Practices of Climate Change Adaptation in the Pacific:

Survey of Implementing Agencies (Phase II)

Household solar panel in Arno Arno Village, Arno Atoll, Republic of the Marshall Islands

(Photo Source: Karen E McNamara)

Report by Karen E McNamara, Sarah L Hemstock and Elisabeth A Holland

Pacific Centre for Environment and Sustainable Development (PACE-SD)

The University of the South Pacific

Suva, Fiji

Contents

Tables and Figures

Acronyms

PACE-SD   Pacific Centre for Environment and Sustainable Development
PICs   Pacific Island Countries

Acknowledgements

Executive Summary

Various and diverse socio-economic, political and environmental challenges face the countries of the Pacific region. Over the last few decades, climate change has risen to increasing prominence as a key challenge and focal point for both national governments and communities to address. This has largely been a result of the ongoing climate change projections for the Pacific region, coupled with various observations by locals of changes to the climate, seasons and their local environment. Together, these observed and projected impacts of climate change can have profound social, economic and environmental implications for all Pacific Island Countries (PICs). To date, a series of broad-brush climate change related impacts have been reported in the literature; the impacts of which include a significant strain on crucial community sectors such as agriculture and fisheries, freshwater resources, human health, economic security, physical infrastructure and coastal resources.

Within the region, mainstreaming climate change into Pacific government policies has become a key activity over the last few years, which has been met with difficulties. Moreover, community-based climate change adaptation has also become another popular activity. In response to this, this report attempts to chart the progress made, and importantly, examine some positive lessons learnt and 'good practices' in relation to community-based climate change adaptation initiatives in the region. Thirty-one agencies completed a survey providing details of projects they had implemented (including location, time frame, sectors targeted and budget), along with specific practices, progress made, levels of success, and perceptions of long-term impact. A number of limitations exist in this study, the most prominent being that it might be too premature to ask agencies to reflect on project success and 'good practices' given that climate change impacts are yet to severely materialise in communities. This limitation is reflected in the relatively poor progress made by implementing agencies in addressing a series of climate change impacts. In this way, this study should be considered as more of a review of actual practices in the region. Despite this, this study with implementing agencies provides a unique, first-stage look into the type of projects that have been implemented in communities throughout the region and whether other criteria have been achieved such as the inclusion of gender and youth issues, as well as local knowledge in the project planning and implementing phases. Moreover, implementing agencies were asked to reflect on how well they have implemented a series of adaptation initiatives, along with the projects' ability to be appropriate, effective and efficient. This unique assessment is used in the interim in light of the difficulties in undertaking an accurate assessment as to whether or not climate

change impacts in these communities have been reduced as a result of these projects, as referred to above.

Despite these challenges in making a robust assessment of the sustainability and success of these community projects 'on the ground', a number of positive stories, and subsequent lessons, have emerged from this assessment of implementing agencies. These lessons – which have stemmed from four projects that have 'completely addressed' some adaptation initiatives and indicated that the projects were 'appropriate', 'effective' and 'efficient' – are four-fold. The first lesson is about the need to ensure locally and culturally appropriate community awareness raising and education strategies. The second relates to the need to actively integrate local community knowledge into the planning and implementation stages of the adaptation projects. The third lesson highlights that community ownership is needed throughout all project stages. The fourth and final lesson speaks to the need to utilise common sense strategies in lieu of accurate and specific climate change empirical evidence. As mentioned above, given that we may not know the specific climate change projections for the community we are working in, using common sense about securing freshwater supplies or bolstering food security are important initiatives, with or without climate change. As such, targeting these areas, if this is the priority of the community and hence ownership can ensue, the project will have a greater ability to achieve sustainability and build community capacity in the future.

Adaptation at the Local Level: A Critical Ingredient for Pacific Communities

This report begins with a discussion of why adaptation to climate change is a critical issue for communities and governments of the Pacific to address. Countries of the Pacific are spread over a vast region of the Pacific Ocean. The Pacific region is unique with a vast array of diverse cultures, natural environments and livelihoods, and a particular set of sustainable development challenges. Although PICs are vastly spread over the largest ocean in the world, these countries share similar sustainable development challenges. Climate change will most likely worsen some existing sustainable development challenges that currently face small island states of the Pacific. Knowing about existing risks and challenges should assist these communities and countries prepare for the future. These sustainable development challenges include: small populations and land masses; limited places for people to live, along with areas for waste disposal, agriculture, industrial development and infrastructure; remoteness and isolation; import-dependency; challenging levels of access to markets; susceptibility to natural disasters and the impacts of climate change; decentralisation; and limited natural assets. Some of these challenges impinge on food, water and health security, and vital infrastructure for communities and entire countries. The sustainable development challenges PICs face are likely to be heightened as a result of the impacts of climate change. Climate change impacts are likely to alter the capacity of communities to produce cash crops and food supplies, and increase the variability of production. Higher demands and unstable levels of food production can result in a crucial development challenge for these countries. Sea level rise, increasing storm surges and therefore more frequent rates of salt water incursions will result in a decline in fresh water supplies and crops – presenting a severe sustainable livelihood challenge. Given this, adaptation needs to be a key priority in the region to ensure the long-term sustainability of Pacific communities and conservation of natural ecosystems.

It is important to also consider that the challenges and impacts of climate change are likely to vary and differ across the region. PICs differ according to their geomorphologic make-up. For instance, low-lying island states are particularly vulnerable to climate change impacts as their freshwater reserves are limited to a shallow subsurface lens, which makes them more susceptible to depletion in drought but also contamination from salt water. Climate change is predicted to threaten the long-term capacity for people to continue living in a number of low-lying Polynesian and Micronesian countries such as Tuvalu and Kiribati, especially given that many of them are ostensibly atolls rarely exceeding two meters above sea level. Second, these development and climate change challenges will vary across the region

according to the dependence of communities on natural resources for subsistence livelihoods, and their stock of social and financial capital. For instance, sea level rise, changes in average and seasonal rainfall, and increases in climate extremes will impact certain communities more severely where their livelihoods and food security are directly dependent on these natural resources. The Pacific region is currently going through a transitional period whereby the majority of people still focus on a subsistence living; yet, there is also an increasing trend for people to move to the urban centres in pursuit of education and employment. Thus, this transitional period varies across the region and impacts on the sustainable development challenges of communities. While the effects of climate variability and change across the Pacific region might not be uniform, they are projected to be substantial, far-reaching and challenging. Ways of life and ultimately, the sustainable development of these communities and countries more broadly will be affected in some way.

