



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

**ACTIVITY REPORT: 2ND CTI REGIONAL EXCHANGE ON
CLIMATE CHANGE ADAPTATION: TOOLS FOR ACTION
APRIL 14-16 AND APRIL 17-21, 2011 (GIZO AND HONIARA, SOLOMON ISLANDS)**



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ACRONYMS

ADAPT	Asia Climate Change Adaptation Project Preparation Facility (USAID)
ADB	Asian Development Bank
AOSIS	Association of Small Island States
AusAID	Australian Agency for International Development
BFAR	Bureau of Fisheries and Aquatic Resources (Philippines)
CCA	Climate change adaptation
CI	Conservation International
COP	Conference of Parties
CSR	Corporate social responsibility
CT	Coral Triangle
CT6	CT Countries (Indonesia, Malaysia, Philippines, Papua New Guinea, Solomon Islands, and Timor-Leste)
CTI	Coral Triangle Initiative
CTI-CFF	Coral Triangle Initiative for Coral Reefs, Fisheries and Food Security
CTSP	Coral Triangle Support Partnership (USAID/Asia)
DEC	Department of Environment and Conservation (PNG)
DEM	Digital elevation model
DENR	Department of Environment and Natural Resources (Philippines)
EAFM	Ecosystem approach to fisheries management
EIA	Environmental impact assessment
ENSO	El Niño Southern Oscillation
GOSIC	Global Observing Systems Information Center
ICCSR	Indonesia Climate Change Sectoral Roadmap
ICM	Integrated coastal management
IEC	Information, education, and communication
IUU	Illegal, unreported, unregulated fishing
KM	Knowledge management
LGU	Local government unit
LiDAR	Light Detection and Ranging
LMMA	Locally Managed Marine Area
LME	Large Marine Ecoregion
M&E	Monitoring and evaluation
MECDM	Ministry of Environment, Climate Change, Disaster Management and Meteorology (Solomon Islands)
MMAF	Ministry of Marine Affairs and Fisheries (Indonesia)
MPA	Marine protected area
NAHRIM	National Hydraulic Research Institute of Malaysia
NAPA	National Adaptation Program of Action
NASA	National Aeronautics and Space Administration (US)
NCC	National CTI Coordinating Committee
NGO	Non-governmental organization
NOAA	National Oceanic and Atmospheric Administration (US)
NPOA	National Plan of Action
OCCD	Office of Climate Change and Development (PNG)

P3DM	Participatory 3-dimensional modelling
PAGASA	Philippine Atmospheric, Geophysical and Astronomical Services Administration
PI	Program Integrator (for USAID/Asia US CTI Support Program)
PNG	Papua New Guinea
RCO	Research Center for Oceanography
RDMA	Regional Development Mission for Asia (USAID)
REAP	Regional Early Action Plan
RPOA	Regional Plan of Action
SCTR	State of the Coral Triangle Report
SEEN	Sabah Environment Education Network
SERVIR	Sistema Regional de Visualización y Monitoreo (USAID-NASA project)
SIDS	Small Island Developing States
SILMMA	Solomon Islands LMMA
SLR	Sea level rise
SocMon	Global Socioeconomic Monitoring Initiative for Coastal Management
SOM	Senior Officials Meeting
SST	Sea surface temperature
TNC	The Nature Conservancy
TWG	Technical working group
UBC	University of British Columbia
UMS	Universiti Malaysia Sabah
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNFCCC	United Nations Framework Convention on Climate Change
UPMSI	University of the Philippines Marine Science Institute
URI-CRC	University of Rhode Island Coastal Resources Center
US CTI	United States Support to the Coral Triangle Initiative
USAID	United States Agency for International Development
USG	United States Government
V&A	Vulnerability and adaptation
VA	Vulnerability assessment
WWF	World Wildlife Fund for Nature

EXECUTIVE SUMMARY

The 2nd Coral Triangle Initiative (CTI) Regional Exchange on Climate Change Adaptation (CCA): Tools for Action was conducted in the Solomon Islands on April 14-21, 2011. It was hosted by the Solomon Islands Ministry of Environment, Climate Change, Disaster Management and Meteorology (MECDM), with assistance from the US CTI Support Program. A total of 55 participants from the six CTI countries (CT6) and development partners participated in the exchange. The CT6 include Indonesia, Malaysia, Papua New Guinea (PNG), the Philippines, Solomon Islands, and Timor-Leste.

