase 1 of the Vanuatu National Coastal Fisheries Roadmap 2019-2030. It was facilitated by ANCORS and SPC from **23 to 24 October 2019**. There were **16 participants** from Pathways, VFD, UOW and SPC including 5 women. [VUT-20191023-WR-CFR Implementation]

**CBFM Data Refresher training, Vanuatu:** This was held on **23 March 2020** and facilitated by Pathways VFD staff. This refresher training on how to complete survey forms targeted 5 VFD observers who then briefed enumerators in Takara, Kwamera and Peskarus communities. Results from round 1 of the data collection programme were also presented in preparation for round 2. [VUT-20200302-WR-Fish. mon. refresher training]

**CBFM facilitators training workshop, Auki, Solomon Islands**: WorldFish and partners organised this workshop in **July 2021** with a focus on "train the trainers". **39 participants** from communities around Malaita participated in the 4-day activity. These community facilitators have now gone home to their villages and are supporting the Provincial Fisheries Officers with information and awareness activities within their communities, as well as in adjacent areas. [SLB-20210727-WR-Auki CBRM training]

#### Posters, factsheets and guidelines

Over the course of the project, there were 30 information materials, including posters, facts and guidelines, all of which are listed below.

- Li, O., Eriksson, H., Bertram, I., Desurmont, A., & Blanc, M. (2018). Handling seafood in the Pacific Islands: Information sheets for fishers, vendors and consumers [Bislama]. P. Community. Noumea, New Caledonia Pacific Community. [PRJ-2019-IM-Li]
- Li, O., H. Eriksson, I. Bertram, A. Desurmont and M. Blanc (2018). Handling seafood in the Pacific Islands: Information sheets for fishers, vendors and consumers. P. Community. Noumea, New Caledonia Pacific Community. [PRJ-2018-IM-Li]
- MFMRD (2019b). Approaches to Te Mwaneaba: CBFM's breaking communication barrier in our community. [KIR-2019-IM-MFMRD 1]
- MFMRD (2019d). Marine Protected Area description guide. [KIR-2019-IM-MFMRD 2]

MFMRD (2019e). Stories of change. [KIR-2019-IM-MFMRD 3]

- MFMRD (2019f). Te Aua [The mullet]. [KIR-2019-IM-MFMRD 4]
- MFMRD (2019g). Te Bun [The Ark shell]. [KIR-2019-IM-MFMRD 5]
- MFMRD (2019h). Te Nouo [The Trochus]. [KIR-2019-IM-MFMRD 6]
- MFMRD (2019i). Te Waro [The Mantis shrimp]. [KIR-2019-IM-MFMRD 7]
- VFD (2021a) Aniwa Manejemen Plan. Pull-up banner (Bislama). [VUT-2021-IM-VFD 1]
- VFD (2021b) Kwamera Manejmen Eria. Pull-up banner (Bislama). [VUT-2021-IM-VFD 2]
- VFD (2021c) Nasonal Komiuniti-Bes Fisaris Manejmen Prokram. Pull-up banner (Bislama). [VUT-2021-IM-VFD 3]
- VFD (2021d) Tul Blong Mesarem Aotkam Blong Komuniti-Bes Fisaris Manajmen. Pull-up banner (Bislama). **[VUT-2021-IM-VFD 4]**
- VFD (2021e) Solar Freezers Fis Maket Hemi Stap Mekem Fis Hemi Mo Avelebol Long Komuniti. Pull-up banner (Bislama). **[VUT-2021-IM-VFD 5]**
- VFD (2018a). Pathways Project: "Strengthening and scaling community-based approaches for coastal fisheries management in Vanuatu". Brochure. **[VUT-2019-IM-VFD 1]**
- VFD (2018b). VFD: Fisheries project information booklet. [VUT-2019-IM-VFD 2]
- Wan Smolbag (2019a). Coconut crab management and lifecycle (comic). Port Vila, Vanuatu, Wan SmolBag. **[VUT-2019-IM-Wan SmolBag]**
- Wan SmolBag (2019c). Sea cucumber management and life cycle (comic). Port Vila, Vanuatu, Wan SmolBag. [VUT-2019-IM-Wan SmolBag 3]
- Wan SmolBag (2019d). Bluefish management and lifecycle (comic). Port Vila, Vanuatu, Wan