Adaptation has now become a crucial thread of the global climate change discourse. While global discussions have largely revolved around mitigation, a greater emphasis has now shifted towards adaptation fuelled by the growing consensus that we are now 'locked into inevitable changes to climate patterns' (International Union for the Conservation of Nature et al., 2003: 1). While climate change is an international issue with a series of global impacts, including international economic and geopolitical instability, adaptation should be focused largely at the local level. For adaptive capacity to increase and adaptation measures to be successful, more attention and efforts must be directed at the community level (see Garnaut, 2008). While PICs have ratified a number of international and regional conventions and strategies in relation to sustainable development and climate change, this is only one pathway for addressing climate change. Consequently, more PICs are taking actions at the local community level to bolster coping capacity and adapt to climate change impacts. Insightfully, Campbell and de Wet (1999: v) defined adaptation over a decade ago as: 'Those actions or activities that people, individually or in groups, take in order to accommodate, cope with or benefit from the effects of climate change'. In this way, adaptation is made up of actions or activities that people and local communities can take collectively to reduce the impacts of climate change on both human and/or natural systems. The local context is a core ingredient for the development of appropriate and effective adaptation efforts. Unfortunately, adaptation efforts to date have largely been 'top-down' and formal in their process and approach (Reid et al., 2009). Consequently, limited focus and attention has been devoted to ascertaining community experiences of climate change, including the knowledge and views of community members on how to cope and adapt to localised changing environmental conditions (Petheram et al., 2010).

Adaptation provides a course of action so that people can cope with the impacts of climate change and continue to develop sustainable livelihood pathways (see PACE-SD, 2011; Alliance of Small Island States, 2008). Adaptation is a dynamic and multi-layered process and activity. If the end goal is sustainable livelihoods that are able to withstand external 'shocks and stresses', then adaptation to local environmental change requires various core elements to ensure its sustainability and effectiveness. These elements can broadly include: culturally and locally-appropriate awareness raising; community capacity building and training; the acquisition of climate data and projections at the regional and local level to help plan activities; and a mixture of both 'soft' and 'hard' measures to protect homes and community infrastructure, and secure water and food supplies (see Global Facility for Disaster Reduction and Recovery, 2009). Pacific communities at large have strong connections to and a sense of identity entrenched in their surrounding environment. Many communities have long oral histories of how to adapt to local environmental conditions and change (see Salick and Ross, 2009; Macchi, 2008). This is not something new. Communities have been adapting to environmental disturbances in their local landscapes for centuries. The reason to highlight this is because local communities in the Pacific, and elsewhere (see McNamara and Westoby, 2011) provide rich oral histories and local knowledge about how to adapt to environmental change. Integrating local knowledge with Western science will not only provide adaptation pathways that are locally and culturally appropriate, but will also provide a greater opportunity for communities to take ownership over adaptation activities because they have been part of the solution.

Methodology

This section provides a brief overview of the methodology for this study on practices of community-based climate change adaptation from the perspective of implementing agencies. The overall research consists of three core components:

a. A review of community-based climate change adaptation projects in the region;
b. An assessment of practices according to implementing agencies of community-based climate change adaptation projects; and
c. An exploration of how community 'beneficiaries' consider the success and sustainability of adaptation projects in their community.

This report provides the details and findings from (b) above.

Surveys were sent to various implementing agencies across the region via email. The In-Country Coordinators (part of this USP European Union – Global Climate Change Alliance project) assisted in sending this survey out to all relevant agencies that have been or continue to be involved with community-based adaptation initiatives. Given that numerous people were involved in transmitting this survey to their networks, it is difficult to accurately pin-point the survey return rate. It is however approximated to be at around 50%, which is a positive result given the mode of delivery (email).

The survey consisted of four-pages with questions ranging from basic project details to self-administered attitudinal statements (see Appendix 1). This methodology and indeed topic area, however, presents a number of limitations. The first is the potential for positive response bias. It is unlikely that implementing agencies would have responded in a way that showed their projects in a poor light. Moreover, it is likely that implementing agencies that have been responsible for projects that have performed poorly would not have completed the survey. As such, care should be exercised when analysing and interpreting the results given this likely positive response bias. The survey was self-administered and as such it was the responsibility of the respondent (normally the project manger of the implementing agency) to report honestly on project details, success, lessons and impact. However, again, given the mode of information gathering, care should be exercised when interpreting the results. Finally, many climate change impacts that are projected for the region are just that – projections. While some changes in climate, seasons and local environments have been experienced by communities, understanding the full extent to which these adaptation projects have safeguarded communities from

these large-scale projected impacts remains in its infancy. Given that some of the survey questions probed agencies about the impact of their project, care should again be exercised in interpreting these results given that it is difficult to gauge the true overall impact projects, positive or negative, at this early stage. Despite this, we can draw out preliminary positive lessons that relate to the process of projects; as detailed in this report. A growing body of literature points to the need to move beyond a singular focus on vulnerability to more general adaptive capacity, given the lack of precision definitions and projections of localised impacts (Dessai et al., 2009; Green et al., 2009; Schneider and Mastrandrea, 2010; Pelling 2011).

Snapshot of Practices: Where, When, Cost, Success and Impact

This section will provide details of the projects and practices gained from the 31 completed surveys with implementing agencies. Such initial details include the location of projects, sectors targeted, and the extent to which issues of gender, local knowledge and youth have been actively integrated into projects. The second section will explore in greater depth the particular objectives, practices and successes of the 31 projects. The final section will explore the long-term impact of projects in addressing community-based adaptation to the impacts of climate change.

Overview of Projects

Thirty-one surveys were analysed from implementing agencies of community-based climate change adaptation projects in various countries around the Pacific region. The average time frame for projects was just over three years (3.23) with the longest running for six years and the shortest running for a quarter of a year. Of the 31 projects, 14 were completed (45.2% of the sample) and 17 were ongoing (54.8% of the sample). Nineteen different implementing agencies responded to the survey. The average funding amount for projects was US$1,135,914 with the highest funding amount being US$5,533,500 and lowest being US$2,000. There were 12 different donors for these 31 projects. The Global Environment Facility was recorded as a donor for 16 of the 31 projects.

A number of PICs were represented in the 31 surveys. Figure 1 provides a summary of the countries that have been involved in these 31 projects.

