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project Scaling-out community-based marine resource governance in Solomon Islands, Kiribati and Vanuatu

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prepared by Anne-Maree Schwarz, Philippa Cohen and Aurelie Delislie

*co-authors/
contributors/
collaborators* Neil Andrew, Quentin Hanich, Gregory Bennett, Faye Siota, Delvene Boso, James Teri, Rosalie Masu and Francis Tofuakalo

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1 Acknowledgments

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We acknowledge the Fisheries Divisions in the Vanuatu and Kiribati Governments and our provincial fisheries colleagues in Solomon Islands who have been integral to the work described in this report, through support with community engagement and logistics and by sharing their extensive local knowledge through being part of the team.

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2 Executive summary

FIS 2010/056 aimed to develop the structures, processes and capacity to implement and sustain a national program of community-based resource management in Solomon Islands, and initiate the same in Vanuatu and Kiribati. The project sought to answer five research questions; 1) What is the most effective model of CBRM for Solomon Islands? 2) What is the most effective model to scale-out innovations in CBRM to new areas to ensure development impact beyond the direct beneficiaries of the project? 3) How do innovations spread among local and larger scale formal and informal social networks? 4) What are appropriate indicators of success for national CBRM programmes and what does an impact assessment programme 'look like'? and 5) How can a successful programme in Solomon Islands be transferred to other contexts?

Project partners had different mandates. The Solomon Islands Ministry of Fisheries and Marine Resources championed and completed the National Fisheries Management Act (2015); the Malaita Provincial Government developed policy and a Fisheries Ordinance (2015). Both these instruments support community based approaches to resource management. These milestones are significant to facilitate more effective links between community and provincial and national scales. National and Provincial Government and conservation and development NGO's in Solomon Islands and project partners in Solomon Islands, Vanuatu and Kiribati have shared learning through formal networks, joint publications and exchanges of staff amongst provinces and countries. Developing participatory theories of change emerged as a powerful tool for aligning different strands of endeavour for a common goal. Its use at an early stage of project design and implementation is recommended to facilitate more effective and equitable partnerships. The project was a significant component of the CGIAR Research Program on Aquatic Agricultural Systems which aimed to reduce poverty and improve security for small-scale fishers and farmers dependent on aquatic agricultural systems. Six elements (commitment to people and place, participatory action research (PAR), a gender transformative approach, learning and networking, effective partnerships and capacity development) defined a 'way of working' adopted by this project. This influenced new and existing community engagements. With members of the national co-ordinating committee of the Coral Triangle Initiative and SILMMA in Solomon Islands we documented the process of establishing CBRM and critically examined the process and outcomes to articulate lessons. We used interdisciplinary research methods to understand how contemporary and cultural knowledge and practices merge in CBRM, to understand how fishing patterns were impacted by local management measures and to understand how innovations in CBRM arise, and are sustained or falter. These are published in more than five open access AAS publications and seven papers in the scientific literature.

Progress toward outcomes identified for CBRM will require change in many dimensions of a socio-ecological system including gender and power relations. Social and gender benchmarking yielded insights into the links between gender norms, agency and capacities to innovate and adapt and this is central to the design of ongoing work. Published guidance for facilitators based on experience from Solomon Islands proved useful for the Vanuatu and Kiribati teams however identifying key differences in the institutional landscape amongst countries meant that not all lessons were transferable; there is no 'one size fits all' model of CBRM. This has implications for sharing lessons on implementation and for capacity development for CBRM at all levels. Ongoing research will seek to understand and articulate the contexts and conditions in which CBRM is, and is not, adequate to address local to national sustainability and development objectives. For example, to realise development outcomes through natural resource management, opportunities to enhance livelihoods and incomes will need to be pursued. Finally research will be needed to better understand the influence of processes, policies and practices outside of the fisheries sector and at higher than local levels that can foster or impede the realisation of development aspirations.

3 Background

Inshore fisheries and marine resources play a critical and unique role in the rural economy and livelihood status of Solomon Islands, supplying daily protein and serving as one of the few sources of cash for coastal people. Of a total population of just over half a million people some 80% of Solomon Islanders are described as subsistence-oriented small holder farmers and fishers. Almost 23% of the population lives below the national average basic needs poverty line of SBD 47.37/week (ca. AUD 5.70/week), and fish account for 73% of total expenditure on animal protein (Govan et al., 2013).

Coastal capture fisheries are the dominant source of fish for Solomon Islanders and this will remain the case for some time. Opportunities for economic development of value added marine products remain in a nascent stage, and more promising opportunities for alternative livelihoods to complement marine resource management regimes are often identified as lying within the agricultural sector. Implementation of marine resource management regimes will provide the basis for improved opportunities for sustainable economic development of marine resources, and improved access to agricultural livelihood opportunities for rural fisher/ gardeners can broaden the livelihood base to incentivize implementation of such regimes.

The broad threats facing the country such as climate change and rapid population growth are particularly relevant to the future of inshore fisheries. A major and known threat is simply catching too many fish. Sustaining inshore fisheries is a crucial plank in the Government of Solomon Islands' strategy to bridge the predicted shortfall in fish supply. Although it is improbable that inshore catches will increase significantly, continued degradation of fisheries will have severe consequences for food security and political stability in the country. No other production sector can fill the shortfall in supply in the foreseeable future.

In 2010, when this project was developed, the Solomon Islands Ministry of Fisheries and Marine Resources had recently developed their first National Strategy for the Management of Inshore Fisheries and Marine Resources (2010-2012). The strategy set out steps to attain national inshore fisheries goals by 2020. Community-based co-management of marine resources was seen as central to the successful implementation of the strategy, providing a platform for the implementation of sound environmental practices and sustainable economic development. By the time the project started implementation MFMR had also published their first ever corporate Plan (MFMR, 2011) and the Fisheries Act (1998) was under revision.

The Inshore Fisheries Strategy (2010-2012) prioritised: (i) securing the productivity of inshore fisheries and where necessary restoring the productivity of degraded or collapsed fisheries, (ii) increasing the benefits from catch through reduced wastage and improved product quality and markets and (iii) increasing the capacity of communities to adapt to change, including external forces such as climate change. The strategy further identified as one of its principles that management that 'learns by doing' (adaptive management) is the most appropriate approach in the low capacity, low data and high uncertainty context of Solomon Islands. Achieving this ambition was identified as requiring innovative new methods at community level to be effectively linked to provincial and national scales. It identified as necessary activities, developing and refining community-based management plans and promoting livelihood diversification/supplementation strategies to reduce dependence on capture fisheries.

The policy environment indicated that MFMR was increasingly looking toward supporting coastal fisheries management and development.

This project contributed to four ACIAR Corporate Goals in 2010: to improve food and nutrition security, productivity and resilience of crop, livestock, forestry and fisheries systems, productivity and resilience of crop, livestock, forestry and fisheries systems and smallholder and community livelihoods. The project built on predecessor WorldFish led

projects FIS/2007/116 and FIS/2003/051 where community based management had been developed and implemented for more than 30 coastal villages in Solomon Islands.

CBRM describes the management that communities carry out. It is management that which arises from participatory, collaborative processes where the focus is on local communities managing their natural resources. In some cases this may be done by the communities themselves without external assistance. However for other communities, working together with government authorities and/or NGOs can help to make the process of management easier and more effective. At the time this project was implemented it was recognised that previous ACIAR investment, the NZ-funded fishery sector institutional strengthening programme (MSSIF) and the Coral Triangle Initiative (CTI) had created sufficient momentum to realistically imagine the transformation that the inshore fisheries strategy and MFMR corporate Plan sought in fisheries, in part through CBRM.

This project aimed to build on the experience gained in previous projects, focusing on the scaling up of CBRM approaches and strengthening the governance requirements for these to be sustained and effective. A companion project (FIS/2010/057) on inland aquaculture development in Solomon Islands provided an opportunity to add to the body of knowledge on relevant livelihood diversification/supplementation strategies that could reduce dependence on capture fisheries.

One of the key experiences that the project was built upon was recognition that the cost of providing external support to CBRM in large numbers of communities in Solomon Islands would be too high to be supported by foreseeable national and provincial budgets, using the commonly adopted approaches by NGOs. Consequently, a more cost effective approach was required (Govan et al., 2011).

One proposed element of a more cost effective strategy was to incorporate broader social and ecological perspectives via an integrated cross-sector approach. Further, it was proposed that community level management be nested in wider catchment or district level planning processes supported by staff decentralized to the provincial level, with key coordination and technical support provided at the national level (Govan et al., 2011); consistent with a model that had been developed by multiple stakeholders through the preparation of the SI-NPOA (MECM/MFMR, 2010). An approach was proposed whereby 'core' sites within each province would receive relatively more attention from external agencies and mechanisms would be developed to influence neighbouring communities and facilitate the passive expansion of management.

Transformation of fisheries will come from the alignment of many strands of endeavour including better local management and linking local and national scale governance. This project was part of an ongoing broad programme of work by multiple partners that seeks to transform the coastal fisheries of Solomon Islands, and beyond that, do the same in Vanuatu and Kiribati.

The project was implemented as part of the WorldFish led CGIAR Research Program on Aquatic Agricultural systems (AAS). Directly aligned to the Program, this project was at the core of the Program's fisheries research. The approach taken was therefore influenced by emerging capacities as well as bodies of theory that had not been previously been at the forefront of research design for WorldFish Solomon Islands.

The approach reflected a change in the CGIAR emerging from a recurrent criticism that agricultural (and fisheries) research for development is too often supply driven and dissociated from a real understanding of the integrated lives and difficult choices poor people make. As part of a broader CGIAR response to these shortcomings, this project set out to do research that was embedded within on-going processes of development and change. The central hypothesis of the AAS Program was that research will have greater impact by moving beyond the linear production model that has dominated much agricultural research and embracing a more integrated, innovative view of how research can accelerate development in agricultural systems.

Within that context, the proposed project sought to answer five important research questions:

- (1) What is the most effective model of CBRM for Solomon Islands (including processes of engagement, institutions and indicators of success)?
- (2) What is the most effective model to scale-out innovations in CBRM to new areas to ensure development impact beyond the direct beneficiaries of the project?
- (3) How do innovations spread among local and larger scale formal and informal social networks (including an analysis of barriers and successes)?
- (4) What are appropriate indicators of success for national CBRM programmes and what does an impact assessment programme 'look like'?
- (5) How can a successful programme in Solomon Islands be transferred to other contexts (e.g. Kiribati and Vanuatu)?

4 Objectives

This project aimed to develop the structures, processes and capacity to implement and sustain a national programme of community-based resource management in Solomon Islands, and initiate the same process in Kiribati and Vanuatu, through five objectives. Approximate relative investments are given in parentheses.

Objective 1. Design and implement processes for scale-out of CBRM in Solomon Islands coastal communities in collaboration with provincial and national agencies (30%).

- Work with communities with existing management plans to refine adaptive management process
- Derive effective community level indicators of management performance based on participatory follow up with existing communities
- Convene stakeholders to design and agree on model of spread
- Implement CBRM in new 'core' communities in Malaita and Makira
- Establish provincial level networks
- Facilitate the spread of learning from existing and new core sites to 'satellite' communities

Objective 2. Understand the spread of innovation among communities and to use that understanding to implement processes to accelerate the spread of CBRM (30%).

- Develop questionnaires and adapt protocols for social network research within in Solomon Islands CBRM networks
- Conduct focus group discussions, informal interviews and semi-structured questioning in core and satellite communities and amongst stakeholders
- Undertake gender differentiated analysis of findings
- Identify and form committee tasked with facilitating cross sectoral integration and identify practical areas for cost and logistic sharing

Objective 3. Support NZAid funded institutional strengthening initiatives within Solomon Islands MFMR and develop capacity in national networks (20%).

- Identify project staff to partner with MFMR and provincial fisheries staff
- Design ToR's, workplans and reporting mechanisms for provincial officers
- Design and implement training and capacity building mechanisms for scale up of CBRM for government officers.
- Develop a process for communities to register management plans at the provincial and national level
- Create guidelines, and training for development NGO's working in coastal areas
- Develop communication materials on CBRM spread for use by practitioners

Objective 4. Design and implement an impact assessment programme (10%).

- Hold Participatory Impact Pathway Analysis workshops in Honiara to guide project design and impact assessment
- Collate existing information and supplement with additional questionnaires as needed to establish economic, social and ecological baselines at local, regional and national scales based on existing CBRM sites
- Develop and implement a participatory impact assessment programme incorporating indicators of change at local, provincial and national scales.
- Work with MFMR and SPC to develop a database for management of CBRM data

Objective 5. Capture lessons learned from Solomon Islands and make available to practitioners in Vanuatu and Kiribati (10%).

- Conduct participatory diagnosis of the most appropriate entry points for management and governance responses in Vanuatu and Kiribati.
- Identify specific contact points and initiate dialogue
- Compile lessons in collaboration with Vanuatu and Kiribati partners
- Prepare a funding proposal to support on the ground activities in these countries and to facilitate on-going mutual learning

5 Methodology

Research in development

AAS began operation in 2011 with the aim of reducing poverty and improving food security for small-scale fishers and farmers dependent on aquatic agricultural systems. As well as seeking to generate these outcomes through action research, the program set a goal to investigate how agricultural research can itself innovate such that it meets the challenge of helping poor and vulnerable people achieve better and more sustainable livelihoods from the agroecological and sociocultural systems in which they live. To capture the intent of this goal AAS coined the term 'Research in Development (RinD)' which has been developed since 2011 as a methodological approach by which to conduct high quality research for impact (Dugan et al., 2013); one the Program hopes will be useful to a wide range of researchers beyond aquatic agricultural systems. The initial thinking about the RinD approach framed the methodology used in this project and FIS 2010/056 has, in turn, contributed local level experiences to the development of the approach.

The RinD approach has six elements that determine a 'way of working' to address a particular goal (Fig.1).

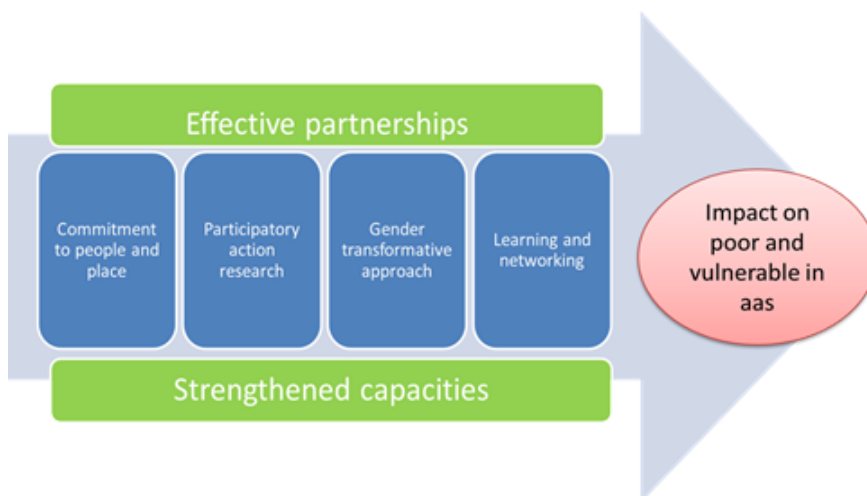


Figure 1. Six elements that constitute the AAS RinD approach (Dugan et al., 2013).

Commitment to people and place is based on the assumption that people in aquatic agricultural systems have the potential to bring about meaningful change, and that a more sustainable way to improve livelihoods is to leverage this potential for deeper and longer lasting change.

Participatory action research is the core RinD process that ensures beneficiaries are co-owners of finding solutions to their own problems and in building their own capacity to reflect and innovate.

A gender transformative approach embodies a commitment to and strategies for social transformation towards equity and equality amongst diverse actors.

Learning and networking both stress the need for adaptive management, for learning and adapting as we go forward, and uses monitoring and evaluation as another set of tools to ensure this happens.

Effective partnerships acknowledges that intervening meaningfully requires working with others, and that building partnerships at all levels is a pathway to greater success.

Capacity building within the research team, with partners and in communities is recognised as a core component of adopting the RinD approach.

Commitment to people and place is a feature of this project. By building on previous ACIAR investment, working with some new communities and partners but also with many with whom the project team had existing relationships, we were able to distil and synthesize learning borne of a number of years of action and reflection and adaptation. Now recognized as an element of the RinD approach these action and reflection elements of a participatory action research cycle were critical methodologies for objectives 1 and 4 in particular.

In Year 1 of the project the geographical location in which the project would be working was reassessed. After an intensive scoping of community and province need and opportunity, and where WorldFish had the capacity to contribute most effectively as part of the rollout of the AAS Program (Schwarz et al., 2013), the focus of in-community activities was settled on as being Malaita and Western Provinces. With the exception of an early engagement in Central Islands Province, which was subsequently supported by the Central Islands Province fisheries division, new community engagements in this project were in Malaita Province.

Objective 1: Design and implement processes for scale-out of CBRM in Solomon Islands coastal communities in collaboration with provincial and national agencies

This objective proceeded at two primary scales: (i) local: by refining existing CBRM sites and introducing new communities and, (ii) national: by testing models of scale-up to a national programme. Communities in Western, Malaita and Isabel provinces that had already implemented CBRM provided opportunities to learn how to make CBRM self-sustaining. We worked with groups in Western and Malaita Provinces to refine their management plans and indicators of management performance, but with a smaller investment of time that had characterised those plans initiated under FIS 2007/116. This project offered the opportunity to further and intensively test management performance, with involvement from community members in data collection using and documenting local language of taxa important for fisheries (see Cohen et al., 2014a). The methods and findings of this work are represented in another four peer reviewed publications (Cohen et al., 2013; Cohen and Alexander 2013; Cohen et al., 2014; Cohen and Steenbergen, 2015).

In this project we aimed to define models of reduced investment in establishing CBRM, and then refine our approach to new sites accordingly. A progressive approach to sharing learning, targeting new 'core' communities' and supporting satellite communities along with partners was envisaged. While progress was made on all of these fronts, establishing and nurturing the necessary partnerships for this to happen at scale took longer than

anticipated. The project team built their capacity to facilitate and nurture coalitions of partners (an element of the RinD approach) at the same time as key partners in Solomon Islands were going through significant institutional change processes; WorldFish rolling out AAS; MFMR building up their Institutional Strengthening Program and key development partner World Vision in Malaita, rolling out new provincial programs.

At the provincial level the opportunity to establish and support networks of communities, provincial government and other relevant stakeholders were scoped in a participatory manner. Scoping identified opportunities to leverage and support existing networks in some cases (MPPD in Malaita) and to facilitate new ones (encouraging coalitions to share information with Western Province Government) in others.

