



**CORAL TRIANGLE
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COMMUNITY-BASED ADAPTATION TO CLIMATE CHANGE IN THE SOLOMON ISLANDS: LESSONS LEARNED FROM GIZO COMMUNITIES, WESTERN PROVINCE



January 2012

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January 2012

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INTRODUCTION

This report summarizes activities carried out by WorldFish under Agreement CT09 Amendment No.2 dated 31 March 2010 between WorldFish and WWF, under the Coral Triangle Support Partnership (CTSP) project. The overall goal of the five-year CTSP project is “to improve the management of biologically and economically important coastal and marine resources and associated ecosystems that support the livelihoods of peoples and economies in the Coral Triangle”. The US Coral Triangle Initiative (CTI) and CTSP’s strategy for achieving this goal is to focus on four main result areas, and the work described in this report primarily targets Result 4: Capacity to adapt to climate change improved throughout the Coral Triangle region.

The activities, undertaken by WorldFish-Solomon Islands in collaboration with WWF-Solomon Islands and the Western Provincial Government in Year 4 (2012) comprised a package of work to undertake participatory Climate Change Adaptation (CCA) planning in the Gizo Integration Site, and test a participatory tool for doing this.

The Climate Change Adaptation Toolkit for Coastal Communities in the Coral Triangle (Version I) was designed by the US Coral Triangle Initiative Support Program with support from USAID to help local governments and coastal communities in the Coral Triangle identify and implement early actions. WorldFish was one of the first organisations to test Tool 4 of Version I (of six tools in the Guide): The Guide to Vulnerability Assessment and Local Early Action Planning (VA-LEAP) (US Coral Triangle Initiative Support Program, in prep). Not all parts of the guide were used and the tool was adapted to fit the context of Solomon Islands and the communities we worked with. The process was iterative and fluid - field personnel and researchers often adapted the worksheets before visiting communities based on their experience, and explored different methods and activities while in communities as the need arose. In addition to testing the toolkit, WorldFish also developed a presentation and materials for raising awareness of climate change science and impacts in communities. To engage youth in the VA-LEAP process, we made a participatory photo film with young people in communities.

Here we report the results and our experiences of workshops conducted using the VA-LEAP guide, with raising climate change awareness, and improving youth engagement in community-based adaptation in Gizo, Western Province. Our target audience for the results of this work is the Solomon Islands national and provincial government, including Ministry of Fisheries and Marine Resources (MFMR) and Ministry for Environment, Climate change, Disaster Management and Meteorology (MECDM). These results, and our experiences have been reported to National and Western Province government, and key stakeholders in November 2012 as part of a workshop conducted in Gizo in which communities presented and discussed their Climate Change Adaptation Plans.

Climate change and vulnerability in Solomon Islands

Global and regional trends and predictions relevant to Solomon Islands were compiled by WorldFish based on the latest available data (Brokovich & Schwarz 2011; PCCSP 2011). The predictions are:

- Increase in air temp 0.5-1.5 degrees by 2030
- Increase in sea surface temperature of 1 degree by 2050
- Ocean acidification below threshold for healthy coral by 2060
- Sea level rise since 1996 has increased 8mm per year. There are global predictions of 0.5-1.4m by 2100
- Rainfall – small increase with more intense floods
- Fewer cyclones, but stronger ones

A broad assessment of vulnerability to climate change in Solomon Islands has been made at the national level as part of the National Adaptation Program of Action (NAPA), the Coral Triangle Initiative National Plan of Action (CTI NPoA), and within the Pacific context (Lal et al., 2009). The NAPA is an adaptation plan for different key sectors (agriculture, water resources, energy, human health, mining, fisheries and marine resources, human settlements, infrastructure, forestry, waste, education, environment and tourism) based on a synthesis of sectoral reports which qualitatively assess the vulnerability of each sector based on observed changes rather than empirical climate exposure data or climate models. The NAPA is an important planning document at the national level, specifically examining climate change adaptation and it preceded the Solomon Islands Climate Change Policy which was finalized in 2012 and launched on 29th June 2012. It included community-level consultations which resulted in a list of changes communities were observing which were perceived to be climate change induced, including:

- Coastal erosion, extreme high tides
- Flooding
- Changes in growing season
- Low productivity/yield of crops
- Frequent/continuous intense rainfall and sea storms (storminess)
- Incidence of pests attacking plants, e.g. slippery cabbage
- High incidence of malaria and water-borne diseases
- Landslides affecting food gardens
- Drought affecting water supply
- Sea-level rise – inundation of land and saltwater intrusion
- Rising lake level affecting food gardens as a result of continuous rain
- Loss of natural ecosystem resources – mangroves, coral reefs
- Absence of certain bird species – impact on pollination of fruit trees and others

In the NAPA and the CTI NPoA there is an emphasis on community-level management of marine resources in the Solomon Islands, and there is evidence that community-based activities are effective in the Solomon Islands to enhance resilience and reduce vulnerability (Schwarz et al., 2011). The lack of operative linkages between governance at the community level and at the national government level, and insufficient capacity in provincial governments in most provinces means the Solomon Islands government looks to community-based solutions while these capacities are being developed. Thus, for this project, WorldFish explored the opportunities and challenges a participatory and community-based approach to climate change adaptation presents.

Adaptation to climate change

In the last ten years, the emphasis for climate change research and action has shifted from one of mitigation to adaptation. Adaptation to global climate change in the human context can be defined as “a process, action or outcome in a system such as a household, community, group, sector, region, or country, that enables the system to better cope with, manage or adjust to actual or expected climatic stimuli, their effects or impacts (stress, hazard, risk or opportunities)” (Smit et al. 2000; Smit & Wandel 2006).

A recent World Bank report found that the global costs of adaptation would be in the range of USD75–100 billion per year between 2010 and 2050 (World Bank 2010) and the UNFCCC predicts that by 2030 developing countries would need USD27-66 billion per year to adapt (UNFCCC 2007), a figure reported to be an underestimation (Parry et al. 2009).

There are multiple definitions of adaptation in the literature and in policy documents and these can be interpreted and employed in a number of ways. It can be confusing, therefore it is essential to be clear and define terms, concepts and assumptions that will be used prior to an assessment as this will influence what will be measured, how it will be measured, who can use the information produced and how (Winograd 2005).

Adaptation to climate change can occur along different dimensions. It can be defined by: spatial scale, sector of interest, phenomenon of interest (e.g. social, biological), action type (e.g. technological, institutional, legal, educational and behavioral), and by temporal scale (e.g. adapting to climate changes occurring in the immediate, short or long-term time scales). Adaptation itself can manifest in many ways. It can be undertaken by an individual for their own benefit, it can be actions by organizations or groups to meet collective goals, or it can be made up of actions by governments and public bodies to protect their citizens (Adger et al. 2005). Adaptation has also been defined as autonomous or planned (IPCC 2007). Autonomous adaptation does not constitute a conscious response to climatic stimuli, but rather is a response triggered by ecological changes in natural systems and by market or welfare changes in human systems. Planned adaptation is the result of a deliberate decision, based on an awareness that conditions have changed or are about to change and that action is required to return to, maintain or achieve a desired state.

Adaptation and vulnerability to climate change

Adaptation to climate change is intimately associated with concepts of vulnerability and adaptive capacity. According to the IPCC, vulnerability is “a function of the character, magnitude, and rate of climate variation to which a system is exposed, its sensitivity, and its adaptive capacity” (McCarthy et al. 2001; 995). In IPCC terminology, exposure refers to the nature and degree to which a system is exposed to significant climatic variations, and sensitivity is the degree to which a system will respond to a change in climatic conditions. Adaptive capacity is the ability of a system to evolve in order to accommodate climate changes or to expand the range of variability with which it can cope. Adaptation is an action or change in behavior that will either a) reduce exposure – generally mitigation measures, b) reduce sensitivity – often a measure to reduce dependence on resources impacted by climate change, or c) enhance adaptive capacity that increases actor’s ability to make adaptation decisions. This can also be taken a step further to transform capacity into action and implement decisions. The approach we used with communities in Gizo attempted to identify options for adaptation at the community level, and focused on adaptation measures that reduce sensitivity and enhance adaptive capacity. It is difficult to address exposure at the community scale, when the causes of the changes occur elsewhere in the world and mitigation needs to occur there.

Community-based adaptation

The focus of this project was to ‘do’ community-based adaptation (CBA) to climate change. CBA is a ‘bottom up’ approach that is led by the community and driven by community needs. The investigation of the adaptive capacity and the adaptive needs within communities assist them to identify possible adaptation initiatives and means of enhancing adaptive capacity, which are tailored to their needs. There has been relatively little research on the processes that facilitate practical implementation of adaptation at the community level. However, although it is not called ‘adaptation’, there are close links with the process of implementation of community-based natural resource management initiatives, and some of the lessons from this area of research are pertinent. Fundamental lessons that have been learned about CBA are: (i) the dimensions of adaptation need to be defined, (ii) the determinants of adaptive capacity are defined by the communities themselves, (iii) the decision-making processes need to be legitimate, (iv) measures are unlikely to be undertaken in response to climate change alone and there needs to be consideration of the interactions with political, cultural, economic, institutional, and technological forces, (v) the process needs to be equitable among and between communities, and (vi) the CBA process is context specific but lessons can be learned and passed on for scaling up.

SITE DESCRIPTION

Two sites from the CTI Integration sites at Gizo were selected and invited to participate in the CBA program by WWF and the Western Provincial Government Environment Officer: Saeraghi and Paelonge¹. WWF has been working with these communities for many years, promoting marine conservation and sustainable marine resource use. However, they had not been actively engaged with the communities since the 2007 earthquake and tsunami, which caused destruction of homes and assets, and loss of life on Gizo Island and in the communities we subsequently worked in together.

Each site comprised several satellite communities (Figure 1, and see Figure 2 for photographs of community workshops).



Figure 1. Map of Western Province, Solomon Islands, and two CTI Integration sites on Gizo Island: Saeraghi and Paelonge (and the satellite communities that were involved in CBA at each site).

¹ A third site, Babanga, was also initially selected as a CBA site. However, after a few visits it became clear that there were many divisions within the communities which would make working with them very difficult and likely to cause more division.



Figure 2. Community workshops in Paelonge and Saeraghi in 2012

APPROACH

Approach

We tested the toolkit VA-LEAP, made modifications as needed, and adapted the tool to meet community needs. The VA-LEAP is focused on “collecting local knowledge and information to understand the perceived status of target natural and social resources, and the vulnerability of these resources to climate changes based on existing non-climate threats, past and current experience, and future predictions. The VA-LEAP was designed this way to allow communities to explore how climate change may impact resources that are important to them and develop “early actions” to address these threats without the need for extensive technical assistance and capacity.”

