Empowering Community-Based Ecosystem Approaches to Fisheries Management: Strategies for Effective Training & Learning

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Executive Summary

In March 2015, regional Pacific stakeholders and Governments engaged in collaborative planning to establish a new direction in the management of Coastal Fisheries[1]. *A New Song for Coastal Fisheries: Pathways to Change* calls for a "*...new and innovative approach to dealing with declines in coastal fisheries resources and related ecosystems*"[2]. *A New Song* is an important step forward for coastal fisheries management across a complex and diverse region. This Paper argues that a strategic and integrated approach to capacity development, learning and training will support its full implementation. The paper makes five recommendations designed 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.

Furthermore, the paper argues on the basis of stakeholder experience, for a long-term commitment to learning that is conductive to sustainable, iterative change, and is backed up by regional and national coordination that allows for sharing of data and learning across the many stakeholders and promoting organisations that are engaged in the training and learning space. When training is the chosen learning methodology, then adapting and contextualising the approach to yield robust learning outcomes is essential, and this means care in design, the delivery approach and attention to learning transfer.

As a resource-constrained environment, the paper argues that this makes it even more critical that every training and learning initiative in coastal fisheries management is targeted and as effective as possible, and supported by an evidence base that uses evaluation and other data to drive ongoing improvement in the approach. This is particularly critical given the diversity of communities and government organisations involved.

The recommendations are summarised as follows:

- The first reiterates what is already acknowledged in *A New Song* –the need for a more **integrated and strategic approach to CEAFM training and learning** across the Pacific[3]. The combination of stakeholders operating in the training and learning space – National and Provincial Governments, National and International development partners and NGO's, regional and local organisations – brings with it risk of duplication, ad hoc and opportunistic strategies and difficulty in addressing issues of scale[4]. Development of coastal fisheries continues to face limits to resourcing and this makes it even more important that every training and learning initiative is strategic and effective[5].
- The need for a **capacity development approach** to be adopted to support the individual, social and institutional learning and change that is necessary to achieve the mandate of *A New Song*. A capacity development approach is systemic, multi-strategy and multi-site, and extends beyond human learning, into systems and processes associated with institutions of governance and the enabling environment[6]. Therefore

[1] Future of Coastal Fisheries Workshop, 3-6 March 2015 & 9th Heads of Fisheries Meeting, 6-12 March 2015, Noumea, New Caledonia

[2] A New Song for coastal fisheries: Pathways to change, Outcomes of the Regional workshop on the "Future of coastal/inshore fisheries management", 3–6 March 2015, Noumea, New Caledonia, p. 3

[3] Item 9, page 3, starts with: "At the regional level, what is needed most is to bring together disconnected initiatives and stakeholders into a strong, coordinated approach with a shared vision of coastal fisheries management."

[4] The 'ad hoc' use of training outside of a clear strategic agenda was raised as a concern in consultations

[5] A common perception amongst interviewees was that coastal fisheries are significantly less resourced than offshore fisheries, although resourcing constraints have lifted somewhat in recent times.

[6] The approach is consistent with capacity development approach described in the FFA (2014). Regional Fisheries Training Framework (RFTF), Pacific Islands Forum Fisheries Agency.

the approach sees training as one of many strategies for learning. Development activity across each nested system – community, sub-national and national – is designed based on an understanding of the performance outcomes or desired results that are supportive of CEAFM practice as a national policy agenda. A capacity development approach also encourages a broader systemic perspective on questions of sustainability of change. In CEAFM this includes recognition of the roles of women and children as agents of influence in current and future practices in fisheries management (Ram-Bidesi 2015), as well as other influencing groups such as churches.

- As a process, capacity development requires a **long-term, iterative approach to learning** that gradually enhances capacity for adaptive co-management from community through to Government institutions. This is particularly important in the light of resource constraints, and essential when working in complex and dynamic contexts. Importantly, it is more consistent with a sustainable approach to development, supports ownership and provides space for the kind of social learning that is essential to adaptive co-management (Cundill and Rodela 2012).
- When training is the chosen learning methodology, **contextualisation of training is essential.** Training needs to targets skills development in technical, administrative and management domains, as well as the 'basic' skills[7] that are often assumed to be in place. In addition, effective training is well pitched, not overly theoretical and is delivered in a mode that engages effectively with adult learners to yield practical, implementable learning outcomes. This approach is 'fit for purpose' and draws on an understanding of the functional role and learning priorities of each nested system involved in the maintenance of CEAFM. The approach also extends beyond training to 'transfer of learning' to consider how learning can become embedded into practice, and contribute to needed outcomes.
- To support the above, a **strong performance focus and evidence-base** is essential to direct training and learning activity, and to enable adaptation of the approach to better contribute to sustained improvement in CEAFM practice and outcomes. Monitoring and evaluation of training needs to target all four levels of evaluation: reaction, learning, behaviour and results[8]. Effective evaluation is grounded in a clear intention regarding outcomes and impacts, which can be described and linked to activity level plans using theory of change and results chain frameworks[9]. Importantly, training providers can use evidence of training effectiveness as feedback to adapt and improve training design.

The following table illustrates some examples of what multi-strategy, multi-level approaches to capacity development might entail, relative to key roles and functions from community to government. Examples of capacity development strategies that may be employed by promoting agencies are included in italics. Functional categories are adapted from Govan (2014).

[7] Basic skills, also known as core skills or transferrable skills, are generic skill sets that apply to many situations and job roles, and underpin individual capacity to learn more complex tasks. For example, basic mathematical skills underpin abilities to analyse and interpret monitoring data.

[8] Based on the Four Levels of Evaluating Training: reaction, learning, behavior and results. Kirkpatrick, D. L. and J. D. Kirkpatrick (2008). Tranferring learning to behaviour: Using the four level to improve performance. San Francisco, Berrett-Koehler Publishers Inc.

[9] For example, the results chain framework was used as the basis of evaluation in Kaly, U. (2014). Assessment of development impacts of the SciCOFish invertebrate work in Cook Islands and Vanuatu, Secretariat of the Pacific Community (SPC): 55.

Nested system	Human capacities, knowledge and agency	Function and performance of groups and institutions	Governance, resourcing and enabling environment
Community			
Key roles	*Community members*	*Community groups and associations*	*Community leaders and interface with Provincial/ Island Government and key stakeholders (church, NGO's etc)*
	Information Function		
	Experimentation to adapt CEAFM to local knowledge *(Collaborative workshops, action learning)*	Systems for local issue identification *(Resourcing support; Training, coaching of responsible officers)*	Communicating the CEAFM message across community stakeholders (*Stakeholder engagement workshops; Facilitation skills training of responsible officers)*
	Management Function		
	Basic practical skills development (e.g. landings, monitoring and reporting etc) *(Providing Advice; Training; Coaching; Train the Trainer)* Community leadership development *(Training; Mentoring; Professional development; Action Learning)*	Procurement of facilities, equipment *(Resourcing support; Providing Advice)* Community management planning *(Collaborative planning & review workshops; Action research facilitation; Providing Advice; Resourcing support; Training, coaching of responsible officers)*	Engaging with other communities and networks *(Resourcing support; Stakeholder engagement workshops; Facilitation skills training of responsible officers)*
	Monitoring and Enforcement Function		
	Training in enforcement and monitoring of local rules *(Training, Coaching)*	Maintaining local rules and managing risks (ecosystem, livelihoods, climate change) *(Resourcing support for system design and development; Training, coaching of responsible officers)*	Influencing neighbouring communities to build awareness of local rules *(Stakeholder engagement workshops; Collaborative planning workshop)*

Nested system	Human capacities, knowledge and agency	Function and performance of groups and institutions	Governance, resourcing and enabling environment
Sub-national/ Provincial/ Island			
Key roles	*Provincial Government/ Island Council staff*	*Provincial/ Island administrative and operations functions*	*Provincial/ Island leadership and interface with National government and key stakeholders*
	Information Function		
	Community engagement skills for extension officers *(Training, Coaching, Instruction & Advice)* Planning and implementing media campaigns to provide communities with information and advice *(Training, Coaching, Instruction & Advice)*	Systems and practices for community management planning oversight and accountability *(Resourcing support for system design and development; Training, coaching of responsible officers)* Training plan for community training *(Resourcing support plan development, Training, Train the Trainer, Coaching of trainers)*	Establishment of National reporting protocols – ensuring clear communications with National Government *(Resourcing support for system design and development; Training, coaching of responsible officers)*
	Management Function		
	Professional development for fisheries officers *(Formal education, Professional Development, Mentoring)* Leadership development *(Professional Development, Mentoring, Action Learning)*	Strengthening Financial and human resource management (HRM) systems *(Resourcing support for system design and development; Training, coaching of responsible officers)*	Establishing Provincial strategies and budgets to secure funding and resourcing *(Resourcing support for system design and development; Training, coaching of responsible officers)*
	Monitoring and Enforcement Function		
	Enforcement skills training *(Training, Coaching, Instruction, Train the Trainer)*	Enforcement practices and procedures *(Resourcing support for system design and development; Training, coaching of responsible officers)* Procurement of facilities, equipment *(Resourcing support)*	Managing resource allocations to different communities *(Research; Resourcing support for system design and development; Training, coaching of responsible officers)*

Nested system	Human capacities, knowledge and agency	Function and performance of groups and institutions	Governance, resourcing and enabling environment
National			
Key roles	*National Government staff*	*National administrative and operations functions*	*National leadership and interface with Parliament, Regional and international stakeholders*
	Information Function		
	Reporting skills *(Training, Coaching, Instruction)*	Systems for monitoring National communications strategies *(Resourcing support for system design and development; Training, coaching of responsible officers)*	Providing advice to inform Government policy *(Resourcing support for system design and development; Training, coaching of responsible officers)*
	Management Function		
	Policy development skills *(Training, Coaching, Instruction)* Administrative and corporate services skills *(Training, Coaching, Instruction)* Executive leadership development *(Professional Development, Mentoring, Action Learning)*	Strengthening Financial and human resource management (HRM) systems *(Resourcing support for system design and development; Training, coaching of responsible officers)*	Planning for National Strategy, Legislative and Policy priorities *(Stakeholder engagement workshops; Collaborative planning workshops; Research; Facilitation skills training of responsible officers)*
	Monitoring and Enforcement Function		
	Professional development of key technical and professional roles *(Resourcing support for system design and development; Training, coaching of responsible officers)*		Establishing standards and protocols for enforcement & licencing *(Stakeholder consultation workshops; Resourcing support for system design and development)*

1. Introduction

In March 2015, regional Pacific stakeholders and Governments engaged in collaborative planning to establish a new direction in the management of Coastal Fisheries[10]. *A New Song for Coastal Fisheries: Pathways to Change* calls for a "*...new and innovative approach to dealing with declines in coastal fisheries resources and related ecosystems*"[11]. Coastal fisheries are of significant importance to the health, social and economic well-being, and tradition of Pacific Island communities. It is estimated that fish provide 50% - 90% of animal protein intake in rural areas and 40% - 80% in urban areas. Most of the fish eaten by rural people (particularly coral atolls and smaller islands) come from subsistence fisheries. Subsistence and small-scale commercial artisanal fisheries employ 100,000s of people across the Pacific (between 250,000 and 500,000 in PNG alone).

Recent studies have concluded that coastal and lagoon fisheries resources are heavily utilised, often overfished, and are fished by both commercial and subsistence fishers. The Secretariat of the Pacific Community (SPC) has estimated that 75% of Pacific Island coastal fisheries will not meet food security needs by 2030 due to a forecast 50% growth in population, limited productivity of coastal fisheries (exacerbated by overfishing) and inadequate national distribution networks. The challenge ahead is clear: with growing populations, increasing demand and declining coastal fish stocks, and other pressures – urbanisation, climate change, economic development and others (Gillett and Cartwright 2010) – to sustain 'island life' an integrated and effective approach to management is becoming increasingly urgent. The approach must bring together the efforts of communities, governments, NGOs, other stakeholders, regional bodies and donor partners. Strategies for development must be practical, sustainable and appropriate given the complexity and interdependency of coastal fisheries and other influencing large scale factors (e.g. Government policy, land-based activities, trade). Ultimately development effort must result in demonstrable longer-term reduced impact on fish stocks.

[10] Future of Coastal Fisheries Workshop, 3-6 March 2015 & 9th Heads of Fisheries Meeting, 6-12 March 2015, Noumea, New Caledonia

[11] A New Song for coastal fisheries: Pathways to change, Outcomes of the Regional workshop on the "Future of coastal/inshore fisheries management", 3–6 March 2015, Noumea, New Caledonia, p. 3

It is in this context that training and learning is positioned as one of a number of enabling strategies to achieve the shared vision of coastal fisheries management articulated in *A New Song*. At the heart of this work is human learning and adaptation at multiple levels – individual, collective, institutional – and within nested systems – community, national, sub-national/ provincial. The scale and importance of the task requires systemic and integrated approaches to learning based on sound development theory and practice, and grounded in real-world evidence and be appropriate for the target audience.

This White Paper is intended to support the achievement of long-term strategic outcomes for coastal fisheries consistent with *A New Song* through Community-Based Ecosystem Approaches to Fisheries Management (CEAFM)[12], with particular reference to Kiribati, Solomon Islands and Vanuatu. The Paper draws on an understanding of existing practice and experience of training and learning through literature, reports and consultations with stakeholders operating in the Pacific CEAFM and broader learning space (refer Appendix A). It is anticipated that the lessons and recommendations will promote further conversation, inquiry and planning toward improved effectiveness and results in training and learning programs.

The paper is founded on two important assumptions. First an assumption that the commitment to community-based mechanisms as described in *A New Song,* and national legislations and ordinances in Vanuatu, Kiribati and Solomon Islands is consistent with the emerging philosophy and practice of Adaptive Co-management. This assumption provides a means of structuring the analysis because adaptive co-management brings with it a set of beliefs about the purpose, process and practice of community-based management along with particular related skills. A brief analysis of adaptive co-management is provided in Part 2.

The second assumption looks at training and learning through a lens of 'decolonisation', and asks: *how can the chosen learning methodology best support the goals of self-determination, social justice and emerging national identity?* For post-colonial Vanuatu, Solomon Islands and Kiribati, issues of adaptation, learning and change are current and inextricably linked to the evolving questions of nation-hood and decolonisation. The goals of self-determination and social justice that are central to the decolonising agenda (Smith 2012), may seem lofty for a CEAFM training event delivered in a community, but are no less important. This is a concern when training providers and the focus of training are introduced from elsewhere, and the chosen methodology or approach to training delivery unwittingly undermines indigenous language, identity and authenticity (Gegeo and Watson-Gegeo 1999). Training and the way that training is used as a learning and development strategy, sits within a broader responsibility, including the importance of valuing local ecological knowledge and bringing together indigenous epistemologies and learning strategies with scientifically validated CEAFM practice[13]. Taking this view of **training as a decolonising methodology** has practical implications for training design, delivery and evaluation, and this theme is picked up throughout the paper.