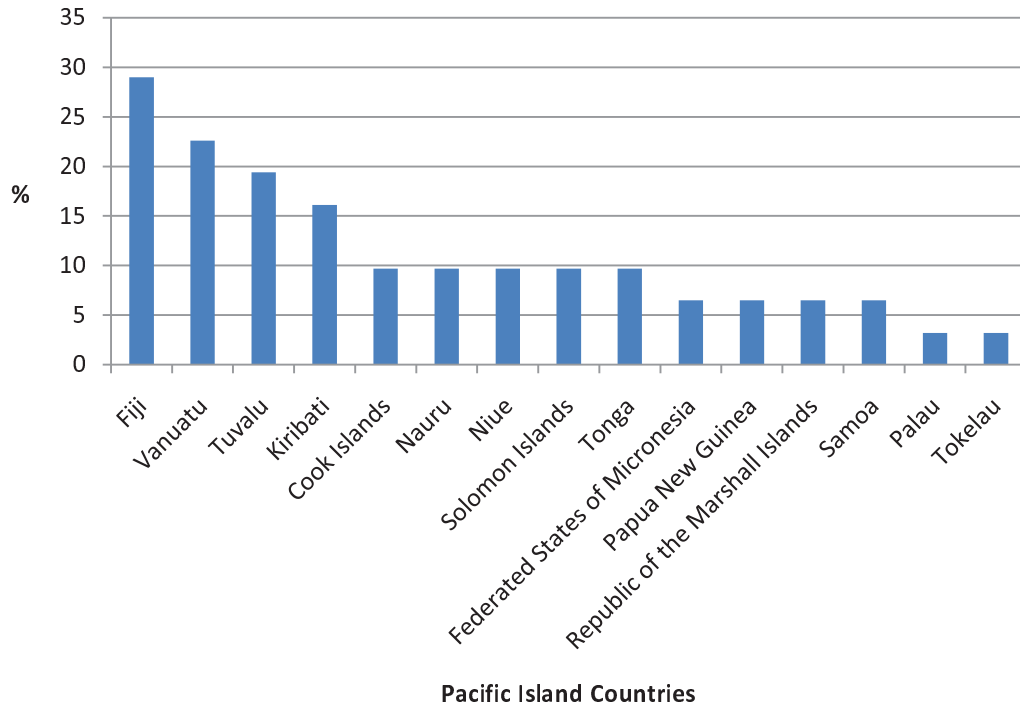Figure 1: PICs involved in these 31 community-based climate change adaptation projects in the Pacific region (n=31)

Moreover, various diverse community sectors have been targeted by these projects. Implementing agencies could select more than one sector as many community-based projects seek to impact across various cross-cutting sectors. Figure 2 provides a summary of the sectors targeted in these 31 projects in the Pacific.
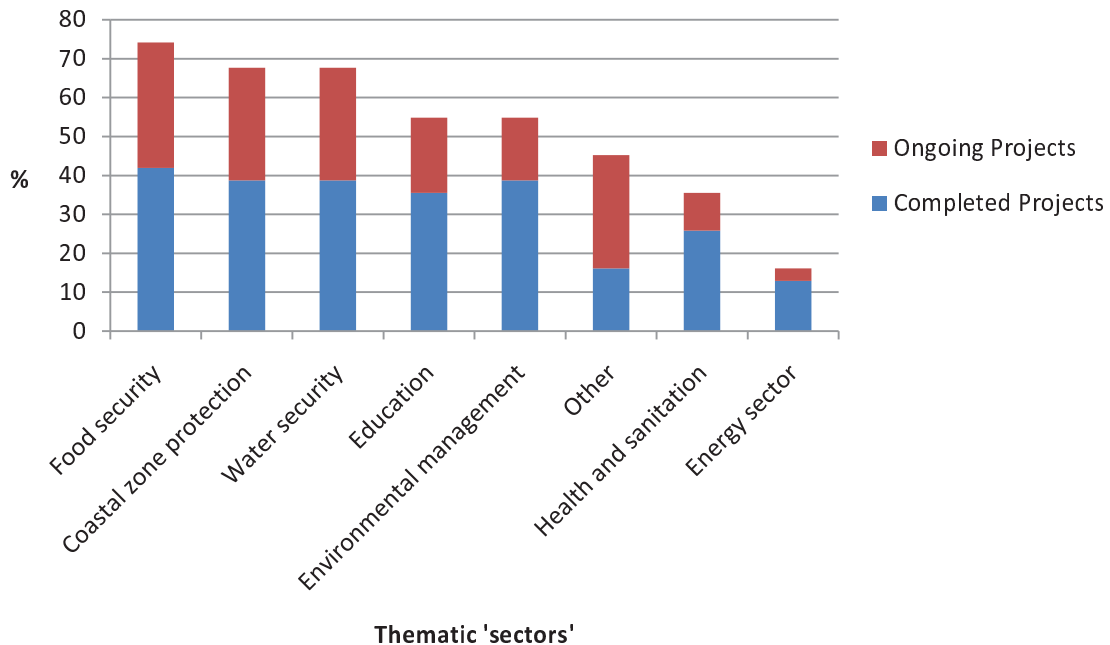
Figure 2: Thematic community 'sectors' targeted for 31 community-based climate change adaptation projects in the Pacific region (n=31)

Figure 2 highlights the high emphasis of projects on food and water security and coastal zone protection. Education and awareness oriented projects, along with projects with an environmental management focus, also make up more than 50 percent of all projects. However, many of these education-based and environmental management projects have been completed (35.5% and 38.7% respectively). 'Other' adaptation initiatives, which have predominately stemmed from ongoing projects, included: disaster risk reduction and/or management (9.6%); 'traditional' knowledge (6.4%); flood risk management (3.2%); alternative income (3.2%); behavioural change (3.2%); cultural identity (3.2%); waste management (3.2%); forestry, agriculture or forestry (3.2%); livestock or animal husbandry (3.2%); population and demographics (3.2%); and policy and capacity building (3.2%). The section to follow will provide a more in-depth analysis of positive stories and lessons along these broad sectoral lines.

Implementing agencies were queried as to the level at which they have explicitly addressed gender and youth issues into their projects. Issues surrounding gender and youth are both considered integral components of sustainable development, as enshrined in the 1992 Rio Principles. On a scale of 0 ('no') to 1 ('partially') to 2 ('yes'), the mean was 1.52 for the integration of gender concerns and experiences, and 1.39 for youth aspirations. The purpose of asking this specific question on gender for instance was

to ascertain the level by which women *and* men have been involved in the planning, consultation and decision-making process for local climate change adaptation initiatives. In some communities, women in particular can face inequalities and climate change adaptation projects should be sensitive to these tensions to: avoid the reinforcement of inequalities; and miss out on valuable local information that women may have on accessing and managing crucial community resources such as freshwater. In terms of youth, there is little integration of their concerns into major decisions that can affect their future livelihoods. If we adopt a systems thinking approach, sustainable development can only be achieved if we think and act through a lens of systems over time. Decisions that are made now can have a positive or grave impact on the younger generation and as such their particular issues, concerns and ideas for the future should be integrated into the planning and delivery of community-based projects. Based on the findings from these 31 projects, progress has been made to make strategic efforts to ensure that both men and women are part of the initiative (from start to end), as well as the younger generation. When comparing completed and ongoing projects, gender and youth issues have been more explicitly addressed in ongoing projects (1.76 for ongoing projects compared with 1.21 for completed project for gender issues; 1.36 for completed projects and 1.41 for ongoing project for youth issues). This is a promising trend and it is hoped it will continue.