Although the VA-LEAP was initially designed to understand and address climate threats to marine resources, it also includes examination of land (e.g. forests, gardens, water) and social (e.g. important resources for communities such as houses and infrastructure) resources. There is a strong focus on “nature-based adaptation planning” and sustainable resource use. Developing the early action plan from the VA-LEAP process included four main steps, and the process for doing this (which the VA-LEAP workshops are based on) is laid out in Figure 3:

- (i) Identification of priority social and natural resources
- (ii) Identification of threats, and characterising the vulnerability of priority resources to climate change impacts
- (iii) Identification of potential solutions to address threats and to reduce vulnerability to climate change impacts
- (iv) Identification of desired results and measurable objectives, and development of an action plan to achieve those results.

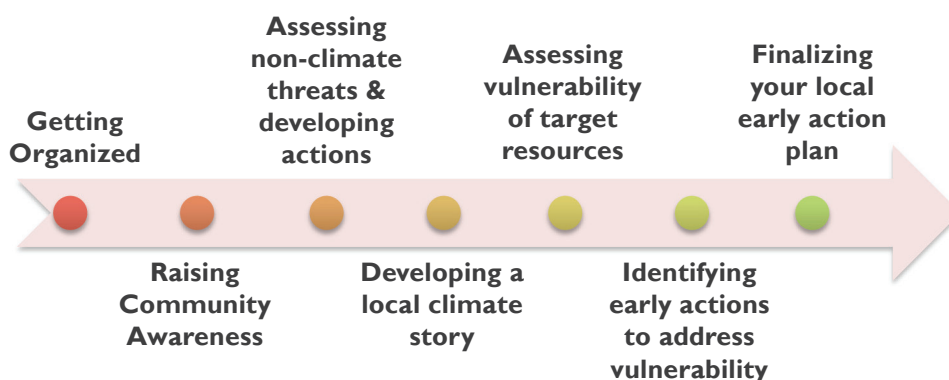


Figure 3. Stages for Developing a Local Early Action Plan for Climate Change Adaptation (VA-LEAP)

Given that a significant amount of time had passed since WWF were directly engaged with the communities, we needed to initially spend time getting to know the communities, gain permission to conduct workshops, and come to agreements about how the VA-LEAP should progress with communities, as a step in between raising awareness and assessing non-climate threats. This was a learning process for both communities and ourselves, and set the foundation for learning as we progressed together.

After scoping trips to the communities and gathering existing information ('getting organized'), the climate change adaptation team, comprising WorldFish, WWF and Western Province government (CCA team) started off with climate change awareness for the whole community. We didn't find any of the resources provided with the toolkit suitable for Solomon Islands communities, primarily because there were too many and communities struggled to understand. The team found that at the community level, reading, writing and following instructions would require some expert guidance either from champions within the community themselves or from an external facilitator. Not everyone was able to easily grasp the concepts of climate change and adaptation from the materials provided. Therefore we designed a presentation of climate change science and impacts which attempted to demystify climate change, promote an understanding of the difference between climate change and natural disasters/or natural climate variability, and explain the likely impacts climate change will have on coastal community livelihoods in the Solomon Islands.

The awareness evenings were the key entry point to engaging with communities, and we repeated the presentation several times throughout 2012 in evening sessions where all community members were invited, and recapped several times during workshops with participants and other stakeholders. Once there was agreement by community leaders to continue, we started workshops where communities decided on set of elected representatives to be involved in the workshop program (including women, youth, resource users, and traditional/religious leaders) and how the workshops should progress. Then the community was led through a set of workshops and activities (based on VA-LEAP steps i-iv) which allowed the community to work out for themselves what their vulnerability to climate change is in the context of other drivers of change in their community. These workshops were held throughout 2012.

At one point it became clear that the youths were not engaging in the VA-LEAP workshops, despite their encouraged participation. To address this, we decided to make a photo-film with them, where youth would tell their own story of climate change. It was presented at the Pacific Festival of Arts Western Province side-event held in Gizo town.

Finally we facilitated discussion, decision-making, and planning around options of adaptation actions to climate change, tailored to community needs. Action plans were then presented and discussions about CBA were conducted as part of a two-day workshop held in Gizo. Convened by Zelda Hilly (WorldFish) and Lysa Wini-Simeon (CTSP coordinator (WWF) the workshop was attended by various NGOs and national and local government stakeholders selected by the communities, as well as the community representatives themselves.

Our adapted VA-LEAP process is outlined in Figure 4, and details/timeline of each step are explained in the next section.

- (i) VA-LEAP training
- (ii) Site selection for CBA
- (iii) Getting organized (background and scoping)
- (iv) Climate change awareness in communities
- (v) Engagement with community stakeholders
- (vi) Important resources and change
- (vii) Threats to resources, root causes and early actions
- (viii) Prioritization of actions planning
- (ix) Youth Photo Film
- (x) Stakeholder presentation of action plan, and next steps

ACTIVITIES

Activities

While initial engagement with the communities occurred in late 2011, most activities for CBA were carried out in 2012 (Table 1). The activities were led by The WorldFish Center, which is based at Nusa Tupe, Gizo, in Western Province. Project partners were WWF Gizo and Western Province provincial government. National government members from MEDCM and the CTSP-coordinator have also been actively involved in discussions and planning with the intention of scaling out a Solomon Islands-specific version of VA-LEAP.

Table 1. Timeline and summary of activities

Date	Summary of activities	Format	LEAP worksheet²
Sept 2011	VA-LEAP training for SI practitioners in PNG Meetings with practitioners and government in Honiara pre- and post-training about climate change science and impacts, community level vulnerability, and how VA-LEAP should be adapted to Solomon Islands context	Training and meetings	
Oct 2011	Selection of sites for CBA	Meetings with project partners	
Oct 2011	Getting organized (background and scoping)	Meetings with project partners, community visits	2, 3, 4
Oct 2011	Climate change awareness in communities	Community meetings	5
Nov 2011	Engagement with community stakeholders and planning the process	1 stakeholder workshop	3
Jan - Feb 2012	Important resources and changes communities had seen, including climate changes	2 stakeholder workshops	6, 7, 10, 11

² The worksheets were used as a guide for discussions and activities rather than filled out specifically in workshops. Note that Worksheets 15 and 16 (vulnerability to climate change) were not included as community activities. The CCA team decided these were too complicated for the communities to complete. Instead, the team conducted the vulnerability assessment in the VA-LEAP training with the CTSP Capacity Development Team, and all discussions of threats to resources in communities, were inclusive of climate change impacts and how they may influence vulnerability in the community.

Mar 2012	Identifying threats to resources, root causes and early actions	2 stakeholder workshops	14, 8
Apr 2012	Climate change awareness in communities	Community meetings	
Apr 2012	Climate change VA-LEAP training with CTSP Capacity Development Team, NGOs, community representatives, provincial government, in Gizo	3 day workshop	
May – Jul 2012	Youth Photo Film including presentation at Pacific Festival of Arts, Gizo.	Youth workshops	
May and Aug 2012	Actions and prioritization	2 stakeholder workshops	17
Sept – Oct 2012	Writing the plan	4 draft community plans	18, 19
Nov 2012	Presentation of the plan and facilitated discussion of VA-LEAP with local communities in Gizo and stakeholders	Large 2 day workshop	1

Description of activities

In this section we describe the main activities conducted during the CBA program. We also highlight where elements were successful and where there were challenges, in the hope this may contribute to further refinement of a CBA approach to be taken in Solomon Islands in the future.

i. VA-LEAP training

In September 2011 members of the Gizo CCA team attended a VA-LEAP training held by CSTP in PNG. Meetings were held at WorldFish in Honiara immediately before and after the training, and all practitioners who were attending the training were invited, including NGO and government members.

The intention of the pre-training meeting was to gain a collective understanding of climate change and what it meant for Solomon Islands communities, discuss the expectations of the VA-LEAP training, and what participants hoped it could bring to current climate change and natural resources work in communities.

The Solomon Islands participants at the training held daily debriefs where they discussed the strengths and weaknesses of different parts of the VA-LEAP. These were then presented back in Honiara in the post-training meeting.

The reported strengths of VA-LEAP were:

- (i) The VA-LEAP built on existing process and tools used in communities (e.g. PRA tools and CBRM), and
- (ii) It was very comprehensive.

The reported challenges or missing elements of VA-LEAP were:

- (i) There appeared to be little consideration of socially differentiated vulnerabilities. An approach which explicitly considers how the community functions and makes decisions, and how this relates to vulnerable and marginalized groups, is needed;

- (ii) A defined boundary of ‘community’ is required;
- (iii) The VA-LEAP stops at a plan, but there needs to be greater emphasis on implementation;
- (iv) It is marine resources focused, but also considers other sectors. NGOs tend to be sectoral (e.g. marine conservation, health) so there was concern about having enough expertise to adequately do the VA-LEAP using a cross-sectoral approach; and
- (v) Some of the worksheets are too complicated for communities, such as the threat-action map, and vulnerability assessment worksheets.

There was agreement that the concerns would require adaptation of the VA-LEAP for Solomon Islands communities. Therefore, the Gizo CCA team attempted to make appropriate adaptations to the suggested activities in light of concerns.

ii. Site selection for CBA

The Gizo integration site was predetermined by project specifications. The communities selected for CBA were determined by WWF (based on prior community engagement) and Western Province Government in October 2011. In hindsight, we believe the selection should have been a more transparent and fair process. For example, we could have asked all Gizo communities to apply if they were interested. Top-down selection of communities was partially to blame for some problems of engagement, disinterest, and on-going participation throughout the program.

