APN

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Making a Difference –
Scientific Capacity Building & Enhancement for Sustainable Development in Developing Countries

Climate Change and Variability Implications on Biodiversity – Youth Scenario Simulations and Adaptations.

USP
THE UNIVERSITY OF THE SOUTH PACIFIC

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Climate Change and Variability Implications on Biodiversity – Youth Scenario Simulations and Adaptations

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Final Report submitted to APN

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Overview of project work and outcomes

Non-technical summary

This two year project was first piloted in Fiji (2006 – 2007) for the first project phase and is replicated in Tuvalu and the Solomon Islands as the second project phase (2008 – 2009).

USP worked through its Locally Managed Marine Areas Network partner organization, the Foundation of the Peoples of the South Pacific that have affiliate offices in Tuvalu (Tuvalu Association of NGO's) and the Solomon Islands (Solomon Island Development Trust).

Work undertaken in the Fiji target sites included 3 workshops on drama and climate change; 3 workshops on climate change risk assessment and adaptation planning; youth community awareness raising performances and community adaptation implementation.
These activities have been replicated in Tuvalu and the Solomon Islands.

Objectives

The present project aimed to:

- To build Pacific Islands (Solomon Islands and Tuvalu) youth capacity in drama for climate change implication on biodiversity public awareness and education in addition to community based participatory risk assessment and adaptation planning
- To undertake approximately 40 community awareness raising drama performances
- To implement 6 priority soft measure adaptations such as coral and/or mangrove planting

Amount received and number years supported

The Grant awarded to this project was:

- US$ 28,000 for Year 1, 2006 -2007:
- US$ 35,000 for Year 2, 2008 - 2009

Work undertaken

These are work undertaken during the 2nd Project Phase

- Capacity building workshops on Drama and Climate Change Risk Assessment in Tuvalu and the Solomon Islands
- Climate change awareness raising theatre performances
- Implementation of soft measure adaptation projects
- 2 manuals developed to assist project country partners facilitate climate change drama and risk assessment workshops

Results

The table below highlight results of activities undertaken during the 2nd Project Phase

PROJECT OBJECTIVES	ACHIEVEMENTS
• To build Pacific Islands youth capacity in: (a) drama for climate change implications on biodiversity public awareness and education in addition to (b) community based participatory climate change risk assessment and adaptation planning.	**Tuvalu and the Solomon Islands** a) 2 Climate Change Drama Workshops were conducted • A total of 32 Tuvalu (16) and SI (16) youth have acquired information and enhanced knowledge on climate change, disaster, biodiversity and sustainable development. • Tuvalu and SI workshop participants have enhanced skills in drama for

	climate change impacts on biodiversity awareness raising • Tuvalu created 4 short plays and the SI created 3 short plays on climate change and biodiversity. • Tuvalu participants developed a cultural natural hazards dance b) 2 Climate Change Risk Assessment and Adaptation Planning Workshops were conducted • Participants gained skills in participatory learning and action tools to facilitate climate change risk assessment and adaptation planning • Tuvalu community identified flooding, drought and tidal waves as major climate change threats on their biodiversity. • SI community identified soil and coastal erosion due to heavy rainfall, storm surge and cyclone as major climate change threats on their biodiversity.
c) To undertake approximately 40 community awareness raising drama performances	**Tuvalu, Solomon Islands and Fiji** • Tuvalu has conducted 5 climate change awareness performances to a total audience of about 500 people. They have also conducted a 2 hours live radio airing of their climate change and biodiversity dramas • SI have conducted 2 climate change awareness performances to a total audience of about 580 people. • Tuvalu and the Solomon Islands have just begun their awareness raising performances with plans for more performances in neighboring communities, districts and schools. • Fiji conducted 16 climate change awareness performances to an audience of 3,050 people
d) To implement 6 priority soft measure adaptation activities e.g. Coral and/or mangrove planting etc.	• Two adaptation activities undertaken in the SI are the setting up of a nursery for 600 of 4 species of mangroves and mangrove planting. • Soft measure adaptation activities undertaken in Tuvalu include mangrove rehabilitation and coastal trees planting. • Two activities undertaken in Fiji; digging village rubbish pits and building 'no littering signs' along village coastal areas.

Relevance to the APN CAPaBLE Programme and its Objectives

Capacity building is an integral part of the work program of APN. The project built regional, national and local capacity in climate change and variability implications on biodiversity and sustainable development, to raise policy makers and civil society awareness and pilot adaptation options in our Locally Managed Marine Areas Network resource management projects as a basis for scoping climatic implications on Pacific biodiversity and attempt to provide answers. The project engaged village communities and in particular the youth through culturally sensitive activities. Considering the vastness of the Pacific and dispersed nature of the islands, extensive and continuum capacity building is necessary to support sustainable development initiatives in our region.

Self evaluation

Project partners' commitment to other projects before the beginning of this 2nd project phase left a large part of the project till 2009 for implementation. There was however much enthusiasm and interest from all partners including project communities. This evaluation is for the overall two years, 1st and 2nd phase projects.

PROJECT OBJECTIVES	EVALUATION
a) To build Pacific Islands youth capacity in: (i) drama for climate change implications on biodiversity public awareness and education and (ii) community based participatory climate change risk assessment and adaptation planning.	These workshops were successful and the onus are on local partners to assist in monitoring, helping project communities implement the project and also expanding them. A total of 138 youth have gained skills in the use of drama for climate change awareness raising and have enhanced understanding of the impacts of climate change on biodiversity and their connectedness to sustainable development. A total of 127 people have gained skills in climate change risk assessment and adaptation planning.
b) To undertake approximately 40 community awareness raising drama performances	The community awareness raising drama performances in Fiji went extremely well as expected and used local network such as national disaster, regional climate change and provincial and district events as opportunities to raise awareness besides communities and schools performances. The project has conducted a total of 51 climate change theatre performances to a total of approximately 9,130 people. Tuvalu and the Solomon Islands have just begun their awareness raising performances with plans for more community performances.
c) To implement 6 priority soft measure adaptation activities e.g. coral and/or mangrove planting etc.	The implementation of adaptation activities in Fiji were slow at first but eventually the communities successfully completed their adaptation projects. Adaptation projects in Tuvalu and the Solomon Islands have been successfully implemented as well and have plans for further ongoing work. A total of 10 soft measure adaptation activities have been undertaken by this project; 8 in Fiji; 2 in the Solomon Islands and 2 in Tuvalu

Potential for further work

- Technical training on maintenance of community water pipes.
- Community training on better land use and marine management systems.
- Community training on waste management.
- Community training on proper planning of village building structures.
- Repair and renovation of guttering as alternative water source.
- Training for newly established community climate change committees on roles and responsibilities of implementing and monitoring adaptation activities.
- Continued awareness raising programs (drama, radio, TV, DVD and print media) on climate change implications on biodiversity.
- Exploration of other forms of vegetation for Tuvalu, such as raised plantations.
- Assessment needed to determine causes of coastal erosion.
- Further scientific studies on project communities to expand, validate and substantiate project results.
- A video documentary production on adaptation work carried out by communities. To highlight community adaptation efforts, enhance project communities' profiles and increase outsiders interest and involvement in climate change adaptation. Also, to assist communities evaluate and monitor their own adaptation activities and bring results to policy makers and donors who cannot otherwise go to these communities.
- Extension of project to assist project theatre troupes carry out more community awareness performances on climate change impacts on biodiversity.
- Extension of project to other Pacific Island countries.

Publications

- Workshop reports on Solomon Islands and Tuvalu
- Draft Facilitators manual for conducting Climate Change Drama and Risk Assessment and Adaptation Planning.

Acknowledgments

- The Foundation for the Peoples of the South Pacific International; Mr. Rex Horoi, Mr. Etika Rupeni, Mr. Hugh Govan, Mr. Hugo Tafea, Mr. Patrick Kekea., Mr. Semese Alefaio, Ms. Annie Homasi, Mr. Joseph Keba and Suelami Foaki
- Solomon Islands Development Trust
- Solomon Islands Resource Owners' Association
- Communities of Leitogo, Sisili, Olevuga and Hanipana, Central Islands Province
- Tuvalu Association of Non Government Organizations
- Tuvalu Climate Change Action Network
- Tuvalu Family Health Association
- Tuvalu Red Cross
- Community leader and members of Funalala in Tuvalu
- World Wildlife Fund for Nature South Pacific Program
- Fiji Locally Managed Marine Areas Network
- Locally Managed Marine Areas Network
- Fiji communities of Vunisinu and Navakavu in Rewa, Naboutini and Lakeba in Cakaudrove, Ucunivanua and Naivuruvuru in Verata in Tailevu.
- Provincial Administrative Offices in Cakaudrove, Tailevu and Rewa
- South Pacific Centre for Environment and Sustainable Development of the University of the South Pacific; Dr. Koshy, Mr. Leone Limalevu, Mr. Tony Weir.
- School of Geography of the University of the South Pacific; Dr. Randy Thaman
- Wan Smol Bag Theatre, Vanuatu
- National Disaster Management Office, Fiji
- South Pacific Geo-science Commission, Fiji and the TAF/OFDA program
- Asia Disaster Preparedness Centre – Community Based Disaster Risk Management Program

Technical Report

Preface

The 22 Pacific Island countries and territories consist of Small Island Developing States with a few amongst the Least Developed countries in the world. These small, scattered and isolated, mostly low lying island countries have increasing population growth, limited land space, human and financial resources, and are susceptible to natural hazards and vulnerable to climate change.

These island countries depend on their biodiversity for subsistence and income. At the same time the isolation has resulted in large percentages of endemic species. Islands in the Southwest Pacific also have extensive plant biodiversity. The cumulative impacts of current unsustainable natural resource use and climate change impacts impose high risks of extinction of various species and intensified modification and destruction of habitats and ecosystems. On islands, there is no escape to coastal species whose coasts are inundated or to cloud cover species when that habitat disappears due to increased temperatures and longer dry periods. Ultimately, these consequences threaten the sustainable development of Pacific Islands and undermine their food security, livelihood sources and the maintenance of their traditions and culture.

To address these challenges, this project worked with Fiji's Locally Managed Marine Areas Network partner in the region, the Foundation for the Peoples of the South Pacific International's Coastal Communities Program to build Pacific Island's community youth capacity in drama for climate change impacts on biodiversity; conduct awareness raising drama performances, build community and youth capacity in participatory climate change risk assessment and adaptation planning and to implement identified priority soft measure adaptation options. These activities have resulted in enhanced public and youth awareness and understanding of climate change implications on biodiversity and implementation of soft measure adaptation activities involving:
- Coastal and Marine Rehabilitation and Protection
- Waste Management
- Food Security and Agriculture

As the Project Leader, it is my sincere hope the project has made some contribution towards the international and national commitments and agendas related to Global Change, biodiversity conservation and sustainable development and that regional and international stakeholders will find this document useful. The youth of today will be the ones who have to deal with the most serious climate change impacts and we feel this project has improved their ability to do so.

Thank you,

Professor William Aalbersberg
Director for the Institute of Applied Sciences
University of the South Pacific

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1. INTRODUCTION

The Pacific Island territories and states are spread over an area of 30 million square kilometres, of which 98% consists of ocean and 2% make up the islands with a total land area of 550,073 square kilometres. The Pacific Islands total population is 8 million. Their marine and terrestrial ecosystems have some of the most significant biological diversity in the world, where there are pristine ecosystems and habitats, some of which harbour endemic and endangered species e.g. in Fiji, Solomon Islands and Papua New Guinea where there are pristine ecosystems and habitats including coral reefs, sea-grass beds, mangrove forests where one can find among others an array of coastal and pelagic fishes, marine turtles, dugongs and whales. The islands are also characterized by unique upland, montane, alpine and forests that harbour endemic species. The islands coastal ecosystems host one of the greatest diversity in terms of reef habitats on the planet, harbour the third longest barrier reef (the Great Sea Reef) and some of the most complex fresh, brackish and saltwater ecosystems, some of which are characterized by high endemism of the archipelago scale.

These islands' communities depend heavily on their natural resources for their food, livelihood and for maintaining their traditions and culture. While economic pressures are constantly mounting, some of these ecosystems are still in relative good conditions to the extent of featuring examples of pristine habitats. However, these unique habitats, ecosystems and related resource base are under threat from impacts of climate change and variability; habitat modification and destruction e.g. coral reef and mangrove habitat due to warming ocean temperatures and sea level rise, rainfall increases amounts of silts, forest destroyed by fire and cyclones lead to loss of habitat and food, erosion and landslides etc. These threats are exacerbated by expanding human populations, habitat conversions, unsustainable or extractive use of resources, alien invasive species and environmental degradation, ultimately endangering these ecosystems.

In Fiji, over the past 40 years, the increase in population has increased demand for agricultural land and consequently put a significant amount of pressure on arable land. This has resulted in reduced food security, increase in poverty, land degradation, reduced productivity and lower yields. The islands' coastal marine environment is spread over an area of 1.29 million square kilometres. The sheer size makes the sustainable management challenging as surveillance is difficult and the resource base under constant threat by poachers and illegal foreign fishing fleets. Fiji's total land area is 13,376, its terrestrial resources are limited and lack of arable land and a growing population are leading to increased pressure on coastal resources. This is compounded by pollution originating from mining, shipping industry, tourist development, sugar and timber mills, cement factories, improper waste dumps, untreated sewerage, agrochemical leakage into the water bodies and damages to reef systems caused by mooring, silt sedimentation and introduction of alien invasive species. Over harvesting of coastal and marine fisheries is a major concern. The growing demand deriving from a rising population and the expanding trade has resulted in over exploitation of fisheries and disappearance of two species of giant clams (*Tridacna gigas and Hippopus hippopus*) and declining stocks for reef fish, giant clams, trochus, beche-de-mer, peer oysters and turtles. Unsustainable or destructive fishing practices include night-time use of spear guns, plants toxic to fish, fine mesh nets, dynamite and cyanide. Coral reefs are under threat because of coral mining, unsustainable aquarium fish trade and deposit of silt due to inland erosion. In addition in the year 2000 coral bleaching linked to the El Nino phenomena caused serious damage to Fiji's coral reefs.

Similarly, in the Solomon Islands, extensive logging, land clearing for subsistence agriculture and slash and burn farming practices have led to decline in soil structure, loss of soil fertility and decline in crop yields (UNCCD Report 2002). With increasing population and limited arable land, there is increased pressure on coastal resources. This is compounded by pollution originating from urban development and construction, industrialized developments such as oil palm extraction and fish canneries, mining, logging, soil erosion, silt sedimentation, untreated sewage, improper waste dumps, and introduction of alien invasive

species, volcanic activities, coral bleaching, crown of thorns, reef mining, over harvesting and exploitation of coastal and marine fisheries and unsustainable or destructive fishing practices. The IUCN Red List of Endangered Species in the Oceania, 2007, indicate the Solomon Islands have a total of about 75 endangered species; 16 fauna and 59 flora.

These trends coupled with the predicted yearly increase in climate change and variability impacts, threaten not only marine, coastal and terrestrial ecosystems but do also undermine local food and economic security. Despite having being attuned to considerable changes in environmental conditions e.g. annual tropical cyclone, storm surges, flood and droughts, these Islands inhabitants and ecosystems have shown in the past the remarkable capability to cope with and adapt to the consequences of environmental change. However, the cumulative stresses indicate Pacific Islands natural and biophysical systems will have compounded vulnerability and inability to cope in the future and beyond.

Most of the biodiversity in the Pacific is located in areas owned by communities. In Fiji, the government has entrusted management of terrestrial and coastal resources to local communities e.g. native communities are custodians of 87% of land area and of all the coastal and marine environments up to 12 miles offshore. The regulatory legal and cultural frameworks are supported for native communities to take the lead in managing their resources. Communities need therefore to be sufficiently skilled and technologically equipped to be in a sufficiently informed position when deciding on how to manage their territory.

The planning and implementations of resources management often included elders, excluding youth and women from decision making. Youth are involved as gofers to implement what necessitates community resources management initiatives. The latter lack awareness of the significance due to lack of empowerment to contribute. This lack of knowledge makes them susceptible to less environmentally sustainable practices, especially given increasing cash economic pressures.

To answer the question of who would best be the target of this project, community youth came to the forefront as we recognize youth are the future custodians of the Pacific Islands natural resources, their contribution to community resource management is vital to ensuring security and availability of resources for the next generations.

The Institute of Applied Sciences, the proponent, hosts the 'Locally Managed Marine Areas Network' (LMMA) for Fiji. The LMMA is a group of practitioners involved in collaborative marine conservation projects who have joined forces to increase the success of their efforts. The Network is made up of researchers, development partners and government officials. LMMA members are found in Fiji, Solomon Islands, Papua New Guinea, Indonesia and the Philippines. LMMA is a learning network wherein participating members share strategies and approaches (e.g. adaptive management and LMMA approach) and work together to achieve their common goals. Network members share knowledge, skills, resources and information in order to learn collectively how to integrate conservation and development and improve community-based coastal resource management. LMMA is not limited to marine change but biodiversity change across biomes that also encompass inland water and terrestrial ecosystems.

In Fiji, the Locally Managed Marine Areas Network (FLMMA) consists of government departments, NGOs, communities and individuals. The main NGOs are the Institute of Applied Sciences/USP, World Wide Fund for Nature, World Conservation Society, Conservation International, Mamanuca Environment Society, Resort Support, US Peace Corps, National Trust of Fiji and Tourism operators; government partners are the Ministry of Fisheries, Ministry of Indigenous Affairs, Ministry of Tourism and the Department of Environment. There are over 217 communities in Fiji that are FLMMA members.

Therefore, this project sought to integrate the LMMA adaptive management approach and

network to pilot addition of climate change and variability factors that are not currently included in their community resource management plans. To build capacity in; a) climate change and variability, biodiversity and sustainable development; b) drama or theatre as a tool for public awareness raising; c) climate change risk assessment which will result in the
d) implementation of appropriate soft measure adaptation and mitigation measures. As we realise these are urgent global environmental problems and must take an integrated approach to achieve sustainable development.

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2. METHODOLOGY

2.1 Narratives on the Project Process:

The project process followed the example provided in Figure 1.

Figure 1: Project Process

2.1 Consultations and Preparations.

This 2 year project involved 2 phases. The 1st Project Phase was conducted in Fiji as a pilot. A total of 6 communities from 3 provinces in Fiji were involved. The project worked in communities engaged in locally managed marine areas. For the 2nd Phase, the project was replicated in the Solomon Islands and Tuvalu through our LMMA partner, the Foundation for the Peoples of the South Pacific and their regional affiliate offices in Tuvalu, the Tuvalu Association of NGOs (TANGO) and in the Solomon Islands, the Solomon Islands Development Trust (SIDT).

This step involved the following: (i) project team meetings; (ii) selection of project communities; (iii) mobilization and consultation with stakeholders and workshop participants; (iv) workshop inputs preparations such as training materials, facilitators and presenters identification and consultation; and (v) administrative and logistics preparation.

2.2. Capacity Building Workshops on Drama In Climate Change Implications On Biodiversity.

These induction workshops aimed to: a) Introduce the APN/USP partnership project; b) Provide knowledge and information on climate change and variability, biodiversity and sustainable development; c) Provide information and skills in basic drama technique as tool for climate change awareness raising and education; d) Facilitate the creation of drama or theatre productions including songs and cultural dances; e) Facilitate the development of youth action plan consisting of identified activities they can undertake as contribution to their respective community resource management plan.

These workshops were usually conducted over a 3 day period. Local LMMA partners and relevant experts from government and NGOs were invited to assist in the facilitation and/or

present on one of the key workshop topics. As well, additional resource materials were acquired from mostly NGO's such as the World Wide Fund for Nature and the South Pacific Geoscience Commission. Participants were largely made up of community youth.

Presentations often included lectures, power point and video presentation. Participants are usually asked immediately after a presentation to work in groups to do a role play or are given a list of 3 – 4 questions to work on and present back to the whole class.

2.2.1) Below is a sample workshop program.

Table 1. Workshop Program

Day 1	Sessions	Facilitator
8:00am	Registration	
8:30am	Introductions	
	- Prayer	
	- Welcome	
	- Participants & Facilitators Introductions	
	- APN/USP Project Introduction	
	- Workshop Objectives and Program Introduction & Housekeeping	
	- Participants' Expectations	
	- Workshop Group Rules	
10:30am	*Tea Break*	
11:00am	Presentation on Climate change and Variability	
12:00pm	Presentation on Biodiversity	
12:30pm	Presentation on Sustainable Development	
1:00pm	*Lunch*	
2:00pm	Listing of youth concerns on climate change and prioritization (Group Work and Presentations)	
3:00pm	Group Work on Likely Climate Change Impacts in 50 years	
3:30pm	*Afternoon Tea*	
4:00pm	Presentation on Community Resource Management Project and Youth Identification of What They Can Do To Contribute	
	End of Day One	
Day 2		
8:00am	Prayer	
	Review of Day One	
8:30am	Presentation on Community Theatre	
8:45am	Basic Drama Techniques	
	- Tableau	
	- Mime and Improvisations	
10:30am	*Morning Tea*	
11.00am	- One Liners	
11:30am	- Chorus	
12:00pm	Climate change Drama Construction	
1:00pm	*Lunch*	
2:00pm	Climate Change Song and Cultural Dance Creation	
3:00pm	*Afternoon Tea*	
4:00pm	Rehearsals	
5:00pm	*End of Day Two*	
Day 3		
8:00am	Prayer	
	Review of Day Two	
8:30am	Conducting A Community Theatre Performance	
10:30am	*Morning Tea*	
11:00am	Community Theatre Action Planning	
11:30am	Rehearsals & Discussions on Stage, Costumes and Properties	
1:00pm	*Lunch*	
2:00pm	Workshop Evaluation	
3:00pm	Community Performance to Showcase Workshop Results and Trial Conducting a Community Theatre Performance	
5:00pm	Workshop Closing	
	End of Workshop	

Pic. 1 Verata in Tailevu, Fiji

Pic 2 Navakavu in Rewa, Fiji

Pic. 3 Naboutini in Cakaudrove, Fiji

Pic. 4 Funafuti in Tuvalu

Workshop participants were tremendously grateful that such a workshop, covering important and useful topics, usually taught at universities and for the educated people, could be brought right to them in the communities. Their sentiments on the workshop were that it increased their appreciation for biodiversity conservation and their vulnerability to the impacts of climate change and current unsustainable natural resource use practices. Participants thoroughly enjoyed these workshops.

Pics. 6-7 Solomon Islands workshop participants

Pics. 8-9 Using Cultural Dance to relay key climate change messages

2.2.2) Handouts Distributed During the Workshops

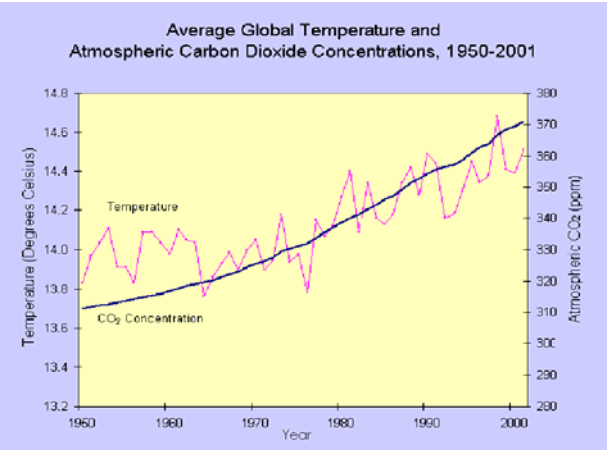
i) <u>Climate Change Handout</u>:

The word climate is different from the word weather. The weather is what we experience daily e.g. good, fine weather today; yesterday was bad or rainy. Weather is the fluctuating state of the atmosphere around us, characterized by temperature, wind, pressure, precipitation, cloud and other weather elements. Climate is the average weather conditions in terms of the normal or average and its unpredictability over a certain time span and area (ranging from months, to 1000s to millions of years. The World Meteorological Organization has defined it as 30 years). Therefore, Climate Change refers to a significant change in the normal climate or its average unpredictability persisting to an extended period, typically decades. This change is known through recording the earth's temperature, which began in 1860. Between 1990 and 2000, the overall earth's temperature was found to have increased by ½ a degree celcius in comparison to the earth's temperature between 1940 and 1950. In the Pacific, we are also feeling the increase in temperature. Now, we are experiencing temperatures of 35 – 36 degrees celcius. In the past, the temperature would go up to only 33 – 34 degrees celcius.

Scientists predict that temperatures will increase by 0.2 degrees celcius every 10 years. This means that by the year 2100, the temperature will increase by 2 degrees celcius. Living things on land and in the sea will surely be adversely affected and will die or move to look for suitable climate conditions if with an increase of 1 degree celcius.

What causes climate change?
There are certain gases like carbon dioxide, water vapour, ozone, methane, nitrous oxide and halo carbons which protects or blankets our earth from the sun's heat and allows enough heat at a temperature suitable for sustaining human, plant and animal life. These gases are know as 'green house gases'. The most important of these gases is the carbon dioxide which we breath out. Carbon dioxide results from burning things. In the past, carbon dioxide concentration in the atmosphere was only 180 – 300 ppm. Now, the level of carbon dioxide concentration is 380 ppm or has increased by 50%. In other words, carbon dioxide emissions are now around 12 times higher than in 1900 as the world continues to burn increasing quantities of coal, oil and gas for energy used for factory machinery and transportation at large scale over the last three hundred years or since the beginning of the industrial revolution.

Figure 2. Global Temperature and Atmospheric Carbon Dioxide Concentrations



Furthermore, the clearing of the world's forests for modern development means that as more greenhouse gases enter the air from increased fossil fuel use and agricultural activities, less is being taken out by trees and plants. This imbalance is why we are experiencing a rise in

'heat trapping' greenhouse gas, causing global temperatures to rise, and is the reason for climate change. Without a doubt, the order of nature's balance has been disturbed.

Where do these high levels of carbon dioxide emissions come from?
We are burning more and more greenhouse gases, such as carbon dioxide, which keep the heat of the sun from escaping. This gas comes from burning fossil fuels, like petrol or coal, which fuel our cars and other modes of transportation or make electricity.

- Carbon dioxide – CO2
- Methane – CH4
- Nitrous oxide – NO2
    - vehicles (CO2, CH4, NO2)
    - factories (CO2, NO2)
    - animal farming (CO2, CH4)
    - rice farming (CH4)

What has been done?
Some actions have been taken globally and regionally to address climate change.

Global:

- The Kyoto Protocol: Emission reduction commitment to a set time frame
- Over 180 countries have signed the United Nations Framework Convention on climate change to reduce emissions
- Voluntary target reductions by states and industries

Regional:

- Pacific Island Governments were very vocal and at international negotiations on climate change
- Regional programs and projects implemented include sea level monitoring, climate change research and promotion of adaptation measures

National:

- Find out what actions your nation has taken to address climate change
- Find out what your nation's priorities are in terms of climate change

What are climate change impacts or effects?
The rise in global temperatures is causing the ice caps in the north and south poles to melt, sea temperatures as well as sea levels rise, leading to changes in climate and increasing natural disasters.

Some other effects of climate change are:

- Increasing temperatures in the day and night
- Increasing heat wave
- Increasing heavy rainfall
- Increasing drought
- Increasing frequency and intensity of cyclones
- Increasing frequency of storm surges

These effects would cause the extinction or loss of species and the degradation of natural resources or biodiversity.

Why must you care about climate change?

- The Pacific Islands are the most vulnerable to the impacts of climate change due to our geographic location, we are small island nations spread out in a large ocean most isolated, small atoll islands, with limited land space
- We have limited financial and human resources
- Most of our villages are located near the coast and depend on coastal and marine resources for their food and source of protein and livelihood

- We depend upon our limited natural resources for our key economies; fisheries, agriculture and tourism

How does climate change affect you?
Sea level rise resulting from the thermal expansion of the oceans and melting of ice caps will have the most significant negative effect of these higher global temperatures. It is projected that sea levels will rise by as much as 5 mm. per year over the next 100 years as a result of global warming.

As stated earlier in the presentation the effects of climate change are currently being experienced and they include:
- Warmer temperatures
- Sea level rise
- Extreme weather conditions (cyclones and increase in the intensity of droughts and rainfall)

Climate change will impact Fresh Water:
- Salt water intrusion affecting the quality and quantity of drinking water and damaging agriculture as seawater seeps into the thin wedge of ground water. Such an incident can be caused by sea level rise and storm surges
- Flooding due to increased rainfall in some areas reducing the ability of soil to absorb water.
- More frequent droughts will be experienced in some areas.
- The above mentioned fresh water problems will further affect other industries such as tourism and agriculture

Climate change will impact Agriculture:
- Salt water intrusion making it difficult to keep crops properly watered.
- Inundation and storm surges destroying crops (In Tuvalu taro pits have been ruined by saltwater inundation).
- More intense droughts also ruins crops (e.g. the 1997 – 1998 drought caused $104 million dollar loss in the Fiji Sugar industry and $15 million in the other agriculture industries).
- Changes in rainfall, winds and temperatures lead to changes in growing seasons.
- Rising temperatures and increased rainfall in some areas may lead to increased pests and weeds destroying crops
- With more frequent zand intense cyclones that cause high wind, increased rainfall and storm surges may destroy crops and give them less time to recover – especially for tree crops such as coconut which have a longer recovery time.

Climate change will impact Forests:
- Increased droughts may see a rise in forest fires like the 1997 forest fires in Indonesia that in which about 165,000 hectares were lost as a result of the extended dry season. Similar fires were also reported from PNG.
- Forest play a particularly important roles as they absorb carbondioxide from the air and stores it – acts as sinks.

Climate change will impact Biodiversity:
- Climate change will have a much higher impact on island ecosystems compared to continental areas largely because islands have a large number of species that are endemic. Ecosystems are made up of a set of linked components – a negative effect on one impacts on all others.
- Ground nesting sea birds on low islands will be affected by more storm surges and sea level rise (In the Northern Cook Islands three types of tropical birds have had ground nests damages).
- Cyclones and forest fires destroying habitat and food

- Coral bleaching occurs as a result of higher sea temperatures. Corals live at temperatures between 18 degrees celcius and 28 degrees celcius and a slight increase in the water temperature causes bleaching.
- Increase silt washed into the reefs as a result of high rainfall is a hindrance to coral growth.

Climate change will impact on Health:

- Warming temperatures and flooding leads to increase in malaria and dengue fever – water provides a habitat for mosquitoes and warmer temperatures allows for breeding in areas that were previously too cold. For example, Malaria which is only found in the eastern part of the Pacific, Solomon Island and PNG may move as far east as Fiji.
- Increased rainfall causing flooding and disrupted sewerage systems and which in turn contaminates water supply is likely to increase Cholera outbreaks.
- Warmer water leads to increased production of marine pathogens (a form of human poisoning) therefore putting the safety of seafood at risk.
- Supply of traditional food crops may be affected as a result of sea level rise, droughts and floods and water scarcity leading to a heavier reliance on imported foods.
- Reduced availability of fish and other seafood is likely to reduce protein intake as well as increase reliance on more expansive and less healthy substitutes from the shops.

Climate change will impact Coastal and Marine Resources:

- The ability of reef plants and animals to make limestone skeletons that build the reefs will be reduced by carbon dioxide concentrations in the ocean.
- Mangroves will have to retreat inland to ensure survival with rising sea levels and coastal erosion.
- Mangrove growth will also be affected by increased sedimentation from more rainfall and flooding.
- Fish-stocks will be affected negatively with the degradation of mangroves and reefs.

While the above impacts can be linked to climate change, it is also very important to recognize that they are also caused by our own daily actions and how we human beings choose to manage our environment. The above impacts are also caused by practices such as over fishing and unsustainable logging, depositing our waste into the rivers and seas and coastal development. The impact of our own daily actions is already a threat to our environment which our lives depend on. Climate change will further increase these risks.

How Do We Adapt To Climate Change?

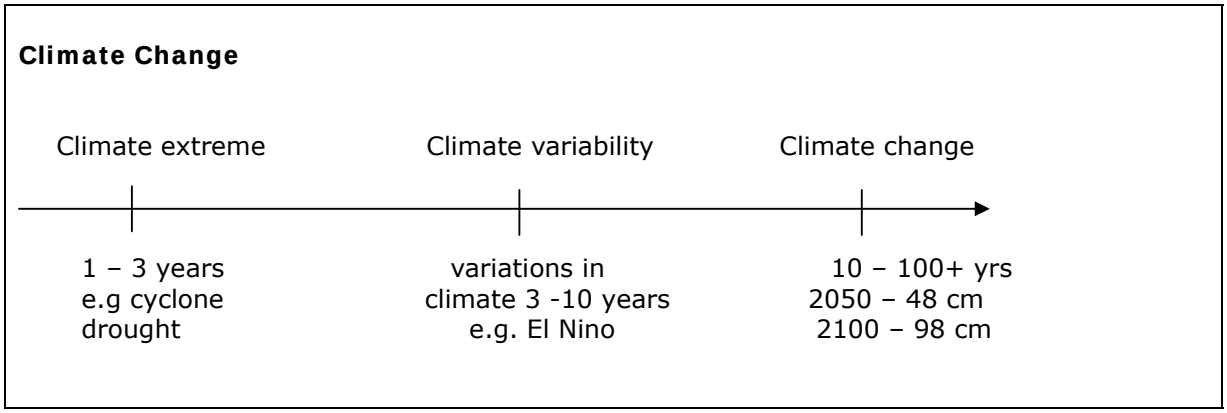
Adapting to climate change will have to be a continuous process of understanding the problem, learning about how to best address the problem, trying out the most appropriate idea, identifying why those ideas worked or didn't work and integrating the lessons learnt back into the process of addressing the problem. Some general steps to addressing climate change at the community level will include the following:

1. Awareness of the climate change problem
2. Look in more detail how climate change is likely to affect our community
3. Identify the main threats to be addressed
4. Identifying the options to address them
5. Identifying the data to be gathered to evaluate options
6. Plan and gather the required data
7. Develop a Community Adaptation Action Plan that contains the chosen Adaptation measure and how and who will implement the plan
8. Implementation of the Community Adaptation Action Plan

The cooperation and involvement of all community members is of utmost importance to make the community adaptation process effective and useful. Further, community cooperation has to be maintained, if not enhanced, on a continuous basis because preparing ourselves for climate change impacts is not the same as responding to natural disasters such as cyclones

or floods. Responding or adapting to climate change requires us to start making adjustments in our daily lives now so that when the slow long-term impacts of climate change occur, we are still able to live the kind of life we value and aspire to.

Figure 3. The Difference Between Climate Extreme, Variability & Change



- Natural disasters or extreme events and climate change impacts are the same. One accumulates over a long period of time whilst the other happens suddenly but both have negative impacts on humans and natural resources

Pics. 10-11 Youth discuss likely climate change impacts in 50 years

Pics. 12-13 Participants present results of group work discussions

ii) <u>Disaster Risk Management Handout</u>:

What Is A Disaster?

A natural or human-caused event which causes intense negative Impacts on people, goods, services, and/or the environment, exceeding the affected community's capability to respond.

A disaster happens when and only when a hazard impacts on a vulnerable community or people. A natural phenomena by itself is not a disaster – only an earthquake, or wind, or flood, or volcano, or drought, etc. Likewise a population may be vulnerable to a disaster for many years, yet without the trigger event there is no disaster. A disaster happens when these two come together.

A hazard is the ***Trigger Event***, which sets off the disaster. The Trigger Event could be any of the following hazards:

- Climatic - cyclone, storm surge, drought, heavy rainfall, flood, landslide, sea level rise
- Geological - earthquake, tsunami
- Environmental - contagious disease, animal disease
- Technical - things humans create e.g. bombs, oil
- Human - war, coup, civil conflict

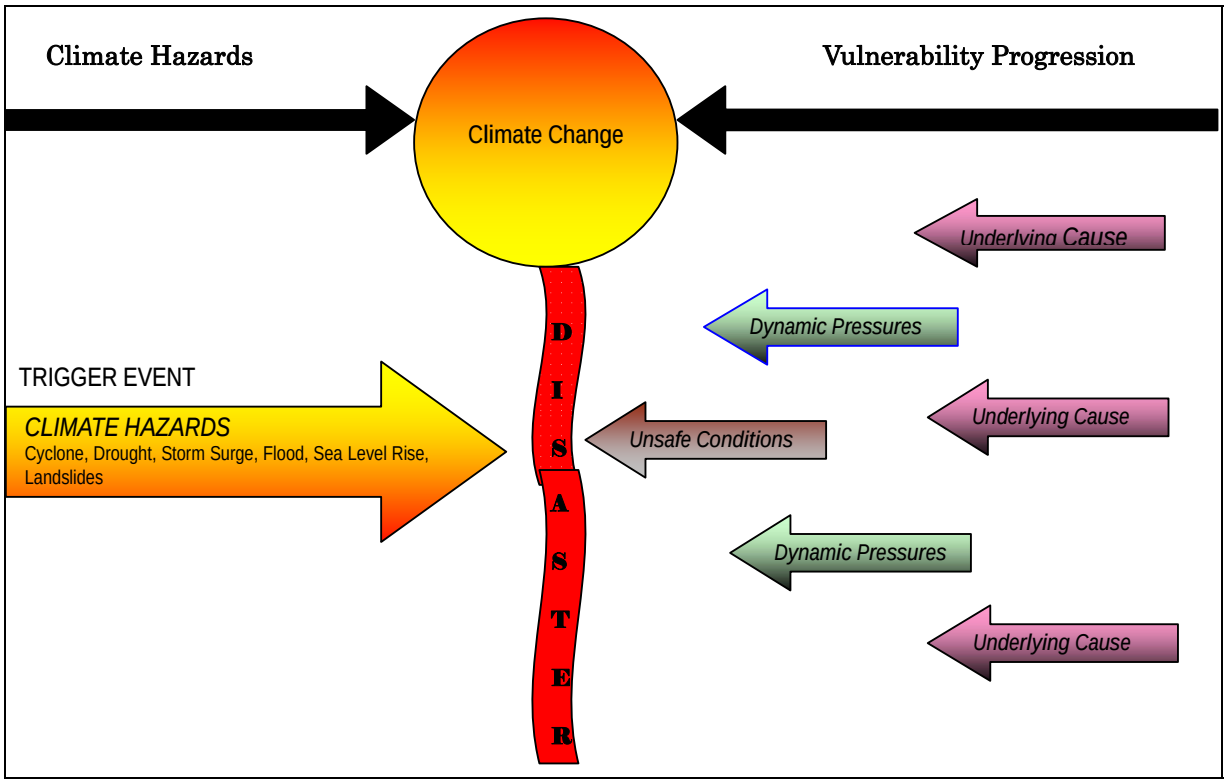
<u>The Disaster Crunch Model</u>*

The Disaster Crunch Model is a framework for understanding and explaining the causes of disaster. Similar to a nutcracker, it is a pressure and release model which shows that vulnerability (pressure) which is rooted in socio-economic and political processes has to be addressed (released) for disaster risk reduction.

Pic. 14 Flooding in Funafuti, Tuvalu

** ADPC, 2002, **Community Based Disaster Risk Management**,*

Figure 4. The Disaster Crunch Model



Vulnerability	Unsafe Conditions	Dynamic Pressures	Underlying Cause
• Biodiversity • People • Property • Environment • Economy • Society • Infrastructure Physical/Material Social/Organizational Motivation/Attitudinal	• Low land • Riverside • Coastal • Poor buildings • Water shortage *Explains the Current Situation*	• Lack of skills • Lack of early warning System • Lack of protective structure • Lack of STOCK of (food, water, medicine, Biodiversity) • Deforestation • Lack of organisation etc. (process and activities) • No evacuation plan and centre *Explains HOW*	Lack of; • Policy (law/plan) • Budget Allocation • Law enforcement • Lack of good • Governance *Explains WHY*

The progression of vulnerability helps us in understanding the complexity of vulnerability, especially its underlying conditions and root causes that may be quite remote from the disaster event itself. Through the reverse of the model, the Disaster Release Model, we are able to understand how the risk of disasters can be reduced.