The integration of 'traditional' local knowledge was also assessed for each project. Utilising the same scoring scale for gender and youth above, the overall mean was 1.58. For completed projects it was 1.36 and for ongoing projects it was 1.76, showing a steady rise in the integration of 'traditional' local knowledge into on-ground community-based projects in the region. As highlighted in the above section of this report, local knowledge is a powerful tool to use in local climate change planning as the experiences and histories of locals can be very useful in understanding past adaptations to environmental change, and planning culturally-appropriate mechanisms to cope with future climate change.

Overview of Project Practices and Successes

Implementing agencies were asked whether they had met their intended objectives and/or aims. On a scale of 0 ('no') to 1 ('partially') to 2 ('yes'), the mean value was 1.52. For completed projects this value was 1.57 and for ongoing projects it was 1.47. This score for ongoing projects is promising given that

these projects are still continuing and are therefore on track to fulfilling their core objectives. For completed projects, it appears that not all established objectives were achieved.

Based on the responses of the 31 implementing agencies, little progress has been made in terms of the implementation of various adaptation initiatives. Seventeen adaptation initiatives were proposed and three 'open' options were provided for implementing agencies to provide details if the list did not suffice. Table 1 illustrates the limited performance of implementation, and also provides more specific details on the levels of implementation according to project status (completion or continuing) and sectors.

Table 1: Implementation of adaptation initiatives as overall mean, and according to project status and community sectors (n=31)

Potential adaptation initiatives	Overall mean	Completed projects	Ongoing projects	Water Security	Food Security	Energy Security	Health and Sanitation	Coastal Zone Protection	Environmental Management	Education
Raised awareness of climate change	2.71	3.29	2.24	2.76	2.83	2.80	2.82	3.00	3.00	2.71
Raised awareness on water management	2.00	2.71	1.41	2.43	1.96	2.80	2.36	2.33	2.35	2.35
Raised awareness of disaster risk management	1.90	2.36	1.53	1.95	2.09	2.20	2.27	2.24	2.35	2.06
Planted mangroves/native vegetation	1.61	2.21	1.12	1.67	1.74	1.00	1.36	2.19	2.24	1.59
Maintained mangroves/native vegetation	1.45	2.07	0.94	1.38	1.70	0.80	1.27	2.00	1.94	1.65
Increased holding capacity of the water supply	1.32	1.50	1.18	1.81	1.17	1.60	1.36	1.52	1.41	1.47
Planted vegetation to protect coastline	1.29	1.36	1.24	1.14	1.30	1.00	1.36	1.86	1.59	1.12
Created more garden plots for food security	1.16	1.14	1.18	1.10	1.35	0.60	1.18	1.38	1.53	0.88
Diversified crops grown	1.00	0.86	1.12	0.90	1.13	0.60	1.18	1.14	1.29	0.65
Discouraged destructive coral fishing patterns	0.94	1.29	0.65	0.86	1.13	1.40	1.36	1.19	1.29	0.88
Improved the drainage system	0.84	1.07	0.65	1.00	0.70	0.00	0.55	1.10	0.88	1.00
Installed a bore	0.55	1.14	0.06	0.67	0.52	0.20	0.09	0.81	0.71	0.94
Constructed a modern seawall	0.48	1.00	0.06	0.57	0.43	0.40	0.18	0.71	0.59	0.82
Constructed a traditional seawall	0.32	0.29	0.35	0.19	0.35	0.20	0.45	0.48	0.29	0.35
Maintained seawalls or floodwalls	0.32	0.50	0.18	0.33	0.39	0.40	0.18	0.33	0.41	0.24
Restored sand dunes	0.32	0.29	0.35	0.19	0.39	0.00	0.27	0.48	0.47	0.24
Built houses on stilts	0.06	0.07	0.06	0.00	0.04	0.00	0.09	0.10	0.06	0.00

The implementation of community-based climate change adaptation initiatives remains in its infancy. As Table 1 reveals, initiatives that have been implemented the most frequently are those focused on awareness raising and education activities. However, upon further examination of these initiatives, they too only support mild levels of implementation. Raising awareness on climate change was only 'completely implemented' by 22.6% of implementing agencies. Likewise, raising awareness on water management and disaster risk management was only 'completely implemented' by both 16.1% of implementing agencies. The majority of completed projects have a high rate of implementation across various initiatives compared to those projects still being implemented, with some notable exceptions including garden plots and diversification of crops, illustrating a slightly renewed focus in food security for current projects. Along broad sectoral lines, food security related projects showed high levels of engagement in awareness activities on climate change but not on water management.

Some implementing agencies indicated 'other' adaptation initiatives that they had undertaken. These included: identification and awareness of new crop varieties in relation to climate change adaptation (n=1), land use planning policies and guidelines (n=1), increased biodiversity in the area (n=1), introduced new gardening techniques for food security (n=1), farming systems and composting and agricultural and livestock productivity (n=1), community disaster response (n=1), increased livelihood opportunity and increase in marine food (n=1), constructed demonstration plots to test crop varieties and various gardening techniques (n=1), solar fruit drying for women's income generation and food security (n=1), cleaner more healthy coastlines (n=1) and agro-meteorology (linking farmers, agricultural extension officers and meteorology services, n=1). Some of these initiatives have been self-reported as completely and successfully implemented, and as such discussed in greater detail in the section to follow.

Implementing agencies were encouraged to self-evaluate how well they addressed (or indeed, are continuing to address) a series of diverse climate-related impacts in communities, based on a scale of 0 ('not addressed') to 4 ('completely addressed'). Nineteen climate change impacts were proposed and three 'open' option impacts not specifically addressed were provided to implementing agencies to add to if required. Only two implementing agencies contributed to the 'other' open-ended responses, namely for: traditional knowledge (n=1); and community climate change perception (n=1). Table 2 outlines a summary of responses to addressing these nineteen climate change related impacts.