The exchange consisted of two main activities, as follows:

1. Three-day (April 14-16) field visit to Gizo, Western Province, a CTI integration site west-northwest of the capital Honiara, where early adaptation actions were underway to address the impacts of climate change on fragile island ecosystems.
2. Five-day (Apr 17-21) regional exchange in Honiara, designed to share on-the-ground experiences implementing early actions in climate change adaptation (CCA), and tools and data used to support these early actions. The regional exchange also served as the venue to review and refine the framework of the CTI Regional Early Action Plan (REAP) developed from the 1st CCA regional exchange held in Ancol, Jakarta, Indonesia in October 2010 and identified early actions for inclusion in the REAP. The regional exchange served as a venue for the kick-off meeting for the CCA Technical Working Group.

Twenty-three delegates from the CT6 and development partners joined the visit to Gizo, where they participated in a forum with key implementers, including those from the provincial government, community and assisting organizations. The visit also included a day trip to three small islands where some climate change impacts (mainly coastal erosion) were observable. Here, participants had the opportunity to learn from implementers and residents about the adaptation and mitigation measures being undertaken locally, as well as to share the lessons of their own experiences with CCA.

Chaired by the MECDM, the regional exchange in Honiara reviewed and finalized the draft REAP-CCA framework and identified early regional, national and sub-national CCA actions under three priority themes: coastal marine ecosystems, food security/livelihood, and coastal infrastructure; and seven climate issue statements. Climate change experts and CT6 delegates shared tools and experiences for risk and vulnerability assessments; discussed capacity building needs and opportunities; shared and discussed data and information management, disaster preparedness, promotion of public awareness, governance, development and enforcement of policy, financing, research and technology; monitoring, evaluation and reporting, and partnership building.)

The top CCA issues identified by the participants included mangrove and coral reef degradation; coastal erosion, flooding in low-lying areas and loss of small islands due to sea level rise (SLR); declining ecosystem functions and services in bays and coves; damage to coastal infrastructure, settlements and businesses (including aquaculture) due to flooding, storm surges and wave action; and changes in ecosystem functions of rivers and estuaries due to siltation and saltwater intrusion. Participants and implementers identified a number of challenges for implementing CCA including data sharing and technical and financial capacity.

OUTPUTS AND NEXT STEPS

The regional exchange resulted in the following key outputs:

- First CCA TWG Meeting
- REAP Framework presented and refined
- Early actions identified for possible inclusion in REAP

- Common language and understanding built of available tools to implement early actions
- Capacity to utilize tools and gather necessary data built
- Understanding of international CCA funds and associated platforms built

In addition, the participants agreed to move the CTI Regional CCA process forward, focusing in particular on the following key steps: 1) Draft, review and finalize the REAP-CCA for submission to the SOM; 2) Identify a CCA focal point to represent each CT6 country in the CCA technical working group (TWG); 3) formalize the CCA TWG; 4) prepare the CTI negotiating text for the next UN climate talks; and ultimately, 5) fully implement REAP-CCA by 2015 according to the RPOA timeline.

More detailed “Next Steps” and responsible parties are shown in Section III, Session 9. The timeline agreed upon for the completion of the REAP-CCA and its presentation to the next CCA Ministerial Meeting is shown in Annex 6. An ad hoc writing team from the PI and workshop participants will initially take charge of writing the draft REAP-CCA; after May 6, 2011, when the CCA focal points shall have been delegated and the CCA TWG formalized, the focal points will become the writing team.

COUNTRY ACTIONS

At the country level, the CT6 delegates outlined the following action items to address national climate concerns as well as support the regional CCA effort:

Indonesia

- 1) Establish TWG-CCA at the national level.
 - 2) Build Capacity of the TWG-CCA and concerned primary stakeholders (e.g. local governments, research institutions, universities, NGOs, etc.).
 - 3) Conduct Vulnerability and risk assessments.
 - 4) Promote Public awareness
- Proposed activities for funding under the US CTI Support Program: Mapping of coastal erosion and VA in coastal villages in the West and South Sulawesi Provinces and Lesser Sunda Eco-region (including West and East Nusa Tenggara, Savu Sea).