The paper is structured in four parts with the first being this introduction. Part 2 provides an analysis of the context of CEAFM, adaptive co-management, learning and change in the context of Kiribati, Vanuatu and Solomon Islands. Part 3 summarises the lessons and opportunities that emerged from the consultations and literature and Part 4 follows by detailing a 'framework of ideas' providing practical suggestions to support the development of new approaches to training and learning that are culturally relevant, strategic, realistic, and measurable.

[12] There is a wide terminology used to describe the various approaches that support community based approaches to fisheries and marine resource management, and an extensive literature on these various approaches that goes beyond the scope of this paper. This paper uses terminology consistent with SPC's A New Song, but notes that the findings of this paper could equally be applied to other community based approaches that include ecosystem considerations and aim to sustain livelihoods and strengthen the resilience of coastal communities.

[13] Epistemology refers to the philosophy of knowledge and knowing, and how we come to know.

2: The Context of Learning in CEAFM

This part explores some of the key ideas that are important to an understanding of training and learning in support of CEAFM in the context of Vanuatu, Solomon Islands and Kiribati.

Why CEAFM and adaptive co-management?

The Pacific Islands region is heavily dependent upon fisheries for food security, livelihoods, revenue and development (Bell, Allain et al. 2015). However, coastal and lagoon fisheries are largely unmanaged in practice, with significant declines in productivity in many islands caused by overfishing. For atoll States such as Kiribati, with few other food and livelihood opportunities, ongoing declines could result in a future of food-aid and mass emigration. The SPC/FFA report, *The Future of Pacific Island Fisheries*, described three alternate scenarios that could arise if the region strengthened, maintained or weakened fisheries management. These illustrations painted a bleak scenario of the potential effects of fisheries management failures for Pacific Island States:

Community-based management arrangements collapse after donor interventions cease, and poverty and commercialisation destroys conservation ethic. Massive overfishing, particularly in urban areas due to domestic and export demand and failure of management systems; resource abundance driven so low that production of important species drops remarkably … Many high-value species are wiped out due to the failure of even simple management. Coral bleaching and other effects of climate change alter species composition and reduce fishery production from reefs. Uncontrolled pollution and poorly designed development degrade habitats. Exports after 2010 surge but subsequent overfishing causes resource and export volume to crash leading to a large decrease in employment in some countries. Tourists repelled by barren reefs. Flows of fish to urban areas crash due to low catch rates in nearby areas, and poor logistics of transporting fish to urban areas. Failed 'development' schemes and habitat destruction have resulted in declines in flow of fish to villages. Some food fish exported at the expense of domestic food supplies. Collapsed coastal fisheries accelerate urban drift (Gillett and Cartwright 2010).

A New Song aims to avert this catastrophic scenario through scaling out CEAFM across the Pacific Islands region. CEAFM provides the most effective pathway to achieve sustainable management and development goals in communities with cohesive decision-making processes. Given the social and governance structures and limited government capacity in most Pacific Islands States, management interventions must be driven by island communities and supported by high levels of voluntary compliance if they are to succeed and be sustained in the long term. CEAFM empowers communities to develop and implement their own management in support of their own sustainable development aspirations. This often requires some external technical assistance that works within existing decision-making and knowledge frameworks. Ideally, this assistance is provided in a manner that enables the communities to self-sustain their own management and development. In many cases, this requires some level of capacity development at the community level.

Where communities have weak or broken decision making processes, or multiple communities have an interest in a fisheries concern, then Government intervention and external assistance is required to facilitate and support CEAFM or alternative adaptive co-management approaches, and provide regulatory and policy support. As will be discussed, this also requires significant capacity development at provincial/island council and national levels.

An evolving Pacific Context

Like most of the Pacific Island States, the recent history of Solomon Islands, Vanuatu and Kiribati includes independence (1978, 1980 and 1979 respectively), and subsequent efforts to develop and 'decolonise' as modern and independent States. During this period of State-

building, Pacific Island nations have called for acknowledgment of indigenous epistemologies given the vast practical history and future potential of indigenous knowledge to direct national efforts toward development policy and practice through the "*application of traditional wisdom to solving the imported, imposed and globalizing problems that affect Oceania*." (Quanchi 2004). Ongoing struggles about sovereignty and identity for Pacific Islanders have been described as caught between "*the discourse of modernization and the discourse of traditional culture."* (Gegeo and Watson-Gegeo 1999). This ongoing process of balancing the pressures of adaptation and global affairs, alongside the valuing of traditions and customs is heavily present in many domains of governance, including natural resource management. In coastal fisheries management, where many traditional long-standing approaches are still practiced, this means adapting to the increased pressures bought by population growth, climate change and land based activities.

Tracking a parallel path was emergence of new understandings in the domain of organisational and international development, where an emphasis on reductionist and mechanistic models of change were falling short of expectations, and often failing to produce sustainable results. The international development agenda for instance, can be viewed though the story line that is encoded in international agreements[14]. Its post-World War II manifestation was donor-driven and directed, with parallel management systems and a primary focus on technical solutions. Training was often included in ad hoc and opportunistic ways, but for the most part capacity development was incidental and technical effort targeted 'gap filling' where expatriate technical specialists would 'do for' the recipient country what it struggled to do for itself. Projects ended with some results achieved, but very little sustainable benefit remained.

Post 2000 and the evolution of a 2nd generation of development practice (Morgan 2009) bought acknowledgment of the rights of recipient Governments to coordinate and direct development effort. Partnership-based arrangements with mutual accountability for outcomes, and purposeful strengthening of recipient country systems and governance structures became normative. In this approach, capacity development was recognised and positioned as a central and enabling strategy – a strategy that demanded careful planning, evaluation and robust practice.

Turning to the discourse on coastal fisheries, the evolution tracks a parallel path. The Apia Policy (SPC 2008), drawing on the Pacific Plan and the Vava'u Declaration with its focus on the political and regional mandate, established a clear message promoting a systemic ecosystem approach, that leveraged benefits of community based management. The Policy recognised that "*fisheries management is about managing people rather than fish stocks*" (p. 8). The focus of action in relation to training and learning targeted a range of disparate strategies: professional development of government staff, various training in data collection, surveys, enforcement, environmental assessment and so on.

The Policy places particular demands on fisheries institutions, which Govan (2013) describes as a major shift in practice and approach: one that moves away from 'top-down', enforcement and rules based approaches, with a reliance on experts and a focus on development for short term gains, toward approaches concerned with sustainability and whole ecosystem management. Such approaches seek to engage communities 'bottom-up' through facilitation, support, recognition, and development of local expertise. Importantly Govan also reports that in Melanesian nations, including Solomon Islands and Vanuatu, "*the implications of the policy shifts that are contained in the Apia Policy have not yet been fully appreciated or incorporated by most Fisheries staff and institutions.*" (Govan 2013)

A New Song builds on the Apia Policy, and other policies and plans, to proposes a message that is clear, focussed and integrated. *A New Song* uses an evidence-base to establish a stronger sense

[14] Paris Declaration on Aid Effectiveness (2005), the Accra Agenda for Action (2008) and most recently the Busan (2011).

of priority and purpose than that articulated in the Apia policy. It acknowledges coastal fisheries as complex ecosystems and supports integrated coastal resource management arrangements that leverage the strengths of communities through to national governments. It promotes a shared perspective of coastal fisheries management that has evolved from a set of disparate but connected aspirations and concerns, to a cohesive, strategic mandate.

Within this, training and learning is one of a number of essential enablers of the strategy. This Paper aims to raise the profile of training and learning, to promote a strategic dialogue, and to draw on practical experience to point a path forward. Essential to this is an understanding of learning, and conceptions of learning in the context of CEAFM.

What is learning?

> *"Learning is the process whereby knowledge is created through the transformation of experience." (Kolb 1984)*

Learning is a process through which "*concepts are derived from and continuously modified by experience*." (Kolb 1984), and is fundamentally self-directed and autonomous (Heron 1999), although the large majority of mental processes associated with learning are highly automated and outside of conscious choice (Clark 2010). In effect "*all learning is re-learning*" (Kolb 1984) because of the continuous adaptation of knowledge and knowing that comes from experience in the social and ecological world.

Learning is a process rather than an outcome, and is dynamic and adaptive in intent. Kolb's experiential learning theory (ELT) is one of many theories that describes the process of learning as continuous and cyclic, moving between concrete experience, reflection on experience, conceptualization to make sense of experience, and lastly experimentation[15]. This final stage means trying new or modified actions, which also leads to more concrete experience. The process of learning is iterative, with each new experience resulting in modified forms of knowledge and ideas, moving the individual adaptively forward.

Embodied learning

Learning is also an embodied process, engaging mind and body as a unitary being. This is in contrast to past conceptions of mind and body as separate in learning- where the mind is conceived to be an objective observer of an externalised world. Rather, mind, body and the relationship of each– through perception, sensing, cognition and language – are an integrated whole.

This idea of learning is consistent with notions of indigenous or local ecological knowledges (Lauer and Aswani 2009), where emphasis is on learning about things and ideas *in relationship* to each other and the learner (Wilson 2001). This kind of knowledge is embodied and automated, in a similar way as other forms of expert technical knowledge (Clark 2010). In contrast to declarative knowledge, which is readily accessible and easily shared, automated or tacit knowledge is inaccessible in a conscious sense, but reveals strongly in the exercise of expertise to solve complex problems.

An example of this kind of embodied learning is described in a study of fishers from Roviana Lagoon in Western Province of Solomon Islands (Lauer and Aswani 2009). The study demonstrates how ecological knowledge, which is described in terms of "*sensitivities, orientations and skills*" are the result of cumulative and lifelong learning "*though actual engagement in and performance of practical activities*". (p. 318) This re-positions the idea of

[15] A detailed analysis of learning theories relevant to environmental management can be found in Appendix A of Blackmore, C. (2007). "What kinds of knowledge, knowing and learning are required for addressing resource dilemmas: a theoretical oveview." Environmental Science & Policy **10**: 512-525.

knowledge and learning being about things (facts, ideas, procedures), to thinking of knowledge as a "process of knowing" – a dynamic that results in many ways of knowing, and emphasizes the interconnectivity and relationship between things and ideas, rather than the usual emphasis on things and ideas themselves (Wilson 2001).

Extending beyond the individual: social and organizational learning

> *"Individuals learn, not organizations, yet a focus only on the individual neglects the social context in which individual learning takes place."(Armitage, Marschke et al. 2008)*

This view of learning[16] as a dynamic, autonomous and embodied human process grounded in experience, along with the notion that knowledge is fluid and adaptable rather than fixed and immutable, is relevant to the practices of adaptive co-management. Individual learning is the basis for this, but always occurs in, and is influenced by the social, cultural and ecological context in which the learning takes place.

This brings us to **social learning**, which is central to community based management practice. Social learning is grounded in individual learning, but extends into the social environment and becomes evident in demonstrations of changed behaviour (Reed, Evely et al. 2006). Evidence of social learning in environmental management includes (i) convergence of goals and criteria for management, based on mutual trust and respect; (ii) co-creation of knowledge to understand issues; (iii) change in behaviours, norms and procedures founded in mutual understandings arising from shared action and experimentation. Participation alone does not constitute social learning; rather social learning is evident in interactions that bring about institutional and local level change (Blackmore 2007).

Social learning is therefore evident in the ways in which communities and other stakeholders (Governments and partner organisations) come together to plan and implement management plans. It is grounded in the practical and ecological experience of 'managing' and involves the ways in which community members share experience, their stories about practice issues and 'experiments', and how this is used to adapt the approach that is used on a collective basis. Social learning requires people to come together, bring diverse views and opinions, and make decisions on complex issues. This naturally touches on questions of expertise and authority, and raises issues of inclusion, power and privilege (Armitage, Marschke et al. 2008). Indeed, social learning involves collective processes that may be very different from the usual group or community culture.

Organisational learning[17], is a form of social learning that is somewhat bounded within the context and mandate of a group or organisation. This form of learning concerns the ways in which groups mobilise adaptive behaviours in response to internal and external pressures – economic, political, societal, ecological. Organisational learning is a situational process that arises from the efforts of organisational members as they go about solving problems and pursuing goals associated with the organisation's purpose. Strategies that result in success – perceived or actual – with time and reinforcement, become normative for members of the organisation and become part of the groups 'culture': the behaviours, standards, artefacts, espoused values and assumptions that are simply 'the way we do things around here.'

Organisational learning is an adaptive process, but paradoxically is difficult because ways of working become institutionalised and embedded in policies, procedures, practices and systems of work, and this makes organisations resilient, stable and resistant to change. (Armenakis,

[16] Kolb's views build on theories of learning proposed by Dewey, Piaget and Lewin, all of which are grounded in constructivist philosophies.
[17] This draws on the ideas of organizational culture and learning developed by Peter Senge, Chris Argyris and Donald Schön, and Edgar Scheine.

Harris et al. 1999). Organizational leaders play strongly into adaptive learning by exercising power, and influencing culture, priority and practice. For example, the behaviors and capacities that are recognized, promoted and rewarded by organizational leaders send strong signals about what is valued and how to be successful.

Learning in the context of Adaptive Co-management

The premise of adaptive co-management is that knowledge of the system is never complete because ecological systems are dynamic and complex, often changing in unpredictable ways. Patterns of change become possible to discern in retrospect, but applying these same patterns as predictive models is always accompanied by uncertainty. This requires fluidity in learning, and ability to use learning adaptively as a continuous and evolving process over time.

Armitage, Marschke and Plummer (2008) describe three processes that are necessary to support the practices of adaptive co-management:

1. **Transforming experience into knowledge** (experiential learning),
2. **Altering consciousness and perception of experience** through reflective processes (transformative learning), and
3. **Sharing and engaging with others** to understand experience (social learning).

These processes bring together experiential and social dimensions of learning, with the notion of transformative learning that results from questioning deeply held assumptions or 'underlying governing values' in order to change beliefs and actions: essentially a "*critique of a premise upon which the learner has defined a problem*" (Mezirow 1998).

In the domain of action, this concept is part of 'double-loop learning' which is said to occur when the governing values of an action are changed in order for a different kind of action to emerge (Argyris 1997). By 'going' double-loop, innovation and transformation is possible when previously hidden and unexamined assumptions about the problem are held to question. The idea of transformation and double-loop learning is relevant to environmental management (Reed, Evely et al. 2006, Blackmore 2007) where the conditions of dynamic complexity demand deep questioning and innovation. The practice may require communities and Governments to question long held assumptions in order to find ways forward given issues of scale and resourcing.