Table 2: Level at which projects have addressed climate change-related impacts as overall mean, and according to project status and community sectors (n=31)

Climate change-related impacts	Overall mean	Completed projects	Ongoing projects	Water Security	Food Security	Energy Security	Health and Sanitation	Coastal Zone Protection	Environmental Management	Education
Heavier rains	1.87	2.43	1.41	1.95	2.04	3.40	2.82	2.14	2.53	2.24
Increasing coastal erosion	1.87	2.43	1.41	1.67	1.91	2.40	2.09	2.43	2.29	2.18
Declining food security	1.84	2.29	1.47	1.76	2.13	2.40	2.27	2.05	2.47	1.71
More frequent drought	1.84	2.43	1.35	2.24	1.83	3.00	2.55	2.14	2.24	2.12
Declining freshwater (quantity/quality)	1.77	2.21	1.41	2.10	1.87	2.40	1.91	2.05	2.24	1.94
Increasing surges/inundation	1.71	2.29	1.24	1.71	1.57	2.40	2.09	2.19	2.00	2.06
Declining agricultural food resources	1.61	2.36	1.00	1.71	2.04	2.40	2.18	1.90	2.18	1.59
Increasing flood events	1.61	2.14	1.18	1.62	1.52	1.40	1.73	1.86	1.76	1.71
Increasing health problems	1.58	1.86	1.35	1.76	1.65	3.00	2.55	1.71	1.88	1.82
Rising temperature	1.58	2.14	1.12	1.67	1.74	2.40	2.27	1.81	2.00	1.76
Sea level rise	1.58	2.07	1.18	1.43	1.83	2.40	2.09	2.14	2.12	1.71
Declining fish and seafood resources	1.52	2.14	1.00	1.33	1.96	2.40	2.00	2.00	2.24	1.71
Decreasing biodiversity	1.52	2.14	1.00	1.48	1.91	2.60	2.09	1.90	2.29	1.59
Increasing number and severity of cyclones	1.48	1.93	1.12	1.52	1.43	1.80	2.09	1.71	1.76	1.65
Loss of homes	1.48	1.93	1.12	1.71	1.57	2.80	2.36	1.76	2.00	1.71
Decreasing quality of life	1.42	1.79	1.12	1.52	1.70	2.20	2.00	1.67	1.71	1.35
Reef decline/degradation	1.29	1.79	0.88	1.24	1.61	2.40	1.91	1.71	1.94	1.47
Coral bleaching	1.03	1.71	0.47	1.24	1.30	2.40	1.73	1.33	1.53	1.35
Increasing riverbank erosion	0.84	0.93	0.76	0.81	0.70	0.00	0.45	0.90	0.65	0.82

Progress made in terms of addressing various climate change related impacts has been low. However, this is expected given that many of these implemented adaptation initiatives are to respond to and minimise the damage of impacts that have not yet eventuated. In this way, responses to this question may be too premature; however, they do provide some interesting indications about how adaptation initiatives are targeting specific impacts. The impacts considered to be most addressed by implementing agencies included heavier rains, coastal erosion, food security and drought. Completed projects had addressed these more than ongoing projects; a trend that ran across all the 19 impacts.

Perceptions of Long-term Project Impact

Implementing agencies were asked to reflect on the level at which their project has been appropriate, effective and efficient. Brief definitions were provided for each of these broad assessments of project success and impact. Appropriateness was gauged according to how well the project met the needs of the communities. Effectiveness on the other hand explored how well the project met its objectives and/or aims. Efficiency was self-assessed according to how well inputs such as funds and time were converted into outputs. The scale by which to respond to these variables ranged from 0 ('no') to 1 ('partially') to 2 ('yes'). Figure 3 (a-c) offers a summary of these findings.

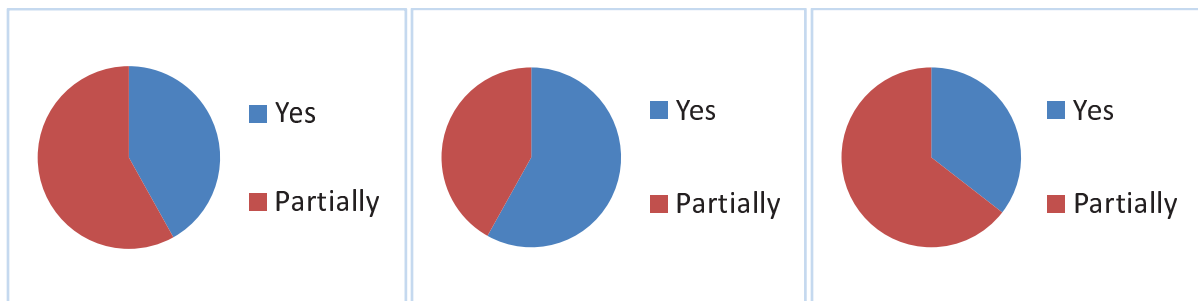Figure 3: Project appropriateness (a), effectiveness (b) and efficiency (c) (n=31)

Project effectiveness was documented with the highest positive 'yes' score (58.1%). This 'yes' ranking predominately came from completed projects (61.1%) and a handful of ongoing projects (38.9%). Table 3 below provides the more in-depth analysis of the above results, according to completed and ongoing projects.

Table 3: Project appropriateness, effectiveness and efficiency, according to project status (n=31)

	'Yes' Completed / Ongoing	'Partially' Completed / Ongoing
Appropriateness	53.8 / 46.2	38.9 / 61.1
Effectiveness	61.1 / 38.9	23.1 / 76.9
Efficiency	63.6 / 36.4	35.0 / 65.0

Based on past completed projects, there appears to be room for improvement in terms of their success according to project appropriateness, effectiveness and efficiency. For those projects that have met these criteria, an in-depth analysis of the intricacies of these projects, based along these three assessment variables, will be provided in the following section.

Table 4 offers an alternative way of assessing project success, based on a series of 13 attitudinal statements. Implementing agencies were asked to reflect on the impact of their project on beneficiary communities and indicate the level to which they agree with the 13 statements, based on a scale of 0 ('do not agree') to 4 ('very strongly agree').

Table 4: Project appropriateness, effectiveness and efficiency, according to project status (n=31)

As a _result of this project_, now the _community_:	_Overall mean_	_Completed Projects_	_Ongoing Projects_
Appreciates the value of 'traditional', local knowledge	2.55	2.79	2.35
Understands climate change science and projected impacts	2.23	2.64	1.88
Feels they are part of decision-making over their future	2.13	2.29	2.00
Knows where to get more assistance from outside agencies	1.90	2.00	1.82
Will involve women more in decision-making	1.87	2.07	1.71
Can cope with changes to the climate	1.65	1.86	1.47
Will continue monitoring local environmental conditions	1.65	1.86	1.47
Has reliable access to safe water resources	1.55	1.79	1.35
Will face less difficulties related to climate change	1.52	1.64	1.41
Has good disaster management practices	1.48	1.57	1.41
Has reliable productive land / food security	1.35	1.57	1.18
Knows what to do if tidal surges and/or cyclones are approaching	1.35	1.64	1.12
Has enough access to good medical facilities when needed	0.81	0.79	0.82

Encouragingly, a statement in relation to the value and role of local knowledge was the most highly reported statement for implementing agencies. Despite this, we can see that there is still room to improve this value, particularly for ongoing (and indeed, future) projects. Overall, responses were quite

poor, but these should be considered in light of the limited timeframe by which community-based adaptation measures have been pursued.