Malaysia

- 1) Develop a sea level rise index adapted to local scale and inundation maps based on SLR projections up to 2040.
- 2) Verify inundation areas using digital elevation models (DEM) and SLR projections.
- 3) Stabilize hills and slopes using local plants.
- 4) Conduct benefit-cost analysis.
- 5) Enforce pertinent laws.
- 6) Reinforce river walls to prevent river bank erosion.
- 7) Conduct research on species and modified agriculture/aquaculture methods suitable for operation in a higher saline environment.
- 8) Strengthen coordination among the Sabah Environment Education Network (SEEN) members to better undertake environmental education efforts in Sabah.
- 9) Establish inter-sectoral committee to develop a guide to the implementation of ICM plans at Sulu-Sulawesi Marine Eco-region.
- 10) Develop EAFM strategy for Sabah fisheries.

Proposed activities for funding under the US CTI Support Program: Tun Mustapha Park (Sabah) CCA actions, including coral mapping at Kudat-Banggi area; coral restoration (artificial reefs; nursery); public awareness program; campaign against destructive fishing (fish bombing, cyanide

fishing); sustainable management of live reef fish trade in Sabah; and land-based pollution monitoring (point source).

Papua New Guinea

- 1) Provide incentives for alternative livelihoods.
- 2) Adopt/strengthen policy to protect mangroves.
- 3) Integrate risk reduction measures such as coastal setbacks, infrastructure siting and design into urban policy and planning to minimize impacts.
- 4) Conduct Light Detection and Ranging (LiDAR) mapping and inundation modeling.

Proposed activities for funding under the US CTI Support Program: Rehabilitation and sustainable harvesting of mangroves in Manus Province; public awareness dialogues with local communities and developers on issues affecting coastal infrastructure and ecosystems.

Philippines

- 1) Update information on the distribution and status of coastal and marine ecosystem.
- 2) Establish Marine Protected Area (MPA) networks.
- 3) Conduct information, education and communication (IEC) and capacity-building activities.
- 4) Improve enforcement of laws on pollution control through community empowerment.
- 5) Incentivize local enforcement of pollution control and fishery laws.
- 6) Reforest mangrove areas and critical watersheds.
- 7) Conduct inventory and mapping of coastal settlements and economic activities.
- 8) Overlay inventory and mapping of coastal settlements and economic activities with other climate stressors.
- 9) Plan CCA in consultation with key stakeholders.

Proposed activities for funding under the US CTI Support Program: Priority activities: CCA plan development/integration into local government plans in the CTSP integration sites; coastal and marine risk mapping; and ridge-to-reef projects (e.g. eco-towns). Other activities proposed for US CTI funding: scaling up of projects; Survival Fund (a proposed facility for adaptation to assist communities affected by climate impacts); valuation studies; IEC campaign; and local V&A and risk assessments.

Solomon Islands

- 1) Promote public awareness.
- 2) Establish a networking system to improve communication between the location of climate events and central database for early warning and priority-setting.
- 3) Link between provincial and national government agencies.
- 4) Mainstream CCA into other sectors.
- 5) Conduct community-based resource management outreach, including livelihood development.
- 6) Do studies on SLR, storminess, elevations, topography, bathymetry and mapping, and digitize the information.
- 7) Analyze and map coastal infrastructure
- 8) Conduct EIA and rapid ecological assessment in the priority sites
- 9) Conduct habitat mapping.
- 10) Replant mangroves.

Proposed activities for funding under the US CTI Support Program: V&A and EIA training/capacity-building at community, provincial and national levels; infrastructure assessment and mapping in

provincial urban centers; scenario mapping for coastal infrastructure using bathymetry, SLR and currents data; and nation-wide assessment of the state of marine and coastal resources.

Timor-Leste

- 1) Conduct coastal habitat mapping.
- 2) Replant mangroves.
- 3) Develop alternative livelihoods for affected sectors.
- 4) Conduct analysis of land use.
- 5) Implement integrated mangrove management.
- 6) Promote community awareness of the need to conserve mangrove resources.
- 7) Identify vulnerable mangrove areas.
- 8) Develop a national legal and policy framework for environmental protection and management.