> *"We can't solve problems by using the same kind of thinking we used when we created them." Albert Einstein*

The practice of adaptive co-management brings the need to manage the complex and dynamic relationship between Governments, communities and fisheries resources. In effect it is the *relationship* that is subject to management (Curtis, Ross et al. 2014). As the ecology of coastal fisheries adapts and changes in response to influences within (e.g. land based activities) and outside (e.g. climate change) of the direct control of local communities and Government, so to the nature of the relationship and therefore the response to the needs that emerge.

Management processes therefore need to support the ability of communities to draw on local knowledge's and practices, and perceive, sense and learn from experience over time and develop strong human and social capital as "*essential elements of any community's capacity to respond to the challenges of sustainability, including a rapidly changing and complex operating environment*" (Curtis, Ross et al. 2014). Communication and sharing of knowledge is essential. Practices of observation, monitoring, reflection, feedback and experimental action offer 'grist for the mill' for learning, and are essential to the development of *adaptive expertise* – the ability to adapt and respond effectively to challenging new situations (Fazey, Fazey et al. 2005).

Learning in adaptive co-management is therefore a dynamic process with a systemic, relational and temporal component. Not a single outcome or event at a point in time, but a continuous process of sensing, learning and adjustment of management approach.

> *"All human actions are produced, in the final analysis, by human beings" (Argyris 1996)*

Indigenous knowledge's and learning strategies

Pacific Island communities have long-standing, context specific strategies for learning. Gegeo and Watson-Gegeo (2002) describe this in terms of indigenous epistemology, which is "*…concerned with the process through which knowledge is constructed and validated, and the role of that process in shaping thinking and behaviour*." (p.382). This positions learning at a location-specific, social and cultural level where ways of knowing, thinking, and creating knowledge are found within a language group or community. Each community, with its own specific ways of organising, will meet practical collective needs by drawing on its own particular epistemology (Quanchi 2004).

This suggests the possibility that there are as many epistemologies and ways of learning and constructing knowledge, as there are languages and variants in culture, custom and tradition. In the context of Pacific Island nations this amounts to considerable diversity. For example Solomon Islands has 87 distinct languages, as well as many dialects[18].

The significant role of language in learning is illustrated by Gegeo and Watson-Gegeo (2002) in their description of indigenous epistemology of Kwara'ae in Malaita, Solomon Islands. The authors describe the metaphoric distinction between indigenous knowledge that "*comes from the shore to the mountains*", and introduced knowledge that "*comes to the shore from the sea*". This distinction speaks to the sense of legitimacy of particular forms of knowledge and ideas based on where they are from. The authors describe how introduced knowledge can become *indigenized*, largely through forms of experimentation and testing the relevance of the ideas relative to indigenous practices. This knowledge construction process maintains the distinction between indigenous knowledge and traditional knowledge, which is historically grounded in ancestral practice. However it is an illustration of the ways in which the epistemology is shaped and reformed through integration and testing of introduced ideas and practices, the results of which are assessed largely on the basis of practical value. As noted by the authors: *"…when villagers apply indigenous knowledge in development, they are involved in a process of constantly (re)theorizing, (re)creating, and (re)structuring knowledge."* (p. 381)

The idea of testing new and introduced ideas is also described by Lauer and Aswani (2009) where Roviana fishers undertook a kind of practical testing of introduced ideas to establish *hinokara* or truthfulness: "*The knowledge acquired through formal instruction gains validity and is "trusted" when it is applied in practical contexts and produces tangible results."* (p. 325)

Different epistemologies lead to different practical methodologies and approaches to learning. For example, learning strategies develop through early life experience in family and community. Ninnes (2007) reported on the "*informal learning system*"(p.677) of school-aged children from Western Province in the Solomon Islands, and noted well-developed learning strategies such as imitation, listening, observing, asking and participation. The strategy of listening highlights the role of narrative and story in learning. Underpinning these strategies was a core value concerned with "*maintenance of good relationships*"(p. 681). This value is maintained by observed behaviours associated with values of respect, humility, and conflict and shame avoidance.

[18] Source Moore, C. (2004). Happy isles in crisis: The historical causes for a failing state in Solomon Islands, 1998-2004. Canberra: Asia Pacific Press

Participation as a learning strategy is also illustrated through the learning of novice fishers in Roviana Lagoon where *"...through repeated practical trials, a fisherman builds his knowledge about the local environment within the framework provided by a skilled mentor."*(Lauer and Aswani 2009).

Another key element related to learning concerns beliefs about where knowledge resides. Ninnes (2007) asserts that the school-aged children in his research see knowledge as an object; as something that is 'out there' and something that someone else has. Further, the validity of the knowledge is based on the perceived validity of the source. As a learning strategy, children rely on existing knowledge from those who 'know' and have been assessed to be reliable (e.g. elder, teacher). The belief in externalised forms of knowledge can reveal itself in adults as a valuing of the content of learning, based on perceived reliability of the source. A respected expert that stands at the front of the lecture theatre and expounds their knowledge of a subject is aligned with this belief. In any culture and adult learning context, this can result in a kind of passive engagement in learning – waiting to be told the 'right' answer or the 'right' approach, and this tendency can be magnified in cultures where respect and humility are robust social norms.

Learning in relation to CEAFM does not occur in isolation of the preferred learning strategies of a particular epistemology, nor the language and the meaning that language imbues. We can reasonably expect that this will 'show up' in the ways that individuals and communities engage in learning. This can also mean that specific learning strategies may be favoured over others, or may result in more effective learning outcomes.

Choosing a methodology for learning

When it comes to choosing an approach to learning, choice is always premised by 'theories of learning' that are grounded in philosophical questions about ontology and epistemology[19] - what we believe to be true about the nature of reality and how knowledge is created and maintained. Often learning is approached at the level of methodology first: "*ok, so what training do we need?"* To design learning means moving past a focus on methodology in the first instance, and examining the assumptions and beliefs that underlie the choice of methodology. Doing so offers opportunity to test the congruence of the approach with the overarching purpose of the training and learning activities. In other words, by examining the theory, we can shape and re-shape the methodology so that both are more congruent and so that intended outcomes from learning are more likely to be achieved.

> *"...becoming aware of our assumptions about how we learn and know and how we develop knowledge can help us to find out more about what we need to know and the possible limits of knowledge and knowing." (Blackmore 2007)*

The table in Appendix C offers an analysis of different philosophies – positivist, constructivist and indigenous – describing each in ontological and epistemological terms, and illustrating how these beliefs inform choice of methodology. Examples of some of the learning and training approaches that are consistent with the chosen methodologies are also proposed.

This is important to the context of learning and training in CEAFM because when the chosen approach to learning is at odds or arises from a fundamentally different worldview, then it is likely to create difficulties in learning. At worst it can result in circumstances where the approach to learning undermines the language, identity and authenticity of indigenous learners (Gegeo and Watson-Gegeo 1999).

[19] Drawing on the four fundamental philosophical questions about knowledge: ontological, epistemological, methodological and axiological in Lincoln, Y. S. and E. Guba (2013). Part 1: The presumptions. The Constructivist Credo, West Coast Press: 37-41.

Training as a methodology for learning

For the purposes of this paper, training is understood as a structured process of adult engagement in learning that is designed to achieve specific learning outcomes, usually described as a set of abilities, skills and knowledge that are necessary to support the confident performance of specific tasks. In a general sense, training aims to achieve learning, and to create knowledge and behavioural change.

Training events may be highly structured with a curriculum and defined standards of achievement or competency (e.g. competency based training), where the effectiveness of training (and therefore the extent of learning) is assessed according to performance against these standards. Training may also be principles-based, facilitative and responsive to learning needs as they emerge in a flexible manner – more learner-directed, and workshop style. Many training programs and approaches sit between these extremes offering a combination of structured, semi-structured and experiential and practice-based learning opportunities.

It can be useful for planning of training to distinguish two interdependent parts: first is the process of acquisition of knowledge and skill in an organised training event; and second is the process of application (or transfer). Application of learning occurs outside of the formal learning environment, and occurs when ideas, skills and knowledge are generalised and applied over time to address real world concerns of the learner. Some training designs bring these two parts together so that learning occurs in-situ or on-the-job, or targets authentic tasks and problems and then works to build practical capacity through part and whole-task practice, and the timely use of feedback and information (e.g. instructional design) (Clark 2010).

However it is achieved, the process of transfer is an essential element of training design because it is through transfer that the benefits of the training are realised (Subedi 2004, Cheng and Hampson 2008). Ultimately the primary concern of training, and the test of effective training, is the ability to demonstrate the down stream benefits through improved performance.

It is for this reason that effective training is results and outcomes driven. This requires comprehensive training evaluation that moves beyond a focus on the reactions of learners at the end of the event ('happy sheets') and extends into downstream behaviour and results. Frameworks like Kirkpatrick's four levels of evaluation – level 1, participant reaction; level 2, learning; level 3, behaviour; and level 4, results – provides a practical framework for training evaluation (Kirkpatrick and Kirkpatrick 2008). It can also be used to design training by adopting a results focussed approach. Starting at level 4, the desired results of the training can be defined in terms of performance and what in practical terms 'needs to happen'. It is then possible to work backward to define behaviours (level 3) that will contribute to the results. Then the knowledge, skills and attitudes (level 2) that underpin the behaviours, followed by the choice of process and methodology to best facilitate the kind of learning required, in an environment that is conducive to learning and attractive to learners (Level 1).

> *"All learning and teaching should focus on diagnosing and strengthening effectiveness (be it at the individual, groups, intergroup or organizational levels)." (Argyris 1997)*

In the context of CEAFM, it is relevant to emphasise some aspects of training design. An intended outcome of learning in the context of CEAFM is to support autonomous, self-determined management action. Autonomy and self-determination speak to the need for high levels of **ownership, sustainability and relevance** of the training. In part these questions are addressed through efforts to respect and bridge indigenous knowledge's and practices with the subject of training. Another aspect relates to the extent to which communities welcome and embrace the CEAFM training. This in turn is very much linked to beliefs, attitudes and priorities expressed (or otherwise) by the relevant custom and institutional authorities.

Ownership, sustainability and relevance are also embedded in the design and delivery of training. In situations where engagement in learning appears passive, trainers can feel pressure to adopt a 'telling' mode to meet these expectations. When training is positioned such that the trainer is seen to be the 'expert', and the engagement in learning reinforces this 'expert' model and oriented toward there being a 'right way', then it is likely to risk dependency. It is essential for trainers and the design of training to reflect modes of engagement that avoid 'expert' orientations wherever possible, or that move leaners through stages designed to gradually disengage from reliance on others, toward self reliance[20]. In relation to technical training the purpose is often to promote a 'best practice', so an expert driven approach can be unavoidable. However, this orientation can become a default position in training that could readily adopt more collaborative approaches and build hybridised forms of 'best practice' reflecting the specific community and application.

3: Lessons from experience in Training and Learning

This part summarises some of the lessons emerging from experience in training and learning in support of CEAFM. It draws on data from the stakeholder consultations (refer Appendix A), and other sources of research. The analysis aims to 'paint a picture' of the current state of affairs. This presents a valuable, if incomplete, perspective and identifies some common themes that emerge from three Pacific Island Nations that are far from homogenous. While this generalised view risks 'glossing over' the multiplicity of differences in CEAFM experience between, and within Vanuatu, Solomon Islands, and Kiribati, it is intended to provide some understanding of the range of factors to be considered.

Case study: Vanuatu

Coastal fisheries management is part of a broad mandate held by the Vanuatu Fisheries Department (VFD). The Department, under the auspices of the Ministry of Agriculture, Quarantine, Forestry and Fisheries, operates from head quarters in Port Vila, and through a provincial office in Santo. Staff officers are located in all other Provinces. With a small staff group the Department manages five Divisions: Management and Policy; Development; Research and Aquaculture; Compliance and Licencing; and Administration[21].

Community based approaches are considered a 'core' activity for the VFD, and therefore subject to ongoing support through a modest operational budget. The VFD relies heavily on communities as the owners of near shore resources to support the enforcement of coastal fisheries management (Léopold, Beckensteiner et al. 2013). Two partner funded projects are currently supporting this work through community based initiatives: Improving Community-based Fisheries Management (PacFish[22]) supported by WorldFish and SPC with funding from ACIAR, and a community-based fisheries and livelihoods project supported by Japan International Cooperation Agency (JICA)[23].

[20] For example, John Heron proposes that training move through three stages: directive stages where the trainer holds power over the curriculum, moving to cooperative phases where power is shared with learners, through to autonomous where power is held by the learners and the role of the trainer shifts to enabler and guide. See Heron, J. (1999). The complete facilitators handbook. Sterling USA, Stylus Publishing.

[21] Note a detailed analysis of the legal, political, structural and program environment in relation to Vanuatu's coastal fisheries is provided in Govan, H. (2014). Monitoring, control and surveillance of coastal fisheries in Kiribati and Vanutau. Part II: Country reviews. Noumea, Secretariat of the Pacific Community.

[22] Improving Community-based Fisheries Management or PacFish: a community-based project aiming to improve the lives of the people through co-developing comprehensive natural resource management plans. www.worldfishcentre.org.

[23] The Project for Promotion of the Grace of the Sea in the Coastal Villages in the Republic of Vanuatu

The Department's approach is described as providing technical advice to help communities to meet their protection needs, and ensure that communities yield benefits in terms of livelihoods. For example, where community resources are depleted and threatened, they may advise a community on how long to establish and maintain a protected area (e.g. 3 years).

Training and learning in relation to community-based management is primarily undertaken by Department staff as part of the community consultations to establish management plans. The VFD staff (who were consulted) described their approach as site-specific, where they treat each community differently, taking care to build on what is working and already in place. Their approach reflects the critical importance of the 'social acceptability' of local fishing regulations to sustained community practice, particularly when Government capacity is limited (Léopold, Beckensteiner et al. 2013). VFD work with communities who are keen to embrace the support offered.

The process of community planning involves two key stages:

1) Many conversations with community governance organisations and individuals to raise awareness and garner support. An emerging issue in Vanuatu was noted as a 'weakening' of community coherence and Chiefly authority, which is contributing to erosion of local governance structures. VFD approach this by engaging broadly, consulting with Chiefs, churches and other community-based structures. This is also consistent with a broad understanding of local governance; one that recognises the diverse systems of governance that predate colonisation (Morgan 2013).
2) One or more workshops to build consensus and establish community priorities for the Plan: *What do you want to achieve?* The Department takes a holistic and livelihoods approach, encouraging communities to manage, protect and realise the benefits of management.