Positive Lessons: Where, Sectors and How

Given the focus of this report on positive practices and lessons ('good practices'), it will now turn its attention to those adaptation initiatives that have been self-evaluated as 'completely implemented'. Despite the relatively low uptake of numerous initiatives broadly (see Table 1), there are some isolated cases of successful implementation, which we will now turn. Out of the 31 implementing agencies, four were 'completely implemented', as well as 'appropriate' (which is, where the project met the needs of the community), 'effective' (which is how well the project met its objectives/aims) and 'efficient' (which is how well the inputs such as funds and time are converted into outputs).

Table 5 provides a summary of these findings. These projects were located in Fiji, Cook Islands, Samoa and Vanuatu. These adaptation initiatives that were 'completely addressed' filter across a number of broad thematic community sectors including: awareness raising and education; water security; food security; environmental management; and coastal zone protection. These projects implemented ranged from a framework to assess vulnerability to climate change (with a strong community awareness and engagement component), a pilot study in six communities in Fiji that focused on water security and coastal protection (both climate sensitive sectors), a water and catchment management project in communities in Fiji and Samoa (that focused heavily on community ownership), and a novel food security project in communities in Vanuatu.

Table 5: Summary of projects that have 'completely addressed' various adaptation initiatives and are appropriate, effective and efficient (n=4)

Potential Adaptation Initiatives	Projects			
	Climate Change Adaptation for Rural Communities in Fiji	Water and Nature Initiative Project Phase II (Fiji and Samoa)	Protection of Food Security through Adaptation to Climate Change (Vanuatu)	Methods and Models for Assessing Coastal Vulnerability to Climate Change (Fiji & Cook Islands)
Raised awareness of climate change	X		X	X
Raised awareness on water management	X	X		
Raised awareness of disaster risk management		X		X
Planted mangroves/native vegetation	X	X		
Maintained mangroves/native vegetation	X			
Increased holding capacity of the water supply	X			
Planted vegetation to protect coastline	X			
Created more garden plots for food security			X	
Diversified crops grown			X	
Discouraged destructive coral fishing patterns				
Improved the drainage system	X			
Installed a bore	X			
Constructed a modern seawall	X			
Constructed a traditional seawall				
Maintained seawalls or floodwalls				
Restored sand dunes				
Built houses on stilts				

Some Lessons from Four Projects: Education, Ownership, Local Knowledge and Common Sense

The four lessons from these four projects relate largely to *approach* as opposed to specific activities. These four positive lessons entail the need to: enhance education and awareness that is culturally and locally appropriate and effective; ensure local ownership of projects from inception to implementation; integrate local knowledge into adaptation solutions; and employ some common sense in lieu of detailed definitions and localised projections of climate change impacts. Each of these projects will be discussed below in turn.

The 'Climate Change Adaptation of Rural Communities in Fiji' project ran from 2006 until 2010 with funding from AusAID and also implemented by PACE-SD. This project worked with six Fijian communities: Druadrua Island, Korotasere village; Bavu village; Votua village; Buretu village; and Navukailagi village. These sites were chosen using a PACE-SD selection criteria based on a points system in relation to degree and vulnerability of sites. As identified in Table 5, this project scored high across a number of adaptation initiatives including awareness and education, freshwater security, coastal zone protection and broad environmental management. Lessons to learn from this project relate to awareness and education activities that focused on a few important tenants:

- One size does not fit all;
- Communities need to be engaged in two-way communication (communities are not 'empty vessels' that need to be told things but rather, they offer important insights concerning their lands);
- It is crucial to understand your community before you can tailor appropriate activities (put another way: get to know your audience); and
- This process of awareness raising is gradual (it is not a 'once off' activity, which people often perceive, it is an ongoing two-way process from project start to finish).

The other lesson relates to local ownership which this project aimed to achieve from inception to ensure that there was a 'high level of satisfaction indicated by the project communities' (survey #2, 2012). This project, along with the ones to follow all indicated that local knowledge was integrated throughout the duration of the project cycle. Moreover, this project worked in a more 'common sense' fashion in that sectors were targeted – with the full involvement and final endorsement of communities – that are climate sensitive such as water security and coastal zone protection. These 'common sense' solutions, designed by both the implementing agency and the community, centered around providing alternative freshwater sources (such as boreholes to access underground water supplies), the expansion of community water holding capacity (through the provision of water tanks), and the protection of the coastal zone and hence vital community infrastructure and settlements (through the re-planting of mangroves). These strategies, with or without climate change, are likely to increase community adaptive capacity in that they are bolstering critical livelihood resources such as freshwater supplies, and protection of coastal homes and community infrastructure.

The second project revealed that it had success in raising awareness and re-planting mangroves. This project, the 'Water and Nature Initiative (Phase II)' was implemented from late 2009 until late 2011 by

the International Union for the Conservation of Nature with a focus on Samoa and Fiji. From the outset, this project appeared to be driven by principles of community ownership and transfer, and appropriate and relevant awareness. For the project in Kadavu, 'plans and activities [were] developed and implemented in a culturally, financially and resource sustainable method to restore or maintain river basin ecosystem services' (survey #5, 2012). Moreover, for the project in Samoa, the local community was actively 'engaged in the decision-making process relating to its watershed' (survey #5, 2012). Capacity building was targeted across numerous scales including individual communities, and national and regional policy makers. Some practical examples of these positive lessons concerning effective community ownership and awareness included:

- Project steering committee was established to oversee project governance;
- Community-based management plan was developed through participatory means;
- Numerous community consultations were informed through a community consultation work plan;
- A communications and learning strategy was developed to foster community understanding of water quality, land use management and water conservation;
- The community was placed in different focus groups such as men, women and youth – the purpose of which was to allow all community members the opportunity to voice their opinions in their comfort zones; and
- The establishment and sharing of meaningful reasons for the community to be actively involved in the project process.

Given this project's high rates of success in raising community awareness, these above lessons provide a very relevant and beneficial foundation for the development of appropriate climate change adaptation strategies of which education and shared dialogue is paramount.