Having sites that contained several communities (or hamlets) was both advantageous and problematic. On one hand, it was beneficial to have representation of several communities within one area participating and making decisions together because they share resources, often share community and religious leaders, and decisions made by one village can have repercussions on adjacent villages. However, on the other hand, each village or hamlet has slightly different issues with resources and different ways of solving problems which was a challenge for the CCA team to cater for.

iii. Getting organized (background and scoping)

Having decided on the sites, the CCA team began by gathering existing materials and information on the selected communities. This included reports by WWF, who had conducted participatory rural appraisals in 2006. In 2007, a large earthquake and tsunami occurred which significantly changed the Gizo landscape and communities. For example, in Saeraghi, many people who lived by the coast moved to upland areas. Therefore we conducted an initial scoping trip to each site. During these visits, we took walks through the village with our contacts and community leaders, and asked them to talk to us about resource use and dependency, and big changes that had happened including the tsunami (see Appendix 1 for scoping data sheet filled out by CCA team members). We attempted to identify appropriate people to include in the workshop program planning, and sought permission to carry out climate change awareness evenings with the communities.

iv. Climate change awareness in communities

The CCA team developed and delivered a Solomon Islands specific climate change awareness program, including a climate change booklet in a format suitable for the Gizo communities and translated into pidgin (Appendix 2). The intention of the climate change awareness was to clearly present the science of climate change, the predictions for Solomon Islands, and the likely impacts this would have on coastal livelihoods. The presentation was refined over the course of the program and we continually asked for input from the communities on the best ways to explain difficult concepts, what the parts were they

liked and disliked. There were also in-depth discussions within the CCA team about the correct pidgin terminology to use to explain key points, and these discussions were extended in the Climate change VA-LEAP training in April 2012, with the CTSP Capacity Development Team, NGO practitioners, community representatives, and provincial and national government representatives.

The guiding principles we used in the design of the presentation were:

- (i) The science needed to be simple, and presented in Solomon Islands pidgin. We experimented with props to illustrate anthropogenic climate change, rather than only using verbal explanations.
- (ii) Use lots of examples that were relevant to Solomon Islands communities.
- (iii) We were careful not to scare communities about climate change, especially given they had been through the tsunami recently. We emphasized that climate change is slow and incremental. This is particularly true of the Western Province, where cyclone activity is not likely to increase in the area.
- (iv) Emphasis on the positive impacts as well as the negative impacts.
- (v) Emphasis that climate change is one driver of change among many, so you can't blame it all on climate change!
- (vi) Emphasis that communities in Solomon Islands are always adapting to change, so there is precedent for community-based adaptation. We felt that it was important to avoid a discourse of vulnerability as it can be disempowering.
- (vii) Make sure that communities know that resource-dependent communities all around the world (and the country) are experiencing the same changes and uncertainty, and that they can learn from each other.
- (viii) Have an environment that is open where the community can ask questions throughout the presentation.

v. Engagement with community stakeholders

It was clear after the first couple of visits in communities and from discussions that the CCA program would need to be a slower process than first imagined, as it is important for the communities to take time to understand, process the information, and discuss amongst themselves, step-by-step. We started by facilitating a workshop comprised of community leaders, that aimed to decide how the program should be organized, and who needed to be involved and presented in the stakeholder group so there is a strong committee and leadership (while still being representative of important groups), and what the timeline should be. At this point we were clear with the community what the CCA team was, and was not, able to do, and what our expectations were of the community. It was also important that the program was flexible.

Both engagement workshops were perceived to be successful (Figure 4). There was good participation and the leaders raised discussion points. The CCA team worked hard to ensure the community understood the program and its benefits for the community. The leaders showed enthusiasm for the program and were in full support. Although there were not as many women representatives in both workshops as hoped, the few who did attend were encouraged to include other women to participate in the coming workshops.

Workshop Challenges

Each workshop took a whole day and there are some challenges in conducting workshops in Gizo where different community groups are combined.

One of the challenges was equal gender participation. There were not enough women representatives from each community and activities that try to draw out the different resources uses and changes may be biased in that input from women were missing.

The example in Gizo where community groups wanted separate community plans, activities needed to consider that not all communities would be the same. The challenge is it is time consuming to ensure each community provided their input.

In some workshops there would be different participant attending if any of the nominated participant had other commitments. This made discussions and progress slower because only the few could contribute to the discussions.

Activities that look back into the community's history require input from all age group especially from the elders. Where old people are not present in workshops there were some difficulty on the facilitator's part to probe discussions for more detail regarding past events.

Having facilitators of marine background with only limited knowledge on other areas, agriculture etc., presented a challenge when trying to link them to climate change.



Figure 4. Photos of the community engagement workshops

vi. Important resources and change

To understand important marine, land and social resources, the communities made resource and habitat maps of their communities (Figure 5), looked at the seasonality of their resources using seasonal calendars, and did historical timelines of major events. These activities were time consuming and needed to be conducted over two days in each community. As part of the activities discussions were held based on the questions below. Our approach for this was to try to integrate understanding of resource changes in the face of different drivers of change, including climate change, and how the communities have adapted to change in the past. The purpose was to establish priority resources for action.

The questions that were asked about resources were:

- How has X (resource) changed and what is the impact?
- Why do you think X has changed?
- When did you notice X change?
- Is the change still happening?
- Who is most affected by X changing?
- How have you adapted to X changing? What have you done differently?
- Of all the changes which one worries you the most? (Ranked 1-3)

The questions that were asked about seasonal calendars were:

- What has changed in the seasonality of livelihoods and resources?
- Rank your biggest worry
- What is the impact of the change?
- Since when did it change?
- Is it still changing?
- Who is most affected by the change?
- How have you adapted to the change?
- What time of year does the change happen?
- Overall, do you think this is an on-going and permanent change?
- Does it happen at important times for harvesting resources?
- What impacts does the change have on socio-economic factors (food security, income, health)?
- How might the projected changes in climate influence these seasons?

The questions that were asked about historical timelines were:

- What happened during the event?
- What was the impact of the event?
- How did you cope - short term?
- How did you adapt - long term?
- Did you use any traditional approaches to cope/adapt?
- How severely were natural resources (marine/land) affected by past climate events?
- What were the socio-economic impacts from past climate hazards and how severe were they?
- Was everyone in the community equally impacted? If not, how and why were individuals or groups impacted differently?

- How did those impacted by past hazards recover from them?
- Do you notice these climate hazards becoming more intense and frequent over time? (e.g. floods)
- Based on climate projections, which climate hazards and impacts will likely become more frequent or intense?
- Based on past experience and future projections, which climate hazards and impacts are the community most concerned about and why?

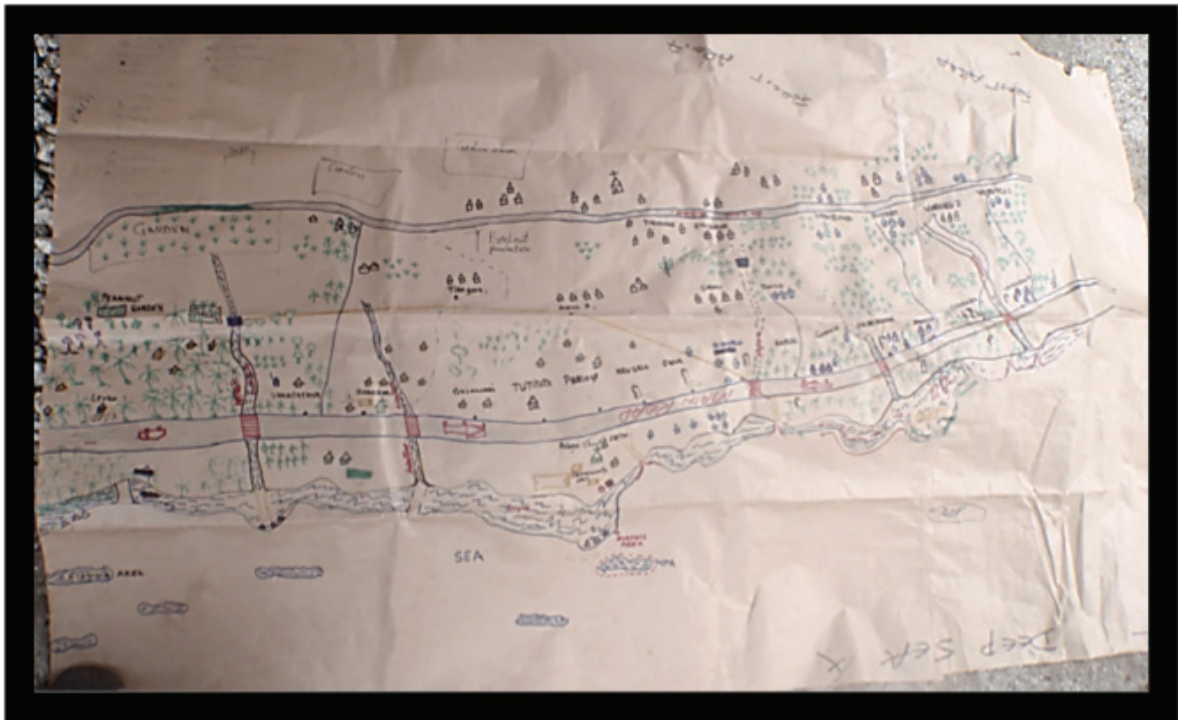


Figure 5. Paelonge resource map

The results of these workshops were then compiled by the CCA team, presented back to the community stakeholder groups, who then presented back to their communities in a series of awareness evenings held in each hamlet of the sites (Figure 6 for photograph, and see Appendix 3 for results).



Figure 6. Youth leader in Saeraghi presenting results to his community

vii. Threats to resources, root causes and early actions

All the information from the activities to understand important resources and changes observed, were then used to build Threat-Action models for the most important marine, land and social resources identified by communities. The threats, cause of threats (going back to the root cause), and possible actions (addressing root causes) were drawn out in workshops (See Figure 6 for an example of a Threat-Action model). Actions that communities were able to do themselves was focused on and discussed in detail.