Proposed activities for funding under the US CTI Support Program: Biodiversity conservation at the priority geography in Nino Konis Santana National Park, primarily to support the establishment of a protected area, vulnerability assessments, reforestation, public awareness promotion, and alternative livelihoods.

Regional Priorities

Regionally, the following areas of concern appeared to be the most common:

- 1) Mangroves
- 2) Coastal settlements, erosion and infrastructure
- 3) Risk and vulnerability assessment and mapping
- 4) Capacity building
- 5) Policy and enforcement
- 6) Livelihoods
- 7) Public awareness
- 8) Standard tools to improve comparability of results
- 9) Climate modelling

The participants stressed that there is much work that the CT6 countries and their development partners need to do individually as well as collectively in order to effectively address the CCA challenge. They identified the following opportunities for cooperation that the CTI could pursue through regional or other multilateral arrangements:

- 1) Knowledge/information sharing to support capacity-building, development of standard tools, as well as risk and vulnerability assessment and mapping
- 2) Trans-boundary cooperation in relevant action areas, such as in the protection and management of shared resources (e.g. watershed, mangroves, rivers and estuaries).

Mostly, the country delegates pointed out four action areas where regional sharing could improve effectiveness of national actions and support regional impacts:

- 1) Public awareness/communication
- 2) Public-private partnerships
- 3) Management of climate coordination activities
- 4) Scenario projections.

I. INTRODUCTION

Goal 4 (Climate change adaptation measures achieved), Target 1 of the Coral Triangle Initiative's Regional Plan of Action (CTI RPOA) calls on the six CTI countries (CT6) – namely, Indonesia, Malaysia, Papua New Guinea (PNG), the Philippines, Solomon Islands and Timor Leste – to develop and implement a Region-wide Early Action Plan for Climate Change Adaptation (REAP-CCA) “for the nearshore marine and coastal environment and small islands ecosystems.” The first Regional Exchange to tackle this goal was held in Ancol, Jakarta, Indonesia in October 2010. That activity produced, among other outputs, a draft REAP-CCA framework based on the CTI RPOA. The review and finalization of this draft framework was a primary focus of the 2nd Regional Exchange on CCA: Tools for Action held in the Solomon Islands on 14-21 April 2011. Additional objectives for the 2nd Regional Exchange emerged from the participants of the First Regional Exchange and the CTI Regional Priorities and Coordination Workshop (May 2010), with a focus on sharing knowledge on appropriate vulnerability assessment tools, data regarding climate and coastal conditions, and tools for implementing adaptation actions.

The 2nd Regional Exchange program included two main activities:

- 1) Three-day (April 14-16) field visit to Gizo, Western Province, a CTI integration site.
- 2) Five-day (Apr 17-21) workshop including an independent half-day data-sharing dialog to prepare inputs for certain sessions of the primary workshop.

Gizo, the capital of the Western Province, is the 2nd largest town in the Solomon Islands. It is situated on Gizo Island about 380 km west-northwest of the national capital Honiara. Coastal management projects, mainly marine protected areas assisted by organizations like the World Wildlife Fund (WWF) and WorldFish Center, have been in place in Gizo and surrounding environs for over a decade now. Of particular interest to this regional exchange were the climate change impacts, mainly coastal erosion, that were visible in some areas, and the climate change vulnerability and adaptation (V&A) assessments and other early adaptation measures that the government and assisting organizations are initiating.

Twenty-three participants, including CT6 delegates and representatives from the US CTI Support Program and other development partners, joined the visit to Gizo. The visit included a local stakeholder forum on “CCA: Telling Our Story, Our Efforts, Our Challenges” and a field trip to three islands showing climate impacts. These activities were designed primarily to set the scene on current CCA

measures underway in the Solomon Islands, to give participants a feel of the context of the environment in which these measures work, and to begin a dialogue about starting and moving forward with adaptation activities.