A synthesis of eight years of experience of action research amongst the project team and CBRM communities in Solomon Islands was undertaken. The case study communities represented three provinces, and five sub regions that comprised villages that were close together and had historical social alliances. We draw on participants' observations, informal interviews and focus group discussions recorded in field notes, meeting records and unpublished reports to donors to describe the evolution of our understanding of effective community engagement. For three of the regions (Dovele, Fauro and Makwanu) we also drew on quantitative findings from household surveys (FIS 2007/116, described in Schwarz et al., 2011).

Table 1. Details of the communities involved in the synthesis.

Region	Province	No. of villages	No. of households (approx.)
Kia District	Isabel	14	60
Jorio Region	Western	5	350
Dovele Region	Western	3	240
Fauro Island	Western	1	300
Makwanu Region	Malaita	5	80

Objective 2: Understand the spread of innovation among communities and provinces and use that understanding to accelerate the spread of CBRM

An important component of this project was to understand and track social and ecological changes that occur as a result of CBRM implementation, and to use that understanding to accelerate learning and uptake of management. To draw on experiences from communities that had been implementing CBRM, with varying degrees of success, for a number of years, a rigorous social research approach was developed to address the research question; how do innovations spread among local and larger scale formal and informal social networks?

Research methods used to investigate patterns of knowledge transfer and conditions for initiating and sustaining CBRM followed a multi-case study research approach (Yin, 2009) and combined qualitative focus group data with quantitative questionnaire data. Five coastal rural communities in Western Province and Guadalcanal in Solomon Islands were used as case studies for empirical work. The communities were selected on the following criteria: (1) all had a high but varying degrees of reliance on marine resources (mainly finfish and invertebrates for subsistence and income), (2) the selected communities had

implemented various types of CBRM but with different levels of success (to ensure variability in the dependent variable), (3) both communities with and without NGO involvement were part of the sample, and (4) they were all geographically close to research facilities in Western Province and Guadalcanal to accommodate as many communities as possible in the sample given a limited research budget. The fieldwork was completed between April and June 2013 by trained project staff. Research instruments were conducted in Solomon Islands Pidgin. Three communities had been involved in implementing community-based adaptive management for their marine resources through previous ACIAR projects. Two communities had not had any NGO assistance but had worked towards implementing CBRM themselves.

Questionnaires were conducted in each community to understand whether certain preconditions for CBRM were present. These included: (i) Basic demographics (ii) Whether CBRM addressed a perceived ecological need (iii) The level of social capital (cohesion, cooperativeness, leadership) within each community (iv) The level of community participation in CBRM activities. Questionnaire design was adapted from Krishna (2002).

In each community, an innovation history activity was designed and conducted using a focus group format. An innovation history is a participatory method for recording, discussing and reflecting on an innovation process, in this case the adoption of CBRM (based on ideas presented in Douthwaite and Ashby, 2005). A timeline was used in each focus group as a prompt to identify and gather information on important events during the CBRM process, as well as events leading up to when the innovation idea was originally thought of or introduced in the community (either by community members or an outside actor). The possible event types were broadly described and explained to the focus group as being one of the following: when a decision was made; when a person, group or organisation did something; when new learning occurred; when meetings occurred; when something happened (including unexpected events); and when problems were identified, arose or solved. Discussions around events included: who was involved; what influence the event had on the overall CBRM process; what the event led to; if the event was communicated to the community, by whom and how; and how events might have been responded to differently. Where relevant, discussions were held on how the community overcame barriers that prevented progression through the CBRM institutionalisation process. Additionally, the focus groups identified and discussed: key actors or groups involved within and outside the community and what their role had been in the process; what resource management rules were implemented and when, and levels of compliance; and awareness of the resource management process within the community, through time. In summary, the innovation history method was used to describe and to provide the basis for understanding how and why the journey towards CBRM unfolded the way it did, what paths were taken and what the implications were for the uptake of resource management for each community.

The data were used to analyse phases of the CBRM process that could be identified; adapted from Rogers (1962).

Table 2. Phase definitions for the CBRM process, adapted from Roger's (1962) five stages in the innovation process in organisations.

	Stage (from Rogers, 1962)	Phase definition for CBRM
1	Agenda setting General firm problems that may create a perceived need for innovation	Agenda setting Community recognises a problem in the fishery that needs to be fixed, or the community recognises a problem in the wider community that needs to be fixed
2	Matching Fitting a problem from the firm's agenda with an innovations	Matching Community decides the innovation to be community-based resource management because it matches with the problem
3	Redefining/restructuring The innovation is modified and reinvented to fit the firm and firm's structures are altered	Redefining/restructuring Community decides on the community-based resource management rules and governance structures. This may be through existing structures or structures may be altered
4	Clarifying The relationship between the firm and the innovation is defined more clearly	Clarifying The community rules or governance systems are implemented or put in use (this includes at least a rudimentary level of monitoring and enforcement)
5	Routinizing The innovation becomes an on-going element in the firm's activities and loses its identify	Routinizing Community-based resource management has become normalised and stable in the community

Research outputs were integrated into protocols and communication materials for practitioners and communicated to stakeholders in support of the long term implementation of the spread model.

Objective 3: Support NZAid funded institutional strengthening initiatives within Solomon Islands MFMR and develop capacity in national networks

This objective was originally designed to support the capacity development of MFMR officers involved in CBRM alongside the NZ funded MSSIF Program. But it became clear during Years 1 and 2 of the project that the MSSIF Program was not yet well enough developed to accommodate the envisaged synergy.

The project team maintained regular contact with MFMR colleagues. In year two both focal provinces for the project (Malaita and Western) had new Chief Fisheries Officers appointed as the incumbents moved into Honiara to take up national positions with MFMR, one as the Deputy Director of Provincial Fisheries and one as the head of the Community Fisheries Unit. Accordingly both remained intimately connected to provincial fisheries activities. WorldFish appointed an existing national officer to the role of liaising with these new officers and she undertook to have regular update meetings with them. Late in Year 2 a formal dialogue was held with MFMR to plan a way forward to ensure that the project's activities best met MFMR's needs. It was agreed that the greatest contribution to the institutional strengthening programme that FIS 2010/056 could make was to (i) focus on implementation of CBRM work at the community level and (ii) test protocols and systems for province-level support in Malaita and Western Provinces by providing information and contributing to training of PFOs in CBRM. An unofficial revised title for this Objective requested by MFMR reflects this: "Support MFMR initiatives to strengthen capacity to implement community based marine resource management within Solomon Islands".

In years 3 -4 the approach for this objective was much more explicitly focused on the Malaita and Western Province Fisheries Divisions.

WorldFish has offices in Auki and Gizo where the provincial fisheries offices are located. WorldFish staff make regular visits to update Chief Fisheries Officers, fisheries officers accompany project team members on their field trips when the officers are not busy with other tasks and WorldFish project staff made themselves available to assist with development of workplans, and fisheries ordinance development.

In 2013, as capacity in MFMR increased, the focus of MSSIF support to MFMR began to turn from Honiara toward provincial fisheries officers. WorldFish project staff have

contributed to annual Provincial fisheries officers meetings every year since then drawing on those forums to determine the most effective training and capacity building mechanisms, including ongoing support required for provincial fisheries officers to perform designated duties related to the scale up of CBRM. The ministry has had a strong focus on completing the revision of the Fisheries Act and the FIS 2010/056 project team worked closely with MFMR to support the passage of the new Fisheries Act throughout the project lifetime.

Objective 4: Design and implement an impact assessment programme

Understanding impact

In the early years of this project MFMR was in the process of developing a monitoring and evaluation (M&E) system for their corporate plan through MSSIF consultants. It was originally intended that this project align and support those efforts. However, the MSSIF Program did not, in practice, prioritise M&E for CBRM or create a database for CBRM. Therefore our efforts on monitoring and evaluating CBRM focussed two distinct components (i) understanding the impact of implementation of CBRM at local and national scales (largely reported on in objectives 1 and 2) and (ii) through aligning with the AAS Program establishing and testing processes that could be used for M&E of a program of work, including a national program of CBRM. The processes included developing theories of change (TOC), benchmarking, conducting outcome evidencing and reflecting on TOCs through participatory action research processes.

Developing a methodology; TOC

We adopted and tested the use of TOC methodology and built capacity around the use of TOC as a monitoring and evaluation tool. A training workshop was held in Honiara in April 2012 at which outcome and impact logic models were developed; and the TOC approach was formally adopted by the project within the AAS Program. At the workshop a TOC for the project's contribution to a national model of CBRM was developed.

Partners were progressively engaged through participatory processes and in 2014 a participatory TOC for CBRM in Malaita Province was developed with stakeholders, effectively nested within the initial TOC.

The TOCs emphasised intermediate development outcomes that included better livelihood opportunities; informed communities; strengthened community governance systems; better access to markets and improved national and provincial policies. The participatory approach ensured that we also took account of activities being undertaken by other partners. For example a significant national project for baselining CBRM as an inventory of managed areas was initiated in 2014; funded by AusAID through The Nature Conservancy and MECDM. FIS 2010/056 project staff contributed information (that was not confidential to communities) on the sites where we worked.

Benchmarking IDOs

Establishing benchmarks against which to monitor change was undertaken through a review of provincial level governance capacity for CBRM in Malaita and Western Provinces; and through conducting a structured benchmarking survey in Malaita Province (subsequently extended to Western province through AAS and FIS 2012/074) that used focus group discussions with community members. FGDs were composed of between 5 and 20 men or women aged 15-70+, and youth aged 12-30 years old. Semi-structured key informant interviews were conducted with men and women who were identified as those perceived to be successful innovators in agriculture or natural resource management. Focus group discussants and interviewees provided prior verbal informed consent. Written consent was not sought because of low levels of literacy.

The approach used four FGD tools and a set of key informant interview questions. Tools had been designed in English, and were translated and delivered by researchers into

Solomon Islands Pijin. The first tool concentrated on gender norms. Discussion points explored men's and women's experiences with and perceptions of norms shaping roles in the household, agriculture and livelihoods. The second tool concentrated on capacities to innovate and explored experiences with and perceptions of agency in strategic life decisions, and gendered dimensions of social capital and collective efficacy in navigating and instigating change. The third tool is referred to as the 'ladder of life', and examined experiences and perceptions of wellbeing of the community, social differentiation of wellbeing within the village and factors influencing people's ability to improve well-being. The fourth tool was designed specifically for youth focus group discussions and encompassed all questions in tool number one on gender norms, with the addition of questions relating to perceptions of social capital and collective efficacy.

Outcome evidencing

A TOC can be thought of as a model showing how an intervention operates as a contributory cause to bring about change, or an outcome. Using theories of change, approaches such as contribution analysis can be used to demonstrate that the intervention made a difference – that it was a contributory cause – and to explain how and why (Mayne, 2008). This process is referred to by the AAS program as 'outcome evidencing'.

Outcome evidencing as practiced by AAS was adapted from a number of sources, in particular, Ford Foundation's recent publication "Outcome Harvesting" (Wilson-Grau and Britt, 2012). Outcome evidencing is a participatory tool that enables evaluators to identify, formulate, verify, and make sense of outcomes they have influenced when relationships of cause-effect are complex. Unlike most evaluation methods, outcome evidencing does not measure progress towards outcomes or objectives defined in advance in, as for example, in the TOC, but rather collects evidence of what has been achieved based on a retrospective analysis, and works backward to determine whether and how a project or intervention contributed to the change.

An outcome harvesting and evidencing exercise conducted in Malaita Province in August 2014 played a dual role; 1) to evidence outcomes that were related to the broader adoption of the RinD approach in the AAS Program and 2) to test the utility of the process for a national CBRM program. The methodology included reviewing project documentation related to PAR processes with communities with the aim of identifying emerging changes which could then be validated and verified through various sources.

Objective 5: Capture lessons learned from Solomon Islands and make available to practitioners in Vanuatu and Kiribati

The last objective of this project was to scope potential opportunities for scaling out CBRM in countries outside Solomon Islands, namely Kiribati and Vanuatu. The knowledge base accumulated in Solomon Islands, through WorldFish-led projects FIS/2007/116, FIS/2003/051 and objectives 1-4 of this project, provided an excellent opportunity to test the applicability of the lessons learned in different Melanesian, Pacific contexts. Coastal fisheries are a policy priority for Kiribati and Vanuatu yet both suffer from weaknesses in management capacity. For example, the Government of Kiribati acknowledges in its National Fisheries Policy (2013-2025) that management of coastal and community fisheries development is not effective; coastal fisheries management is the responsibility of island councils and must take place on an island-by-island basis but, for the most part, current arrangements provide little or no protection to the resources they are intended to conserve. Furthermore, fisheries information is not currently analysed or organised in a way that supports island-by-island management (FFA 2010).

ANCORS was the lead agency on this objective which aimed to build relationships and set the scene for further activities in Vanuatu and Kiribati. Three of the elements of the RinD approach were particularly relevant in guiding the approach used by ANCORS: 'Effective partnerships'; 'Commitment to people and place'; and 'Learning and networking'.

Effective partnerships consisted of establishing important working relationships between the team and key national agencies involved in coastal fisheries management in Kiribati and Vanuatu. In Vanuatu and Kiribati WorldFish and ANCORS respectively, worked in collaboration with national fisheries agencies to identify entry points to support national policy for improved governance of coastal resources. In Vanuatu, the Fisheries Department, and in Kiribati the Ministry of Fisheries and Marine Resources Development (MFMRD) were engaged in discussions about how to most effectively integrate the project with their existing work.

In year 2 a new ACIAR project FIS 2012-074 was designed to support further activities in Vanuatu and Kiribati. To avoid duplication, in agreement with ACIAR, in Vanuatu FIS 2012-074 took the lead on research culminating in published outputs, while this project (FIS 2010/056) continued to focus on establishing entry points and sharing of lessons with relevant fisheries staff.

The project's commitment to people and place is reflected in continuous efforts to build upon previous investment and relationships in Kiribati by the ANCORS team. Building upon established/existing relationships between Dr. Hanich and staff of the Ministry of Fisheries and Marine Resources Development (MFMRD), the ANCORS team first undertook a scoping study. This scoping study focused on providing information on the current status of Kiribati fishery resources (ocean and coastal), their current governance and future challenges. Kiribati was visited three times in 2012-13 (two trips under external project funds) for consultation with government officials from the different units of MFMRD. The ANCORS team also recognised the need to consult with officials from the Ministry of Internal Affairs and the Ministry of Environment, Lands and Agricultural Development. Staff from the aforementioned agencies were individually interviewed about potential entry points, key management and development challenges in the fisheries sector, as well as governance responses and capacity gaps effecting the implementation of CBRM in Kiribati. Other interviewees included representatives of the Island Council and communities of North Tarawa. A background paper and context analysis was prepared.

The implementation of FIS 2012-074 enabled a physical project presence to be established in Vanuatu and Kiribati via the recruitment of two local CBFM project officers in each location integrated within the respective country's ministry responsible for fisheries.

Learning and networking was facilitated through reciprocal visits amongst Kiribati, Solomon Islands and Vanuatu practitioners to establish regional alliances for the purpose of sharing experiences and learning from each other. The first visit to Solomon Islands took place in July 2014 to coincide with a CBRM workshop organised by WorldFish as an inaugural activity in FIS 2012/074. The second visit, to Kiribati, took place in October 2014 and was arranged as part of the inaugural Kiribati CBFM stakeholder workshop with stakeholders. A lessons learned brief was prepared.

Finally, stakeholders from the three countries who have experience in delivering and receiving CBRM training were consulted to get their feedback on existing capacity development programs. A 'white paper' was then prepared to summarise key recommendations for future capacity development training programs relevant to CBRM.

6 Achievements against activities and outputs/milestones

Objective 1: To design and implement processes for scale-out of CBRM in Solomon Islands coastal communities in collaboration with provincial and national agencies.

no.	activity	outputs/ milestones	completion date	comments
1.1	Work with communities with existing management plans to refine adaptive management process	Solomon Islands CBFM handbook produced WorldFish (2013). Community-based marine resource management in Solomon Islands: A facilitator's guide. Based on lessons from implementing CBRM with rural coastal communities in Solomon Islands (2005 - 2013). CGIAR Research Program on Aquatic Agricultural Systems. Penang, Malaysia. Manual: AAS-2013-17.	2014	This research is also documented in Cohen, P., Schwarz, A., Boso, D., Hilly, Z. (2014). Lessons from implementing, adapting and sustaining community-based adaptive marine resource management. Lessons Learned Brief: AAS-2014-16. Cohen, P.J., Cinner, J., Foale, S. (2013) Fishing dynamics associated with periodically harvested marine closures. Global Environmental Change 23(6), 1702-1713 Bennett, G. (2014) Trends and challenges for sustainable marine resource management for rural Solomon Islanders. Thesis: Doctor of Philosophy (PhD) Schwarz, A-M. J., Cohen, P.J., Andrew, N.L., Boso, D. and Ramofafia, C. (in review) Resilience in Practice: Building a Participatory Diagnosis and Adaptive Management Programme for small-scale fisheries. Environmental Science.
1.2	Derive effective community level indicators of management performance based on participatory follow up with existing communities	Community level indicator handbook produced Community level indicators and monitoring guides were produced with partners through SILMMA (http://www.silmma.org.sb/index.php/downloads/finish/9-guides/6-monitoring-catch-per-unit-effort-cpue)	2011	This research is also documented in Cohen, P.J.; Alexander, T.J. (2013) Catch rates, composition and fish size from reefs managed with periodically-harvested closures. PLoS ONE, 8(9):e73383 [open access] Cohen, P.J., Tapala, T., Rikio, A., Kukiti, E., Sori, F., Hilly, Z., Alexander, T., Foale, S. (2014) Developing a common understanding of taxonomy for fisheries management in North Vella Lavella, Solomon Islands. SPC Traditional Marine Resource Management and Knowledge Information Bulletin. 33, 3-12. [open access] Cohen, P., & Steenbergen, D. (2015). Social dimensions of local fisheries co-management in the Coral Triangle. doi:doi:10.1017/S0376892914000423.
1.3	Convene stakeholders to design and agree on model of spread	Model of spread is agreed by stakeholders and ratified by MFMR	2011	The model of spread is now described in the NPOA implementation plan (2013) – published by MFMR and MECDM. The final agreement on a 'model' has primarily been a CTI led activity through the NCC in Solomon Islands to which the ACIAR project team have contributed as stakeholders.