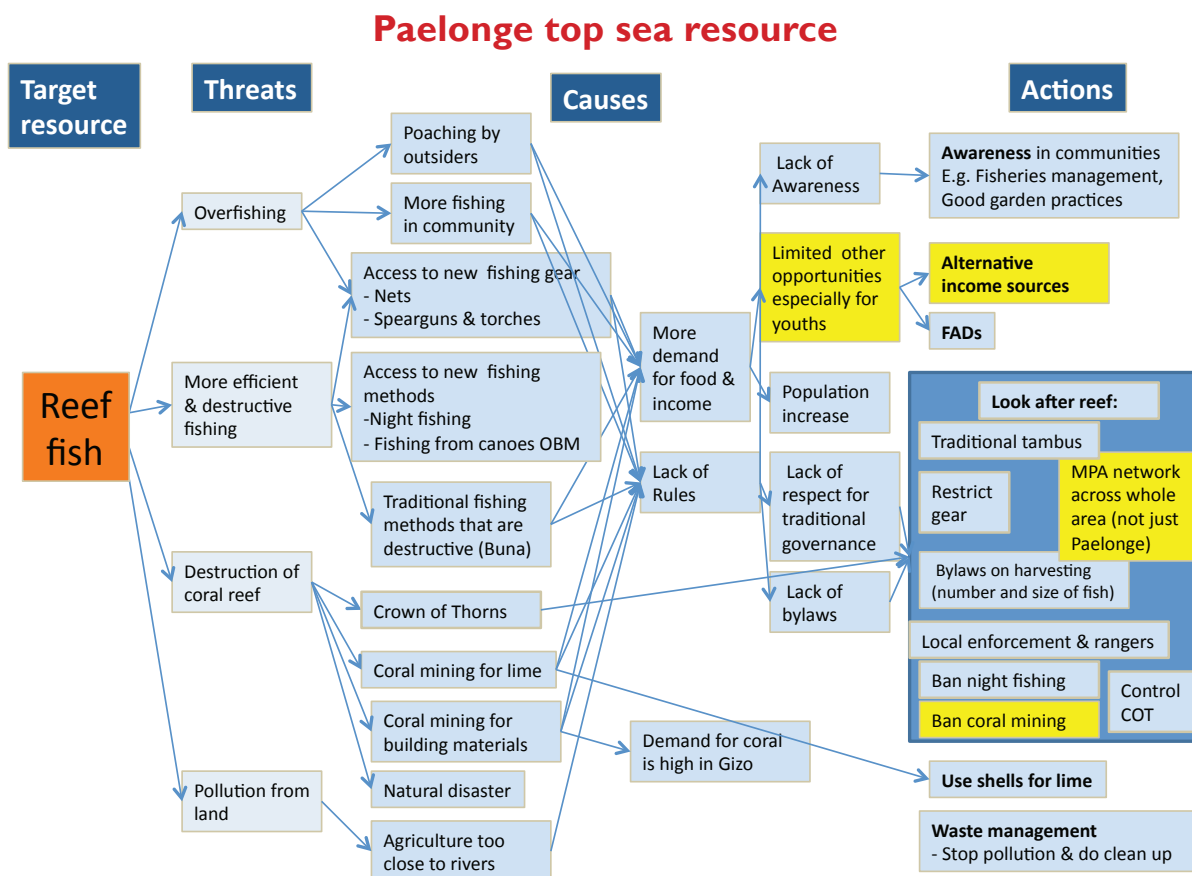


Figure 6. Threat-Action model threatened marine resource: Reef fish

The Paelonge and Saeraghi community stakeholders are aware of the importance of their natural resources, how they have changed and what are the causes of the threats. During these workshops, there were in-depth discussions about the root causes of the threats. Many root causes were traced back to problems of overpopulation, unsustainable harvest of resources and the lack of management in their areas.

The communities are aware that weather patterns have changed in living memory. The winds are now becoming unpredictable, and communities feel this is affecting marine resources, as well their crops and their soil. Communities have noticed marine resources have declined, and the fertility of their soil produces poorer yields. There have been changes in the seasons of harvest. Some fruits (pineapple) are now harvested earlier, which may be due to changing rainfall and temperature. Communities are aware of actions to improve soil quality, such as planting legumes so that more nutrients are added to the soil and healthy fruits can be produced.

The link between climate change and marine resources is more tenuous, although improving adaptive capacity more generally by managing marine resources, and enforcing community tenure of resources in order to stabilize food and income security, was emphasized. Runoff from the land from previous logging and agricultural activities are also believed to be contributing to reduced marine resources, and so the links between land and sea resources is clear.

Both community groups came up with good adaptation actions that would also be suitable for ameliorating the impacts of climate change. However, one of the main barriers to adaptation is land ownership. Land in the Paelonge area is not 'customary owned', and access has to be negotiated with the Provincial government, which affects the ability of the community to move to other areas (to farm for example) and to control resource use (particularly marine resources). Population is also increasing rapidly and given space restrictions, it has affected the way communities can live. One action suggested was to ask the government for land that is located near their villages to use for gardens and building houses. Another action that was repeated in both communities was to increase awareness to all levels of the community. In particular to demonstrate the importance of the community's natural marine resources for future generations, and to understand the effects if there is continued decline of resources. Participants thought that awareness was important for increasing community commitment to having sustainable resources, as well as increasing the efficacy of adaptation actions.

viii. Prioritization of actions and planning

We developed a prioritization matrix to help communities to decide which actions to start with first. This was a complex task and was refined over two workshops in each community. It asks four questions of each action, and then the score is added together. The action with the highest score is then prioritized. The four questions are:

- (i) Does the community have the knowledge and skills to be able to do the action?
- (ii) Is the community able to fundraise for doing the action?
- (iii) Would doing the action cause harm to land, sea or communities?
- (iv) Would the community support doing the action?

Initially the communities were trained to use the matrix in one workshop and they wanted to do the prioritization in consultation with their community members over a period of a month. It was translated into pidgin and copies were handed out to leaders (Appendix 4). However, there was variable success,

and some communities struggled to do the matrix on their own. It was decided to hold a workshop for both communities at the WorldFish office on Nusa Tupe to complete the prioritization process, and write action plans for the highest priority actions. The Paelonge communities wanted to develop a plan of action together (all hamlets), while the Saeraghi communities wanted to develop separate plans.

The actions plans were simple and answered nine questions (Figure 7):

- What is the ACTION?
- What is the threat?
- What is the target?
- How will the community monitor the target?
- Where will the action be done?
- When will the action start?
- When will the action finish?
- Who will be involved in the action?
- Who will be responsible for getting the action done?

COMMUNITY ACTION PLAN LAND	
What is the Action	PROPERTY REDUCTION * REFER TO BUTCHER'S PAPER TITLE LAND * LESS PROPERTY REQUIREMENTS
What is the threat	
What is your target	* SCHEDULE DEPOPULATION * REDUCE HARVESTING AGE/SEX/REQUIREMENTS * REDUCE CONTROL BIRTH RATE * GOVT LAW ENFORCEMENT * CONTROL CENSUS (COMMUNITY STATISTIC)
How is the target monitored by the Community	
Where will the action be done	COMMUNITY (PAELONGE, SUWANIA, HAKAROA) TROBUKLE, LEOKO
When will the action start	* SEPTEMBER 2012. (THIRD WEEK)
When will the action finish	* NOVEMBER 2012. (FOURTH WEEK)
Who will involve in the action	MINIS OF HEALTH, SIPPA, COMMUNITIES, PLANNING OFFICE LANDS OFFICERS, FORESTRY OFFICER, AGRICULTURE DEPT
Who will be responsible for getting the action	CLIMATE CHANGE ADAPTATION COMMITTEE

Figure 7. Paelonge’s action plan for land resources

Action plans are presented in Appendix 5.

ix. Youth Photo Film

One of the challenges the CCA team observed during the testing the VA-LEAP was low participation of young people in the workshops. We believe it may be due to the dominance of the elders in the workshops, which is indicative of the culture of the Solomon Islands. It may also be because they are shy. We attempted to address this by engaging the youth separately to the older participants in making a photo film.

It was identified early in the program on climate change, that while the elders in the community hold the wisdom, memories in time, and have witnessed the changes in the weather, the resources on land and in the sea, and in their social systems and livelihoods, the future of the communities in a changing climate is in the hands of the young people. The youth will inherit the community and the responsibility for looking after it. They will be the ones who will need to implement actions to reduce their vulnerability to climate change impacts that are likely to occur in their lifetime. So it is important that the youth and the elders come together and exchange knowledge and ideas.

The idea of making a photo film was received with enthusiasm as a way to engage young people in climate change adaptation. It was a fun process about a serious topic. Climate change should not be all about doom and gloom, but also be an opportunity to strengthen resilience generally in communities.

In the photo film, the youth (boys and girls) interviewed and recorded the elders talking about the changes they have seen, and what their advice is for dealing with the changes, including what techniques they know from the past (traditional knowledge) they can pass on which might help. The youth then took photos of their communities, and the things they thought best represented their life, to complement the story that is being told (Figure 8).

WorldFish and WWF facilitated the process and put the audio and photos together to make a photo story at Nusa Tupe. Trips were made to the communities to show progress. The process was presented to the whole communities in awareness evenings conducted in six locations in Gizo in April/May, and the final film was shown at the Festival of Pacific Arts in July 2012 at a side event held in Gizo.



Figure 8. Youth from Saeraghi community interview elders about the changes they have witnessed in their lifetime as part of a photo film being made with WWF and the WorldFish Center: “I give some advice to the young people. We must look after the land and sea that belong to us, no matter if any climate changes that happen or not. We need to make sure everything is safe and secure for our communities.”

x. Stakeholder presentation of action plan, and next steps

Given the concerns of the community and the CCA team members for what would happen after the workshop program ended, we decided to hold a two-day workshop in Gizo, for the communities to present their plans to people from key government Ministry and NGOs. It was also an opportunity to inform national and provincial government, and key stakeholders, the challenges, successes and recommendations from VA-LEAP process (See Table 2 for program).

Community representatives presented their action plans using power point, and recounted compelling stories about their resource issues, and the possible solutions. Kastom Gaden (a local agricultural NGO) based in Honiara, and the Environmental Health and Agriculture division of National Government were some of the stakeholders invited who responded to the invitation to the workshop. A consultation was held with them individually prior to the workshop to align their presentations to key areas of concern (water and sanitation and agriculture) identified in the community action plans. The presentation by the stakeholders on covered the existing programs they have and how communities can access these. These talks promoted good discussions. The Deputy Director from the Climate Change division of National Government presented on climate change adaptation efforts at the national level, which was useful for communities to put their adaptation actions into the perspective of a national process. Provincial Government representatives and those from MEDCM were very supportive throughout the workshop, and were able to answer the communities’ questions.

The Roviana Conservation Foundation (RCF) were also present, and talked about their experience with using parts of the VA-LEAP. RCF measured sea level rise inundation in communities (using participatory laser level surveys) emphasized that the sea level rise activity is an important part of the VA-LEAP (and one we did not do in Gizo communities). RCF talked about how it was important for communities to ‘see to believe’, and the sea level rise was effective for this. Other hands-on activities in the process would be a good idea.

After the workshop, the community representatives said they felt more empowered and saw the importance of putting together a plan which involved the whole community. They resolved to work further on implementing actions. The CCA team had been worried at this point that the communities had lost interest in the program. However, the workshop revealed that communities need to be equipped with more information and the 'know how' to implement actions.

One of the clear recommendations of the workshop from our (WorldFish) perspective was to get the original Solomon Islands participants of the VA-LEAP training in PNG together again, to use the experience now gained and to workshop ideas on how the VA-LEAP tool can be made simpler, yet effective, for remote Solomon Islands communities. These lessons are likely to be relevant for other remote CTI communities.