The process tends to reveal the training and learning needs of individual communities, and the VFD seeks to address these needs opportunistically (e.g. stock assessment training). On the question of the skills of Fisheries officers in managing and implementing the community consultation, planning and training, it is notable that officers are not formally trained, and rely on others for support and advice when needed (e.g. senior members of the Department).

Questions of sustainability and scale are of great concern. The officers consulted observed that the activity of communities toward implementation of management plans can decline after VFD support finishes. One of the mechanisms that is available to communities as part of the planning process, are community councils. The councils liaise with both local governance and Fisheries officers, provide informal report-back to VFD, and have potential as a longer-term mechanism for local awareness raising and plan implementation, particularly as VFD support is reduced.

Close working relationships between development partners and NGO's to progress priority projects are valued. For example, Wan Smol Bag has for many years run a successful program of community level awareness for marine resource (initially focussed on turtle conservation) and promotion of community based management. The view was expressed that although support is greatly beneficial and essential for project funding, it does not offer a long-term fix. Ultimately, it is the responsibility of Governments to take up the mandate of coastal fisheries management through resourcing and political will.

To summarise, this analysis presents some key opportunities that will strengthen the approach to training and learning:

- Approaches need to reflect a site specific approach that is flexible and responsive to the needs of individual communities and ecologies;
- An opportunity lies in developing the capacity of Fisheries officers in community engagement and training skills;

- Further investigation is needed about how the potential of community councils as long-term mechanisms for implementation of management plans may be best supported. This is likely to include some form of capacity development support over time, particularly after Department support reduces.

Case study: Solomon Islands

The Fisheries Management Act 2015, passed by the Parliament of Solomon Islands in April 2015, bought legal recognition of the role of 'Community Fisheries Management Plans' as part of sustainable management of living aquatic resources. The Act emphasises principles including upholding the customary rights of Solomon Islanders, applying participatory and inclusive approaches to decision making, and utilising the benefits of science-based, ecosystem management tools. Power is in effect devolved to communities, with support of Provincial authorities, but this brings with it many practical challenges.

The Act provides a clear legal mandate for Provincial Governments, beyond existing Ordinances, to support and be an important point of contact for communities. Political awareness has been raised in recent times due to the Parliamentary deliberations about the Fisheries Management Bill, however political understanding of what community-based management entails is seen to be limited. The new Act requires more formalised processes of community-based planning and gazetting of plans, with allied policy initiatives implemented through the activities and oversight of the Ministry of Fisheries and Marine Resources (MFMR), Ministry of Environment Climate Change, Disaster Management and Meteorology (MECDM), and Provincial Governments.

Raising awareness and mobilising action in communities toward community-based management can be a slow process, affected by difficulties in communicating national level decisions in a timely and effective way, as well as by disputes arising from land and access disputes, population pressure, migration, differences in kastom and so on. This can add pressure to already difficult situations where communities face many significant issues that demand management attention. Drivers for engagement in community-based management come from various directions including desire to benefit from development opportunities, fears about climate change, hearing what communities 'next door' are doing, and through awareness raising activities, including radio messaging.

Uptake and application of community-based management relies considerably on a strong community governance structure, and the interest of community members and traditional leaders. NGO's play a significant role in providing practical support for awareness raising, learning and development in relation to community-based management. Provision of support to communities for planning and implementation of plans, considers a number of factors: expression of interest, past history, strength of community governance structures, level of Provincial government engagement and support, and so on.

Communities have tended to rely on NGO's to help them to develop fisheries management plans, although the Community-based Fisheries Management Unit of MFMR also provides support as a primary responsibility. Under the new Act the requirements for this role are likely to increase, given the more formalised requirements for registering a Community Fisheries Management Plan.

Once plans are determined, some communities find the ongoing task of implementing community-based management to be demanding and momentum for community-led change can decrease after support concludes. Dependency of communities on external support was noted as a concern in consultations for this study, with over-dependency seen as eroding the ability of community's to take on and manage a range of social changes, including fisheries. One of many lessons from a recent study of community-based management in Solomon Islands was the tendency for implemented management to be different to management plans, despite plans

being developed using robust and inclusive consultation processes (Cohen, Schwarz et al. 2014). The report notes a number of reasons for this, including in some cases, lack of implementation and enforcement. Importantly for this paper, the report also recognises the learning processes that communities undertake as they observe and adapt their management, which means that plans and approaches to implementation need to be flexible and adaptable to reflect the dynamic nature of complex ecological management.

> *"CBFM will not work in all places, it needs a good community governance structure that's still strong" NGO representative, Solomon Islands*

Traditional leadership and strong community governance is important in the implementation of community-based management initiatives. Chiefly authority is part of this but is influenced by modern pressures, such as the increasing advocacy for the voices of women and youth to be present in decision-making, and traditional pressures such as lineage of land ownership – patrilineal or matrilineal. In a broader sense, custom authority plays a considerable role in questions of legitimacy for those involved in community-based management, and their ability to influence others and enforce local rules (Cohen and Steenbergen 2015). In addition, the ability to bridge the science of fisheries management, with the understandings of local practices and local knowledge is important in engaging traditional leaders, and essential to building on what's strong.

Development assistance for coastal fisheries to Government and communities comes in a number of forms. Some examples include New Zealand Government Aid, which is currently supporting institutional strengthening in the MFMR[24]; the Australian Government Aid Program which is providing program support to the CBFM Unit in the MFMR as part of the Coral Triangle Initiative; WorldFish who are leading practice development through research initiatives and providing support to Provincial Governments in community-based management projects. A number of NGO's are active, including WWF and TNC; WWF supports initiatives in Western Province including micro financing and installation of inshore fish aggregating devices (iFADs); TNC are applying their Ridges to Reef participatory approach to threat and opportunity identification as essential data to inform Isabel and Choiseul Provincial government planning and guiding protection.

The Solomon Islands have benefited from the work of a Locally Managed Marine Area (SILMMA) network of practitioners since its inception in 2003. The National Coordinator role is housed in MFMR, and operates as a close working partnership with MFMR officers. Despite funding challenges SILMMA has provided support to the Ministry by implementing a range of initiatives in accordance with the SILMMA Strategic Plan. SILMMA also provides a mechanism through which member partners and NGO's can coordinate activities and voice their concerns to government; an example of the value and potential of collaboration across practitioners and organisations.

When it comes to training and learning, Government resources are stretched and they do not have strong community presence in training, nor a capacity development strategy or program to direct training activity. Rather, NGO's are relied upon as promoting and training organisations, and are the primary drivers of activity. Any training undertaken tends to be receptive to community or Government needs and requests, reflecting a flexible and responsive approach rather than a programmed one. NGO's naturally bring to this work an interest driven by their own objectives, approach and area of focus. NGO's operating in the CBFM space are in effect, "*the arms and legs of MFMR out there*"[25] and there is need for the Ministry to have a

[24] Mekem Strong Solomon Islands Fisheries (MSSIF) program

[25] As described by a Ministry representative during consultations.

greater role in coordination and ensuring that messaging is consistent. One response to this has been the development of a toolkit for practitioners.[26]

Community based training tends to be provincially based. Training is considered to be more effective when it is hands on, practical and directly applicable to livelihoods (e.g. the agricultural example of Kastom Gaden[27]), but it can be challenging to locate and get the right people into the right training. Encouraging the participation of men and women, as equitable partners in community-based management requires a sensitivity and understanding of gender equity and community-based gender norms. WorldFish and TNC have published cases describing approaches that encourage engagement and participation of women in CBRM and Ridge to Reef planning (Schwarz, James et al. 2014). The studies highlight, amongst other things, the need for capacity development for women that enhances their confidence to participate, and opens opportunities for them to play a more active part in decision-making that affects them and their family's future.

Training is generally not evaluated so data on training effectiveness is scarce. However, there is awareness that monitoring and evaluation of training needs more attention, because data that provides insight into the downstream effects related to training, and the extent to which trainees are able to generalize and apply what they have learnt on return to their institutions and communities, can be used to strengthen the approach.

When it comes to Government officers, training is predominantly offered in Honiara, or regionally for educational scholarships. Greater access to training and support at provincial level is desirable to ensure that training and learning is located close to where it is applied. An example of how this might work for a future scenario is the placement of new Fisheries graduates in Provincial offices. In such cases, mentoring support could also be of benefit to help the graduate to be clear about what is expected of them, adopt effective practices in relation to current demands for community-based planning and management, and know how they can best contribute to a challenging mandate.

To summarise, this analysis presents some key opportunities that will strengthen the approach to training and learning:

- The strengthening of community capacity targeted key skills associated with establishing, managing and implementing their Community Fisheries Management Plans presents an emerging opportunity. This needs to consider the longer-term implementation of Plans, and how communities can maintain momentum, and be supported to develop the capacities they need, including appropriate community engagement strategies, tools, materials, communication and awareness raising mechanisms.
- Providing alternative modes of professional development support to existing and future Provincial officers to be able to carry out a range of responsibilities and effectively meet the demands of their roles.
- Continuing to develop approaches to training that support application of learning, and situate learning as close as possible to where it is to be applied.
- Coordinating, through new or existing mechanisms, a strategic approach to learning and training, and increasing access of Provincially based Government officers and community members to relevant training.

[26] For example: Albert, J., A.-M. Schwarz and P. Cohen (2005). Community-based marine resource management in Solomon Islands: A facilitators guide. Based on lessons from implementing CBRM with rural coastal communities in Solomon Islands (2005-2013). Research Program on Aquatic Agricultural Systems. Penang, Malaysia, CGIAR Research Program on Aquatic Agricultural Systems.

[27] See: Morgan, M. (2013). Monitoring the Kastom Gaden Association training in Biche and Kia.

- Balancing the benefits associated with long-term support and risks associated with dependency, with the need for broader support to other communities as necessary for scale-up. As recognised in various Government planning documents, this requires a strategic approach to how limited resourcing can be best coordinated and applied. It also raises questions about process and approach to building capacity at different scales.
- Further exploration of the use of methodologies that move away from externally driven learning and training, toward 'in-situ', strengths–based approaches that build on what is in place, and apply approaches to learning that are specifically designed to support self-reliance and self-directed action. An example is the increasing use of PAR.

"Building strong and effective CBRM can take time. While communities may successfully implement components of management or some resource-use rules (such as tambus) early on, it can take longer to create the right conditions for implementing the suite of management measures that will be necessary to achieve broad and lasting fisheries benefits."(Cohen, Schwarz et al. 2014)

Case study: Kiribati

Kiribati is in the early stages of applying community-based approaches to fisheries and ecosystem management (Uriam and Delisle 2014). The Ministry of Fisheries and Marine Resource Development (MFMRD) manages five core divisions: Fisheries; Resource Economics and Policy; Mineral; Information Technology; and Administration and Human Resources. Within the Fisheries Division, coastal/inshore fisheries management and development falls under the mandate of the Coastal Fisheries Branch. Most staff of the Coastal Fisheries Branch operate from the capital of Kiribati in South Tarawa while a small unit is located in Kiritimati. Individual Fisheries Assistants appointed by the Ministry are located in most outer islands. Their role is to advise outer island institutions on licensing and management issues.

The activities of MFMRD are guided by a range of national policies and plans, however the term 'community-based fisheries management' is not used[28]. Management and planning associated with fisheries and food security recognises the importance of community participation and empowerment as essential to achieving national mandates, but institutional effort is largely focussed on licensing and revenue collection (Campbell and Hanich 2014).

At sub-national level, all outer islands have an Island Council composed of elected representatives from the island's villages. These representatives make decisions about the affairs of the island including fisheries issues but no representative is specifically assigned a fisheries portfolio. Under current legal frameworks, Island Councils carry power and responsibility to make decisions, set policy and allocate resourcing for coastal fisheries management, although plans must be gazetted by national Parliament[29]. Similar to other Pacific contexts, Kiribati is challenged by the tensions between fisheries development and associated economic and lifestyle benefits, compared to fisheries management and food security, which is perceived to be restrictive and preventing people from doing what they want. This challenges political will and commitment to management.

Local unimane (traditional leaders) on the other hand, tend to have a perspective that is grounded in the practical needs for management, balanced by the desire for the benefits of development, although maintaining the balance is problematic. The unimane are recognised as holding local ecological knowledge about fisheries and how to preserve and protect fisheries

[28] Kiribati National Fisheries Policy (2014), Kiribati Integrated Environment Policy (2013), Kiribati Joint Implementation Plan (2013), Kiribati Integrated Fisheries Master Plan (2014)

[29] The Local Government Act (1984, amended in 2006) authorizes councils to make marine resource bylaws and to license businesses that operate within three nautical miles (nm) from the low-water mark.

from destructive activities. However, the unimane vary in terms of their involvement and willingness to champion community-based management.

Consultations with MFMRD stakeholders revealed that there is a broad recognition that traditional and local ecological knowledge, combined with Western knowledge, will offer more effective longer-term management responses to pressures such as climate change and fishing effort creep from technology advances. Despite this, practices are tending to move toward use of modern technologies preferring technologically based solutions to fisheries management issues, because of perceived ease of use compared to traditional practices. This is believed to be eroding the ability of communities to use traditional management approaches.

Sharing of information and engagement of government officers with communities is a critical and problematic aspect of the work. Access to communities is very resource constrained, particularly in terms of travel to outer islands. In addition, MFMRD officer access to local knowledge can be difficult, because community members resist sharing knowledge with those outside their communities and families because this is seen to undermine their agency and authority over their own resources. Decisions about management support by government are made by the MFMRD based on criteria that is applied to identify areas of need[30]. Raising awareness and building a sense of urgency in communities then follows.

Learning and training in relation to coastal fisheries management is undertaken through two primary streams of activity. Firstly, most staff within the Coastal Fisheries Branch have received formal education in marine sciences/Fisheries. Upon taking their position in their assigned unit, junior staffs appear to refine their role through on-the-job training or rely on more senior individuals for guidance. Staff may access further development such as short SPC attachments if it is seen as beneficial to their position. After a few years, staff may also apply for further formal education. With regards to Fisheries Assistants, formal education and training is provided by MFMRD through vocational courses offered by USP. On graduation, skill is further developed by on-the-job training, postings to outer islands and use of graduate rotation. Access to further development (e.g. attachments in SPC; short courses in NZ; practicals in PNG) is merit based drawing on individual job evaluations. Fisheries Assistants are not currently active in community-based fisheries management and as such do not receive specific training targeted at supporting the process of community-based fisheries management.