1.4	Implement CBRM in new core communities in Malaita and Makira.	<p>Management plans are implemented</p> <p>Core communities that are implementing or in the process of implementing management plans since the start of this project, and to which this project has contributed fully or in part are Koilovala community in Central Islands Province and in Malaita; Mararo community in east Are'Are; Fumato'o community in North Malaita and Radefasu community in Langalanga Lagoon.</p>	2012-2015	<p>Koilovala community in Central Islands Province (CIP) completed a management plan with the assistance of WorldFish in 2012. Research on other community's experiences with resource management in Central Province was reported in (1) Cohen, Cinner and Foale (2013), (2) Cohen and Alexander (2013) and (3) Cohen and Steenbergen (2015), based on sites in Central Province where the Foundation of the Peoples of the South Pacific (FSPI) was working.</p> <p>Two AAS publications, supported by this project were published as part of the rollout of the AAS Program and included identifying opportunities and obstacles for implementing CBRM in Malaita.</p> <p>Schwarz A., Andrew N., Govan H., Harohau D and Oeta J. (2013). GGIAR Research Program on Aquatic Agricultural Systems Solomon Islands, Malaita Hub Scoping Report. AAS 2012-13.</p> <p>Govan H. Schwarz A., Harohau D., Oeta J. and Orirana G. (2013). Identifying governance obstacles and opportunities for the AAS Program Central Hub, Solomon Islands. AAS 2013.</p>
1.5	Establish provincial level networks	<p>Provincial level networks established / supported</p> <p>Malaita Province Fisheries Ordinance gazetted</p> <p>National Fisheries Management Act (2015) gazetted</p> <p>[Original proposed output] Community Based Management Plans are being registered under provincial ordinances and/ or the Fisheries Act. NOTE: Provincial ordinances and new Fisheries Act were gazetted one month before the end of the project (May 2015)</p>	<p>2012-2015</p> <p>May 2015</p> <p>May 2015</p>	<p>Malaita Province: Initiated by World Vision in 2011, the Malaita Province Partnership for Development (MPPD) is the first group of NGO's and provincial government representatives, in that province, to come together to form a network of practitioners to improve delivery of services to communities and to provide a venue for community voices to be heard. Malaita provincial Fisheries and WorldFish are both members and MPPD acts as the steering community for the AAS Program in Malaita Hub.</p> <p>Western Province does not yet have the same sort of network despite it being widely recognised amongst partners in Western Province as a need. In 2014 we convened a symposium of NGOs, registered community organisations undertaking CBRM and government on CBRM in Western Province. A key outcome was the establishment of an information exchange and coordination network of these CBRM practitioners. While the current expectations of this network are modest, efforts to further develop their roles, functions and capacity will be ongoing. A summary of CBRM activities/partners was collated and presented to the Provincial government to aid their ongoing monitoring and networking.</p>
1.6	Facilitate the spread of learning from	Management plans encompass at least 15 new satellite communities	June 2015	Activities to facilitate spread of learning to satellite communities have been in regions where there is sufficient

	<p>the existing and new core sites to nearby 'satellite' communities.</p>		<p>community knowledge to draw on from 'core communities'.</p> <p>Regions are</p> <p>(i) North Malaita – Fumato'o has emerged from previous work in Funa'afou and Foueda (FIS 2007/116); eight communities in North Malaita had material distributed to them during a workshop in Fumato'o in 2013 (AAS community action planning workshop report, WorldFish unpublished data).</p> <p>(ii) South Malaita; eight communities in Malaita received information (printed materials, training of community facilitators (Small Malaita) on implementing CBRM through World Vision activities in Haunasi Village, Taori Village and Waiaha Villages.</p> <p>(iii) East Malaita; Mararo community has a mangrove management plan (developed under an ADB ICM project, using the materials and staff capacity developed through WorldFish ACIAR projects) and local resource people have been supported to conduct awareness about CBRM to 14 surrounding villages.</p> <p>(iv) Vella Lavella Western Province: Leona continues to be the core of CBRM in Vella Lavella; increasingly they are able to share lessons with surrounding communities; for example the project facilitated a meeting in Leona community in April 2013 that drew on experiences of communities in the Western Solomons as well as provincial, national government and NGO stakeholders to share lessons learned about CBRM.</p>
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PC = partner country, A = Australia

Objective 2: To Understand the spread of innovation among communities and use that understanding to accelerate the spread of CBRM

no.	activity	outputs/ milestones	completion date	comments
2.1	Develop questionnaires and adapt protocols for social network research within in Solomon Islands CBRM networks	Project team and MFMR partners are trained in conducting social network analyses	June 2013	<p>Activities 2.1 and 2.2 describe the methods, design and field work for a targeted piece of research on the spread on innovation amongst communities undertaking or attempting some sort of CBRM.</p> <p>This research is also documented in</p> <p>Mills, M., Álvarez-Romero, J.G., Vance-Borland, K., Cohen, P., Pressey, R.L., Guerrero, A.M., Ernstson, H. (2014) Social network analysis for systematic conservation planning. <i>Biological Conservation</i> 169, 6–13.</p>

2.2	Conduct focus group discussions, informal interviews and semi-structured questioning in core and satellite communities and amongst stakeholders	Scientific publication on patterns of knowledge transfer, specifically amongst communities within and between provinces.	December 2013	Abernethy, K. Bodin, O., Olsson, P., Hilly Z., Schwarz, A. (2014) Two steps forward, two steps back: The role of innovation in transforming towards community based marine resource management in Solomon Islands. <i>Global Environmental Change</i> . 28: 309–321.
2.3	Undertake gender differentiated analysis of findings	Protocols and training materials have been produced for practitioners of CBRM	December 2013	<p>Guidelines for collecting gender differentiated data (and justification) were initially described in the CBRM facilitator's handbook.</p> <p>Since then we have begun to dig deeper into the causes and consequences of gender inequity and opportunities for gender equitable approaches and this is reported in;</p> <p>Schwarz A, James R, Teioli HM, Cohen P and Morgan M. (2014). Engaging women and men in community-based resource management processes in Solomon Islands. Penang, Malaysia: CGIAR Research Program on Aquatic Agricultural Systems. Case Study: AAS-2014-33.</p> <p>In 2014 a rigorous benchmarking of gender norms was undertaken in the North Malaita communities; supported by this project and contributing to planning for future gender transformative interventions (Consultants report: Dyer 2014).</p>
2.4	Identify and inform committee tasked with facilitating cross sectoral integration and identify practical areas for cost and logistic sharing	NCC (or other committee) is effectively facilitating cross sectoral integration	December 2014	<p>A WorldFish project team member is a member of the NCC and attends all meetings.</p> <p>In 2014/15 a focus has been on the Malaita Provincial Development network (MPPD). In the AAS Malaita Hub, MPPD facilitates cross sectoral integration of activities in Malaita and provides a forum for this project to work with the provincial government.</p>

Objective 3: Strengthen capacity of Solomon Islands MFMR to implement community based marine resource management

no.	activity	outputs/ milestones	completion date	comments
3.1	Identify project staff to partner with MFMR and	MFMR and PFO's are conducting outreach to satellite communities	December 2014	MFMR now has a CBRM team in place. The MFMR CBRM team (Peter K and Michael L) have been conducting

	provincial fisheries staff	independent of NGO partners		<p>independent outreach on CBRM to communities on Guadalcanal. This is an MFMR / SILMMA funded initiative.</p> <p>Ms Faye Siota from the WorldFish CBRM team is the focal point in Honiara to counterpart with the MFMR CBRM team in an attempt to improve mutual planning for CBRM activities.</p> <p>PFOs are given the opportunity to be involved in project activities in the Provinces. Over the life of the project this has included Western, Central and Malaita PFO's. A Malaita PFO was trained in community engagement processes in April 2014 in North Malaita. In Malaita and Western provinces Provincial fisheries officers were part of scoping new communities for engagement through the AAS Program and they have often joined the research team in the field over the life of the project. In Malaita there is, as yet, insufficient human resource or funding capacity in the provincial fisheries teams to take on the demands of effectively supporting CBRM.</p>
3.2	Design ToR's, annual workplans and reporting mechanisms for PFO's	<p>[Original proposed output] PFO's are working under agreed ToR's for CBRM</p> <p>In 2012 an MOU was signed with the Malaita Province Government to 'guide future co-operation in research and development in aquaculture and community based approaches to sustainable management of coastal resources'.</p>	2012-2015	<p>In 2012/113 MFMR revised PFO JDs and TORs with support from NZAid funded institutional strengthening initiative. Therefore, this activity was reviewed in July 2012 when MFMR requested a focus on assisting PFOs in their reporting, i.e., "<i>Design Provincial Government reporting mechanisms for provincial fisheries officers to Provincial Government</i>". In February 2013 it was further agreed that WorldFish will work with the Malaita provincial officers to track engagements with communities (activity 3.3). (Contractual changes were approved by FIS Program manager).</p> <p>Since 2012, the ACIAR PL and more recently Auki office national staff, have worked with the chief fisheries officer (CFO), Malaita Province to prepare his annual workplan and summary of activities in communities. These have also been presented at the MFMR annual PFO meeting in Honiara, by the Malaita CFO. In 2015 WorldFish Auki staff have played a lead role in developing the provincial fisheries action plan for the new Malaita Province Government. (Meeting reports and policy documents).</p>
3.3	Design and implement training and capacity building mechanisms for scale up of CBRM for government	[Original proposed output] Information and protocols have been produced and training conducted for at least 3 provincial fisheries office staff	revised	This activity was reviewed with MFMR in July 2012. The deputy director provincial fisheries (MFMR) was identified as the point of contact for training manual development and reviewed and commented on the 'CBRM handbook. MFMR began to

	officers.			hold regular PFO meetings in Honiara and this was seen by MFMR as the appropriate venue for training. However the activity needed to align with MFMR workplans and a window of opportunity for a training has not arisen in the PFO workshops. Other topics have taken precedence (i.e. FAD construction and deployment) .
3.4	Develop a process for communities to register management plans at the provincial and national level	Registration process for Community Management plans and reporting mechanisms are approved by MFMR and relevant committees. Malaita Province Fisheries Ordinance gazetted National Fisheries Act gazetted	N/A 2015 2015	This activity has only been able to proceed in principle until the final month of the project. No publications or formal outputs were possible until the new legislation was in place. The WorldFish team has made every effort to influence and support the Solomon Islands Government process of gazetting of legislation by attending consultation meetings, commenting on drafts of legislation and supporting government consultation with community fishers.
3.5	Create guidelines, materials and training for development NGO's working in coastal areas	Processes, materials and training modules published.	2013-2015	At the start of the project we anticipated that we would write a document for development NGOs about CBRM. In recent years we have found greater value in working together with partners to develop products that account for the specific needs of them and their audience. We began this process during the AAS scoping in 2012, supported by this project (Schwarz A., Andrew N., Govan H., Harohau D and Oeta J. (2013). GGIAR Research Program on Aquatic Agricultural Systems Solomon Islands, Malaita Hub Scoping Report. AAS 2012-13) and have continued through carrying out joint awareness activities through MOUs with Live and Learn and World Vision using the CBFM facilitators manual (WorldFish, 2013).
3.6	Develop communication materials on CBRM spread for use by practitioners	Communication materials are freely available through networks, NGO's and government offices	2014	There are a range of channels by which locally relevant communications materials, increasingly developed and endorsed by groups of partners, have become available in Solomon Islands. The ACIAR project team has contributed materials to a folder of CBRM information that has been compiled by the CTI national co-ordinating committee. The project provided CBRM information materials, and a bookcase for display of materials, to the Auki fisheries office. This office was selected by the Malaita PFO as the focal point dissemination of CBRM materials for the Province. Two DVDs developed in a previous ACIAR project (CBRM in Jorjo and CBRM in Lau) on CBRM (FIS 2007/116) have been re-produced in bulk and made available for

				<p>dissemination to communities via WorldFish offices, Provincial fisheries offices, SILMMA and partner organisations.</p> <p>MFMR instituted a radio program through CTI and SILMMA. WorldFish worked in collaboration with MFMR to produce two nationally broadcast radio programmes that discussed the processes and objectives of community based management.</p> <p>A SILMMA website has been launched that has links to ACIAR project publications www.silmma.org.sb.</p> <p>SPC developed a series of information materials for communities members in the Pacific and the project team provided input to those</p>
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Objective 4: Design and implement an impact assessment programme

no.	activity	outputs/ milestones	completion date	comments
4.1	Hold PIPA workshops in Honiara to guide project design and impact assessment	First workshop held	May 2012	<p>A Participatory Impact Pathway Analysis training workshop was held in Honiara on the 25th and 26th April 2012. Seven WorldFish staff plus two consultants who work closely with WorldFish on community fisheries management were trained using the TOC approach to plan the pathways to the expected outcomes of Project FIS/2010/056.</p> <p>In 2014 a TOC for the implementation, support and spread of CBRM in Malaita Province was developed by WorldFish and other national partners; nested within the overall TOC developed in 2012.</p>
4.2	Collate existing information and supplement with additional questionnaires as needed to establish economic, social and ecological baselines at local, regional and national scales based on existing CBRM sites	Impact assessment programme has been implemented	June 2012	<p>Developing an impact assessment programme for CBRM has included undertaking research on the impacts of CBRM and testing processes for reflecting on and revising theories of change. The components of the IA system implemented in this project through the AAS Program are described in</p> <p>Douthwaite, B., Apgar, M., Crissman, C. (2014) CGIAR Research Program on Aquatic Agricultural Systems. Penang, Malaysia. Monitoring and Evaluations Strategy Brief: AAS-2014-04</p>

4.3	Develop and implement a participatory impact assessment programme incorporating indicators of change at local, provincial and national scales.	Scientific publication detailing effectiveness of integration of community management plans into the national model and protocols	June 2014	<p>Cohen, P., Schwarz, A., Boso, D., Hilly, Z. (2014). Lessons from implementing, adapting and sustaining community-based adaptive marine resource management. Lessons Learned Brief: AAS-2014-16.</p> <p>Ratner, B.D.; Cohen, P.; Barman, B.; Mam, K.; Nagoli, J.; Allison, E.H. (2013) Governance of aquatic agricultural systems: Analyzing representation, power, and accountability. Ecology and Society, 18(4): 59 [open access]</p>
4.4	Work with MFMR and SPC to develop a database for management of CBRM data	An MFMR staff member is managing an up to date database and is able to generate appropriate reports	ongoing	<p>MFMR has not been ready to develop a CBRM database over the life of the project. In parallel the Australian Government in 2013-14 funded TNC to conduct and audit of all community managed areas in Solomon Islands (under the auspices of MECDM and MFMR in the CTI). WorldFish project staff contributed to this audit.</p> <p>The CBRM Western Province symposium (Activity 1.5) also documented all CBRM activities currently underway in the province for the Western Province Government (WorldFish 2014).</p>

PC = partner country, A = Australia

Objective 5: Capture lessons learned from Solomon Islands and make available to practitioners in Vanuatu and Kiribati

no.	activity	outputs/ milestones	completion date	comments
5.1	Conduct participatory diagnosis of the most appropriate entry points for management and governance responses in Vanuatu and Kiribati.	A discussion paper is produced and presented to relevant stakeholders	May 2014	<p>This research is documented in Campbell, B. and Hanich, Q. (2014) Fish for the Future: Fisheries development and food security for Kiribati in an era of global climate change. Australian National Centre for Ocean Resources and Security (ANCORS) University of Wollongong. WorldFish open access publication.</p> <p>A scoping report for Vanuatu was combined with the implementation of ACIAR FIS2012/074 (Pacific Fisheries) and will be reported on through that project.</p>

5.2	Identify specific contact points and initiate dialogue	Reciprocal site visits have occurred between government representatives of Vanuatu and Kiribati and Solomon Islands	October 2014	<p>In July 2014, staff from Vanuatu and ANCORS visited Solomon Islands for a sharing of lessons and a workshop on CBFM across three countries.</p> <p>In July 2014, the CBFM officer from MFMR Solomon Islands SPC Vanuatu) attended the 1st CBFM Stakeholder meeting in Kiribati in late October 2014.</p> <p>In March 2015 a community rep and the Vanuatu and Kiribati CBRM officers attended an SPC forum in Nouméa and where government officials, NGOs, research partners and community representatives gathered from the Pacific region.</p>
5.3	Compile lessons in collaboration with Vanuatu and Kiribati partners	<p>Lessons learned document published</p> <p>[Draft complete]</p>	June 2015	<p>Delisle, A. and Hanich, Q. (in press.) Lessons learned from the implementation of community approaches to resource management in Kiribati.</p>
5.4	Prepare a funding proposal to support on the ground activities in these countries and to facilitate on-going mutual learning	A proposal has been submitted for funding to support a learning network for Solomon Islands, Vanuatu and Kiribati	June 2015	<p>An opportunity has not arisen for a funding proposal to be developed and submitted as originally envisaged. In agreement with ACIAR (Email 10 March 2015), the activity was revised to develop a 'white paper' on training for government officials and communities in CBRM in Vanuatu, Kiribati and Solomon Islands.</p> <p>Consultations with stakeholders were undertaken early 2015 in Solomon Islands, Vanuatu and Kiribati.</p> <p>The outcome of those consultations is documented in:</p> <p>Vaartjes, V.; Hanich, Q.; and Delisle, A., (2015), Empowering Community-Based Ecosystem Approaches to Fisheries Management: Strategies for Effective Training and Learning, Australian National Centre for Ocean Resources and Security (ANCORS), University of Wollongong. http://ro.uow.edu.au/uowbooks/11</p>

PC = partner country, A = Australia

7 Key results and discussion

In this section we describe the progress made towards developing the structures, processes and capacity to implement and sustain a national program of CBRM in Solomon Islands and initiate the same process in Kiribati and Vanuatu. We describe the new knowledge generated between 2011 and 2015 and the outputs and outcomes that reflect and draw on previous community and stakeholder engagements through FIS/2007/116 and FIS/2003/051. The results and discussion section is structured as follows; firstly we describe the synthesis of learning from existing and ongoing community engagements (section 7.1.1), secondly we describe learning about innovation spread and the role of networks at local to national scales (section 7.1.2), thirdly we describe how we drew on those findings and experiences between 2011 and 2015 to inform more explicitly strength based and cross sectoral community and stakeholder engagements, aligned to the research in development (RinD) approach of the AAS program (section 7.1.3). Fourthly, in section 7.1.4 we describe the degree to which a TOC has been developed for a national program of CBRM in Solomon Islands and identify indicators and components of an impact assessment program. Finally we describe how this project supported initial scoping and sharing of lessons about CBRM in Solomon Islands with Vanuatu and Kiribati (section 7.1.5) as a precursor to FIS 2012/074. We conclude with a summary and some recommendations for next steps.

7.1 Results

7.1.1 Lessons from community engagement in CBRM

The core of our action research with communities built on relationships (communities and partners) that were established in previous ACIAR projects (results from new engagements are described in 7.1.3) and enabled us to start to address specific research questions about the processes and performance of community managed fisheries. This was an opportunity to draw together learning from communities, partners and WorldFish staff and document these for Solomon Islands, regional and international audiences.