#### SmolBag. [VUT-2019-IM-Wan SmolBag 4]

- WorldFish (2020a) Community Based Resource Management (CBRM) In Malaita Province. Fact Sheet. 2pp. [SLB-2020-IM-WorldFish]
- WorldFish (2020b) What WorldFish does in Malaita Province. Fact Sheet. 2pp. [SLB-2020-IM-WorldFish 2]
- WorldFish (2020c) FAD Deployment in Malaita. Fact Sheet. 1p. [SLB-2020-IM-WorldFish 3] WorldFish (2020d) What WorldFish does in Western Province. Fact Sheet. 2pp. [SLB-2020-

#### IM-WorldFish 4]

- WorldFish (2020) Follow the Fish. Fact Sheet. 2pp. [SLB-2020-IM-WorldFish 5]
- WorldFish (2019a). Kakae fis blong wan helti Vanuatu (DVD): 16 minutes. [VUT-2019-IM-WorldFish]
- WorldFish, Malaita Provincial Government and Government of Solomon Islands (2018). Conserving corals. Auki, Solomon Islands, Worldfish. [SLB-2018-IM-WorldFish 1]
- WorldFish, Malaita Provincial Government and Government of Solomon Islands (2018). Managing mangroves. Auki, Solomons Islands, WorldFish. [SLB-2018-IM-

#### WorldFish 2]

WorldFish. (2020f). OI fes 1000 Dei [Bislama]. [VUT-2020-IM-Worldfish]

Worldfish. (2020g). FIS - Kakae blong kivim gudfala helt [Bislama]. [VUT-2020-IM-Worldfish 2]

### Media – blogs, interviews, newspaper articles

Over the course of the project, there were 78 media sources developed, including blogs, interviews and newspaper articles, all of which are listed below. Articles in the SPC Fisheries Newsletter and the SPC Women in Fisheries Information Bulletin are listed as project outputs in Section 10.2 of the report.

- News: Understanding media coverage of fish for Pacific Island food security. (2017). Retrieved from https://www.crawfordfund.org/news/news-understanding-mediacoverage-of-fish-for-pacific-island-food-security-december-2017/
- Towards food security in the Pacific Islands. (2017, 19 December). *UoW Research & Innovation,* 6-7.
- East Kwaio villagers celebrate receipt of FAD. (2018, 29 April). Solomon Star.
- New roadmap for Vanuatu's coastal fisheries: Stakeholder consultation workshop marks important step in final stages of developing a coastal fisheries roadmap. (2018, 12 October). *Vanuatu Daily Post,* p. 5.
- Senior Pacific officials commit to promoting small-scale fisheries in national policies. (2018). Retrieved from https://fish.cgiar.org/news-and-updates/news/senior-pacific-officialscommit-promoting-small-scale-fisheries-national
- WorldFish marks International Women's Day. (2018, 8 March). Solomon Star.
- WorldFish tribute to women. (2018, 8 March). Solomon Star.
- Celebrating International Day for Women and Girls in Science. (2019, 11 February). Vanuatu Daily Post, p. 5.
- Wan Smolbag livens up fisheries management with the 'Coastal Fisheries Play'. (2019, 16 March). *Vanuatu Daily Post,* p. 4.
- Andrew, N., & Eriksson, H. (2018, 10 July) *Mornings with Nick Rheinberger/Interviewer: N. Rheinberger*. ABC Illawarra.
- Aqorau, T. (2018, 5 May). The challenges and opportunities of rural development. *Solomon Star,* pp. 10-11.
- Australian Centre for International Agricultural Research. (2019). Communities help themselves to improve fisheries management. *Partners in Research for Development*, 21-23.