Secondly, training is delivered to communities through the Training Unit of MFMRD. The Unit undertakes community training and awareness raising activities, including promotion in local schools (limited to schools in the capital at the moment). The training unit currently runs two thematic training programs in communities: “safety at sea” and “post-harvest”. Access to ongoing support by MFMRD after initial training is resource limited and tends to focus on delivering the same messages to ensure community members fully understand. SPC provides support on request in the delivery of staff and community training programs. Training is currently not provided in community-based management by MFMRD, although this is likely to change as community-based management has been prioritised in the Kiribati National Fisheries Policy, and pilot trials are currently underway in North Tarawa and Butaritari (e.g. the Community-based Fisheries Management (CBFM) project underway and funded by the Australian Centre for International Agricultural Research).

This context reveals some specific challenges in relation to learning and training in support of community-based management. The current focus of MFMRD, where training targets narrow thematic concerns, suggests that there is limited capacity for the kind of development support that is needed to encourage local level action toward CEAFM. A change in focus and capacity in MFMRD is needed, which Govan (2014) describes as a “*radical shift from an entrenched top-*

[30] Current criteria as identified in consultations include: multi-use and urgency, level of existing and predicted pressure, ecological value, cost effectiveness etc Future new criteria were identified as: status of resources, population pressure.

down approach" (p.12) toward the development of capacity to facilitate local actions, collaboration and institutional partnerships. Congruent with adaptive co-management, and Kiribati's social and governance structures, CEAFM "*must be driven by island communities, with technical and regulatory support provided by MFMRD and other ministries, as required."* (Campbell and Hanich 2014, p.61)

This suggests that the current focus of learning and training for MFMRD officers needs to extend into development of capacities and skills in facilitation, partnering and negotiation (Govan 2014). This will be particularly important to ensure effective engagement of communities in participatory approaches that support co-management and empower communities to manage their own resources. As community-based fisheries management initiatives develop, training and learning should also target Island Council, village and traditional leaders to strengthen the participation of all actors toward community-based management.

Such as a shift requires a corresponding change in institutional practices, decision-making, planning and implementation to ensure that resources are managed and allocated in a way that reflects the demands of adaptive co-management process. To embed and sustain community-based management as a development priority, capacity development of MFMRD will be essential to align and institutionalise change in systems, practices and management approaches consistent with the demands of CEAFM.

"The existing management arrangements focused on licensing revenue rather than on conservation. Island councils have some understanding of sustainability issues, but lack technical expertise and face strong financial pressures. Fisheries management activities therefore focus on license and revenue collections almost by necessity and there is limited capacity for additional support from the current MFMRD. Any conservation and sustainable management activities undertaken in coastal fisheries should apply a co-management approach." (Campbell and Hanich 2014, p.57)

To summarise, the Kiribati analysis reinforces many of the learnings from Solomon Islands and Vanuatu and highlights the need for relevant Ministries to strategically develop their capacity and re-focus institutional practices to better reflect and support CEAFM activities across diverse communities.

Lessons from Regional experience

A number of the consultations were undertaken to develop a perspective of learning and training more broadly in the context of the Pacific region. The resulting analysis has been grouped in four areas of concern: Strategic, Coordination, Practice and Learning.

Strategic concerns

Strategic concerns are associated with the continuing need for political will to drive high-level change in legal frameworks, resourcing and governance arrangements in support of CEAFM.

It is widely acknowledged and reported that coastal fisheries is an area of need when it comes to funding, human resource capacity and effective legislation as the foundation for effective action. *A New Song* notes 'advocacy and political will' as one of a number of factors influencing regional movement toward sustainable coastal fisheries based on CEAFM.

In Melanesian contexts, Govan (2013) describes this as a 'perennial issue' that will be subject to development on a prioritised basis as national governments seek to resource many complex and competing issues. Govan suggests a strategic development focus that (i) builds on the existing strengths of communities, whose local governance systems and local ecological knowledge can offset lack of institutional support; and (ii) enhances the capacity of government staff, who are resourceful in the light of significant constraints and logistic difficulties.

'Building on existing strengths' can mean broadening the skills base of existing institutional staff so that they can work confidently in a broad range of situations. For example, fisheries extension officers may benefit from extending their skills in community engagement and facilitation of community-based planning. Such a focus may go some way to addressing difficulties in retaining skilled staff in coastal fisheries who can access career pathways elsewhere (e.g. in oceanic fisheries), and improve the ability of Governments and communities to achieve long-term sustainable results.

Coordination concerns

Coordination concerns are associated with the need to continue to improve regional and national coordination of training and learning, and the integration of different management concerns into an holistic and ecological approach.

Appendix A lists many organisations who have current or past involvement in supporting training, learning and community-based management across the Pacific. Each brings their own vision and objectives, their preferred approach, and their area of interest. This brings the advantages of access to resourcing, expertise and technical support beyond the capacity of national governments to progress specific agendas. This also brings risk of overlap, repetition and the potential for areas of need and opportunity to be overlooked, such as when broader ecological perspective is overlooked in favour of a focus on individual species or goal (e.g. conservation without consideration of livelihoods).

The idea of better coordination aims to leverage the good will of multiple stakeholders and open possibilities for greater information sharing, capturing learning's from the range of projects and approaches, and create opportunities for examining how well effort is contributing to national and regional objectives. In many ways, this coordinated approach is reflective of the principles and practices of adaptive co-management, where coordination mechanisms can encourage: transformation of experience into knowledge (experiential learning), altering consciousness and perception of experience through reflective processes (transformative learning), and sharing and engaging with others to understand experience (social learning) (Armitage, Marschke et al. 2008). Good examples of the mutual benefit achieved by coordination and collaborative effort are recognised (e.g. SILMMA), and such co-learning can offer space to explore the best ways to manage community level risks such as over-dependence on external assistance.

Practice concerns

Practice concerns are associated with the conduct of training, and how well the approach is contextualised and effective in engaging participants in learning.

Regional experience suggests that a facilitative approach to learning, that values local knowledge and engages participants by building on strengths, tends to be more effective. In addition, learning that is hands-on, well pitched, practically focussed and addresses skills needs that are relevant to the concerns of the learner, are also more effective. Learning is 'not one size fits all' which means that delivery needs to be flexible and responsive to the context of learning. For promoting organisations, this must be founded on the development of relationships and trust, an appreciation of culture and respect for autonomy, and an intention of working "with", not "on" participants.

This suggests the need for a broader perspective on learning, where training is one of many approaches in use, and where facilitative approaches that encourage practical problem solving are preferred, over more structured and curriculum driven methods. This may require existing trainers (in promoting organisations and government institutions) to expand their repertoire and develop capacity to work with strengths-based and facilitative learning approaches.

"We have had a lot of success with peer mentoring as a means to support capacity development beyond the training – we train groups to utilise specific processes for ongoing peer mentoring as a learning process for professional development and supervision support. This removed the need for us to "facilitate from the outside" and provided opportunity for individual and groups to work through ethical and paradoxical dilemmas they encounter within a safe forum of peers." Sandy Thompson, Unitec.

An understanding of the dynamics of gender, power and privileged, and how these can affect diverse participation in community-based learning, is the basis for culturally sensitive and appropriate approaches to learning and training. For example, there are often many factors that impact on women's participation in community-based management, which are less to do with interest and capacity, and more to do with gender-based norms and local expectations. It can be difficult to identify the 'right' people for training, and even once identified there is no guarantee that those same people will arrive at training. Communities influence who attends, and sometimes this means that training is not well targeted.

A final point pertains to the use of the 'train the trainer' strategy, which has had mixed success. One risk reduction measure concerns how people are selecting to develop as trainers. For example, generalists have been found to be more successful as trainers, compared to specialists who may be invested in one aspect of ecological management or approach. In addition, selecting people who have pre-existing facilitative skills, and an aptitude and interest in the development of others is also important.

Learning concerns

Learning concerns are associated with the need for increased attention to learning transfer, as well as monitoring and evaluation, to drive adaptation and results.

Perhaps not surprisingly, much of the feedback from regional stakeholders supports approaches to learning that engages learners in direct diagnosis, problem solving and improvement of their own circumstances. Learning is not an academic process, but one that is grounded in deep contextual understanding and self-directed change. This lies at the core of adaptive co-management practice, and requires specialised facilitation skills (e.g. facilitation of Participatory Action Research).

Greater attention is needed to learning transfer and how this can be facilitated after training concludes. Mentoring is one approach that could be more widely used in specific situations. For example post training support is needed to enable fisheries graduates to be clear about what is expected of them, and how to make the best possible contribution in resource constrained situations. Mentoring support can be used explicitly to help shift long held habits and ways of working that may be normative, and encourage a culture of learning and accountability for performance and results.

Assessing the downstream impact of training on results and benefits is challenging and made more difficult by limited evaluation of training effectiveness. Many regional stakeholders noted monitoring and evaluation as an area needing attention, and one recent example of a complex multi-country development using a results chain concept illustrates how a results focus can be evaluated[31]. Monitoring and evaluation approaches that are culturally appropriate have been found to be particularly effective, such as those that draw on narrative and stories of change (e.g. Most Significant Change).

[31] An SPC commissioned assessment of the development impacts of the Scientific Support for the Management of Coastal and Oceanic Fisheries in the Pacific Islands Region (SciCOFish) Project, using a Results Chain approach (Kaly 2014).

Range of learning strategies in use

Across the region in relation to learning and training for coastal fisheries management, a range of strategies are in use, including:

- Training responding to community and institutional needs, targeting practical skills development, awareness raising, education and community planning. In some contexts this includes use of local experts and resource people to assist in areas of need (e.g. WorldFish in Solomon Islands).
- Use of the Train the Trainer as a strategy designed to support sustainable access to training expertise. (e.g. TNC support of women as community-based trainers in Isabel Province and WorldFish in Western and Malaita Provinces, Solomon Islands).
- Vocational training of enforcement and fisheries officers through educational scholarships (e.g. USP).
- Professional development courses offered from time to time through New Zealand, Australian and regional CROP agencies, targeting specific technical and thematic development needs.
- Training 'attachments', such as those supported by SPC. An example is where trainees spend time working with staff at SPC in Noumea, with the intention of developing practical and analytical skills using their own country data (e.g. survey data) and turning it into management advice. SPC counterparts provide advice and instructional support.
- Use of participatory and collaborative approaches to community-based planning, management and adaptation (e.g. Participatory Action Research (WorldFish); Ridges to Reef (TNC))
- Competency based training (e.g. USP-FFA fisheries vocational courses contributing to formal qualifications at USP)[32]

Range of stakeholders in the training and learning space

A detailed listing of stakeholders is provided in Appendix A, and are summarised below:

- Stakeholders include National Governments and their sub-national institutions who carry the mandate for CEAFM;
- International Governments and Aid organisations (New Zealand, Australian, Japan and German) who provide development assistance through bilateral and multi-lateral/multi-agency aid projects and programs;
- Regional organisations and CROP agencies who provide strategic guidance and access to regional expertise and practical development support;
- A range of international NGO's including research organisations, foundations and philanthropic organisations (e.g. WorldFish, TNC, WWF etc) who offer in-country development support targeting specific thematic concerns and utilising preferred development approaches (e.g. PAR by WorldFish; Ridges to Reef by TNC);
- National NGO's and networks who target local and sub-national initiatives, and bring contextual and collaborative strength to their approach.
- Academic and research institutions are also active through project delivery, which includes in-country learning and development activities (e.g. ANCORS through PacFish[33]

[32] As part of an FFA-USP Memorandum of Understanding, re-signed in May 2015.

funded by ACIAR), and through provision of an accredited learning curriculum (e.g. Unitech, USP).

4: Future directions and practical strategies

Preamble

Training and human engagement in learning is not an exact science and training often lets us down. Learning is a process fraught with emergent and unpredictable elements – not the least of which is that people exercise choice. Arguably, the most that training can hope to do is to offer participants an opportunity that is conducive to learning. It is then up to individual participants to decide if they engage, and if learning takes place.

The role of trainers and educators then becomes one of ensuring that the chosen methodology is based on sound and relevant beliefs about learning and knowledge, and is designed and delivered to best effect in the context. The following recommendations – a framework of ideas - take their lead from the extensive lessons learnt, and offer ideas intended to support improvement in design and effectiveness of learning and training in support of CEAFM.

Recommendation 1: Establish an integrated strategy to guide CEAFM training and learning

The first recommendation reiterates what is already acknowledged in A *New Song* and extends this to training and learning: development of an **integrated and strategic approach to CEAFM training and learning** across the Pacific. The vast combination of stakeholders operating in the training and learning space will benefit from a strategic approach to guide diverse activity.

An essential part of this recommendation links to the very foundation of social learning: the capacity to share information drawn from experience in the field, transform this through critical reflection, and develop a shared understanding of what is most effective (see Part 2). The value of mechanisms that bring together diverse stakeholders to learn and plan is in evidence in the recent Future of Coastal/Inshore Fisheries Management Workshop in Noumea (3-6 March 2015). This experience, and the value it offered to those who participated, offers evidence of the potential benefits to be gained by establishing forums that can:

- Ensure that training and learning strategies are linked to higher level strategic outcomes (whether national, Provincial/ sub-national or regional);
- Provide space and time for conversations to share experiences and lessons, and develop a coordinated and consistent approach to diverse training and learning activities;
- Establish agreed ways of evaluating training so that data can be used as evidence to drive adaptation and improvement of approaches to training and learning, and to track the contribution of training and learning to longer term outcomes.

Recommendation 2: Adopt a 'capacity development' approach

A core proposition explored in the Paper, is the need for a **systemic capacity development approach** to be adopted as necessary to support the learning and systemic change necessary to achieve the mandate of *A New Song*. The dynamic complexity of coastal ecosystem management is clearly acknowledged. What is needed is an approach that enables learning within such dynamic complexity. No initiative or activity on its own will support the kind of change that is so clearly needed. This recommendation suggests the adoption of a coordinated multi-strategy,

[33] Improving Community-based Fisheries Management or PacFish: a community-based project aiming to improve the lives of the people through co-developing comprehensive natural resource management plans. www.worldfishcentre.org.

multi-level approach to capacity development, tailored to the requirements of each country and the target audience.

A capacity development approach is evidence-based and performance-focussed, because the primary interest is in *whole system* performance, however that is defined. Therefore, a capacity development approach sees training as one of many development methodologies that can be purposefully applied to support targeted skills development (refer Appendix B). Adoption of a capacity development approach means designing learning that contributes to broader system functioning and performance and starts with the question of *capacity for what purpose?* For this reason, the approach to training also comprises strategies for learning transfer, behaviour change and is ultimately concerned with the contribution of training to performance and purpose.