A total of 55 people, representing the CT6 and CTI development



Participants at the Planning Workshop on Climate Change Adaptation: Tools for Action chaired by Hon. Rence Sore (front row, third from left), Permanent Secretary of the Ministry of Environment, Climate Change, Disaster Management and Meteorology of the Solomon Islands. (Photo: CTI/Malaysia)

partners, participated in the Regional Exchange. Seventeen participants were official CT6 official representatives involved in climate policy work in their respective countries. Their main task was to review and finalize the REAP-CCA framework, and identify data, tools and methodologies for V&A assessments that could be applied in the CT region at both local and regional levels.

The Regional Exchange was designed to encourage sharing of information and ideas between the six country delegations on a regional level, as well as allow country-specific planning toward early adaptation action at the national and sub-national levels. To facilitate sharing, each country was invited to present their overarching management issues, CCA-related programs, NPOA priority actions for CCA including their proposed approach, examples, capacity and data strengths and needs, and next steps. Presentations and discussions in plenary and breakout sessions were organized in a manner that provided participants with necessary information on the draft REAP-CCA framework and the suite of adaptation tools currently available, while encouraging them to build on such information in the context of both national and regional priorities in order to flesh out the framework and map out the next steps toward defining and implementing priority actions.

As a side event of the Regional Exchange, the CTI CCA Technical Working Group (TWG) was convened for the first time to review and consider a decision memo for the CT6 defining the TWG's structure, membership and operation; its scope, role and functions; its portfolio of CCA-related activities and the actions so far taken; and plan and agenda for the next TWG meeting and SOM inputs for decisions. Concurrently a session on data and information was organized to provide a venue for participants with GIS experience to discuss existing data that could help inform CCA measures in the countries, what data they might consider sharing regionally and how local and traditional knowledge might contribute to understanding climate related threats in the absence of "scientific" data. Outputs from this data session were inputs into the Regional Exchange program in the discussion of tools.

OBJECTIVES AND EXPECTED OUTPUTS

As a follow-through activity of the CTI regional initiative on climate change, this 2nd regional exchange was designed to bring the CCA planning process a step closer to RPOA Goal 4 adoption and implementation, focusing in particular on the following objectives:

- 1) Share information on climate change and coastal management adaptation strategies and early actions to increase resilience.
- 2) Identify priority data and information needed to inform early actions, both for regional and national levels.
- 3) Develop and share preliminary data or example GIS maps from the CTI area with submitted information displayed to address key climate impacts.
- 4) Identify tools and methodologies available to help identify and implement early actions, vulnerability assessment (VA) and adaptation strategies.
- 5) Identify a list of regional and national priority actions (including training needed to implement these actions) which are specific projects that can be included in the REAP-CCA.

There were six expected outputs:

- 1) First meeting of the CCA TWG resulting in a decision memo, to be presented to the Senior Officials Meeting (SOM), defining its membership, scope, and next steps toward drafting and finalizing the CTI REAP-CCA.
- 2) Final REAP-CCA framework (or a refined version of the draft framework).
- 3) Identification of early actions for possible inclusion in the REAP-CCA.
- 4) Common language and understanding of available tools to implement early adaptation actions.
- 5) Collective understanding of the funds available to support adaptation actions.
- 6) Outline of next steps toward adoption and implementation of the CTI REAP-CCA.

II. FIELD VISIT REPORT

DAY I, 14 APRIL 2011

The field visit to Gizo, Western Province, was conducted and hosted by the Solomon Islands Government through its Ministry of Environment, Climate Change, Disaster Management and Meteorology (MECDM) and the Coral Triangle Support Partnership (CTSP) and climate change partners, and supported by the US CTI Support Program.

The Gizo agenda included three major activities:

- 1) Courtesy call on provincial government officials.
- 2) Forum on local efforts to address climate issues.
- 3) Visit to three small islands showing visible climate impacts (mainly coastal erosion).

The visit highlighted early local adaptation actions, consisting mainly of climate change V&A assessments; the multiple threats (in addition to climate change) facing communities; and efforts to address them.

COURTESY CALL ON THE PROVINCIAL GOVERNMENT

Shortly upon arrival in Gizo, a small team led by Mr. Rence Sore, Permanent Secretary of MECDM, Dr. Teresa Leonardo of USAID, Mr. Maurice Knight, Chief of Party of the CTSP-Regional Coordination Team and Dr. Stacey Tighe, Senior Regional Coordinator of the US CTI Support Program Integrator (PI), made a courtesy call on the Office of the Western Province Premier. Mr. Richard Tekifono, the Western Province's Minister of State, received the team in behalf of Mr. George Lilo, Western Province Premier, who was unable to attend because of a death in the family. Also present at the meeting was Hon. Francis Tekatoha, the Western Province's Environment Officer.