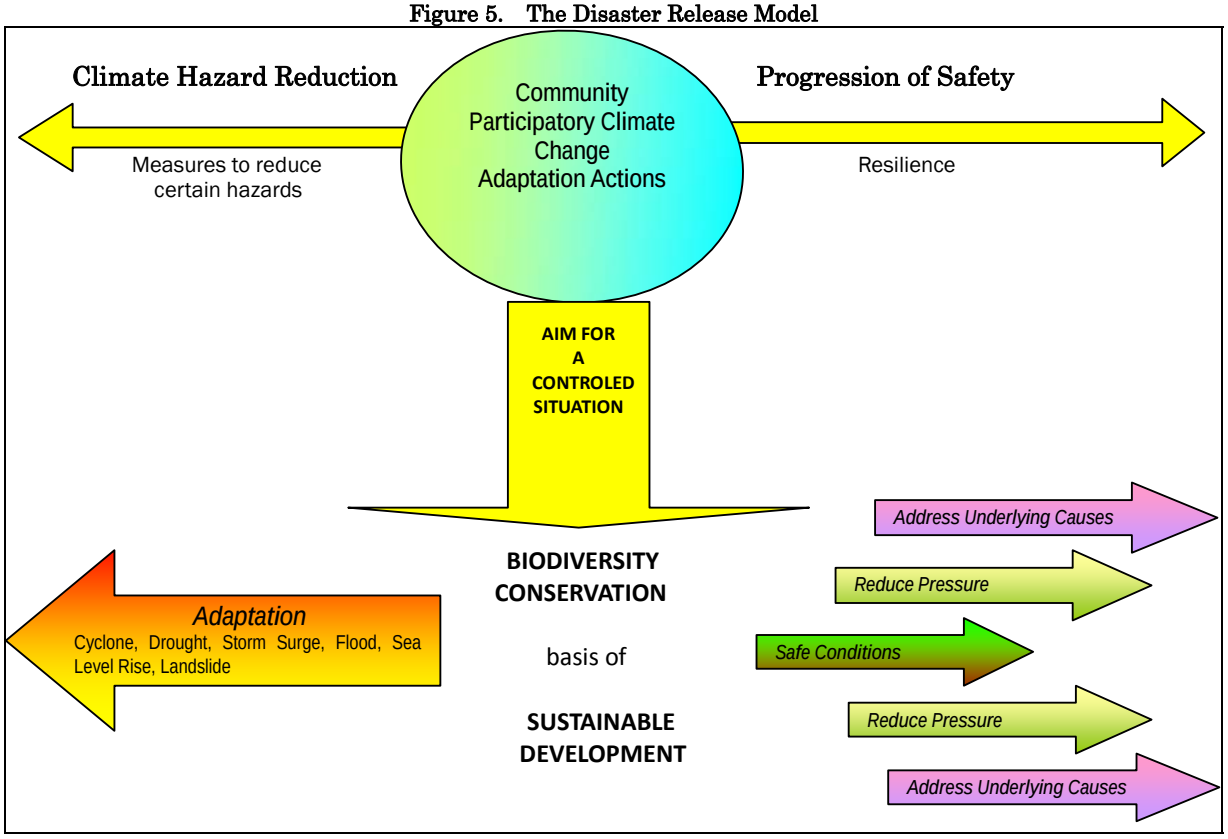
The ***Unsafe Conditions*** are the vulnerable context where people and property are exposed to risk of disaster. These make the community vulnerable to a particular hazard. They physical environment is one element. Other factors include an unstable economy and low-income levels. Examples: people having to live in dangerous locations, being unable to afford safe buildings, lacking effective protection by the state (for instance, in terms of effective building codes), having to engage in dangerous livelihoods (such as ocean fishing in small boats, or wildlife poaching, or prostitution, with its health risks), or having minimal food entitlements, or entitlements that are prone to rapid disruption.

Dynamic Pressures within the society are the immediate causes of the Unsafe Conditions. They are processes and activities that have 'translated' the effects of root causes into unsafe conditions. These pressures answer the question of HOW unsafe or dangerous conditions have arisen. Beneath the Dynamic Pressures are ***Underlying Causes***, which cause communities or sections of it to be unsafe and vulnerable. These are basic fundamentals and ideologies on which the society is built. Vulnerability is not a situation that just happens. Most often, it has developed as a progression from Underlying Conditions to Dynamic Pressures, to Unsafe Conditions. These underlying or root causes answer the question WHY dangerous or unsafe conditions persist. If the fundamental causes of disaster risk are not addressed then the disaster situation will soon repeat itself.

The Disaster Release Model

In the same way that the Disaster Crunch Model helps us to understand how vulnerability is built up, the Disaster Release Model helps us to understand how the risk of disasters can be reduced.

Figure 5. The Disaster Release Model



CAPACITY	Safe Conditions	Reduced Pressures	Addressed Underlying Causes
• Biodiversity • People • Property • Environment • Economy • Society • Infrastructure Physical/Material Social/Organizational Motivation/Attitudinal	• Higher ground • Stilts • Flood gates • Strong buildings • Water *Explains the Current Situation*	• Skills • Early warning system • Protective structure • STOCK of (food, water, medicine, Biodiversity) • Reforestation • Organisation etc. (process and activities) • Evacuation centre and plan *Explains How*	• Policy (law/plan) - Adaptation plan - Disaster Management plan • Budget Allocation • Law enforcement • Good governance *Explains WHY*

The first stage is to examine the disaster event itself. Natural phenomena cannot be prevented but their risk of getting out of control and causing damage and loss of life can be reduced. Measures can be undertaken to modify or reduce the hazards. Example, to reduce the risk of river flooding, protective dikes or bunds can be built and the system of river control can be linked to flood warning systems.

If Unsafe Conditions are to be turned into Safe Conditions, then it is necessary to adopt activities, which will lessen the Dynamic Pressures. Some specific mitigation measures may be to provide incentives to encourage the community to strengthen their homes, to vacate particularly dangerous house locations and/or build new houses in a safe manner to resist local hazards.

The next step is to Reduce Pressures that directly or indirectly contribute to the growth of vulnerability. For example, the following basic development activities can be undertaken to significantly reduce lives lost or property damaged in future disaster;

- Introduction of disaster preparedness plans
- Building or strengthening of local institutions
- Education of local builders and craftsmen
- Initiation of income generating activities
- Protection of forest reserves
- Family Planning advice

The next stage is to address underlying causes with positive actions. For example, the national and international levels can be involved. Necessary actions could include the following:

- The future building of major roads would need to take into account both the benefits as well as associated risks.
- Emigration policies of the government to take into account its social and economic consequences on the development of rural vulnerability.

Pic. 15 Workshop participants' scenario simulations

2.2.3) A Drama Manual is attached. This is a manual produced to assist local partners facilitate these drama workshops and community awareness raising performances.

2.3 Community Awareness Raising Performances.

The Community Awareness Raising Performances aim to: a) raise public awareness on climate change and variability implications on climate change through theatre performances; b) conduct post performance discussions on climate change and biodiversity conservation related issues.

There are generally two types of community performances depending on the type of audience and event. In instances where there is a large audience of more than 100 people, or if the event is a workshop, national event such as Disaster Awareness Week etc., or district and provincial gathering, the theatre group will perform their climate change dramas, songs and/or cultural dance.

Theatre groups conduct post performance discussions in communities and schools etc. that have allocated time for them to do so. A community theatre performance normally takes 1–2 hours per sitting of 20-30 minutes of climate change drama performance, followed by discussions around the 'yaqona bowl' on issues highlighted in the play.

Some performances are arranged by the theatre group and some are by invitation.

Pic. 16 Youth perform climate change impacts on culture and tradition

Pic.. 17 Tuvalu climate change cultural dance

Pic. 18-19 Fiji youth performance on marine biodiversity

Pic. 20 Verata youth raise awareness on climate change and natural resource management

2.3.1) Below is a sample Community Theatre Performance Program.

Figure 6. Sample Community Theatre Performance Program

1. Traditional protocols

2. Introductions
   - Prayer
   - Welcome
   - Objective of the visit
   - Why community theatre for climate change awareness
   - Why youth are engaged
   - Introduction of visitors and participants

3. Climate Change Theatre Performance

4. Post Performance Group Discussions
   - Comments on theatre messages
   - Brief introduction on Climate change impacts on biodiversity
   - Introduction of Group activities
   - Breaking into small groups (men, women, youth & children)
   - Distribution of pens and newsprints

5. Groups Discussions – A
   - 5.1 – Identifying climate change issues
   - 5.2 – Prioritization of issues
   - 5.3 - Group work presentations

   Group Discussions – B
   - 5.4 - Climate change Impacts in 50 years
   - 5.5 - Identifying solutions
   - 5.6 - Prioritization of solutions
   - 5.7 - Climate change adaptation planning
   - 5.8 - Group presentations

6. Summarization of program results by Theatre Group Leader

7. Final words from the Community Leader

8. Prayer

9. End of program

2.3.2) Community Theatre Evaluation Form

The evaluation forms are aimed to assist the group gauge audience response and effectiveness of their performance program. These forms are handed out by the community theatre troupes to selected members of the audience before a performance. Forms are collected after the performance. Below is a sample form.

……

COMMUNITY THEATRE EVALUATION FORM

Please kindly fill out the questionnaire below and return when completed. Your feedback assists the group monitor their community theatre performance program.

1. What is the drama about?

……
……

2. What is the drama trying to tell you?

……
……

3. Do you think you can do or not do what the drama is asking you?

Tick your answer □ Yes □ No If your answer is 'no' please explain.

……
……

4. Was there anything in the drama you did not understand?

Tick your answer □ Yes □ No If your answer is 'no' please explain.

……
……

5. What did you like about the performance (drama, song, dance, etc.)?

……
……

6. Was there anything you did not like about the performance?.

Tick your answer □ Yes □ No If your answer is 'yes' please explain.

……
……

7. Do you have any suggestions to improve the performance?

……
……

Thank you kindly for taking the time to fill this form.

2.4 Capacity Building Workshops On Community Based Participatory Climate Change Risk Assessment and Adaptation Planning Workshops

These workshops aim to build community and youth capacity in climate change risk assessment and adaptation planning. It normally takes 2 days to run these workshops. Participants consist of community leaders, elders, youth and community members. Local government and NGO partners are normally invited to assist in facilitation. The workshop utilizes participatory learning and action tools and a brief session on climate change is also included.

2.4.1) Workshop Design:

Table 2: Community Based Participatory Climate Change Risk Assessment and Adaptation Planning Workshop Design

SESSION	METHOD	OUTPUTS
1 Situation Analysis	Community Historical Timeline Community Mapping	Community Time Line Village Map
2 Natural Threats	Mapping Inventory - Coastal & Marine Resources - Land Resources - Community Infrastructure	• Map and Inventory of Coastal & Marine Resources • Map and Inventory of Land Resources • Community Infrastructure Map & names of houses • List of hazards
3 Causes of Threats	Root Cause Analysis Review Community Resource Management Plan	• List of Threats/Problems • List of Impacts • List of Causes • Elimination of problems already addressed in the Management Plan
4 Prioritization of Importance	Intuitive and Standard method Ranking together	• Prioritized List of Risks (vulnerabilities & hazards) faced
5 Likely Effects of Climate Change	Information on Climate Change Impacts on Biodiversity and Sustainable Development. Listing Effects of Climate Change a) Now b) In 50 years Ranking Matrix for now & in 50 years Visioning	• Enhanced understanding of climate change & variability, Biodiversity and sustainable development • List of Prioritized Effects for now and in 50 years. • Vision Statement
6. Resilience Assessment	Listing of how they have coped in the past Listing of traditional & modern warning systems used in the past and now Listing of actions to solve or address issues relating to impacts of climate change or meeting development needs	• List of coping mechanisms • List of early warning systems • List of actions or options
7. Evaluation Of Adaptation Options	Ranking of Importance Listing objectives	• Ranking of Important actions • List of objectives for each action community will undertake • Agreed Strategy
8. Participatory Climate Change Change Adaptation Planning	Action Planning Discussion of forming Committee or Climate change and Disaster Community Project Liaison Officer	• Climate Change Adaptation Action Plan • Disaster Management Plan • Agreed Strategy • Community CCD Committee or Project Officer/CPLO

2.4.2 A draft manual on Community Participatory Climate Change Risk Assessment and Adaptation Planning was developed to assist our local project partners facilitate these workshops. See draft manual on Facilitators' Guide – Community Participatory Climate Change Risk Assessment and Adaptation Planning.

2.5 Adaptation Activities Implementation

This step in the project aims to facilitate communities' implement their identified priority soft measure adaptation activities. Youth in project communities take the lead in implementing these activities.

Communities raise their adaptation plans in their respective village council meeting to endorse the plan. Once this is endorsed, it is listed as part of their village development or resource management plan. The village council endorsement includes their recommendation for areas of project implementation such as land for planting trees.

Taking the council recommendations, youth draw up their action plan and carry out their adaptation activities. Reports of activities are forwarded to USP, and to their respective provincial councils for their records, or for further assistance such as for training on mangroves planting, etc.

2.6 Monitoring and Evaluation

These activities are carried out by the local project partners and their reports forwarded to USP.

2.7 Reporting and Feedback

Workshop reports are collected and done by USP then sent to the project sites and the respective provincial administrative council and partner organizations.

3. RESULTS

This section will mainly highlight results from Tuvalu and the Solomon Islands and inclusion of key results from the 1st phase in Fiji.

3.1 Capacity Building Workshops on Climate Change and Variability Impacts on Biodiversity and Drama

This induction workshop was carried out in all the project sites in Fiji's three provinces, Solomon Islands and Tuvalu. As a result of these workshops the following were achieved;

a) A total of 138 youth from the 3 countries participated in these workshops and have enhanced knowledge and understanding on climate change and variability impacts on biodiversity and sustainable development and gained skills in the use of theatre as a tool for awareness raising and education.

b) A total of 19 drama story outlines, 10 songs and 4 cultural dances on climate change related issues were created under the 1st and 2nd phase of the project.

c) A total of 6 community theatre groups were formed or strengthened: 3 groups in Fiji, one in the Solomon Islands and 2 in Tuvalu.

d) A total of 8 adaptation activities were identified by youth as their contribution to their respective community resource management plans.

3.1.1 The climate change impacts identified by youth during these workshops were;

a) Soil Erosion
b) Cyclone
c) Storm Surge and Tidal Waves
d) Sea Level Rise
e) Flooding
f) Drought
g) Coastal Erosion
h) Coral bleaching
i) Land slide
j) Salt water intrusion


Pic. 21-22 Youth dramatization

The table below is a synthesis of workshop results from the 3 countries identifying climate change, their perceived causes and impacts.

Table 3. Youth Identified Common Climate Change and Variability Impacts on biodiversity

Natural/Climatic Threats	Causes	Impacts
Increased Heavy Rainfall	Climate change Logging Careless tree felling Burning of trees Land clearance for agricultural and subsistence purposes	Soil erosion - Increasing silt sediments and run offs, affect food gardens, rivers, coast and marine habitats and ecosystems, - Pollutes water sources and village. - Soil stability, fertility and crop productivity - Increasing depletion of coastal and marine resources due to run offs and sediments - Food security and income sources Flooding - Muddy village, stench of mud in village - Increases insects breeding - Increases diseases - Pollutes water sources - Affects crop growth, damages crops Coastal erosion - Increased loss of land, food gardens - Inundation of coastal areas - Change coastal features - Threatening homes
Flooding	Climate change Heavy rainfall Storm surge Sea level rise Extensive land use practices and pollution	- Changes in growing seasons - Blocks drainage - Muddy village, stench of mud in village - Increases insects, diseases, affects health - Water quality - Crop growth and productivity - Economy
Coastal Erosion	Climate change Sea level rise Storm surge High tides	- Increases loss of land - Increases loss of food gardens - Threat to homes - Inundation of coastal areas
Cyclone	Climate change	- Increases endangered and extinction of birds, crops and native plants/trees species - Changes landscape - Damages habitats; coral reefs, mangroves and ecosystems in these areas - Increases depletion of marine resources - Damages property, infrastructure and homes - Damages food crops - Affects economy, sources of food and income - Disrupts education and work
Storm surge / tidal waves	Climate change	- Salt water intrusion affects vegetation, water sources, soil fertility, poor crop yields - Damages coastal and marine resources - Coastal erosion - Depletion of marine resources
Drought	Climate change Increasing temperature	- Coral bleaching - Water supply affected - Increase diseases e.g. dengue, insect breeding, affects health - Destroys plants and trees - Increases endangered and extinction of plants, birds, crops and fish species and habitats - Increase loss of food due to destroyed food crops - Agriculture – loss of income
Sea level rise	Climate change Global warming causing increase in water temperature	- Salt water intrusion affecting water sources and food gardens - Increased coastal erosion - Increased loss of land - Increase loss of food and income sources

3.1.2 Vulnerabilities;

Major vulnerabilities highlighted by workshop participants were: over fishing, over harvesting of corals and mangroves, aquarium trade, dumping of waste in rivers, coast and inshore areas, untreated sewage, use of poison and dynamite in fishing, small mesh nets, over harvesting and exploitation of forest through deforestation such as logging, careless tree felling, burning of trees and grass, land clearance for commercial and subsistence farming, over use of chemicals for agricultural farming, and gardening close to streams.

Some observations made by Fiji participants highlighted were loss of fruit trees, native plants and birds. For example, the Navakavu totem tree called '*frangipani*', the '*Tahitian Chestnuts*' of Ucunivanua and Naboutini and the various bird species which used to be in abundance have disappeared or significantly declined. Participants thought the loss were due to human activities such as logging, careless tree felling and burning and clearance of land for subsistence and commercial use and for settlement. The Solomon Islands participants highlighted food were not bearing well, sago palms and sticks used for building traditional homes were highlighted as becoming scarce.

3.1.3 Common Problems;

The most common climate change impacts highlighted by youth from Fiji, Tuvalu and the Solomon Islands were; soil erosion, cyclone, storm surge, tidal waves, and sea level rise. Other natural threats identified were earthquake and tsunami, highlighted by the Solomon Island workshop participants.

Soil erosion believed to be caused by heavy rainfall was highlighted to be causing increasing silt and sedimentation affecting food gardens, soil features, rivers, coastal environment inshore fisheries and coral reefs.

Other common climate change related problems highlighted were cyclone, strong tidal waves, storm surges, flooding, sea level rise, drought, and coastal erosion. The extent of these problems were not delved into during the workshops, although it is clear the communities are susceptible to these problems and thus posing additional serious threats to their already limited land and fragile resources such as water sources, food gardens, village homes, infrastructure, economy, marine and terrestrial resources.

3.1.4 Youth Contribution;

To support local resource management efforts, youth participants highlighted the following as their contribution:

a) Theatre productions for community awareness raising by addressing the following;

- Loss of biodiversity – loss of fruit trees, native trees, birds, coastal and marine species
- Community vulnerability to climate change impacts
- Climate change impacts on culture and tradition
- Human migration
- Climate change impacts on land, marine and coastal biodiversity
- Causes of climate change such as green house gas emissions, use of fossil fuels, deforestation
- Climatic hazards and preparedness for; cyclone, sea level rise, flooding, storm surge and erosion
- Unsustainable land use practices such as careless tree felling and burning
- Unsustainable marine use practices threatening depletion of resources
- Waste management

b) To implement in their respective village communities;

(Listed below are activities carried out by the project country youth)

- Dug rubbish pits to reduce littering and dumping of rubbish on the coast and in the sea.
- Organised coastal clean up to reduce breeding of insects and related diseases, and to improve appearance of their shores.
- Built native plants and mangrove nurseries.
- Planted mangroves and native trees as adaptation for climate change impacts such as soil erosion, loss of soil fertility, silt and sedimentation affecting food gardens, coast and fishing grounds.
- Respect for their village marine protected areas.
- Assisted with village preparedness for extreme climate events such as cyclone, flooding and storm surge.
- Addressed in respective village council meetings youth concerns for the following;
  - careless tree felling
  - preparedness for extreme climate events and need for an evacuation centre
  - enforcement of laws against the use of poison in fishing, overuse of mangroves, over-fishing
  - monitoring of the marine protected area in their fishing ground
- Raised awareness within their respective village communities on the following; waste management, coastal protection, marine resources management, land use management, endangered and extinct species of plants including fruits trees/food crops and birds, climate change causes and impacts on biodiversity and connectedness to sustainable development.

Pic. 23 Fiji's Naboutini community youth waste management initiative

Pics. 24-25 Youth reforestation initiative (planting of breadfruit trees)

3.2 Community Awareness Raising Performances

Community Theatre groups established or strengthened through this project conducted community awareness performances. As a result the following were achieved.

a) For the second project phase:

- A total of 23 climate change awareness raising performances were conducted to a total of approximately 4,130 people
  - Fiji community theatre groups conducted 16 performances to a total of 3, 050 people
  - Tuvalu conducted a total of 5 performances to approximately 500 people
  - Solomon Islands conducted a total of 2 performances to approximately 580 People

- A live radio broadcast of the dramas and the community theatre members were aired live on the Tuvalu National Radio Broadcast during the National Environment Week Celebration

b) For the first project phase;

- A total of 28 awareness raising performances were conducted by Fiji community theatre groups to approximately 5,000 people.

Pics. 26-27 Community Theatre Performance in Fiji

Pics. 28-29 Solomon Islands' Pitudila Community Theatre Performance

3.2.1 Impacts on Youth Engagement in Community Awareness Raising;

As a result of raising awareness youth from project communities highlighted the following:

- They have increased concern for the preservation of coastal, land and marine resources, for example when they walk past mangroves they ensure seedlings planted are growing well and replanting ones that have been broken; they are discussing with peers and family members about preservation and compliance with village and government laws regarding sustainable use of natural resources, including waste separation and proper disposal; they have heightened awareness of their natural resources and some highlighted when fishing or planting in their food gardens they are more conscious now then before about sustainable practices and their benefits; some highlighted addressing others in their village not to burn leaves and plants but to compost them and explained the reasons such as burning will destroy the soil affecting their ability for cultivation.

- Increased confidence in public performance, for some it was public speaking but all revealed being a part of the awareness raising group has been a positive learning experience. Elders from project communities highlighted their appreciation for the project engaging youth and noted improved changes for example, several relatives have highlighted their delight in seeing their youth who once were overly shy are now able to face the crowd, perform and speak quite confidently. In addition, village community elders and parents highlighted appreciation for engaging youth and proud they were addressing such important issues in the district, provincial and national level and doing some activities too in the village.

- Some other impacts highlighted by youth were; enhanced drama skills; appreciation for opportunity provided to create climate change and environment protection dramas, songs and dances; working as a team; opportunity to travel and for respectable purpose to help other villages; increased understanding about the climate change and variability, biodiversity, and sustainable development; appreciation for meeting new people they would otherwise have not had the opportunity to meet; taking mental stocks of natural resources in their community and heightened commitment to ensure their preservation and sustainable use; appreciation for government, NGO and donor efforts in assisting their village communities with conservation of natural resources; appreciation for emphasis on conservation of resources for the benefits of future generations; increased interest in their respective community natural resource conservation projects and efforts; interest in assisting with monitoring natural resource use in their village; interest and availability to work with other communities and schools in the use of drama as a tool for exploring and raising awareness on climate change impacts on biodiversity; increased commitment to let as many people as possible understand the impacts of climate change on biodiversity and adaptation as a way of life; increased appreciation for biodiversity including birds, and unseen colonies of living things in the forest and in the sea; would like more opportunities to raise awareness in more village communities.

Pic. 30 Tuvalu Community Theatre Group raise awareness on climate change

3.2.2 Some comments from audience where theatre groups performed;

Given below, are comments from some of the audience where the theatre groups performed.

a) What is the drama about?

Climate change; forest and marine life; development; environment; disasters; the future weather; relationship between the climate, nature and culture; global warming; climate change and migration; global warming and sea level rise; transportation create more carbon dioxide; development in the right way; cyclone and storm surge; nature; development that will not damage the environment; protection of marine areas; land destruction, abuse of nature; disasters…cyclone, storms surge and floods; preparation for disasters such as cyclones and climate change; pollution and waste destroy nature; deforestation and soil erosion; not to cut trees; littering and putting them in their right places; climate will make us lose traditional medicine from plants and trees; know first aid; planning to counter disasters;

b) What is the drama trying to tell you?

Climate is changing and we can lose a lot of nature on land and sea; to lessen the amount of carbon dioxide released into the atmosphere by not cutting trees…instead to plant them more and decrease number of cars run by fuel; protect the environment; protect the marine and land resources; waste and pollution destroy marine life and not to use poison and dynamite for fishing otherwise we lose plenty fish; proper waste disposal; reduce, reuse & recycle; don't pollute the ocean; separate rubbish and think of good way to dispose them that will not harm the environment; don't rubbish the coast; think first before doing any development … will it cause little or big damage to the environment; not to use small net for fishing…the sea is like a village of marine creatures; global warming will increase sea level, disasters will happen more and people in my country and living things will stand little or no chance for good life and survival; think about the future when I use anything from the environment; climate change will sink my island; protect the environment for my future generations; not to destroy land so living things there will not be lost forever; climate change will force us to migrate; loss of nature and loss of people's identity; use the right kind of development that keeps abundance of nature for the future generation to enjoy and not like the dinosaur story; to respect relationship between living things on this planet; climate change will cause migration of birds and fishes; be environment friendly; to protect plants and trees so we can still use as medicine; climate change will make us starve and poor; be good to nature and nature will be good to me; not to burn and cut trees carelessly; preparedness for climate

change should be my way of life; keep number of living things as in creation and not decrease; I should take only what I need from the sea; grow different kinds of fruit trees; corals are very important so to not destroy them; protecting marine life will increase the number of fishes; climate change is real; temperature will increase more in the future; be prepared for disasters; sea level rise will destroy coasts and reduce land size; humans are making the earth grow warmer and will cause climate to change; not to disturb the balance in nature; humans are upsetting nature; climate change will make bad development worse and the future generation will suffer; stock food through marine and land reserves and first aid; to have a disaster and evacuation plan for my village and family; know how to do first aid and keeping first aid ready; take care of coasts and plant more trees there; more poor if we are not prepared for the climate change disasters; to plant again if tree is cut; not to burn trees.

Pic. 31 Youth climate change scenario simulations

c) Do you think you can do or not do what the drama is asking you?

All forms indicate yes.

d) Was there anything in the drama you did not understand?

All forms indicated audience understood the messages except for the following-

- Have more costumes.
- Some actors to speak louder or use microphone
- Thank you for bringing this message, I learnt a lot of new things.

e) What did you like about the performance(drama, songs, dance, etc)?

- The dramas were short and sweet, can make a big production
- The messages were clear, enjoyed the drama and song
- Excellent performance, good to take around the country
- Good to see young people addressing very important issues
- The performance was great, thank you
- Liked the characters, the story and the song and dance.
- Messages were loud and clear, keep up the good work.
- Liked the song at the end and thank you for the drama. Well done.
- Characters were believable, drama and dance were excellent
- Great work by the young people to bring out important topics

- Thank you for the inspiring performance
- The characters were good and exciting drama
- Liked the performance and performers
- Clear message, well done performance and should go around the country
- Enjoyed the whole performance
- Wishing you all the best in your future performances
- Good selection of characters
- Entertaining and educational, thank you
- Very happy for bringing this drama and message, thank you
- Need more of this type of entertainment to encourage more young people to get involved
- These things are happening and people need to know and do
- Admire young people in the group
- Shy nephew now confident in public
- Talented youth involved in useful work that helps our community
- The messages are very important and the whole country should see this performance
- The costume helped make the message clear
- Important message for everyone to hear and see
- Messages on climate change and effects on the environment
- Funny characters
- Truth about possibility of migration due to climate change
- Good actors make believable performance
- Actors were young and proud of their performance
- Messages were powerful, thank you for coming to share this
- Learnt a lot about climate change
- Protection of the environment, should take to other communities.
- More young people to be involved in this program. Keep up the good work.
- Food and livelihood affected by climate change
- Good team work
- Very educational
- Educational and fun

f) Was there anything you did not like about the performance?

All forms indicated 'No' except for the following;

- Thank you for the performance. Need more time to discuss after.
- More costumes.
- Better staging not too far from audience.
- Great performance, but program was too short. Have more dramas.
- Enjoyed everything and the messages…should take this around to all communities in the district.

g) Do you have any suggestions to improve the performance?

Most of the forms indicated 'thanks', 'good', 'well done' except for
For the following;

- More time for discussion after performance
- Very interesting topics, need more time for discussion
- More costumes
- Invite people to come closer to the performance stage
- Have more than one drama and make program longer
- The play was short and understandable, thank you.
- The group to go to other communities too
- More programs like this
- Everyone to hear the message and do
- More performances in other communities because it is very useful
- Thank you for encouraging protection of the environment for our future generation

- Everything was great
- Thank you for coming and sharing this message
- Involve more young people.
- A very useful program and interesting to us in the village
- More community leaders to hear this message
- Thank you for being good examples to the young people

Pic. 32 Climate change song by the Tuvalu Community Theatre Group

Pic. 33 Scenario simulation on loss of cultural identity

3.3 Capacity Building Workshop On Community Based Participatory Climate Change Risk Assessment and Adaptation Planning

As a result of these workshops, a total of 127 people from the project communities in Fiji, Solomon Islands and Tuvalu have enhanced knowledge and gained skills in climate change risk assessment and adaptation planning. Below are the results of these workshops from the 3 project countries.

3.3.1) Climate Change Related Problems Affecting Biodiversity:

A) Fiji:

The Fiji Islands lie between the latitudes of 12° and 21° south of the equator and longitudes of 177° east and 175° west. Fiji is made up of 320 islands with a total land area of 18,376 sq km and ocean area of 1,290,000 sq km. It comprises two largest islands; the biggest is Viti Levu which is 10,390 sq km and the second largest is Vanua Levu with an area of 5,538 sq km. The remaining islands are clusters of groups of small islands. Viti Levu and Vanua Levu are both mountainous. The highest peak in Viti Levu, Mt. Victoria is 1,323 m separating the east from the west and Vanua Levu's Nasorolevu peak is 1,023 m. Fiji has a mild tropical maritime climate throughout the year. The wet seasons are from November to April and dry season from May to October. Fiji's temperatures range from 20°C in the cooler months and up to 30°C in the summer. The windward side of Viti Levu has an average rainfall of 165-180 cm of rainfall per year. In comparison, the leeward side gets 2000 mm per year. Fiji has a population of 800,000 people and it's capital is Suva on Viti Levu island.

The 3 project targeted provinces in Fiji are Lakeba in Saqani, Cakaudrove, in *Vanua Levu* and Naivuruvuru in Verata, Tailevu and Vunisinu in Dreketi, Rewa (highlighted in blue) are on *Viti Levu* island.

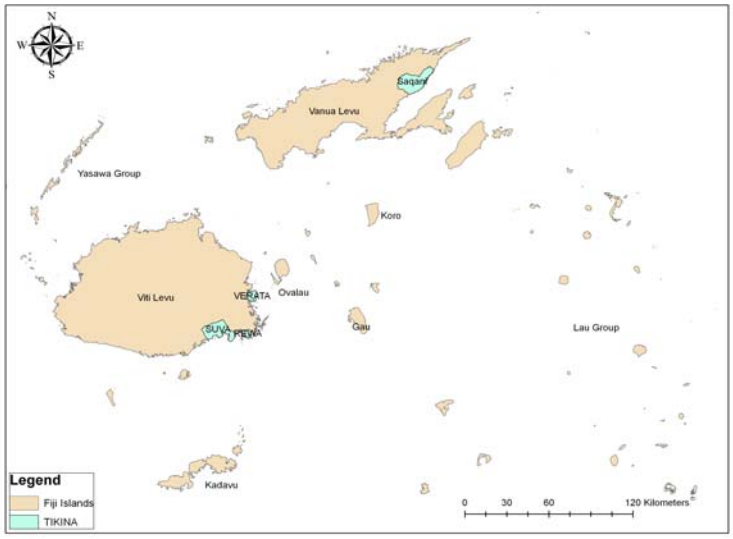


Fig. 7 Fiji Map; Project sites are highlighted in blue

The Fiji Islands are susceptible to natural disaster occurrences such as cyclone, storm surge, flooding, landslide, drought and climate change. The major climate change related threats highlighted by workshop participants as affecting biodiversity were flooding, soil erosion, coastal erosion, sedimentation, sea water intrusion and sea level rise.

A1) **Vulnerabilities – Climatic impacts on biodiversity**

Workshop participants explained flooding is due to excessive heavy rainfall, storm surge, salt water intrusion and possibly sea level rise. Flooding impacts village environment through

stagnation of water, creating health risks such as water borne diseases, dengue fever, typhoid and skin diseases; muddy village and stench of mud in the village; pollutes drinking water sources and affects supply, such as strong flood currents breaking water piping; damages crops and affects crop growth through salination of soil. Flooding also affects roads already in poor condition in these rural project communities, affects transportation for education, to markets for sale of marine and agriculture produce and general movement. Also, house foundations are being ruined due to corrosion from sea water.

Other impacts of heavy rainfall believed to be climate change related are soil erosion and run offs causing siltation which are damaging food gardens and commercial crops; affecting crop growth and productivity, soil quality and heavy sedimentation on, river systems, coastal habitats and coral reefs, affecting marine life and contributing to depletion of marine resources. Other causes of soil erosion highlighted were logging, careless tree felling and burning.

Pic. 34 Stagnant water after rainfall in Vunisinu village, Fiji

Participants observed coastal erosion happening. It was highlighted as caused by soil erosion due to heavy rainfall, storm surges and possibly sea level rise. The impacts were loss of land e.g. loss of 50 meters of old village site which is of sentimental value to the villagers of Naivuruvuru in Tailevu; loss of coconut and native trees which used to grow along the coast of Lakeba village in Cakaudrove and some at Vunisinu in Rewa; and a few Vunisinu homes which were a few meters from the coast are now right at the edge.

Pic. 35 Vunisinu village house on stilts

Sea water intrusion was also raised and believed to be climate change related. Intrusions were believed to be caused by high tide, strong winds, floods, storm surge and sea level rise. Participants highlighted the impacts of intrusion are damaging food gardens (subsistence and commercial), plants and trees; affecting soil fertility, crop growth and yield.

Some participants observed sea level rise is causing coastal erosion and salt water intrusion. Sea level rise has caused coastal erosion, loss of land, loss of coastal trees and plants and threatening loss of homes and relocation of inhabitants.

Cyclone, drought and storm surge were highlighted as climate change issues that will have more damaging impacts on biodiversity then they have experienced in the past. The impacts will cause loss of varieties and severe damages of natives trees, birds, plants, fruit trees, subsistence and agricultural crops; soil; loss and destruction of wetland resources, habitats and ecosystems causing depletion of marine life stocks; change of landscape and loss of land; increased salt water intrusion affecting food gardens; fresh water sources and acquifer contamination; affect livestock; inundation of coastal areas; threat to human lives, health, damages to human habitats, property, infrastructure and disruption of social and economic activities.

According to the Fiji project community members' observations, some changes in biodiversity raised were; loss of '*Kula*' birds, ducks, owls, Fiji frogs, bamboo plants, decline in frangipani trees (a totem tree for the Navakavu tribe), Tahitian Chestnuts, loss of varieties of fruits trees, decline and loss of varieties of emergency root crops; decline in some varieties of crustacean species and depletion of marine resources. Some of the losses were highlighted as caused by extreme climate events such as droughts and cyclones; land clearance for agricultural purposes such as cattle farming, logging, crop growing for subsistence and commercial, development, introduced and alien invasive species, over harvesting of marine resources, use of unsustainable fishing practices, soil erosion and heavy sedimentation.

A2) **Vulnerabilities - Human impacts on biodiversity highlighted during the workshops are;**

i) Land resources;

Some of the problems highlighted as human impacts on land resources were; improper waste disposal mainly due to lack of disposal services, lack of land for disposal and lack of awareness on waste management; the overuse of chemical spray for agricultural crops due to lack of knowledge for proper usage; widespread careless tree burning and felling due to land clearance for food gardens or for planting commercial crops; land development; lack of technical skills to maintain fresh water supply; poor drainage systems; poor building structures (homes) needing repairs or renovations and poor or no guttering.

ii) Coastal and marine resources;

Workshop participants highlighted over harvesting of mangroves for firewood and construction; coastal developments; unsustainable fishing practices such as the use of fish poison, dynamite and small mesh nets; liquid and solid waste and pollution including untreated sewage, animal waste, old batteries etc; lack of awareness of marine resource management; and poaching.

iii) Other Problems;

Some attitudes and social problems highlighted as additional major stresses include unemployment; heavy reliance on natural resources; apathy; lack of education causing lack of skills; lack of awareness of significance of natural resources, lack of awareness of sustainable resource use, lack of capital, lack of cohesion amongst community members due to individualism; lack of compliance and enforcement of village council laws and decisions

regarding village life and against the abuse of natural resources.

A3) Capacities

Coping capabilities are as follows; availability of services such as electricity, government water supply, schools, dispensaries, roads although not in good condition, public bus transportation, community water tanks; houses on stilts; flush, water seal and compost toilets; communication through community telephones and mobile phones; radio; government installed flood gates; resource owners, and have land for food gardens and fishing grounds for food and cash; relatively abundant natural resources; handicraft skills such as mat weaving; carpentry skills; farming and fishing skills; remittance from relatives working abroad and in Fiji's urban centres; government and NGOs initiated development projects; district and provincial administration of community concerns and developments; traditional management structure; Locally Managed Marine Areas community programs in the district; community cohesion for development projects such as church building, footpaths, renovation of bridges, weekly village clean up, fundraising drive; community based development and environment-related committees; village organizations such as the women, men, youth groups; existing knowledge of traditional medicines, emergency/disaster root crops, and early warning signs; political will and faith in God.

A4) Discussion:

Coastal erosion and sea level rise indicate the increase in sea temperatures due to global warming. Another major impact of sea temperature rise is coral bleaching. Although these workshop results are valid, they are still anecdotal and qualitative and participants' observations may have some substance to them, there is no clear scientific evidence of the causes of coastal erosion and sea level rise in these project communities. However, a scientific research was conducted in 2007/2008 in Navuruvuru in Verata, Tailevu on the East coast of Viti Levu, (one of our APN/USP project sites) by the World Wide Fund for Nature in collaboration with Conservation International and the University of the South Pacific on climate change impacts on mangroves and coral reefs. The results revealed extensive coral bleaching in the Verata coral reefs. This may be evidence to substantiate communities' observations of climate change highlighted during these workshops.

In addition, it seems that rising surface temperatures due to global warming is causing extensive heavy rainfall. The impacts of which are flooding, soil erosion and run offs, major problems of silt and sedimentation, and salt water intrusion affecting biodiversity such as; damage to food crops (commercial and subsistence), crops growth and productivity, soil stability and fertility, fresh water sources and supply, land for agriculture and habitation, rivers, streams, coastal and coral reef fisheries and ecosystems are affected, consequently threatening food and livelihood sources and peoples' way of life. However, reports from the local meteorological centre regarding rainfall patterns over these project sites and over the past two years revealed there has been no significant increase in rainfall pattern. This may mean that heavy rainfall which may be for shorter periods are having damaging intensity, such as the flash floods in the Western Division of Viti Levu Island in Fiji, in early 2009, caused significant damages to infrastructure, humans' property, biodiversity, food and livelihood sources totalling approximately FD$15 million, and could also mean human's activities are contributing to and exacerbating climatic impacts on biodiversity.

The significance of these findings reveal climate change and variability impacts are threatening the sustainability of Fiji's biodiversity and communities. These findings confirm the urgency for communities in Fiji to be made aware of climate change impacts in order to implement crucial adaptation measures that will ensure sustainability of their natural resource abundance and security of their sources of food and livelihood and maintaining their tradition and culture.

Although Fiji communities are just beginning to understand climate change and its impacts, the current major hindrances to adaptation are firstly people's lack of awareness; not viewing holistically the connectedness of biodiversity and sustainable development in order to fully grasp the ravaging implications of climate change on their natural resources in the future; lack of technical assistance and lack of funds. Fiji communities need empowerment in biodiversity inventory documentation (community based records instead of outside), in order to monitor changes, to know what is available and what is in danger of extinction and ensure necessary efforts are taken to maintain abundance. A fine example is the Fiji Locally Managed Marine Areas Network where its communities are trained to carry out their own monitoring surveys of selected significant indicators as part of their marine resource management efforts. There is need to empower and utilize existing local administrative machinery to provide more assistance and support in ensuring integration and mainstreaming of climate change adaptations into district, provincial and national development plans. Also, there needs to be more promotion and facilitation of communities maintaining and passing on of traditional knowledge from elders to the youth regarding emergency root crops e.g. families of yam etc. to encourage the planting of more of these; traditional food preservation methods and its practice so the taste is not lost; early warming signs, more empowerment programs for community based youth engagement in resource management specifically on climate change adaptation, and organization of government declared annual village disaster drills or simulations to keep community disaster response plans fresh and to reduce vulnerability during extreme event onslaughts, which are expected to increase in intensity and frequency due to climate change and global warming.