The Deputy Director for National Climate Change Division who was present in the workshop agreed to the recommendation made and requested to have the 'Solomon-ised' toolkit available within their division to facilitate the spread of early actions throughout the country.

Table 2. Local Early Action Planning for Climate Change – Workshop schedule, held at the Women's Center Conference Room, Gizo, Western Province, 5th -6th November 2012

DAY 1: 5 th November 2012			
Time	Activity	Materials	Lead
8:30am – 9:30 pm	WELCOME & OPENING SESSION: Opening Remarks & Introduction		Western Province
9:30-10:00	Overview of the Workshop: LEAP GIZO -Background to the leap	PowerPoint Presentation	Facilitator Presenter: WF +WWF
TEA BREAK			
10:30 – 11:00	PRESENTATION: CASE STUDY Paelonge and Saeraghi Community representatives: Community action plans	PowerPoint Presentation	Paelonge and Saeraghi WorldFish
11:00 – 12:00 pm	PRESENTATION: Kastom Garden Association- Michael Quanafia Agriculture division_ John Kepas Provincial agriculture officer Rural Water supply Division: Fred Napthale <i>Objective: To provide information to community in response to community plans</i>	PowerPoint Presentation	Presenter
LUNCH			
1:30- 3.00pm	Question and Answers		-
TEA BREAK			
3:30 – 4.00pm	WHATs NEXT <i>Objective: Way forward for community plans</i>	PowerPoint /discussion	WorldFish

DAY 16 th November 2012			
Time	Activity	Materials	Lead
8:30am – 9:30 pm	WELCOME & RECAP on DAY 1		Climate Change Division and Western Province Environment Officer
9:30-10:00	Presentation: Government: Our climate change story <ul style="list-style-type: none"> Climate change division; Hudson Kauhiona, Deputy Director Other National CCA efforts: Nesta Leguvaka <i>Objective 1: Establish common understanding on government commitment supporting 'Adaptation' efforts in Solomon Island coastal communities</i> <i>Objective 2: To identify existing efforts and challenges to CCA in Solomon Islands</i>	PowerPoint Presentation	Facilitator Presenter: WFC
TEA BREAK			
10:30 – 11:00	PRESENTATION: CASE STUDY GIZO and the LEAP process <ul style="list-style-type: none"> WorldFish and WWF 	Handouts: PowerPoint Presentation	Presenter
11:00 – 12:00 pm	PRESENTATION: CASE STUDY –RCF Early Action Planning in Roviana and cc awareness in Central Islands Province- Nixon Tooler <i>Objective: To establish understanding on the leap process- the challenges, successes and recommendations</i>	Handouts: PowerPoint Presentation	Presenter
LUNCH			
1:30- 3.00pm	OPEN DISCUSSION: Our perspective in early action planning in SI and whats next? Questions and Answers <i>Objective 1: To identify different perspectives from Government, NGOs and communities towards Early Actions Planning in Solomon Islands. Objective 2: Reach agreement on whats next with the toolkit?</i>		- - - Community Rep - WorldFish/WWF
TEA BREAK			
3:30 – 4.30pm	Wrap up and closing	Flip Chart	Facilitator

LESSONS LEARNED AND FUTURE STEPS

Given that this was the first test of the VA-LEAP in communities, and the interest in using the VA-LEAP for communities in Solomon Islands, there have been many lessons we have learned throughout this experience that the CCA team feels are important to share for future versions of 'The Climate Change Adaptation Toolkit for Coastal Communities in the Coral Triangle'.

General comments and lessons about the VA-LEAP (Version I) and CBA

- Information and access to information has been a major element throughout the process for the community. Many of the discussions about climate change have been a result of awareness raising activities, and there has been constant demand from the CCA team to give talks and produce materials that are relevant for Solomon Islands and remote communities. The ability for communities to access quality and accurate information about: (i) climate change science and predictions (ii) resources available for adaptation, and (iii) advice on what to do to adapt, is important for empowering communities to get started on actions they see fit.
- The VA-LEAP is a complex tool and requires intensive engagement over the long term. Just as CBRM activities in Solomon Islands have demonstrated, there will be variable uptake and success due to a number of different factors. Therefore, the VA-LEAP can be a costly toolkit in terms of time and money. We believe that the tool could be simplified, and suggestions are made for ways to do this and make the tool context-specific for Solomon Islands below.
- Good initial engagement is important when establishing a VA-LEAP program in communities. It is important that there is transparency in community selection in the first place, that time is spent engaging with the communities, there is good selection of participants (not just the usual people that are involved in decision making, but also the more marginalized groups, a mix of older and younger people who will remember the past and look to the future), and there is continual feedback between the community stakeholder group and the communities as a whole.
- The VA-LEAP is designed for NGOs to facilitate in communities. Communities that do not have NGO engagement may be disadvantaged as the toolkit is complex and in English. Our team, who are highly qualified, found the VA-LEAP difficult to understand, despite two sets of training and learning while 'doing' in communities. Intensive training is required in order to undertake the VA-LEAP as it is currently drafted.
- The VA-LEAP has attempted to be multi-sectoral, which we believe is important for resource management and for designing strategies and actions for adapting to change. We found that specific expertise was required to address different issues and suggest and examine actions. However, NGOs using the VA-LEAP may have only sectoral experience (E.g. WorldFish has high capacity to deal with marine systems, but not other areas, such as health). In our experience, it has been difficult to find expertise locally for other sectors. One solution may be to form a network or forum of various agencies/organizations/researchers who work in Solomon Islands and can share and provide detailed information about their sectors, options for adaptation,

and the associated challenges and opportunities (E.g. hazard management, health, food security, resources, and education). Furthermore, including better integration of the sectors and explicitly understanding how changes in one sector may influence other sectors is required for the VA-LEAP.

- The VA-LEAP in many places was similar to community-based natural resource management programs (such as CBRM). There is a clear remit in the VA-LEAP that ensuring natural resources are sustainable is a key part to improving adaptive capacity of coastal communities. We believe that an approach which uses existing community-based natural resource management programs, that explicitly looks at the interactions between sectors, and then mainstreams climate change, is a more appropriate approach than starting with climate change as the problem.

Specific lessons learned about the VA-LEAP (Version I) process and activities

- The CCA team found it difficult to include social resources in the VA-LEAP. Marine and land resources were easily identified, but social resources were more difficult for the team and for the communities to identify because they were not sure what they were.
- It is difficult to understand the direct impacts of climate change on marine resources, compared to agriculture or fresh water resources. There are many drivers of change causing declines in marine resources, that have more impact than climate change is/will be, such as overharvesting. However, we found it was important to understand the links between resources. For example, how impacts of climate change on land resources may have indirect impacts on marine resources. If agriculture fails, will people turn more to the sea? These interactions between different drivers and climate change, and between different resources, could be more specifically addressed in the VA-LEAP.
- The Vulnerability Assessment worksheets were deemed too complex to carry out in communities. The terms and concepts are difficult. The CCA team decided to do the vulnerability assessment themselves and present this in discussions with the communities, however this meant that the links between climate change vulnerability and other drivers of change were hard to integrate.
- There needs to be greater emphasis placed on the links made between actions, rather than them being treated as stand-alone activities. For example, one adaptation action may be beneficial for one resource and not for another; or beneficial for one community, but have implications for neighboring communities.

Ideas for adapting the VA-LEAP (Version I) for Solomon Islands

- In Solomon Islands, the VA-LEAP process additionally requires addressing complex issues of tenure and governance at the community level. The communities themselves need strong leadership and to be a cohesive community for the VA-LEAP to be effective.
- In Solomon Islands, “seeing is believing”. The VA-LEAP should consider inclusion of more activities such as “look and learn” where communities learn what climate change will look like, so they can have an indicator for baseline conditions and monitoring over time. Understanding of the state of their own resources, and the ability to watch them, and differentiate climate

impacts from other drivers of change is important. There is a sea level rise activity, which should be done. But other activities such as showing what diseased and bleached coral looks like, may also be useful.

- Expectations of what will happen after the plan is made need to be explicitly considered and managed. It is important to be clear about the goal of the process – how the action plan will lead to implementation, how that will happen.
- Given the nature of the VA-LEAP, it is likely that coverage in communities will be low and patchy. There will be a tendency towards locations where NGOs already work and where logistics are easier, which are not necessarily the most vulnerable areas to climate change. Priority areas or sectors that are vulnerable to climate change should be identified first, to guide where the VA-LEAP is implemented. It is important to gather all previous information and data that have been collected from communities and national initiatives about different sectors, before starting.
- Significant time needs to be spent translating key terms and concepts into the local language.
- The VA-LEAP requires a well-trained team which is motivated and has a solid understanding of resources and climate change.
- We have learned that information transfer has been one of the most successful and important parts of the process.
- It is important for local government officials to be able to be accessible to communities so they can address community questions and have long-term engagement in the process. Officers may engage in person during the VA-LEAP process or the VA-LEAP team should be able to provide a list for the community, of who to go to for more information and support.

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APPENDICES

Appendix I: Initial Scoping

INITIAL SCOPING SHEET: 1. RESOURCE USE & DEPENDENCY AND 2. BIG CHANGES INCLUDING TSUNAMI

This can be filled out through observation, knowledge of the team, or by asking the community leader.

1. Resource use and dependency: Does the community...circle the ONE appropriate answer and add notes

Fish?	Main areas		Who	Important for cash	Important for food	Notes
Y N	Reef - outside lagoon		Everyone Most people Some people	Very important Important to some	Very important Important to some people	
	Reef - inside lagoon/bay		A few people No people	Not important	Not important	
	Open sea		Men Women			
	Mangrove					
Glean?	Main areas		Who	Important for cash	Important for food	Notes
Y N	Reef - outside lagoon		Everyone Most people Some people	Very important Important to some	Very important Important to some people	
	Reef - inside lagoon/bay		A few people No people	Not important	Not important	
	Mangrove		Men Women			
Garden?	Distance		Who	Important for cash	Important for food	Notes
Y N	Distance from village?	M KM	Everyone Most people Some people	Very important Important to some	Very important Important to some people	
			A few people No people	Not important		


			Men Women		Not important	
Employed outside?	Main types		Who	Important for cash		Notes
Y N			Everyone Most people Some people A few people No people	Very important Important to some Not important		
			Men Women			
Handicraft	Main types		Who	Important for cash		Notes
Y N			Everyone Most people Some people A few people No people	Very important Important to some Not important		
			Men Women			
Other	Main types		Who	Important for cash	Important for food	Notes
Y N			Everyone Most people Some people A few people No people	Very important Important to some Not important	Very important Important to some people Not important	
			Men Women			

<p>What happened to the community after the tsunami?</p> <p>Notes:</p>	
<p>What are the big changes that you have seen in the community since the tsunami?</p>	<p>Marine ecosystem</p>
	<p>Mangrove ecosystem</p>
	<p>Agriculture</p>
	<p>Weather (temperature, rainfall, wind, storms)</p>
	<p>Social and economic conditions</p>

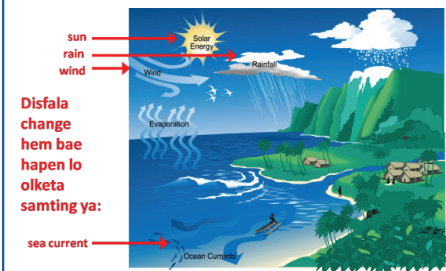
Appendix 2: Climate change materials

Climate change poster for communities in Solomon Islands pidgin. This was also made as a pamphlet and distributed to communities.