Live and learn implemented the Vanuatu component of the USAID-funded 'Protection of Food Security through Adaptation to Climate Change' project from August 2010 until December 2011. This project successfully integrated youth and gender issues into its process and implementation activities, although recommended that 'separate workshops for women in some communities may have helped with gender balance' (survey #7, 2012). This project sought to protect local food supplies and resources from increasing weather variability and extreme weather events. In achieving this, the project established plot demonstration sites that showcased new crop varieties and various new garden techniques for food security. These activities were considered successful because they were hands-on and practical for

community members to learn more about 'the changes in weather patterns, and the reason why we should adapt to the new weather events… and the reason of why to protect biodiversity' (survey #7, 2012). This last point is particularly pertinent; community members must be able to easily identify the reasons for their involvement in these projects so that they can genuinely contribute to its agenda and outcomes. Community members constructed the demonstration plots themselves, drawing on their local knowledge and new knowledge gained from the training workshops. Through this process, 'participants share[d] amongst themselves their gardening knowledge through facilitating sessions during the workshop' (survey #7, 2012). A crop nursery was also built to 'ensure the sharing of new resistant crops and other species that have been propagated to deal with climate change challenges' (survey #7, 2012). This project explicitly integrated local knowledge into the outputs and activities by fostering a two-way dialogue between community members and outside 'experts' – a core lesson for any future community-based adaptation initiatives.

The 'Integrated Methods and Models for Assessing Coastal Vulnerability and Adaptation to Climate Change in PICs' project provided some lessons as another successful story of raising community awareness. This initiative ran from 2003 until 2005 with funding from the Global Environment Facility (US$350,000) and implemented by PACE-SD. The beneficiaries for this project were all PICs as it was largely a 'research based climate capacity building project focusing on vulnerability and adaptation assessments, with outcomes and impacts at the region level' (survey #1, 2012). The specific communities involved in the Pacific were a small atoll island a large volcanic island and as such included Aitutaki in the Cook Islands and both Navua and Natadola in Viti Levu, Fiji. Given that this project was largely geared to enhance the technical and human capacity of PICs to assess vulnerability and adaptation to climate change (including variability), this project indicated that it 'completely addressed' awareness raising on climate change and disaster risk management (see Table 5). This was done by expanding 'the understanding and knowledge concerning impacts and adaptation to climate change in the Pacific through case studies in Cook Islands and Fiji' (survey #1, 2012). A core component of the project was the delivery of a series of education activities that built 'in-country research capacity through training in and transfer of the new and advanced methods and integrated assessment models' (survey #1, 2012). More specifically, the project developed a 'hands-on tool' to allow 'practitioners to have a much better knowledge and appreciation for: (i) climate change related risk and vulnerability and adaptation related risk minimisation through adaptation and mitigation; and (ii) risk based measures serving to reduce disaster impacts and promote sustainable development' (survey #1, 2012). This

practical, hands-on tool has provided a useful lesson – to think creatively about awareness raising and consider other communication techniques that might be more culturally effective in transmitting messages, including 'hands' (practical) or 'hearts' (emotional) based techniques.

Concluding Remarks

This study has provided an overview of community-based climate change adaptation projects in the Pacific region, according to the view and experiences of 31 implementing agencies. These agencies provided details of both completed (n=14) and ongoing (n=17) projects, across a variety of countries and thematic community sectors. The average timeframe for projects was six years and the average budget was just over one million (US$). Nineteen different implementing agencies completed the survey, from 12 unique donors. The Global Environment Facility was recorded as the donor for 16 projects examined in this study. Progress is being made to ensure that gender and youth issues are being integrated into project formulation and implementation but with room for improvement in future initiatives. Likewise for the role of local knowledge in planning community-based adaptation initiatives, progress is being made but more strategic efforts should be forthcoming in subsequent projects in the future. According to implementing agencies, adaptation initiatives that were most popular included a suite of awareness raising activities (on climate change, water management and disaster risk management). This was followed by initiatives concerning the planting and maintaining of mangroves and native vegetation, and increasing the holding capacity of freshwater supplies.

As identified in this study, many adaptation projects have only just been implemented in communities throughout the region and thus it can be too early at this stage to ascertain impact, success and overall sustainability. Moreover, uncertainty over climate change impacts for specific communities means that we may not be directing our efforts towards long-term sustainable outcomes that safeguard communities from climate change and maladaptation may even ensue. Despite these difficulties, some positive stories are transpiring from a number of projects. These stories and subsequent lessons relate to community awareness raising and education, understanding and integrating local knowledge into the planning and implementation stages of the project, ensuring community ownership throughout all project stages, and employing common sense strategies in lieu of accurate and specific climate change empirical evidence. Garnaut (2008: 363) reinforced this focus on the human experience: 'adaptation is best seen as a local, bottom-up response' and noting that 'Households, communities and businesses are best placed to make the decisions that will preserve their livelihoods and help maintain the things they value'. As demonstrated in a number of projects, it is critically important to recognise that community members are key resources in outlining what constitutes an appropriate and effective adaptation strategy for their village. Local community views and expectations should be the focus of adaptation

planning and monitoring. Crucially, climate change adaptation strategies should be culturally appropriate and sensitive, and incorporate local Indigenous context specific knowledge and draw on local resources to promote ownership of adaptation responses.

References

Alliance of Small Island States (2008) *Global Climate Change and Small Islands Developing States: Financing Adaptations*. New York: United Nations Foundation.

Campbell, J. and de Wet, N. (1999) *Climate Change Adaptation: Incorporating Climate Change Adaptation into Development Activities in Pacific Island Countries: A Set of Guidelines for Policymakers and Planners*. Apia, Samoa: South Pacific Regional Environment Programme.

Dessai, S., Hulme, M., Lempert, R. and Pielke, Jr. R. (2009) 'Climate prediction: a limit to adaptation?', In: Adger, W.N., Lorenzoni, I. and O'Brien, K.L. (eds.) *Adapting to climate change: Thresholds, Values, Governance.* Cambridge, United Kingdom: Cambridge University Press, 64-78.

Garnaut, R. (2008) *The Garnaut Climate Change Review: Final Report*. Melbourne, Australia: Cambridge.

Global Facility for Disaster Reduction and Recovery (2009) *Preparedness, Planning, and Prevention: Assessment of National and Regional Efforts to Reduce Natural Disaster and Climate Change Risks in the Pacific*. Suva, Fiji: The World Bank and SOPAC.

Green, D., Jackson, S. and Morrison, J. (2009) *Risks from Climate Change to Indigenous Communities in the Tropical North of Australia.* Canberra, Australia: Department of Climate Change and Energy Efficiency.