The courtesy call provided the opportunity for the US CTI Support Program team to orient provincial officials on the program and its objectives. Much of the discussion focused on the need to balance development with environmental governance, and how the Program could support the provincial government in addressing this concern. The case of Kennedy Island was raised. The island, named after US President John F. Kennedy, is remembered to be the place where then Lt. Kennedy aided his injured crew after his boat was rammed by a Japanese destroyer during World War II. The island is privately owned, and the discussions explored how the provincial government could maintain control over the island's development in order to protect the fragile island ecosystem yet still allow sustainable tourism activities to proceed.



Assuring the group that “[the name] Kennedy Island will not be changed because of its historical value,” Mr. Tekifono said his government would wish to pursue an EIA for Kennedy Island, and would welcome any help from the CTI toward developing the Province’s environmental governance capacity. He expressed concern over mining activities that only recently started in the province, and how mining continued despite the provincial government’s resistance.

While the Solomon Islands law states that every development project is required to pass an environmental impact assessment (EIA), local regulations and capacity for environmental monitoring needed to be developed.

MECDM Permanent Secretary Sore noted that Gizo has hosted two regional CTI events (the 2nd Ministerial Meeting in November 2009 and now this field trip), which he said indicated a strong interest within the CTI to work with the province. Noting also that the Western Province was so far the only province in all of the Solomon Islands to have designated an Environmental Officer, he commended the provincial government for its effort at environmental vigilance. He said the effort could be strengthened if an environmental monitoring system could be established locally, employing teachers and the police as environment inspectors.

Mr. Knight said Gizo presented an opportunity to show the world “how development should be done in a fragile environment.” He assured Mr. Tekifono that the CTSP was ready to provide technical assistance toward developing a provincial environmental monitoring system in particular and, in general, to support good environmental governance.

FORUM: CCA IN THE SOLOMON ISLANDS – TELLING OUR STORY; OUR EFFORTS, OUR CHALLENGES

This forum was organized to provide participants the opportunity to learn directly from implementers about current plans and strategies for adaptation in the Solomon Islands. The forum included presentations and discussions on local climate change work and challenges, and an introduction to learning destinations, learning networks and integration sites.

In their opening remarks, Solomon Islands government officials emphasized the strong link between environment and culture in the Solomon Islands. “We look forward to your technical expertise for advice and direction in this most important task of preparing our societies for CCA,” Western Province Premier Lilo said in a speech delivered for him by Minister of State Tekifono. “My hope is that you will not simply look past us into the technical aspects of our physical environment because much of what you can see around here is here because we as a people maintain and sustain them... Climate change is a global concern, but CCA may very well be regionally based and parochial.”

MECDM Permanent Secretary Sore agreed with the Premier’s statements and added that as



Western Province Environment Officer Francis Tekatoha (middle, facing camera) at the forum on “CCA: Telling Our Story; Our Efforts, Our Challenges” in Gizo, Western Province, Solomon Islands. (Photo: US CTI PI/A Sia)

custodians of the environment, “we as individuals are also responsible for our environmental problems” and that the effort to address these problems “must be based on and driven by us, the CT6 countries.”

Four presentations were made that provided an overview of early adaptation actions being undertaken in the Solomon Islands, focusing in particular on the national government’s climate change policy and strategies, and three projects on community adaptation currently being implemented by The Nature Conservancy (TNC), WorldFish Center, and WWF, and their local partners.

The MECDM is the lead agency in CCA in the Solomon Islands, responsible for developing and coordinating the implementation of national climate change policy. Mr. Hudson Kauhiona, Deputy Director of the Climate Change Division, a newly established office at the Ministry, outlined the country’s commitments to various international agreements on climate change, including the United Nations Framework Convention on Climate Change (UNFCCC), Kyoto Protocol, Hyogo Framework, and the 2009 CTI Leaders’ Declaration. Solomon Islands is also a member of the Association of Small Island States (AOSIS), an inter-governmental organization of low-lying and small island countries established in 1990 to consolidate the voices of small island developing states (SIDS) to address global warming.