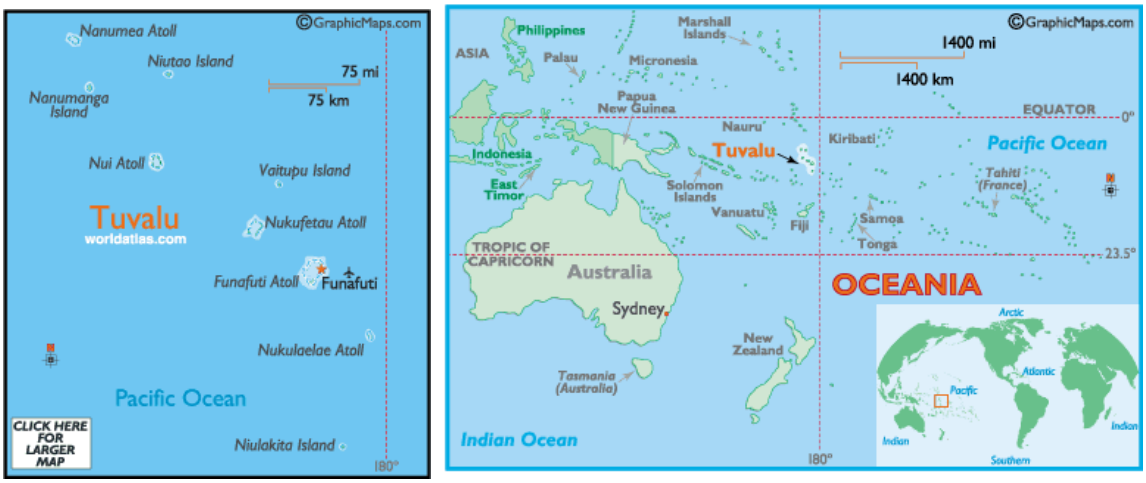
***A4*) Needs:**
These are identified needs for the project communities in Fiji:

- Technical training on maintenance of community water pipes.
- Community training on better land use and marine management systems.
- Community training on water and waste management.
- Assist communities repair and renovate roofs and guttering as alternative water source.
- Training for newly established community climate change committees on roles and responsibilities of implementing and monitoring adaptation activities.
- Continued awareness raising programs (drama, radio, TV, DVD and print media) on climate change implications on biodiversity.
- A video documentary production on adaptation work carried out by communities. To highlight community adaptation efforts, enhance project communities' profiles and increase outsiders interest and involvement in climate change adaptation. Also, to assist communities evaluate and monitor their own adaptation activities and bring results to policy makers and donors who cannot otherwise go to these communities.
- Assessment needed to determine causes of coastal erosion.
- Extension of project to assist project theatre troupes carry out more community awareness performances on climate change impacts on biodiversity.
- Further scientific studies on project communities to expand, validate and substantiate project results.
- Identification and documentation of traditional emergency root crops and passing on information to younger generation
- Communities' identification and documentation of community biodiversity inventory, to assist in monitoring and adaptation to climate change (community based records)
- Extension of project to other communities in Fiji

B) Tuvalu

Tuvalu is one of the smallest countries in the world, was formerly known as the Ellis Islands. This low lying group of islands is made up of nine coral atolls, with a total land area of 26 square kilometres and an ocean area of 900,000 square kilometres. Tuvalu's highest elevation is 4.6 meters -- 15 feet but most of it is less than a meter above the sea. Tuvalu lies south of the equator and west of the International Dateline. It has a population of approximately 10,000 people. Tuvalu's capital is Funafuti. Like the rest of the Pacific Islands, Tuvalu is susceptible to natural disasters and vulnerable to climate change.

The project sites in Tuvalu are Funafuti and Funalala. The major climate change related threats highlighted as affecting their biodiversity were coastal erosion, sea level rise, strong winds and hurricanes, tidal waves, flooding, and drought.



Figs. 8-9 Tuvalu Map

Workshop participants highlighted coastal erosion was due to sea level rise, strong tidal waves and winds. Impacts of coastal erosion and rising sea level highlighted were destruction of coastal trees such as coconut trees which is a source of income for many locals, causing salt water intrusion in food gardens and fresh water sources and threatening loss of already limited land and vegetation. Frequent storms, tidal waves and strong winds were highlighted as happening frequently and also causing salt water intrusion, flooding, salination of food gardens, vegetation and water sources, and increasing coastal erosion.

Pic. 35 Tuvalu islets (*L. Tafue*)

Pic. 36 Funafuti, Tuvalu (*L. Tafue*)

Salt water intrusion seeping through from underground is also causing flooding. Participants highlighted flooding occurring in areas never flooded before. Intrusion affected food gardens, vegetation and water sources through salination. Contaminated water source has led to heavy reliance on rain water.

Cyclone damages coral reefs and affects fish stock supply, coastal areas, and threatens peoples lives, property, infrastructure, and economy. Drought would exacerbate their current water problems and increase health risks such as typhoid and dengue.

Pic. 37 Strong tidal waves in Funafuti (*L. Tafue*)

Pic. 38 Funafuti, Tuvalu (*L. Tafue*)

Some observations community members' highlighted were the decline in vegetation, loss of coastal trees such as coconut trees and decline in various fish species. Strong tidal waves and winds causing flooding, is occurring more often than before and extreme weather events occurring out of their expected seasons. There is grave concern by the community members regarding their future on their homeland due to climate change impacts and pray they will remain as a people on their islands for many more generations.

Pic. 39 Funafuti islands, Tuvalu (*L. Tafue*)

***B1)* Human impacts on biodiversity highlighted during the workshops are;**

i) Land resources;

Some of the problems highlighted as human impacts on land resources were; improper waste disposal of especially baby diapers; lack of land for disposal and lack of awareness on waste management; lack of land for human settlement and deforestation for development and construction.

ii) Coastal and marine resources;

Workshop participants highlighted increasing population; lack of reforestation of mangroves and other coastal trees; pollution from sewage and waste disposal; increase in bacterial levels due to pollution and waste from humans and animals pose health risks and outbreak of diseases and possibly ciguatera; increased algae growth threatening corals and consequently fish and other dependant marine life; extraction of coastal resources for construction purposes increasing sedimentation; and over harvesting of marine resources.

iii) Other Problems;

Some attitudes and social problems highlighted as additional major stresses include unemployment; lack of modern equipment for early warning; lack of awareness of climate change impacts and adaptation and expensive economy.

***B2*) Capacities:**

Coping capabilities are as follows; availability of services such as electricity; hospital; roads; water tanks for households; raised houses; toilets; local radio station; school; telephone services and mobiles; Methodist church; fishing and farming skills; community cohesion; government and NGOs assistance; foreign aid for community development projects; community organizations such as for church, women, men, youth etc.; strong family ties; traditional management structure; political will; and faith in God.

***B3)* Discussion:**

These findings are significant as they indicate Tuvalu is seriously vulnerable to the impacts of climate change and variability on their biodiversity. Given the size, geographic location, and limited land resources, the Tuvalu islands are at the forefront of experiencing the worst negative implications of climate change in comparison to Fiji and the Solomon Islands. Whilst Fiji and the Solomon Islands are just beginning to grapple with the impacts of climate change on their natural resources as sources of their sustenance and income, Tuvalu is at the other end of the spectrum with its inhabitants faced with the consideration of migration as an adaptation for a sustainable future. Therefore, climate change implications in Tuvalu threaten the inhabitants maintaining their tradition and culture.

For Tuvalu, the major hindrances to adaptation are limited capital, technical assistance and knowledge and awareness of appropriate adaptation options beyond what they have already applied. The impacts of climate change on Tuvalu's natural resources needs to be looked into and facilitation of community based participatory (with govt. NGOs) discussions and implementation of results for maintaining abundance. There needs to be more empowerment programs for community based youth engagement specifically on climate change adaptation

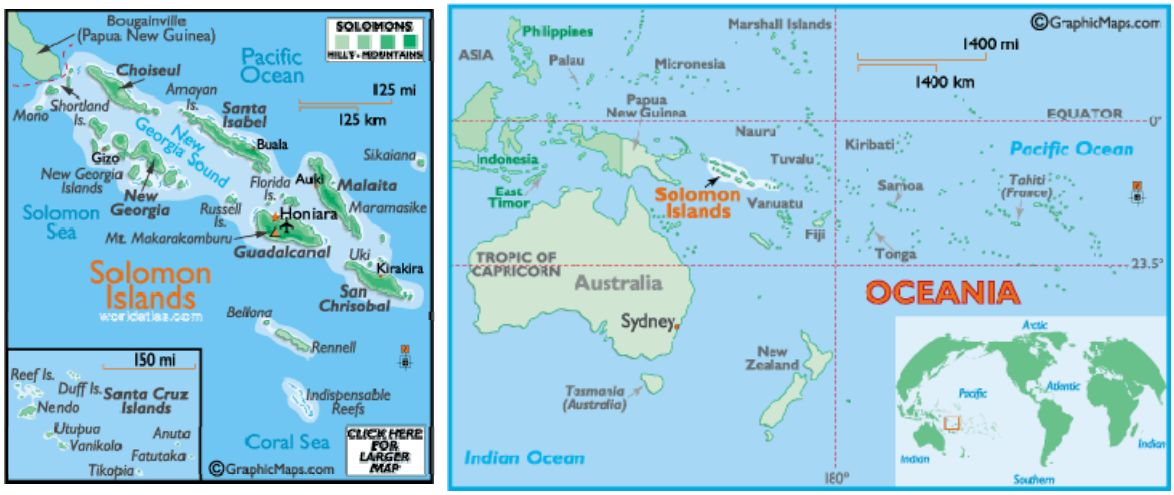
***B4)* Needs:**

- Community training on waste management, particularly the disposal of baby diapers
- Extension of project to assist project theatre troupes carry out more community

awareness performances on climate change impacts on biodiversity
- Further scientific studies on project site to expand, validate and substantiate project results
- Exploration of other forms of vegetation for Tuvalu, such as raised plantations
- Exploration of other adaptation options for flooding
- Extension of project to other islands in Tuvalu

C) Solomon Islands

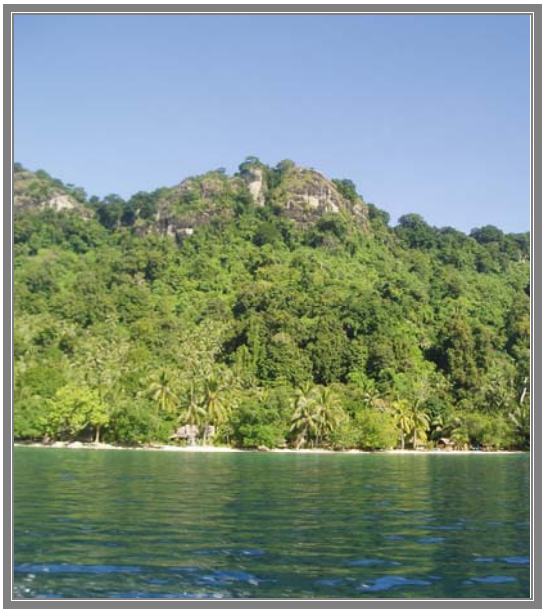
The Solomon Islands is located between latitudes 5° South and 12° South and longitudes 152° East and 163° East in the Pacific Ocean, covering a total land area of 28,785 sq km and an Exclusive Economic Zone of 1.34 million sq km. Solomon Islands consist of a double chain of 6 large islands that make up a total of 997 islands spread across 900 miles. The islands are mountainous, heavily forested, volcanic islands with some active and a few low-lying coral atolls. The climate is humid and warm with mean daily maximum temperature of about 30°C and a mean daily minimum of about 23°C. Rainfall distribution is quite varied with annual average rainfall normally ranges from 3000m to 5000m. Often drought in the country is associated with the El Nino Southern Oscillation phenomenon (ENSO). From December to March, a perios of west to north-westerly monsoonal winds and abundant rainfall can be expected as well as a period where tropical cyclones form and affect the islands. The south-east trade winds blows from around May to October and trigger high rainfall particularly on the windward side of the islands. The major industries are agriculture, forestry and fishing. The Solomon Islands population is 508,000 and the capital city is Honiara.



Figs. 10-11 Solomon Islands map

Workshop participants highlighted erosion as climate change related and due to heavy rainfall causing erosion of land, affecting food gardens, decreasing soil stability and fertility, threatening weak home structures and contributing to coastal erosion, silt and heavy sedimentation in inshore and on coral reefs which are affecting marine life and ultimately food and livelihood sources.

Storm surge was a concern as participants highlighted were occurring more frequently and would exacerbate depletion of marine and coastal resources which they primarily depend on as their major source of livelihood. Storm surge was believed to be contributing to the erosion of their coastal areas and causing flooding. Cyclone is an expected annual extreme event which participants raised as one of their major climate change related concerns. They highlighted it would cause major damages to their fragile resources on land such as forests, food gardens, homes and coastal and marine resources.



Pic. 40 Leitogo village on the narrow coastal plain

Drought and landslide were also highlighted as climate threats. Drought would adversely affect fresh water sources, damage food gardens, threaten loss of biodiversity on land, increase bleaching of corals thus threatening depletion of marine species. Landslides will change land features and threaten source of food supply in food gardens and livelihood sources through damage of crops, livestock and a risk for homes and peoples' lives.

Pic. 41 Traditional Solomon Island House (Leitogo village)

Workshop participants noticed rise in sea level and pointed out their dug wells which they used to use couple of years ago are now contaminated with sea water and therefore no longer in use. For fresh water, participants depend on water from the streams, two community water tanks and rain water. Coral bleaching was also highlighted as occurring in their marine areas.

Pic. 42 Leitogo village foreshore

Community members observed climate change weather pattern was causing agricultural plants not to follow the seasonal calendar; loss of bird and native tree species; and increasing hot temperature.

***C1*) Human impacts on biodiversity highlighted during the workshops are;**

i) Land resources;

Some problems highlighted are lack of land for human habitation and food gardening; logging; careless tree felling and burning through land clearance for subsistence and semi commercial farming; bush fires; shortage of food gardens; unfenced animals; poor village building structures; stealing from others' food gardens; decline of materials used for traditional building e.g. sago palm leaves and sticks; decline in various species of traditional emergency root crops and participants highlighted concern for the loss of this knowledge and would like to see its encouragement for replanting and training the young generation to recognise them.

ii) Marine resources;

Community members highlighted dynamite fishing; night time diving; extensive coral harvesting for lime; and over harvesting of marine resources as additional stresses that will exacerbate climate change impacts.

iii) Other problems highlighted:

***C2)* Capacities;**

Coping capabilities are as follows; availability of services such as schools, health centre, community water tanks; houses on stilts; resource owners, and have land for food gardens although inadequate and fishing grounds for food and cash; relatively abundant natural resources; traditional house building skills; farming and fishing skills; Solomon Islands Development Trust Village Demonstration Workers program, district and provincial administration of community concerns and developments; traditional management structure; Locally Managed Marine Areas community programs in the district; community cohesion for development projects such as church building, footpaths; community based development and environment-related community; village church organizations such as the women, men, youth groups; existing knowledge of traditional medicines, emergency/disaster root crops, and early warning signs; political will, Anglican church and faith in God.

***C3*) Discussion:**

The significance of these findings reveal climate change variability impacts are threatening the sustainability of Solomon Islands' biodiversity and communities. These findings also confirm the urgency for communities in the Solomon Islands to be made aware of climate change impacts in order to implement crucial adaptation measures that will ensure sustainability of their natural resource abundance and security of their sources of food and livelihood and maintaining their tradition and culture.

Similar to Fiji, the Solomon Island communities are just beginning to understand climate change and its impacts. The current hindrances to adaptation are firstly people's lack of awareness; lack of awareness of adaptation options; not viewing holistically the connectedness of biodiversity and sustainable development in order to fully grasp the ravaging implications of climate change on their natural resources in the future; lack of technical assistance and lack of funds. The Solomon Island communities need empowerment in biodiversity inventory documentation (community based records instead of outside), in order to monitor changes, to know what is available and what is in danger of extinction and to ensure maintenance of abundance. There is need to empower and utilize existing local administrative machinery to provide more assistance and support in ensuring integration and mainstreaming of climate change adaptations into district, provincial and national development plans. Also, there needs to be more promotion and facilitation of communities maintaining and passing on of traditional knowledge from elders to the youth regarding emergency root crops e.g. families of yam etc. to encourage the planting of more of these; traditional food preservation methods and its practice so the taste is not lost; early warming signs, more empowerment programs for community based youth engagement specifically on resource management and climate change adaptation and organization of government declared annual village disaster drills or simulations to keep community disaster response plans fresh and to reduce vulnerability during extreme event onslaughts, which are expected to increase in intensity and frequency due to climate change and global warming.

***C4)* Needs:**

- Community training on better land use and marine management systems.
- Community training on water and waste management.
- Community training on family planning.
- Community training on proper planning of village building structures with consideration of climate change impacts.
- Assistance with supply of water from sources to the village and homes
- Training for newly established community climate change committees on roles and responsibilities of implementing and monitoring adaptation activities.
- Continued awareness raising programs (drama, radio, TV, DVD and print media) on climate change implications on biodiversity.
- A video documentary production on adaptation work carried out by communities. To highlight community adaptation efforts, enhance project communities' profiles and increase outsiders interest and involvement in climate change adaptation. Also, to assist communities evaluate and monitor their own adaptation activities and bring results to policy makers and donors who cannot otherwise go to these communities.
- Assessment needed to determine causes of coastal erosion.
- Extension of project to assist project theatre troupes carry out more community awareness performances on climate change impacts on biodiversity.
- Further scientific studies on project communities to expand, validate and substantiate project results.
- Extension of project to other communities in the Solomon Islands.

3.4 Community Climate Change Adaptation Implementation

As a result of the project, a total of 10 soft measure adaptation activities have been undertaken by this project; 6 in Fiji; 2 in the Solomon Islands and 2 in Tuvalu. The target for the second project phase were 6 soft measure adaptations to be implemented by regional countries, initially Solomon Islands, Tuvalu and Kiribati. Since Kiribati was not included in the 2nd phase of the project, the results concluded 4 adaptations carried out by Tuvalu (2) and the Solomon Islands (2). To suffice, Fiji youth implemented 2 adaptation activities including waste management (digging village rubbish pits) and building 'no littering signs' along village coastal areas.

3.4.1 Fiji Adaptation Projects;

a) Lakeba village in Cakaudrove

This community implemented adaptation measures for soil and coastal erosion as follows;

i) Setting up of a nursery for mangroves and native plants
ii) Planted 1000 mangrove plants and 50 mahogany plants

The benefits are to mitigate soil and coastal erosion, enhance soil fertility and productivity and maintain abundance of mangroves and native trees such as mangroves consequently enhancing food crop yields and stocks of marine species and habitats. In addition, mahogany will provide economic benefits for the village community.

Community members of Lakeba were overwhelmingly grateful for this initiative and are excited about the plants grown, especially the mahogany plants. The village resource management and climate change committee is continuing with monitoring of these adaptation activities and looking at ways of carrying out other activities in their adaptation plan.

b) Vunisinu village in Rewa

Vunisinu village community implemented adaptation measures for flooding as follows;

i) Planted coastal trees
ii) Planted varieties of root crops and fruit trees

The benefits of planting coastal trees and varieties of root crops and fruits trees will increase food security, livelihood source, community health, restocking and maintaining abundance of native root crops and fruit tree varieties.

The project in Vunisinu also includes neighbouring Nalase village. The two villages are demarcated by a small drain between them. They belong to one tribe and were both represented at the APN/USP partnership workshop. The two villages have implemented these above mentioned projects in their respective villages. The villages' Development, Climate Change and Disaster Committee is currently seeking funding to carry out other activities highlighted in their Climate Change Adaptation plan such as building rubbish bins for the village households, making sign boards for waste, coastal and marine management especially their mangrove habitat; acquiring farming tools such as folks, ploughs, wheelbarrows etc. to improve their agriculture project as continuation of their community adaptation work.

c) Naivuruvuru in Tailevu

The Naivuruvuru community adaptation measures for flooding were as follows;

i) Planted fruit orchards
ii) Replanted native coastal trees such as mangroves

The benefits will increase food security, increase livelihood source, enhance community health, and restocking and maintaining abundance of native fruit varieties. Trees planted will help reduce soil and coastal erosion and lessen the likelihood of landslides

during periods of excessive rainfall, will improve soil fertility, increased well being of household and people reap benefits from better management of their terrestrial and coastal environment, decreased sedimentation will improve resilience of their marine environment, maintain high levels of marine resources for their livelihoods, improved health, less outbreaks of skin diseases, diarrhoea and dengue when area is flooded, enable revival of cultural activities, revive landscape with native trees that are culturally significant to them – medicine, building materials, improve and maintain abundance of native tree varieties, protects coastal sites of historical and cultural significance to the villagers, improved well being for villagers having no hardship to relocate and buffer for strong waves and sediment build up.

The community's orchard planting project was implemented but initially failed as the trees died. The villagers are in the process of replanting fruit orchards in a new location with hopes they will grow well. The village climate change project leader organised a mangrove planting day for the village youth to coincide with the National environment week. Other activities such as a training workshop on mangroves and planting; acquiring seedlings for other native coastal trees, training workshops on land use and time management were reported as in progress as the community's efforts to continue implementing activities in their climate change adaptation plan.

3.4.2 Solomon Islands Adaptation Projects;

Leitongo village in the Central Province, Solomon Islands. The activities undertaken were adaptation measures for coastal erosion.

i) Setting up of a nursery for 600 of 4 species of mangroves
ii) Mangrove planting

The benefits will increase the stability of coastal resources resilience. The mangroves reforestation will improve soil fertility, neutralize runoffs and sediments resulting from inland erosion and pollution, improve and maintain abundance of coastal and marine biodiversity and buffer for strong waves.

3.4.3 Tuvalu Soft Measure Adaptation Projects;

The community members of Funalala village highlighted flooding caused by tidal waves as a major climate change issue. Their adaptation activities for flooding are;

i) Mangrove rehabilitation
ii) Coastal tree planting

These activities are in the process of being implemented and will be coordinated by the Tuvalu Association of Non Government Organizations (TANGO), in partnership with the Tuvalu Network of Climate Change (TuCAN) and implemented by the Funalala village community members.

4. CONCLUSION

The project's study aims were to identity the impacts of climate change on Pacific Islands' biodiversity that can threaten their sources of sustenance, economy and maintaining their tradition and culture; to determine how communities can ensure the sustainability of biodiversity, and how community youth can contribute to resource management to ensure sustainability and maintaining abundance of biodiversity.

Based on the study aims the project activities were; (i) to build South Pacific Island youth capacity in drama for climate change impacts on biodiversity; (ii) to conduct awareness raising drama performances; (iii) to build community and youth capacity in participatory climate change risk assessment and adaptation planning; (iv) and to implement identified priority soft measure adaptation options.

As a result of this project, coastal and marine rehabilitation and protection, waste management and food security and agriculture were highlighted and implemented as adaptation measures for climate change and sustainability of biodiversity. Enhancement of awareness on climate change and variability impacts on sustainable biodiversity and practical applications of soft measure adaptations were highlighted and implemented as youths' contribution.

The project findings reveal climate change impacts such as floods, soil erosion, sedimentation, coastal erosion, sea level rise and sea water intrusion are already affecting food gardens, agricultural crops, fresh water sources, inland water, coastal and marine resources and threatening people's health and homes. These impacts have led to the loss and decline of various marine and terrestrial species, modification of habitats and disruption of ecosystems.

These findings confirm climate change and variability impacts threaten Pacific Islands' marine, coastal and terrestrial ecosystems and consequently undermining their food and economic security, as well maintaining their tradition and culture.

These climate change impacts, coupled with human impacts on biodiversity, Pacific Islands' susceptibility to other climatic hazards such as cyclone, storm surge and drought, global warming trends and the IPCC climate change impact projections, indicate Pacific island communities need to take urgent adaptation measures now to be able to maintain their pristine ecosystems, biodiversity abundance and be able to cope with the ravaging impacts of climate change in the future.

5. FUTURE DIRECTIONS

We intend to seek support and assistance to address the gaps identified through this project and communities' highlighted needs as our commitment to building Pacific Islands' resilience to the impacts of climate change and variability

In addition, we wish for support and assistance to extend this project to other communities within these project countries as well as to other countries in the Pacific region.

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Appendices

1. Draft Facilitators Guide – Community Participatory Climate Change Risk Assessment and Adaptation Planning

2. Draft Facilitators Guide – Drama Manual on Climate Change Impacts on Biodiversity

3. Solomon Islands Climate Change Youth Capacity Building Workshop Report

4. Solomon Islands Climate Change Risk Assessment and Adaptation Planning Workshop Report

5. Tuvalu Climate Change Youth Capacity Building Workshop Report

6. Tuvalu Training of Trainers on Vulnerability Assessment Workshop Report

COMMUNITY PARTICIPATORY CLIMATE CHANGE RISK ASSESSMENT AND ADAPTATION PLANNING

FACILITATORS GUIDE

(1st Draft - 2009)

Institute of Applied Science, USP
and the
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- Asia Disaster Preparedness Centre – Community Based Disaster Risk Management
- PACE-SD, School of Geography – USP
- Fiji Locally Managed Marine Areas Network (FLMMA)
- Village community leaders and members of;
    1. Naivuruvuru in Verata, Tailevu, Fiji
    2. Lekeba in Saqani, Cakaudrove, Fiji
    3. Vunisinu and Nalase in Dreketi, Rewa, Fiji
    4. Funala village in Tuvalu
    5. Leitogo village in Sandfly District, Central Province, Solomon Islands
    6. Community Leader and members of Leitogo Village in the Central Islands Province, Solomon Islands
    7. Community leaders of Sisili, Olevuga and Hanipana, Central Province, Solomon Islands
    8. Solomon Islands Resource Owners Association, Solomon Islands
    9. Community leader and members of Funalala in Tuvalu
- Ministry of Indigenous Affairs
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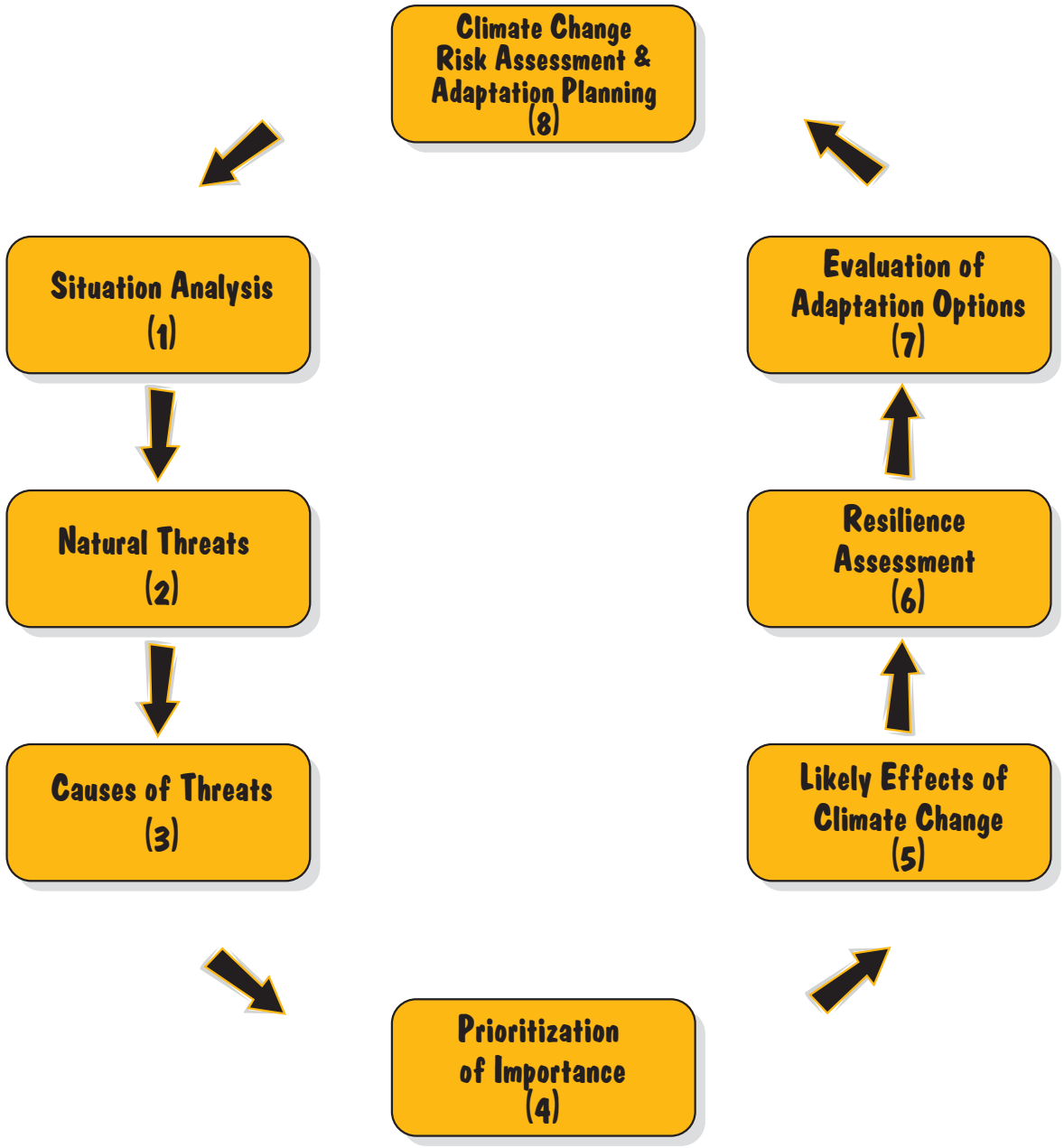
CONTENT

A. INTRODUCTION

Process :



Day One:

1. Situations Analysis (1 hr.)
2. Natural Threats (2 hrs.)
3. Causes of the Threats (2 hrs.)
4. Prioritization of Importance (1 hr.)

Day Two:

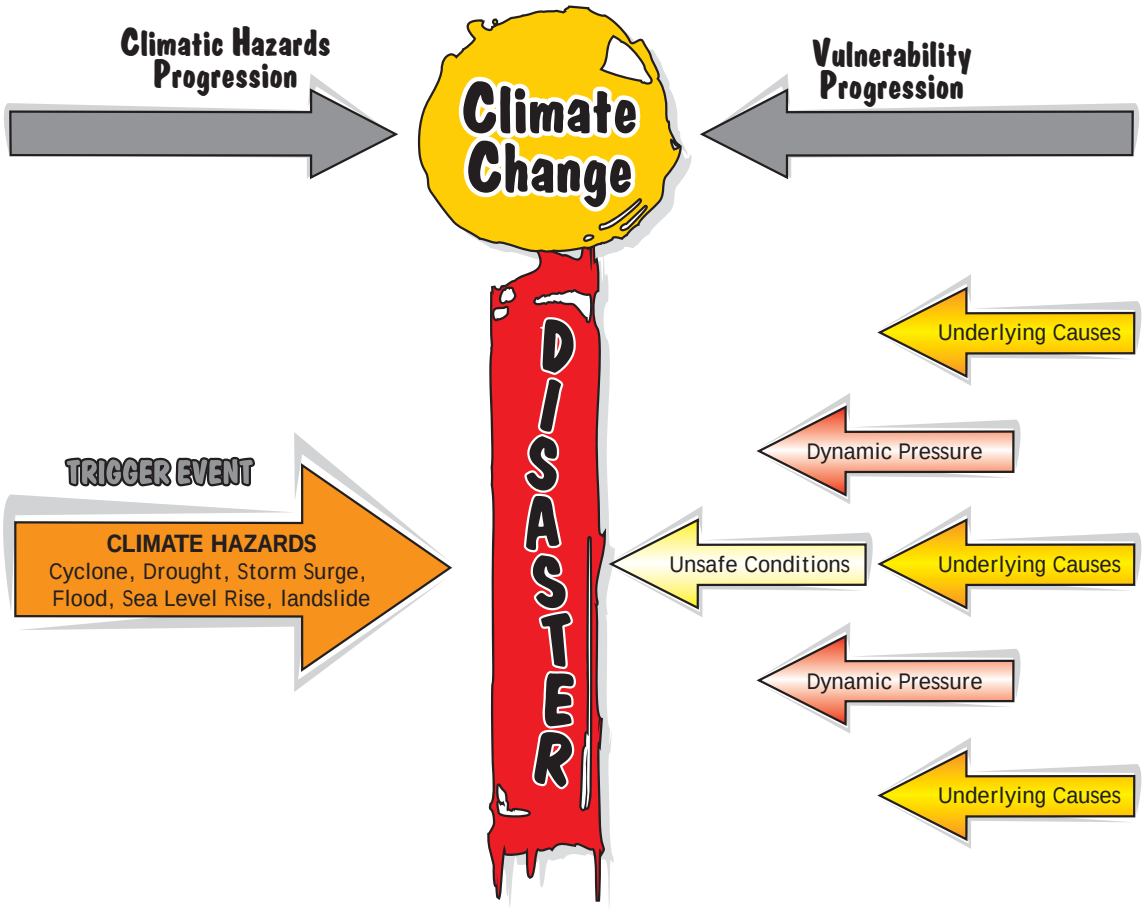
5. Likely Effects of Climate Change (2 hrs.)
6. Resilience Assessment (2 hrs.)
7. Evaluation of Adaptation Options (2 hrs.)
8. Climate Change Risk Assessment & Adaptation Planning. (2 hrs.)

Workshop Design:

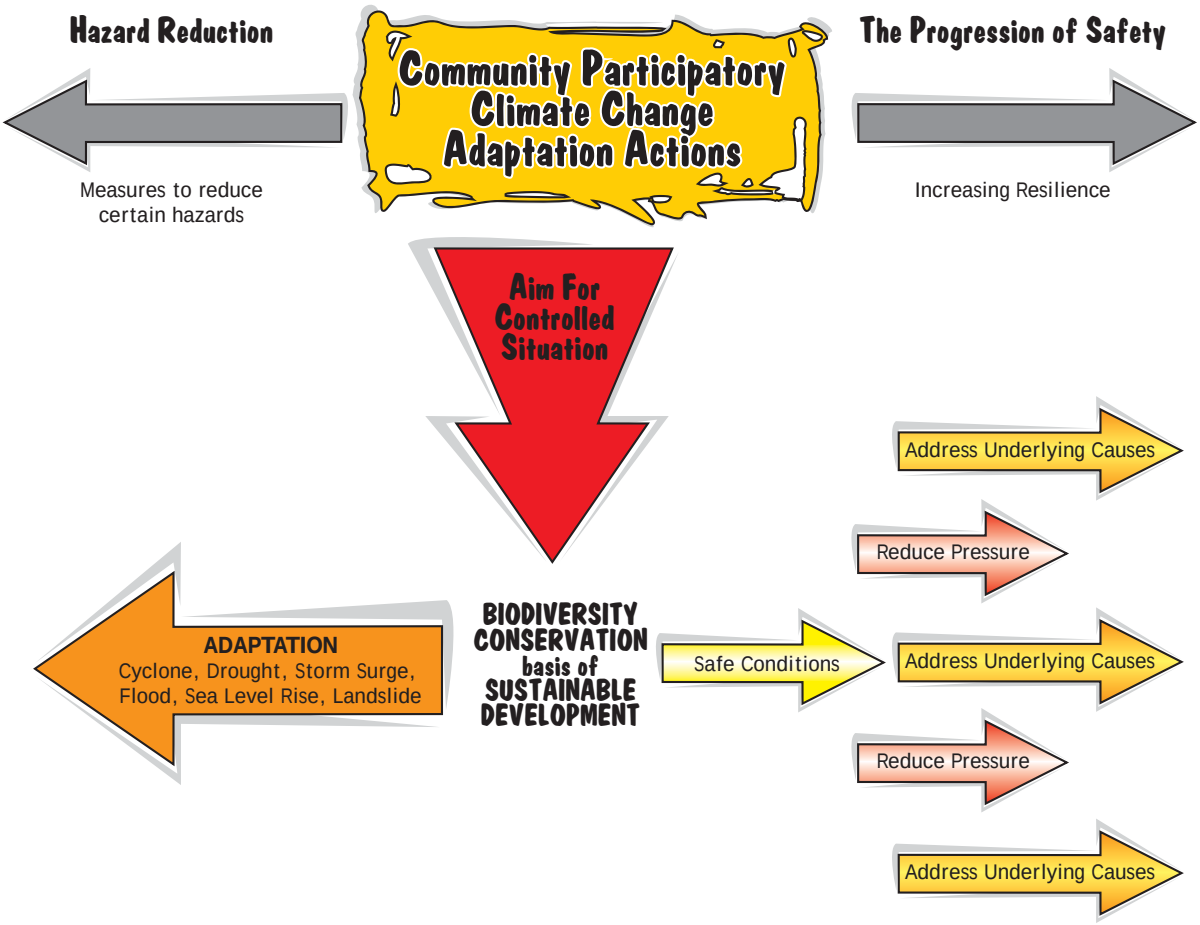
SESSION	METHOD	OUTPUTS
1. Situation Analysis	Community Historical Timeline Community Mapping	Community Time Line Village Map
2. Natural Threats	Mapping Inventory • Coastal & Marine Resources • Land Resources • Community Infrastructure	• Map and Inventory of Coastal & Marine Resources • Map and Inventory of Land Resources • Community Infrastructure Map & names of houses • List of hazards • Description of hazards • Risk Map
3. Causes of Threats	Listing Problems Root Cause Analysis Review Community Resource Management Plan	• List of Problems • List of Impacts • List of Causes (Capacities Vulnerabilities Analysis) a) current situation b) dynamic pressures c) underlying causes • Vision statement and murals
4. Prioritization of Importance	Intuitive and Standard method Ranking together	• Prioritized List of Risks (vulnerabilities & hazards) faced
5 Likely Effects of Climate Change	Information on Climate Change Impacts on Biodiversity and Sustainable Development. Listing Effects of Climate Change a) Now b) In 50 years Ranking Matrix for now & in 50 years Visioning	• Enhanced understanding of climate change & variability, Biodiversity and sustainable development • List of Prioritized Effects for now and in 50 years. • Vision Statement
6. Resilience Assessment	Listing of how they have coped in the past Listing of traditional & modern warning systems used in the past and now Listing of actions to solve or address issues relating to impacts of climate change or meeting development needs	• List of coping mechanisms • List of early warning systems • List of actions or options
7. Evaluation Of Adaptation Options	Ranking of Importance Listing objectives	• Ranking of Important actions • List of objectives for each action • Community will undertake agreed Strategy
8. Participatory Climate Change Adaptation Planning	Action Planning Discussion of forming Committee or Climate change and Disaster Community Project Liaison Officer	• Climate Adaptation Action Plan • Disaster Management Plan • Agreed Strategy • Community CCD Committee or Project Officer/CPLO

What Are We Trying To Do?

To facilitate community assessment of their vulnerability and capacity to be able to develop climate change risk adaptation actions that will ultimately increase their resilience and that of their future generations.