Key lessons from communities

The first significant synthesis came from a meeting in Western Province, with communities that had at least five years of experience of trying to implement CBRM with varied success. The CBRM these communities have experienced incorporates a suite of resource-use rules and governance arrangements. These arrangements have emerged from community-driven deliberations, in this case, with guidance from support partner WorldFish. Management arrangements are recorded in management plans that are designed to be 'living' and 'adaptable' guiding documents.

Lessons learned from the communities experiences were collated (Cohen et al., 2014b) and included the following:

- Differences between planned and implemented management may emerge because of a variety of reasons including:
 - a shift in the external environment (e.g. policy change)
 - shifts in community priorities
 - difficulties in implementing or enforcing planned measures
 - a requirement for more flexibility
 - learning and new knowledge
 - a response to changes in the status of fisheries resources or the marine environment.
- Implementation of a management plan is supported by strong leadership, sustained community-wide awareness of arrangements and their rationale, sustained

- community-level involvement and ownership of the management process, and community leaders that can guide management through shocks and changes.
- Tambus¹ are a preferred and commonly used management measure, but additional measures may be required to improve resource sustainability. Management outcomes may be improved if both partners and communities have an improved understanding of the benefits and limitations of various management tools.
 - Communities need to address a range of concerns and priorities across all sectors in order to develop their community. Fisheries and resource management must be one of these priorities in order for CBRM to be effective, but CBRM may often compete for people's time and energy with other equally important issues such as community health or education needs.
 - Efforts to address fisheries concerns through CBRM may be more effective where it is integrated into planning for broader community development.

Fisheries management rules

Although tambus are still the most commonly employed rule (Cohen et al., 2013), and commonly employed throughout the Pacific (Cohen and Foale, 2012), additional measures may be required to improve resource sustainability. We have found that when it comes to the implementation phase, tambu areas are the most commonly, and in some cases the only, resource use control that is effectively implemented from all those that had been laid out in management plans. Despite a ready identification of the need for rules such as size limits, gear restrictions or other rules applying to open fishing grounds, these appear to be harder to implement (e.g., Cohen et al., 2013). An exception can be nationally legislated resource-use rules, in particular trochus size limits and the ban on harvest-for-export of sea cucumber. For example fishers are reluctant to harvest undersized trochus as village level buyers will not buy it; because further along the market chain exporters will face difficulties exporting undersize trochus due to government enforcement of size limits at export (Cohen and Steenbergen, 2015). However we often observe cases where national regulations are not active in community fisheries. For example, communities often choose to reinforce the national regulation on net mesh size in their management plan, however as this regulation is not enforced nationally at the point of import, communities enforcers have usually found it beyond their ability to enforce within their fishing grounds. Building strong and effective CBRM can take time. While communities may successfully implement components of management or some resource-use (such as tambus) early on, it can take longer to create the right conditions for implementing the suite of management measures that will likely be necessary to achieve broad and long lasting fisheries benefits (Schwarz et al, in review).

Monitoring

Communities are interested in monitoring the biological or ecological outcomes of their management. Many partner organisations have learned that underwater counts of fish and/or invertebrates can be conducted by community members with training. However, community representatives continue to require and request financial and technical support to conduct this type of monitoring and when support is 'project based' and finite this is not a sustainable option. We have found that some community representatives can however, with training, self-sufficiently sustain low intensity and simple catch monitoring where they use catch per unit effort data to monitor the results of management. Other communities and fishers tend to use perceptions or 'expert observation' techniques, whereby fishers consciously use their intimate knowledge and regular exposure to the fishery to assess changes. A key lesson is that monitoring activities need to be simple, reliable, and cost effective, and have community interest. Our lessons on monitoring are documented in

¹ *Tambus are based on historical or customary practices, and are usually non-permanent closures placed over areas of reef or coastal waters to 'save-up' or replenish marine resources. In many contemporary contexts, tambus are closed to harvesting for a period of time, or closed indefinitely until a need for resources arises.*

Schwarz et al. (in review). As we increasingly adopt a Participatory Action Research approach (see section 7.1.3) there is additional opportunity to move away from monitoring and indicators (such as that might be established through repeated household surveys) towards a process of participatory learning to monitor the impact of CBRM (see section 7.1.4). The research reported on here, and research now building on that, reflects this shift. Our research reported in Cohen et al. (2013) and Cohen & Alexander (2013) was supported by involvement of community members (male youth). Several steps were taken to encourage participation and the production of high quality data to determine fisheries performance (e.g., see Cohen et al., 2014a). These represent early steps towards PAR approaches, and in future efforts increasing community engagement in all stages of research will be a goal.

Which villages are engaged?

In some instances (e.g. the Jorio region in Vella Lavella) a number of villages have attempted to work together under one management plan that spans multiple villages. Villages may prefer to work as a region; where multiple villages (between 3 and 5 in our experience) form a regional unit because of a historical connection.

Developing and implementing management by region (as opposed to management by village) holds several advantages in terms of facilitating process and outcomes. Firstly working at the region level can extend management over a larger area. Secondly a regional management arrangement draws on natural social alliances which may facilitate the sharing of lessons, experiences and technical resources to support management implementation. From an ecological perspective managing a region, or establishing a network of managed or protected areas, can enhance the effects from management or protection due to larval dispersal and adult migration from neighbouring well-managed sites. However while villages within a region may appear, upon initial assessment, to have broadly similar management issues and external environments, as management proceeds the differences in management needs, governance arrangements and shocks or changes faced emerge and become more apparent. This can lead to villages being at quite different stages along the management process and some villages may face problems in implementing or sustaining management.

In our experiences to date, managing at a regional (multi-village level) can be quite difficult, and can slow or hinder adaptation. The logistical difficulties of travel in Solomon Islands can make it expensive and challenging for representatives from a region to come together for discussions and deliberations – and meeting may therefore be dependent on external support. In some cases, this challenge has appeared to slow the reassessment and adaptation of management arrangements.

Additionally, adaptations may be quite different within the different villages that had been trying to work together as one management unit. We have observed that communities more advanced in the management process can however serve as a positive example and share lessons with communities that are less advanced. In other cases, if some communities are having problems implementing management this can slow the progress of other communities. Cross-community lessons sharing may be useful at regional levels. However, specific management rules and governance arrangements may, in many cases, be best devolved to the village level – allowing rapid responses to change and that specific context.

Gender

One of the key observations in synthesising lessons and community experiences was the need to continue to address gendered differences in opportunities to participate and benefit from fisheries management arrangements. Our consideration of gender over the life of this project has matured from one of collecting gender differentiated data (refer final report FIS/2007/116) to undertaking gender analysis at the community level (section 7.1.4.) and building capacity in the national and international research team to design approaches that are gender equitable. Gender equity refers to the process of being fair to

women and men in order that women and men can equally access opportunities and life choices regardless of their sex.

The journey from being gender aware to taking an approach that actively aims to address inequity in gender and power around resource management is reflected in the joint publication on the experiences of WorldFish and SILMMA partner TNC, and the increasing sophistication in collection of data culminating in an extensive benchmarking of gender norms carried out in North Malaita in late 2014 (Dyer, 2014). With partners TNC, we synthesised lessons on the engagement of men and women in CBRM and proposed that local and national management policies and practices can be more effective if they are more gender equitable and better consider the differences in how men and women participate in natural resource use and in the community, taking into account their potentially different goals. In Schwarz et al. (2014) we identified challenges to achieving gender equity in terms of access to resources and decisions about how resources are used and managed. These include:

- *Gender roles.* In rural communities, both men and women are involved in community activities, in producing food and generating income, and in preparing food and taking care of their families, but their roles vary. Men are better represented on local committees and in regional and national politics. Men may have more opportunities to travel outside of the community to meetings and trainings than women, who have the primary responsibility for child care and work longer hours. These different roles can affect whether and how men and women are able to participate in, and how they are impacted by, decisions about resource management.
- *Lack of information.* Information about programs and activities run by external organizations in communities is commonly addressed first to leaders, chiefs or committee chairs; these are usually men. As a result, women and youth are often dependent on these men to pass on the information through communication channels such as announcements in church. This reliance, combined with the relatively low literacy levels of rural women and men (60.1% with only primary education and 18.6% with no schooling) means that in some situations information does not reach marginalized members of communities, including many women.
- *Limits to participation.* When both men and women are present in meetings and workshops, there may be social and cultural reasons that mean women are less likely to speak up or contribute toward decisions. We have also observed that when selection of participants relies on male community leaders, most participants are men, even when the leaders are explicitly requested to invite women to events. When women do attend community events with external organizations, they often have a dual role of preparing food for the participants, and as a result can spend much of the meeting moving in and out, losing the opportunity to participate fully.
- *Assumptions.* Understanding the roles of men and women in a community requires questioning assumptions. For example, a common assumption is that all fishers are men. However, women's roles in fisheries are numerous and diverse, and include collecting, processing, preparing and marketing fish and other marine resources that contribute directly to the well-being of their families and communities. Yet because fishing is perceived to be a male dominated sector and "fishing" is taken to mean line or spear fishing and not gleaning for shells and seaweed—and also because the term "fishing" does not capture associated activities such as processing, preparation and marketing—the role of women in fisheries can be overlooked.
- *Differing motivations.* Community consultations often reveal that men and women may have different motivations for getting involved in managing resources and hold different objectives for management. Due to the dominant gender roles and norms in some communities, men can tend to look more at the land and sea for

ways to generate income while women may place greater emphasis on how the land and sea can provide adequate food for their families; men's priorities are often more strongly reflected in management strategies.

- *Cultural norms.* Known as kastom in Solomon Islands, cultural norms can play an important role in safeguarding the morality, behavior and attitudes of people, but may not necessarily align with democratic processes and equality. For example, where men are regarded as heads of households and have the role of leading and determining household decisions, they may also directly or indirectly control how women spend their time, including their involvement in activities outside the household. Where ideas such as promoting equal participation in household or community decisions and promoting equal opportunities to access and benefit from resources are considered important to households and communities, there can be some challenges in reaching a balance with cultural norms.
- *Support access to information.* Men and women have different opportunities to access information. Men who have more freedom and time to travel or to attend workshops and meetings don't always effectively share information with other men when they return to the community. However, when women and men have the opportunity to access information directly, they can share through their channels of communication with others and with children in the household.

Useful strategies to address these issues include the following:

- Arrange specific activities at times and locations that are suitable so that both men and women have improved access to information.
- Provide opportunities for men and women to learn together and share experiences.
- If representing an organization from outside of the community, talk with leaders of both men's and women's groups early and come to a clear understanding of agreed communication channels.
- Provide opportunities for different groups within the community to share experiences with each other.
- Carry out activities for men and women within the community simultaneously, but if necessary, separately. Ensure the processes are transparent between the groups.
- Provide opportunities for leadership and use the following strategies:
- Conduct a participatory gender analysis to help guide facilitators and to increase community self-awareness about impacts of different management interventions on men, women and youth in the community.
- Establish partnerships with women's groups and church groups to develop programs that women can lead and that are aligned with their existing programs so as not to add an extra burden.
- Seek out male champions who are supportive of the involvement of women and youth in marine resource management.

The joint publication with TNC resulted in MOUs being signed between TNC and WorldFish and Live and Learn and WorldFish, indicating that there is growing interest in joint learning for mainstreaming approaches that are equitable for men and women and other marginalised groups in communities. To contribute to sustaining the momentum within the resource management sector, subsequent to the completion of this project, in August 2015, the AAS Program hosted a partner workshop in Solomon Islands. This was facilitated by international gender research organisation PROMUNDO and resulted in the planning of gender transformative interventions based on the benchmarking findings and the experiences of partners.

Resilience approaches to CBRM

One of the planned outcomes of this project was to produce publications that drew on practical experiences to contribute to the body of information on adaptive co-management and resilient small scale fisheries. With a resilience lens we synthesised eight years of

learning, drawing on community experiences and lessons about how communities had defined their fisheries, developed and monitored their management rules (Schwarz et al., in review). In the paper we described our experiences in attempting to ground resilience thinking in collaborative CBRM in five coastal regions of Solomon Islands, through testing the participatory diagnosis and adaptive management framework of Andrew et al. (2007) in FIS2007/116, FIS/2003/051 and this project. We highlighted that we had focused on collectively building the management constituency and its ability to respond to change and tested a resilience-informed approach to interpreting monitoring results (see FIS2007/116 final report). We highlighted that this had been well received in communities but that most were unable to sustain monitoring programs. Defining the fishery in a way that was meaningful to the local community in terms of their resource-use practices and management jurisdiction was important, but meant that local governance and management arrangements were ill-prepared for change beyond the scope of their fishery, for example the imposition of a national sea cucumber export ban. The paper identifies that communities had mixed success in implementing and sustaining management arrangements, which, in practice, sometimes differed from those planned in consultative processes. The paper concludes that these adaptive changes reflected the complexity of these social–ecological systems. The use of the adaptive framework helped us identify and reflect upon our experience of the various elements of a resilience approach to CBRM. As a result, our approach as management partners evolved substantially to become more interdisciplinary and to use a wider variety of entry points to community engagement (see section 7.1.3).

7.1.2 Innovation spread and the role of networks

The findings from research into the spread of innovation in CBRM were published in Abernethy et al. (2014). From the five case study sites in Solomon Islands the research showed there was no blueprint to the CBRM institutionalisation processes that occur and that it greatly depends on the community context. The processes are not linear journeys and there are periods of rapid change and stability or stagnation. The case studies revealed that sustained institutionalisation and active support of CBRM depended on the types of events that happened at the beginning of the process. Active support was defined as a combination of three factors: the perceived legitimacy of the resource management process, the level of community support for resource management, and the existence and the nature of rules in use. The series of events taken to maintain active support were important and can be divided into three component types that were collectively essential for building active support for CBRM within a community:

- (i) Using governance structures and decision-making processes that were perceived to be legitimate in the eyes of the community were particularly significant. Without legitimacy it was difficult to gain or maintain support for CBRM within the community. The communities which had the most widespread active support for CBRM, had built on existing governance systems, both rules and larger institutions.
- (ii) Spending time garnering support for the CBRM idea through community-facilitated participatory and inclusive awareness raising and dialogue was important for initiating support for CBRM. Then observing those promised improvements to community life, whether they be direct or indirectly related to CBRM, was a powerful mechanism for maintaining active support.
- (iii) Selecting and adapting rules appropriate to the situation, respecting ownership of resources and involving the whole community in rule enforcement improved compliance and the acceptance of rules in the community.

The research showed that some communities generated effective and active support for CBRM ideas without direct NGO input. Agency was important here as building support for the idea required intensive engagement with the whole community and facilitation by an enthusiastic and determined group from within the community.

A supportive leadership with an active youth appeared to be a successful combination in the cases examined in the paper. Nevertheless NGOs had an important role to play in the co-production of CBRM, particularly in supporting and providing access to information on resource problem recognition, marine ecosystem function, management options, and long term monitoring of CBRM and fisheries.

Research in Solomon Islands suggests that effective partner and community networks (Activity 1.5) will facilitate implementation of a CBRM spread model. Two prominent national networks that have an explicit focus on CBRM are the Solomon Islands locally managed marine area network (SILMMA), and the national coordinating committee (NCC) for the Coral Triangle Initiative (CTI). We have maintained active roles in both these networks, and have both taken direction and guided direction of policies developed by both. At the present time SILMMA is challenged to find traction and realise progress, and our investment in the network to date seems not to have paid dividends. On the other hand, the NCC effectively steers conservation and development activities in Solomon Islands. Of particular relevance is the prioritisation given in the CTI National Plan of Action to CBRM as the main model through which to implement conservation, coastal fisheries management and development. Further, project staff have provided input and advice into research designed to assess the effectiveness of SILMMA for coordinating and expanding CBRM in Solomon Islands (Cohen et al., 2012).

The Malaita Province Partnership for Development (MPPD) is the first group of NGO's and provincial government representatives, in that province, to come together to form a network of practitioners to improve delivery of services to communities and to provide a venue for community voices to be heard. Originally established by World Vision with the Malaita Provincial Government MPPD has been supported to hold some of its meetings by this project and has been leveraged to share learning (activity 1.6) through development partners such as World Vision, for example.

A participatory action research partnership with the MPPD is being led by Dr Jessica Blythe through research collaboration with JCU and is funded in part by this project; supported by the AAS Program. A participatory TOC was developed with the forum in 2014, linking with a TOC for CBRM spread in the province. The TOC was revisited in May 2015 and the results of a survey of MPPD members on their aspirations for the network will be published 2015 (Blythe et al., in prep).

Western Province does not yet have the same sort of network despite it being widely recognised amongst partners in Western Province as a need. In 2014 we convened a symposium of NGOs, registered community organisations undertaking CBRM and government on CBRM in Western Province. A key outcome was the establishment of an information exchange and coordination network of these CBRM practitioners. While the current expectations of this network are modest, efforts to further develop their roles, functions and capacity will be ongoing. A summary of CBRM activities/partners was collated (WorldFish, 2014) and presented to the Provincial government to aid their ongoing monitoring and networking.

7.1.3 A research in development approach to CBRM

In section 7.1.2 we alluded to the changes that have come about in the way that WorldFish addresses gender in our participatory action research approach. Two other key changes that have particularly influenced the research in the project include how we engage with communities and how we have addressed learning about implementing national models and the necessary scale out processes.

Community engagement

One of the guiding documents for the implementation and rollout of CBRM in Solomon Islands is the Solomon Islands National Plan of Action for the Coral Triangle Initiative (NPOA). The NPOA recommends an approach that enables the resources of various ministries, divisions and NGO's from a range of sectors to be shared, and allow a broader

range of issues to be addressed within any one community engagement. This approach was referred to as CBRM+ indicating that natural resource management would be addressed through ecosystem approaches and include climate change vulnerability and adaptation assessment, and food security. The intent of CBRM+ is consistent with the RinD approach of the AAS Program and the recognition that many CBRM initiatives, including our own approach, have focused on fisheries or marine issues without adequately (if at all) exploring other community issues or concerns. While many partner and community efforts have resulted in the establishment of community management of marine resources, it is not uncommon for community enthusiasm for resource management to wane and other community development priorities or governance issues to derail their efforts (Schwarz et al., in review).

Aligned to the approach of the AAS Program, new community engagements through this project adapted an approach promoted by a Belgian based NGO, the Constellation, termed the Community Life Competency process (CLCP). WorldFish national and international CBRM researchers and CLCP coaches came together in a workshop in Honiara on September 2012 to compare and contrast the WorldFish CBRM engagement approach with the CLCP approach. Participants drew on their experience of working in 11 communities across four provinces. Two aspects of the CLCP approach that were emphasised, and added value to the engagement approach previously used by the WorldFish team, were the addition of facilitation tools to adopt a more strength-based approach to community engagement, facilitating communities to identify the strengths and resources they already had to build upon rather than looking only to the external partner for support; and to take a broader view of diagnosis of the issues facing the community and how they would be prioritised, rather than only adopting a fisheries management lens.