- Australian High Commission. (2019). Strengthening and sustaining Nei Tengarengare in Kiribati. Retrieved from <iframe src="https://www.facebook.com/plugins/ post.php?href=https%3A%2F%2Fwww.facebook.com%2Faustraliainkiribati%2Fpost s%2F3414958168545085&width=500" width="500" height="789" style="border:none;overflow:hidden" scrolling="no" frameborder="0" allowTransparency="true" allow="encrypted-media"></iframe>
- Australian High Commission (Kiribati). (2021). Tabonibara Women leading in Management of Coastal Fisheries! Retrieved from

https://www.facebook.com/australiainkiribati/posts/6095525850488290

- Campbell, B. (2018). Pathways forward for community-based fisheries in Kiribati. In *The Anchor* (pp. 3). University of Wollongong: The Australian National Centre for Ocean Resources and Security.
- Crute, D. (Writer). (2019). ANCORS sustainability training and education in Vanuatu. In Institute of Marine Engineering Science & Technology (IMarEST) (Producer), *Our Oceans, Our Future*.
- Davis, R. (2018). Pathways participates at regional technical meeting on coastal fisheries. In *The Anchor* (Vol. 19, pp. 4). University of Wollongong: The Australian National Centre for Ocean Resources and Security.
- Department of Foreign Affairs and Trade. (2018). *National Daily Headlines: Australia increases support for coastal fisheries and food security in the Pacific*. Retrieved from http://ministers.dfat.gov.au/fierravanti-wells/releases/Pages/2018/cf\_mr\_180124.aspx.
- Department of Foreign Affairs and Trade. (2019, 13 August 2019). Australia's Pacific engagement. Retrieved from https://dfat.gov.au/geo/pacific/engagement/ Pages/supporting-sustainable-oceans-and-livelihoods.aspx
- Devine, J. (2020). Press Release: Vanua-tai network celebrate silver jubilee (25th Anniversary and Annual Group Meeting) [Press release]
- Eriksson, H., Cole, S., & Ploeg, J. V. D. (2019). Commentary/Small fry are beautiful: rethinking development in small-scale fisheries. Retrieved from https://rethink.earth/small-fry/
- Eriksson, H., Ride, A., Boso, D., Steenbergen, D., & Neihapi, P. (2020). Coastal Fisheries in a Pandemic: Solomon Islands and Vanuatu Experiences, DevPolicy Blog, 29 July 2019. <u>https://devpolicy.org/coastal-fisheries-in-a-pandemic-solomon-island-andvanuatu-experiences-20200729/</u>
- Glyde, I. (2020). New research collaboration to support Pacific communities to prepare for the future. Retrieved from https://www.uow.edu.au/media/2020/new-research-collaboration-to-support-pacific-communities-to-prepare-for-the-future.php
- Gomese, C. (2019). Emerging scientist: Chelcia Gomese. Retrieved from https://fish.cgiar.org/news-and-updates/news/emerging-scientist-chelcia-gomese
- Gotschall, I. (2021). An overview of I-Kiribati women in fisheries. In *Women in Fisheries* Information Bulletin (pp. 31-36).
- Ha'arabe, C. H. (2019, 10 March). World-Fish advocates for local women. *Solomon Star,* p. 5.
- Jones, P. (2019). How theatre is helping Vanuatu protect its fisheries. Retrieved from https://stand.uow.edu.au/?p=11894&preview=1&\_ppp=0a8bc7fd94
- Jones, P. (2019). Living in the shadow of a volcano. Retrieved from https://stand.uow.edu.au/living-in-the-shadow-of-a-volcano/
- Jones, P. (2019). Troubled waters: telling the story of fish in Vanuatu theatre in pictures. Photography Retrieved from https://www.theguardian.com/world/gallery/ 2019/sep/15/troubled-waters-telling-the-story-of-fish-in-vanuatu-theatre-in-pictures
- Jones, P. (2019). Vanuatu islanders return to volcanic home, Ambae Island. Retrieved from

https://www.illawarramercury.com.au/story/5861028/their-hearts-are-here-vanuatu-islanders-return-to-volcanic-home/