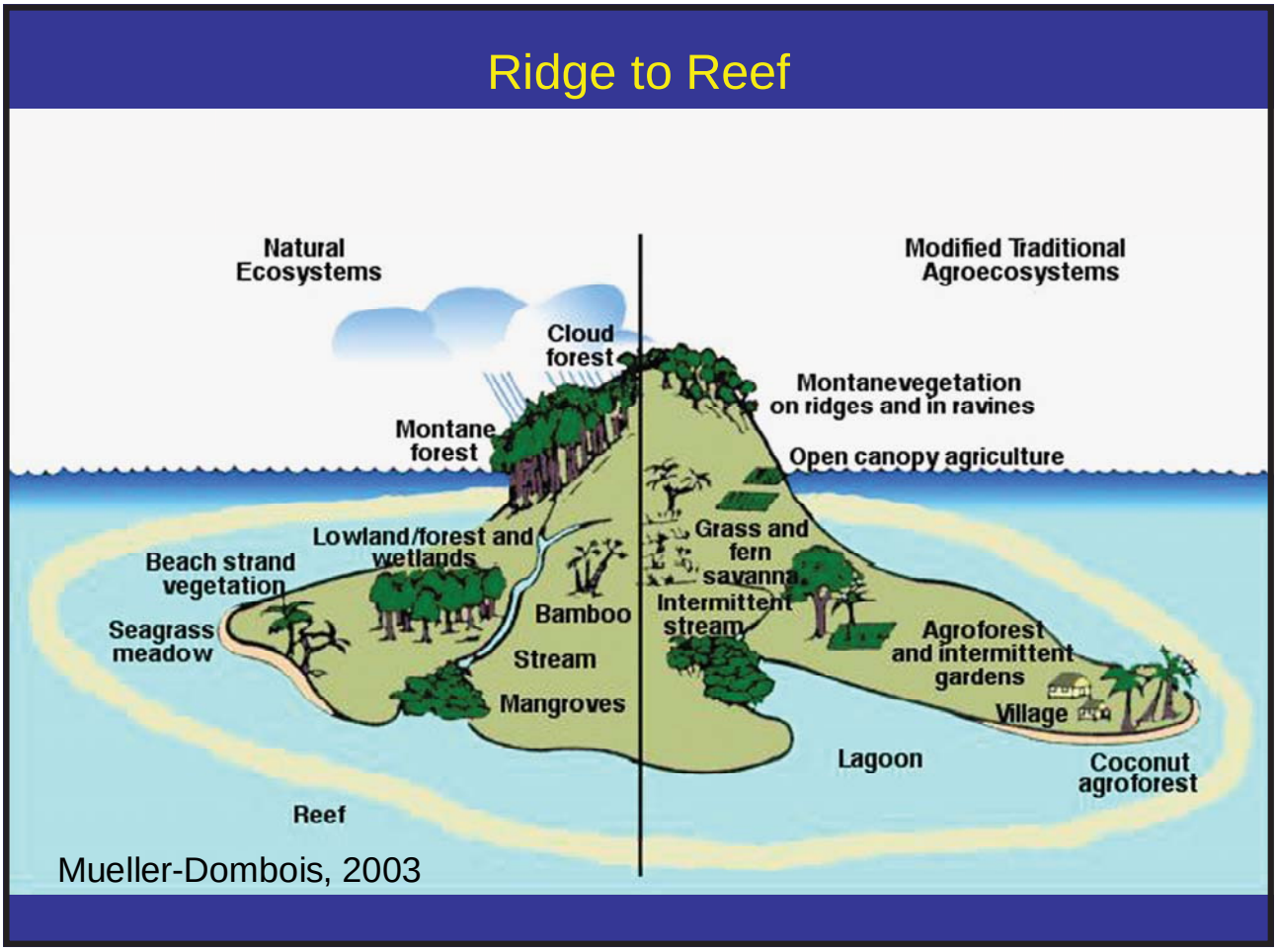


Vulnerability	Unsafe Conditions	Dynamic Pressures	Underlying Cause
• Biodiversity • People • Property • Environment • Economy • Society • Infrastructure Physical/Material Social/Organizational Motivation/Attitudinal	• Low land • Riverside • Coastal • Poor buildings • Water shortage Explains the Current Situation	• Lack of skills • Lack of early warning • System • Lack of protective structure • Lack of STOCK of • (food, water, medicine, • Biodiversity) • Deforestation • Organisation etc. • (process and activities) • No evacuation plan and centre Explains HOW	• Policy (law/plan) • Budget Allocation • Law enforcement • Lack of good governance • Climate Change Explains WHY



Capacity	Safe Conditions	Reduced Pressure	Addressed Underlying Cause
• Biodiversity • People • Property • Environment • Economy • Society • Infrastructure Physical/Material Social/Organizational Motivation/Attitudinal	• Higher ground • Stilts • Flood gates • Strong buildings • Water Explains the Current Situation	• Skills • Early warning system • Protective structure • STOCK of (food, • medicine, Biodiver-sity) • Reforestation • Organisation etc. • (process and activities) • Evacuation centre and plan Explains HOW	• Policy (law/plan) - Adaptation plan - Disaster Management plan • Budget Allocation • Law enforcement • Good governance Explains WHY

Building Resilience



Biodiversity Is:

a) The variety of living creatures in the stratosphere, atmosphere, land and sea; trees, plants, animals, birds and micro-organisms

b) The variety of families of these living things

c) The variety of places where they live

– reefs, lagoons, mangroves, streams, rivers, forests…

Sustainable development Is:

The development that makes life healthier, safer, more productive and more enjoyable but doing so without destroying the natural, human and cultural capital needed for the development of the future generations.

The emphasis is on maintaining the 'abundance' of biodiversity, as the foundation for sustainable development. We are to ensure that development and maintaining abundance of biodiversity go hand in hand.

Why Must We Care?

Climate Change and Variability threatens our sources of food security, livelihood and culture, our key economies; fisheries, agriculture and tourism - the very basis of our existence

B. RISK ASSESSMENT & ADAPTATION PLANNING

Step 1: Situation Analysis

Objective:
To help the community better understand changes and significant natural and human events that occur in the village and to identify risk areas, vulnerable community members and available resources.

Method:
- Divide participants into 2 working groups
- The groups are to work on a Community Time Line and Community Mapping
- Groups will come together after 1 hour to each report on their work
- Collective triangulation of findings.

Time: 1 hour

Activity:

1.1 Community Historical Time Line

This is a chronological listing over many years of key events in the history of a community or area. The time line facilitates community discussion and examination of past trends, actions, problems and achievements. It is useful in resource planning and decision making to think back on these past events and experiences and look at how they influence present attitudes and actions.

How to Facilitate:
Ask the community to use 1 hour to work in groups and discuss and record significant dates in their community e.g. education, leadership & structure, settlement, land & ownership, natural disasters (cyclones, floods, storm surges, erosions, drought) and how did they used to cope during each of these events, how were they warned or what were some early warning signs, health, spiritual and cultural events, population, infrastructure, developments (govt. & ngo's), community organizations and community projects etc. Have them organize these in chronological order and go as far back as they can recall.

Materials:
Pental Pen, Butcher Paper, stick on paper or pieces of paper and masking tape or blue tac

Youth present community time line

Figure 1: Time Line Example

1954	Cyclone occurred - Houses (thatched at the time) were damaged) - Food was scarce - No government assistance - Coconut plantations (main income source) was damaged
1960	Income from copra used to build wooden houses n the village
1973	Hurricane Bebe occurred - no floods experienced - Coconut plantations damaged - No government assistance
1982	Road was built - brought in increased development to the community
2000	Cabinet meeting was held in Koro and the community Received assistance from Government - Community hall was built - 30 flush toilets built - Footpath built
2003	Cyclone Emi occurred - Houses and plantations were damaged - Government assistance received (housing and food)
2006	Tsunami awareness workshop was conducted by the Energy Department Pumice deposits surrounded the coastline - fish was scarce along the coast

1.2 Community Mapping

This mapping exercise will allow community members to look at their resource base and areas of vulnerability by hazards like floods etc. and make an inventory of capacities.

How to Facilitate:

The facilitator asks the community members to identify a landmark in the community. Have the members draw the boundaries of the community. This will be followed by drawing the location of houses, critical facilities and resources in the community. The facilitator is to ask questions like who have access and control over the resources. Community members then to be asked to mark the areas at risk from hazards like drought or flood. Ask them who are the vulnerable members of the community, who are most at risk because they are in vulnerable locations and have little resources to prepare for or recover from a disaster.

Driti Mangrove Fishery Community Map.

Materials:

Pental Pen, Butcher Paper, and masking tape or blue tac

Step 2 : Natural Threats

Objective:
To help the community identify changes, hazards, threats and vulnerabilities

Tuvalu Island (Randy Thaman)

Method:
- Divide participants into 3 working groups
- The groups are to work on:
  a) Coastal & Marine Resource Mapping and Inventory
  b) Land Resource Mapping and Inventory
  c) Community Infrastructure Mapping and Assessment
  d) Hazards Assessment
- Groups will come together after 2 hours to each report on their findings.
- In the large group to draw a Risk Map of their community

Time: 2 hours

Activity:

2.1 Coastal & Marine Resource Mapping and Inventory

To collect information on available coastal and marine biodiversity and to get a picture of vulnerability

How to Facilitate:
Ask the group to draw a Coastal and Marine Resource Map. Then invite them to fill out the format on the butcher paper. Ask them to list names of plant, animal and fish; their uses or significance, abundance or loss and locality. Once they have finished entering their results, they are to discuss and list laws that exist to protect these, threats on these biodiversity and concerns. It will be ideal to have fisherfolk in this group.

Solomon Islands (Randy Thaman)

Materials:
Pental Pen, Butcher Paper and Example Sheets

Figure 2: Inventory Matrix

Name of fish/ shell fish/ sea plants	Uses/ Significance	Abundance or Loss	Locality	Laws	Natural Threats
Concerns					

2.2 Terrestrial Resource Mapping and Inventory

To collect information on available terrestrial biodiversity and to get a picture of vulnerability

How to Facilitate:
Ask the group to draw a Terrestrial Resource Map. Then invite them to fill out the format on the butcher paper. Ask them to list names of plants, birds and animals; their uses or significance, abundance or loss and locality. Once they have finished entering their results, they are to discuss and list laws that exist to protect these, threats on these biodiversity and concerns.

Materials:
Pental Pen, Butcher Paper, color pens and example sheet

Figure 3: Inventory Matrix

Name	Uses/ Significance	Abundance or Loss	Locality	Laws	Natural Threats
Forest trees and plants					
Agricultural Plants					
Birds					
Animals					
Concerns					

2.3 Community Infrastructure Mapping and Inventory

To facilitate community identification of community infrastructure' and get a picture of vulnerability to natural threats

How to Facilitate:
- Ask the group to draw a map of the community showing houses and infrastructure.
- Invite them to walk around the village and look at the different types of houses and assess their strengths and weaknesses
- Ask the elders in the group; why these different types of houses were built, what are they used for, what and how materials were used to build the houses, how old are the houses and their quality.
- Have them fill format on butcher paper as below in Figure 4.
- Have them list and draw (not more than 10) the different types of houses in the community
- Invite the group to discuss the types of houses they should build to decrease their vulnerability to impacts of natural threats and increase their resilience.
- List Natural threats and impacts on the various house types (Strongest to weakest)

Materials:
Pental Pen, Butcher Paper, color pens and example sheet

Figure 4: Infrastructure Inventory

Types of Houses in the Community			
Type of House	**Who Uses It?**	**Materials Used To Build It. How old & quality?**	**Drawing of Building**
1.			
2.			
3.			
4. Etc			

- Ask them if they have a copy of or are aware of the legislations regarding community buildings and constructions.
- Some points to add:
  - Houses must be built 50 meters away from the shore line
  - Do they have a qualified and experienced carpenter?
  - Who builds houses in the village, where did they learn these skills, how many years of experience in building houses?
  - Is there a village committee responsible for buildings and constructions e.g. the distance between houses to prevent the spread of fires, diseases and other social problems?
  - Do they have a community extension plan?
  - Are they aware of their new village boundary and the allocations for development within these boundaries? (Shifting of old boundary to accommodate new development plans)
  - Do they have an evacuation centre in case of an extreme event? If no, what do they recommend?

Community Infrastructure Assessment

Materials:
Pental Pen and Butcher Paper, Copies of Environment ACT.

Step 3 : Causes Of These Natural Threats

Objective:
To assist community have a broad overview and understanding of existing problems or threats, the various factors which cause them and their impacts on their lives and biodiversity.

Method:
- Explain what disaster is and what is participatory disaster risk management planning
- Divide into the 3 working groups to list problems and prioritize then present to large group
- Return to 3 working groups to work on Root Cause Analysis
- Groups will come together after 1 hour to present their work.
- Hang results in a place where all can see for reference

Time: 2 hours

Activity:

3.1 ROOT CAUSE ANALYSIS

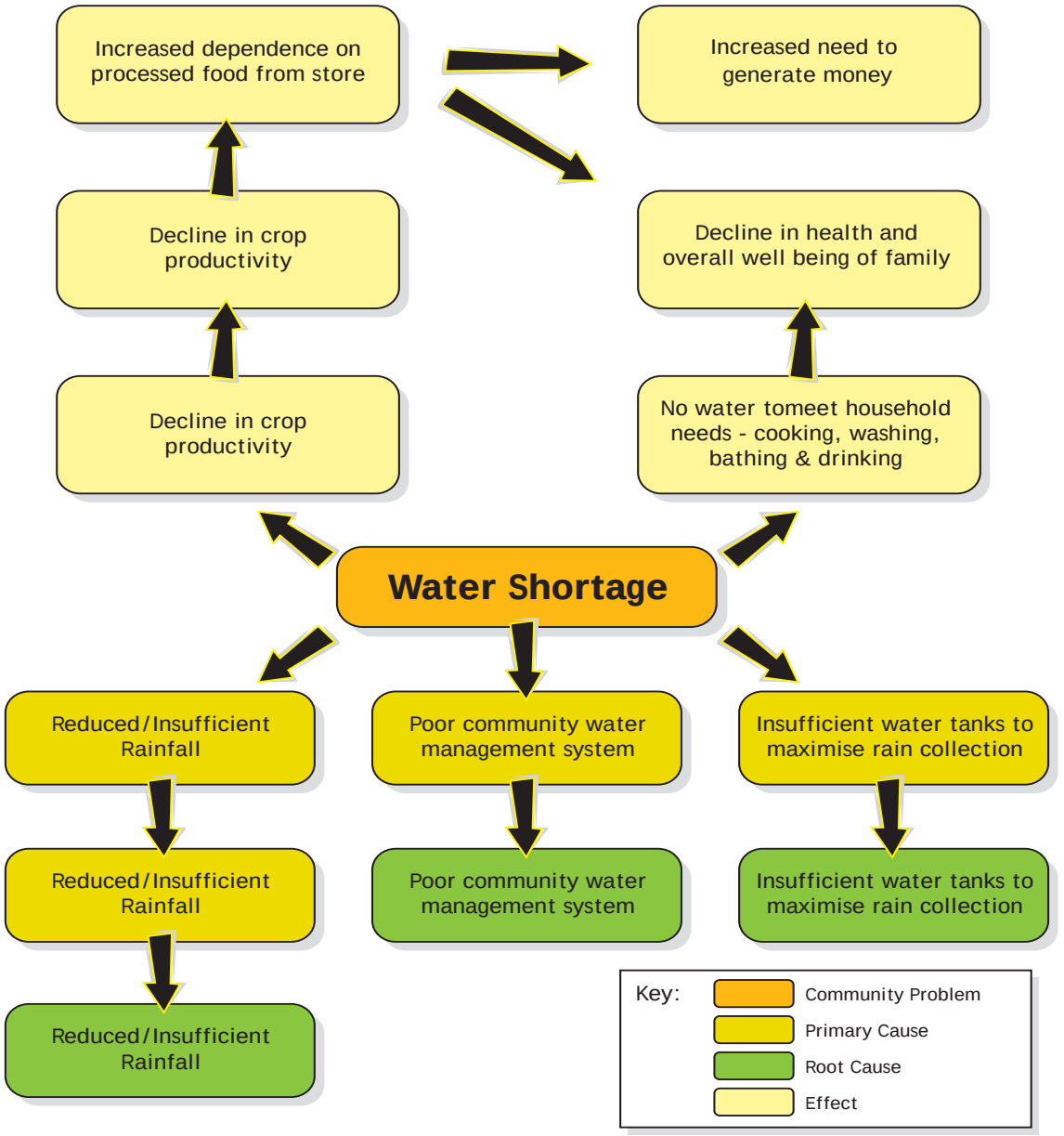
To determine root causes or underlying causes and their effects or impacts.

How to Facilitate:
- Ask participants to review problems highlighted by their 3 work groups in Step 2 and on a large sheet of butcher to list Problems Currently Faced by The Community. Get each group to list in order of priority. Include Hazards and list of problems in order of priority. Check if these problems are highlighted in the community resource management plan. Have them present these problems with additions from other groups if any then compile into one big list. Have them prioritize together the list by show of hands.
- Explain they will now draw problem trees to determine causes and impacts. Give each group a problem and have them work on it for 1 hr. Go through each problem and ask them the causes for each of the listed problems. Ask them pressing 'why' questions to lead them to exhaust all causes till they reach the root cause. Once completed, ask pressing question of 'what happened' to lead them to exhaust effects of the problems by drawing branches and 'impact' leaves.
- Once completed, have them present work to large group. Ensure names of group members are written on the sheet of butcher paper.

Materials:
Pental Pens, Butcher Paper, Color pens, example sheet.

Fiji Climate Change Workshop participants during group work

Root Cause Analysis - Problem Tree



Studies at USP (Randy Thaman)

Step 4 : Prioritization Of Importance

Objective:
To assist community determine agreed levels of risk (vulnerability and hazard) for biodiversity and community/family security and which problems they feel are the most pressing to them.

Method:
- Divide into the 4 working groups to determine which are most pressing and decide on level of risks by using intuitive and standard method
  a) Natural Threat impacts on coastal and marine biodiversity and level of risk
  b) Natural Threat impacts on terrestrial biodiversity and level of risk
  c) Natural Threat impacts on community and level of risk
  d) Hazard threats and impacts and level of risk
- Groups will come together after 30 minutes to present their work.
- In the large group they agree on level of risk of their biodiversity and community
- Prioritization of importance
- Visioning
- Hang results in a place where all can see for reference

Time: 1 hour

Activity:

4.1 Natural Threat impacts on sea, land and community and level of risk for areas and biodiversity

To determine level of risk (hazard and vulnerability) of biodiversity at sea, land and community

How to Facilitate:
- Get the group to review their list of prioritized problems (intuitive). Ask them why the top 5 are priority to them then have them fill format in Figure 5 on Hazard Assessment and Prioritization
- Invite them to determine level of risk using Standard Method below. Explain how to use standard method and fill format in Figure 6
- Once completed, have them present work to large group. Ensure names of group members are written on the sheet of butcher paper.

Materials:
Pental Pens, Butcher Paper, Color pens, example sheet.

Figure 5: Intuitive Method on Hazard Threats Matrix

Hazard/Threats	Problems (and level of risk)	Impact High/Medium/Low	Frequency High/Mediem/Low	Estimated Cost of Damage High/Medium/Low
e.g. Cyclone				
e.g. Drought				
Etc.				

Figure 6: Standard Method Matrix

Impact		X	Frequency	= Level of Risk
High	= 70 – 100% = 3		High = 1 – 3 events/per	= 3
Medium	= 30 – 70% = 2		Medium = 1 event/every 3 – 10 yrs	= 2
Low	= < 30% = 1		Low = 1 event every 10 – 100 yrs	= 1

- Ask group to multiply impact and frequency in each category and list results under 'problem' column
- Have them look at the 'problem' column and prioritize according to largest number to the least. List these on new butcher paper.
- Keep both the priority list in Fig. 5 & 6 and the result of chart together for discussions and for presentation to the larger group.
- During presentation facilitate consensus reconciliation of intuition and standard method to produce one final agreed list of level of prioritized important risks
- On a prepared Fig. 7 of "Decide on Acceptable Level of Risk", ask them which they can prevent, reduce, transfer or live with. Note these down.

Figure 7: "Decide On Acceptable Level Of Risk" Matrix

Priorities	Prevent	Reduce	Transfer	Live With

Step 5 : Likely Effects Of Climate Change

Objective:
- To enhance participant's understanding of climate change and variability impacts on biodiversity and their connectedness to sustainable development
- To assist community determine how they perceive Climate change will impact their lives and
- Identify how the community members would like their future to be.

Method:
- Divide participants into groups of men, women and youth, then give each group one of the priority problems.
- Have them fill out the format example in Figure 8 and Figure 9.
- After the above exercise, invite participants to discuss and write or draw their vision for what they would like the future to be.
- Get them back in the large group to present their work.

Time: 2 hours

Activity:

5.1 Presentation on Climate Change and Variability, Biodiversity and Sustainable Development

A hallf hour presentation on what is climate change and variability, biodiversity and sustainable development.

5.2 Likely Effects of Climate Change

To determine level of risk (hazard and vulnerability) of biodiversity at sea, land and community

How to Facilitate
- Invite participants to work in their groups by discussing and filling in Figure 8 and Figure 9

Ask them what are the likely effects:
- More heavy rain
- Stronger winds in cyclones
- More dry periods
- More evaporation of water
- Higher Sea Level
- Coral Reef Bleaching

Figure 5: Intuitive Method on Hazard Threats Matrix

Effects of Climate Change	Prioritized Problem(s)	Priority Now (H/M/L)	Priority with Climate Change in 50 years (H/M/L)
More heavy rain			
Stronger winds in cyclones			
More dry periods			
More evaporation of water			
Higher Sea Level			
Coral Reef Bleaching			

5.3 Ranking matrix to determine immediate issues of concern.

Figure 9: Ranking Matrix

Priority Problems	RANKING			
	Men	Women	Youth	Total
E.g. Decline of reef fish species	I	I	I	I - 7
E.g Salination of gardens	I	I	I	II - 2
E.g Low Productivity of fruit trees	II	II	I	III - 0

Key: *I - of most immediate concern and needs attention immediately*
II – of concern but can only be postponed for a little while
III - of concern but can be dealt with at a later date

5.4 Visioning

To determine how communities perceive climate change will impact their lives, biodiversity and their future generations.

How to Facilitate

- Ask the groups to envision the impacts of climate change and how they want the future to be like.
- Have them draw murals of what they would like the future to look like
- Once murals are drawn, invite participants to write vision statements.
- Have the groups come together and each group to select a presenter to explain their mural their vision statement. A facilitator to be ready and writing down on a butcher paper the groups' vision statements.
- Invite the large group to agree on which they would like or if they can pick from all 3 groups' statements to make up a new one. Have them agree on one as their community vision statement.

"Planning begins with the desire to change existing undesirable conditions. Climate change and Disaster risk management action planning starts with an aspiration for safety for the self, the family and the community." (PDRM – ADPC)

Materials:

Pental Pens, Butcher Paper, Color pens

Unsafe Condition

Deciding for the Future

Step 6 : Resilience Assessment

Objective:

- To assist the community determine solutions/actions they can take to address their concerns and problems

Method:

- Divide participants into 4 working groups and give each group one the priority problems from Step 3 on Root Cause Analysis and Step 5 on the Likely Effects of Climate Change.
- Ask them to discuss and fill the format example in Figure 10. "Resilience Assessment".
- Invite them back in the large group to present their work.
- Compile in order of prioritized problem and their solutions or options.

Time: 2 hours

Activity:

6.1 Resilience Assessment

This exercise to facilitate communities exploring possible solutions to their problems and impacts of the problems

How to facilitate:

- Ask participants to work in their groups to list problems or impact issues and solutions or options. Have them list the problems and their impacts and discuss and write solution in the prepared sheet in Figure 10.

Materials:

Pental Pens, Butcher Paper, Color pens.

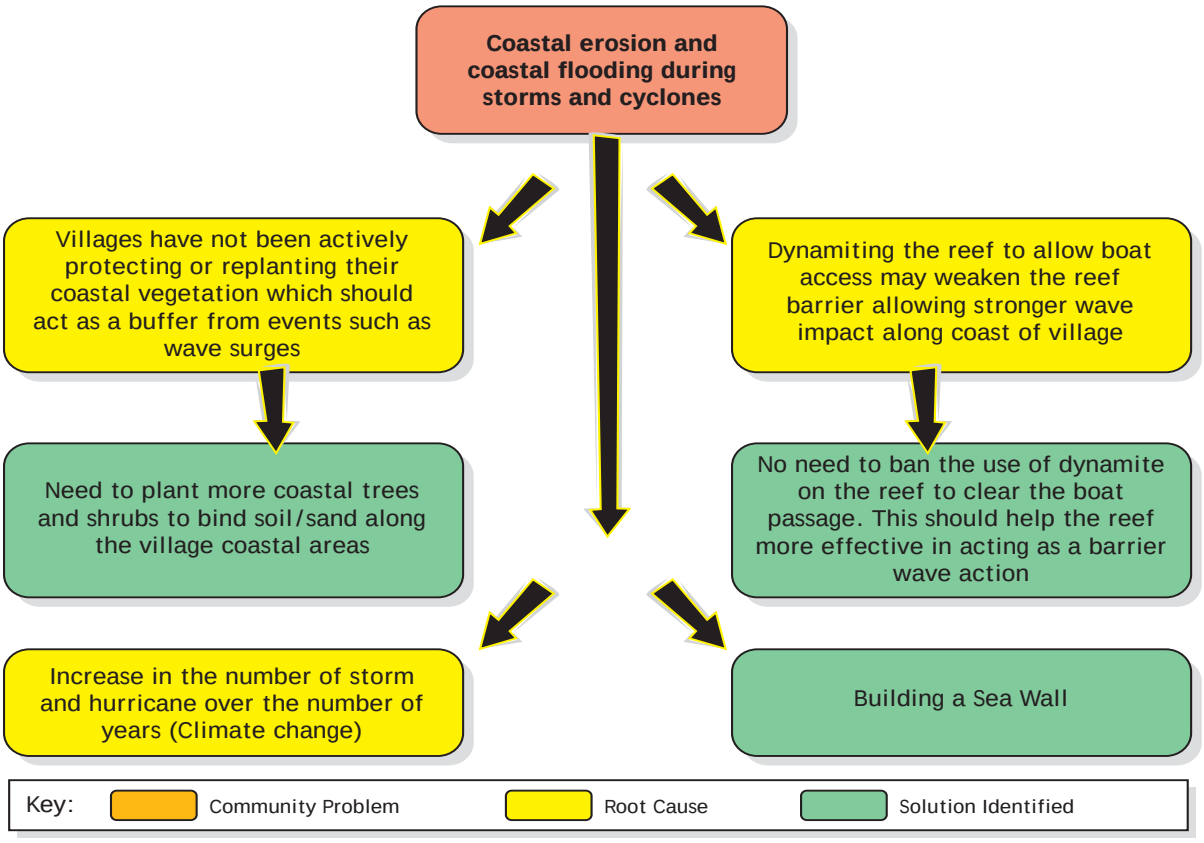


Figure 10. Problems and Solution Matrix

Community Problem	Adaptive Solution	Less Effectiveness		
		Low	Moderate	High
Water Shortage	Develop and Implement village rules on the proper utilization of collected rain water and maitenance of community water tanks.			★
	To obtain more community water tanks to increase the community's water storage.			★
Coastal Flooding/ Coastal Erosion	Plant more coastal trees and shrubs to bind soil/sand along coastal areas.		★	
	Build seawall along coast of Tokalau village.			★
Coral Bleaching	To implement village rules that will forbid dumping of village wastes into the sea and to find a proper village dump site for their rubbish		★	
	To ban the use of destructive harvesting practices that harm live coral on the reef. For example, use of crowbars to pry free shellfish from coral heads, use of traditional toxins to fish etc.		★	
Decline in Productivity of Food Gardens	Determine how existing agricultural pests/diseases can be controlled effectively with pesticides.			★
	Encourage village men and youths to be more active in planting their traditional crops and crop varieties in their village garden.		★	

6.2 Disaster Preparedness

This exercise to facilitate communities preparedness for disasters

How to facilitate:

- Ask participants to work in their groups to list the hazards in order of priority.
- Ask them to discuss and fill in example sheet in Figure 11.

Materials:
Pental Pens, Butcher Paper, Color pens, example sheet.

Figure 11: Disaster Preparedness Matrix

Hazards	Coping Mechanisms Before/Now	Early Warning Systems Before/Now	Actions Before	Actions During	Actions After

Step 7 : Evaluation Of Adaptation Options

Objective:
To assist the community members in deciding which specific actions will be taken by them to adapt to the impacts of climate change and set SMART objectives

Method:
- Remain in the 4 working groups in Step 6 and ask them to discuss and fill out the column which is headed 'Level of Effectiveness' in the example on Figure 10.
- Invite them to rewrite their solutions or options to serve as objectives for their adaptation projects
- Invite them back in the large group to present their work
- Have a facilitator record the specific actions and ask the large group if they agree on these.
- Bring forward the Disaster Preparedness Solutions and Evaluate and agree on the options.

Time: 2 hours

Activitiy

7.1 Evaluating Adaptation Options

To assist community members evaluate the appropriateness of each option

How to Facilitate
Have each group discuss the list of solutions or options they have listed in Step 6 and determine their level of effectiveness. Ask them to fill the example on Figure 10.

Materials:
Pental pens and Butcher paper, example sheet

7.2 Writing SMART Objectives

To assist community members set SMART objectives as basis of their climate change adaptation actions

How to Facilitate
Ask the group the following questions on each of the options listed as highly effective to set SMART objectives.
S – is it specific? Is it exact and precise?
M – is it measurable? Consider the size and number of population it will benefit.
A – is it Attainable? Do you have the resources to do this? E.g. skills, expertise, funds etc.
R – is it Relevant? How important is this option, high, moderate, low or don't know.
T – when can this be realistically done? Within a year, 5 years, 10 years?

Materials:
Pental pens and Butcher paper, group work on Figure 10.

Step 8 : Participatory Climate Change Risk Adaption Planning

Objective:
- To assist the community organize tasks and projects they will implement to adapt to climate change impacts and disasters.
- To discuss and agree to the role and process of appointing a committee and/or community project liaison officer

Method:
- Divide participants into work group to discuss and fill in Adaptation Plan format.
- Once group work is completed invite group to gather again in the large group
- Ask the large group if they agree on all these tasks, assignments, resources and time.

Time: 2 hours

Activitiy

8.1 Climate change Risk Adaptation Planning

To develop community climate change risk adaptation plan

How to Facilitate:
- Invite the groups to retrieve group work results in Step 7
- On a separate butcher paper ask participants to draw a table as in Figure 12. Ask them to identify and list tasks, who to be responsible, resources needed and time (start and finish) for each prioritized solutions or options
- Invite them back in the large group to present their work

Materials:
Pental pen and Butcher paper and example sheet

Figure 12: Climate Change Adaptation Plan Matrix

Problem	Objective Solutions	Tasks	Whose Responsible	Resources Needed	Time

8.2 Community Disaster Preparedness Planning

To develop community climate change risk adaptation plan

How to Facilitate:
- Invite the groups to retrieve group work results in Step 7
- On a separate butcher paper ask participants to draw a table as in Figure 13. Ask them to identify and list tasks, who to be responsible, resources needed and time (start and finish) for each prioritized hazards solutions or options for before, during and after periods.
- Invite them back in the large group to present their work

Materials:
Pental pen and Butcher paper and example sheet

Figure 13: Community Disaster Plan Matrix

Hazards: Cyclone, Drought, Storm Surge, Flood, Earthquake, Landslide (Plan one hazard at a time)
Objective:
Indicator: Zero loss of life

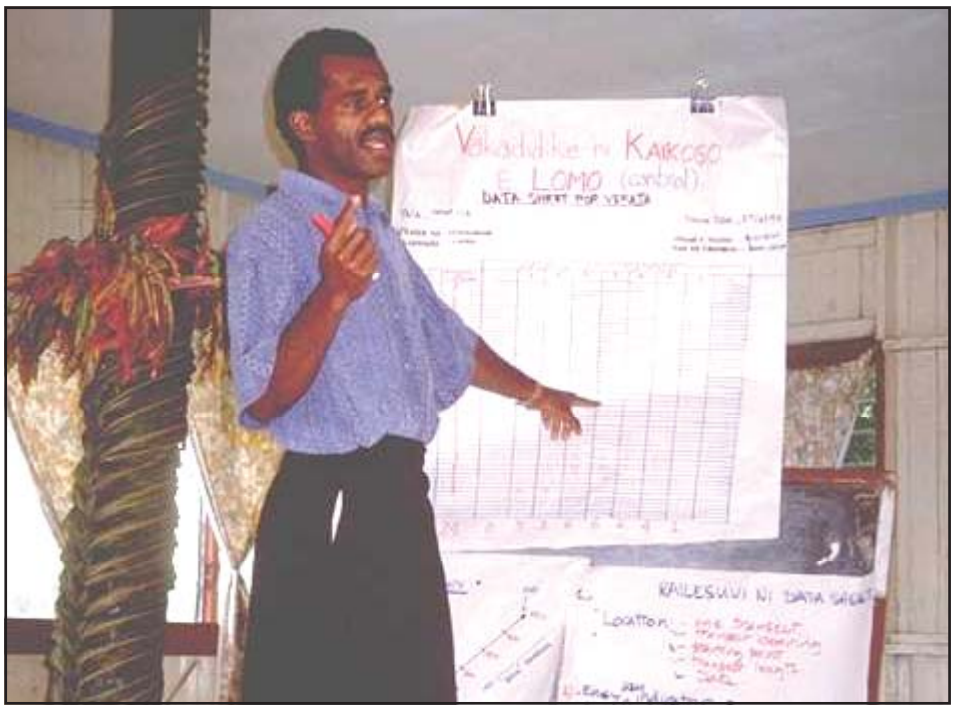
Time Frame	Activities	Tasks	Whose Responsible	Resources Needed	Time
BEFORE					
Prevention					
Mitigation					
Preparedness					
DURING					
Response					
AFTER					
Rehabilitation					
Reconstruction					

8.3 Discussion and Concensus on Selection of a Committee and/or Project Liaison Officer

To discuss the role and process of establishing a Community Climate change and Disaster Management Committee and/or Community Project Liaison Officer

How to Facilitate:
- Invite the Country Team Leader to facilitate the discussion
- Have a facilitator record minutes of the discussion
- Ask if the community agree

Materials:
Pental pen and Butcher paper



Present Results

C. COLLATION OF INFORMATION

Step 1.1 Community Time Line – Possible Topics For Discussion

Significant Events	50	20	10	5
A) (PHYSICAL/MATERIAL)				
1) Population				
2) Number of house (types /use)				
3) Education (primary, secondary, ter.)				
4) Developments				
5) Sources of livelihood				
6) Employment				
7) Changes in government				
8) Health				
9) Village boundary, leases, uses				
10) Remittance and member of community abroad				
11) Community owned property (business, funds, buildings, boat, machines, engine, vehicles, jetty, tools etc.)				
12) Infrastructure : transportation Communication/ phone, toilets				
13) Services: medical centre, water, electricity, schools, education, transportation e.g. bus				
14) Community source of water				
15) Natural hazards: drought, floods, storm surge, cyclone, which the community has encountered.				
16) What were damaged				
17) Early warning signs				
18) Preparedness measure in the past, still in now, not in use				
19) Marine resources, fish etc.				
20) Agricultural plants, trees, plants, fruits, mangroves				
21) Animals and birds				
22) Types of farming and tools				
23) Types of fishing and equipment				
24) Fishing area boundary				
B) (social/organizational)				
25) Outside assistance (govt./ngo)				
26) Community projects ?				
27) Govt./community governance				
28) Churches				
29) Organizations in the village				
30) Traditional events				
31) Traditional rules				
32) Community laws/rules				
33) Govt. laws				
34) Relations and organizations Among the people				
C) Motivational/Attitudinal				
35) Culture, how does the community view its ability to create change? Current Actions, Achievements, What motivates them?				
D) Perceptions				
36) Risk perceptions				

Step 1.2 - Changes & Hazard Description

TOPIC	PAST	NOW	CONCERNS
PHYSICAL/MATERIAL (What productive resources, skills and hazards exist?)			
ORGANISATIONAL/SOCIAL What are the relations and organizations among people?			
MOTIVATIONAL/ATTITUDINAL (How does the community view its ability to create change)			
Perceptions Risk perceptions. Also biodiversity and sustainable development			
GENDER Changes in the life of Men, women, girls, boys, children, elders			
CLIMATE Observations about the climate, seasons, how often, force, impacts. Agricultural plants, fruit trees, water, trees and plants, coast, marine resources, fish, shell fish, sea plants, animals, birds. Why do you think they are changing? Is it caused by people or climate or something else? What are the impacts of their loss or damage?			

Hazard Description:

Time	Hazard type	Force Kaukauwa	Warning Signs	Forewar-ning	Speed of onset	Frequency	When	Duration
1 - 3 yrs								
3 – 10 yrs								
10 –100 yrs								

- Identify areas most affected by each of the hazard e.g. the geographical coverage, range of impact.
- What impacts did it have on biodiversity? Etc.
- An estimated cost of damage.
- Draw a hazard map or risk map

COLLATION OF INFORMATION

Group:…….. **Facilitator(s):** ……
Step No: 1 **Date :** …….

1. Highlight significant changes
   - biodiversity (food, use of marine/land resources, endemic, endangered, lost
   - governance and leadership in village/government
   - physical and material resources
   - people and organization relationships
2. What has remained the same or constant over the years?
3. Community achievements, cohesion throughout the years
4. Compliance with village, and government laws
5. Have their perception of disasters, biodiversity, developments changed from past and now?
6. Gender – have their lives changed from the past and now? What changed this?

	Vulnerability (Unsafe conditions) – climate hazards e.g. cyclones, storm surge, floods, droughts, erosions)	**Capacity** (Physical and materials things, skills, will, motivation, relationships, organizations within available, community achievement)
Physical/Material (What productive resources, skills and hazards exist?)		
Organisational/Social What are the relations and organizations among people? Leadership		
Motivational/Attitudinal (How does the community view its ability to create change) time management, level of education		
Perceptions Risk perceptions. Also biodiversity and sustainable development		
Gender		
Concerns		
Recommendations		

Additional Comments/Observations:_____

COLLATION OF INFORMATION

Group:…….. **Facilitator(s):** ……
Step No: 2.1 **Date :** …….

Describe vulnerabilities and capacities of community, biodiversity, of women and men and disaster risks.
What resources do they have they can use in preparedness, during, and after a disaster and be resilient to climate change threats. These are community capacities. What threats and hazards are they vulnerable to? What areas, biodiversity and people are vulnerable?

Physical/Material (What productive resources, skills and hazards exist?) - Coastal & Marine resources - Land resources - Community resources - building	**Vulnerability** (Unsafe conditions) – climate hazards e.g. cyclones, storm surge, floods, droughts, erosions and lack or loss of Physical and materials things, skills, will, motivation, relationships, organizations within	**Capacity** (Physical and materials things, skills, will, motivation, relationships, organizations within are available, community achievement)
Coastal & Marine Areas and Resources		
Coastal Areas		
Marine areas		
Fish		
Shell fish		
Sea plants		
Uses/Significance		
Fishing Equipment		
Abundance/loss		
Laws		
Community Environment/ Resource Management Plan		
Natural Threats		
Gender		
Concerns		
Recommendations		

Additional Comments/Observations:_____

COLLATION OF INFORMATION

Group:…….. **Facilitator(s):** ……
Step No: 2.2 **Date :** …….

Describe vulnerabilities and capacities of community, biodiversity, of women and men and disaster risks.
What resources do they have they can use in preparedness, during, and after a disaster and be resilient to climate change threats. These are community capacities. What threats and hazards are they vulnerable to? What areas, biodiversity and people are vulnerable?

Physical/Material (What productive resources, skills and hazards exist?) - Coastal & Marine resources - Land resources - Community resources - building	**Vulnerability** (Unsafe conditions) – climate hazards e.g. cyclones, storm surge, floods, droughts, erosions and lack or loss of Physical and materials things, skills, will, motivation, relationships, organizations within	**Capacity** (Physical and materials things, skills, will, motivation, relationships, organizations within are available, community achievement)
Land Areas and Resources		
Water bodies e.g. streams, creeks		
Land areas		
Trees		
Plants and Flowers		
Agricultural plants		
Fruits		
Birds		
Animals		
Uses/Significance		
Soil Enhances		
Stock - Abundance/loss		
Laws		
Community Environment/Resource Management Plan		
Natural Threats		
Gender		
Concerns		
Recommendations		

Additional Comments/Observations:_____

COLLATION OF INFORMATION

Group:…….. **Facilitator(s):** ……
Step No: 2.3 **Date :** …….

Describe vulnerabilities and capacities of community, biodiversity, of women and men and disaster risks.
What resources do they have they can use in preparedness, during, and after a disaster and be resilient to climate change threats. These are community capacities. What threats and hazards are they vulnerable to? What areas, biodiversity and people are vulnerable?