The newly trained facilitators saw that the process created space for the community participants to talk about and share their visions and that this created an opportunity for making decisions about collective action. As one participant observed, “individual/family dreams are also part of a larger community dream, and one person’s dream that is not shared is unachievable”. WorldFish staff said that in informal discussions with some of the youth and women who attended the workshop, “they mentioned that they liked the process as it was not WorldFish telling them what to do, but helped them try to see their own strengths and resources and to build up from there” (pers. comm. Orirana G. July 2013). These sentiments helped WorldFish staff become more comfortable with the CLCP process and continued to clarify where it could add value to engagement processes being used in other communities undertaking CBRM.

Another prong to a more holistic approach to community engagement in Malaita was for the project team to utilise the MPPD for consultations on process and to improve cross sectoral collaboration; for example MPPD members advised that an agreement between WorldFish and the communities where we work in Malaita was prudent and a process was devised to come to a mutual understanding of purpose, roles and responsibilities with the communities. . From November 2013 to January 2014, the WorldFish team consulted with communities in Malaita on the draft of community research agreements that laid out WorldFish and partner commitments on one side, and community commitments to their action plans on the other. The agreements were signed in March 2014.

Learning about a strength-based approach to community engagement

Before working with CLCP we limited our engagement in communities to areas where we could meet expectations. Working with CLCP we better understood an underlying premise of the AAS program; that every community has the capacity to tackle challenges and take ownership of actions to meet their development aspirations. We understand better how a process of collective visioning and action planning ‘switches on’ this capacity. As a result, there has been a shift in the way WorldFish works. Instead of representing ourselves as fisheries experts, we now play a role as facilitator. Whereas we used to respond only to community concerns about marine resources and ask “What support can WorldFish provide to the community to improve fisheries management?” we now stimulate

communities to think broadly about their vision and how, “We, the community, can do a lot.”

Part of what we have learned through implementing CLCP as part of the AAS RinD approach was the importance of a greater sensitivity to differences in levels of participation, representation and power within communities. We learned this the hard way, when people we thought were community representatives were not actually representing broader community interests to the satisfaction of their communities. Community members explained that if the ‘representative’ is not the person of their choice they do not want to listen. However, even when community representatives were chosen and approved by the community, they still may fail to represent community interests all the time and some dissatisfaction is to be expected. The approach gives us tools to facilitate processes that recognize that those who represent communities must be chosen through a fair and transparent procedure decided on by the community. We have learned to include broad representation in decision making committees and to structure discussions so that men, women and youth are all able to contribute.

The RinD approach has brought about changes to our engagement in development and our CBRM practices in three main areas. First, in adopting the strength-based approach we have shifted our role from only being fisheries ‘experts’ to facilitators with new skills and tools to enable and empower communities. Second, we have increased our sensitivity towards power relations within communities and drawn on our facilitating skills to promote participation. We have further sensitized our research to explore elements of representation and power and what these mean for development outcomes. Third, we have increased the emphasis we place on fostering meaningful engagement of community members in research and in integrating research into the development process.

There are many outstanding questions about whether these changes in process are sufficient to bring about lasting change given the range of challenges the Solomon Islands development context presents. Nevertheless we have some evidence emerging that gives us confidence to hypothesise that these shifts in practice and emphasis will accelerate and deepen the impact of our work with communities, who will have improved capacity to adapt and innovate, and that generalizable lessons can be synthesised. These will be important to help further address the question of how to facilitate spread of community innovations to a wider number of communities.

CBRM spread

The effectiveness of community-based management efforts can be enhanced when capacities are built across institutional and spatial scales (i.e., not just at the community level) (Govan et al. 2011; Cohen et al., 2015). However, scaling direct support to more and more communities to ensure the spread of CBRM is beyond the reach of foreseeable national and provincial budgets, or the project models commonly pursued by NGOs (Govan et al., 2011). Govan et al. (2011) outlined a potential approach for Solomon Islands which nests community level management in wider catchment or district level planning processes supported by staff decentralized to the provincial level, with key coordination and technical support provided at the national level. Implementation would require an approach that gradually increases the number of core, or learning, sites (Fig. 2) directly supported at the provincial level but that also develops effective means to encourage and support the majority of communities to improve management without the same levels of direct support.

WorldFish project staff contributed to workshops facilitated by the Solomon Islands Government CTI National Coordinating Committee (NCC) to develop a strategy for implementation of the NPOA in Solomon Islands (NCC/Govan, 2013), drawing on the model proposed by Govan et al. (2011). That strategy drew on experience to date to identify that provincial governments need, and wish, to play a key role in decentralized

governance efforts (Cohen et al., 2012), including in providing support for CBRM+ in order to reach the majority of Solomon Islanders. Yet, the limited capacity of the provincial government to provide this institutional and technical backing to community based efforts has been recognized (Lane, 2006; Cohen et al., 2012). The “strategy” aimed to contribute to developing solutions for strengthening the role of provincial governments in environmental management and conservation and more effectively support locally-managed marine areas. It recommended a phased approach to provincial CBRM+ and delivery, identifying some relevant milestones for such an approach (Fig. 2).

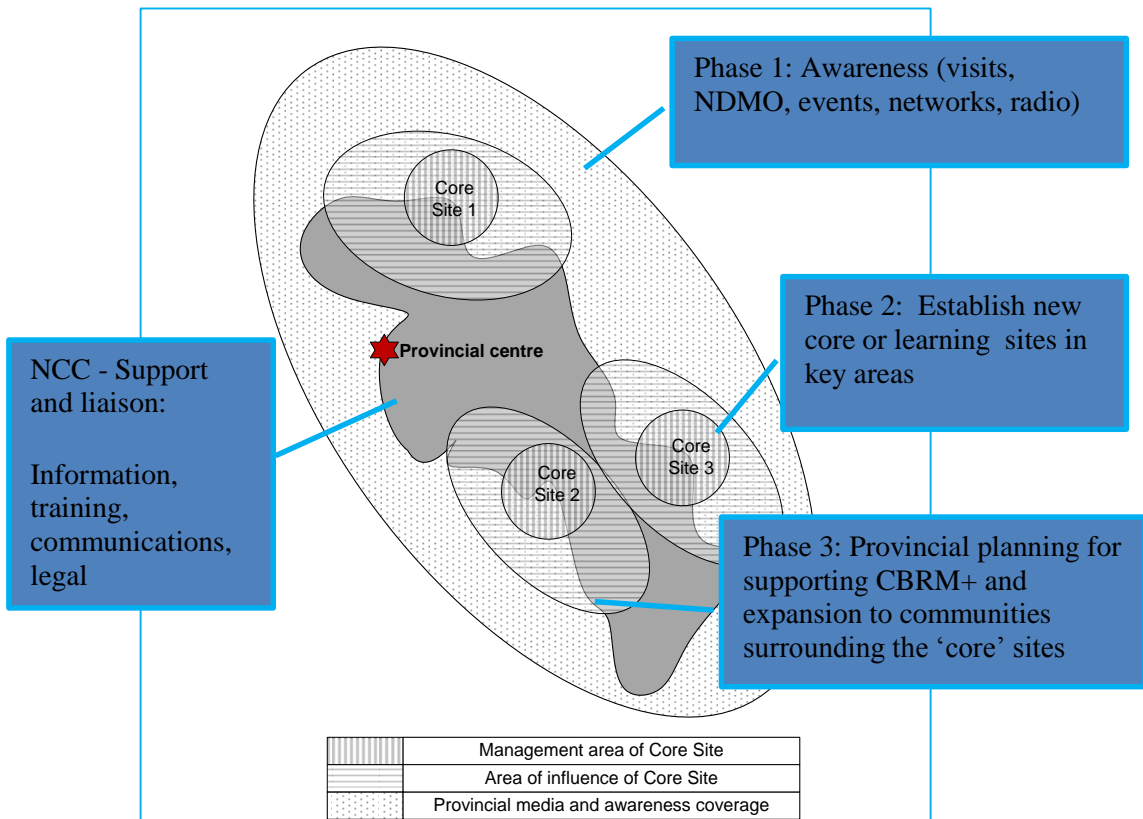


Figure 2. Diagram representing three phases of rollout of a nested system of CBRM+ in a hypothetical province (Figure adapted from NCC/Govan (2013)). Phase 1 prioritizes general awareness; phase 2 supports core or learning sites and phase 3 supports an expansion of learning from the core sites to surrounding communities. A role for a network (in this case the NCC) is identified for liaison and provision of information etc.

In this project we tested some elements of the phased rollout model for core and surrounding sites in Mararo, Fumato’o and Radefasu communities in Malaita Province. In WorldFish (2013) we outlined the process for community engagement in a core (or seed) area (Fig.2) as well as a ‘lite-touch’ engagement approach for situations where a community have interest in having some assistance with implementing CBRM because they have received information about CBRM through neighboring communities or by sourcing their own information from the government or other organizations. The lite touch approach was envisaged as being useful to help planning if there was the opportunity to visit such a community only rarely or opportunistically (Fig. 3).

Many of the steps described in WorldFish (2013) can be completed by the community themselves if they are organized and have their own resource people to draw on. They may seek some specific support from government or NGOs where required.

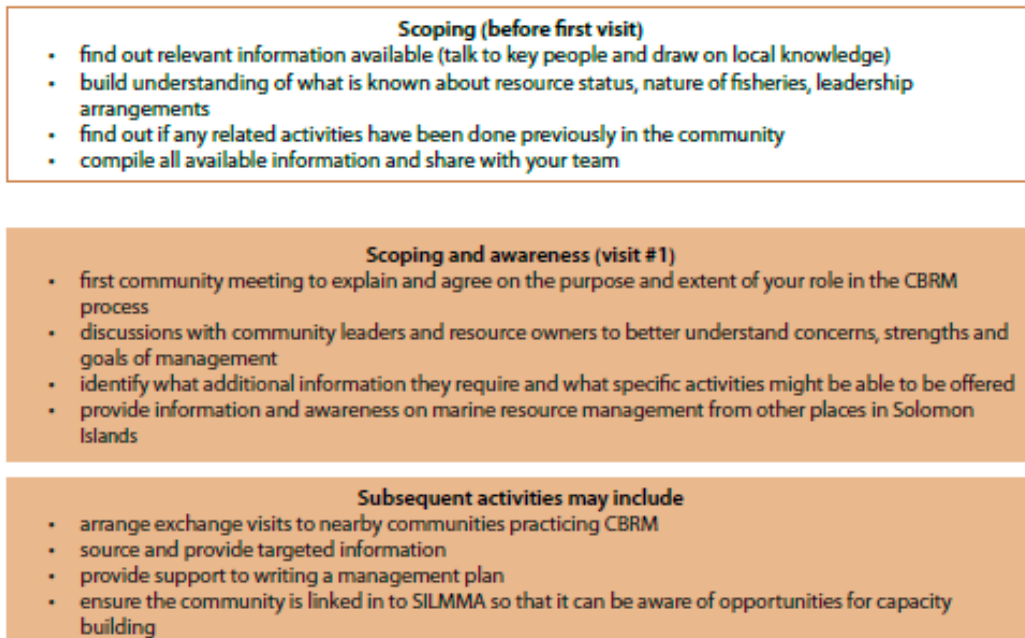


Figure 3. The 'lite touch' approach for a 'core' community (WorldFish, 2013) outlining suggested steps, from top to bottom.

The new engagements within this project illustrated the learning (section 7.1.1) that different community contexts require different approaches and have different time lines, consistent with the research on innovation histories (section 7.1.2), however the general steps compiled in WorldFish (2013) were robust enough to be an effective guide for the different situations and trajectories. These are summarised for new engagements in Table 3.

Table 3. Events in three communities between 2012 and 2013, illustrating different events identified in partnership with the communities and responding to their timelines. Where ACIAR funded learning contributed to other donor (ADB) funded activities this is noted.

	Fumato'o	Mararo	Radefasu
Site characteristics	Accessible by sea from provincial centre of Malu'u	Remote from all transport routes and provincial centers	Close to provincial capital of Auki, can access provincial fisheries and WorldFish on a daily basis if necessary
2012		Community engagement (scoping and diagnosis) after requests from a community resource person	Community resource persons focus on mangrove replanting and with the assistance of WorldFish hold a regional mangrove

			planting workshop
2013	Community engagement (scoping and diagnosis) after requests from a community resource person	<p>CBRM awareness conducted</p> <p>Members attended a cross community learning event in South Malaita (ADB)</p> <p>Community resource persons conduct their own consultations on rules and plan boundaries</p> <p>Management plan drafted with assistance from WorldFish (ADB)</p>	<p>Community resource persons conducted their own scoping and diagnosis after consultations with WorldFish staff</p> <p>Members attended a cross community learning event in South Malaita</p>
2014	<p>CBRM awareness conducted by WorldFish</p> <p>Members attended a cross community learning event in Western Province</p> <p>Community resource persons conduct their own consultations on rules and plan boundaries</p>	<p>Capacity building activities for committee and community members (ADB)</p>	<p>Community resource persons conduct their own consultations on rules and plan boundaries</p>
2015	<p>Management plan draft being consulted widely with surrounding communities by the committee</p>	<p>Community members and resource persons conducted an awareness raising trip about CBRM to neighbouring communities (ADB)</p> <p>Management plan poster printed and plan implemented</p>	<p>Consultations complete with surrounding communities; plan being finalised for printing</p>

Core communities

The nominal role of a core community in the model of Govan et al. (2011) is to act as a learning site or a center from which information diffuses, or spreads. While possible ‘core’ communities that are located close to government or NGO offices (e.g. Radefasu) can be the recipients of relatively more attention and follow up by partner organisations, those that are remote are likely to only be able to receive a lite approach to CBRM facilitation (e.g. Mararo). If a core site is to be supported through a lite approach this research suggests that an effective community resource person² is essential for such an approach to succeed. Building the capacity of, and then utilizing, community resource people as much as possible (rather than always NGO staff) has proved to be cost effective for the

² In this document we recognize this community derived term for an individual with certain skills to help a community achieve a specific objective; such individuals are also referred to as focal points or a bridge person between the community and external organizations.

partner organization but does require a lot more relative input on the part of the community.

Resource persons need to be people that the community trusts and who have a sufficient level of formal education. They need to be creative to seek assistance when needed, and self-motivated to facilitate community activities and help them move forward with their management plan without regular outside assistance. At some stage a broader constituency needs to be empowered e.g. a management committee to handle finances and ensure transparency and to ensure a distribution of capacity building to provide sustainability when the resource person is absent from the community.

Influencing neighbouring communities

Effective influencing of neighbouring communities is likely to have a number of pathways. Our research has shown that communities used existing networks (e.g. church meetings, story-telling) to pass messages and ideas. Facilitated sharing events (e.g. community to community exchanges held in Western Province (2013, Activity 1.6), and in South Malaita (2013) and North Malaita (2015) through companion projects (ADB funded); appeared to give legitimacy to community actions that stimulated a great deal of interest from surrounding communities.

Communities can learn from the experiences of others – word of mouth can stimulate other communities to implement CBRM (Abernethy et al., 2014). This process of learning can be facilitated through structured ‘look and learn’ activities i.e., where NGO or government partners provide financial and logistical support to community representatives to visit another location where CBRM is operational, and there they participate in a structured programme of learning. However the exchange of information and ideas about CBRM can also happen more naturally through family and market relations in particular (Abernethy et al, 2014). While approaches such as radio are expected to increase the reach of information, radio is not yet accessible by all in remote locations; the time may have come for new technologies such as using internet access on mobile phones, a now ubiquitous technology in rural Solomon Islands.

To date activities to facilitate spread of learning to satellite communities have been in regions where there is sufficient community knowledge to draw on from ‘core communities’. In North Malaita –Fumato’o has emerged from previous work in Funa’afou and Foueda (one tool used was the Lau DVD FIS 2007/116); eight communities in North Malaita had material distributed to them during a workshop in Fumato’o in 2013. In South Malaita; eight communities in Malaita received information (printed materials, training of community facilitators (Small Malaita) on implementing CBRM through World Vision activities conducted in Haunasi Village, Taori Village and Waiaha Village; and 10 communities attended a cross community learning event about mangrove management in 2013 (funded by ADB). In South East Malaita; Mararo community has a mangrove management plan (developed under an ADB ICM project, using the materials and staff capacity developed through WorldFish ACIAR projects) and local resource people have been supported to conduct awareness about CBRM to 14 surrounding villages; interest that was stimulated in part by the cross community learning event.

Leona continues to be the core of CBRM in Vella Lavella, Western Province; increasingly they are able to share lessons with surrounding communities and with other stakeholders; for example the project facilitated a meeting in Leona community in April 2013 that drew on experiences of communities in the Western Solomons as well as provincial, national government and NGO stakeholders to share lessons learned about CBRM.

Policy and legislation

The CBRM+ spread model (Fig. 2) is a nested model identifying significant roles for provincial and national government as well as communities. In May 2015 the new Solomon Islands Fisheries Act was gazetted. The Protected Areas Act (2010) is currently being tested by MECDM for the registration of conservation areas but this act was not

designed for community managed fisheries areas. The Fisheries Act therefore is a significant milestone for MFMR meaning that there is now a mechanism for registration of community fisheries management plans. As the Act was gazetted in the last month of this project, the focus has been working with provincial networks to find ways to better support communities under the current legislation options available to them; to better prepare communities and provincial level stakeholders for the time when the relevant legislation becomes available, and to engage with MFMR and provincial governments to support the review of the Fisheries Bill and development of the Western Province (this project) and Malaita Province (a related ADB project) fisheries ordinances. This included project and AAS team members playing a role as members of advisory groups such as Dr Gregory Bennett on the Western Province Fisheries Advisory Committee and Dr Reuben Sulu on the national Fisheries Advisory Council in Honiara.

7.1.4 An impact assessment program

Developing a theory of change

The research conducted, and published, in FIS 2010/056 increased our understanding of the potential impact of a national CBRM program. We developed and tested processes for assessing that impact including building the capacity of researchers and stakeholders to develop and reflect on theories of change. The processes will take a number of years to be fully tested as to their utility in evaluating the impact of a national program of CBRM, however we propose that the components of an M&E system we describe has utility, with its focus on outcomes, in not only measuring progress but also understanding how this progress is made.

The mechanism for identifying outcomes and the activities and milestones that contribute to those outcomes was the development of a participatory TOC. The AAS program adopted TOC as a method for impact assessment in complex systems, using participatory action research principles (Apgar and Douthwaite, 2013) that emphasise ownership by the participants, equity, shared analysis and feedback for ongoing learning that is potentially transformative. In 2012 the impact assessment research focused first on building capacity in participatory action research approaches, including the participatory development of theories of change, in the WorldFish team and partners.