- Jones, P. (2019, 20 January). Vanuatu islanders who yearn for home. *The Sun-Herald,* pp. 34-35.
- Jones, P. (2019). 'When to Ambae?' Volcano-hit islanders long for home in pictures. Photographic Retrieved from https://www.theguardian.com/world/gallery/ 2019/jan/23/when-to-ambae-volcano-hit-islanders-long-for-home-in-pictures
- Kleiber, D. (2019). Good science using sex disaggregated data. Retrieved from https://fish.cgiar.org/news-and-updates/news/'good-science'-using-sexdisaggregated-data-small-scale-fisheries-research-and
- Lawless, S., Song, A., Cohen, P., & Morrison, T. (2019). From principles to practice: Addressing gender inequality in coastal fisheries. Retrieved from https://www.genderaquafish.org/2019/03/23/governance-principles-valued-othersgender-equality-represented-ill-defined-principle-coastal-fisheries/
- Layzell, C. (2018). Lite-touch approach to community-based resource management shows promise in Solomon Islands. Retrieved from http://blog.worldfishcenter.org/ 2018/11/lite-touch-approach-solomon-islands/
- Li, O. (2018). Building communities of practice in the Pacific Islands. In *The Anchor* (pp. 3). University of Wollongong: The Australian Centre for Ocean Resources and Security.
- Li, O. (2018). Pathways CBFM makes scaling progress in Kiribati. In *The Anchor* (pp. 4). University of Wollongong: The Australian National Centre for Oceans Resources and Security.
- Lofana, S. (2018, 19 April). WorldFish supports fishing group with device. Solomon Star.
- Massing, A. (2019, 21 March). Government signs Coastal Fisheries Roadmap Policy. *Daily Post.* Retrieved from http://dailypost.vu/news/government-signs-coastal-fisheriesroadmap-policy/article\_bb995ca4-1054-578a-8b52-3add93d34411.html
- Ministry of Environment Lands and Agricultural Development, Kiribati. (2020). Reviewing and finalizing fisheries management plans on Nonouti Island [Press release]
- Ministry of Environment Lands and Agricultural Development, Kiribati (2020) Mamautari broadcast.
- Ministry of Fisheries and Marine Resources Development, Kiribati. (2018, 8 June) *Kaongara radio program.* Kaongara.
- Ministry of Fisheries and Marine Resources Development, Kiribati. (2018, 22 June) *Kaongara radio program*. Kaongara.
- Ministry of Fisheries and Marine Resources Development, Kiribati. (2018, 14 September) Kaongara radio program. Kaongara.
- Ministry of Fisheries and Marine Resources Development, Kiribati. (2018, 26 October) Kaongara radio program. Kaongara.
- Ministry of Fisheries and Marine Resources Development, Kiribati. (2018). Katean te rabwata ibukin tararuakin ao tikonakin marin taari. In *Mamautari Newsletter* (Vol. 7, pp. 4-5). Bairiki, Tarawa: Ministry of Fisheries and Marine Resources Development.
- Ministry of Fisheries and Marine Resources Development, Kiribati. (2018). Press release: Butaritari Forum. In *Katanoata man te Karikirake ae ataaki n arana ae te Community* Based Fisheries Management iaan te Botaki n Akawa.
- Ministry of Fisheries and Marine Resources Development, Kiribati. (2018). Press release: North Tarawa Forum. In.
- Ministry of Fisheries and Marine Resources Development, Kiribati. (2020, 3 May) *CBFM update*. Mamautari News.
- Ministry of Fisheries and Marine Resources Development, Kiribati. (2020). Community Based Fisheries Management (CBFM) Ana Tua Te Botaki N Akawa Mwakoro II: Ana Kainibare Te Kawa Ibukin Katanan Marine Taari. In. Tarawa, Kiribati: Ministry of

Fisheries and Marine Resources Development.