Physical/Material (What productive resources, skills and hazards exist?) - Coastal & Marine resources - Land resources - Community resources - building	**Vulnerability** (Unsafe conditions) – climate hazards e.g. cyclones, storm surge, floods, droughts, erosions and lack or loss of Physical and materials things, skills, will, motivation, relationships, organizations within	**Capacity** (Physical and materials things, skills, will, motivation, relationships, organizations within are available, community achievement)
Buildings		
Where the houses are located Community property e.g. shops, church, village hall, water tanks…		
Type of houses, including toilets, out kitchens, how they are built and age of buildings		
Is there a committee to give advice on where buildings are to be built so it is not overcrowded?		
Are they aware of and comply with building codes? Where are these laws found?		
Does the community have plans for extending village boundary?		
Are they aware of village boundary and allocations for development projects?		
Do they have an Evacuation centre if there is a natural disaster? Do they have a disaster management plan?		
Gender		
Concerns		
Recommendations		

Additional Comments/Observations:_____

COLLATION OF INFORMATION

Group:..... **Facilitator(s):** .....
Step No: 3 **Date :** .....

To understand and describe the root causes of the community's vulnerability.

Elements of Risk ← **Vulrability Progression**	**Vulnerability** ← Unsafe Conditions: • Lowland • Riverside • Coastal • Poor buildings • Water shortage etc. as listed below	**Dynamic Pressures** ← Dynamic Pressures : • Lack of skills • Lack of early warning system • Lack of protective structure • Lack of STOCKS of (Food, water, medicine, biodiversity) • Deforestration • Organization etc. • (processes and activities – Explains HOW) • Primary/Secondary	**Underlying Causes** ← Underlying Causes: • Policy (law/plan) • Budget allocation • Law enforcement • Lack of good governance • Climate change This explains WHY	**Capacity** (Keep filling this column as you observe and to cross off during resilience Assessment
Physical/Material : *What vulnerable resources, skills & hazards exist?*				
People (most vulnerable people, where/who?)				
Property				
Economy				
Infrastructure				
Environment				
Food source				
Economic sources				
Maintaining traditions & Culture				
Social/Organizational: *(what are the relations & organizations among people?) Leadership?*				
Motivational/Attitudinal *How does the community view its ability to create change? Current Actions.*				
Natural threats				

Additional Comments/Observations:_____

Matrix of vulnerability and coping mechanism

Vulnerability	Causal Factors	Current Coping Mechanism
e.g. Salt water inundation		
e.g Coastal erosion		
e.g Water deficiency		

Matrix of Community Identified Vulnerabilities

Vulnerability Identified	Who	Vulnerability	Causes of Vulnerability
Dwelling houses and kitchen inundated due to rise in water table	70 – 80% of village and population affected	Critical	• Flooding/inundation of settlement by the sea • Sea level change • Tectonic subsidence • Short and intensive rainfall due to climate variability • Flat and low elevation of village site • Location of village on coast • Close proximity to water bodies • Low topography of village • Cyclones • Storm surges and waves
Insufficient drinking water	100% of population	High	• Climate variability • El Niño • Limited roof catchments • Limited water storage facilities • Prolonged dry seasons droughts
Lack of timely meteorological advice on seasonal changes and extreme events. Have to rely on traditional knowledge	100% of population	Critical	• Geographical isolation • No communication facilities • Available • Lack of access to climate and weather forecasts/communication
Increase in water borne disease e.g. malaria	20 – 30% of population	High	• Flooding • Close proximity to water bodies • Lack of adequate medical supplies • Lack of consistency in medical • supplies

COLLATION OF INFORMATION

Group:…….. **Facilitator(s):** ……
Step No: 4 **Date :** …….

To understand and describe the concerns and issues which are most important to the community and why.

Vulrability Progression ← **Elements of Risk**	**PRIORITY ISSUES**	**Vulnerability** ← • Unsafe Conditions: lowland, • riverside, • coastal, • poor buildings etc. as listed below	**Dynamic Pressures** ← • Dynamic Pressures : • Lack of skills • Lack of early warning system • Lack of protective structure • Lack of STOCKS of (Food, water, medicine, biodiversity) • Deforestration • Organization etc. • (processes	**Underlying Causes :** ← **Underlying Causes:** • Policy (law/ plan) • Budget allocation • Law enforcement • Lack of good governance
PROBLEMS Physical/Material : What vulnerable resources, skills & hazards exist?				
PROBLEMS Social/Organizational: (what are the relations & organizations among people?)				
PROBLEMS Motivational/ Attitudinal How does the community view its ability to create change? Current Actions.				

Additional Comments/Observations:_____

COLLATION OF INFORMATION

Group:…….. **Facilitator(s):** ……
Step No: 5 **Date :** …….

To understand and describe the community's perception of climate change and how it will impact them and their future generations. To also understand their vision of what the future is to be like for them.

Additional Comments/Observations:_____

COLLATION OF INFORMATION

Group:…….. **Facilitator(s):** ……
Step No: 6 **Date :** …….

To understand and describe the concerns and issues which are most important to the community and why.

Resilience Progression →	Safe Conditions → • Higher ground • Upland • Stilts • Flood gates • Strong buildings • Water	**Reduce Pressures** → • Skills • Early warning system • Protective structure • STOCKS of (Food, water, medicine, biodiversity) • Reforestation • Organization etc. • (processes and activities – How)	**Underlying Causes Addressed** → • Policy (law/plan) • Budget allocation • Law enforcement • Good governance Explains Why
SOLUTIONS Physical/Material : What resources, skills & capacities exist?			
SOLUTIONS Social/Organizational: (what are the relations & organizations among people?)			
SOLUTIONS Motivational/Attitudinal How does the community view its ability to create change? Current Actions.			

Additional Comments/Observations:_____

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HAZARDS and ACTION OPTIONS *(Next Page)*
Additional Comments/Observations:_____

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Hazards: Cyclone, Drought, Storm Surge, Flood, Earthquake, Landslide (Plan one hazard at a time)
Objective:
Indicator: Zero loss of life

Time Frame	Activities	Tasks	Whose Responsible	Resources Needed	Time
BEFORE					
Prevention *Measure taken for the purpose of avoiding disaster (natural or human caused) or preventing other emergencies from occurring*					
Mitigation *Measures taken to reduce the loss of life, livelihood, and property by disasters, either by reducing vulnerability or by modifying the hazard, where possible*					
Preparedness *Measures taken to reduce to the minimum level possible the loss of human lives and other damage, through the organising of prompt and efficient actions of response and rehabilitation*					
DURING					
Response *Actions carried out immediately before, during and as soon after a hazard impact, which are aimed at saving lives, reducing economic losses and alleviating suffering*					
AFTER					
Rehabilitation *Restoring peoples lives back to normal, as well as essential services, including the beginning of the repair of physical, social and economic damages.*					
Reconstruction *The medium and long term repair of physical, social and economic damage and the return of affected structures to a conditions equal to or better than before the disaster*					

COLLATION OF INFORMATION

Group:…….. **Facilitator(s):** ……
Step No: 7 **Date :** …….

To assist the community members in deciding which specific actions will be taken by them to adapt to the impacts of climate change and disasters and set SMART objectives

Additional Comments/Observations:_____

COLLATION OF INFORMATION

Group:…….. **Facilitator(s):** ……
Step No: 8 **Date :** …….

To assist the community organize tasks and projects they will implement to adapt to climate change impacts and disasters.

Adaptation Plan

Problem	Objective Solutions	Tasks	Whose Responsible	Resources Needed	Time

Community Disaster Plan

Hazards: Cyclone, Drought, Storm Surge, Flood, Earthquake, Landslide (Plan one hazard at a time)
Objective:
Indicator: Zero loss of life

Time Frame	Activities	Tasks	Whose Responsible	Resources Needed	Time
BEFORE					
Prevention					
Mitigation					
Preparedness					
DURING					
Response					
AFTER					
Rehabilitation					
Reconstruction					

Additional Comments/Observations:_____

D. GLOSSARY

HAZARD	The potential for a natural or human-caused event to occur with negative consequences
EMERGENCY	A situation generated by the real or imminent occurrence of an event, requiring Immediate attention
DISASTER	Natural or human-caused event which causes intense negative impacts on people, goods, services, and/or the environment, exceeding the affected community's capability to respond
DISASTER MANAGEMENT	A collective term encompassing all aspects of planning for and responding to emergencies and disaster, including both pre- and post- event activities. It refers to both the risk and consequences of an event.
HAZARD ASSESSMENT	Includes hazards, frequency, severity, locations/area, time period/duration and speed of onset
VULNERABILITY	The extent to which a community's structure, services or environment is Likely to be damaged or disrupted by the impact of a hazard
RISK	The probability that loss will occur as the result of an adverse event, given The hazard and vulnerability
RISK EQUATION	Hazard x Vulnerability = Risk
ASSESSMENT	It is a quantitative evaluation to determine facts, numbers, amounts etc. E.g. An assessment determines there are 12,000 people, 3,000 homes, 100 businesses and a power plant that are vulnerable to flooding
ANALYSIS	It is the synthesis of facts (as assessment) into a conclusion or recommendation Example: After reviewing the history of flooding the vulnerability assessment And the mitigation measures that have been taken, the analysis of risk is moderate (M)
DEVELOPMENT	The cumulative and lasting increase, tied to social changes, in the quantity and Quality of a community's goods, services and resources, with the purpose of Maintaining and improving the security and quality of human life without Compromising future generations
COMMUNITY	The district or locality in which people live (physical locations) A group of people living in the same locality and under the same government (political attachment). A social group having common interests (social attachment)

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NOTES

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Drama In Climate Change Implications On Biodiversity

Facilitators Guide

(1ST DRAFT 2009)

Drama In Climate Change Implications On Biodiversity

This manual is for facilitating *climate change impacts on biodiversity and sustainable development* drama training especially prepared for engaging youth and in recognition that they are the future custodians of our natural resources. The youth of today are the ones who will have to deal with the serious consequences of climate change impacts. Therefore, engaging youth in biodiversity conservation is vital to ensure availability and security of natural resources for the next generation.

This manual provides some basic information on climate change and practical activities on creating climate change dramas and conducting community drama performances for awareness raising and generating meaningful disucssions.

What and Why Drama?

Drama is an effective method to raise awareness and generate meaningful discussions on climate change implications on biodiversity and sustainable development. It ignites curiosity and excitement and can easily draw a crowd of people and capture their attention.

Drama in this context is refered to as a play, stage show, performance, theare, or production. It is put together by members of a community or builds on their knowledge and experience and usually with help from outside assisting NGOs or government for raising awareness on key social, developmental or environmental issues which aim to bring about positive changes in peoples attitutde and behaviour. Since the dramas are created by the community members themselves, they are culturally appropriate and relevant because they use the local dialect, humor and local cultural expressions. However, sometimes these dramas can be fused with appropriate international flavours to attract certain types of audiences such as in tourist areas or in urban centres.

This type of drama is also know as 'Community Theatre'. Members of the drama troupe or community theatre group may or may not be professionals. This type of drama can be conducted anywhere and not just confined to the four walls of a theatre building. Community theatre performance can be conducted in a village hall, in a park, at the market place, under a tree in a village ground with the possibility of chicken or a dog walking across the stage, or held in the evenings with poor lighting and under conditions where actors have to be flexible and creative with change rooms, stage and entrances and exits. Community theatre is also known as minimalist theatre where the costumes and stage properties are not extravagant but kept to the minimum.

Actors involved in this type of drama are primary beneficiaries because given the amount of time they spend researching the issues to dramatize, rehearsing and performing it to audiences, the process will highly likely have a profound impact on their lives. It builds participants' confidence in public performance, improves self esteem, creates a healthy social attitude, they gain respect from peers and family members and possibility of employment.

Drama Training Process

STEP 1 **Processing Information**

It important for participants to first gain knowledge about climate change and its impacts on biodiversity and sustainable development if they are going to raise public awareness on these topics.

This step includes the provision of information about climate change, biodiversity and sustainable development. It is often interwoven with drama exercises to help facilitators gauge participants' knowledge of the topic before they make their presentation and also, to assist participants process the information they have just received.

STEP 2 **Creating Climate Change Dramas**

Everyone has had some experience in drama, either during school, church play or drama clubs. This training provides basic drama technique that will help participants explore further and discuss the topic of climate change impacts on their community biodiversity. They identify natural and human threats they are particularly concerced about that will affect their ability to live in a thriving environment if not addressed now. Participants draw murals of the future they foresee given current trends and a mural of their vision of a future they would like instead. This provides them the key messagers for awareness raising and basis for planning practical activities they can undertake as adaptation for climate change through biodiversity conservation to secure their sources of food and economy and maintaining their culture and tradition.

STEP 3 **Conducting Community Awareness Raising Drama Performances**

As a result of this training, participants have created dramas to be rehearsed and polished ready for awareness raising performances in communities.
This step includes the participants developing a committee, rehearsal and theatre performance action plan and how to conduct a community performance and post performance discussion. It also includes looking at ways of monitoring the effectiveness of their performance in order to make improvements.

STEP 1 **PROCESSING INFORMATION**

In order to effectively raise awareness on climate change through drama performances and post performance discussions, actors or the carriers of these important messages must have some knowledge of the subject itself.

1.1 Build on the knowledge and experience of participants.

Everyone has experience and knowledge about many different things, people and places. It is always good to start with what participants already know and build on this knowledge.

Exercise 1:

- Divide participants into working groups of 5-6 people.
- Invite them to discuss briefly in their working groups, then to do tableau work of the following; (*See fig. 1 for an example of tableau work)*.

I. What are 3 causes of climate change? Do a tableau for each of the causes.
II. What are 3 effects of climate change? Do a tableau for each of the effects.

- Ask the groups to try and combine the cause and the relevant effect when doing their tableau.
- Once the groups have completed their work, invite them to come together in the large group to present the results of their work.
- After a group presentation, ask the rest of the groups to try and guess what they are trying to portray.
- After all the groups have presented, give your comments.
- Ask someone from each group to take a note of their sequence of pictures. Clearly mark the group, the session number and the date.

Time: 30 minutes. **Materials:** Butcher paper, Pental markers, Masking tapes.

Tableau: Using bodies to make statue pictures that covey emotions and gestures without any words spoken. *(E.g. A tableau of King Solomon judging between two women who claim to be the real mother of a baby);*

Picture 1: *Two women and a baby in the presence of a king. Each of the women pose as if pulling the baby in the opposite direction of the other. The king poses with a hand gesture as if to say stop. (Freeze! They hold this position for a few seconds. Then come alive again for the second picture).*

Picture 2: *One woman is standing, steaming with rage, whilst the other is on her knees crying, begging the king. The king is holding the baby with a hand held out to a servant whose ready to place a cane knife in his hand. (Freeze! They hold this position for a few seconds. Then come alive again for the second picture).*

Picture 3: *Two guards arresting the angry woman, the king hands the begging woman the baby. (Freeze! They hold this position for a few seconds. Then come alive again for the second picture). The end.*

Fig. 1 Tableau work example

1.2 Presentations on Climate Change and Variability, Biodiversity and Sustainable Development

In this session one or several experts provide information and knowledge on the above mentioned topics. Below is a handout on Climate change.

1.2.1 Climate Change

The word climate is different from the word weather. The weather is what we experience daily e.g. good, fine weather today; yesterday was bad or rainy. Weather is the fluctuating state of the atmosphere around us, characterized by temperature, wind, pressure, precipitation, cloud and other weather elements. Climate is the average weather conditions in terms of the normal or average and its unpredictability over a certain time span and area (ranging from months, to 1000s to millions of years. The World Meteorological Organization has defined it as 30 years). Therefore, Climate Change refers to a significant change in the normal climate or its average unpredictability persisting to an extended period, typically decades. This change is known through recording the earth's temperature, which began in 1860. Between 1990 and 2000, the overall earth's temperature was found to have increased by ½ a degree celcius in comparison to the earth's temperature between 1940 and 1950. In the Pacific, we are also feeling the increase in temperature. Now, we are experiencing temperatures of 35 – 36 degrees celcius. In the past, the temperature would go up to only 33 – 34 degrees celcius.

Scientists predict that temperatures will increase by 0.2 degrees celcius every 10 years. This means that by the year 2100, the temperature will increase by 2 degrees celcius. Living things on land and in the sea will surely be adversely affected and will die or move to look for suitable climate conditions if with an increase of 1 degree celcius.

What causes climate change?

There are certain gases like carbon dioxide, water vapour, ozone, methane, nitrous oxide and halo carbons which protects or blankets our earth from the sun's heat and allows enough heat at a temperature suitable for sustaining human, plant and animal life. These gases are know as 'green house gases'. The most important of these gases is the carbon dioxide which we breath out. Carbon dioxide results from burning things. In the past, carbon dioxide concentration in the atmosphere was only 180 – 300 ppm. Now, the level of carbon dioxide concentration is 380 ppm or has increased by 50%. In other words, carbon dioxide emissions are now around 12 times higher than in 1900 as the world continues to burn increasing quantities of coal, oil and gas for energy used for factory machinery and transportation at large scale over the last three hundred years or since the beginning of the industrial revolution.

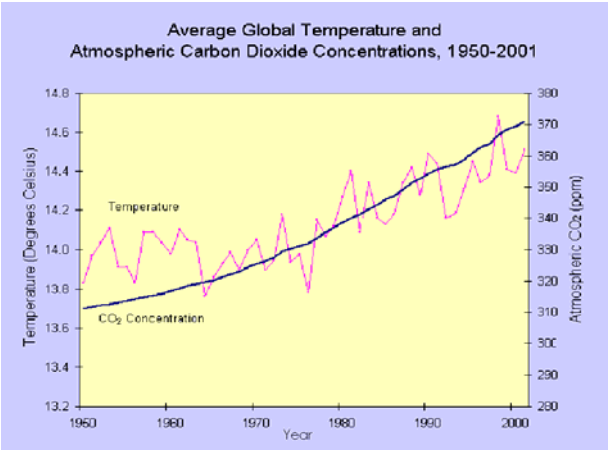


Figure 2. Global Temperature and Atmospheric Carbon Dioxide Concentrations

Furthermore, the clearing of the world's forests for modern development means that as more greenhouse gases enter the air from increased fossil fuel use and agricultural activities, less is being taken out by trees and plants. This imbalance is why we are experiencing a rise in 'heat trapping' greenhouse gas, causing global temperatures to rise, and is the reason for climate change. Without a doubt, the order of nature's balance has been disturbed.

Where do these high levels of carbon dioxide emissions come from?

We are burning more and more greenhouse gases, such as carbon dioxide, which keep the heat of the sun from escaping. This gas comes from burning fossil fuels, like petrol or coal, which fuel our cars and other modes of transportation or make electricity.

- Carbon dioxide – CO2
- Methane – CH4
- Nitrous oxide – NO2
    - vehicles (CO2, CH4, NO2)
    - factories (CO2, NO2)
    - animal farming (CO2, CH4)
    - rice farming (CH4)

What has been done?

Some actions have been taken globally and regionally to address climate change.

Global:

- The Kyoto Protocol: Emission reduction commitment to a set time frame
- Over 180 countries have signed the United Nations Framework Convention on climate change to reduce emissions
- Voluntary target reductions by states and industries

Regional:

- Pacific Island Governments were very vocal and at international negotiations on climate change
- Regional programs and projects implemented include sea level monitoring, climate change research and promotion of adaptation measures

National:

- Find out what actions your nation has taken to address climate change
- Find out what your nation's priorities are in terms of climate change

What are climate change impacts or effects?

The rise in global temperatures is causing the ice caps in the north and south poles to melt, sea temperatures as well as sea levels rise, leading to changes in climate and increasing natural disasters.

Some other effects of climate change are:

- Increasing temperatures in the day and night
- Increasing heat wave
- Increasing heavy rainfall
- Increasing drought
- Increasing frequency and intensity of cyclones
- Increasing frequency of storm surges

These effects would cause the extinction or loss of species and the degradation of natural resources or biodiversity.

Why must you care about climate change?

- The Pacific Islands are the most vulnerable to the impacts of climate change due to our geographic location, we are small island nations spread out in a large ocean most isolated, small atoll islands, with limited land space
- We have limited financial and human resources
- Most of our villages are located near the coast and depend on coastal and marine resources for their food and source of protein and livelihood
- We depend upon our limited natural resources for our key economies; fisheries, agriculture and tourism

How does climate change affect you?

Sea level rise resulting from the thermal expansion of the oceans and melting of ice caps will have the most significant negative effect of these higher global temperatures. It is projected that sea levels will rise by as much as 5 mm. per year over the next 100 years as a result of global warming.

As stated earlier in the presentation the effects of climate change are currently being experienced and they include:

- Warmer temperatures
- Sea level rise
- Extreme weather conditions (cyclones and increase in the intensity of droughts and rainfall)

Climate change will impact Fresh Water:

- Salt water intrusion affecting the quality and quantity of drinking water and damaging agriculture as seawater seeps into the thin wedge of ground water. Such an incident can be caused by sea level rise and storm surges

- Flooding due to increased rainfall in some areas reducing the ability of soil to absorb water.
- More frequent droughts will be experienced in some areas.
- The above mentioned fresh water problems will further affect other industries such as tourism and agriculture

Climate change will impact Agriculture:

- Salt water intrusion making it difficult to keep crops properly watered.
- Inundation and storm surges destroying crops (In Tuvalu taro pits have been ruined by saltwater inundation).
- More intense droughts also ruins crops (e.g. the 1997 – 1998 drought caused $104 million dollar loss in the Fiji Sugar industry and $15 million in the other agriculture industries).
- Changes in rainfall, winds and temperatures lead to changes in growing seasons.
- Rising temperatures and increased rainfall in some areas may lead to increased pests and weeds destroying crops
- With more frequent zand intense cyclones that cause high wind, increased rainfall and storm surges may destroy crops and give them less time to recover – especially for tree crops such as coconut which have a longer recovery time.

Climate change will impact Forests:

- Increased droughts may see a rise in forest fires like the 1997 forest fires in Indonesia that in which about 165,000 hectares were lost as a result of the extended dry season. Similar fires were also reported from PNG.
- Forest play a particularly important roles as they absorb carbondioxide from the air and stores it – acts as sinks.

Climate change will impact Biodiversity:

- Climate change will have a much higher impact on island ecosystems compared to continental areas largely because islands have a large number of species that are endemic. Ecosystems are made up of a set of linked components – a negative effect on one impacts on all others.
- Ground nesting sea birds on low islands will be affected by more storm surges and sea level rise (In the Northern Cook Islands three types of tropical birds have had ground nests damages).
- Cyclones and forest fires destroying habitat and food
- Coral bleaching occurs as a result of higher sea temperatures. Corals live at temperatures between 18 degrees celcius and 28 degrees celcius and a slight increase in the water temperature causes bleaching.
- Increase silt washed into the reefs as a result of high rainfall is a hindrance to coral growth.

Climate change will impact on Health:

- Warming temperatures and flooding leads to increase in malaria and dengue fever – water provides a habitat for mosquitoes and warmer temperatures allows for breeding in areas that were previously too cold.

For example, Malaria which is only found in the eastern part of the Pacific, Solomon Island and PNG may move as far east as Fiji.

- Increased rainfall causing flooding and disrupted sewerage systems and which in turn contaminates water supply is likely to increase Cholera outbreaks.
- Warmer water leads to increased production of marine pathogens (a form of human poisoning) therefore putting the safety of seafood at risk.
- Supply of traditional food crops may be affected as a result of sea level rise, droughts and floods and water scarcity leading to a heavier reliance on imported foods.
- Reduced availability of fish and other seafood is likely to reduce protein intake as well as increase reliance on more expansive and less healthy substitutes from the shops.

Climate change will impact Coastal and Marine Resources:

- The ability of reef plants and animals to make limestone skeletons that build the reefs will be reduced by carbon dioxide concentrations in the ocean.
- Mangroves will have to retreat inland to ensure survival with rising sea levels and coastal erosion.
- Mangrove growth will also be affected by increased sedimentation from more rainfall and flooding.
- Fish-stocks will be affected negatively with the degradation of mangroves and reefs.

While the above impacts can be linked to climate change, it is also very important to recognize that they are also caused by our own daily actions and how we human beings choose to manage our environment. The above impacts are also caused by practices such as over fishing and unsustainable logging, depositing our waste into the rivers and seas and coastal development. The impact of our own daily actions is already a threat to our environment which our lives depend on. Climate change will further increase these risks.

How Do We Adapt To Climate Change?

Adapting to climate change will have to be a continuous process of understanding the problem, learning about how to best address the problem, trying out the most appropriate idea, identifying why those ideas worked or didn't work and integrating the lessons learnt back into the process of addressing the problem. Some general steps to addressing climate change at the community level will include the following:

1. Awareness of the climate change problem
2. Look in more detail how climate change is likely to affect our community
3. Identify the main threats to be addressed
4. Identifying the options to address them
5. Identifying the data to be gathered to evaluate options
6. Plan and gather the required data
7. Develop a Community Adaptation Action Plan that contains the chosen Adaptation measure and how and who will implement the plan

8. Implementation of the Community Adaptation Action Plan

The cooperation and involvement of all community members is of utmost importance to make the community adaptation process effective and useful. Further, community cooperation has to be maintained, if not enhanced, on a continuous basis because preparing ourselves for climate change impacts is not the same as responding to natural disasters such as cyclones or floods. Responding or adapting to climate change requires us to start making adjustments in our daily lives now so that when the slow long-term impacts of climate change occur, we are still able to live the kind of life we value and aspire to.

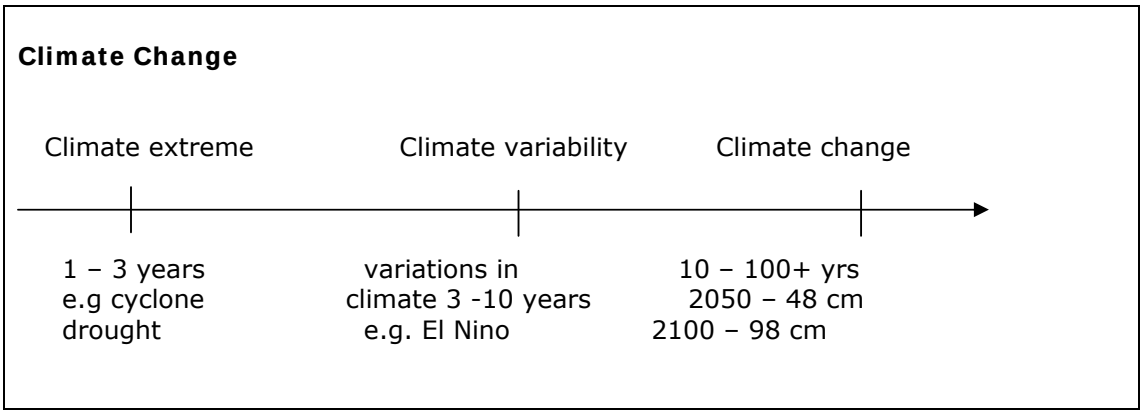


Figure 3. The Difference Between Climate Extreme, Variability & Change

Climatic caused natural disasters or extreme events and climate change impacts are the same. One accumulates over a long period of time whilst the other happens suddenly but both have negative impacts on humans and natural resources

What Is A Disaster?

A disaster is a natural or human-caused event which causes intense negative impacts on people, goods, services, and/or the environment, exceeding the affected community's capability to respond.

A disaster happens when and only when a hazard impacts on a vulnerable community or people. A natural phenomena by itself is not a disaster – only an earthquake, or wind, or flood, or volcano, or drought, etc. Likewise a population may be vulnerable to a disaster for many years, yet without the trigger event there is no disaster. A disaster happens when these two come together.

A hazard is the ***Trigger Event***, which sets off the disaster. The Trigger Event could be any of the following hazards:

- Climatic - cyclone, storm surge, drought, heavy rainfall, flood, landslide, sea level rise
- Geological - earthquake, tsunami

- Environmental - contagious disease, animal disease
- Technical - things humans create e.g. bombs, oil
- Human - war, coup, civil conflict

1.2.2 Drama Exercise On Climate Change

Exercise 2: Climatic Threats

- Invite participants to work in their groups.
- Ask them to discuss and to do the following;

I. List 3 main climatic threats in their geographic region today and in the future. Revisit results of group work and determine the main threats.
II. List 3 impacts of these threats on their natural resources today and in the future.
III. List 3 key activities they think should be undertaken to adapt to the Impacts of climate change on natural resources.

- Ask the groups to combine each identified threat with its impact(s) and what can be done to adapt to the impact(s).
- Once these are done, invite the group to chose one main climate threat to their natural resource, its impact(s) and what can be done to adapt to this climate threat.
- Once the groups have completed their work, invite them to come together in the large group to present the results of their work.
- After a group presentation, ask the rest of the groups to try and guess what they are trying to portray.
- After all the groups have presented, give your comments. Ask someone from each group to take a note of their sequence of pictures. Clearly mark on the paper the group, the session number and date.

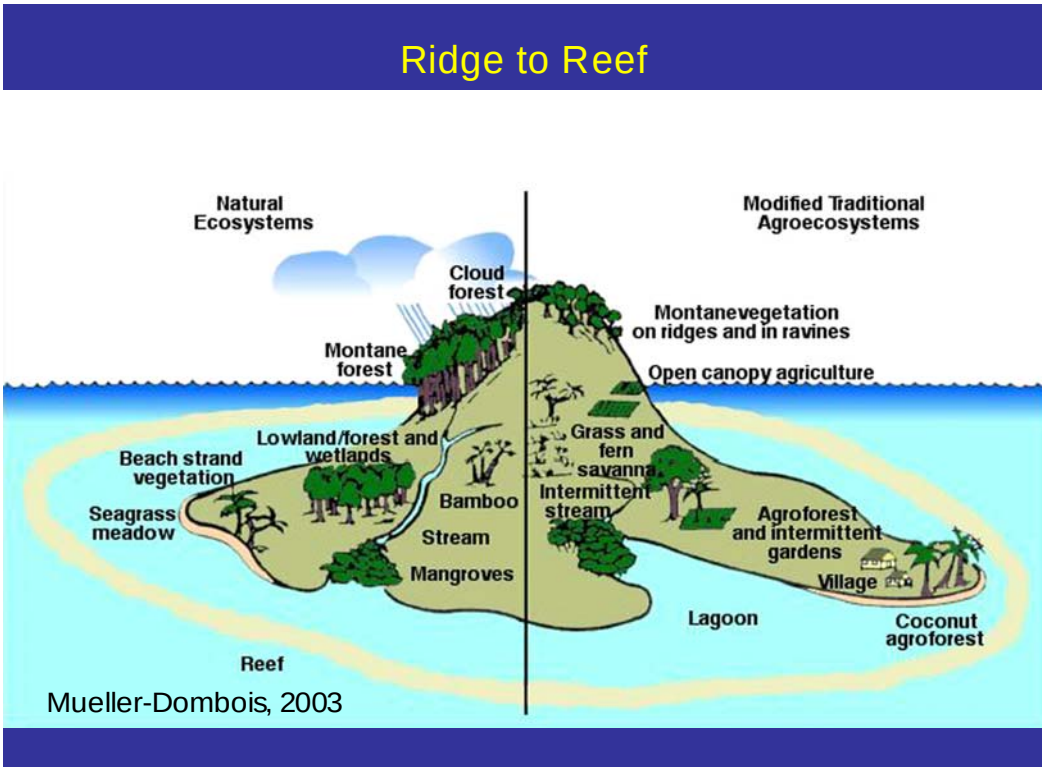
Time: 45 minutes. **Materials:** Butcher paper, Pental markers, Masking tapes.

Pic. 1 Tuvalu youth participants

Pic. 2 Solomon Islands youth participants

1.2.3 Presentations on Biodiversity and Sustainable Development in Relation to Climate Change

BUILDING RESILIENCE



Biodiversity Is:

a) The variety of living creatures in the stratosphere, atmosphere, land and sea; trees, plants, animals, birds and micro-organisms
b) The variety of families of these living things
c) The variety of places where they live – reefs, lagoons, mangroves, streams, rivers, forests...

Sustainable development Is:

The development that makes life healthier, safer, more productive and more enjoyable but doing so without destroying the natural, human and cultural capital needed for the development of the future generations.

The emphasis is on maintaining the 'abundance' of biodiversity, as the foundation for sustainable development. We are to ensure that development and maintaining abundance of biodiversity go hand in hand.

Why Must We Care?

Climate Change and Variability threatens our sources of food security, livelihood and culture, our key economies; fisheries, agriculture and tourism - the very basis of our existence.

1.2.4 Climate Impacts on Biodiversity and Sustainable Development

Exercise 3: Biodiversity Threats

- Invite participants to work in three working groups.
- Have each group work on each of these tables. Rotate the groups after 15 minutes so they all have a chance to contribute in each table.

a) Discuss and fill out the table below.

AREAS	Climatic Threats		Human Threats	Abundance High/Medium/Low	Significance	Community or govt. laws regarding these areas and/or the species in these areas.
	Now	Future				
Coral reefs						
Forest						
Food gardens						
Mangroves						
Coastal areas.						
Fresh Water sources						
Rivers and Streams						

Table 1 – Threats Table

b) Discuss and fill out the 2nd table below.

Climatic Threats	Impacts In 50 years
More Cyclone	
More Heavy Rainfall	
More Dry Periods	
More Evaporation of Water	
Higher Sea Level	
Coral Reef Bleaching	

Table 2 – Future Impacts

Group presentation

C) Discuss and fill out the table below

Current Problems Faced	Priority Now	Problems in 50 years	What needs to be done to address these problems	Priority Solutions to be addressed now	Priority Solutions to be addressed later
Coastal Erosion	1	- Our island will disappear - Climate refugee - Loss of identity	- Planting of coastal trees, mangroves - Increase awareness programs	- Increasing awareness programs	- Planting of mangroves
Sea level rise	2	- Salt H2O intrusion in vegetation - Tidal waves - Coastal erosion - Water problems - Our islands will disappear - climate refugee - Migration	- Negotiate with developed countries to reduce the realeasing of CO2 or the use of fossil fuels - Increased awareness programs	- Increasing of awareness programs for drama, tv programs, radio, etc.	- Negotiate with the developed countries
Strong winds & Hurricanes	3	- No shelter - Less production - Increase in water borne diseases - Education will cease	- Strong wind Warnings - Increasing Awareness Programs - Adopt more Modern Weather equipments	- Preparation - Increasing of Awareness Programs - Evacuate people from risky areas	- Adapt more Modern Weather Equipments
Tidal waves	4	- Caused coastal erosion - Bleaching - Affects the natural resources - Desert low lying Lands	- Planting of Coastal trees - Awareness programs	- Increase the Awareness Programs - Evacuate People from Risky areas	- Planting of Coastal trees
Frequent outbreak of water borne diseases & health	5	- Increase in Malaria and dengue fever - Increased rainfall causing flooding & disrupted sewerage system - Warmer water lead to increase in pathogen	- Awareness of Climate change problems - Increase Medical supply	- Awareness of Climate change programs	- Increase of medical supplies

Table 4: Sample - Likely Impacts of Climate Change In 50 Years.

- Once the groups have completed their work, invite them to come together in the large group to present the results of their work.
- After all the groups have presented, lead them in a discussion of the 2 groups' results of table 1 and synthesize results together. Same as for Table 2.
- Next, invite participants to prioritize significant biodiversity, climate change threats and impacts. List these on a butcher paper.
- If there is a community resource management plan, highlight the plan and discuss with the participants.
- Ensure groups have clearly marked their group name, session number and date on their butcher paper.

Time: 2 hours. **Materials:** Butcher paper, Pental markers, Masking tapes.

STEP 2 **CREATING CLIMATE CHANGE DRAMAS**

Participants are now more aware of the main climate change impacts that threaten the sustainability of their communities' or district biodiversity. These knowledge, coupled with their vision for the future they want, enables them to pick key messages on which to create their dramas and basis for planning their actions regarding what they can do for climate change adaptations.

"Planning begins with the desire to change existing undesirable conditions. Climate change and Disaster risk management action planning starts with an aspiration for safety for the self, the family the community." (*PDRM – ADPC*)

2.1: Planning for the future

2.1.1 Drawing A Mural of Their Perception of Climate Change Implications on Biodiversity in 50 years

- Invite participants to first discuss the concepts for the activities. To agree on a collective concept for how the future will be like in 50 years and how they would like it to be instead.
- Now, have the participants envision the effects of climate change as highlighted in their group work on Exercise 3, Table 2. It will be good to revisit the groups' work on Table 2.
- Have them discuss and agree on a concept
- Ask them to select a one or two people to draw their mural.

2.1.2 Visioning

- Ask the participants to envision what they would like the future to look like
- Have them discuss and agree on a concept
- Ask them to select volunteers who can draw a mural of the future they want for their community

Time: 1 hour. **Materials:** Butcher paper, Pental markers, Masking tapes, Colour pens.

2.2 Drama Techniques

A) Mime:

Acting without words. In mime the actor must be 100% committed to the object mimed. If he picks something, to remember to put it back somewhere and not just let the object disappear into thin air. The air must consider the size, shape, weight, height, texture, length and temperature of the object or place mimed.

B) Improvisation:

To make something up in an instant and initially with no idea how a story will end. This method uses the Point of Concentration and the 'What', 'Where' and 'Who' ...whilst the why is still unknown. Actors decide on the what, where and who to improvise a drama and as the story unfolds the why surfaces.

C) One Liners

Actors in a group have a theme. Using improvisation, each person says one line with an action and the next person builds on that and the next until a story surfaces.

D) Five Liners

It is similar to 'One Liners' in that each person in a group of 5 say one line each on a given theme. The first 5 lines should describe the where, who are the characters, what they are doing and why they are there.

E) Chorus

The use of chorus takes the pressure off trying to learn lines and keeps actors focused more on acting. Chorus can be used to comment on what others on stage are doing or to be a conscience or feelings of one character. It is great for first time actors because they get to say only one line or say one line with one or more characters. In choruses, some lines can be spoken by two or more people or the whole group

G) Songs:

Simple, popular and catchy tunes are effective for getting messages across to the public and especially to schools. The participants can choose from rap, pop, reggae, country, opera, army marching song, cheer chants, etc.

H) Cultural Dances

Use local dances moves similar to a climate hazard type to do a climatic threats drama.

2.3 Creating Climate Change Dramas

Exercise 4:

- Invite the participants to revisit the priority climate threats in their community region, the priority impacts of those threats and the priority adaptation options for those impacts. List these if not listed already and discuss in order to find key message to build the dramas on. For example, flooding scenario and its impacts on biodiversity including people and adaptation measures such as building house on stilts, relocation of homes to higher ground etc. Participants can create this dramas using 1 or 5 liners or improvisation.

- Ask the participants to discuss and do an improvisation of the following;
  a) the impacts of climate change on food security
  b) the impacts of climate change on the economy
  c) the impacts of climate change on maintaining culture and tradition

- Participants could join together the short skits put from Exercise 1 on the causes and effects of climate change and exercise 2 to describe what is Climate change.

- Invite participants to create songs and cultural dances.

Time: 2 hours. **Materials:** space, people and gestures

Exercise 5: Community Theatre Action Plan

- Invite participants to develop or strengthen their community theatre group
- Facilitate their action planning for e.g. rehearsal times, community performances and adaptation activities in their respective villages.
- The table below can be filled as they make plans.

Activities	What needs to be done	Who is responsible	When to do it

STEP 3 Conducting Community Awareness Raising Drama Performances

The community awareness raising performances are the best part but depending on how much preparation went into the production of the drama, is the effectiveness of the play. Below is a sample community theatre awareness program and a sample evaluation form that is given out to selected members of the audience to assist the group gauge audience response and the effectiveness of the drama itself.

Figure 6. Sample Community Theatre Performance Program

1. Traditional protocols

2. Introductions
   - Prayer
   - Welcome
   - Objective of the visit
   - Why community theatre for climate change awareness
   - Why youth are engaged
   - Introduction of visitors and participants

3. Climate Change Theatre Performance

4. Post Performance Group Discussions
   - Comments on theatre messages
   - Brief introduction on Climate change impacts on biodiversity
   - Introduction of Group activities
   - Breaking into small groups (men, women, youth & children)
   - Distribution of pens and newsprints

5. Groups Discussions – A
   - 5.1 – Identifying climate change issues
   - 5.2 – Prioritization of issues
   - 5.3 - Group work presentations

   Group Discussions – B
   - 5.4 - Climate change Impacts in 50 years
   - 5.5 - Identifying solutions
   - 5.6 - Prioritization of solutions
   - 5.7 - Climate change adaptation planning
   - 5.8 - Group presentations

6. Summarization of program results by Theatre Group Leader

7. Final words from the Community Leader

8. Prayer

9. End of program

Community Theatre Evaluation Form

The evaluation forms are aimed to assist the group gauge audience response and effectiveness of their performance program. These forms are handed out by the community theatre troupes to selected members of the audience before a performance. Forms are collected after the performance. Below is a sample form.