A systemic approach also looks for **energy, innovations and opportunities** to extend and build on the strengths of current practice, and to reach into areas that may have been overlooked. The intention in *A New Song* to reach the next generation of fishers by providing educational resources for teachers and schools is an example of this. So too intentions to encourage engagement of women and influential community based groups (e.g. churches). For example, Ram-Bidesi (2015) notes that in coastal communities in Fiji, the exposure of children to women as they undertake day-to-day tasks (e.g. selling, fishing) offers a passive learning environment where they acquire skills and knowledge, attitudes and beliefs. "*While these may be later reshaped through formal education and training, the values and attitudes learnt in early life nevertheless play critical roles towards character development including ethical environmental considerations, such as the practice of responsible fisheries*." (p.7) Where there is energy, relationship and motivation for change, this opens opportunity for targeted development.

> *"Everything is contextually situated, everything is interconnected and everything changes everything else. So instead of trying to understand linear relationships we need to understand the complex dynamics of social systems" (Burns 2007)*

'Multi-strategy' refers to the integrated use of a number of learning strategies, each intended to be reinforcing and in concert with the others. Training is one of many strategies that can be employed to support individual, social and organisational learning (refer Appendix B). Each strategy is selected to support the achievement of longer-term results.

A 'multi-level' approach focuses the use of learning strategies at different levels within each nested system (community, sub-national and national):

I. Learning in support of individual human capacities, skills, knowledge and agency;

II. Learning and change to support the effective function and performance of formal and informal groups and institutions of management, and

III. Learning and change that targets the broader governance, resource and enabling environment, taking in issues of power, privilege and access, and including the policy and legal framework.

The following Table 1 provides a range of examples to illustrate what a multi-strategy, multi-level approach to capacity development might look like in relation to CEAFM.

Table 1: The Tables below illustrates some examples of what multi-strategy, multi-level approaches to capacity development might entail, relative to key roles and functions from community to government.
Examples of capacity development strategies that may be employed by promoting agencies are included in italics.
Functional categories adapted from Govan (2014)

Nested system	Human capacities, knowledge and agency	Function and performance of groups and institutions	Governance, resourcing and enabling environment
Community			
Key roles	*Community members*	*Community groups and associations*	*Community leaders and interface with Provincial/ Island Government and key stakeholders (church, NGO's etc)*
	Information Function		
	Experimentation to adapt CEAFM to local knowledge *(Collaborative workshops, action learning)*	Systems for local issue identification *(Resourcing support; Training, coaching of responsible officers)*	Communicating the CEAFM message across community stakeholders (*Stakeholder engagement workshops; Facilitation skills training of responsible officers)*
	Management Function		
	Basic practical skills development (e.g. landings, monitoring and reporting etc) *(Providing Advice; Training; Coaching; Train the Trainer)* Community leadership development *(Training; Mentoring; Professional development; Action Learning)*	Procurement of facilities, equipment *(Resourcing support; Providing Advice)* Community management planning *(Collaborative planning & review workshops; Action research facilitation; Providing Advice; Resourcing support; Training, coaching of responsible officers)*	Engaging with other communities and networks *(Resourcing support; Stakeholder engagement workshops; Facilitation skills training of responsible officers)*
	Monitoring and Enforcement Function		
	Training in enforcement and monitoring of local rules *(Training, Coaching)*	Maintaining local rules and managing risks (ecosystem, livelihoods, climate change) *(Resourcing support for system design and development; Training, coaching of responsible officers)*	Influencing neighbouring communities to build awareness of local rules *(Stakeholder engagement workshops; Collaborative planning workshop)*

Nested system	Human capacities, knowledge and agency	Function and performance of groups and institutions	Governance, resourcing and enabling environment
Sub-national/ Provincial/ Island			
Key roles	*Provincial Government/ Island Council staff*	*Provincial/ Island administrative and operations functions*	*Provincial/ Island leadership and interface with National government and key stakeholders*
	Information Function		
	Community engagement skills for extension officers *(Training, Coaching, Instruction & Advice)* Planning and implementing media campaigns to provide communities with information and advice *(Training, Coaching, Instruction & Advice)*	Systems and practices for community management planning oversight and accountability *(Resourcing support for system design and development; Training, coaching of responsible officers)* Training plan for community training *(Resourcing support plan development, Training, Train the Trainer, Coaching of trainers)*	Establishment of National reporting protocols – ensuring clear communications with National Government *(Resourcing support for system design and development; Training, coaching of responsible officers)*
	Management Function		
	Professional development for fisheries officers *(Formal education, Professional Development, Mentoring)* Leadership development *(Professional Development, Mentoring, Action Learning)*	Strengthening Financial and human resource management (HRM) systems *(Resourcing support for system design and development; Training, coaching of responsible officers)*	Establishing Provincial strategies and budgets to secure funding and resourcing *(Resourcing support for system design and development; Training, coaching of responsible officers)*
	Monitoring and Enforcement Function		
	Enforcement skills training *(Training, Coaching, Instruction, Train the Trainer)*	Enforcement practices and procedures *(Resourcing support for system design and development; Training, coaching of responsible officers)* Procurement of facilities, equipment *(Resourcing support)*	Managing resource allocations to different communities *(Research; Resourcing support for system design and development; Training, coaching of responsible officers)*

Nested system	Human capacities, knowledge and agency	Function and performance of groups and institutions	Governance, resourcing and enabling environment
National			
Key roles	*National Government staff*	*National administrative and operations functions*	*National leadership and interface with Parliament, Regional and international stakeholders*
	Information Function		
	Reporting skills *(Training, Coaching, Instruction)*	Systems for monitoring National communications strategies *(Resourcing support for system design and development; Training, coaching of responsible officers)*	Providing advice to inform Government policy *(Resourcing support for system design and development; Training, coaching of responsible officers)*
	Management Function		
	Policy development skills *(Training, Coaching, Instruction)* Administrative and corporate services skills *(Training, Coaching, Instruction)* Executive leadership development *(Professional Development, Mentoring, Action Learning)*	Strengthening Financial and HRM systems *(Resourcing support for system design and development; Training, coaching of responsible officers)*	Planning for National Strategy, Legislative and Policy priorities *(Stakeholder engagement workshops; Collaborative planning workshops; Research; Facilitation skills training of responsible officers)*
	Monitoring and Enforcement Function		
	Professional development of key technical and professional roles *(Resourcing support for system design and development; Training, coaching of responsible officers)*		Establishing standards and protocols for enforcement & licencing *(Stakeholder consultation workshops; Resourcing support for system design and development)*

Recommendation 3: Adopt a long-term, iterative approach to change

A capacity development approach in resource limited circumstances needs to ensure that initiatives are well planned and well targeted. It means asking: *what can we reasonably do with the resources available to move adaptively forward?*

As a process, capacity development requires a **long-term, iterative approach to learning** that gradually enhances capacity for adaptive co-management from community through to Government institutions. This is particularly important in the light of resource constraints, and essential when working in complex and dynamic contexts. Importantly, it is also more consistent with a sustainable approach to development, supports ownership and empowerment, and provides space for the kind of social learning that is essential to adaptive co-management practice (Cundill and Rodela 2012).

One approach that is supportive of iterative, participative and adaptive learning and change is Participatory Action Research (PAR). PAR offers an approach to long-term change that moves beyond superficial fixes for the multitude of challenges a community is likely to encounter, and seeks to inquire into, understand and address deeper systemic factors that are likely to bring more sustained benefit. The approach is designed to promote gradual, iterative change, and is grounded in beliefs about the rights and emancipatory benefits of people's participation and engagement in issues of relevance and concern to them, using process that supports awareness, deep learning, self-direction and development of resilience[34]. Action Research also supports 'politically informed' development and transformational change, in programs working at the development-aid nexus (O'Keef, Sidel et al. 2014).

This is particularly relevant to the experiences in Solomon Islands and Vanuatu where community activity has been observed to decline once support is reduced (CEAFM in Kiribati is relatively recent and is still in an early stage). In the absence of support, and in conditions of political, economic and social complexity, including resistances and pressures against change, it can be very difficult for change to be maintained except for at a superficial level.

In practical terms, this means long-term commitments by providers, and strategies that support the establishment of relationships with communities and government, where training and learning activities take place. Learning is a fluid, adaptive and iterative process over time that occurs at a pace and time determined more by the learners than the promoting agency. This means programming that enables a flexible and responsive approach to support, and this can be challenging for agency funding that is contingent on clear and defined timetables and outputs promised in advance of funding approval.

A long-term iterative approach means:

- Finding ways of matching levels of learning support needed with programmed support over time;
- Using a range of learning strategies to build on and leverage the benefits of previous learning (e.g. mentoring of fisheries officer's on return from formal education);
- Applying methodologies like PAR that are designed to support social learning, and develop community capacity for self-directed action;
- Drawing evaluation data into the process, to provide an evidence-base for learning, and to drive adaptation and track change longitudinally;

[34] PAR is described by CGIAR as an approach that embeds research into the development context to yield both development and research outcomes, and support social learning and empowerment of communities as they work to address issues of concern. See Apgar, M. and B. Douthwaite (2013). Partcipatory Action Research in the CGIAR Research Program on Aquatic Agricultural Systems. Program Brief: AAS-2013-27. Penang, Malaysia, CGIAR.

- Sharing lessons that emerge from experience across networks and stakeholders, to draw out the benefits of collective wisdom;
- Being targeted about institutionalizing changes by embedding practices in systems of work, as needs emerge.

Recommendation 4: Get the most out of every training event

When training is the chosen learning methodology, **contextualisation of training is essential.** The stakeholder consultations highlighted the varying practices used by training providers in the CEAFM space, and the benefits to be gained by establishing a clear and shared understanding of approach. This is not recommending more training per se, but rather engaging with the question of how training can be targeted and delivered to achieve maximum benefit for communities and stakeholders.

- Training as a methodology for learning, is founded on ontological and epistemological assumptions (Refer Part 2), however training designs rarely articulate the underlying theory and this makes it difficult to evaluate and contextualise. The use of theories of change and other means of articulating the underlying assumptions helps enable 'double-loop' learning, offering training providers opportunity to adapt and contextualise their approach.
- As a process concerned with learning, behaviour change and results, the design of training to contribute to a capacity development approach starts with the question: *capacity for what purpose?* This is the starting point for training design, and requires articulation of what increased capacity will enable people and organisations to do in terms of results and performance.
- Training needs to targets skills development in a range of domains: technical, administrative and management domains. Learning and change, and the embedding of improved practice, means extending beyond the obvious and finding out how changed practices are managed, transferred, and reinforced in ordinary day to day activities. For example, a technical focus on survey skills can be readily undermined if administrative processes do not support effective record keeping.
- In addition, training is often pitched based on assumed levels of underlying or 'basic' skills[35]. When underpinning skills or knowledge are not in place, then higher order learning may be beyond the capacity of the learner. Effectively pitched training meets learners in their 'zone of proximal development'[36].
- Learning is a process that occurs over time, so training that is staged and delivered in manageable chunks is likely to be more effective for long-term sustainable benefits. We have only to look back at our own professional learning journey to realise the role of many formal, informal and incidental learning opportunities.
- There is considerable value in learning that occurs through working on authentic or 'real-life' situations. For example, project-based Action Learning (AL) offers an approach to learning that brings real-life challenges and practical action as the core focus of learning. AL may be individual or group-based, and is designed to support gradual learning through engagement in complex problem solving, planning and action. In doing

[35] Transferable skills, also known as core skills or basic skills, are generic skill sets that apply to many situations and job roles, and underpin individual capacity to learn more complex tasks. For example, basic mathematical skills underpin abilities to analyse and interpret monitoring data.

[36] A term coined by Lev Vygotsky in his Social Development Theory, referring to the kind of learning that a person has the underpinning skills and capacities to achieve, the support of others to 'scaffold' the learning process.

so it also builds awareness of culture and context, and skills in collaboration, facilitation, leadership and decision-making (Dick 2009).

- Maintaining a practical focus to training, and ensuring that there is plenty of opportunity to bring theory into practice, is a key part of the learning process. Learning from experience, and using training as a means of facilitating the process of learning are important opportunities. For example, a training course may support learners to move through all stages of the Kolb cycle, a number of times with increasing levels of challenge:
    - Providing trainees with some theory to build awareness of the context of the training;
    - Followed by demonstration of the specific skills being taught, in an authentic setting;
    - Followed by space and support for participants to practice the skills on a simple task, with feedback and timely advice as needed;
    - Followed by collective reflection of the training group on the practice experience, drawing conclusions about the particular challenges of the task and strategies for next time;
    - Followed by more theory in small increments, more participant practice, feedback and timely advice, and so on.
- Training needs to be 'fit for purpose', contextualised drawing on an understanding of the functional role and learning priorities of each nested system, group and individual. As *A New Song* states: "one size does not fit all" in relation to choice of methods, and this also applies to training.
- It is important to avoid approaches to training that reinforce a reliance on external expertise, and use the 'expert model', because these approaches detract people away from valuing their own wisdom and experience, and tend to build dependency. This can mean re-thinking the deeper underlying philosophical position embedded in the chosen approach to training. Or it may mean adopting a strategy to learning that meets learners where they are most comfortable, which may be in 'expert' or directive mode, but throughout the training purposefully moves to more 'cooperative' and then 'autonomous' modes[37].
- Strategies for 'transfer of learning' need to be a key element of training design. The 70:20:10 model suggests that only 10% of learning in a technical domain occurs inside formal training or educational spaces[38]. The rest occurs through other means – support from supervisors, challenging projects, coaching, engagement in routine tasks etc. Inside a training program transfer can be supported by encouraging learners to 'bring their challenges into the training space', literally by situating the training in the 'work' place, or through activities that invite learners to work on typical or actual problem scenarios. One study also noted that there are factors pre and post training that can have a significant effect on transfer. Table 2 provides examples relevant to CEAFM.

[37] Based on John Heron's three modes of facilitation: hierarchical, cooperative and autonomous. Mode is a conscious choice for trainers, and can be designed into training processes. Refer Heron, J. (1999). The complete facilitators handbook. Sterling USA, Stylus Publishing.

[38] The 70:20:10 model is a useful construct for understanding the limitations of formal approaches when it comes to technical learning. Other mechanisms play a significant role and need to be included in learning program design. Refer Kajewski, K. and V. Madsen (2012). White paper: Demistifying 70:20:10, Deakin University. **1-2**.