- Ministry of Fisheries and Marine Resources Development, Kiribati. (2020). E a tauraoi kanoan aua te ririki iroun Te Botaki n Akawa (Launching of MSP) [Press release]
- Ministry of Fisheries and Marine Resources Development, Kiribati. (2020, 20 Feb) Launch of the MFMRD Ministry Strategic Plan (MSP), Coastal Fisheries Regulations and Coastal Fisheries Roadmap. Mamautari Radio News.
- Ministry of Fisheries and Marine Resources Development, Kiribati. (2020, 5 April). Tabiteuea catch monitoring survey. *Te Mamautari*.
- Napwatt, F. (2019, 16 February). In times of hardship we turn to the sea. Vanuatu Daily Post.
- Nikiari, B., Uriam, T., James, L., Karekenatu, I., Delisle, A., & Li, O. (2021, September). Women of Tabonibara lead fisheries management into the future. *Women in Fisheries Information Bulletin*.
- Saeni, B. a. W. (2018, April June). Conserving their fishing grounds. *Malaita Star*, 18-19.
- Saeni, B. a. W. (2018, 15 February). Malaita participants undergo Fisheries training. *Solomon Star,* pp. 12-13.
- Saeni, B. a. W. (2018, 28 February). West Are'Are women benefit from solar freezers. Solomon Star. Retrieved from http://www.solomonstarnews.com/index.php/features/women/item/20110-west-areare-women-benefit-from-solar-freezers
- Saeni, B. a. W. (2019, 28 January). Fishermen told to care for FAD. Solomon Star, p. 4.
- Saeni, B. a. W. (2019, 25 January). Fishing body praised for achievement. Solomon Star.
- Saeni, B. a. W. (2019, 25 January). Malaita fishermen launch home-made FAD. *Solomon Star,* pp. 8-9.
- Sanga, L. (2018). SINU signs MOU with WorldFish. Retrieved from http://www.solomonstarnews.com/index.php/news/national/item/20257-sinu-signsmou-with-worldfish
- Steenbergen, D. (2018, 25 January) *Aussies improving fishery management in the Pacific.* ABC News TV Weekend Breakfast.
- Tuni, K. (2018). Nusa Tupe Research Station boosts sustainability in Solomon Seas. Retrieved from http://www.sibconline.com.sb/nusa-tupe-research-station-boostssustainability-in-the-solomons-seas/
- University of Wollongong (Producer). (2019, 19th September 2019). *It's not about fish it's about people* [Retrieved from https://stand.uow.edu.au/podcasts/its-not-about-fish-its-about-people/
- Vachette, A. (2018). Pathways at international conference on game-based learning. In *The Anchor* (pp. 4). University of Wollongong: The Australian National Centre for Ocean Resources and Security.
- VFD. (2019, 25 May). Growing a Pacific 'community-of-practice' for coastal fisheries management. Daily Post. Retrieved from <u>http://dailypost.vu/news/growing-a-pacificcommunity-of-practice-for-coastal-fisheries-management/article\_af3d2aa0-1e5f-5f8d-9a54-5d47918f700c.html</u>
- VFD (2020). Reflecting on three years of community management of reefs in the Maskelyns. Vanuatu Daily Post. Retrieved from https://dailypost.vu/news/reflecting-on-threeyears-of-community-management-of-reefs-in-themaskelyns/article\_6a48bbae-c6e9-11ea-9bc5-5780150e8dea.html
- VFD. (2020, 14 March). VFD seeking to understand where fish go after they are caught. *Vanuatu Daily Post*. Retrieved from <u>https://dailypost.vu/news/vanuatu-fisheries-</u> <u>department-seeking-to-understand-where-fish-goafter/article\_6702cb3a-6594-11ea-</u> <u>837b-6f4d6f055b79.html</u>
- VFD (2020, 12 December). Strengthening collaborative networks among coastal fisheries stakeholders. *Vanuatu Daily Post*. Retrieved from

https://dailypost.vu/news/strengthening-collaborative-networks-among-coastalfisheries-stakeholders/article\_94381db6-3d9e-11eb-9e6d-177184eb6b1c.html VFD (2021). FIS Kakae blong kivim gudfala helt. In: VFD.