……

COMMUNITY THEATRE EVALUATION FORM

Please kindly fill out the questionnaire below and return when completed. Your feedback assists the group monitor their community theatre performance program.

1. What is the drama about?

……
……

2. What is the drama trying to tell you?

……
……

3. Do you think you can do or not do what the drama is asking you?

Tick your answer □ Yes □ No If your answer is 'no' please explain.

……
……

4. Was there anything in the drama you did not understand?

Tick your answer □ Yes □ No If your answer is 'no' please explain.

……
……

5. What did you like about the performance (drama, song, dance, etc.)?

……
……

6. Was there anything you did not like about the performance?.

Tick your answer □ Yes □ No If your answer is 'yes' please explain.

……
……

7. Do you have any suggestions to improve the performance?

……
……

Thank you kindly for taking the time to fill this form.

GLOSSARY

HAZARD	The potential for a natural or human-caused event to occur with negative consequences
EMERGENCY	A situation generated by the real or imminent occurrence of an event, requiring Immediate attention
DISASTER	Natural or human-caused event which causes intense negative impacts on people, goods, services, and/or the environment, exceeding the affected community's capability to respond
DISASTER MANAGEMENT	A collective term encompassing all aspects of planning for and responding to emergencies and disaster, including both pre- and post- event activities. It refers to both the risk and consequences of an event.
HAZARD ASSESSMENT	Includes hazards, frequency, severity, locations/area, time period/duration and speed of onset
VULNERABILITY	The extent to which a community's structure, services or environment is Likely to be damaged or disrupted by the impact of a hazard
RISK	The probability that loss will occur as the result of an adverse event, given The hazard and vulnerability
RISK EQUATION	Hazard x Vulnerability = Risk
ASSESSMENT	It is a quantitative evaluation to determine facts, numbers, amounts etc. E.g. An assessment determines there are 12,000 people, 3,000 homes, 100 businesses and a power plant that are vulnerable to flooding
ANALYSIS	It is the synthesis of facts (as assessment) into a conclusion or recommendation Example: After reviewing the history of flooding the vulnerability assessment And the mitigation measures that have been taken, the analysis of risk is moderate (M)
DEVELOPMENT	The cumulative and lasting increase, tied to social changes, in the quantity and Quality of a community's goods, services and resources, with the purpose of Maintaining and improving the security and quality of human life without Compromising future generations
COMMUNITY	The district or locality in which people live (A physical locations A group of people living in the same locality and under the same government (political attachment) A social group having common interests (social attachment)

INSTITUTE OF APPLIED SCIENCES

THE UNIVERSITY OF THE SOUTH PACIFIC

REPORT

Climate Change and Variability Implications on Biodiversity – Youth Scenario Simulations
Drama Training Workshop
Maravagi in Solomon Islands
April 2009

by

Sukulu Rupeni

Contents Page

1.0 ACKNOWLEDGMENT

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- The Foundation for Asia and the Pacific International (FSPI)
- The Solomon Islands' Development Trust (SIDT)
- The Workshop Participants
- The Maravangi Resort Staff

2.0 INTRODUCTION

The Climate Change and Variability Implications on Biodiversity – Youth Scenario Simulations Project is a partnership project of the Asia Pacific Network for Global Change and Research and the University of the South Pacific's Institute of Applied Sciences.

The Institute of Applied Sciences of the University of the South Pacific's (Climate Change and Variability Implications on Biodiversity - Youth Scenario Simulations) project takes a holistic integrated approach to sustainable development through the integration of climate change and variability with biodiversity conservation and fostering youth contribution.

The project recognizes youth as the future custodians of the South Pacific Islands' natural resources. It seeks to foster community youth contribution in biodiversity conservation through raising awareness regarding climate change impacts and implementing adaptation projects to ensure security and availability of resources for future generations.

Therefore, the project's main objectives are to (i) build South Pacific Island youth capacity in drama for climate change impacts on biodiversity; (ii) conduct awareness raising drama performances; (iii) build community and youth capacity in participatory climate change risk assessment and adaptation planning; (iv) and to implement identified priority soft measure adaptation options.

This two year project was first piloted in Fiji (2006 – 2007) for the first project phase and is replicated in Tuvalu and the Solomon Islands as the second project phase (2008 – 2009).

The project workshop / training methods are highly interactive including lectures, presentations, role plays, dramas, songs, dances, participatory learning and action tools.

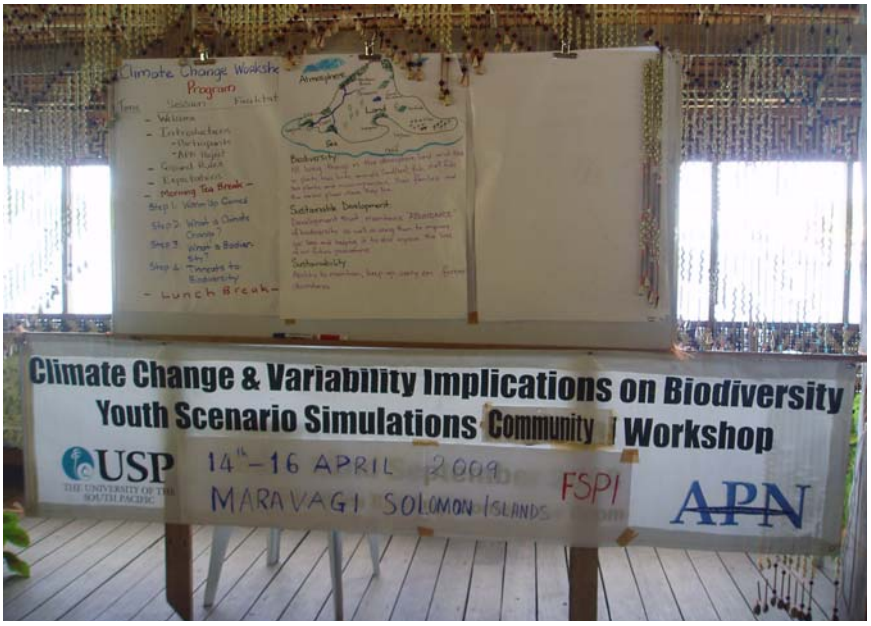
In Fiji, more than 80 youth from 3 provinces in Fiji (Rewa, Cakaudrove and Tailevu) were provided training on climate change and variability, biodiversity and sustainable development. They were provided skills in Theatre for Development or the use of songs, cultural dance, drama as education and awareness raising tools for development. Stewardship of biodiversity was emphasized and promoted as foundation for sustainable development. Youth were encouraged to work with their village/district/provincial leaders, elders and community members to generate discussions on climate change issues, identify priority problems and together find solutions which the youth themselves can be involved in the developing and implementing in their own villages. As a result, Fiji theatre groups developed climate change story lines, songs and traditional dances and performed these items in 28 villages; national, provincial and district gatherings and schools. The adaptation soft measure projects youth have implemented include digging rubbish disposal pits and awareness raising on waste management; setting up native plants and mangrove nursery, replanting trees along the shorelines, respecting and protecting marine tabu areas, planting variety of root crops to maintain abundance, to serve as food and livelihood sources.

3.0 SUMMARY SHEET

TOPIC	DESCRIPTION
Drama Training Workshop	
Project Name	Climate Change and Variability Implications on Biodiversity – Youth Scenario Simulations
Donor Agency	Asia Pacific Network for Global Change and Research and the Global Environment Fund
Organizer	Institute of Applied Sciences of the University of the South Pacific
Workshop Facilitators	Solomon Islands Development Trust – Hugo Tafea, SI Coastal Program Manager and Patrick Kekea University of the South Pacific – Sukulu Rupeni
Number of Participants	16
Other organizations represented	Resource Owners' Association (ROA)
Methodology	Lecture, drama, Participatory Learning and Action tools
Workshop Objectives	• To introduce the APN/USP project • To provide information and knowledge on Climate Change, biodiversity and their connectedness to sustainable development. • To provide information and skills in basic theatre techniques. • To assist participants create two short climate change plays, a song and cultural dance. • To assist participants' develop their climate change awareness project action plan.
Achievements	• 16 youth have enhanced understanding of climate change and variability, biodiversity and connectedness to sustainable development • Identified key climate change issues youth will address through their awareness raising dramas • Created 3 drama outlines on biodiversity threats

4.0 WORKSHOP PROGRAM

Day 1	Introduction and Knowledge	Facilitator
09:00am	Welcome	Hugo Tafea
09:05am	Opening Prayer	Francis Durai (ROA)
09:10am	Introduction of Participants	Patrick Kekea
09:15am	Introduction of the APN Project & Workshop Objectives	Sukulu Rupeni
09:30am	Workshop Program, Ground Rules & Expectations	Patrick Kekea
10:00am	***TEA BREAK***	
10:30am	Climate Change	Hugo Tafea
11:00am	Biodiversity and Sustainable Development	Patrick Kekea
11:30am	Warm Up Games	Patrick Kekea
11:45am	Drama – Biodiversity and Threats	Sukulu Rupeni
1:00pm	***LUNCH***	
2:00pm	Listing of current climate change problems and prioritization	Patrick Kekea
2:30pm	Group work on likely Climate Change Impacts in 50 years (Drama) - Coral reefs - Forests - Human Diversity	Hugo Tafea
3:00pm	***TEA BREAK***	
3:15pm	Solutions and visioning	Patrick Kekea
3:30	Action Planning	Hugo Tafea
4:30pm	End of Workshop	



Workshop at Maravagi Resort, Western Province, Solomon Islands

5.0 NARRATIVES OF WORKSHOP PROCEEDINGS

This was a one day workshop. The day aimed to provide key information on the project rational, objectives, process, achievements in the first phase that was piloted in Fiji and key messages on climate change, biodiversity, and sustainable development. The participants consisted of youth and several community leaders and district and local NGO representatives.

5.1 INTRODUCTIONS

5.1.1 WELCOME

The workshop was opened with a prayer by the Resource Owners Association representative, Mr. Francis Durai. Hugo Tafea welcomed everyone and led in the introduction of participants and facilitators including himself

5.1.2 APN/USP PARTNERSHIP CLIMATE CHANGE PROJECT

Sukulu Rupeni introduced the APN/USP partnership project and involvement of the Foundation for the Peoples of the South Pacific International and its affiliates in the Solomon Islands and Tuvalu and the Locally Managed Marine Area Network. In addition, she gave a brief update of work carried out in the Fiji project sites during the 1st project phase.

5.1.3 PARTICIPANTS EXPECTATIONS

Patrick Kekea led the participants to state list their expectations of the workshop. Many revealed they wanted to learn more about climate change, biodiversity, natural hazards in order to pass on information to others and be able to deliver well through their dramas. (*Please see attachment 2 for Participants' Expectations*)

5.1.4 GROUND RULES

The local partner facilitators thought this a fitting exercise to assist in the flow of the program and to help participants work well together in a learning environment. Patrick led the participants in setting their own ground rules and as well consequences if ground rules are broken. (*Please See attachment 2 for Workshop Ground Rules*).

5.2 CLIMATE CHANGE AND VARIABILITY PRESENTATION

Mr. Hugo Tafea presented on Climate Change and Variability implications on biodiversity in the Pidgin language.

5.3 BIODIVERSITY AND SUSTAINABLE DEVELOPMENT

Mr. Patrick Kekea and Mr. Tafea presented on these topics in the Pidgin language. They provided the definitions of the words and described and provided examples of what biodiversity and sustainable development are.

5.4 WARM UP GAMES

This session got participants on their feet and moving. It included making melody; freezing and melting during a narration and making gestures to represent a hazard as it is called out. Participants thoroughly enjoyed this exercises and got them warmed up.

Participants make melody using Solomon Islands mouth pipes

5.5 DRAMA – BIODIVERSITY AND THREATS

Participants were split into three groups to discuss and dramatize biodiversity and current threats. (*See Attachment 3 for individual group work result)*. Below is a synthesis of groups work results on biodiversity and current threats, relationships amongst biodiversity and dramatization. *(See Attachment 4 for group work on relationships amongst biodiversity)*

Group discussion on biodiversity and threats

Threats to biodiversity highlighted by participants are destruction of marine, coastal and land habitats through the use of dynamite, small nets, over fishing, extraction of corals for lime production used for chewing betel nut, sand mining, building of jetty, pollution, human waste or untreated sewerage, coral trampling, aquarium trade, careless tree felling of coastal and land trees, logging, burning of trees and grass, over harvesting and exploitation of forest, gardening close to streams, oil spill, insects and pests destroying palm trees, poor soil quality, salt water intrusion into dug wells, seal level rise, earthquake, strong currents/swells and cyclone.

5.5.1 Synthesis of group work results on BIODIVERSITY AND THREATS

Key Resources	Threats	Existing Biodiversity
- Sea	Marine biology extinct, destruction of habitat	Sea shells, Fish (deep), cray/lobsters, beach-de-mer (pou)
- Coral reefs	Dynamite, over fishing. Lime production, trampling, aquarium trade, pollution	Fish, clam shell, turtles, sea weeds, whales, squids, corals, beach-de-mer, sea grass, octopus, clam shells, bivalve species (ke'e, havulu, sua, ngare, stone crabs)
- Marine Protected Area	Population, pollution	
- Fish	Small nets, waste disposal, pollution	
- Beach	Cutting of beach trees, high tide, strong currents/swells, sand mining, building of jetty etc.	
- Mangroves	Sea level, oil spill, health and sanitation, Materials, house, unnecessary cutting, high tides	small fish, shell or Kuta, Tue, Boru, Ihu, Ship worm, Jellies & polaps, ray fish, oyster, Mud shell, sharp tail, florid blue orchid, furring fox, mud crab
- Streams	Cutting of trees upland, gardening close to streams, logging, mining, human waste	Shrimps, tilapia, bagovu, eels, prawn water crayfish, water snails, mud fish (*Mauvo, pomo, ura, pipopo, kona kona, bari*),
- Coconuts	Pests, insects, soil nutrients absent, entomology	
- Forests	Population, over harvesting & exploitation	Iguana, crabs, wild pigs, birds, Opossum, lizards, snakesnails, orchid, florida blue
- Trees	Open fires, cutting of trees for no purpose, burning	birds, snake, ants, carterpillar, grass hopper kadora
- Garden	Planting of necessary trees leaves no space for gardens, grounds into stone, food is not bearing well, frequency of rain, landslides, erosion, pollution increase	
- Grass hill	Burning of grass	grass hopper, centipede, snake, small grass bird, earth worms, other micro-organisms
- Stones	Sea level rise (split apart), earthquake, use for building of house, sociology, economics, violence	
- Roads	Unclean roads	
- Dug Wells	Overflow of rain water into wells, mixture of salt, dry	
- Houses	Lack of sago palm leaf, lack of stick, windy – cyclone (natural disaster)	
- Church	Lack of resource to cope with completion of church building, religious life is low (attendance & participation) etc.	
Clinics	Relocation, lack of medicine, population growth increase	
- Betelnut	Stealing of betelnut, destroyed by insects/pests	
- Human Beings	Getting married at a very young age, and also change of human system before (tall) and now (shorter)	

5.5.2 Dramatization

Participants worked in their 3 groups to dramatize biodiversity and climate change impacts.

Group 1: Land biodiversity
The story is about unsustainable land use practices including logging, careless tree felling, burning and land clearance for agriculture. As a result animals and birds roam and fly about complaining their homes are destroyed. Heavy rain falls start to cause soil erosion. Birds and animals look on as a farmer sees the damages soil erosion has made on his food gardens. In anguish the farmer cries out…'now where will I get food and money?'. In anguish the birds and animals also cry out in unison ….'now where will we live, our homes are destroyed?'.

Workshop participants' scenario simulations

Group 2: Marine biodiversity
Villagers go fishing and within minutes they return with a big catch. A business owner comes to the village and wants to buy some corals. The greedy local village chief sells him all the corals in their fishing ground. A cyclone and storm surge follow. Village members use dynamite, poison and small nets for fishing. Villagers enter to fish and have to wade out to the deep and wait longer but still no catch. Soon the villagers decided their fishing ground is depleted and they scratch their heads wondering what has caused all this? A conflict breaks out in the village as everyone blames the chief, then those who use dynamite and poison and those who fish too much. They call in the local fisheries department representative and the police to help them find out why their marine resources are depleted and who caused it. The local fisheries representative listens to their complaints and gives them his feedback and recommendations for a marine protected area so fish stock can increase again and a ban against the use of poison, dynamite and small nets. In addition, he talks about the impacts of climate change on their resources. The villagers agree and decide to work together to restore their marine resources through establishing a marine protected area and banning the use of destructive fishing practices including pollution, for their own sake and for their future generations.


Youth dramatization

Group 3: Coastal biodiversity

Crabs and fishes gather around the mangrove habitat talking about such a safe place for breeding and feeding but recently their environment is getting darker,
polluted with rubbish and more muddier especially when it rains. While crabs and fishes are talking, rubbish gets thrown on them, shocked they scurry away to hide. Peeping from behind a rock they can see mangroves getting chopped off.
Crabs and fishes come out of hiding, shaking their heads and looking sad. Together they say, 'this place is no longer safe for breeding and feeding, what must we do? (*turning to the audience*) what must humans do?

5.6 CLIMATE CHANGE PROBLEMS

Participants were asked to work in their groups to discuss and list natural or climatic problems, their causes, impacts, most vulnerable people, solution and key messages

Participant presents results of group work

5.6.1 The climate change related problems listed were;

- Flooding (rain and high water)
- Cyclone (windforce & rain with strong waves)
- Drought (without food and water)

5.6.2 Below is the synthesis of the group work results on Climate Change Problems

Problems (Climatic Hazards)	Causes	Impacts	Vulnerable People	What Needs to be done?	Key Messages
Flooding	Rain and high water- climate change Logging and prospect farming	Food gardens, houses, trees, 12 million was the cost of damages, 3,000 people affected	Children, elders, women. People who live on river banks and low lying areas. Unprepared people	Need awareness. NGOs and communities need to have a workshop	- Keep their environment intact - Effect of resources exploitations - Climate change and variability - Sustainable harvesting of trees - Select sustainable development that does not contribute to the impacts - Biodiversity - Tradition Culture - Population
Drought	Climate change	Water is dry, food and crops die, no rain, bush fire, relief supply worth millions of dollars, affects everyone	Everyone in the coastal area. Unprepared people	Awareness through information, radio, etc. NGOs & Theatre groups to raise awareness Management action plan	- Climate change - Management action plan - Sustainable harvesting
Cyclone	Climate change	Homes, food gardens, water destroyed, 3 – 7 million dollars cost of damages, affected 7-10,000 people	Whole Ngella island, Sandfly and Buena Vesta because they live along the coast. Unprepared people	More community awareness needs to be done. Drama and theatre Media	- Focusing on Risks or incoming danger - Be prepared - Cut birth rate (population) - Health and sanitations improvements - Listen to weather forecasts & instructions

5.7 LIKELY CLIMATE CHANGE IMPACTS IN 50 YEARS

Participants were asked to work in their 3 groups to discuss and write what the likely effects of climate change will be in 50 years.

Group 1: Biodiversity in Coral Reefs;

Natural Threats In 50 Years	Biodiversity - Coral Reefs
More cyclone	Corals will die and destroyed
More heavy rain	They will die of water pollution from silt sedimentation
More dry periods	Unhealthy corals, fish will move far away from Solomon Islands coral reef to find cool areas
More evaporation of water	Reef polluted and also affected
Higher sea level	Destroy corals
More coral bleaching	Coral will die, fish stock will decline

Group 2: Biodiversity in Mangroves;

Natural Threats in 50 Years	Impacts on Biodiversity - Mangroves	Future Impacts
More cyclone	Mangroves will be destroyed and also shell fish, crabs, fishes	- decreases in economy - increase in poverty - increase sex work – affect Health – HIV/AIDS
More heavy rain	Increase silt sedimentation will kill all the resources e.g. shell fish	- decline in mangrove species
More dry periods	Will cause particular species in mangrove habit to not cope	- all the terrestrial and marine life will die
More evaporated water	Natural restoration of such species will be unable to recover because of high water	- change of system in mangroves
High sea level	Mangroves will be uprooted. Resource like fish etc. will not be able to breed because of difference appearance	- mangrove will sink and die
More coral bleaching	Because of interconnectivity, coral bleaching will increase leading to no coral, no fish, no money, no help to contribute for 40% carbon dioxide.	- lack of adaptation to the above, we will sink 6 ft in the coffin.

Participant work groups

Group 3: Biodiversity in Forests and Coral Reefs

Natural Threats in 50 Years	Impacts on Coral Reefs	Impacts on Forests
More cyclone	- decrease in habitats - decrease in marine Resources	- erosion takes place - destruction of trees
More heavy rain	- decrease in coral supply and existence - silt sedimentation, run offs washed into the sea - causing threats to marine Life	- landslides - soil erosion
More dry periods	- corals will die - fish will move away	- bush fire occur - low yield of resource
More evaporated water	- A lot of water will cause marine destruction	- withered plants - less carbon production
High sea level	- strong ocean current causing bleaching	- withered plants - slow growth of plants - contours spoiled
More coral bleaching	- scarce marine life - shortage of habitats	- insufficient air to the forest


Work group discussions

Hugo Tafea makes a point

Participants take a break

5.8 Workshop Closing

Since this was a one day workshop, three more activities were left undone because time was up and participants had to catch their boat back to their villages. It was decided that the remaining activities be carried out on the final day of the Risk Assessment workshop held in Leitogo village. Mr. Francis Durai offered a word of prayer to close the workshop.

Participants set sail to their villages from Maravagi

6.0 CONCLUSION AND RECOMMENDATIONS

The one day workshop was a success, participants have enhanced understanding of climate change and variability, biodiversity and connectedness to sustainable development; identified key climate change issues to address through awareness raising dramas; identified activities they can undertake to support their communities' resource management plan and created 3 drama story outlines.

Participants recommended similar workshops conducted around the country to raise awareness and assist community youth participation in biodiversity conservation and adapting to impacts of climate change and variability.

Workshop participants

Attachment 1: Workshop Participants List:

No.	Name	Age	Gender	Village	Work
1.	Edmond Pegasi	40	M	Leitongo	-
2.	Mr. Nancy Pule	46	M	Hanipana Centre	Garden Centre Coordination Member
3.	Patteson Maetoni	20	M	Leitongo	Garden Centre Coordination member
4.	Charles Tura	49	M	Leitongo	Food committee chief
5.	Joel Tele	40	M	Leitongo	Elder
6.	Francis Durai	46	M	Sisili	Chairman Resource Owners Association
7.	Clement Mela	62	M	Leitongo	Association of Companion
8.	Robert Pule	46	M	Hanipana Centre	Chairman Hanipana Centre
9.	Ini Collin Ruka	30	M	Leitongo	Association of Companion
10.	Serah Kavoa	31	F	Leitongo	Housewife
11.	Maret Toke	25	F	Leitongo	Member
12.	Ray Mano	56	M	Olevuga	Member of SHC
13.	Clement Keli	59	M	Sisili	Member of ROA
14.	Joseph Keba	37	M	Leitongo	VDW/FSPI
15.	Rachel Keba	30	F	Leitongo	Pitudila
16.	Priscilla Bale	22	F	Leitongo	Member

Attachment 2: (a) Participants Expectations

1. Deliver new information to Pitudila Action Group
2. Report/Implementation to be submitted to relevant authorities
3. Learn more on how of climate change
4. Common management action plan for Pitudila & ROA – Gela Region
5. Greater participation of all leaders (chiefs, elders)
6. Increase knowledge of Pitudila on simpler terms in order to deliver
7. Integration of cultural/modern knowledge
8. Development and change regarding climate change
9. Learn more on threats/hazards to be biodiversity
10. Learn more in order to pass on to other women & children (Mrs. R. Keba)
11. Effects on climate change on health & in return promote awareness to Sandfly, Longana community (Joyce Kuko)
12. Adaptive knowledge in subsistence farming in order to sustain children (Mrs. Kigo)
13. Build Sea walls/or similar along coastlines
14. Ways to stop home brew alcohol
15. Security fund for transport etc.

Attachment 2: (b) Participants Ground Rules

- Speak in English
- Be on time
- No chewing of betel nut
- Respect each other
- Excuse before leaving the workshop room
- Consequence for breaking workshop rules = custom dance

Attachment 3: Group Work on Biodiversity and Current Threats

Group 1:

Key Resources	Threats
- Coral reefs	Dynamite, over fishing. Lime production, aquarium trade
- fish	Small nets, waste disposal
- Beach	Cutting of beach trees, high tide, strong currents/swells, sand mining, building of jetty etc.
- streams	Cutting of trees upland, gardening close to streams
- coconuts	Pests, insects
- trees	Open fires, cutting of trees for no purpose
- garden	Planting of necessary trees not giving space for garden, grounds into stone, no bearing of food well, frequency of rain
- stones	Sea level rise (split apart), earthquake, use for building of house
- dug wells	Overflow of rain water into wells
- houses	Lack of sago palm leaf, lack of stick, windy (natural disaster)
- church	Lack of resource to cope with completion of church building etc.
- betelnut	Stealing of betel nut, destroying by insects/pests
- human beings	Early age gets married and also change of human system before (tall) and now (shorter)

Tubila village - Existing biodiversity

Reef:

Fish, turtle, clam shells, bivalve species (ke'e, havulu, sua, ngare, stone crabs)

Forest:

Opossum, lizards, crab, snake, birds, snails, orchid, florida blue

Streams:

Eel fish, prawn water crayfish, water snails, mud fish

Mangroves:

Mud shell, sharp tail, florid blue orchid, furring fox, mud crab

Group 2:

Key Resources	Threats
Coral reefs	Dynamite, trampling
Forests	Population, over harvesting & exploitation
Mangroves	Sea level, oil spill, health and sanitation
Streams	Logging, mining, human waste
Coconut plantation	Entamology, soil nutrients, (absences)
Domestic homes	Sociology, economics, violence
Food gardens	Landslides, erosion
Clinics	Relocation, lack of medicine, population growth increase
Church	Religious life low, (attendance and participation)
Sea	Marine biology extinct, destruction of habitat
Water wells	Mixture of salt, Dry

Existing biodiversity:

1. *Coral reefs:*

Fish, clam shell, turtles, sea weeds, whales, squids

2. *Forests:*

Iguana, crabs, wild pigs, birds

3. *Mangroves*

Jellies & polaps, ray fish, oyster, kuta, tue, boru

4. *Stream:*

Shrimps, tilapia, bagovu, eels,

5. *Sea*

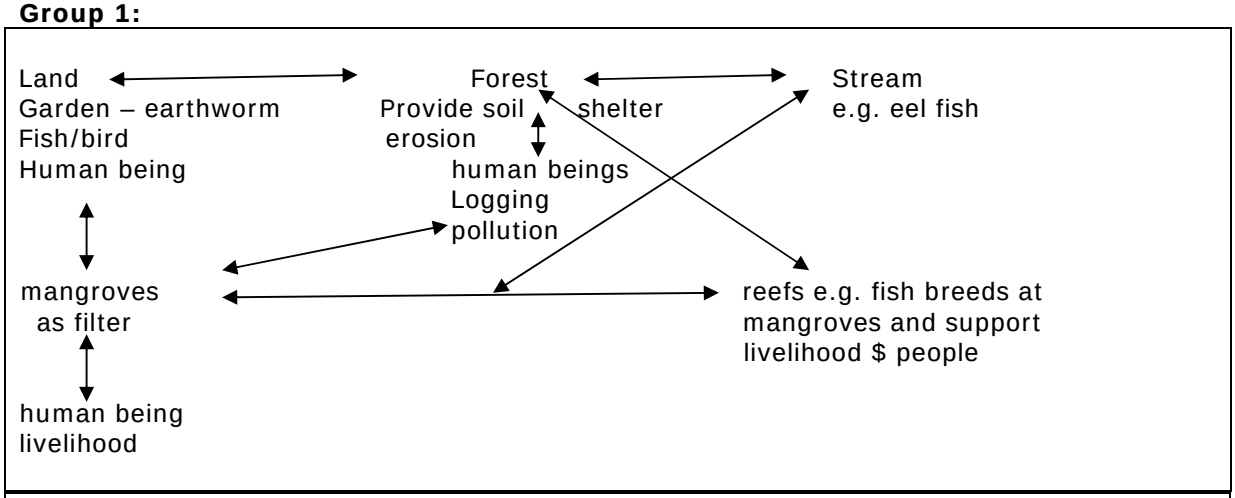
Sea shells, Fish (deep), cray/lobsters, beech-de-mer (pou)

Group 3:

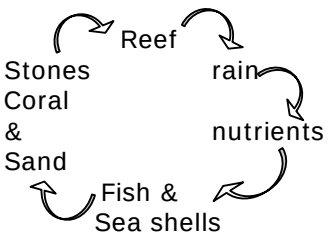
Key Resources	Threats
stream	Cutting down of trees - logging, - gardening *Existing biodiversity*: Mauvo, pomo, ura, pipopo, kona kona, bari
House	
Grass hill	Burning of grass *Existing biodiversity:* grass hopper, centipede, snake, small grass bird, earth worms, other micro-organisms
Garden	Pollution increase
Coconuts	
Mangroves	Materials - house - unnecessary cutting - high tides *Existing biodiversity:* small fish, shell or Kuta, Tue, Boru, Ihu, Ship worm
Fish	Pollutions
Road	Unclean road
Trees	- cutting - burning *Existing biodiversity:* Kadora, birds, snake, ants, carterpillar, grass hopper
Marine Protected Area	- populations - pollution
Reef	- pollution - dynamite *Existing biodiversity:* clam shells, fish, corals, beach-de-mer, sea grass, octopus

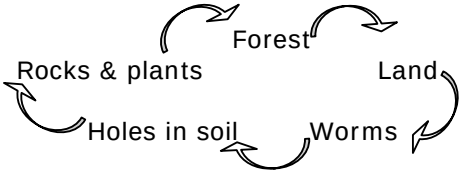
Attachment 4: Relationship Amongst Biodiversity

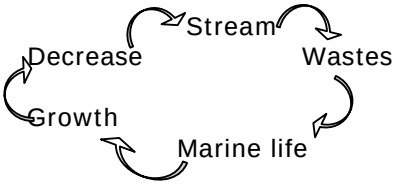
Group 1:

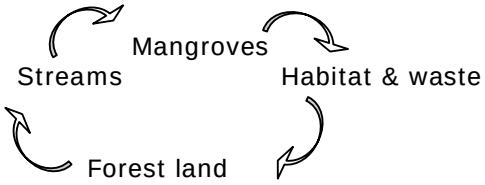


Group 2:

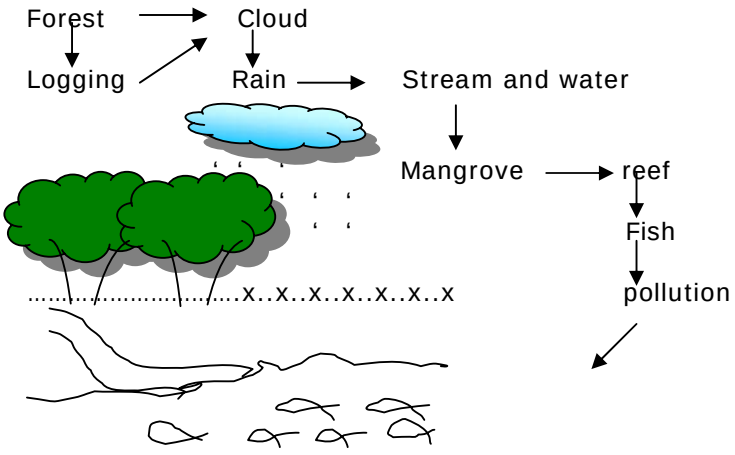








Group 3:



Attachment 5: Community Performance Program

A community theatre performance sample program. The actual community theatre program normally takes 2 - 3 hours for one sitting where the troupe makes a 20 – 30 minutes theatre performance followed by discussions.

Below is a sample Community Theatre Performance Program

1. Traditional protocols

2. Introductions
   - Prayer
   - Welcome
   - Objective of the visit
   - Why community theatre for climate change awareness
   - Why youth are engaged
   - Introduction of visitors and participants

3. Climate Change Theatre Performance

4. Post Performance Group Discussions
   - Comments on theatre messages
   - Brief introduction on Climate change impacts on biodiversity
   - Introduction of Group activities
   - Breaking into small groups (men, women, youth & children)
   - Distribution of pens and newsprints

5. Groups Discussions – A
   - 5.1 – Identifying climate change issues
   - 5.2 – Prioritization of issues
   - 5.3 - Group work presentations

   Group Discussions – B
   - 5.4 - Climate change Impacts in 50 years
   - 5.5 - Identifying solutions
   - 5.6 - Prioritization of solutions
   - 5.7 - Climate change adaptation planning
   - 5.8 - Group presentations

6. Summarization of program results by Theatre Group Leader

7. Final words from the Community Leader

8. Prayer

9. End of program

Attachment 6: Community Theatre Action Planning

5.11 Community Theatre Action Planning

a) Priority Climate Change Adaptation Activities Youth Will Implement to support their existing resource management plan.

	Priority Climate Change Problem Currently faced	Adaptation Activities Youth Will Implement	Whose Responsible	When
1.	Erosion – land and coast	Planting native trees and coastal trees including mangroves	Hugo Tafea	To be determined after meeting with partners
2.	Lack of awareness of climate change impacts	Awareness raising on climate change impacts on biodiversity through theatre performances.	Hugo Tafea	

b) Theatre group Name: 'Pitudila' Community Theatre Group
Theatre Group Leader: Mr. Joseph Keba

INSTITUTE OF APPLIED SCIENCES

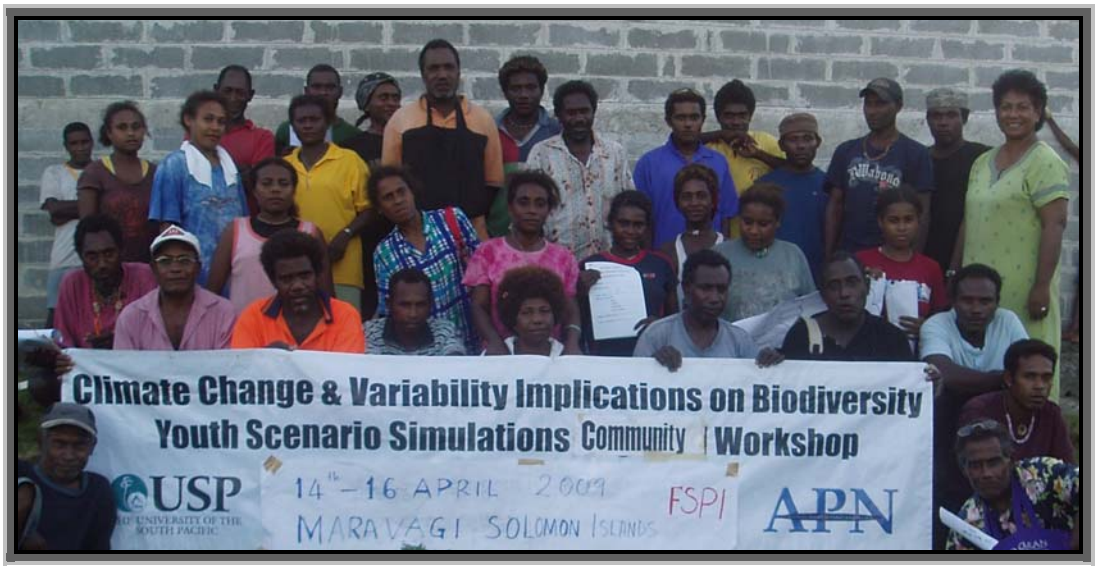
THE UNIVERSITY OF THE SOUTH PACIFIC

REPORT

Community Participatory Climate Change Risk Assessment and Adaptation Planning Workshop

Leitogo Village, Central Province, Solomon Islands

April 2009



by

Sukulu Rupeni

Contents Page

1.0 ACKNOWLEDGMENT

We wish to express our gratitude for the enormous support, assistance, contributions and participation of the following individuals and organizations for making this workshop successful.

- The Asia Pacific Network for Global Change and Research for funding this workshop (APN)
- The Foundation for Asia and the Pacific International (FSPI)
- The Solomon Islands' Development Trust (SIDT)
- The Community leaders and members of Leitogo village
- The workshop participants

2.0 INTRODUCTION

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The Institute of Applied Sciences of the University of the South Pacific's (Climate Change and Variability Implications on Biodiversity - Youth Scenario Simulations) project takes a holistic integrated approach to sustainable development through the integration of climate change and variability with biodiversity conservation and fostering youth contribution.

The project recognizes youth as the future custodians of the South Pacific Islands' natural resources. It seeks to foster community youth contribution in biodiversity conservation through raising awareness regarding climate change impacts and implementing adaptation projects to ensure security and availability of resources for future generations.

Therefore, the project's main objectives are to (i) build South Pacific Island youth capacity in drama for climate change impacts on biodiversity; (ii) conduct awareness raising drama performances; (iii) build community and youth capacity in participatory climate change risk assessment and adaptation planning; (iv) and to implement identified priority soft measure adaptation options.

This two year project was first piloted in Fiji (2006 – 2007) for the first project phase and is replicated in Tuvalu and the Solomon Islands as the second project phase (2008 – 2009).

The project workshop / training methods are highly interactive including lectures, presentations, role plays, dramas, songs, dances, participatory learning and action tools.

In Fiji, more than 80 youth from 3 provinces in Fiji (Rewa, Cakaudrove and Tailevu) were provided training on climate change and variability, biodiversity and sustainable development. They were provided skills in Theatre for Development or the use of songs, cultural dance, drama as education and awareness raising tools for development. Stewardship of biodiversity was emphasized and promoted as foundation for sustainable development. Youth were encouraged to work with their village/district/provincial leaders, elders and community members to generate discussions on climate change issues, identify priority problems and together find solutions which the youth themselves can be involved in the developing and implementing in their own villages. As a result, Fiji theatre groups developed climate change story lines, songs and traditional dances and performed these items in 28 villages; national, provincial and district gatherings and schools. The adaptation soft measure projects youth have implemented include digging rubbish disposal pits and awareness raising on waste management; setting up native plants and mangrove nursery, replanting trees along the shorelines, respecting and protecting marine tabu areas, planting variety of root crops to maintain abundance, to serve as food and livelihood sources.

3.0 SUMMARY SHEET

TOPIC	DESCRIPTION
Drama Training Workshop	
Project Name	Climate Change and Variability Implications on Biodiversity – Youth Scenario Simulations
Donor Agency	Asia Pacific Network for Global Change and Research and the Global Environment Fund
Organizer	Institute of Applied Sciences of the University of the South Pacific
Workshop Facilitators	Hugo Tafea - Solomon Islands Development Trust Patrick Kekea – Solomon Islands Development Trust Joseph Keba – Pitudila Community Theatre Ray Mano – Community Leader Francis Durai – Chairman Resource Owners Association Sukulu Rupeni - USP
Number of Participants	30
Other organizations represented	Resource Owners' Association (ROA)
Methodology	Lecture, drama, Participatory Learning and Action tools
Workshop Objectives	• To introduce the APN/USP project • To provide information and knowledge and skills in Climate Change risk assessment and adaptation planning. • To enhance community members' understanding of climate change and variability and their impacts on biodiversity • To assess communities vulnerability to climate change • To facilitate the community adaptation planning and forming a climate change committee
Achievements	• 30 participants have gained knowledge and skills in climate change risk assessment and adaptation planning • Enhanced community members' understanding of climate change and implications on biodiversity • Identified natural threats to the community and its biodiversity, the causes of these threats and options for adaptation • Community developed a climate change adaptation and disaster management action plan • Community formed a climate change committee

4.0 WORKSHOP PROGRAM

Day 2	Activities	Facilitator
08:00am	**Welcome**	Hugo Tafea
08:05am	- Opening Prayer	Francis Durai (ROA)
08:10am	- Introduction of Participants	Patrick Kekea
08:15am	- Introduction of the APN/USP Project	Sukulu Rupeni
08:30am	- Workshop Objectives, Program & Ground Rules	Patrick Kekea
09:00am	**Situation Analysis & Natural Threats**	Hugo Tafea
10:00am	***TEA BREAK***	
	- Timeline	Patrick Kekea
	- Land Resources	Joseph Keba
	- Buildings	Ray Mano
	- Marine Resources	Francis Durai
1:00pm	***LUNCH***	
2:00pm	**Causes of Threats**	Hugo Tafea
3:30pm	**Prioritization of Importance**	Patrick Kekea
4:30pm	***End of Day***	
Day 2		
09:00am	Recap of Day Two	Patrick Kekea
09:15am	Opening Prayer	Francis Durai (ROA)
08:20am	Program for Day Two	Patrick Kekea
08:30am	Climate Change Presentation	Hugo Tafea
09:00am	**Likely Effects of Climate Change**	Sukulu Rupeni
11:00am	**Resilience Assessment & Evaluation of Adaptation Options**	Joseph Keba
01:00pm	***LUNCH***	
01:30pm	**Climate Change Adaptation Planning**	Patrick Kekea
03:00pm	Establishing a Climate Change Committee	Hugo Tafea
03:30pm	Workshop Closing	
04:00pm	Drama Performance	
04:30	***End of Workshop***	

5.0 NARRATIVES OF WORKSHOP PROCEEDINGS

This was a two day workshop consisting of participants from the Drama Workshop and the community members of Leitogo Village. The aim of the two days are to provide information, knowledge and skills in climate change risk assessment and adaptation planning.