Table 2: Examples of some pre and post training factors related to learning transfer (Cheng and Hampson 2008)

	Pre-training factors	Post-training factors
National and sub-national government trainees	Relevance of training to job function Selection of trainees – right people to right training Expectations and interest of trainees in learning offered Supervisor interest and accountability for training outcomes	Supervisor/manager interest and support (e.g. through instruction, coaching, mentoring) Workplace environment (culture) that values and encourages new behaviours Formal accountability and performance assessment Willingness to share and pass on learning and skills to others
Community participants in training	Awareness of training Understanding and 'buy in' to benefits of training Perceptions of relevance of training to the every-day Selection of participants that can apply the learning	Regular ongoing visits and support by trainer or government officers Endorsement of learning by community leaders, and encouragement to apply Motivation, ability and authority of individual to apply what they have learnt

- Lastly, training can become a space that supports the decolonization agenda by being a space that values, appreciates and invites integration of local knowledge's and adaptation of CEAFM practices to develop contextualized, hybrid 'best practices.' Aligning with local epistemologies and practices not only helps achieve fit for purpose learning outcomes, but also supports ownership and plays a part in supporting the goals of self-determination and social justice.

Recommendation 5: Collect and use evidence to improve training effectiveness

To support the recommendations above, a **strong performance focus and evidence-base** is essential to direct training and learning activity, and to enable adaptation of the approach to better contribute to sustained improvement in CEAFM practice and outcomes. This means good monitoring and evaluation, and using this data in a formatively to adapt and improve the approach to learning and training over time.

Monitoring and evaluation of training needs to target all four levels of evaluation: reaction, learning, behaviour and results[39]. Effective evaluation is grounded in a clear intention regarding outcomes and results, which can be described and linked to activity level plans using theory of change, results chain and other frameworks[40]. Effective evaluation also draws on and values diverse sources of data that are relevant and meaningful to the context. For example, in Pacific Island cultures where story is a valued form of knowledge sharing, then narrative-based and participative methods of evaluation that draw on rich personal experience (e.g. Most Significant Change) can capture what more objective measures will likely miss.[41]

[39] Based on the Four Levels of Evaluating Training: reaction, learning, behavior and results. Kirkpatrick, D. L. and J. D. Kirkpatrick (2008). Tranferring learning to behaviour: Using the four level to improve performance. San Francisco, Berrett-Koehler Publishers Inc.

[40] For example, the results chain framework was used as the basis of evaluation in Kaly, U. (2014). Assessment of development impacts of the SciCOFish invertebrate work in Cook Islands and Vanuatu, Secretariat of the Pacific Community (SPC): 55.

[41] Most Significant Change is a qualitative and participatory approach to monitoring and evaluating change in complex social development projects, through a systematic reflective and reflexive process that gathers and analyses personal accounts of change.

In complex systems, where many variables are in play and likely to affect performance, linking training and results is difficult because we cannot assume direct causality. However, rigour in design, monitoring and evaluation, and use of approaches that are specifically designed to pick up the subtle shifts in social behaviour (e.g. Outcomes Mapping) can help to address this challenge by offering insights into small shifts that might signal the emergence of a more broadly based change.

Conclusion

A New Song is an important step forward for coastal fisheries management across a complex and diverse region. This Paper argues that a strategic and integrated approach to capacity development, learning and training will support its full implementation across diverse communities with differing circumstances and needs. The paper recommends strengthening of CEAFM across the region by adopting a capacity development approach as an integrated strategy, that aims to develop capacity in CEAFM in information, management, monitoring and enforcement functions, from community to national government.

Furthermore, the paper argues on the basis of stakeholder experience, for a long-term commitment to learning that is conductive to sustainable, iterative change, and is backed up by regional and national coordination that allows for sharing of data and learning across the many stakeholders and promoting organisations that are engaged in the training and learning space. When training is the chosen learning methodology, then adapting and contextualising the approach to yield robust learning outcomes is essential, and this means care in design, the delivery approach and attention to learning transfer.

As a resource-constrained environment, the paper argues that this makes it even more critical that every training and learning initiative in coastal fisheries management is targeted and as effective as possible, and supported by an evidence base that uses evaluation and other data to drive ongoing improvement in the approach. This is particularly critical given the diversity of communities and government organisations involved.

The particular challenges of scale have so far not been addressed in this paper, but remain a significant concern. Taking the recommendations made, a couple of synergies have emerged that may point to way forward and contribute to the continuing discourse on issues of scale.

Firstly, this paper argues for a systemic approach to capacity development and learning, which sees each targeted initiative as having potential to affect change elsewhere, as is the nature of complex adaptive systems. If we adopt this idea, it means that individual and social learning situated in small-island and community contexts, has potential to permeate and influence practice in other domains of activity. For example, a government officer who develops management skills through their engagement in CEAFM, will likely take these skills into their many roles: church, sport, family, community leadership and so on. A systemic view considers the potential of well-targeted, effective learning that can be readily generalised to others domains of influence[42]. Once again, this reinforces the important of contextualisation, transfer or learning and sustainability in the approach, and the strengths of adaptive co-management in linking individuals and groups and developing 'social capital' for scale-up (Armitage, Marschke et al. 2008).

Secondly, a coordinated National and Regional approach that offers a space for learning from experience across the many training and learning providers, will assist in efforts to move to scale. The desire and willingness for this was clear in the stakeholder consultations, and there are examples of such collaborations in practice. With the diversity of communities in terms of

[42] This term was coined by Solomon Island scholar, Dr Kabini Sanga as a means of describing the three domains of influence: village or community, church and institutions of governance. See Sanga, K. (2009). The Pacific public servant: Serving three masters? Canada, Graduate School of Public Policy, University of Saskatchewan.

needs, interest, social and ecological concerns, arguably every initiative, including practical tools and materials, needs to be carefully tailored and contextualised, and there is much to be gained by learning from the experience of others[43]. Drawing on practice experience of scale-up in Indonesia, Armitage and Marsche etc al (2008) suggest that "*Perhaps the most important lessons are that not all resource management experiences can be transferred, and that learning may be very place and time specific, especially in complex social–ecological systems.*" (p.94)

If wholly contextualised approaches to CEAFM implementation are to be normative in order to support scale-up, then this shifts focus away from the 'what' and toward the 'how' – encouraging a stronger focus on *process* that is flexible, responsive, participative and adaptable (e.g. Participatory Action Research). Where many activities are conducted that may be in effect, 'piloting' an innovation or a hybrid approach to CEAFM, then it becomes even more essential to build in the benefit of 'research rigour' through data gathering, sharing and collective scrutiny in a kind of community of practice. Indeed this is no less than what CEAFM asks of communities and governments in their adaptive co-management practice.

[43] For example the following guide drew on 8 years of learning with communities and partners to produce: Albert, J., A.-M. Schwarz and P. Cohen (2005). Community-based marine resource management in Solomon Islands: A facilitators guide. Based on lessons from implementing CBRM with rural coastal communities in Solomon Islands (2005-2013). Research Program on Aquatic Agricultural Systems. Penang, Malaysia, CGIAR Research Program on Aquatic Agricultural Systems.

5: Appendices

Appendix A: Organisations in the CEAFM Training and Learning space

National Government organisations with coastal fisheries responsibilities

National Government	Responsible agency	Representative engaged in consultations
Government of Solomon Islands	Ministry of Environment, Climate Change, Disaster Management and Meteorology	Agnetha Vave-Karamui. Chief Conservation Officer
	Ministry of Fisheries and Marine Resources	Duta Bere Kauhiona
Government of Vanuatu	Ministry of Agriculture, Quarantine, Forestry and Fisheries Department of Fisheries	Manager Management and Policy Division Community-based Resource Management Officer (Vanuatu)
Government of Kiribati	Ministry of Fisheries and Marine Resources Development	Officer in Charge, Policy Division Training Officer at Fisheries Division

Stakeholder organisations including Aid organisations, academic and research organisations, NGO's, CROP agencies and Not for profit

Stakeholder	Description of activities in training and learning in the Pacific region	Representative engaged in consultations
Council of Regional Organisations of the Pacific (CROP) agencies[44]		
Secretariat for Pacific Community (SPC) Division of Fisheries, Aquaculture and Marine Ecosystems (FAME), Coastal Fisheries Program	*www.spc.int.fame* FAME provides the 22 SPC member countries and territories across the Pacific with the information to make informed decisions on the management and development of aquatic resources, along with the tools and support to strengthen the capacity needed to implement decisions. The Coastal Fisheries Programme (CFP) is one of two programmes that make up the FAME Division of SPC. The CFP's goal is: "*coastal fisheries, nearshore fisheries and aquaculture in Pacific Island Countries and Territories are managed and developed sustainably*". The CFP helps to develop the capacities of member Pacific	Lindsay Chapman, Coastal Fisheries Programme Manager

[44] CROP agencies: Pacific Islands Forum Secretariat, Fiji School of Medicine (FSMed), Pacific Islands Forum Fisheries Agency (PIFFA), Pacific Islands Development Programme (PIDP), Secretariat for the Pacific Community (SPC), Secretariat of the Pacific Regional Environment Programme (SPREP), South Pacific Tourism Organisation (SPTO), University of the South Pacific (USP), Pacific Power Association (PPA) and Pacific Aviation Safety Office (PASO).

Stakeholder	Description of activities in training and learning in the Pacific region	Representative engaged in consultations
	Island countries and territories (PICTs) to assess, harvest, develop, manage and conserve their marine resources, through provision of assessment, development and management advice, technical assistance, and vocational and scientific training at national and regional levels, as well as the production and dissemination of relevant information.	
SPREP – Secretariat of Pacific Regional Environment Programme	*www.sprep.org* SPREP supports FFA and SPC as they lead fisheries management initiatives, by supporting them to integrate ecosystem and biodiversity management. Community-based management is applied where possible into work with communities, provincial and national governments. SPREP provides capacity building workshops relating to community ecosystem based management for coastal areas and fisheries; training workshops on specific knowledge and skills (eg, ecosystem-based coastal protection and rehabilitation). SPREP implement Ecosystem based management (EbM) and Ecosystem based adaptation (EbA) projects which include workshops with governments and communities; development, publication and dissemination of guidelines and promotional products. In June 2015, SPREP established a Host Country Agreement with Vanuatu, to facilitate the in-country implementation of the Pacific Ecosystem-based Adaptation to Climate Change (PEBACC) Project.	Warren Lee Long, Coastal and Marine Adviser (consultation by email only)
University of South Pacific (USP)	*www.usp.ac.fj* Faculty of Science, Technology and Environment, School of Marine Studies offers formal qualifications in fisheries: • Diploma in Ocean Resources Management and Policy • The Certificate in Sustainable Fisheries The USP Institute of Marine Resources is the research arm.	

Stakeholder	Description of activities in training and learning in the Pacific region	Representative engaged in consultations
International Government Aid organisations		
Australian Government Department of Foreign Affairs and Trade	*www.dfat.gov.au* Australia supports increased benefits to Pacific island countries from sustainable commercial and subsistence fisheries and effective governance and ecosystem-based management mechanisms for sustainability. The Australian Aid program recently revised its aid program for fisheries and launched the Strategy for Australia's Aid Investments in Agriculture, Fisheries and Water. The Strategy focuses on three pillars: strengthening markets, innovating for productivity and sustainable resource use, and promoting effective policy, governance and reform. Much of the fisheries components of the strategy focus on regional and national priorities, but a significant component focuses on supporting community based approaches with an emphasis on research, strengthened provincial, national and regional cooperation, simpler tools (including for monitoring) and adaptive management to support wider, long lasting benefits. Australian support is largely implemented through regional fisheries organisations—the Forum Fisheries Agency (FFA) and the Secretariat of the Pacific Community's (SPC) Division of Fisheries, Aquaculture and Marine Ecosystems (FAME). In response to the growing threats to the Pacific's coastal fisheries, Australia has also increased support through the Australian Centre for International Agricultural Research (ACIAR) for community-based fisheries management and aquaculture assistance for the poor.	Cherie Lambert Pacific Fisheries Program Manager Department of Foreign Affairs and Trade
The Australian Centre for International Agricultural Research (ACIAR)	*www.aciar.gov.au* ACIAR is a statutory authority that operates as part of the Australian Aid Program. ACIAR funds research projects that are developed within a framework reflecting the priorities of Australia's aid program and national research strengths, together with the agricultural research and development priorities of partner countries. ACIAR operates in five regions including Pacific Island nations. Assistance includes research into sustainable practices, project-related training, capacity development for Research and development, and funding of development	

Stakeholder	Description of activities in training and learning in the Pacific region	Representative engaged in consultations
	activities related to research programs. ACIAR administer the Australia Awards international scholarships and fellowships that offer the next generation of global leaders an opportunity to undertake study, research and professional development. Since 1986, the ACIAR Fellowships Scheme has provided the opportunities for partner country scientists involved in ACIAR-supported collaborative research projects to obtain postgraduate qualifications at Australian tertiary institutions. ACIAR supports CGIAR through the provision of core and project-specific funding. ACIAR and the University of the South Pacific (USP) Scholarship scheme also offer scholarships for agriculture, forestry and fisheries.	
New Zealand Government, Ministry of Primary Industries International Fisheries Management	MFAT have engaged MPI to provide assistance to Pacific Fisheries Management and Development Initiative, Phase II, under the NZ Aid Program. The range of capacity development approaches employed include provision of equipment and facilities; in-country technical assistance (e.g. in SI); workshops, training, advising, diagnostic work, program review with in-country authorities; policy and legal framework development for coastal fisheries management. MFAT/MPI align with and support the regional authorities SPC and FFA. MPI provide support to SPC initiatives, targeting areas where NZ has experience that can add value such as in the area of customary fisheries management and compliance.	Don Syme, Senior Policy Analyst Kalolaine Vaipuna, Policy Analyst Silver Bishop, Fisheries Analyst, Pacific Fisheries Management Pete Southern, Monitoring, Control, Surveillance and Enforcement
New Zealand Ministry of Foreign Affairs and Trade New Zealand Aid Program	*www.aid.govt.nz* Includes commitment to Fisheries: improving the management of fisheries to increase revenue, create more job opportunities and preserve fish stocks for future generations. New Zealand's bilateral development assistance include: a strengthening programme to improve the Ministry of Fisheries and Marine Resources' (MFMR) capability and systems for managing fisheries resources in Solomon Islands;	

Stakeholder	Description of activities in training and learning in the Pacific region	Representative engaged in consultations
Japan International Cooperation Agency (JICA)	*www.jica.go.jp* Currently supporting: The Project for Promotion of the Grace of the Sea in the Coastal Villages in the Republic of Vanuatu	
GIZ	*www.giz.de* GIZ is the enterprise responsible for the distribution of aid and development cooperation on behalf of the German Government, and has been working in the Pacific Region for 35 years and employs a total of 10 seconded and 6 national experts working in offices in Suva, Fiji and Manila, Philippines. GIZ is currently working with three regional organisations to advise 12 island states in climate change projects, including: Secretariat of the Pacific Regional Environment Programme (SPREP) as lead in the project: Marine and coastal biodiversity management in the Pacific island states and atolls, working with Fiji, Kiribati, Solomon Islands, Tonga, Vanuatu.	
Academic and Research organisations		
Australian National Centre for Ocean Resources and Security (ANCORS)	*www.ancors.uow.edu.au* The Australian National Centre for Ocean Resource Security (ANCORS), based at the University of Wollongong, is a globally recognised academic centre of excellence for ocean governance and resource security, marine dispute resolution and maritime crime prevention. They provide a wide variety of teaching, advisory, research and consulting services across the Asia Pacific region. Their Fisheries Governance Program studies the management of human interactions with the marine environment, and develops innovative solutions to manage activities and impacts. Communication and engagement are key components of their research. They are currently partnered with Worldfish, SPC and the Kiribati Ministry of Fisheries and Marine Resource Development (MFMRD) on the Pacfish project to support CEAFM in Kiribati. Research includes assessment of critical success factors of implementing CBFM, how CBFM interacts with broader livelihood choices, and how men and women make decisions around CBFM. It will also look at how the successes from work done in communities and with national agencies in the three partner countries be spread through the region.	Dr Quentin Hanich and Dr Aurelie Delisle.