Climate change science lo Solomon Islands




Wanem nao climate change?
Climate change hemi oketa difren wei wea paten lo weather blo iumi hem happen distaim En Climate change hemi hapen slo tumas




Disfala climate change hem bae hapen lo olketa samting ya:

Wanem nao kosim climate change fo hapen?
Global Warming nao kosim climate change fo hapen. Global warming hem minim olsem wol blo iumi hem go hot tumas

NOMOA
Climate Change



Climate hem change = HOT TUMAS!



Wanem nao Global warming?


Hem garem wanfala air wea kavarem wol blo iumi olsem wanfala blanket wea hem save keepim wol blo umi hot, bat no hot tumas. Disfala blanket oketa kolem **greenhouse gases**. Wanfala mein air lo disfala blanket hemi **carbon dioxide**. Disfala air ya nao iumi breathim out, and oketa trees breathim in, so taem iumi katem tri iumi kosim blanket fo hem thick.

Taem sun hemi saen kam down hemi hottim wol blo iumi

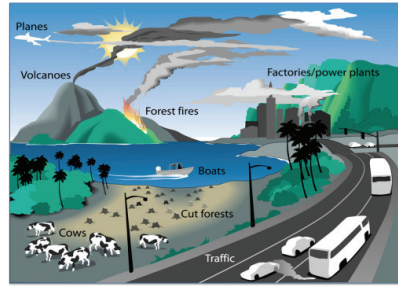
Samfala hot air save go out back from wol blo iumi en go aot lo spes

Disfala blanket or taep air save holem Samfala hot blo sun en kipiim wol blo iumi hot. Sapos disfala blanket hem no stap baebae wol blo iumi hem kol tumas olsem ice

Tingim olsem disfala mosquito net an simoka eksample wea WF and WWF wakem lo awareness!



Wanem nao kosim Global warming?



Wanem nao kosim Global warming?

Iumi olketa pipol save bonem oel, fuel & petrol en simoka blo diswan hemi go antap lo skae en hem go kasem blanket ia.

Taem disfala simoka hem kasem blanket, hemi mekem disfala blanket fo bik go moa. En taem staka simoka hem go kasem blanket, hemi save stopem hot for go aot from wol blo iumi en go lo spes.

Samfala eksampol blo oketa samting wea wakem simoka nao-cars, planes, boats, factories and powerplants.

Samfala simoka, nature save givim aot seleva tu, olsem volcano, en burusu blo bulumakau

Hao nao climate change hem happen lo komuniti blo iumi?


Senis lo lan

Wanfala senis hemi: Staka hevi rain
Bae kosim: Flad → Trabol lo gaden
→ En staka siki olsem malaria

Meke 2 senis: Long taem no rain
Bae kosim: Draot → Trabol lo gaden
→ Sot lo fres wata

}

Staka hevi rain
+
Long taem no rain
=
Graun babae was aot





Hao nao climate change hem happen lo komuniti blo iumi?


Senis lo sea


Meke 3 senis hemi: Solwata hem kamap (1cm per year)
Bae kosim: Solwata fo kasem village → Solwata kakaim sea sait
→ Pipol bae muf go lo nara ples
→ Trabol lo gaden wetem solwata


Meke 4 senis hemi: Solwata hemi ba kam hot moa
Bae hem kosim: Korol fo waet, siki en dae → Ples blo fis fo stap hem dae
→ Risos lo solwata hem go daon











Appendix 3: Changes to Resources and Seasons, threats and actions

Saeraghi resource and season changes, and historical timeline

Changes and threats to important resources



Keys

- Villages
- Forest Area
- River & Streams
- Padlock Area
- Swamp Area
- Mangrove Area
- Turtle
- Crocodile
- Mangrove Shrub
- Swamp
- Seagrass
- Sea urchin
- Fishing Area
- Diving Area
- Climb
- Reef
- Coconut Plantation
- Bridge
- Cave

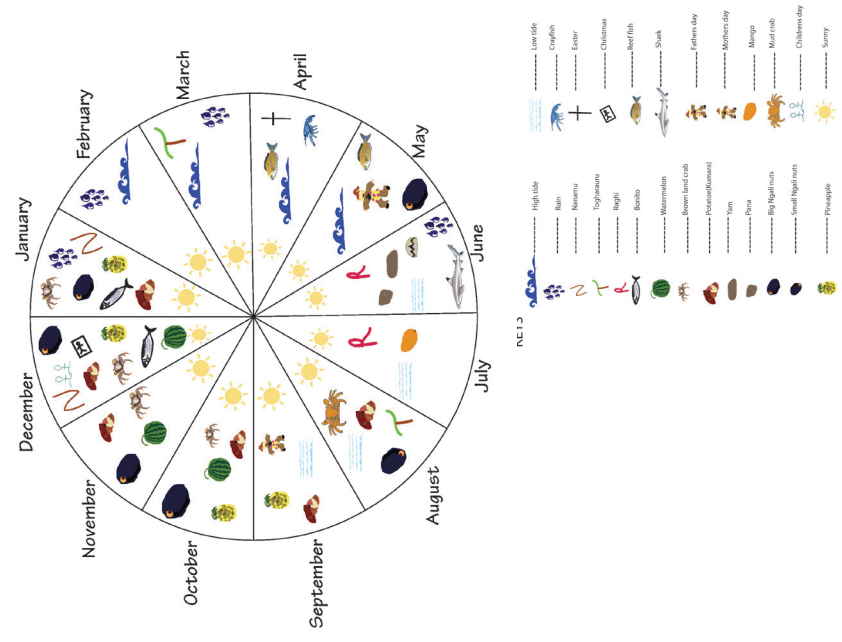
Historical timeline

1979	Road project started/official opening of road
1983	Ngari primary school established
1986	Cyclone Namu
1993	Cyclone Nina
1996	Cyclone Ida
1997	Elnino
1998	Vorivori water supply constructed
1999	Ethnic tension
2003	UC Centenary celebrations in Vonunu
2005	Rotary financial assistance to Ngari school
2007	Earthquake and tsunami; Ngari second division
2008	Sea rise/new buildings and houses
2009	Heavy rain/Ngari clinic/Oxfam rehabilitation Programme
2010	Cyclon (flood); Rotary/Ngari clinic, Daigro road construction
2011	Marathon race, heavy rain and flooding, very hot year
2012	Bibolio playing field started

Saeraghi key resources threats, causes and actions

Change to important resources over time and in seasons

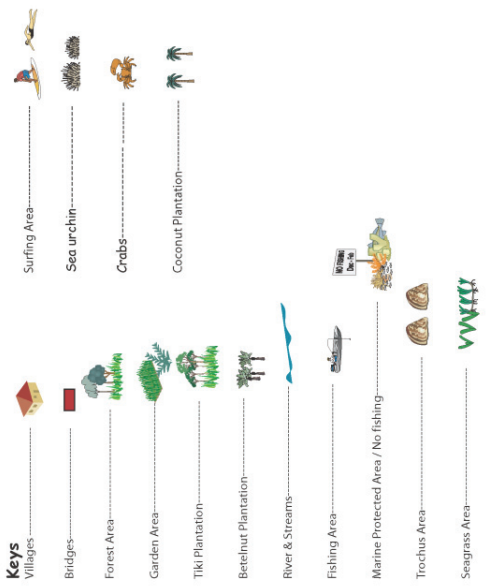
SAERAGHI SEASONAL CALENDER



Resource type	Key resources	Rank	Change	Threat & Impact	Cause	Since when?	How have you adapted?	ACTIONS!
Marine habitat	Coral reefs	1	Less coral, grass cover	Less resources	Lack of understanding about coral reef function, harvesting coral, no management	2002	Travel further to fish	Village awareness, targeted awareness (children, youths women, fishermen) on coral function. Posters are good for children
	Mangrove	Vorivori = 3 Bibolo = 3 Saeraghi = 2	Less mangrove	No fishing in mangrove	Population increase, overharvest, clearing, strong waves	1990's	Fishing methods change (strike-line)	Leaders/chiefs establish strong community rules, replant mangroves, Awareness to target to different groups in the community.
	Seagrass	Vorivori = 2 Bibolo = 2 Saeraghi = 3	Less seagrass	Less resources	Dugongs eat seagrass, low tide dries seagrass	2007	Nothing, but also moved to other places for resources	
Marine resource	Fish	1	Less fish, smaller fish	Need to fish further away	Pollution, waste, population increase, 2008 (more using nets, overharvest, destruction of coral, change in lifestyle (need for cash))	2008 (more obvious after tsunami)	Changed target fish & gear to more efficient methods. Copied Gilbertese style	Marine management plan, conservation, strengthen chiefly system
	Shells	Vorivori = 2 Bibolo = 2 Saeraghi = 3	Difficult to find now	Women affected	Changes in high and low tide	tsunami	Don't look for rosiqi now	
	Seaweed		Less seaweed	?			Moved to congu to find seaweed. Changed to gathering mangrove shells and fruits	
Land habitat	Fresh water	2	Shortage of water	Less drinking water and water for use	Standing pipes don't always work, too many people using it, waterhole is disturbed (Vorivori), reduced river flow and agriculture pollution	1985 - 1995	Use tank water if supply short, community clean pipes	Dig wells, look for funds and training to maintain pipes, set up water management committee, community awareness, raise dam
	Forest	2	Less forest	Less forest resources	Clearing for cattle paddocks, gardens & logging, overharvest, population increase	1980s	Go to other islands to look for resources in forest area (Rannoga, Vella)	Awareness on garden/land management, replant trees/local tree species; Alternative land development but set boundaries for garden and forest
	Garden Crops	1	More difficult to grow, smaller fruit & veg	Less crops	Reduced soil fertility, too many people - lack of land and overuse	Varies, worse since tsunami	1960s; Burn fruit trees to increase productivity, change staple from potato to cassava, buy potatoes from market	Get technical advice from government agriculture sector, education on suitable crops for the soil, look and learn from other communities, inviting other experts to advise
Land resource	Plantations	1	Season for betel nut changed & Fruit small. Less coconut plantation	Betel nut - soil	Coconut plantation cut down for development	1990s	Looking for better places for growing betel nut	
	Wild harvest	2	Less wild harvest		Population increase		Go to other islands to look for resources in forest area (Rannoga, Vella)	
	Kindy	2	Moved out of village (Bibolo) to Ngari	Children have to walk distance	government decision	2010-11	Raise funds to maintain school and resources for school	
Social resource	Water and Sanitation	1	Some people have no access to water	No access to water	Tsunami meant people moved from coast to bush	2007	walk to collect water from coastal stand pipes, use dry pits for sanitation	Increase water supply to relocated areas, health awareness
	Road transport	3	road access has improved	Drunk and dangerous driving	Tsunami destroyed road, rebuilt after	2010		Government maintenance of road, road safety signs and speed limits
	Clinic	2	New clinic	Better access to services and town	Better access to healthcare	?		Aid post in Saeraghi, mobile clinic, increase qualified nurses