5.1 INTRODUCTIONS

5.1.1 Welcome

The workshop was opened with a prayer by Joseph Keba. Hugo Tafea welcomed everyone and led in the introduction of participants and facilitators followed by a brief overview of the workshop which transpired on Day One at Maravagi.

5.1.2 APN/USP Partnership Climate Change Project

Sukulu Rupeni thanked the community members for taking time to be a part of the workshop and introduced the APN/USP partnership project including work undertaken in Fiji for the 1st project phase.

5.1.3 Workshop Objectives, Program and Ground Rules

Patrick Kekea introduced the workshop objectives, program and highlighted the ground rules set by participants on Day One at Maravagi. Everyone agreed to the ground rules already set.

5.2 SITUATION ANALYSIS & NATURAL THREATS

After a brief explanation about this session, facilitators and participants were divided into 4 working groups:

- Historical Time Line (Patrick Kekea)
- Land Resource Inventory (Joe Keba)
- Marine Resource Inventory (Francis Durai)
- Village Building Structure (Ray Mano)

5.2.1 Historical Time Line

Participants were asked to give a historical account of the major events experienced by the community as far back as they can remember.

Community Profile:

Leitogo village is in the Central Province, about 4 hours by boat from Honiara, the capital city of the Solomon Islands. Leitogo is a rural coastal community with a population of about 120, with 13 households. The village is situated on a narrow coastal plain with a steep mountain in the background. The only religion in the village is Anglican. Majority of the villagers are semi-subsistence fishermen. Their main source of income is fishing. Other income sources are from selling root crops, vegetables and betel nut in Honiara market. Some also sell livestock such as pigs. Earnings are directly from the sale of marine and agricultural produce. Household expenditure include church tithe and community contributions, travel to market to sell their produce and basic necessities. There is a health centre on the island but is ill equipped. For education, children attend the district school in the next village on the island. Rubbish collection is not a service available so they are composted, burned or buried. They have 2 community water tanks, houses have storage drums to collect rain water, there are wells but are now mixed with salt water, villagers fetch water from the nearby stream. The main source of energy for cooking is firewood. There is no electricity in the village, they use benzine or kerosene lanterns. There are no toilets, only mangroves. There is no telephone services for communication. People's transportation are by dugout canoe or outboard motor.

Leitogo village

Results of the community historical time line are as follows:

- The community is susceptible to cyclones, drought, flooding, landslide, erosion, strong winds and storm surge.
- Leitogo village has experienced natural hazard events 3 times per every 10 years.
- Damages to biodiversity caused by natural events include destruction of coral reefs, coastal and forest habitats, food gardens, and water sources. According to community members, once a cyclone destroyed their reefs and formed coral walls along the coastlines which was flattened by another cyclone several years later.
- Other vulnerabilities highlighted are village building structures are not standardized and on an improper site.

(See Attachment 2 for results of historical timeline)

Participants give historical account of their community

5.2.2 Land Resource Inventory

Participants were asked to list land resources, their uses, locality, laws, their significance and things that threaten them. Natural threats identified are as follows; climate change weather pattern is causing agricultural plants not to follow the seasonal calendar; cyclone; erosion and landslides due to heavy rainfall; flooding, hot temperatures, earth quake and tsunami. Major vulnerabilities highlighted are human activities such as careless tree felling, burning of trees and grass, and over extraction of some tree species for construction; lack of land for food gardens; unfenced animals damaging food gardens; and people stealing from other people's food gardens; decline in materials used for traditional building e.g. sago palm leaves and sticks; decline in various species of traditional emergency root crops and participants highlighted concern for the loss of

this knowledge and would like to see its encouragement for replanting and training the young generations to recognise them. Participants highlighted land resources are in abundance except for some trees species are declining due to over harvesting. *(See Attachment 3 for group work results)*.

Land resources inventory group

5.2.3 Marine Resource Inventory

Participants were asked to list marine resources, their use, locality, laws, their significance and uses and things that threaten them. Natural threats identified were cyclone, flooding, coral bleaching and tsunami. Major vulnerabilities are the harvesting of corals for lime which is used for chewing betel nuts; dynamite, night dive and over fishing. Participants highlight marine resources are in abundance but concerned about the above listed human unsustainable and destructive activities. *(Please see Attachment 4 for group work results).*

Marine resources inventory group

5.2.4 Village Building Structure

This group was tasked to assess the community building structure. Natural threats identified were heavy rainfall, cyclone, flooding, earthquake and tsunami. Major vulnerabilities highlighted are the village houses are all traditional and built with local materials, the village is located in an improper site and buildings not standardized. These make the community members' lives and property highly at risk to impacts of natural disasters. *(See Attachment 5 for group work results).*

Village Building Structure group present results of their group work

5.3 CAUSES OF NATURAL THREATS

Participants were asked to list causes of natural threats. The participants maintained their 3 work groups (land, marine & building structure), whilst members of the Time line group were asked to join any one of the 3 groups.

5.3.1 On Land Resources;

This group identified causes of natural threats such as cyclone; erosion and landslides, flooding due to heavy rainfall, hot temperatures, earthquake and tsunami are acts of God or climate change. Community members highlighted causes of other threats are due to population increase, lack of family planning, lack of land, lack of policy, law, control over population, lack of enforcement, funds and governance. In addition, lack of education, lack of awareness of significance of importance of natural resources, laziness to plant, lack of respect for others, chief and elders, lack of skills, lack of leadership, lack of coordination and cooperation. *(Sees Attachment 6 for group work results)*

5.3.2 On Marine Resources;

Workshop participants highlighted causes of natural threats such as cyclone, flooding and coral bleaching are due to climate change and global warming which increases ocean temperatures, and tsunamis caused by earthquake. Participants highlight there is constant tectonic activities felt but not aware of impacts on coral reefs and marine life. The major cause of human threats highlighted is economic pressure. *(See Attachment 7 for group work results)*

5.3.3 On Village Building Structure;

Participants highlighted heavy rainfall, flooding and cyclone are caused by climate change; earthquake and tsunamis are acts of God. Discussions highlighted erosions and landslides caused by heavy rainfall threaten the community houses, property and peoples' lives. Causes of improper village site and buildings not standardized are poor or no planning, lack of proper technical input or advice and lack of funds. *(See Attachment 8 for group work results)*

5.4 PRIORITIZATION OF IMPORTANCE

Participants worked in their respective groups to list all problems/threats identified in the previous exercises and to prioritize them according to importance.

Priority Natural Threats are as follows;

1. Storm surge
2. Cyclone
3. Erosion
4. Earthquake
5. Flooding
6. Tsunami

Erosion is associated with heavy rainfall, believed to be climate change related, is causing erosion of land, affecting food gardens, decreasing soil stability and fertility, threatening weak home structures and contributing to coastal erosion, and silt sedimentation in inshore and on coral reefs which affects marine life and ultimately food and livelihood sources.

Global warming causing coral bleaching was earlier highlighted but got lost in the process. However it needs to be noted as a priority natural threat.

Drought was also a major event which severely affected the village in 1986 following a cyclone. This climate hazard was highlighted in the community time line activity but has not been highlighted since during these processes. It should be noted as a natural threat to the community as well.

Other prioritized threats are as follows;

a) Land resources;
   1) lack of land
   2) Stealing
   3) Unfenced Animals
   4) Shortage of garden lands
   5) Bush fires & Hot temperatures
   6) Shortage of food gardens

b) Marine resource;
   1) dynamite fishing
   2) night dive
   3) lime poke or coral harvesting (live & dead)

c) Village building structures;
   1) No proper site
   2) No standard plan
   3) Heavy rainfall

(See Attachment 9 for group work results)

5.5 LIKELY EFFECTS OF CLIMATE CHANGE IN 50 YEARS

This activity was conducted in the large group. Participants considered the following likely impacts of climate change; (more cyclone, more heavy rainfall, more dry periods, more evaporated water, higher sea level and more coral bleaching) in 50 years against their list of current prioritized natural and other threats. *(See Attachment 10 for group work results)*

The exercise caused participants to reconsider some of their current priorities and reemphasized the need to focus on others for immediate action. Some changes highlighted were the slashing of current concerns such as stealing from others' food gardens, unfenced animals, dynamite fishing and night time diving. Participants included drinking water sources and logging as important in the light of likely climate change impacts in 50 years.

Some of the major impacts highlighted were the possibility of relocation due to lack of land for agriculture and human habitation. Participants highlighted that increased heavy rainfall causing soil erosion, siltation and sedimentation are affecting their food gardens, increasing soil instability and infertility, threatening their traditional homes, increasing erosion of coastal areas and sediments affecting marine life. Storm surge as observed by participants is also contributing to increased erosion of their coastal areas and threatens marine life in their fishing ground. Salt water intrusion in community dug wells was highlighted. Increasing salt water intrusion threatens drinking water sources. Cyclone is an issue as it threatens their marine and land resources consequently their food and livelihood sources. It also poses a threat to their property and people's lives as all village houses are thatched and materials used as highlighted by participants are not proper. Participants highlighted Climate impacts on Leitogo village in 50 years indicate increasing endangered or extinction of land, coastal and marine species and habitats, decreased economy, increased poverty, increased health problems, and increased crime including sex work.

5.5.1 Ranking of Problems/Threats

Participants were asked to rank the threats/problems High, Medium or Low in light of the impacts in 50 years. *(See Attachment 11 for ranking results);* Below is the outcome of the ranking exercise;

1. No proper village site
2. Lack of land
3. Drinking water sources
4. No Standard Plan for village building structures

5.6 RESILIENCE ASSESSMENT & EVALUATION OF ADAPTATION OPTIONS

Participants revised solutions provided earlier, identified what is already taking place or included in their community resource management plan, selected solutions they can take to address problems and evaluated their appropriateness through a show of hands. This session was conducted as a whole group and building consensus as the session progressed. *(See Attachment 12 for group work results).*

Key adaptation options highlighted include replanting and planting of native trees and coastal trees such as mangroves, reserve forest areas to hold soil, maintain soil quality and biodiversity, have marine and coastal protected areas to maintain abundance, build a sea wall to mitigate coastal erosion and storm surge impacts, replant and encourage planting of more disaster or emergency crops such as wild yams and swamp taro, preserve vegetation close to water sources, ban gardening near water sources, raise awareness and training on family planning and land use practices, good planning for proper village site and building structures, have community disaster action plans including communications such as traditional and early warning systems and food preservation in place.

5.7 CLIMATE CHANGE ADAPTATION PLANNING & DISASTER ACTION PLANNING

Participants worked together as a whole class to draw their adaptation and disaster action plans.

5.7.1 Below is the community adaptation plan.

LEITOGO CLIMATE CHANGE ADAPTATION PLAN

Problem	Solution	What's has been done?	What needs to be done?	Who's Responsible?	When? Start - Finish
1) No proper Site for homes	Good planning	No	Community Discussion	Pitudila ROA	May – Dec. 09
	Use of appropriate materials	No	Develop Plan of action		
2) Lack of land	Birth Control	No	Awareness and family planning	Pitudila ROA Health Workers	May - Ongoing
	Land Use management training		Custom garden training		
	Planting trees	No		Custom Bird	June
	Reserve Forest	No			
	Encourage Planting of swamp taro	Yes Community gardens	Training on Land Use Management	Forestry ROA	July
	Protect all Emergency foods e.g. swamp taro, wild yams, paro		Awareness	Pitudila	June
3) Drinking water	Protect all Vegetation close to water source	No	Improve present existing sites Through Piping and Fencing Awareness	Pitudila ROA / RWSS Chiefs	May - August
	Stop gardening close to water source	No	Awareness		May - August
4) No Standard Plan	Good Planning	No	Sufficient Physical Planning	Chiefs Elders Families	Immediate
			Community discussion		

5.7.2 Below is the Community Disaster Plan.

LEITOGO DISASTER PLAN

HAZARD	BEFORE	DURING Immediately before, during and immediately after	AFTER
STORM SURGE	Wet Season – Dec. to April Communication: - Conk Shell Drum Radio Traditional Early Warning - Coastal trees sound - cloud formation - birds (frigit)	• Emergency Kit • Emergency Relief supply of basic necessities • Secure houses • Better coordinator/ coordination • Have an Evacuation Site • Listen to Instructions on the radio	• Emergency Relief supply of basic necessities • Community Support e.g. for counselling, First aid, construction • Emergency funds • Clean Up Debris • Listen to guidance of chief and elders
	Food Preservation: - Educate - Awareness On Sesele, Meke, Sebina, (wild yam and taro)		
	- Plan and Implement	- Plan and Implement	- Plan and Implement
CYCLONE	Communication: - Conk Shell Drum Radio Traditional Early Warning - Coastal trees sound - cloud formation - birds (frigit)	• Emergency Kit • Emergency Relief supply of basic necessities • Secure houses • Better coordinator/ coordination • Have an Evacuation Site • Listen to Instructions on the radio	• Emergency Relief supply of basic necessities • Community Support e.g. for counselling, First aid, construction • Emergency funds • Clean Up Debris • Listen to guidance of chief and elders
	Food Preservation: - Educate - Awareness On Sesele, Meke, Sebina, (wild yam and taro) - Plan		
	Plan and Implement	- Plan and Implement	- Plan and Implement
EROSION	- Plant Coastal Trees		
	- Plant Mangrove Trees		
	- Sea walls		
	Plan and Implement	- Plan and Implement	- Plan and Implement

5.7.3 Forming Climate Change and Disaster Action Committee

Sandfly District Disaster & Climate Change Committee
Leitongo Disaster and Climate Change Committee

Chairman – Joseph Keba
Assistant Chairman – Clement Mela
Secretary – Johnson Bale
Assistant Secretary – Clement Kelo
Treasurer – Edmond Pegasi
Assistant Treasurer – Nancy Pule

Members:
Nancy Pule
Clement Kelo
Johnson Bale
ROA Chairman
Pitudila Coordinator
DIP for Sandfly
Honorable member

5.8 WORKSHOP CLOSING

The workshop was closed with a summary by Hugo Tafea. Sukulu Rupeni made her final remarks regarding the workshop and thanked the participants, Leitogo leaders, SIDT and the facilitators. Ray Mano gave a vote of thanks on behalf of the participants and government and NGO's represented. Mr. Mano closed the workshop with a word of prayer.

5.9 DRAMA PERFORMANCE

The Pitudila Community Theatre group showcased their drama productions from Day One. Participants and community members gathered around to watch the performance. The dramas were lively, captivating and educational.

6.0 CONCLUSION AND RECOMMENDATIONS

The two days risk assessment and adaptation planning workshop was successful. Participants have enhanced knowledge and understanding of climate change and implications on biodiversity; gained skills and knowledge of conducting risk assessment and adaptation planning; understanding of climatic threats and their community vulnerability and developed plans to adapt to the threats.

These were the sentiments of the participants who are keen to start their climate change adaptation project and unanimously expressed recommendations for more support and assistance to implement similar exercises throughout their district, province and country.

6.1 It is recommended that harvesting of corals for lime production used for betel nut chewing is monitored to protect corals and coral reefs.

6.2 An issue of concern to the community is the lack of standardized plan for village building structure. It is recommended that an appropriate qualified building engineer be consulted to provide technical advice that incorporates climate change impacts.

6.3 There is no running water in the village and therefore recommend assistance from government or donor agencies to enable piping of water from the source to the village or to their homes.

6.4 Leitongo village is highly vulnerable to climate change impacts and needs immediate assistance with planning for and strengthening of village building structure, proper sanitation or proper human waste disposal, and fresh water piping service from source to the village.

Attachment 1: Workshop Participants List:

No.	Name	Age	Gender	Village	Work
1.	Richard Dodoko	26	M	Leitongo	Fisherman
2.	Samuel Buse	27	M	Leitongo	Fisherman
3.	Bogaga Julian	17	M	Leitongo	Farmer
4.	Freda Kigo	26	F	Leitongo	Housekeeping
5.	Andrew Seleni	24	M	Leitongo	Villager
6.	Rachael Baile	24	F	Leitongo	Villager
7.	Elizabeth Geli	22	F	Leitongo	Villager
8.	John Hudson Jr.	20	M	Leitongo	Fisherman
9.	Samuel Johnson	25	M	Leitongo	Fisherman
10.	Edmond Pegasi	40	M	Leitongo	Villager
11.	Mr. Nancy Pule	46	M	Leitongo	Villager
12.	Patteson Maetoni	20	M	Leitongo	Villager
13.	Charles Tura	49	M	Leitongo	Villager
14.	Joel Tele	40	M	Leitongo	Elder
15.	Francis Durai	46	M	Sisili	Fisherman
16.	Clement Mela	62	M	Leitongo	Villager
17.	Robert Pule	46	M	Hanipana Centre	Elder
18	Clay S.	54	M	Leitongo	Villager
19.	Raymond Toroi	52	M	Leitongo	Villager
20.	Thomas Belani	52	M	Leitongo	Villager
21.	Elizabeth T.	22	F	Leitongo	Villager
22.	Patrick Samuel	19	M	Leitongo	Villager
23.	Ini Collin Ruka	30	M	Leitongo	Villager
24.	Serah Kavoa	31	F	Leitongo	Housewife
25.	Magret Toke	25	F	Leitongo	Villager
26.	Ray Mano	56	M	Olevuga	Elder
27.	Clement Keli	59	M	Sisili	Elder
28.	Joseph Keba	37	M	Leitongo	VDW/FSPI
29.	Rachel Keba	30	F	Leitongo	Pitudila
30.	Priscilla Bale	22	F	Leitongo	Villager

Attachment 2: Historical Time Line Group Work Results

Historical Time Line – Group work results:

1967 Hurricane – no damages

1969 Cyclone Kalota – strong wind & heavy rain, no damage

1972 Cyclone Ida – Damages trees, gardens, houses

- one child killed, one adult injured
- destroyed reefs, formed coral walls along coastlines
- village full of water, drinking water was polluted
- people had no food (hungry), lived only on coconuts and other means of food they could find
- A few months later M/V Wainoni brought Sago palm leaves from Guale

1984 Rough sea and heavy rain

- A group fishermen got lost in the storm and later landed at Haleta village near Tulagi

1986 Drought caused by cyclone Namy

- Garden tools and food supplied from the provincial and Central Government.
- Seventh Day Adventist Mission supplied 2nd hand clothes

1996 Cyclone Ben flattened the coral walls made by Cyclone Ida

- Water and mud covered the church floor
- Landslide
- Community water tank damaged

2000 Cyclone Joy

- Damaged water tanks
- Heavy rain and strong wind

2001 Pitudila fundraised for the community church building

- Donation to Tikopia and Anula Cyclone victims
- Waves came into village/storm surge

2009 West wind (Koburu)

- Damaged kitchens
- Sea covered wells

Attachment 3: Land Resources Inventory Group Work Results

Names of bird, plant, tree	Uses Significance	Abundance or loss	Locality	Laws	Natural threats
Birds					
Bola	Pets	Abundance – H	- Inland forest - mangroves - islands	No	Cyclone landslide
Siri	Food, feathers for custom dance, pet	Abundance – H	- Plantation - Coastal	All species comply with Solomon Island government laws.	Spoils coconut
Kaili	Traditional shell Money, helper of restoration of species (tree), Pet	Abundance – H	- cave - forest - mangroves		All fruits, spoils when premature
Echo	Feathers for custom dance, security, pet	Abundance – M	- mangroves		All fruits, spoils when premature
Kinekine	Indicator for somebody is going to die, pet	Abundance – M	- Inland - Forest		Spoils our bananas & nail nuts
Kavuku	Holy bird (dove)	Abundance – M	- Inland		
Agriculture Plants					
Poro kaukarua	Food, juice	Abundance – M	- garden - grass land		Human beings
Poro Sanae	Food, juice	Abundance – M	- garden - grass land		Cyclone, erosion
Poro Sagi	Food, selling	Abundance – H	- garden		Climate change weather pattern causing these to not follow the season calendar.
Pana uvi	Traditional food, Selling	Abundance – H	- garden		
Cassava Sebina Taburumu Laelae	Food, selling	Abundance – H	- garden (nanagu0		
Plants/Trees					
Habaga	Canoe, medicine, timber	Abundance – M	- land		Lack of not knowing their importance Cyclone, erosion, landslide
Aroaro (land)	Custom medicine, building house, fire wood	Abundance – H	- inland		
Bundro (seaside)	Custom medicine, building house, fire wood	Abundance – H	- seaside		
Vulekua	Timber, build house, medicine	Abundance – H	- Inland - seaside		
Koilo (sea) 1. Hube (land) 2. Bagula 3. Kada	Timber, canoe	Abundance – H	- Inland - Seaside		
Gugula	Timber	Abundance – M	- Inland - Swamp area		
Tutupi	Food, firewood	Abundance – H	- Inland		
Ligi	Timber, canoe, Medicine	Abundance – L	- Inland		
Tao	Timber, firewood	Abundance – M	- Inland		
Vaha	Timber, canoe	Abundance – M	- Inland		
Buti	Timber, canoe	Abundance – L	- Inland		
Kau	Hunting, security		- Home - Security		eaten banabana open ovens unhygienic

					to community
Gunu	Food, sell		- Bush	Forbidden to sell	
Gagadani (m)	Food, sell		- Bush		
Kave (f)	Food, sell		- Bush		
Vuto	Food, sell		- Bush		
Dale	Food, sell		- Bush	SI Environment law	
Kolage	Food, sell		- Bsuh	SI Environment law	
Bolo Asi	Food, sell		- Forest		

Attachment 4: Marine Resources Inventory Group Work Results

Names of fish / shell / sea plant	Uses Significance	Abundance or loss	Locality	Laws	Natural threats
Mara/fish	Eat/sale	Plenty of fish, shell fish, sea plants, star fish MPA sites activities (Tabu)			Cyclone
Boila/topa	Eat/sale				Flooding
Kaekale	Eat/sale				Tsunami
Kara	Eat/sale				Storm surge
Malole	Eat/sale				
Shell fish					
Kunuga	Eat/sale				
Puku mau	Eat/sale				
Talinga	Eat/sale				
Kee	Shell money				
Sura	Eat/sale				
Sea Plants					
Kulikuli	Fish food/shelter				
Guegueva	Eat/sale				
Busu	Eat/sale				
Ghaghagha	Eat				
Busu	Eat/human turtle fish				
Star fish					
Veuitughu	Eat/sale				
Kokonola	Eat/sale				
Baraso	Eat/sale				

Attachment 5: Village Building Structure Group Work Results

Types of Houses In The Community

Types of Houses	Who Uses It	Materials Used To Build It. How Old, Quality	Drawing of Building
1. Leva House (In language name)	Village people (ancient)	Bush materials	Traditional
2. Vale Pari (Gela language – low House)	Old people	Bush materials	Traditional
3. Vale Bela (Gela language – high House	Modern people	Bush materials	Traditional
4. Vale Vuto (language name)	Modern people	Bush materials	Traditional

Attachment 6: Causes of Natural Threats On Land Resources Group Work Results

Threats	Causes	Effects	Solutions
Natural Threats: • Landslide • Flooding • Cyclone • Hot temperature	Climate change or Acts of God	Destroy food gardens Destroy trees and plants Destroy livestock Loss of food and income source	Plant more food crops Reforestation Planting more trees
• Earthquake & • tsunami	Natural movements of under plates of earth	Loss of property Loss of food etc.	Preparedness plan Food preservation
1. Lack of land	Over population No family planning No law & lack of policy to control population Lack of governance	Land disputes Too crowded Health hazards Its very easily likely to catch any suspective problems e.g. landslide, fire, contagious diseases Results of all above is poverty	Relocate area Replanting trees Reserve forest Planting trees to hold soil Plant disaster or emergency foods Such as swamp taro Preserve wild yams Stop gardening close to water source Plant more trees
2. Unfenced animals	Carelessness Lack of awareness Lack of Respect Flexibility of law Lack of enforcement	Uproot garden No food Time consuming No time for other activities	Fence animals Give advice to animal owners
3. Stealing	No land Laziness – ignorance within the village traditional ways Never plant any of fruit trees He/she never listen to advise from elder, chief (not planting)		
4. Bush Fires & Hot temperature	Human beings careless Lack of knowledge Illiterate No school Cultural Lack money Increase in population	Loss of garden Loss of food Loss of land/forest Loss of soil nutrients Dry land Drought No food Poor health Poverty Biodiversity decline	Awareness on bush fires Reforestation
5. Shortage of garden land	Landslide Heavy rain More people No family planning No savings No awareness No organization Lack of cooperation Lack of leadership No skills No education	Loss of garden - food - water - trees - house/property - species Conflict (Resource owners Association) No peace Hungry Stealing No money Prostitution Health	Move to dry place Not to stay close to river bank Find new source of spring well Reforestation of local plants/trees Rehabilitation

Attachment 7: Causes of Natural Threats On Marine Resources

Threats	Causes	Effects	Solutions
1. Coral Bleaching	Global warming Increasing ocean temperature (*reproduce, Crown of thorns, fish feeds on corals, land/soil erosion*)	Natural colour loss (corals die) Sand cover Mara eat corals into sand Fish decrease in the area Fishermen go far away No money Inflation Anaemia (no protein) Poverty increase Damaged corals Destroyed - damage corals - destroyed - lost properties	Coral restoration Removal of crown of thorns Awareness on marine resources
2. Cyclone and flooding	Heavy rain fall Landslide		Relief supply Restoration of corals
3. Tsunami	Earthquake	Reef change to dry land Change biodiversity	Restoration depends on nature of tsunami and earthquake
4. Dynamite fishing	Human beings Damage fish Need for money and food Need for family affairs	Lack of awareness Damage corals Corals die Less fish and less money Fish move to a new area Destroyed biodiversity	Awareness and ban use
5. Night Diving	Human beings Need for fish and money Dive for feasting	Lack of awareness Decrease of fish Damage of corals Poaching Conflict Disorganization in communities	Awareness and ban use
6. Lime (poke) or coral Harvesting (live & dead)	Human beings Need for money for betel nuts	Lack of awareness Loss of corals No fish home Fish ran away Fish find a new home or area	Awareness and ban extraction

Attachment 8: Causes of Natural Threats On Village Building Structures

Threats	Causes	Effects	Solutions
Natural Threats: Heavy rainfall Flooding Cyclone Earthquake Tsunami	Climate change or Acts of God	Destroy or damage homes and property Destroy lives Damage beaches	Plant more trees at the beach Proper sea wall defence Waste management Disaster manage-ment plan
1. No proper site for homes	Poor planning	Buildings damaged Destroyed Breakdown Building not up to standard No proper tools and materials	Good Planning Proper site
2. No standardized plans	Poor planning No plan No qualified carpenters No money		Proper and right tools and materials Up to standard

Attachment 9: Prioritization of Importance

9.1 Standard Method Prioritization of Natural Threats

Community took each of the natural hazards and worked out its impacts and frequency and multiplied the answers to give its level of risk. This was done as a whole group exercise and through consensus. After all the natural hazards were calculated, participants were asked through show of hands to determine the priority natural hazards.

Hazard threats	Impacts	Frequency	Level of Risk
	High = 70 – 100% = 3 Med. = 30 – 70% = 2 Low < 30% = 1	High = 1 – 3 p/y = 3 Med.= 3 – 10 p/y = 2 Low = 10 – 100 p/y = 1	
Earthquake	2	3	6
Tsunami	1	1	1
Cyclone	3	3	9
Storm surge	3	3	9
Flooding	2	1	2
Erosion	3	3	9

The show of hands reveal the following natural threats in order of priority;

1. Storm surge
2. Cyclone
3. Erosion
4. Earthquake
5. Flooding
6. Tsunami

Erosion is associated with heavy rainfall, believed to be climate change related, is causing erosion of land, affecting food gardens, decreasing soil stability and fertility, threatening weak home structures and contributing to coastal erosion, and silt sedimentation inshore and on coral reefs which affects marine life and ultimately food and livelihood sources.

9.2 Participants' prioritized threats;

Participants first worked in their groups to prioritize threats then came together in the large group to present their results. The results were pasted on the board and the whole class was asked if they agreed on the prioritization through a show of hands.

List of Prioritized Threats		
Land Resources Group	***Marine Resources Group***	***Village Building Structure***
1) lack of land 2) Stealing 3) Unfenced Animals 4) Shortage of garden lands 5) Bush fires & Hot temperatures 6) Shortage of food gardens	1) dynamite fishing 2) night dive 3) lime poke or coral harvesting (live & dead)	1) No proper site 2) No standard plan 3) Heavy rainfall

Attachment 10: Likely Impacts of Climate Change in 50 Years.

Effects of Climate change	Current Priority Threats/Problems	Problems In 50 Years	Changes highlighted
More cyclone More heavy rainfall More dry periods More evaporated water Higher Sea Level More Coral Bleaching	**Land resources**		
	Lack of land	Relocation of villagers Overcrowding Increased health hazards No land for planting	Logging and Drinking water sources were highlighted as priority issues participants felt needed to be included. Stealing of food from gardens and unfenced animal problems were deemed as unimportant so participants decided these problems dropped from priority list and to be addressed later.
	Stealing	No longer an issue	
	Unfenced animals	No longer an issue	
	Shortage of garden land	Loss of garden and food Loss of land/forest Loss of soil nutrients Dry land, Drought Poor health Poverty Biodiversity extinct or endangered	
	Bush fires	Bush fire will not be an issue Water will be a priority issue No money High crime Prostitution Health	
	Marine resources		
	Dynamite fishing	Will not be an issue. there will be less marine resources	
	Night diving	Increased night diving Increased poaching Increased conflict	
	Lime poke or coral harvesting (live and dead)	Loss of corals or more dead corals Depleted marine resources Less fish Less food Less money Increased poverty Marine species destroyed/loss	
	Village building structure		
	No proper sites for homes	Relocation of village Houses destroyed Loss of lives Increase in diseases Increase in poverty	
	No standard Plan	No materials left for thatched houses No money for tools and proper materials Homelessness	
	Hazards		
	Storm surge	Increased loss of corals Increased loss of food from the sea, coast, and land Increased salt water intrusion Salination of water sources	
	Cyclone	Increased loss of food from the sea, coast and gardens Extinction of tree, bird, plant and fish species, property destroyed, homeless, increased poverty	
	Erosion/Heavy rainfall	Increased loss of soil fertility and stability, loss of food & money source Loss of land, beaches Loss of marine resources	

Attachment 11: Prioritization In Light of Likely Impacts of Climate Change in 50 Years.

Participants were asked to rank the threats/problems High, Medium or Low in light of the impacts in 50 years. The rankings were totalled and the results are provided below this table.

Likely Impacts in 50 years → **Priority Problems ↓**	**More cyclone** H/M/L	**More heavy rainfall** H/M/L	**More dry periods** H/M/L	**More evaporated water** H/M/L	**Higher sea level** H/M/L	**More coral bleaching** H/M/L	**TOTAL**
Lack of land	H	H	H	H	H	L	H – 5 L – 1
Logging	L	L	L	L	L	L	L – 6
Drinking water sources	H	H	H	H	H	L	H – 5 L – 1
Dynamite	H	M	H	M	L	L	H – 2 M – 2 L – 2
Night diving	L	L	H	L	L	M	H – 1 M – 1 L – 4
Coral harvesting	L	L	H	M	H	H	H – 3 M – 1 L - 2
No proper site	H	H	H	H	H	L	H – 5 L – 1
No standard plan	H	H	H	M	H	L	H – 4 M – 1 L – 1
Heavy rainfall	H	H	L	H	H	L	H – 4 L – 2

Priority problems in 50 years are:
Lack of land = 5 Highs
Drinking water sources = 5 Highs
No proper site = 5 Highs
No standard plan = 4 Highs
Heavy rainfall = 4 Highs

Participants were asked to further determine priority problems by a show of hands. The results are as follows;

1. No proper village site
2. Lack of land
3. Drinking water sources
4. No Standard Plan

Attachment 12: RESILIENCE ASSESSMENT & EVALUATION OF ADAPTATION

OPTIONS

Participants revised solutions provided earlier, identified what is already taking place or included in their community resource management plan, selected solutions they can take to address problems and evaluated their appropriateness through a show of hands. Although ranking of adaptation options were planned for this session, but due to lack of time, show of hands method was used to determine priority options. This session was conducted as a whole group and building consensus as the session progressed. The groups work results are shown in the table below.

Threats/Problems	Solutions/Options	Adaptive Solutions
1. No proper site for homes	• Good planning • Use of appropriate materials	• Develop a plan of action through community discussion
2. Lack of land	• Birth control • Land use management training • Planting trees • Reserve forest • Encourage planting of swamp taro, wild yams, paro	• Raise awareness on family planning • Train community members on custom gardening and land use management
3. Drinking water sources	• Protect all vegetation close to water source • Stop gardening close to water source	• Improve present existing water sites through piping and fencing. • Raise awareness on water conservation.
4. No standard plan for village building structures	• Good planning	• Develop a plan for standardizing village building structures through community discussions

INSTITUTE OF APPLIED SCIENCES

THE UNIVERSITY OF THE SOUTH PACIFIC

REPORT

Climate Change and Variability Implications on Biodiversity – Youth Scenario Simulations
Drama Training Workshop
Funafuti in Tuvalu
April 2009

by

Sukulu Rupeni

1.0 Acknowledgment

We wish to express our gratitude for the enormous support, assistance, contributions and participation of the following individuals and organizations for making this workshop successful.

- The Asia Pacific Network for Global Change and Research for funding this workshop (APN)
- The Foundation for Asia and the Pacific International (FSPI)
- The Tuvalu Association of NGO's (TANGO)
- The Tuvalu Family Health Association (TUFHA)
- The Tuvalu Red Cross
- The Tuvalu Climate Action Network (TUCAN)
- The Workshop Presenters and Facilitators
    - Tuvalu Climate Change Action Network – Rev. Tafue Lusama, President of TUCAN
    - Tuvalu Red Cross – George Tataua Pese
    - Tuvalu Family Health Association – Savali Kelese
    - TANGO – Semese Alefaiou and Suelami Foaki
- The youth volunteers from the Tuvalu Family Health Association and Red Cross who participated in the workshop
- The workshop caterers

2.0 Introduction

The Climate Change and Variability Implications on Biodiversity – Youth Scenario Simulations Project is a partnership project of the Asia Pacific Network for Global Change and Research and the University of the South Pacific's Institute of Applied Sciences.

The Institute of Applied Sciences of the University of the South Pacific's (Climate Change and Variability Implications on Biodiversity - Youth Scenario Simulations) project takes a holistic integrated approach to sustainable development through the integration of climate change and variability with biodiversity conservation and fostering youth contribution.

The project recognizes youth as the future custodians of the South Pacific Islands' natural resources. It seeks to foster community youth contribution in biodiversity conservation through raising awareness regarding climate change impacts and implementing adaptation projects to ensure security and availability of resources for future generations.

Therefore, the project's main objectives are to (i) build South Pacific Island youth capacity in drama for climate change impacts on biodiversity; (ii) conduct awareness raising drama performances; (iii) build community and youth capacity in participatory climate change risk assessment and adaptation planning; (iv) and to implement identified priority soft measure adaptation options.

This two year project was first piloted in Fiji (2006 – 2007) for the first project phase and is replicated in Tuvalu and the Solomon Islands as the second project phase (2008 – 2009).

The project workshop / training methods are highly interactive including lectures, presentations, role plays, dramas, songs, dances, participatory learning and action tools and group work and discussions.

In Fiji, more than 80 youth from 3 provinces in Fiji (Rewa, Cakaudrove and Tailevu) were provided training on climate change and variability, biodiversity and sustainable development. They were provided skills in Theatre for Development or the use of songs, cultural dance, drama as education and awareness raising tools for development. Stewardship of biodiversity was emphasized and promoted as foundation for sustainable development. Youth were encouraged to work with their village/district/provincial leaders, elders and community members to generate discussions on climate change issues, identify priority problems and together find solutions which the youth themselves can be involved in the developing and implementing in their own villages. As a result, Fiji theatre groups developed climate change story lines, songs and traditional dances and performed these items in 28 villages; national, provincial and district gatherings and schools. The adaptation soft measure projects youth have implemented include digging rubbish disposal pits and awareness raising on waste management; setting up native plants and mangrove nursery, replanting trees along the shorelines, respecting and protecting marine tabu areas, planting variety of root crops to maintain abundance, to serve as food and livelihood sources.

3.0 SUMMARY SHEET

TOPIC	DESCRIPTION
Drama Training Workshop	
Project Name	Climate Change and Variability Implications on Biodiversity – Youth Scenario Simulations
Donor Agency	Asia Pacific Network for Global Change and Research and the Global Environment Fund
Organizer	Institute of Applied Sciences of the University of the South Pacific
Workshop Facilitators	Tuvalu Climate Change Action Network – Rev. Tafue Lusama, President of TUCAN Tuvalu Red Cross – George Tataua Pese Tuvalu Family Health Association – Savali Kelese TANGO – Semese Alefaiou and Suelami Foaki, USP – Sukulu Rupeni
Number of Participants	16
Other organizations represented	TANGO, TUCAN, TUFHA, Tuvalu Red Cross and USP
Methodology	Lecture, Theatre, Participatory Learning and Action tools, power point presentations, and video
Workshop Objectives	• To introduce the APN/USP project • To provide information and knowledge on Climate Change, biodiversity and their connectedness to sustainable development. • To provide information and skills in basic theatre techniques. • To assist participants'create two short climate change plays, a song and cultural dance. • To assist participants' develop their climate change awareness project action plan.
Achievements	• 16 youth with enhanced understanding of climate change and variability, biodiversity and connectedness to sustainable development • Identified key climate change issues youth will address through their awareness raising dramas • Created 4 drama outlines based on the identified key issues, and 1 cultural natural hazard dance

4.0 Workshop Program

Day 1	Introduction and Knowledge	Facilitator-Full Day
Session	Welcome	Semese Alefaio (TANGO)
09:00-09:05	Opening Prayer by Rev. Tafue Lusama	President TuCAN
09:05-09: 15	Opening speech by Rev Tafue	President TuCAN
09:15- 09:30	Introduction of participation and OTHA	Semese A. (TANGO)
09:30-09:45	Short summary of objectives, agenda, introduction of project, expectation	Sukulu Rupeni (USP)
After summary	TEA BREAK	
10:30-11:00	Climate Change 101(What is Climate Change?)	Tafue Lasama
11:00-11:15	Disaster (What is Disaster and Disaster Risk Management?)	George Tataua Pese
11:15-11:30	Biodiversity	Semese A. (TANCO)
11:30-12:30	Sustainable Development	Sukulu R.
12:30-13:30	LUNCH	
13:30-14:30	Listing of current climate change problems and prioritization	Semese A. George P.
14:30-15:00	Group work on likely Climate Change Impacts in 50 years and 2 murals: - Biodiversity - Health/Sanitation - Social - Culture/Belief - Education - Economy - Migration	Semese A. George P.
15:00-15:15	TEA BREAK	
15:15-16:00	Group work on what needs to be done to address these likely impacts and prioritization and Key messages	Semese A.
Day 2	**Drama skills**	**Full Day**
8:30-10:00	Introduction to Drama skills - Statue and Tableau	Sue M. (TANGO Savali Kelese (TUFHA) Sukulu Rupeni (USP)
10:00-10:20	TEA BREAK	
10:20-12:30	- Various ways of saying your lines - Choruses - Hazard cultural dance - Making music and songs	Sue F. (TANGO Savali Kelese (TUFHA) Sukulu Rupeni (USP)
	LUNCH	
	Exploring climate change impacts through drama - Dream: past/present/future - Climate change impact in 50 yrs. (Day One) Past/present/future	Sue F. (TANGO Savali Kelese (TUFHA) Sukulu Rupeni (USP)
	Group Presentation	
15:15-15:30	TEA BREAK	
15:30-1600	Rehearsal of days production(s)	Sue F. (TANGO Savali Kelese (TUFHA) Sukulu Rupeni (USP)
Day 3	**Planning and Closing up**	**Full Day**
8:30-9:30	Community Theatre Action Planning	Semese A.
9:30-10:30	Conducting a Community Workshop	Semese A.
10:30-10:45	TEA BREAK	

10:45-11:30	Rehearsals	Semese A.
11:30-12:30	Rehearsals	
12:30-13:00	LUNCH	
13:00-13:30	Field work checklist	Semese A.
13:30-15:50	Closing of workshop	TMS
19:30-	Public performance	All workshop participants

5.0 Brief Narratives of Workshop Proceedings

Day One:

Much of the activities on the first day included providing key information on the project rational, objectives, process, achievements in the first phase that was piloted in Fiji and key messages on climate change, biodiversity, and sustainable development. It is crucial for youth to have adequate knowledge about the issues they will be addressing through their community climate change awareness raising performances.