Stakeholder	Description of activities in training and learning in the Pacific region	Representative engaged in consultations
Unitec Institute of Technology, Auckland New Zealand	*www.unitec.ac.nz* Offer in-country delivery of Graduate Certificate in Pacific NGO Leadership and Management Unitech's approach is student centred, highly engaging and non-prescriptive despite being a tertiary qualification. The program aims to develop Pacific leadership and management skills to an advanced level.	Sandy Thomson, Lecturer, Program Leader, Community and Health Services
James Cook University	*www.jcu.edu.au* Centre for sustainable Tropical Fisheries and Aquaculture, with an interest in research for community based marine protection (e.g. Phillipines)	
International NGO's, Foundations and Philanthropic organisations		
WorldFish – Member of CGIAR	*www.Worldfishcenter.org* The stated mission of WorldFish is to reduce poverty and hunger by improving fisheries and aquaculture. WorldFish strives to achieve large scale, environmentally sustainable, increases in supply and access to fish at affordable prices for poor consumers in developing countries. WorldFish accomplishes its research through projects that are part of the CGIAR Research Programs.	Delvene Boso, Country Manager WorldFish Solomon Islands Anne-Maree Schwarz Faye Siota Neil Andrew
The Nature Conservancy (TNC)	*www.nature.org* The stated mission of TNC is to "*conserve the lands and waters on which all life depends*" Examples of projects, include partnering with Solomon Island provincial governments and communities to create Reef-to-Ridges plans based on rigorous gathering of local and scientific data, and stakeholder involvement in planning, to help local actors achieve healthy, sustainable futures for communities and nature alike.	Willie Atu, Project Manager for The Nature Conservancy's Solomon Islands program
World Wildlife Fund WWF	*www.wwf.org.au* WWF-Australia is a not-for-profit organisation and part of the WWF International Network. In Australia and throughout the oceanic region, WWF work with governments, businesses and communities to help people and nature thrive within their fair share of the planet's natural resources. Pacific programs include *Coastal Fisheries Improvement in*	Shannon Seeto, Solomon Islands, Western Province

Stakeholder	Description of activities in training and learning in the Pacific region	Representative engaged in consultations
	Solomon Islands and Papua New Guinea where WWF, with support from Australian Aid, is working to improve the livelihoods and food security of people living in coastal fishing communities in Gizo (Western Province, Solomon Islands) and Madang (Papua New Guinea). Installing nearshore Fish Aggregating Devices (FADs) that can be easily fished by coastal communities for food and income is a high priority for government agencies in the region and WWF is working with selected communities, fisheries agencies and other partners to document the social, economic and ecological impacts of the near shore FADs for coastal communities. WWF-Australia's *Coral Triangle and South West Pacific fishery programme* focuses on areas where engagement is likely to yield highest impact on fisheries sustainability, livelihoods, poverty reduction and local food security.	
Live&Learn	*www.livelearn.org* Since formation in Queensland Australia in 1992, Live&Learn have targeted environmental education as a means of achieving their vision " a sustainable and equitable world free from poverty". Live&Learn have active programs across the Pacific including supporting communities-based approaches for management of resources on which community livelihoods depend. Many programs are large scale developments in collaboration with National governments, CROP agencies, international institutions and NGOs.	
Bloomberg Philanthropies Vibrant Oceans Initiative	*www.bloomberg.org/program/environment/vibrant-oceans/* Bloomberg Philanthropies support groundbreaking approaches to reform both local and industrial fishing simultaneously through an approach that integrates financial strategies to ease the transition to more sustainable fishing. Bloomberg partner with Rare (local fishing), Oceana (industrial fishing) and Eko Asset Management Partners (financing).	
Rare	*www.rare.org* For more than 25 years, Rare has empowered local communities in over 50 countries to shift from being resource users to environmental stewards. Rare's unique approach appeals to hearts and minds through proven marketing techniques. Rare trains local leaders to lead	

Stakeholder	Description of activities in training and learning in the Pacific region	Representative engaged in consultations
	change, leaving a legacy of increased capacity and a sense of ownership, responsibility and pride in conservation.	
The American Museum of Natural History, Centre for Biodiversity and Conservation	*www.amnh.org* Holds the Center for Biodiversity and Conservation (CBC) since 1993 with a mission to mitigate critical threats to global biological and cultural diversity by advancing scientific research in diverse ecosystems; strengthening the application of science to conservation practice and public policy; developing professional, institutional, and community capacity; and furthering the Museum's efforts to heighten public understanding and stewardship of biodiversity. The CBC's Pacific Programs is a regional conservation and research initiative that is leveraging world-class biodiversity research to achieve significant conservation gains in the Pacific. Through dedication to lasting partnerships, the Pacific Programs has developed a unique set of initiatives that promote enduring conservation across some of the Pacific region's most threatened land and seascapes. CBC activities also include The Network of Conservation Educators and Practitioners (NCEP) program to improve the availability and quality of conservation education and professional training worldwide through open access teaching modules, and provision of training in effective teaching practices.	
GEF-CSO Network	*www.gefcso.org* GEF-CSO Network seeks to achieve their vision of "A dynamic civil society influencing policies and actions at all levels to safeguard the global environment and promote sustainable development." through strong partnerships with civil society by enhancing opportunities for participation, contributing to policy and stimulating action.	
The David & Lucile Packard Foundation	*www.packard.org* Packard Foundations stated goal is to "restore and ensure the health and productivity of coastal marine environments in the face of rapidly increasing pressures, in particular from overfishing." Packard's strategy focuses on grant making to fund: 1. Development of well-designed and durable systems of marine reserves as models of effective management.	

Stakeholder	Description of activities in training and learning in the Pacific region	Representative engaged in consultations
	2. Development of sound systems of near shore fisheries management and governance. Development and promotion of the skills, policies and institutions as required to support effective marine reserve and fisheries management.	
International Institutions		
World Bank	*www.worldbank.org* Worldbank is supporting the *Pacific Islands Regional Oceanscape Program - Solomon Islands* The objective of the project is to strengthen the shared management of selected Pacific Island oceanic and coastal fisheries, and the critical habitats upon which they depend. It includes a component to focus on sustainable management of coastal fisheries by supporting participating countries to sustainably manage defined coastal fisheries and the habitats that support them, focusing on those with the greatest potential for increased benefits (i.e. export earnings, livelihoods, health etc) This component includes activities to: (i) empower stakeholders to sustainably manage targeted coastal fisheries in participating countries and (ii) link sustainable coastal fish products to regional markets.	
Food and Agriculture Organisation of the United Nations (FAO)	The UN Food and Agriculture Organisation undertakes a number of global programs to support and promote responsible and sustainable development in fisheries and aquaculture, including significant work in small scale fisheries in developing States. However, given the significant capacity in regional institutions in the Pacific islands region, the FAO focuses its efforts on overarching policy projects with limited work at local or national levels.	
National NGOs and network organisations		
The Solomon Islands Locally Managed Marine Area network (SILMMA)	*www.silmma.org.sb* The Solomon Islands Locally Marine Managed Area (SILMMA) network is a group of projects and practitioners including NGOs, Government and communities in Solomon Islands who have joined together and working to improve the success of their conservation and fisheries management efforts through sharing and networking.	Duta Bere Kauhiona

Stakeholder	Description of activities in training and learning in the Pacific region	Representative engaged in consultations
	SILMMA's mission is to help communities manage and conserve marine resources to maximize benefits and ensure food security by sourcing funds, facilitating, coordinating and providing information, building capacity and empowering partners through traditional and scientific approaches. SILMMA strategies include 'look and learn' activities, training opportunities for staff and members, communities and stakeholders; awareness programs and materials to assist communities to access financing; providing assistance to communities to seek out alternative options for livelihoods as appropriate for their situation; provision of training members in monitoring of management plan indicators.	
Wan Smol Bag Theatre, Vanuatu	*www.visit.wansmolbag.org* Non-government organization, funded by Australian Government Aid funded based in Vanuatu with 16 full-time core actors working in theatre productions, radio drama and film work. The environment program includes the Vanua-Tai Turtle Monitoring Network, and awareness raising through plays and documentaries.	
Solomon Islands Community Conservation Partnership (SICCP)	*www.siccp.org* SICCP work to encourage sound governance, financial sustainability, and globally significant conservation through a set of Community Conservation Agreements (CCA) that support community-driven protection of natural and cultural heritage of the Solomon Islands. CCAs are transparent agreements that provide communities and other landowners with benefits and capacity building in exchange for their participation in effective conservation of high priority areas and species.	Seno Mauli

Appendix B: Range of capacity development strategies

The following Table outlines a broad range of capacity development strategies. A multi-strategy approach draws on a combination to achieve specific developmental outcomes, and will consider factors such as the suitability and sustainability of capacity development outcomes.

For example, a consultancy project designed to develop a new information management system may include collaborative workshops or inquiry to scope the system, provision of equipment, training of users and 'super users', train the trainer for ongoing sustainable support and technical support to establish operational budgets, project-based action learning facilitation through implementation to address emerging issues and adapt the system as needed.

Strategy	Description	Practical examples
Resourcing Strategies	*Offering access to the resources needed to facilitate development and address immediate and systemic capacity 'gaps'*	1. Technical Assistance: Inline; long or short term advisory 2. Volunteer assistance: Project-based; advisory 3. Consultancy project: Bounded project with clearly defined deliverables and time frame 4. Provision of temporary/ ad hoc funding for: a. Infrastructure b. Materials and equipment c. Staff positions in establishment d. Recurrent costs 5. Recruitment and provision of skilled project staff 6. Project grants
Supported Learning Strategies	*Offering approaches to target individual and social learning in formal, informal and workplace settings*	7. Workplace coaching: Usually task or skills specific 8. Mentoring: Longer-term developmental relationship with an experienced mentor 9. Project-based Action Learning (AL) 10. Workplace instruction and peer learning 11. Formal education, by scholarship 12. Training, in-house or external a. Competency based b. Instructional design c. Problem based learning d. Narrative methods e. Strengths based approaches 13. Train the trainer 14. Professional Development Course (International, regional, local) a. Technical/ professional field b. Leadership development

Strategy	Description	Practical examples
		c. Management development 15. National, regional, international exchange, attachments or twinning
Collaborative Learning & Change Strategies	*Offering experiences that engage with different ways of thinking to inform organisational development*	16. Forums, professional conferences or seminars 17. Problem-based, organisational system or service delivery diagnostic workshops and collaborations 18. Strategic planning 19. Scenario or risk analysis and planning 20. Stakeholder and community engagement workshops and events: To create space for broader engagement in strategy development, planning and review 21. Participatory Action Research (PAR): Progress resolution of complex problems by drawing on the collective wisdom, agency and motivation of those concerned to affect change 22. Appreciative Inquiry (AI): Collaborative, strengths-based approach to visioning, planning and development
Research and Diagnostic Strategies	*Establishing an evidence base for informed, targeted capacity development options, approaches and priorities*	23. Study tours: To learn how others address similar challenges 24. Commissioned Research: Social, case based, experimental 25. Desktop Research: Identification and adaptation of pre-existing data, models, theories 26. Collaborative inquiry: To build consensus and inform strategy, priority and approach 27. Participatory evaluation: A formative approach usually embedded in PAR, AI etc 28. Assessment and diagnostics: a. Organisational/ institutional assessment b. Skills assessment/ needs assessment c. Survey (e.g. perception survey) d. Individual behavioural and leadership styles (e.g. psychometric and feedback tools) 29. Design of theories of change, logic and M&E frameworks 30. Baseline, mid and end program research 31. Independent evaluation and review

Appendix C: Training and learning methodologies arising from different paradigms

Paradigm: Positivist

Ontology and Epistemology	Methodology	Examples related to training and learning
There is an absolute truth, one reality that is 'out there' waiting to be discovered Knowledge is acquired through experience with the external world Mind-body distinction where mind is capable of objective observation of external reality	Knowledge transfer from outside to inside – through expert instruction, objective research Objective observation Experimental design an search for validity, reliability and generalizability Deductive learning and inquiry	Scientific research Teacher or expert-centered Pre-determined learning objectives and curriculum Expert assessment to externally defined standards Instructional design Evaluation focuses on 'knowing how' and 'doing'

Paradigm: Constructivist

Ontology and Epistemology	Methodology	Examples related to training and learning
Many realities and ways of knowing Reality is socially constructed and re-constructed through social sense-making, languaging and action Knowledge is constructed by the learner Truth is contextual	Provide a rich context for negotiation of meaning and meaning construction Integrating, valuing and bridging knowledge's and perceptions with a focus on lived experience Participative processes, many voices & collaboration Meaning of symbols and artifacts Inductive leaning and inquiry Negotiated objectives	Collaborative inquiry Action Learning Narrative, story and metaphor Strength based approaches Learner centred using authentic learning problems and tasks Evaluation focuses on adaptation, fitness for purpose Artifacts of learning reflected on and shared Evaluation focuses on being able to *navigate around similar problems* or tasks

Paradigm: Indigenous (Adapted from Wilson (2001))

Ontology and Epistemology	Methodology	Examples related to training and learning
Knowledge is relational, embodied and shared with all creation – social, ecological, cosmological It is the relationship with objects and ideas that is important, not the objects and ideas themselves	Learning as a holistic and embodied process Learning about ideas and things through the lens of relationship, meaning, and language	Participatory Action Research Appreciative inquiry Evaluation focuses on *enhanced relationships and practical relevance*

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