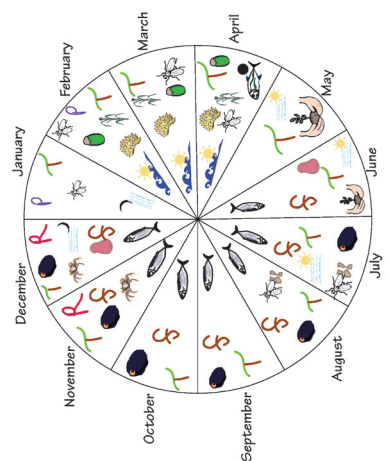
Paelonge resource and season changes, and historical timeline

Important resources



Changes to the seasons of important resources

PAELOGE SEASONAL CALENDER



Changes to important resources over time

Timeline	Settlement Paeloge established	Bibolo & Paeloge 1 community, mobilise and work together	World War 2	Alter worldwar 2	Duke's Phillip visit	Arrival of Gilbertise in Titiana	Logging started on Gizo	Road built in Paeloge	Paeloge school children transferred to other senior school like Iengans, Vununu, Kokepoto, Logha	Cyclone struck Western Province	United Church Established	Abundant marine and land resources, Foreign frogs found	Bibolo community separated from Paeloge community	Allocation of Government land	Experienced decline of marine and land resources	Forestry operated	Dryseason	Sea level rise	Melon fruit fly affect cabbages	Water shortage/hot sun	Millenium celebration/ paeloge church built/wvff starts awareness programme on environment day	Financial crisis	Establishment of Hakaana community	Earthquake and Tsunami	Coastal road rehabilitation	Extreme heat felt (dry season/low tide)	2009-2012 Experienced over-population and land shortage	
1935	1935-1972																											
1942																												
1943-1960																												
1958																												
1959																												
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2004																												
2007																												
2010																												
2010																												
2009-2012																												

Establishment of Paelonge settlement- Led by Chief Padajiru by the authority of chief Ghioi

Community in Paelonge returned back to Simbo Island

Community return to Paelonge, under British, built churches, schools and homes. Allocation of customary land to the settlers by authority of Chief Ghioi

Colonial government moved Gilbertese to Sobomon Islands from Kiribati

Experienced land infertile after forestry and logging company operated in Gizo Island

Public division constructed coastal road from Gizo to Saeraghi

Church kindies moved to primary that existed during that time

Damage of land resources mostly in coastal areas. Big waves

Poisons affected soil fertility, trees, water, growth of garden crops and vegetables

Fish and other marine resources died

Start experiencing sea level rise at the coastal areas. Coastal area were destroyed/washed away














Melon fruit flies affects cabbages, fruits (Guava, pawpaw)

Experienced water shortage for 3 months. Hot sun cause fish and other marine resources to die.

Copra price decline


Road, houses, gardens damaged. NGOs came to assist. New settlements established inland (Trodjoke, Stokawa and Vaceover). Awareness done in community about disasters.

BDM, clam shell, and other marine resources died unexpectedly. Since marine resources declined, people sold corals, sand beaches, and stones for their income

Resource type	Key resources	Rank	Change	Threat & Impact	Cause	Since when?	How have you adapted?	ACTIONS!
Marine habitat	 Coral reefs	1	Less coral, poor growth	Less resources, fishing harder	Building, limits, overharvest, population increase, natural disaster	1980s	Unable to stop it	Awareness on resources & management, use shells for lime, Bylaws to stop coral harvest.
	 Mangrove	2	Less mangrove	Sea inundates	Building roads, harvest for firewood, natural disaster	1970s, worse after tsunami	Move to reef fishing activities	Replant mangroves, awareness on importance of mangrove for culture and harvest, WP bylaw
	 Sand beach	3	Shifted position along beach	Sea inundates	Natural weather and currents, exacerbate	CC may 1990s	Relocation	Relocation, build seawalls, awareness on natural buffer systems (mangrove, coral reefs)
Marine resource	 Shells	1	Less shells	Less money and seafood	Overharvest, population increase	2000 (WWF awareness) & after tsunami	doing other things for income	Management rules: seasonal closures. Education/awareness on controlling harvest at community & family level
	 Fish	1	Less fish	Less money, food, problem for culture	Overharvest, destructive fishing methods, pollution, population increase, outsiders	early 1990s	Fishing further out, buy canned/fresh fish	Raise awareness, restrict gears (spears and screwdriver tools), tambu on reef areas. Laws and rangers to control
	 Seagrass Evu	2	Seagrass die	Less habitat for turtles, inverts and fish	waste in sea	late 1990s	Nothing	Awareness on waste disposal, waste management plan
Land habitat	 Fresh water	1	Polluted	Unsafe for people to drink	Agricultural development upstream, population increase	2000 (Lever company)	Using water tanks	Dig wells for drinking water, buy tanks to collect rain water
	 Forest resources	2	Less forest resources	Less building materials, firewood, medicine, motu leaves. Problem for water catchment, soil fertility & habitat	Population pressure needing housing materials	1970s & 1980s	Using softwood instead of hardwood, using ship/plastic rope instead of bush rope to build house.	Educate people about distance people can settle from catchment areas. Awareness on looking after forest resources. Preservation, replanting
Land resource	 Garden crops	1	Soil less fertile	Crops less productive	Over use of land	?	Mulching, observing what is growing better	Mulching
	 Coconut plantation	2	Less plantation area	People need to find firewood some place else Less coconut/copra to sell	cut plantations down, space for village? build houses, population increase		Can only sell green coconut, but less coconuts so people sell other produce	Don't know
	 Wild food harvest	3	Shortage of wild food	overharvest, and trees cut for timber (eg ngali)	Population pressure, clearing for plantations	1974	Using stoves instead of fires	Preserve forest area.
Social resource	 Bridges	3	Increasing disturbance especially from Gizo, increased access to services	Bad - influences bad behaviour, good 0 easy access to service especially from Gizo, and market, new technology, increased access to transport		Long time, but worse after tsunami rebuilt bridges		Don't know
	 Social cohesion	2	Less community cooperation	Social problems, youth disobedience, nobody listens to chief anymore	Intermarriage, poor parenting, weakened governance	1990s, since tsunami	Community church youth program	Strengthen culture, special area constable, strengthen leadership, opportunities for self-employment for young people. Awareness to youth, parents educate children at home, youth activities
Land tenure		1	Land dispute	Disputes	Population increase	1975	Notified honorable member. Hope that NGO can help.	Don't know

Appendix 4: Prioritizing adaptation actions

Prioritizing adaptation actions – community worksheet

Prioritizing ALL actions (sea, land & social)	
	<p>Samfala samting fo ting abaoatem befoa yu ansarem olketa kwesten (A-D)</p> <p>Ansarem evri kwesten Givim soa 1, 2, or 3 Raetem discripson an soa fo evri akson lo neks peij</p>
<p>A</p> <p>Tingting raonem olketa save wea pipol lo komiuniti garem fo doem disfala akson, an if komiuniti hem garem ikwipmen an taem fo startim disfala akson</p>	<p>Waswe komiuniti garem save, ikwipmen an taem fo doim disfala akson?</p> <p>1 = Komiuniti NO garem save, NO garem ikwipmen an NO garem taem fo doim disfala akson 2 = Komiuniti garem SAMFALA save, SAMFALA ikwipmen an SAMFALA taem fo doim disfala akson 3 = Komiuniti garem PLANDE save, PLANDE ikwipmen an PLANDE taem fo doim disfala akson</p>
<p>B</p> <p>Ting rounim wanem kain selen nao bae nidim fo doem disfala akson, an if komiuniti ba save doim fundraising fo paym eveni pat blo akson o somefala pat blo akson</p>	<p>Waswe komiuniti nidim selen fo doim disfala akson, an komiuniti save doim fundraising fo disfala akson?</p> <p>1 = Komiuniti nidim selen fo disfala akson an komiuniti bae no save doim fundraising fo disfala akson. 2 = Bae nidim selen fo disfala akson an bae komiuniti save doim samfala fundraising fo doim disfala akson 3 = Bae nidim selen fo disfala akson an komiuniti bae save doim olketa fundraising fo karem aot disfala akson or NO nidim selen fo doim disfala akson .</p>
<p>C</p> <p>Samfala akson hem save good fo fixim samfala samting bat hem maet nogud fo olketa nara samting. Ting raonim olketa nogud samting wea bae save hapen lo sea, lo land and lo pipol insaid komiuniti if yu doim disfala akson</p>	<p>Waswe bae bae olketa nogud samting hapen lo sea, lan or pipol if komiuniti doim disfala akson?</p> <p>1 = PLANDE nogud samting bae save hapen go lo sea, lan an pipol if komiuniti doim disfala akson 2 = SAMFALA nogud samting bae hapen go lo sea, lan an pipol if komiuniti doim disfala akson. 3 = Olketa gudsamting nomoa bae hapen if komiuniti doim disfala akson</p>
<p>D</p> <p>Ting aboutim if pipol lo komunity ba laikem nao disfala akson an if bae olketa willing fo help fo doim disfala akson</p>	<p>Waswe bae pipol lo komiuniti laikem disfala akson an bae olketa laik fo help wetem disfala akson?</p> <p>1 = NO ENI pipol lo komiuniti bae laikem disfala akson an no eni wan bae help fo doim disfala akson. 2 = SAMFALA pipol lo komiuniti bae laikem disfala akson an samfala bae help wetem disfala akson. 3 = PLANDE pipol lo komiuniti bae laikem disfala akson an plande ba help wetem disfala akson</p>
<p>TOTAL SCORE</p>	