The workshop was opened with a prayer and welcome by the Reverend Tafue Lusama, who is also the President of the Tuvalu Climate Change Action Network. This was followed by introduction of participants and facilitators and the APN/USP project.

5.1 Climate Change Presentation by Reverend Tafue Lusama

This session included a power point presentation that was presented in the Tuvaluan language. It covered the following:

- Solar system and greenhouse gases on the Earth's surface
- Output and intake sources of greenhouse gases
- Increase in greenhouses gases leading to increases in global temperature
- The three key effects of global warming:
  - i) increase in Earth's air and water temperature;
  - ii) rise in sea level due to warming of earth's water and melting of ice in the north and south pole regions as well as in high altitude regions
  - iii) increased frequency and intensity of weather conditions (the intensification of Cyclone Katrina as it moved over warmer seas was used as an example)
- The impacts of the three main global warming effects was then discussed including: higher water tables affecting drinking water, agriculture and various habitats; health impacts such as increases in vector-borne diseases; coral bleaching; coastal erosion; flooding from intense rainfall; etc.
- It was also emphasised that climate change impact would only enhance the impacts to the already existing threats to the community such at over fishing, coastal erosion, land-based pollution, etc.

(See Attachment 1 for the Climate Change Presentation).

5.2 Disaster (What is Disaster and Disaster Risk Management) Presentation by Tataua Pese

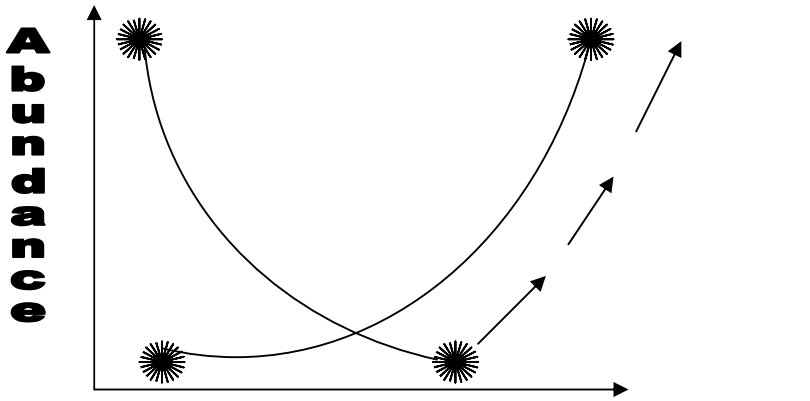
This session employed various methods including the use of power point and video presentation and small group discussion. The presentation was conducted in the Tuvaluan language. After Tataua's presentation on disaster, he asked the participants to break into two groups. One group was asked to discuss and list disasters caused by nature and the other group to list disasters caused by humans. Groups presented results of group work. This led to discussions of how humans' activities are now affecting or contributing to natural disasters. This was followed by a video presentation. The video was very powerful and moving as it showed the Tsunami in Indonesia and the utter chaos, devastation; mangled, piled, carried corpses and deep sorrow, confusion and the pain of affected families. Discussions following the video included the need for preparedness at all levels.

5.3 Biodiversity Presentation by Semese Alefaio

The presentation was made through power point on what is biodiversity and in the Tuvaluan language. The session included the definition of biodiversity, description of habitats, description of important things that live in these areas and the things that can destroy them. A short group discussion followed reinforcing the messages received regarding humans as a part of biodiversity, humans' dependence on nature and nature's dependence on humans.

5.4 Sustainable Development Presentation by Sukulu Rupeni

The session provided the definition of sustainable development, explanation of the development trend is the Pacific and the contrast and examples between the unsustainable and sustainable types of developments in the Pacific. Sustainable development – development that makes life healthier, safer, more productive and more enjoyable but doing so without destroying the natural, human and cultural capital needed for the development of the future generations. The emphasis is on maintaining the 'abundance', conservation of biodiversity as the foundation for sustainable development.



(Abundance Graph)

5.5 Listing of Current Climate Change Problems and Prioritization

This session began with participants breaking off into 2 groups to discuss and list climate change problems faced by their community(s). Once the problems were listed the groups used pairing matrix tool to determine priority issues.

Pair Wise Matrix

Group 1:

<u>Priority</u>:

1. Coastal erosion
2. Drought
3. Sea level rise
4. Strong winds & hurricanes
5. Tidal waves
6. Deforestation
7. Frequent outbreak of H20 borne diseases
8. Salt H2O intrusion in vegetation
9. Bleaching
10. Deforestation
11. Expensive economy

Tuvalu workshop participants

Group 2.

Priority:

1. Drought
2. Sea level rise – matagi malosi
3. Erosion
4. Strong winds
5. Flood
6. Loss of islet
7. Diseases – Fever, Typhoid
8. Cyclone
9. Deforestation
10. Fire
11. Conflict

Synthesis of the 2 groups' lists of priority climate change issues indicate the following as the top 6 priority issues:

1. Drought
2. Coastal erosion
3. Sea level rise
4. Strong winds and hurricanes
5. Tidal waves
6. Floods

Other issues of concern include the following:

- Loss of islets
- Deforestation
- Disease; water borne diseases – fever, typhoid
- Salt water intrusion in vegetation
- Coral bleaching
- Expensive economy

5.5 Likely Climate Change Impacts in 50 years and Prioritization

Participants were asked to work in their 2 groups to discuss and write in matrices what the likely effects of climate change will be in 50 years.

Youth discuss climate change impacts in 50 years

Group 1:

Current Problems Faced	Priority Now	Problems in 50 years	What needs to be done to address these problems	Priority Solutions to be addressed now	Priority Solutions to be addressed later
Coastal Erosion	1	- Our island will disappear - Climate refugee - Loss of identity	- Planting of coastal trees, mangroves - Increase awareness programs	- Increasing awareness programs	- Planting of mangroves
Sea level rise	2	- Salt H2O intrusion in vegetation - Tidal waves - Coastal erosion - Water problems - Our islands will disappear - climate refugee - Migration	- Negotiate with developed countries to reduce the realeasing of CO2 or the use of fossil fuels - Increased awareness programs	- Increasing of awareness programs for drama, tv programs, radio, etc.	- Negotiate with the developed countries
Strong winds & Hurricanes	3	- No shelter - Less production - Increase in water borne diseases - Education will cease	- Strong wind Warnings - Increasing Awareness Programs - Adopt more Modern Weather equipments	- Preparation - Increasing of Awareness Programs - Evacuate people from risky areas	- Adapt more Modern Weather Equipments
Tidal waves	4	- Caused coastal erosion - Bleaching - Affects the natural resources - Desert low lying	- Planting of Coastal trees - Awareness programs	- Increase the Awareness Programs - Evacuate People from Risky areas	- Planting of Coastal trees

		Lands			
Frequent outbreak of water borne diseases & health	5	- Increase in Malaria and dengue fever - Increased rainfall causing flooding & disrupted sewerage system - Warmer water lead to increase in pathogen	- Awareness of Climate change problems - Increase Medical supply	- Awareness of Climate change programs	- Increase of medical supplies

Group 1 – Key messages

The effects of climate change on the following:

1. Our health
2. Coastal and marine resources
3. Fresh water
4. Agriculture
5. Economy
6. Lovely home Island
    a) Loss of identify
    b) Climate change refugee
7. Biodiversity

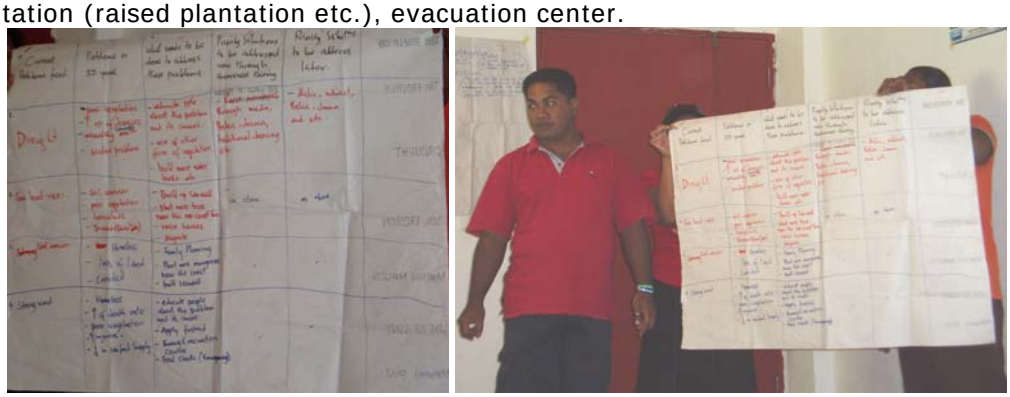
Group presentation

Group 2:

Current Problems faced	Problems in 50 years	What needs to be done to address these problems	Priority solutions to be addressed now	Priority solutions to be addressed later
Drought	- Poor vegetation - Increasing number of diseases - Water problem	- Educate people about the problems and their causes - Use of other forms of vegetation - Build more water tanks etc.	- Raise awareness through media, posters, drama, traditional dancing etc.	Media, internet, posters, drama etc.
Sea level rise	- Soil erosion - Poor vegetation - Homeless - Disease (fever etc.)	- Build up sea wall - Plant more trees Near the coast line - Raise houses - Migrate	As above	As above
Coastal erosion	- Homeless - Loss of land	- Family Planning - Plant more	As above	As above

	- Crowded	mangrove near the coast - Build sea wall		
Strong winds	- Homeless - Increased death rate - Increased injuries - Decreased food Supply	- Educate people about the problems and their causes. - Apply first aid - Evacuation centre - Food stocks (emergency)	As above	As above

Group 2 - Key messages:
Family planning, plant more coastal trees, impacts of climate change on drought, sea level rise, soil erosion, and strong wind, first aid knowledge, use of other forms of vegetation (raised plantation etc.), evacuation center.



Participants share result of group work

Day Two:
The second day focused on transforming information acquired on day one into theatrical expressions. Participants were provided information and basic drama techniques.

5.6 Introduction to Basic Drama Skills Presentation by Sukulu Rupeni

The session began with a brief background on (the what, how, where and when) community theatre.

- Community Theatre
  - Minimalist theatre
  - Addresses issues of importance in society

- Change Agents
  - Bring about positive changes in peoples':
    * Knowledge
    * Attitude
    * Practices

Participants learnt basic drama techniques such as the use of tableaus and statues to portray biodiversity in the coral reefs, mangroves, forests. The class was asked to work in groups to show the importance of these areas to other life forms in these habitats and to humans. To show what threatens their abundance and what can be done to stop or reduce these threats. The session revealed some very talented participants. They thoroughly enjoyed the session.

Other basic drama skills provided included the use of mime, choruses, one liners, various ways of saying lines and hazards cultural dance. These exercises included working as a big group as well as in pairs or small groups.

5.7 Scenario Simulations: Climate Change Impacts on Biodiversity and

Sustainable Development by Suelami F. of TANGO

Participants were divided into 3 working groups and asked to revise their group work on day one to create dramatic scenarios. Three scenarios were created:

Group 1: The past

This group play is about warriors from the past revisiting their village and finding the environmental features have changed and unfamiliar. The issues addressed included waste and pollution, improper land use practices, deforestation of coastal trees as human impacts on the environment, and the loss of birds and native plants and trees. The warriors made contrasts between how it was in the past and how it is now to address unsustainable development.

Group 2: The present

The group play is a story about a family consisting of a pregnant single mother and her 5 children aged between 11 and 6. The issues addressed included family planning; health; water; food security; poverty; lack of education; loss of medicinal plants; lack of preparedness for disasters including lack of adherence to cyclone warnings; global warming leading to intensified impacts of cyclone, strong winds, tidal wave, flood; unsafe building structures; need for knowledge to apply first aid in emergencies, need for a first aid kit, emergency supplies and evacuation centres.

Group 3: The future

Scenario 1:

The group play is about a girl and her family migrating to New Zealand for a better life in a big country. The play addresses mass migration due to climate change impacts, loss of culture and loss of identify.

Scenario 2:

The second play is done in two parts.

Part 1

This shows a traditional wedding and the traditional feast that follows. It shows the couple separately dressed by doting family members fitting them into their elegant traditional wedding gowns. The couples are led to seat on a pile of skilfully crafted and neatly laid out traditional woven mats. After the wedding, the best traditional foods are brought in rows and spread alluringly before the couple. The traditional celebration of cultural dances and local songs break out.

Part 2

The second part shows the gloomy future impacts of climate change on tradition and culture. The same couple from part 1, stand before a priest to wed in their best daily outfits. After the wedding service they seat on ordinary chairs and are brought two glasses, a bottle of some sort of drink and some cookies for refreshments. There are no doting relatives and no celebration dance and songs.

Climate change scenario simulation

5.8 Natural Hazards Cultural Dance and Chant

Youth were asked to improvise using cultural dance move actions that best portray each of the natural hazards listed: heavy rain, flood, strong winds, cyclone and storm surge. These moves were joined together to form a cultural dance whilst chanting the hazards in the local language. A suitable contemporary or local song can be played in the background to add more flavour to the production. The purpose of the exercise is to provide a tool that can address global warming impacts on natural hazards causing them (natural hazards) to increase in intensity and frequency.

Participants highlighted they already have a climate change song and will create a new one later after the workshop.

Natural Hazards dance

Day Three:

The third day focused on rehearsals and preparing for the evening public performance where the participants will showcase their climate change dramas.

5.9 Rehearsals, Stage, Costume and Blocking.

Participants spent most of the day rehearsing their dramas, songs and dances. They learnt the importance of entrances and exits, using the stage levels, the stage space and not upstaging other actors. Blocking for each play were rehearsed. Costumes were decided and tasks delegated.

5.10 Community Performance Program.

A community theatre performance sample program. The actual community theatre program normally takes 2 - 3 hours for one sitting where the troupe makes a 20 – 30 minutes theatre performance followed by discussions.

1. Traditional protocols

2. Introductions
   - Prayer
   - Welcome
   - Objective of the visit
   - Why community theatre for climate change awareness
   - Why youth are engaged
   - Introduction of visitors and participants

3. Climate Change Theatre Performance

4. Post Performance Group Discussions
   - Comments on theatre messages
   - Brief introduction on Climate change impacts on biodiversity
   - Introduction of Group activities

- Breaking into small groups (men, women, youth & children)
- Distribution of pens and newsprints

5. Groups Discussions – A
   - 5.1 – Identifying climate change issues
   - 5.2 – Prioritization of issues
   - 5.3 - Group work presentations

   Group Discussions – B
   - 5.4 - Climate change Impacts in 50 years
   - 5.5 - Identifying solutions
   - 5.6 - Prioritization of solutions
   - 5.7 - Climate change adaptation planning
   - 5.8 - Group presentations

6. Summarization of program results by Theatre Group Leader

7. Final words from the Community Leader

8. Prayer

9. End of program

5.11 Community Theatre Action Planning

a) Priority Climate Change Adaptation Activities Youth Will Implement

	Problem Currently faced	Adaptation Activities Youth Will Implement	Whose Responsible	When
1.	Coastal erosion	Planting coastal native trees	Semese A./ TANGO	To be determined after meeting with partners
2.	Waste management	Awareness raising on waste management through theatre performances.	Semese A./ TANGO	

Tuvalu has a Climate change Action Network, which our partner organization TANGO an affiliate of FSPI is a member. All climate change related activities as proposed above are taken up with the network for decisions regarding implementation.

5.12 Closing of Workshop

The closing included participants and facilitators sharing what they learnt during the workshop. Acknowledgments and expressions of gratitude from each of the facilitators (George T., Semese A., Sue F., and Sukulu R.) for the participants' hard work during the three days. Final words from Sukulu thanking the facilitators and participants and the organizations that have contributed to the workshop. A vote of thanks from the

participants. Final words by Semese A. encouraging the youth with the task of awareness raising that lay before them. Sue Foaki closed the workshop with a word of prayer.

5.13 Public Performance

The evening performance was held at the Vaiaku Langi Hotel. There were approximately 100 people present including the director of TANGO. The program began with an introduction by Semese Alefaio. Below is the performance program for the evening.

1. Drama on the Visitation of Warriors
2. Drama on the Family that Narrowly Survived a Cyclone Disaster
3. Drama on Migration and Loss of Identity
4. Cultural Hazards Dance
5. Drama on the Impacts of climate change on Culture and Tradition
6. Climate Change Song
7. Summarization of Program
8. End of program.

6.0 Participants List

1. Walter Eti - 19
2. Teve V. - 34
3. Kaio Tiira Taule - 23
4. Talasieta Uamea - 26
5. Gario P. – 20
6. Paua Finilau
7. Alofa T. - 20
8. Aloama S. - 20
9. Sopoaga - 25
10. Naomi T. Vaisua - 20
11. Susana T. - 19
12. Lautolo S.- 19
13. Lorreta K. Sacua – 19
14. Lanola Telina – 20
15. Teano Angie - 19
16. Filifau Siaosi - 17

7.0 Participants Evaluation of The Workshop

Below is the summary of participant' evaluation of the workshop. The total given in several of the tables indicate the number of participants' selections.

1. What three main things you learnt from this workshop?

TOPICS	TOTAL POINTS
Biodiversity	1111111111
Climate change	11111111111111
Drama	11111111
Disaster	1111111
Deforestation	1
Team work	1
New words	1

2. Which sessions did you like and learnt from the most?

TOPICS	COMMENTS
Climate Change & Variability	- Threatens our source of food and Culture - I need to know about the climate and the weather - Learnt about the cause, the effects

	and ways to prevent climate change - The major causes of climate change due to the attitude of human beings and the availability of transportation and factories - Learnt a lot of new things about Climate change - The difference impacts of climate Change - I learnt about climate change and new words like biodiversity, migration and culture
Biodiversity	- I need to know that people do not have to cut down trees and damage the life of other living things
Drama	- Learning to perform lively drama and dancing - Learnt to explore climate change and biodiversity through drama - Drama skills was well delivered and Energetic - I like the drama part because in this part I was able to explore more about climate change and biodiversity - I enjoyed much and learnt a lot From this session - Learnt how to act, to be confident and Focused - Day 2 sessions because I learnt more Skills on drama and especially how To deliver key messages
Disaster	- Learnt new things about disaster - First time to learn about disasters

3. Which topic do you now feel confident to train others in?

TOPICS	TOTAL POINTS
Climate Change & Variability	111111111111111
Disaster	1111111111111
Biodiversity	111111111111
Sustainable development	11111111111
Drama	111111111111111

4. What key messages will you personally tell people about climate change?

- Firstly, I will tell people about the impacts of climate change that is affecting our islands
- How to make first aid, and to plant more mangroves
- To move on otherwise the island was lost and no place to live on it. So it is good to migrate to other islands
- Educate people to not cut down trees
- To migrate to another country. To educate people about climate change
- Act now that climate change did happen and that will affect our land and air, will make us homeless
- Climate change is real. We have to do something before it is too late and our beloved home island will sink.

- Act now, not later
- Family planning, to be aware or prepared during climate change, encourage reforestation to help in the problem of climate change
- The effects of climate change so that they can be aware of it
- Be prepared, do something before it is too late
- Climate change is real, so be prepared
- The impacts of climate change on our islands
- To be prepared
- Plant more trees near the coastal areas
- To be prepared for emergencies and disasters
- The causes and impacts of climate change

5. What did you enjoy the most about this workshop?

- Climate change session. Learnt importance of family planning and the need for sea wall.
- I enjoyed the food and the fun things we did in the workshop
- Energizer and drama as well as the food
- Learnt how to act especially the mime technique to click, grip and drink
- Doing drama and all about the climate change, disaster and biodiversity
- I really enjoy this workshop because it is very important to me.
- All the sessions. Well delivered and energetic
- I enjoy learning different style of dramas to express climate change and other effects to our country
- Working with other participants as a group to pass the important messages on climate change
- Enjoyed the drama skills
- Expert facilitators
- Food
- Eating
- First time to know about climate change and disaster
- Drama and the food
- It was fun and useful, really related to my island Tuvalu – flood, drought etc.
- Everything that was done throughout the workshop

6. Was there anything you did not like about the workshop?

No – 1111111111111111

Yes –

7. What suggestion can you give to improve this workshop in the future?

- Have the workshop over a period of 2 weeks.
- To invite more youth to this workshop and also to do this workshop in the outer island that the understanding of the people can be extended about climate change
- To be punctual to the workshop start time
- Build a theatre for it or make radio programs if possible or TV programs too
- Have more workshops about awareness
- Keep the drama workshop going for 2 weeks so that people don't forget
- Much more time instead of just 3 days

Training of Trainers Workshop on Vulnerability and Adaptation (V&A) on Climate Change in Tuvalu

Workshop Report

8th – 11th July 2008, Funafuti, Tuvalu

by

Semese Alefaio

Background:

Tuvalu is one of the smallest countries in the world, was formerly known as the Ellis Islands. This low lying group of islands is made up of nine low lying coral atolls, with a total land area of 26 square kilometres and an ocean area of 900,000 square kilometres. Tuvalu's highest elevation is 4.6 meters -- 15 feet but most of it is less than a meter above the sea. Tuvalu lies south of the equator and west of the International Dateline. It has a population of approximately 10,000 people. Tuvalu's capital is Funafuti.

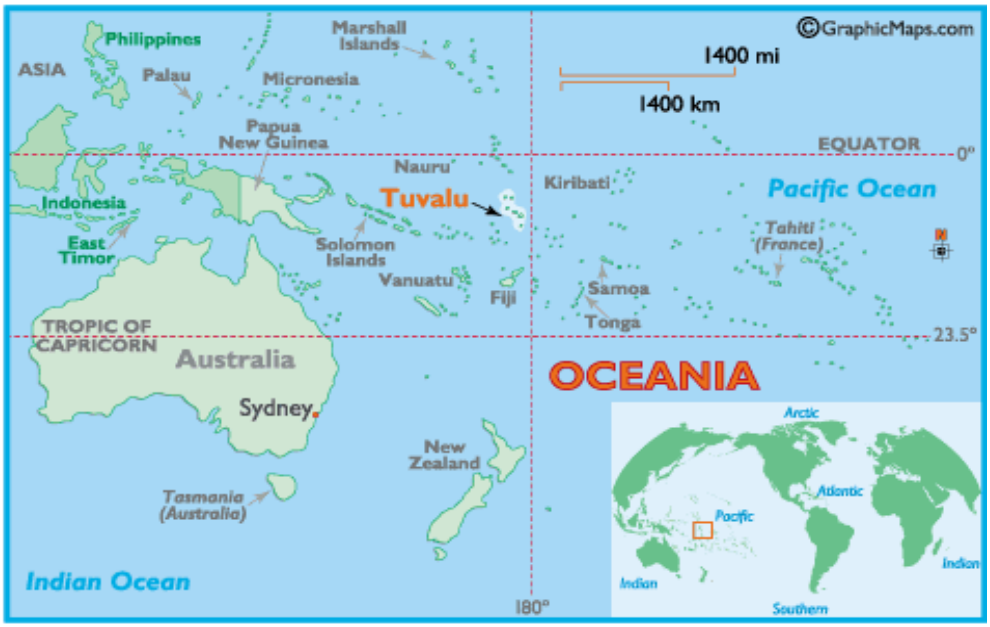


Fig. 1 Tuvalu in the South Pacific Islands.

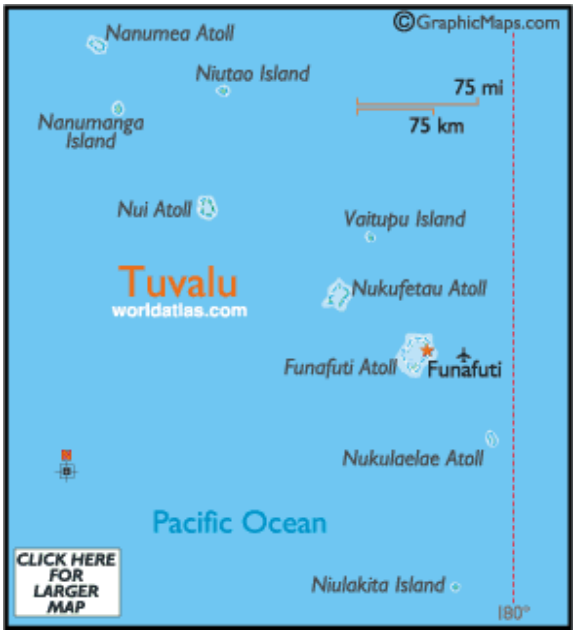


Fig. 2 Tuvalu Islands

Introduction:

A climate change risk and adaptation planning workshop held in Funafuti in Tuvalu in 2008 was organized by the World Wild Life Fund for Nature South Pacific Program and co-facilitated by members of the Tuvalu Climate Action Network(TuCAN). Participants to the training include a mixture of female and male facilitators that were selected by TuCAN. These participants were specifically selected according to the nature of their work with communities and the possibility of engaging them in future climate change work with communities particularly on using the toolkit. These were mainly staffs from TuFHA, Red Cross, Environment dept, Womens dept, Funafuti community, member of TuCAN, Education dept, Funafuti Kaupule and Fisheries. The 4 days training was held at the conference room of the Vaiaku Langi Hotel. All the tasks described in this document have been approved by members of the TuCAN.

Therefore, the APN/USP partnership project will review the adaptation plan drawn by the Funalala community as a result of this workshop and support the implementation of two soft measure activities highlighted.

This report is in 3 Parts. Part A provides the narratives of the workshop proceedings, Part B is about the APN/USP partnership aspect of this project; Part C is the conclusion and recommendations.

PART A – NARRATIVES OF WORKSHOP PROCEEDINGS

DAY 1:

Objectives:

1. **To build simple understanding on background knowledge required in order to effectively enhance the tools from the toolkit with communities.**
2. **To discuss best ways on ensuring effective participation of different stakeholders and how to effectively facilitate them in an appropriate way.**

The official opening of the training started with an opening prayer led by the Rev. Tafue Lusama who happens to be the TuCAN President, followed by a statement from the Director of Environment Mr. Mataio Tekinene.

The facilitator took over after the opening going through the objectives and expectations of the training. The participants were asked to introduce themselves and to state what they expect out of this training. The training started off with a presentation by Melton Tauetia presenting an overview of what Climate Change is with its impacts to communities and to the world as a whole. The information presented on Climate Change has been simplified and modified in order to level with those participants who have little knowledge on the issue. These include the use of power point presentation and showing of cartoon animated videos from Al Gore's 'Inconvenient Truth' movie which provided simple basic knowledge on Global Warming. Some participants find the first day interesting but not for some as they already have the knowledge on Climate Change.

At the latter part of the day, the highlight of the day was lid up after participants were introduced into using "Facilitation methodologies and how to facilitate effectively and efficiently". Participant explored basic information needed and skills required on how to effectively facilitate communities. Majority of these activities involved the use of participatory techniques and ideas on building a fundamental picture of how to ensure the participation and involvement of people in the community. Activities such as preparing for engaging with communities, planning of approaches that may help the facilitation with communities.

From the feedback at the end of the day, most of the participants find the information useful and a few issues discussed enhanced their knowledge on the issue of Climate Change and most importantly the facilitation methodologies and techniques.

DAY 2:

Objective:

1. To introduce participants how to use PLA tools.
2. Familiarize participants on using selected tools from the toolkit.

The day began with a prayer followed by participatory recap exercise where participants were asked to get into pairs to find out about what one has learned from previous day. The exercise is an important activity in determining the knowledge gained from the activities and whether target training objectives have been achieved. This will also provide the Trainers with an overview on the level of knowledge of the participant have on the issue discussed.

Day 2 is an important day for the participants because the facilitations will focus much on the tools and methodologies on community assessment. The participants enjoyed the process in which the facilitation was done and how it was carried out. The toolkit provided guidance for the participants but not all the tools in the toolkit was used. Instead, we only used mapping, problem solving, action planning, seasonal calendar, and time line. The facilitators together with the participants went through the tools thoroughly with a lot of hands on exercises which provide real experience on the use of the different tools and how to apply them. In addition, participant also watched a video

on PLA that was directly intended particularly for training community facilitator. This video was very helpful in terms of sharing ideas and experience from other parts of the world on how some of the PLA tools were done in rural communities. It also provided a better vision to participant on how effective facilitation were carried out. The participants found the tools very useful especially when they relate these tools to their own work and how they could benefit from it in terms of acquiring information in the community.

There are other important issues discussed which will enhance the knowledge and skills of the participants. These things were not included in the toolkit, things like stakeholder analysis, facilitation skills and techniques, and energizers among others. Another important bonus lesson that was taught among participant was how to adapt themselves if there are 'sabotage or saboteurs' during facilitation process. New techniques and ideas were shared to avoid such incident in communities. After all the group work at the end of the day, trainers demonstrated to participants the appropriate way of facilitating a community group. This was done using one of the tool while applying different facilitation techniques while participants act as members of the community. A handful of experiences, ideas, new knowledge and techniques were learned and shared between trainers and participants after this exercise.

DAY 3:

Objective:

1. **To familiarize participants with key tools on analyzing different types of stakeholders involved in the community.**
2. **To introduce participants on the assessment of possible adaptation options that is suitable for Tuvalu.**
3. **To identify root causes of problems and analyze threats and impacts.**
4. **Provide participants with a practical experience on enhancing the skills and knowledge gained over the last 2 days.**

Day 3 focuses on the analyzing information using the tools which can be used to put information gathered into a plan which will be useful to the community. The participants worked in groups trying to use tools like; Root Cause Analysis (problem tree), Stakeholder Analysis,

On the second part of the day, participants went out to one of the communities and did a practical exercise using their skills on the 3 methods (Mapping, Seasonal Calendar, Time line). This community often faced flooding annually particularly during king tides and storm surge during low pressure systems close to Funafuti. According to local residents from the area, they have noticed that such events are becoming more frequent over the years. Often during flooding, families and some of their livestock are temporary relocated by government officials to safe areas.

Participants were given a chance to present the visiting team using local formal protocol and enhance practical exercise with the community. Community members were equally divided into 3 groups using energizer activity and trainees were given 1 tool each to facilitate with each group. These were mainly Mapping, Seasonal Calendar, and Timeline. Results collected from this practical exercise were then analyzed and presented back to the community as part of the afternoon session while light refreshment was served. At the end of the session, participant had a separate recap session outside the community on analyzing important issues, major finding and share knowledge and experience from the practical exercise. Day 3 ended with the briefing of participants of important things to do for the field trip to the community on next day.

DAY 4:

Objective:

1. **Provide participants with a real life practical experience of engaging with communities.**
2. **To develop skills and experience on using selected methods from the toolkit.**

Background: Day 4 began with an energetic mood from everyone on looking forward on going to Funafala. Funafala is a small beautiful village located 14 km south of the main urban centre. There are 8 families living in the community and life in this village is quite simple. Most of the people in this community depend a lot on nearby coastal resources particularly marine resources. Everyone was assembled around the hotel jetty at 7.30am for briefing before leave for the community. Participants boarded 2 boats and traveled to the community.

Activities Undertaken:

In the community everyone was welcomed in to the *Falekaupule* (community meeting hall) and it was a good chance for the participants to practice and witness traditional protocols which are rarely practiced in urban areas. These can also include dressing codes, sitting formats, use of proper language, presentation and introduction of the group and other necessary cultural formalities used.

During each group work, community members were literally introduced into the use of each method. The following tools were used during the community exercise:

- ✓ Seasonal calendar
- ✓ Community time line
- ✓ Mapping
- ✓ Root cause analysis
- ✓ Action plan

The trainees together with community members went through each tool and were facilitated by a trainee while the trainers observed the process thoroughly and also providing the necessary assistance required. During the practical exercise with the community, a group of three trainees were selected to facilitate each different tools. This provides a great chance for the trainees to experience and enhance their facilitation skills when using the tools.

At the end of the day all the results were presented back to the community members and these were discussed and comparing significant issues raised from each tool, eg, (vulnerable sites from the mapping exercise, flooding periods from the seasonal calendar, and previous storms and cyclone events from the time line). The day ended at 4:00pm and everyone returned back to the mainland getting ready for the closing ceremony at 6:00pm.

Closing ceremony:

The last activity of the training was the closing ceremony and handing over of certificates which was held at the hotel from 6pm to 8pm. The workshop was officially closed by the Director of Environment which he presented a brief statement encouraging the participants to make use of the knowledge and skills gained from the training. He also emphasizes the importance role of each individual in supporting future Climate Change community trainings. This event was witnessed by TuCAN members together with the Director of Environment. Ceremony ended at 8.30pm.

Workshop Evaluation Summary

This evaluation was done at the end of the field trip to Funafala as part of the field trip. Participants were given a evaluation sheet and were asked to evaluate the content and process of the workshops and future recommendation. Each of the 10 questions asked in the evaluation is listed below, followed by a synopsis of the evaluation responses that were provided to each respective questions. Evaluation summary conclusions are highlighted in **bold** text.

1) Were your expectation met?

This question received the minimum of respondent feedback.

However, there was a strong agreement among respondents on this by saying 'yes'. All 13 respondents felt that **most of their expectations were met**.

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2) What tool/tools did you find most useful?

7 Out of 13 respondents strongly expressed that **all the tools covered during the training were all useful and important**. 3 of the respondents said that only 3 of the tools were important. These were mapping, timeline and seasonal calendar. Only 1 participant out of the group said that problem tree, mapping, seasonal calendar and timeline were useful. She/he also expressed that other additional information such as Climate Change 101 was also very useful in terms of providing a basic understanding of the main issue. Only 2 of the participant felt that only Timeline and seasonal were useful.

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3) What tool/tools did you find least useful?

Nearly all respondents thought that **all the tools used were important and useful.** While nearly all said and noted under this question that not enough time was committed to completing group exercise. As a result of this, most respondents felt "**did not feel that there was enough experiences shared**" during group exercise.

4) What did you get out of this workshop?

Knowledge, skills, confident to facilitate, and new ideas

5) Did you find the workshop useful or not?

All respondent said that they do find it **useful and very important to their work**.

6) What worked well?

Most say **everything worked fine** while a few felt that there need to be more time spent on group exercise on doing each tool.
Also, the group **appreciated the diversity of people attending the workshops**, particularly in terms of: (1) the different types of age group they represented, and gender (2) the various department that they were from, and (3) their backgrounds and wealth of experience they brought to the training.

7. What could be done better?

Majority of the respondent strongly expressed that in future **more time should be given for group work** to allow participants to fully complete group exercise. They also felt that the **training duration was short** and need to extend to 5 days.

8. Was the facilitation clear?

All felt that the **facilitation was clear and understandable**.

9. Did you experience any challenges?

All the feedback from all respondent that were collected felt that **only a few experience and minor challenges were experience**. There were 3 main significant issues that stood out and these were 1.Time 2. Language and 3.Group dynamic

10. Did you have any recommendations/suggestions for future exercise?

- Need more time for this type of training
- More practical work (expose trips to communities)
- Participate in future trainings and overseas trainings of this kind
- Ensure to clearly explain the useful of each tools and it's relevant to adaptation measures.

New Knowledge:
From the trainer's point of view, the following were significant new knowledge that was gained from the training:

- For mapping exercise in future, useful to use local materials such as grass, wood, sand, cans, rocks, etc could be very effective and should be recommended.
- A mixture of different training materials could be very helpful and effective. E.g use of videos, posters, handouts, local materials, powerpoint presentation, drama, etc
- Identify enough sources of resource materials for providing brilliant ideas and good advises.
- Very important to also check background of each individual participants and previous experience on the issue before the workshop.

Lesson learned:
Highlighted below are a few of the lesson learned from this training. Some of them may be indirectly related to the training or may be useful for recommendation for future trainings on this issue.

- Communities and participants have to **be specifically cleared of objectives** and important of the exercise and should also be reminded during presentation of results.

- **Ensure every ones participation by confirming** it 2 or 3 days before training start.

- **Do evaluation on sites** while it's still fresh and while everyone is available**.**

- Be sure to **use name tags**. People loved to be called by names.

- **Have a plan B for backup** incase your plan A fail. e.g Power failed, less turnout, bad weather, low turn up, etc

- **Do debriefing at the end of each day** with trainers

- The **use of dramas should be recommended** in delivering simple clear message in community and could be very enjoyable compare to lecturing. However, be aware of other sensitive issues that might be offensive to the community. e.g language, or related incident, etc.

- **Avoid the use of English terms** such as projects, development, GEF, etc. It can be very confusing for some or might create a different aspect of what we do.

- **Another best way of learning is by doing**. In future, have **more time on practical exercise** rather lecturing.

- Always **have a checklist of important things to do** when planning a training workshop

Future plans:

- ✓ To develop local toolkit with Tuvaluan translation.
- ✓ Repeat similar training using the trained trainees as key facilitators
- ✓ Expand this training to outer island communities
- ✓ Conduct follow up discussion with the Funafala community to further explore adaptation actions needed based from initial results from this training
- ✓ Use these trainees to assist in facilitating process in different areas/focus eg, MPA, Good governance, water, etc, etc……

PART B – APN FUNDED ASPECT OF THE PROJECT

The APN/USP partnership program aimed to build on the workshop conducted in 2008 in the Funalala village community by reviewing their adaptation plan and supporting the implementation of two soft measure adaptation activities highlighted. This was a decision made by the Tuvalu Association of NGOs or TANGO. Flooding was selected to be addressed by this project

1. Brief background on Funalala Village.

Funalala is a small coastal village located 14 km south of the main urban centre in Funafuti. The village has 8 families whose main source of income is fishing. Their main religion is Methodist. Villagers go to Funafuti centre for health and education. They have electricity, water is sourced from their household tanks and for transportation villagers use boat, motorbike or walk.

Pic. 1 Funafuti Island

The workshop results highlighted flooding as the major climate change issue. Funalala village faces flooding annually during king tides and storm surge during low pressure systems close to Funafuti. Participants highlighted, they have noticed that such events are becoming more frequent over the years. Often during flooding, families and some of their livestock are temporarily relocated by government officials to safe areas. Besides flooding, the workshop results highlighted drought and tidal waves were priority climate change issues. Other key issues highlighted include the lack of communication/alert system for disasters and lack of knowledge on adaptation activities.


Pic. 2 and. 3 Flooding in Funafuti, Tuvalu

2. The climate change adaptation activities identified for implementation by the APN/USP partnership project were;

The soft measure adaptation activities identified for flooding of Funalala village, caused by increasing tidal wave occurrences were:

i) Mangrove rehabilitation
ii) Coastal tree planting

These activities are in the process of being implemented and will be coordinated by the Tuvalu Association of Non Government Organizations (TANGO) in partnership with the Tuvalu Network of Climate Change (TuCAN) and implemented by the Funalala village community members.

PART C – CONCLUSION AND RECOMMENDATION

The workshop was a success as participants have enhanced skills in the use of participatory learning tools and assessing communities' vulnerability to climate change and developing adaptation plans.

Community members were grateful for raising their awareness of climate change and facilitating the identification of issues and needs.

We wish to recommend the support of the USP/APN partnership project to assist with the review of the Funalala community climate change adaptation plan and its implementation.