We drew on existing experience of CBRM implementation in Solomon Islands to identify intermediate outcomes, end of project outcomes and intermediate and shared development outcomes (Fig. 4). End of project outcomes were defined as 1) Communities in Western and Malaita Provinces are implementing CBRM; 2) processes for spread of CBRM understood and used to spread CBRM; 3) structures to sustain a national Program of CBRM are in place and 4) national and provincial capacity to support and enable CBRM enhanced, while intermediate development outcomes included such things as better access to new livelihood opportunities; more informed communities and strengthened existing and traditional (governance) systems (Fig. 4). The TOC for these outcomes was aligned with the high level shared development outcomes of AAS - improved well-being of AAS dependent people (in Solomon Islands) (AAS, 2011).

The 2012 TOC narrative is summarised as ‘through the efforts of researchers, provincial government national government and development partners, by 2015 capacity will be built and information produced and disseminated that would ensure that processes for the spread of CBRM are understood and used by stakeholders. Core communities will be implementing CBRM, and supporting legislation and structures to sustain a national CBRM Program will be in place’.

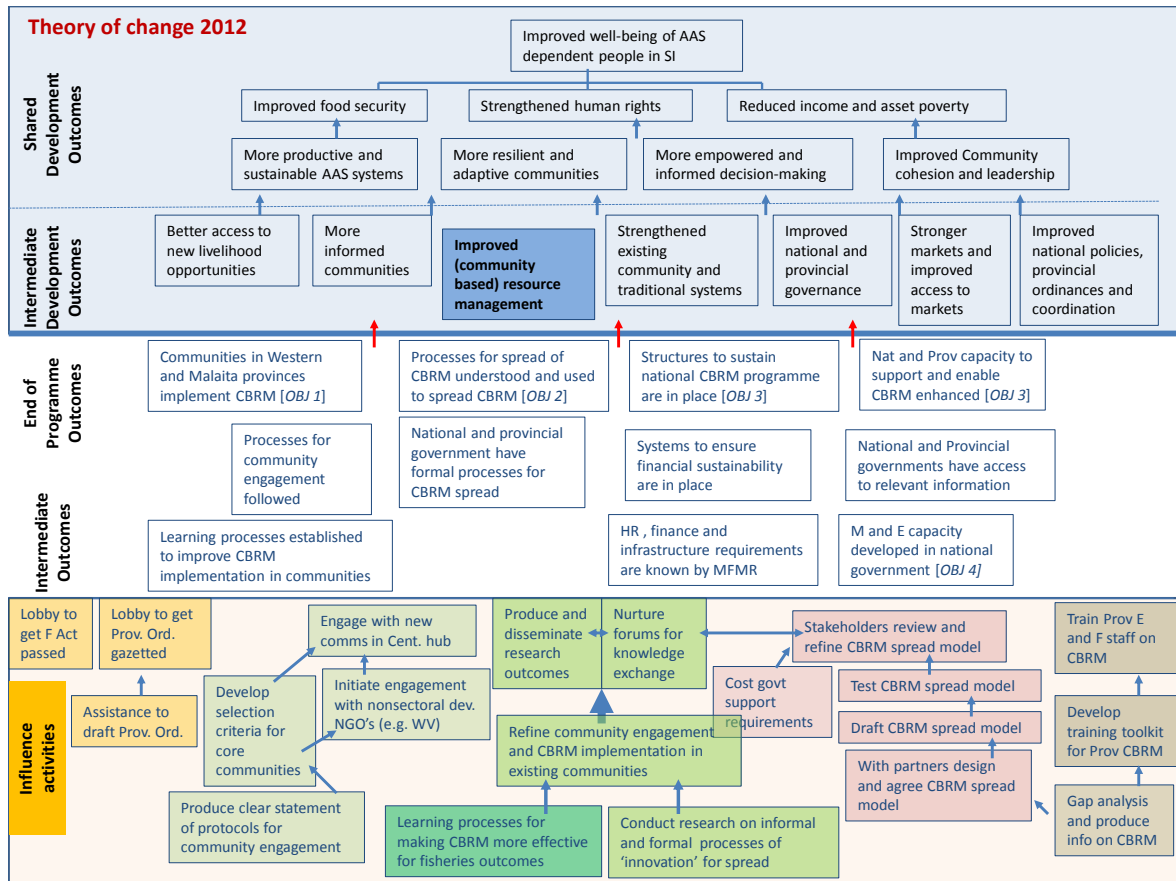


Figure 4. A Theory of change for the project in Solomon Islands was developed as part of a training exercise on participatory theories of change in 2012. At the bottom are activities that the project team and project partners were engaged in or identified as necessary. Moving up the diagram, outcomes become increasingly longer term and increasingly, will only come about from many strands of endeavour.

These participatory exercises contributed to AAS Program learning. Douthwaite et al (2014) described the AAS M&E system as having five components (Fig. 5). In the center of Figure 5 are the three different types of M&E that are distinguished: performance reporting, monitoring of outcomes, and M&E for learning. These are the elements that are likely to be relevant to a national program of M&E. The other two (information management and evaluation research) relate to how the AAS research program manages and uses information generated through M&E:

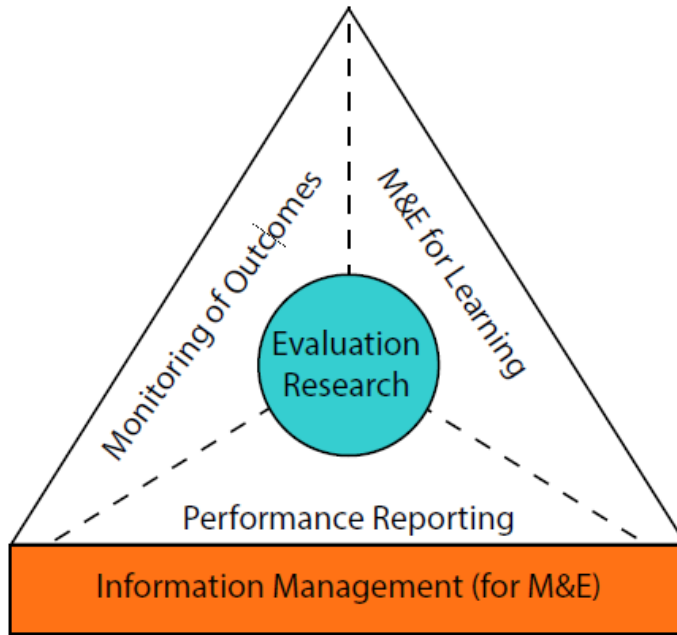


Figure 5. A depiction of the M&E system for AAS that was developed over the lifetime of FIS2010/056 and to which project learning initially contributed, and then tested.

Reflecting on a TOC

Monitoring progress against the TOC was centred on cycles of reflection and action with groups of stakeholders. Regular reflection informed by outcome monitoring allows stakeholders to learn if the assumptions are valid (Douthwaite et al., 2014). One reflection event was held with Malaita Province stakeholders and national government representatives in November 2013 and another was held in March 2014. During the second event a TOC was developed specifically for CBRM in Malaita Province. This was essentially seen to be nested within the broader scale TOC developed in 2012 (Fig. 4).

The outcome to impact narrative for the Malaita Province TOC for CBRM was

In 10 years' time communities of Malaita have adapted/adopted locally-appropriate marine resource management. Resource decline has slowed or ceased, and in certain areas resources have rebuilt and increased. Marine resources remain adequate to meet the subsistence and small-scale use needs of rural communities, and provide an important contribution to nutrition by providing protein and micro-nutrients. There are opportunities for rural communities to market marine produce at good prices – locally, in the national market and in some cases internationally.

Men, women and youth in communities feel supported and listened to by NGOs and provincial government and have access to Provincial Fisheries Officers if they encounter problems and need advice or information about management. The Provincial government has the capacity to provide advice and information to communities to support them to respond to changing conditions and to adapt their management appropriately. The provincial government can provide support to communities in enforcing community management plans or other fisheries regulations where communities seek assistance. Communities are aware of national and provincial legislations related to fisheries and marine resources. Both the Provincial Fisheries officers and the national Ministry of Fisheries and Marine Resources are aware of community management efforts, and have a broad understanding of the level of management and the effectiveness of management in those communities.

National regulations and provincial ordinances are relevant, current and enforced - therefore legislation adequately supports communities to manage their resources, and enhances the sustainability resource use in high-use areas and for high-demand resources.

Men, women and youth in communities plan, act, observe and reflect together with support organizations. Support organizations focused on marine resource management in Malaita work well together sharing new science and best approaches to support communities and engage in new communities. These support organizations communicate well with organizations in other sectors of development, and cross cutting issues and development planning are discussed and addressed in a multi-stakeholder, cross-sectoral approach that holds community needs and visions at the fore.

Benchmarking and understanding impact

Activities to better understand the potential impact of CBRM and to inform revisions of activities in regular reflections on a TOC included 1) understanding the impact of CBRM on how resources were used and fished (Cohen et al., 2013), 2) Understanding whether rules employed were improving fish catches (Cohen and Alexander 2013) and 3) understanding the social processes involved in the formation and implementation of CBRM (Cohen and Steenbergen, 2015). Research reported in Abernethy et al. (2014); Cohen and Steenbergen (2015); Cohen et al. (2014a); Schwarz et al. (2014) and Schwarz et al. (in review) has increasingly shown that progress toward outcomes identified for CBRM will require change in many dimensions of a socio-ecological system; including gender and power relations.

The benchmarking exercise conducted in focal communities in Malaita Province in 2014 aimed to understand people in the context of their communities through the lenses of gender relations, power and social differences. Key findings (Lawless and Teioli, 2015) were that the uptake of innovations (such as CBRM) amongst community members were dependent on them seeing evidence of success. This was connected with the perceived risk that people would go hungry in the process of change. Respondents reported that they were dependent on external assistance to initiate and provide support for innovations. Innovativeness was found to be constrained by negative attitudes attached to change in fishing (and agricultural practices), particularly those that required people to deviate from social or cultural norms. Factors supporting capacities to innovate included the ability to work together (particularly for women), ability to replicate innovations, access to money and equipment, among others. It was found that men and women had differences in exposure to external organisations and natural resource and livelihood networks. Ways in which information was accessed and or disseminated has the potential to determine shape learning and entitlement to knowledge.

Adaptive capacities were examined in terms of collective efficacy, social capital and perceived abilities to navigate through changes in livelihoods and socioeconomic mobility. Community governance and problem solving were positions predominately held by men with limited participation from women. Common conflicts in communities related to issues relating to alcohol consumption and natural resource decline. Social capital was examined in terms of social cohesiveness, and the Church was found to play the largest role in bringing people together. There were distinct differences in the perceptions of men and women as the social cohesiveness of communities. Both men and women's self-reported capacities to navigate through change were found to be limited. For some, it was perceived as a man's role to lead changes in livelihoods, and women felt limited in their alternative livelihood options.

Women reported that they were largely confined to their villages. There were mixed responses as to women's freedom to move in and out of communities. Women referred to decision-making within the household, whereas men discussed decision-making at a

community level. However, it was found that men often had the final say in household decisions.

The resulting information has helped document the existing conditions from which change processes will be traced and to design RiND interventions. The adapted methodology has also been used for comparative benchmarking in Western Province and will be used in Kiribati and Vanuatu as part of ACIAR project FIS 2012/074. A consultant's report (Dyer, 2014) and key findings report (Lawless and Teioli, 2015) were produced from Solomon Islands benchmarking and the analysis for scientific publications is being undertaken in 2015 through ACIAR project FIS 2012/074.

Understanding the contribution of an intervention to change; outcome evidencing

An outcome evidencing process in 2014 began to help elucidate change and how change was happening. Two examples are presented here; one at the local (community scale) and one at the higher than local scale.

Community scale

In August 2014 a community level outcome identified in North Malaita was:

Changing behaviors and attitudes at the community level are leading to better attendance and contribution in community meetings/ events and moving past community differences and increased confidence in pushing past barriers; recognizing resource management issues (reef, mangroves) and making a decision to do something about it.

The activities that had been conducted through FIS2010/056 and the AAS Program that could have contributed to this outcome were mapped by the project team (Fig. 6) and a narrative of how that change had come about developed.



Figure 6. An example of the flow diagram activity used to map changing behaviours and attitudes at a community level. The outcome is in the center of the ‘map’

Short narrative: People in the focal communities are coming together to talk together more often about livelihoods issues (fishing and farming) than before and there are more people attending these meetings because they are encouraged by church leaders, village

committees and local resource people who are seen as a bridge to the AAS Program. New information and experiences such as a look and learn; awareness presentations and resource management rule setting workshops that have been facilitated by AAS have helped fuel these conversations and a practice of talking together has meant community members are making decisions about greater inclusion in decision making (i.e. ensuring that the wider community has a say in the new marine management rules). The community action planning process has resulted in action on previously identified problems that had not been acted upon and improved networking with resource people in North Malaita. The joint planning process for men and women has also meant men are becoming interested in being involved in opportunities in gardening and some women have become more vocal in talking about CBRM, both otherwise on the surface seen as strongly gendered livelihoods. Increased confidence is expressed from having increased knowledge; and pride in having local resource people doing trainings. One community cluster does not show such evidence of change ; on reflection this is explained by them as not being one connected community but rather a cluster of separate 'villages' and that the community action planning process was undertaken by representatives rather than a cohesive community. This 'community' has been influential to other communities however through the knowledge they have from a long association with KGA [KGA is a local NGO nationally influential in improved small holder farming practices].

Contribution: Possible contributions from program activities were identified as the community action planning process as capacity building for community planning; Knowledge sharing and capacity building through look and learns, CBRM facilitations and training community facilitators; being inclusive of men and women in the action planning process and taking a partnership approach through engaging local resource persons.

Higher than local scales

In August 2014 the higher than local level outcome was: *Changing behaviors and attitudes of network partners (national and regional e.g. SPC) leading to a more effective working relationship with SPC; a stated intent to be more collaborative (Western) and recognition of MPPD as a positive forum for planning.*

Using the same process for the community level outcome a narrative of how that change had come about was developed.

Short narrative: The value of networking is becoming more widely recognized in the Hubs, nationally and regionally; the MPPD network in Malaita Hub has strengthened from an initiative by World Vision and Malaita provincial Government (MPG) to become the steering committee for AAS and a recognized network by MPG, it has been a forum through which partners came to the table to develop TOCs for research initiatives and provides and information sharing and learning forum. WorldFish signed an MOU with the MPG which opened the door for closer work with provincial fisheries and the hiring of Basil. In Western Hub, many strands have come together to influence partners to recognize the value of networking around CBRM. WorldFish took advantage of this to hold a CBRM workshop which resulted in an agreement to share information as a first step towards a potentially more formal Western Province network that includes regular updates to the provincial government. Regionally an MOU and opportunities to work together on reviews and technical projects have strengthened the opportunity for SPC and WorldFish to share knowledge expertise and learning.

Contribution: Possible contributions from program activities were identified as networking through MPPD, Western Hub partners for CBRM and national government led agricultural partner forums. Partnerships with AVRDC, SPC and others in the TOC workshops. KS&L through publications (CBRM, nutrition) and working together. Capacity building through TOC workshops and hiring of a program staff into Malaita Fisheries.

The outcome narratives, collected two years after the development of the TOC and one year after new community engagements, highlight changes in knowledge attitude and practices that were suggestive of starting to bring about change. A rigorous process

requires evidence for identified outcomes to be sourced, validated and reported. Such an understanding can inform the revisiting of a TOC.

We give one illustration of how project research, outcome evidencing and the use of participatory TOC can be used for monitoring of impacts and for learning to improve practice. Research we have been involved in on multi-stakeholder networks (Cohen et al., 2013) highlights that more networking does not necessarily lead to improved or more widespread CBRM. For example, research on SILMMA highlighted that its objectives were very broad and somewhat unfocused, and that partners expressed concern that given their limited time and resources to ‘network’, the anticipated benefits of improved coordination, learning and collaboration were not being realised sufficiently. In more recent engagements with multi-stakeholder networks, our research and practice takes a more critical perspective than “the more networking the better”. The TOC is a key tool in this regard, in that with MPPD, it facilitated collective strategic planning and objective formation, where limitations and assumptions towards clear objectives are all made explicit. Further, the use of outcome evidencing methods, allows progress to be assessed against the ToC in a participatory manner, and this then facilitates adjustments to practice and reassessment of the ToC. Different agencies have different roles to play in contributing to high level outcomes. In Table 4 we illustrate some of the roles played by MFMR, Malaita Provincial Government and WorldFish which had all been made explicit in the TOC. All activities, by multiple partners, were required to make progress toward common outcomes.

Table 4. An example of some activities identified in the 2012 TOC that were completed by 2015 and led by MFMR/Malaita Provincial Government and WorldFish, illustrating how the contribution of different stakeholders is required to bring about an identified outcomes.

	Activities in the TOC	Outcomes identified in TOCs
National and Provincial Government activities	Malaita province fisheries ordinance is gazetted (2012 TOC) [supported by MFMR, MPG, WorldFish and ADB]	Structures to sustain national CBRM programme are in place and Nat and Prov capacity to support and enable CBRM enhanced ; Improved CBRM and more resilient and adaptive communities
	Fisheries Act (2015) is gazetted (2012 TOC) [Supported by MFMR with partner contributions]	Structures to sustain national CBRM programme are in place and Nat and Prov capacity to support and enable CBRM enhanced ; Improved CBRM and more resilient and adaptive communities
	Inshore Fisheries Strategy has been reviewed (2014 Malaita TOC) [MFMR activity with partner contributions]	Structures to sustain national CBRM programme are in place and Nat and Prov capacity to support and enable CBRM enhanced ; Secure local marine resources for food and livelihoods
WorldFish	Capture CBRM lessons and share with national and provincial government [activity 1.1]	Better integration of science into CBRM practice and secure local marine resources for food and livelihoods
	Forums for knowledge exchange convened and documented (Western Province CBRM practitioners, MPPD and SILMMA) [activity 1.5]	Structures to sustain national CBRM programme are in place and Nat and Prov capacity to support and enable CBRM enhanced
	Community action planning and look and learn exchanges between Malaita and Western Provinces [Activities 1.4 and 1.6].	Communities in Western and Malaita provinces implement CBRM; Improved CBRM and more resilient and adaptive communities

Implementing an impact assessment program

We have tested the use of TOC, benchmarking and outcome evidencing as an alternative to before and after community socio-economic surveys, for example, to measure impact. Using this approach we have been able to critically look at attribution, where the program of work contributed and where it struggled; thereby informing improved TOCs for national CBRM models in Solomon Islands, and in Vanuatu and Kiribati.