Prioritizing ALL actions (sea, land & social)								
Question	Action 1	Action 2	Action 3	Action 4	Action 5	Action 6	Action 7	Action 8
	Description of action	Description of action	Description of action	Description of action	Description of action	Description of action	Description of action	Description of action
A								
B								
C								
D								
TOTAL SCORE								

Appendix 5: Community Action Plans

Saeraghi – Bibolo village Action Plans

Target resources (Land, Social, Sea)	
I. Land: Garden Crops	
What is the action?	<p>Social- Community Hall</p> <p>Action 2: Buy iron roofing for the community multipurpose hall (the hall will be used for meetings, awareness, other important and educational meetings for all community to attend)</p>
	<p>Action 1: invite an expert from Kastom Gaden to give an awareness/training to the community on</p> <ul style="list-style-type: none"> a. Soil fertility b. Garden and Land management c. New crop species d. Improving gardening skills e. Pathogen free sweet potato species f. Integrated pest management g. Water pollution <p>Soil fertility not that good so crops do not grow well</p>
What is the threat?	
What is your target?	To have at least one awareness in the community about soil fertility/ learn a practice for improved gardening
How will the target be monitored by the community?	Community learn and practice new skills after awareness
Where will the action be done?	Bibolo
When will the action start?	Xxx
When will the action finish?	Xxx
Who will be involved in the action?	Kastom Garden, Ministry of Agriculture
Who will be responsible for getting the action done?	Harry Soqilo, Garry Soqilo
	Community youths has to be able to convene during programs, sports, church or awareness programs
	Improve meeting hall by replacing leaf materials with iron roofing
	Community leaders to organize for fundraising
	Bibolo
	As soon as funds are secured
	3 months implementation
	Community
	Harry and Garry Soqilo

Saeraghi – Saeraghi village Action Plans

Target resources (Land, Social, Sea)			
	I.Land-Garden Crops	2. Social- Action 2.Strengthen chiefly system	3.Sea-Reef Fish
What is the ACTION?	Action 1. Improve soil fertility by seeking expert advice from KGA on good garden practices	Action 3. Strengthen traditional tambus	Action 4 Make community rules on marine resources
Steps	Community would like some awareness on how to improve soil fertility and training on gardening	Appoint a Village organizer in the village. Juko, Alopa and Simon will talk to the village elders, chief to present the idea of a VO in Saeraghi.	Marine resources such as fish and shells are threatened because of the lack of community management rules on these resources
What is the threat?	Potato and other crops do not grow well in the area.	Community cohesion and resources governance	Fish, shells are declining and more people fishing
What is the target?	Community to increase awareness on agriculture practices and knowledge. At least one awareness and training in the community	A village organizer appointed by chiefs and elders in the village.	Increase in the resources by implementing at least one management rule in the area
How will the target be monitored by the community?	Improved crop yield and gardening practices in some gardens	Village organizer will be responsible for organizing leaders in the village and the community members.	This should cover the whole Saeraghi group (Saeraghi, Vorivori and Bibolo)
Where will the action be done?	Saeraghi village	Village organizer assist in the process of setting up at least one marine management rule.	After the chiefs committee meeting has been held and consultations will begin with the chiefs.
When will the action start?	August 2012	Saeraghi	Saeraghi
When will the action finish?	October 2012	August 2012	After the chiefs committees meeting to set up a VO
Who will be involved in the action?	Community reps and other groups. Kastom Gaden to invite	December 2012	By February 2013
Who will be responsible for getting the action done?	Community to seek assistance from Kastom Garden for the awareness component with WorldFish and Provincial Government	Juko, Alopa, Simon, Chiefs, elders	Juko, Alopa, Simon, VO
		Juko, Alopa and Simon with support from other community leaders.	Juko, Alopa, Simon, VO

Saeraghi – Vorivori village Action Plans

Target resources (Land, Social, Sea)			
	I. Garden Crops	2. Water and Sanitation	3. Reef Fish
What is the ACTION?	<p>Action 1. Set up rules to protect Sago Palm forest</p> <p>Conduct Awareness- by conducting talks targeted to children, youths and adults in the area on the importance of the Sago palm forest resource for housing materials and other uses. Communities needed to be more aware of its importance before they can make a decision to manage the area.</p> <p>The concern is that this important resource sago palm has been overharvested.</p>	<p>Action 2. Improve the health of community people</p> <p>More patients moved to bigger hospital in Gizo and there is not enough space to cater for many sick patients</p> <p>Improve the clinic service and to increase the health of people in the area.</p>	<p>Action 4 Make community rules on marine resources</p> <p>Marine resources such as fish and shells are threatened because of the lack of community management rules on these resources</p> <p>To formulate management rules in consultation with the whole community</p>
What is the threat?		<p>People have limited access to health care. For some cases have to be referred to the main hospital in Gizo, this means additional transportation costs to the community and some may not be able to cover these costs</p>	
What is the target?	<p>The target is to place management rules over the sago palm forest to control harvesting. Chiefs and Elders of the committee are responsible to set up rules for the community. Advice will be sought from elders who have the traditional knowledge of Sago palms.</p> <p>Replanting Sago Palms in the area. After rules have been set up the community will start on a replanting program to rehabilitate sago palm forests</p>	<p>Nurses will be the focal point for monitoring the health of the community.</p> <p>This action will cover the people from Saeraghi village to Paelonge catchment area.</p>	<p>Fishermen will be consulted to advice on the status of the reef fish around the area.</p> <p>This should cover the whole Saeraghi group (Saeraghi, Vorivori and Bibolo)</p>
How will the target be monitored by the community?	<p>Through the chiefs and elders they will ensure that the rules are implemented and abided to by the community. When chiefs and elders have set up rules and have conducted awareness on these rules they will be responsible for the enforcement of these rules in the area</p> <p>This will take place in the Saeraghi area (covering other satellite communities)</p>	<p>This will begin in 2013 January and should be completed in the same month.</p>	<p>After the chiefs committee meeting has been held and consultations will begin with the chiefs in December</p>
Where will the action be done?		<p>August 2013</p>	<p>The proposed finish date is January</p>
When will the action start?	<p>Proposed start date is January.</p>	<p>Health clinic committee</p>	<p>The chiefs committee and elders</p>
When will the action finish?	<p>It will take 1 week for the</p>	<p>Health clinic committee and community representatives (Fraser, Harry, Daniel and Ronald)</p>	<p>Community representatives: Fraser, Harry, Daniel +Ronald</p>
Who will be involved in the action?	<p>Chiefs, elders of the community will be involved in carrying out this action</p>	<p>Committee members, clinic committee, nurse</p>	<p>Committee members, clinic committee</p>
Who will be responsible for getting the action done?	<p>Community members from Saeraghi, Vorivori and Bibolo</p>	<p>Community representatives (Fraser and those clinic committee members)</p>	<p>Representatives: Fraser, Harry, Daniel +Ronald</p>

Saeraghi – Vorivori village Action Plans

Target resources (Land, Social and Sea)						
	1.a Land	1.b Land	2a. Social	2b. Social	2c. Social	3. Sea, Reef Fish
What is the action?	Reduce and manage harvest of forest resources by conducting discussions with community on rule for managing forest or land crops	Improve garden crops/ improving soil fertility in gardens by seeking expert advice from KGA on good garden practices	Conduct an awareness program on family planning.	Buy 2 water tanks for each community	Improve social cohesion by forming council of chiefs by tribal members <ul style="list-style-type: none"> Develop activities for youths to keep them engaged Awareness on culture in individual families (yet to design this awareness) 	Establish MPA committees for each community to enforce the management rules (restrict fishing gears, customary law) <ul style="list-style-type: none"> Encourage community to build rafters? (FAD5)
What is the threat?	Deforestation and overharvesting of forest resources Population increase and less land space	Land space limited and soil fertility gives low crop produce	Inviting the Ministry of Health or SIPPA to do this awareness Population increase and land resource may not cater for the communities growing population	Dry periods,	Youth disobedience and disrespect of elders and chief ; other social problems (alcohol and community disturbance)	Overfishing
What is your target?	Reduce deforestation, Reduce overharvesting of forest resources, control birth rate	Awareness on garden community practice - No burning of rubbish when gardening - Mulching and covering crops to fertilize soil - Use local methods to protect the fruit from insects (melon fly)	One awareness in the community from the MOH or SIPPA	Fundraise for two tanks	Formation of council of chiefs Organize a social activity for youths Awareness of culture in families	Establish MPA areas and enforce bylaws
How will the target be monitored by the community?	Government law and enforcement, control census community statistics	I awareness and change of practice in the village to be observed	Community population census	2 tanks in each community	By laws- number of chief represent each tribes Number of social activities organized by the committee Number of family doing awareness in their family	Rangers and reef check training
Where will the action be done?	Paelonge, Hakaraoa, Suvaia, Tiroduke, Leoko	Paelonge, Hakaraoa, Suvaia, Tiroduke, Leoko	Paelonge, Hakaraoa, Suvaia, Tiroduke, Leoko	Paelonge, Hakaraoa, Suvaia, Tiroduke, Leoko	Paelonge	Paelonge, Hakaraoa, Suvaia, Tiroduke, Leoko
When will the action start?	September 3 rd week	October 2012	On-going	On-going	September	January 2013
When will the action finish?	November 4 th Week	January 2013- onwards	On-going	On-going	November	June 2013
Who will be involved in the action?	SIPPA, Planning officers, Lands officers, forestry officers, agriculture departments	Kastom garden, Live and Learn Ministry of Ag	Community leaders Harry and Garry Soqollo	Committee members, church	Planning officers, Chiefs, youths, church leaders, Police, legal advisor/lawyers, cca committee members	Planning officer, environment officer, community chiefs, church leaders, provincial government, WWF, WorldFish
Who will be responsible for getting the action done?	CCA committee	CCA committee	Harry and Garry Soqollo		CCA committee members	CCA committee (Phillip Lyndes, Albert Kuper, Hence Goni)



**CORAL TRIANGLE
INITIATIVE**
ON CORAL REEFS, FISHERIES AND FOOD SECURITY