- Verity, W. (2017). Fish for life: Food security in the South Pacific. Retrieved from https://stand.uow.edu.au/coastal-fisheries-food-security/
- Wells, E. (2018). Maritime experts tackle food security issues in Pacific. In. University of Wollongong.
- Willie, G. (2019, 6 September). Communities discuss progress in Coastal Fisheries Management. Vanuatu Daily Post. Retrieved from https://dailypost.vu/news/communities-discuss-progress-in-coastal-fisheriesmanagement/article\_19f5e94e-9470-5f3d-a41d-d1804f3baba7.html
- Willie, G. (2019, 20 July). Strengthening community-based cooperative fish markets. Vanuatu Daily Post. Retrieved from dailypost.vu/news/strengthening-communitybased-cooperative-fish-markets/article\_01b8ade9-c618-5ab9-9bae-2917f93cf3e0.html
- Wood, M., & Grainger-Jones, E. (2018, 8 June). World Oceans Day: Australia's responsibility to ocean health doesn't end with the Great Barrier Reef. Retrieved from http://www.abc.net.au/news/2018-06-08/world-oceans-day-australia-great-barrier-reef-health-tourism/9839940
- Worldfish. (2019). The cool women of Malaita Solar-powered freezers make money for rural women in Solomon Islands. Retrieved from https://worldfish.exposure.co/cool-women-of-malaita
- Worldfish (Producer). (2020). Facilitating inclusive community-based management of coastal fisheries. Retrieved from

https://www.youtube.com/watch?v=VtjFRdem3tE&utm\_source=E-

Alert&utm\_campaign=e792ec3b1b-

EMAIL\_CAMPAIGN\_2018\_05\_21\_COPY\_03&utm\_medium=email&utm\_term=0\_0a 4d9ec4ca-e792ec3b1b-87606913

## **Conference presentations**

Over the course of the project, there were 14 conference presentations, all of which are listed below.

- New Song panel during the World Small Scale Fisheries Congress in October 2018 in Thailand.
- Dirk Steenbergen presented work at a conference on codification of rules in the Pacific in July 2018, based on a co-authored paper on law codification in relation to CBFM work in VUT (paper in process)
- Dirk Steenbergen presented a seminar as part of the UoW Vice Chancellor seminar series on CBFM scaling strategies about VUT in October 2018, as project awareness raising
- Dirk Steenbergen presented work at the 3WSSFC in Chiang Mai in October 2018, based on a co-authored paper with van de Ploeg and Eriksson on collective action institutions in CBFM
- At the Third World Small-Scale Fisheries Congress, Andrew Song gave a plenary on Pacific policy coherence; Kalna Arthur (VFD) on work in Vanuatu, specifically focussing on TAILS; Grace Oriana presented on the lite touch approach to scaling CBFM in Solomon Islands.

- Two presentations (Sarah Lawless, JCU project-associated PhD student, and project gender-specialist Danika Kleiber) at the Gender Aquaculture and Fisheries Congress in Thailand in October 2018.
- People and the Sea conference, MARE Amsterdam project staff who presented include Dirk Steenbergen, Hampus Eriksson, Ruth Davis, Jan van der Ploeg, Danika Kleiber.
- Collaborated with UK television broadcasting company ITN Networks to film a segment for the IMarEST documentary titled "Our Oceans, Our Future" showcasing Pathways activities in Vanuatu. This documentary was aired at the Royal Institution, London on the 20th November 2019 (attended by 75 people) and is part of a 12 month campaign being shared across websites and social media.
- Chelcia Gomese, Anouk Ride and Aurelie Delisle presented 'Balancing the canoe: CBRM and gender in Pacific coastal fisheries' at the Cultivating Equality Conference (virtually) in October 2021
- Pita Neihapi and Dirk Steenbergen, presented 'A coastal community's response to tourism collapse in Vanuatu' at the Royal Geographic Society Annual conference Aug 2021 (virtually).
- Senoveva Mauli (ANCORS PhD candidate) presented Community Based Fisheries Management and Rural Development strengthen the practice of indigenous food systems governance in Solomon Islands. Global Food Conference, Lisbon, Portugal, December 2021.
- Lisa Wraith, Seya Brighton, Pita Neihapi and Dirk Steenbergen presented on "Bringing M&E data to life through Prezi", ACIAR brown bag lunch, 7th September 2021
- Pita Neihapi and Dirk Steenbergen presented on 'Drawing on immersive ethnography perspectives to implement CBFM in Vanuatu', ACIAR seminar series, 21st October 2021
- Aurélie Delisle (on behalf of Tooreka Teemari) presented on 'Scaling CBFM in Kiribati' during the ACIAR organized 'Multi-stakeholder partnerships for scaling innovation' as part of the UN Food Systems Summit on 25 May 2021 (virtually).