Experiences from FIS 2010/056 and the AAS Program in which it was embedded, have contributed to a comprehensive WorldFish Pacific regional program strategy for monitoring progress towards development outcomes in FIS 2012/074 (Eriksson et al., 2015).

The primary recommendation from the research conducted in FIS 2010/056 and AAS over the same period relates to the use of TOC as an impact evaluation strategy for CBRM. Developing participatory TOCs, identifying emerging outcomes and reflecting on milestones as well as emerging outcomes, regularly and collectively, is proving to be a powerful tool for M&E, for planning and for alignment of effort by multiple stakeholders.

A recommendation is that for a national program of CBRM, responsible ministries develop participatory theories of change within which provincial TOCs can be nested; identifying intermediate and longer term outcomes, activities and indicators.

These can be reflected on and revised annually with stakeholders.

7.1.5 CBRM in Vanuatu and Kiribati

To answer RQ5, the project team aimed to capture lessons learned from Solomon Islands and to make them available to practitioners in Vanuatu and Kiribati. The 'lessons learned' documents and the CBRM facilitator's guide (objective 1) were tangible outputs designed to communicate lessons from Solomon Islands to Vanuatu and Kiribati CBRM practitioners. In particular, the lessons learned documents and CBRM facilitator's guide produced by the Solomon Islands' team were used as part of the toolbox for newly recruited CBFM project officers in these countries under a new ACIAR project FIS 2012-074.

To avoid duplication with the new ACIAR project FIS 2012-074 this project is providing support to a diagnosis of the most appropriate entry points for management and governance responses in Vanuatu.

Dr Hanich and Ms Campbell worked closely with Kiribati government officials from relevant ministries and stakeholders to undertake a comprehensive review of potential entry points for management and governance responses in Kiribati, and travelled to communities in North Tarawa to meet with local communities and stakeholders to assess challenges and threats. This built on previous work by Dr Hanich that had reviewed institutional strengthening priorities and the state of fisheries governance throughout the Kiribati islands. A background paper and context analysis, which forms part of the participatory diagnosis for FIS 2012-074 in Kiribati has now been published (Campbell, B. et al., 2014) to inform future practitioners and guide subsequent community based approaches to fisheries management. The report was launched in October 2014 during Kiribati Fisheries Awareness Week. In recognition of the fact that some stakeholders in Kiribati may have limited access to online resources, the ANCORS team provided hard copies of the report to libraries of each consulted government department and to the Island Council of North Tarawa.

In July 2014, one CBFM project officer from Vanuatu (Mrs Rolenas Baereleo), and staff from ANCORS (Dr. Aurélie Delisle) working with the partner agency working in Kiribati, visited Solomon Islands for a sharing of lessons and a workshop on CBFM across three countries (a summary report was produced). Initially, all four CBFM project officers from Vanuatu and Kiribati were scheduled to attend the workshop. However, due to a dispute between Fiji and Solomon Islands airlines which grounded flights between the two

countries, one staff member from Vanuatu and two staff from Kiribati were unable to attend the workshop. As a result, Dr. Delisle shared what had been discussed during the workshop with the local I-Kiribati staff upon her return to Kiribati in August 2014.

Due to the missed opportunity for the meeting between representatives of Vanuatu, Kiribati and Solomon Islands in July 2014, the ANCORS team invited Mr Peter Kenilorea (CBFM officer from MFMR Solomon Islands) and Mr Pita Neihapi (CBFM officer, SPC Vanuatu) to attend the 1st CBFM Stakeholder meeting in Kiribati in late October 2014, which was co-hosted by the Ministry of Fisheries and Marine Resources Development. Peter Kenilorea and Pita Neihapi shared their experiences about the CBFM programs in their respective countries with over 30 participants including government officials from several Ministries, Island Councils, NGOs and community representatives in Kiribati. This was a highlight of the stakeholder meeting in Kiribati and their presentations generated a lot of discussion. Both government officials and community representatives benefited from the presence of practitioners from those two countries. Government officials from Kiribati were able to discuss the involvement and role of the government in CBFM programs while community representatives from the pilot sites in Kiribati were particularly interested in hearing and learning from the activities undertaken by their counterparts in Solomon Islands and Vanuatu. The reflections at the end of the workshop were that the implementation of CBFM would be a long process, that there will be successes and failures, and that it was important for countries which are new to the process to learn from others which have a lot of experiences.

To contribute to this exchange of experiences and transfer of knowledge, an opportunity arose for a community representative implementing CBFM activities in Kiribati (through FIS 2012-074) to attend the SPC Coastal Fisheries workshop which was held in early March, 2015 in Nouméa and gathered government officials, NGOs, research partners and community representatives from the Pacific region. The ANCORS team invited communities trialling CBFM in Kiribati to select a representative to attend the meeting on their behalf. Mr Materiki Toromon was selected and attended the workshop. Mr Toromon found that sharing his experiences and concerns as a representative of a new CBFM project and interacting with other community representatives from across the region with more experience in CBFM was invaluable.

The experiences shared and lessons learned during the workshops held in Solomon Islands, Kiribati and New Caledonia were collated and reflected upon by the ANCORS team and I-Kiribati CBFM officers. These insights were combined with knowledge of the I-Kiribati environment and governance arrangements to formulate an approach appropriate to the local context. This amended approach was trialled during the first year of the CBFM program at pilot sites in Kiribati. A report summarising lessons learned during the workshops and the implementation of those lessons in Kiribati has been prepared (Delisle and Hanich, in press).

One of the original outputs of the project was to develop a funding proposal to support a learning network for Solomon Islands, Vanuatu and Kiribati. In some respects, this output was pre-empted by FIS 2012-074. Through discussion with potential donors in the Pacific region, it became clear that the timing for another funding proposal was poor, given the recent launch of FIS 2012-074, and regional discussions for funding in the medium term from the EDF. Additionally, ANCORS staff have worked on a number of training programs throughout the Pacific islands region and have regularly encountered donor funded training programs that have weak strategic frameworks or little understanding of local cultural and institutional contexts. These weaknesses significantly undermine the effectiveness and implementation of such training programs. Also, in the Pacific region, leaders have recognised that effective coastal fisheries management needed the support of community based approaches to fisheries management. Training strategies that engage with local community leaders and stakeholders are required for these regimes to be effective. Because of these circumstances, and in agreement with ACIAR, ANCORS identified the need to develop a white paper that could guide the development of

subsequent training programs in the field of coastal fisheries and improve their effectiveness. The white paper has now been published and includes a series of recommendations to strengthen community-based ecosystem approaches to fisheries management (CEAFM) across the region by adopting a capacity development approach as an integrated strategy, to develop capacity in CEAFM in information, management, monitoring and enforcement functions, from community to national government. Following the release of this publication, Dr Hanich has held discussion with the Packard Foundation and Unitec (New Zealand), regarding a trial training program for coastal fisheries managers to build capacity and leadership skills in CBFM. The trial is planned to initially take place in Fiji. If successful, the Packard Foundation has agreed to discuss the possibility of expanding the program throughout the region.

7.2 Discussion

Lessons from CBRM engagements with communities in Solomon Islands since 2005 have been synthesised, published and disseminated. They have been instrumental in guiding new engagements in Kiribati and in building the capacity of implementation teams in Vanuatu. Moving toward a more holistic view of CBRM within the development aspirations of communities, through the research in development approach of AAS, has been effective in enhancing engagements to better understand how change happens and what the enabling conditions are for CBRM. Seeking a better understanding of social and gender norms in target communities in order to take an explicit gender transformative approach, has surfaced a growing interest in joint learning amongst partners for mainstreaming approaches that are equitable for men and women and other marginalised groups in communities.

Developing participatory TOCs has proven to be a powerful tool in improving partnerships for alignment among organisations with different mandates but similar aspirations for impact. Outcomes from NGO partners, provincial and Government Ministries were identified. Nevertheless in Solomon Islands significantly more capacity is required in the provincial fisheries offices to support community efforts. In Malaita Province, ongoing support is required to continue the spread of knowledge and sharing of experiences; to establish more core communities, to enable them to share with each other and to facilitate their efforts to share information and learning. Communities that have been exposed to the idea of resource management from core communities are now seeking relevant information, opportunities for capacity building, financial support for management committees and for being mobile to visit other communities etc. As yet the provincial fisheries division does not have sufficient budget or staff to meet this need. New skills and additional people will be required for the provincial fisheries office to be able to take a lead in supporting community management plan development and registration of new legislation.

The opportunity to share learning with Vanuatu and Kiribati has created new partnerships amongst practitioners and staff of relevant national ministries. These are being strengthened through FIS 2012/074 and new national and regional learning will emerge.

Ongoing research will seek to understand and articulate the contexts and conditions in which CBRM is, and is not, adequate to address local to national sustainability and development objectives. For example, to realise development outcomes through natural resource management, opportunities to enhance livelihoods and incomes will need to be pursued. Finally research will be needed to better understand the influence of processes, policies and practices outside of the fisheries sector and at higher than local levels that can foster or impede the realisation of development aspirations.

8 Impacts

8.1 Scientific impacts – now and in 5 years

The implementation of FIS 2010/056 between 2011 and 2015 coincided with, and contributed to, the implementation of the CGIAR Research Program AAS. Significant changes in the way that the CBRM project team within WorldFish carried out their activities, and the lens through which researchers contextualised CBRM activities, mean that there have been and will continue to be in the next five years significant scientific impacts. These relate not only to what activities are carried out with communities and amongst stakeholders but also how they are carried out. The explicit RinD approach which meant the AAS Program had to create space for capacity development at all scales, partnership development, gender transformative approaches and regular action and reflection cycles through participatory action research, is showing early signs of resulting in deeper and more lasting impact (Douthwaite et al., in press).

The outcome evidencing process illustrated that project activities are influencing not only activities in Solomon Islands communities and amongst Solomon Islands practitioners but also regional activities and informing changes in practice within and beyond Solomon Islands. Outcomes and outputs from ACIAR investments in CBRM in Solomon Islands have featured strongly in the scoping, diagnosis and implementation phases of the rollout of AAS in Solomon Islands and have been instrumental in influencing AAS outputs and shaping a WorldFish Pacific M&E strategy for small scale fisheries management (Eriksson et al 2015). The community driven research agenda based on Participatory Action Research requires researchers to critically analyse their approaches to community engagement and to design PAR approaches to ensure impact and opportunities for scaling.

A list of scientific outputs from this project is given in section 10.2. In addition, outcomes from ACIAR investments in CBRM in Solomon Islands are now finding their way into the wider scientific literature – as evidenced by outputs from ACIAR investments being cited, or literature being developed in consultation with ACIAR project staff. FIS 2010/056 was influential in the design of FIS2012/074 Improving Community-based Fisheries Management in Pacific island countries (2012-2017) which is implemented in Solomon Islands, Vanuatu and Kiribati and draws very strongly on the outputs and findings of FIS 2010/056. Some examples of literature that has drawn on FIS 2010/056 capacity and publications are:

- Apgar, M., Douthwaite, B. (2013). Participatory Action Research in the CGIAR Research Program on Aquatic Agricultural Systems. CGIAR Research Program on Aquatic Agricultural Systems. Penang, Malaysia. Program Brief: AAS-2013-27 <http://aas.cgiar.org/sites/default/files/publications/files/AAS-2013-27.pdf>
- Douthwaite B., Apgar M., Schwarz A., McDougall C., Attwood S., Senaratna Sellamuttu S., Clayton T. (in press). Doing research in development: Lessons learned from AAS. AAS Program Report.
- Douthwaite B., Kabir K., Karim M., Lando L.A., Longley C., Muyaule C., Perez M., Siota F., Sukulu M. (in press) More inclusive science for the poor: Linking farmers to researchers using the RinD approach In: Douthwaite et al., (in press). Doing research in development Lessons learned from AAS. AAS Program Report.
- Goby G. (2012) Ecosystem Approach to Fisheries Management (EAFM): A Solomon Islands Policy Review for the CTSP, Coral Triangle Initiative.
- Govan., H., Bennett., G. (2014). Towards sustainable resource management in Western Province: Capacity, potential theory of change and strategies for implementation of

Community-Based Resource Management (CBRM+) in Western Province.
WorldFish Report.

Krushelnytska O. (2015) World Bank. Synthesis of study Gender, Fisher, Trader, Processor: Towards Gender-Equitable Fisheries Management and Development in Solomon Islands (Barclay, Payne and Mauli, 2015).

Ratner B.D., Barman B., Cohen P., Mam K., Nagol, J. and Allison E.H. (2012) Strengthening governance across scales in aquatic agricultural systems. Working Paper. The WorldFish Center, Penang, Malaysia. AAS-2012-10.

8.2 Capacity impacts – now and in 5 years

Capacity development across scales is one of the essential elements of the RinD approach and in FIS 2010/056 has encompassed capacity to implement CBRM at the community level; and capacity development within the research team and with partners to plan for and support a national Program of CBRM. We deal with community capacity impacts in detail in section 8.3.

WorldFish research team

Mrs Delvene Boso a Solomon Islands researcher who has been a core staff member of the ACIAR project team since 2007 was promoted to Country Manager of the WorldFish Solomon Islands Programme in December 2011. The ACIAR projects have been significant in contributing to building Ms Boso's capacity to enable her to take over the country programmes senior management role. Throughout FIS 2010/056 WorldFish staff Faye Siota and Delvene Boso have represented WorldFish as a partner organisation of the Solomon Islands Locally Managed Marine Area network (SILMMA) and WorldFish is a member of the SILMMA Advisory Council. Ms Boso is part of a team of senior NGO and Government officers who regularly meet to co-ordinate resource management activities in Solomon Islands through SILMMA or through the Coral Triangle Initiative National co-ordinating committee (NCC). These connections ensure that capacity development activities conducted through the project are made available to these stakeholders. Conversely WorldFish staff can access national capacity building activities supported by other partners, for example Ms Faye Siota has undergone training with SILMMA on website management and uploading documents to the SILMMA website.

Australian scientist Dr Philippa Cohen completed her PhD at James Cook University in 2012. Dr Cohen began her studies in the Jorio communities and has assessed environmental and food security impacts of community based adaptive management alongside the Jorio communities that have been involved in FIS 2010/056 and predecessor projects. Dr Cohen was recruited to WorldFish as a scientist based at James Cook University in 2013.

Dr Gregory Bennett, a Solomon Islander completed his PhD at Waikato University in New Zealand, with financial support for field activities from FIS 2010/056. On completion of his thesis he was recruited as a post-doc by WorldFish in 2013 to work on CBRM in Western Province. In 2013, Dr Bennett was appointed to the Western Province Government's Fisheries Advisory Council.

Ms Zelda Hilly, a WorldFish national staff member who has contributed significantly to community development of marine resource management plans as a research analyst in both FIS FIS2007/116 and FIS/2010/056, has received an ACIAR scholarship to undertake a Masters degree by coursework at James Cook University in 2014 and 2015.

In August 2012, four WorldFish staff members who are Solomon Islands nationals and who are facilitators of CBRM completed training in strength based approaches to community engagement and action planning, held by the Constellation (Community Life Competency Process); partners to AAS. On the job mentoring continued by Constellation facilitators throughout 2013 in Malaita Province and in 2014, experienced members of the

Malaita based team supported a similar training for WorldFish, community and partner staff in Western Province. In May 2013 Dr Kirsten Abernethy trained a team of Solomon Islands national staff in qualitative data collection and analysis. This included a Guadalcanal Province fisheries officer; five WorldFish staff a Solomon Islands UPNG student assistant and the SILMMA officer from MFMR.

In early 2012 WorldFish established an office in Auki, Malaita Province to support rollout of the AAS Program. The WorldFish office in Auki, Malaita Province is now well established with eight permanent staff supporting the AAS Program. This has enabled regular communication with the provincial fisheries officers, building trust, whereby we can now provide more targeted technical support, and provide information that is useful to them. The PFOs in Malaita have now begun to recognise the national approach to CBRM and what it can mean for Malaitan communities. Accordingly CBRM is recognised in the Malaita Province Fisheries Ordinance (2015).

Partners

The sharing of lessons and use of publications (particularly WorldFish, 2013) has, and will continue to build the capacity of teams in Vanuatu and Kiribati to implement CBRM. Publishing with TNC on gender in CBRM was a capacity building exercise that enabled joint reflection on approaches and the identification of ways forward for both organisations in Solomon Islands.

Provincial and stakeholder capacity has been improved through project support to networks that facilitate and co-ordinate CBRM and delivery of services from other sectors. The AAS Program through FIS 2010/056 supported the employment of a graduate 'project' fisheries officer for nine months to be embedded in the Malaita Provincial Fisheries Office to work with Fisheries Officers and partners to develop protocols for the recording of information on CBRM in Malaita Province; in preparation for the gazetting of the ordinance in 2015. Bookshelves were supplied to the Malaita Provincial Fisheries Office in order that they could display CBRM relevant materials for members of the public.

The national WorldFish/ACIAR team in Auki were called upon to assist in development of policy for the newly elected Malaita Provincial Government in February 2015. The outcome is that for the first time there is a policy objective that recognises CBRM approaches; under "3. Fisheries and Marine resource management", the objective is to "(iv) Encourage and facilitate communities' interests to establish Marine Conservation Areas around the Province; and to Establish Community Based Resources Management and Conservation plans". The opportunity to utilise the out-comes from ACIAR research are recognised through a stated action to seek capacity development support from relevant partners such as WorldFish, and/or national ministries and to have effective monitoring of CBRM.

In July 2014, one CBFM project officer from Vanuatu (Mrs Rolenas Baereleo) and staff from ANCORS, the partner agency working in Kiribati (Dr. Aurélie Delisle), visited Solomon Islands for a sharing of lessons and a workshop on CBFM across three countries. The ANCORS team invited Mr Peter Kenilorea (CBFM officer from MFMR Solomon Islands) and Mr Pita Neihapi (CBFM officer, SPC Vanuatu) to attend the 1st CBFM Stakeholder meeting in Kiribati in late October 2014, which was co-hosted by the Ministry of Fisheries and Marine Resources Development. Peter Kenilorea and Pita Neihapi shared their experiences about the CBFM programs in their respective countries with over 30 participants including government officials from several Ministries, Island Councils, NGOs and community representatives in Kiribati. This was a highlight of the stakeholder meeting in Kiribati and their presentations generated a lot of discussion. Both government officials and community representatives benefited from the presence of practitioners from those two countries. A community representative implementing CBFM activities in Kiribati (through FIS 2012-074) attended the SPC Coastal Fisheries workshop which was held in early March, 2015 in Nouméa and gathered government officials, NGOs, research partners and community representatives from the Pacific region.