International Union for the Conservation of Nature, Stockholm Environment Centre and International Institute for Sustainable Development (2003) *Livelihoods and Climate Change: Combining Disaster Risk Reduction, Natural Resource Management and Climate Change Adaptation in a New Approach to the Reduction of Vulnerability and Poverty*. Winnipeg, Canada: International Institute for Sustainable Development.

Macchi, M. (2008) 'Indigenous and Traditional Peoples and Climate Change', In: *International Union for the Conservation of Nature, Issue Paper March 2008*. Geneva, Switzerland: International Union for the Conservation of Nature.

McNamara, K.E. and Westoby, R. (2011) 'Local Knowledge and Climate Change Adaptation on Erub Island, Torres Strait', *Local Environment: The International Journal of Justice and Sustainability*, 16 (9), 887-901.

PACE-SD (2011) *Climate Change Factsheets*. Suva, Fiji: PACE-SD, University of the South Pacific.

Pelling, M. (2011) *Adaptation to climate change: From resilience to transformation*. New York, USA: Routledge.

Petheram, L., Zander, K.K., Campbell, B.M., High, C. and Stacey, N. (2010) 'Strange changes: Indigenous perspectives of climate change and adaptation in NE Arnhem Land (Australia)', *Global Environmental Change*, 20, 681-692.

Reid, H., Cannon, T., Berger, R., Alam, M. Ashley, H., Kenton, N. and Milligan, A. (editors) (2009) *Participatory Learning and Action 60 – Community-based Adaptation to Climate Change*. London, UK: International Institute for Environment and Development.

Salick, J. and Ross, N. (2009) 'Traditional Peoples and Climate Change', *Global Environmental Change*, 19 (2), 137-139.

Schneider, S.H. and Mastrandrea, M.D. (2010) 'Risk, Uncertainty, and Assessing Dangerous Climate Change', In: Schneider, S., Rosencranz, A., Mastrandrea, M. and Kuntz-Duriseti, K. (eds) *Climate change science and policy.* Washington DC, USA: Island Press, 162-174.

Appendix 1: Survey Instrument

Project Overview

1. Please provide the following details on this project:

   a. Title:

   b. Timeframe (start and end date):

   c. Total funding amount:

   d. Donor(s):

   e. Beneficiaries:

2. Please list the Pacific countries involved:

3. Please list the specific Pacific communities involved:

4. Please describe how these countries and communities were selected:

5. Please indicate (X) the community sectors predominately targeted (please select all that apply):

   ☐ Water security   ☐ Food security   ☐ Energy security

   ☐ Health and sanitation   ☐ Coastal zone protection ☐ Environmental management

   ☐ Education   ☐ Other _____   ☐ Other _____

6. Please describe how these sectors were selected:

7. Have gender issues been explicitly addressed in this project? ☐ Yes OR ☐ No OR ☐ Partially

8. Have youth issues been explicitly addressed in this project? ☐ Yes OR ☐ No OR ☐ Partially

9. Has 'traditional', local knowledge been integrated into this project? ☐ Yes OR ☐ No OR ☐ Partially

10. Please briefly describe the core objectives and/or aims of this project:

Project Practices and Success

11. Do you think this project has met these intended objectives and/or aims? ☐ Yes OR ☐ No OR ☐ Partially

    a. Please explain your reasons to the above question:

12. Please indicate (X) the level at which this project has implemented the following potential adaptation initiatives:

Potential adaptation initiatives	Not implemented	Mildly implemented	Moderately implemented	Largely implemented	Completely implemented
Raised awareness of climate change					
Raised awareness of disaster risk management					
Raised awareness on water management					
Increased holding capacity of the water supply					
Installed a bore					
Improved the drainage system					
Created more garden plots for food security					
Diversified crops grown					
Planted mangroves/native vegetation					
Planted vegetation to protect coastline					
Maintained mangroves/native vegetation					
Restored sand dunes					
Discouraged destructive coral fishing patterns					
Constructed a traditional seawall					
Constructed a modern seawall					
Maintained seawalls or floodwalls					
Built houses on stilts					
Other _____					
Other _____					
Other _____					

13. Please describe in detail what has worked well in this project (key benefits, good practices) and why:

14. Please describe in detail what hasn't worked well in this project and why:

15. Please describe what you would do in the future to improve community climate change adaptation projects in the Pacific:

16. Please indicate the <u>level at which</u> this project has <u>addressed</u> any of the following list of <u>climate change-related impacts</u>:

Climate change-related impacts	Not addressed	Addressed a little	Moderately addressed	Very much addressed	Completely addressed
Sea level rise					
Increasing surges/inundation					
Increasing flood events					
Rising temperature					
Declining freshwater (quantity/quality)					
Increasing riverbank erosion					
Increasing coastal erosion					
Increasing number and severity of cyclones					
Heavier rains					
More frequent drought					
Decreasing biodiversity					
Reef decline/degradation					
Coral bleaching					
Declining food security					
Declining fish and seafood resources					
Declining agricultural food resources					
Increasing health problems					
Loss of homes					
Decreasing quality of life					
Other _____					
Other _____					
Other _____					

17. To date, <u>has this project been</u>:

a. <u>Appropriate</u> (how well the project met the needs of the communities? ☐ Yes OR ☐ No OR ☐ Partially

b. <u>Effective</u> (how well the project met its objectives and/or aims)? ☐ Yes OR ☐ No OR ☐ Partially

c. <u>Efficient</u> (how well inputs such as funds and time were converted into outputs)?

☐ Yes OR ☐ No OR ☐ Partially

Perceptions of Long-term Project Impact

18. Reflecting on the impact of this project on beneficiary communities please indicate (X) the level to which you agree with the following statements:

As a result of this project now the community:	Do not agree	Agree a little	Moderately agree	Strongly agree	Very strongly agree
Understands climate change science and projected impacts					
Can cope with changes to the climate					
Has reliable access to safe water resources					
Has reliable productive land / food security					
Has enough access to good medical facilities when needed					
Appreciates the value of 'traditional', local knowledge					
Has good disaster management practices					
Knows what to do if tidal surges and/or cyclones are approaching					
Feels they are part of decision-making over their future					
Will continue monitoring local environmental conditions					
Will face less difficulties related to climate change					
Will involve women more in decision-making					
Knows where to get more assistance from outside agencies					

19. Which communities and local groups (beneficiaries or partners) would you suggest we speak to about the impact of this climate change adaptation project?

20. If you have any other comments please share them here:

Sincere thanks for your time in completing this survey – it is greatly appreciated.