8.3 Community impacts – now and in 5 years

Developing a theory of change and using methods that focus on outcomes, measure progress and understand how this progress is made; is particularly informative when assessing community impacts.

8.3.1 Economic impacts

The benchmarking has identified some barriers and opportunities to improving economic benefits from CBRM and that these are tied in part to cultural expectations that have, and will continue to, change. In North Malaita it was reported that there have been changes in the expectations of a 'good' man and women in recent decades, influenced by the influx of Christianity, the cash economy, and declining health of natural resources, among others. Consequently, people felt their standards of living were higher but found it difficult to generate income and in some cases reported their livelihoods were worsening. In terms of socioeconomic mobility, most people described themselves as of similar socioeconomic status to others in the community and considered themselves on the lowest rung of a figurative ladder with limited opportunities for improving conditions. Most people rely on marine resources for household consumption and also as a source of income. Nevertheless they also reported that people are finding it difficult to find fish to supplement their incomes, and have become more reliant on gardening and marketing vegetables.

Future change will be strongly determined by changes in attitudes, knowledge and practices in the first instance, including increased gender equity. For example benchmarking (Lawless and Teioli 2015) found that

- Ways in which information is accessed and or disseminated has the potential to determine who has access to and is entitled to knowledge.
- Agricultural networks are available and some people are accessing these for support, yet networks lack capacity to adequately support innovative practices. Networks are more accessible to men and some people (mainly women and youth) are not aware of networks or how to access.
- Community governance (generally referenced in terms of problem solving) is closed to those who occupy traditional or spiritual authority, and women are excluded from community leadership positions (with the exception of women's groups).
- The capacity to meet individual aspirations (as opposed to community aspirations) appear to be challenging as individualism is not encouraged.
- Women generally spend most of their time in their villages, and movements outside the community are confined to markets resulting in difficulties in learning new practices and ideas, coping with change, and improving socioeconomic conditions.
- It is mainly women who are responding to changes in natural resources, such changes include women's workloads increasing, more pressure to look after families.

Outcome evidencing suggested that adopting the RinD approach was influencing: changing behaviors and attitudes at the community level, leading to better attendance and contribution in community meetings/ events and moving past community differences and increased confidence in pushing past barriers; recognizing resource management issues (reef, mangroves) and making a decision to do something about it.

While this is encouraging for CBRM governance at the community level, being able to take advantage of improved natural resource management for improved economic gain requires a combination of well governed fisheries management borne out of changed knowledge attitudes and practices, as well as ecological benefits that sustain a yield that meets community needs.

In two papers reported here (“Catch rates, composition and fish size from reefs managed with periodically-harvested closures” (Cohen et al., 2013) and “Fishing dynamics associated with periodically harvested marine closures” (Cohen and Alexander, 2013)) we document some of the short term changes in fishing efficiency and highlight some of the longer term concerns with regards to the sustainability of economic benefits from fisheries.

We found that catch rates for gleaning shellfish were higher, and the size of fish captured slightly higher, when harvested from tambu areas (i.e. a common measure employed within CBRM). These benefits represent favourable economic efficiency for fishers when areas are opened. We found that newly opened areas are very heavily fished perhaps because pressure is elevated by social conditions such as celebrations and a race for fish. It is often these relatively large catches and high catch efficiencies that fishers recall. This strategy may have economic benefits for invertebrate fisheries (e.g. trochus), however these benefits do not necessarily coincide with long term economic efficiency of all species targeted by fishers

Improved networking with partners, including government, can open up opportunities for communities and their partners to be better informed about optimising value chains and livelihood opportunities. The AAS Program activities in Malaita and Western Hubs aims to embed CBRM into the wider community development process where alternative opportunities for cash generation and food production (e.g. agriculture) can sit alongside community fisheries management through partnerships with AVRDC-The World Vegetable Center and KGA.

8.3.2 Social impacts

Contemporary community-based resource management is often simply described as a ‘hybrid’ between local (customary) and science-based management and conservation practice. However, the form of this hybridisation has rarely been critically analysed. In Cohen and Steenbergen (2015) we examined the merging and evolution of cultural management practices within CBRM we were supporting in Western Province. We found that in contrast to closures used before CBRM that were predominantly open, contemporary closures (a commonly used management tool in the locations we work) were predominantly closed, reflecting the effects of awareness to reduce fishing effort and enhance ecological sustainability. Harvests were relatively short and largely triggered by social and economic needs of particular individuals or whole communities. The harvesting and management practices we observed were influenced by CBRM, but also by religious institutions, increasing resource demand, and modernisation.

Our research summarised in the paper “Fishing dynamics associated with periodically harvested marine closures” (Cohen et al 2013) described that a range of resource-use rules were agreed upon in the CBRM process to change fishing behaviours towards those that are more sustainable. However, the research highlights that only few of those are successfully implemented. This is likely due to the relatively high social acceptability of some rules (e.g., tambus) and the lower social acceptability of others. Our research continues to examine ways in which more comprehensive management (able to improve sustainability of fisheries) can be implemented while also remaining socially acceptable.

Our paper reported here (*Developing a common understanding of taxonomy for fisheries management* (Cohen et al 2014)) highlights that our efforts to develop a common understanding of taxonomy by documenting local language appear to be beneficial for enhancing involvement of community members in CBRM associated research – and thus have also promoted an understanding of research outcomes.

Capacity was built in facilitators from focal communities (three in Malaita and three in Western Province) for developing and managing community action plans. In March 2014 seven Solomon Islands national WorldFish staff, two government staff and 13 community members completed a village based training in North Malaita led by the Constellation partners to the AAS Program. In September 2014, the Western Province participants

included WorldFish, male and female community focal persons and representatives from two partner organizations. One of these communities had a long engagement around CBRM. Their plan on completing the training was to go back and “work as a team”. Participants said they would “use the approach to address community concerns”.

The drawing together of partner learning about gender equitable approaches (Schwarz et al., 2014), increased capacity in the research team to conduct and synthesise a gender analysis, means that more explicit attention has been paid to facilitating in community processes that are designed to ensure equitable participation by men and women and to improve the opportunity for men and women to negotiate rules that will yield equitable benefits. The outcome evidencing narrative in section 7.1.4 illustrates how this is being manifested in communities where FIS 2010/056, through the AAS program has engaged.

“ People in the focal communities are coming together to talk together more often about livelihoods issues (fishing and farming) than before and there are more people attending these meetings because they are encouraged by church leaders, village committees and local resource people..... One community cluster does not show such evidence of change ; on reflection this is explained by them as not being one connected community, but rather a cluster of separate ‘villages’ and that the community action planning process was undertaken by representatives rather than a cohesive community. This ‘community’ has been influential to other communities however through the knowledge they have from a long association with KGA”.

8.3.3 Environmental impacts

Communities perceive improved stocks where fisheries are managed via CBRM and this is reflected in some cases by quantifiable improvements in catch rates from fishing on managed reefs. However, our research summarised in (“Catch rates, composition and fish size from reefs managed with periodically-harvested closures” and “Fishing dynamics associated with periodically harvested marine closures”) suggests that there are some concerns for long term and improved environmental sustainability in those communities where tambus are employed as a primary (or only) management measure. In the 2012 and 2013 annual reports it was highlighted that in some communities there is increased community awareness of, and enforcement of laws against, dynamite fishing and the use of nearshore FADs to reduce fishing pressure in managed areas – which are expected to enhance environmental sustainability. In our recent research we found one community had adapted their management to ban or restrict the regular harvesting of clams which are highly susceptible to overfishing. This is a good example of where awareness and empowerment has likely supported the emergence of community-led adaptations to increase environmental sustainability.

One strategy to share these community lessons with others is to facilitate community exchanges or ‘look and learns’. In April 2014 Fumato’o community from North Malaita undertook a learning exchange trip to Leona in Western Province where management has been effectively implemented for a number of years and which is a focus for a longitudinal study on the process and outcomes of community fisheries management. The opportunity was also taken for the eleven men and one woman from North Malaita communities to be trained in coral rehabilitation techniques and building MPA markers at the WorldFish research station in Western Province.

Evidence of positive ecological impacts can be found in localised sites at the scale of an individual community, however it is clear that overall, success in implementation was mixed (Schwarz et al., in review). Three broad types of outcomes in terms of new, negotiated forms of management can be identified: (1) none implemented; (2) initially implemented but not sustained; or (3) implemented, modified and sustained in some form (e.g. Cohen et al., 2013). Abernethy et al. (2014) found that across sites where CBRM had been implemented (including three of the regions described here), perceived legitimacy of the governance and rule-making processes, as well as attributes of the people involved in decision-making, were vital to success. Problems arose where there

was community conflict related to land or marine tenure and the distribution of benefits (Bennett, 2014).

In successful communities, rules-in-use differed from rules-on-paper because, for example, committees found it unrealistic to implement some rules (e.g., total bans on night spear fishing) and more flexibility (e.g., more frequent temporary opening of closed reefs) was required to meet social obligations (Cohen et al., 2013; Cohen and Steenbergen, 2015). While management arrangements varied from those originally agreed to, this in fact captures the very essence of community based management – that arrangements should fit local context, local social objectives and should be adapted through time.

Community-based resource management will continue to be part of the management package for addressing inshore, coastal, small-scale fisheries concerns in the Pacific. This is reflected by a recent, large-scale regional meeting convened by the Secretariat of the Pacific Community, and attended by representatives of all 22 Pacific Island Countries and Territories, as well as representatives from non-government organisations, funders and research organisations engaged in the region. Experiences from this project provide a rich body of evidence to draw upon to help inform, balance and guide these discussions which were strongly focused on discussing the role of community-based resource management for small-scale fisheries.

8.4 Communication and dissemination activities

Communication and dissemination activities have included international conference presentations, contributions to regional forums, publications of lessons learned, briefs and working papers all of which are available open access on the WorldFish website.

A comprehensive list is given here, those reported in section 8.1 are not repeated here.

2012

- Dr Schwarz attended the 1st International Marine Conservation think tank held in December 2011 in Auckland, New Zealand
- Dr Schwarz made a presentation on Community Based Management of Marine Resources in Solomon Islands at the WorldFish Science week Penang July 2011
- Ms Boso and Dr Bennett attended the International Coral Reef Symposium in Cairns in July 2012.
 - Ms Boso presented a poster on ACIAR funded research titled '*Gender equity in community based management in Solomon Islands*'
 - Bennett G. (2012) Customary marine tenure and contemporary resource management in Solomon Islands. Proceedings of the 12th International Coral Reef Symposium, Cairns, Australia, 9-13 July 2012. Session 22A Cultural, political & historical dimensions of coral reef management.
- Dr Abernethy made a presentation on community fisheries research in Solomon Islands to James Cook University in February 2012.
- DVDs on community based management in Western and Malaita Provinces that were developed through FIS/2007/116 were carried to the May 2012 International Expo in Korea by the Solomon Islands Tourism Ministry and used as part of the Solomon Islands display on biodiversity.

2013

- NCC and SILMMA and presentations to MFMR (11 recorded meetings)
- Dr Abernethy conference presentations to James Cook University
- Dr Schwarz attended Washington DC meeting of CI and joint publication now in press.
- The ACIAR project team has contributed materials to a folder of CBRM information that was been compiled for provinces by the CTI national co-ordinating committee.

- Provided CBRM information materials, and a bookcase for display of materials, to the Auki fisheries office. This office was selected by the Malaita PFO as the focal point dissemination of CBRM materials for the Province.
- Two DVDs (CBRM in Jorio and CBRM in Lau) on CBRM (FIS 2007/116) have been re-produced in bulk and made available for dissemination to communities via WorldFish offices, Provincial fisheries offices, SILMMA and partner organisations.
- AAS stakeholder workshop Auki, Malaita
- AAS community consultation workshop Auki, Malaita
- Use of ACIAR funded outputs (DVD in CBRM in Lau Lagoon) in awareness in other communities (EU funded EAFM awareness in Langalanga lagoon and IUCN/MECDM funded mangrove management project MESCAL).
- National communications Officer employed to WorldFish Solomon Islands staff
- ACIAR project team members Drs Bennett and Schwarz collaborated with SPC and the Choiseul Province GiZ to share lessons from Western and Malaita Province with Choiseul communities. Mr Bennett joined staff from SPC on a fisheries scoping trip to Choiseul Province.
- Presentation to MFMR and MSSIF 25th July 2013

2014

- WorldFish ACIAR project staff work closely with a CTI funded community radio program hosted by MFMR to provide material for the shows Q1 2014
- Uploading to the newly launched SILMMA website Q1 and Q2 2014
- CBRM workshop Western Province March 2014
- Press release on CBRM workshop and article in the national newspaper March 2014
- Participatory Theory of Change workshop Honiara April 2014
- A presentation at the 12 Pacific Science Inter-Congress "The contribution of locally managed marine areas to small-scale fisheries management and food security - a Solomon Islands case study"-July 2013
- Western Hub stakeholder consultation workshop 11-12 November 2013
- At the 9th Pacific Islands Conference on Nature Conservation and Protected Areas, in Fiji December 2013;
 - a presentation on "Resilient Communities" in a session that was co-funded and co-organised under the WorldFish ACIAR grant - "The resilience of Pacific communities".
 - a presentation "Testing the lite approach to CBRM" in a parallel session for the ADB CTI Lessons Learning and Best Practice
 - a presentation "fisheries outcomes of LMMAs and policy implications", in an LMMA side session
- A booth to distribute a range of WorldFish information, publications and DVDs.
- Donated a set of publications to the USP library Fiji
- Dr Abernethy; Presentation at the Resilience Conference May 4-8 2014, Montpellier, France. Two steps forward, two steps back: Navigating the transitions towards community-based marine resource management in Solomon Islands.

9 Conclusions and recommendations

9.1 Conclusions

Community-based and collaborative management is widely seen as a key strategy to preserve social and economic benefits from small-scale fisheries. In many places in the Pacific region, CBRM is proliferating as a component of strategies to address small-scale fisheries concerns. In this project we have addressed some components of a theory of change for scaling-out community-based marine resource governance in Solomon Islands, Kiribati and Vanuatu including testing elements of an impact assessment process for a national program of CBRM. Through scientific publications we have sought to outline our approach, describe our role as CBRM partners, and critically reflect on experiences with communities in designing and implementing CBRM.

Through aligning with the CGIAR research program AAS we employed participatory processes with communities to unpack resource issues, identify management goals and to design locally governable management solutions. Our approach was designed to promote community participation, empowerment and ownership of processes and outcomes (WorldFish, 2013; Govan et al., 2008) and provided space for local and external knowledge to be negotiated into appropriate forms (Cohen and Steenbergen, 2015). Nonetheless, in some situations, communities tended to rely on the presence of the facilitation team before any action was taken to progress management. Additionally, some communities faced problems with implementation and enforcement due to governance challenges and changes in local priorities away from marine resource management. Our investment in strengthening the management constituency was appropriate to progress management in some cases, but inadequate in others. To improve understanding of social and governance contexts that foster or stall CBRM and a community's ability to navigate change requires an interdisciplinary perspective of longer-term engagements. While our experiences have provided some insights, this represents an ongoing focus for our research.

In 2012, WorldFish rolled out the CGIAR Research Program on Aquatic Agricultural Systems (AAS) in Solomon Islands (AAS 2011). The overriding hypothesis is that research pursued through effective participatory processes, and embedded in the development context, can empower communities and strengthen their capacities to transform their lives through innovation, including governance and management solutions to enhance the benefits that people derive from small scale fisheries. The AAS approach has resonated well with our lessons and experiences with CBRM in Solomon Islands, and was in part informed by the emerging lessons from Solomon Islands.

AAS employs community engagement processes that are appreciative, empowering and gender equitable, where community participants evaluate their lives and future aspirations and translate these into community-led action plans (Apgar and Douthwaite, 2013). In recognition that fisheries are frequently just one of many development concerns, the approach uses a wider set of entry points to community engagement. Where fisheries emerge as a concern, this presents an opportunity to embed CBRM into community initiatives, including those where development partners assist with other (non-fisheries) priorities. In recognition that fisheries and community development can be both hindered and fostered by the external environment, AAS explicitly aims to foster an 'enabling environment' both within and beyond the local scale, seeking to foster cross-sectoral partnership, and networking from which positive outcomes from CBRM and other innovations can expand and extend. This undoubtedly brings a new suite of challenges, but the experiences we reflect on here, and those from decades of collective development experience suggest this is essential to realizing the development aspirations of fisheries-dependent communities in Solomon Islands and the wider Pacific.

9.2 Recommendations

Future research in coastal fisheries management in Solomon Islands and the wider Pacific has been articulated from community and stakeholder driven processes within the AAS Program.

Current and future WorldFish research is expected to focus on examining governance processes and outcomes (representation, decision-making, equity, rule-formation, compliance, leadership) associated with community development (i.e., as articulated in action plans), and adaptive-community based management of natural resources (i.e., as articulated in management plans). Research answers specific questions such as “How are communities tackling resource use issues identified in their action plans?”, “How do communities adapt the CBRM model to fit their local context, and to adapt through time?”, “How are decisions about natural resource management and community development made, implemented and enforced? How, and in what situations, are favourable adaptations realised? Who is included and through which processes?”

To realize development outcomes, opportunities to enhance livelihoods and incomes will need to be pursued. WorldFish research will strive to understand the livelihoods landscape in different contexts where we work and utilize this knowledge to identify and pursue opportunities to build resilient livelihoods. The research recognizes the complex system interactions of livelihood utilization and natural resource management, and will therefore answer questions like; Do livelihood and market developments enhance or undermine outcomes from natural resource management? How can markets be harnessed to realise community and hub level development aspirations?

Recognising the role of coalitions and networks in the spread of CBRM ongoing research is recommended on building enabling conditions, scaling impact and spreading of innovations. Research on governance networks (e.g., MPPD, FAC) and learning coalitions (e.g., SILMMA, CBRM WP network) seeks to understand; what are the implicit and explicit objectives of governance networks and learning coalitions operating within hubs? In what situations, and for what purposes, can networks become ‘more than the sum of their parts’ in making progress towards stakeholder goals? and What processes facilitate learning within a network?

Finally we acknowledge that processes, policies and practices outside of sectors of focus (e.g., fisheries) and local levels (i.e., at national, regional and global scales) can foster or impede the realisation of community and higher scale development aspirations. Research will need to better understand and influence interventions in governance; e.g. what criteria are useful in determining “strategic” investments in regional partnerships, processes and policy? And what changes have resulted from key strategic investments or partnerships with national ministries and regionally operating agencies or networks (e.g., SPC, LMMA)?

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Published outcomes acknowledged as at least partially funded from ACIAR investment include:

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11 Appendixes

11.1 Appendix 1:

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