2011-CCA REX2-Gizo Forum, Speaker is Minister of State Tekifon. (Photo by M. Quiliban)

Four major climate-related policy documents have been developed, namely, the National Adaptation Program of Action (NAPA), Second National Communication to the UNFCCC, National Energy Policy Framework and National Disaster Management Strategy. The National Climate Change Policy had not been completed and CCA and the provincial governments had yet to be mainstreamed in the national development agenda and partnership, but several adaptation and mitigation projects were underway. These projects – all of them donor-funded – were mostly in their early stages of implementation, tackling climate

change concerns ranging from strengthening community and ecosystem resilience to flood alleviation and coastal infrastructure.

Mr. Kauhiona said that as a general policy, relocation was regarded as “the strategy of last resort” requiring transparent and scientifically valid vulnerability, social and environmental assessments, and that the government recognized that climate change presented both challenges and opportunities. “We must address the challenges and embrace the opportunities,” he added, assuring participants that the Solomon Islands national government was ready to support provincial governments, NGOs and other stakeholders through the establishment of institutional and coordination mechanisms; mobilization of resources for adaptation and mitigation; and training.

Ms. Senoveva Maui, a marine scientist working with the TNC Field Office in Honiara, talked about the Climate Change Adaptation Partnership Project being implemented by TNC and its partners in Choiseul Province, Solomon Islands; Manus Province, PNG; and Marshall Islands. Funded by the Australian Agency for International Development (AusAID), the project involved the use of four participatory tools to support V&A assessment, namely, 1) participatory three-dimensional modeling



(P3DM); 2) household surveys; 3) participatory video; and 4) cultural heritage mapping. Ms. Maui recounted in detail the P3DM process, which she described as “a live physical process.” As an adaptation tool for climate change, P3DM, whereby the community construct a scaled, 3-dimensional model of their area from topographic maps and then discuss their routine uses of the area helped communities to visualize their resources and land uses in their present state and under different climate change scenarios, she said.

Ms. Maui described only briefly the three other V&A assessment tools used by the project, all in various stages of completion. She enumerated the following highlights from the household surveys: 1) Respondents believed there was strong governance and traditional leadership in their communities; 2) Most community members relied on subsistence fishing and agriculture; and 3) Respondents showed very low awareness of climate change and its potential impacts.

Dr. Anne-Maree Schwarz (Worldfish Center) noted in her presentation the strong cultural link between the people of the Solomon Islands and its neighbor countries, which she said indicated that “we can apply in the other countries what we learn from our adaptation work.” She said much of the adaptation work in the Solomon Islands was in its early stages and focused primarily on identifying and ranking the most vulnerable areas to prioritize resource allocation. What the work had revealed so far was that there was a good amount of global climate data, including general trends in changes in air temperature, sea surface temperature, acidity of the water, etc. However, information was scarce at the country level and, at the community level, there was hardly any data being measured; in particular, sensitivity and adaptive capacity data were only available at the provincial level at best. Data limitations were partly overcome by going directly to the community to obtain relevant data. “People who live in the community can provide a huge amount of information on exposure and what they have experienced, so we developed a structured questionnaire to obtain information from the people themselves, because it is not available elsewhere,” Dr. Schwarz explained. “After collecting the data using the questionnaire (ed: household survey) approach, we’ve moved on to developing a database to record and analyze the data.”

Dr. Schwarz said there were several adaptation projects being implemented in various areas in the Solomon Islands, “but they still lack depth in terms of the way things are prioritized.” She suggested that a “locally relevant methodology” must be developed and lessons from the CTI and other projects must be shared. In addition, “a nationally coordinated approach needs to be agreed on,” she said. “The draft methodologies are not ready to be rolled out, but we have them to work with now. In particular, the VA methodology will be reviewed and refined by the 3rd quarter of 2011.

We want to be able to integrate existing initiatives (e.g. community-based resource management policies and actions) and other donor-funded projects in order to optimize resources.”

The fourth presentation was by Mr. Bruno Manele of the local WWF office in Gizo. Their team uses various approaches to assess and address climate change in this site. In speaking with counterparts, the team collects information about local attitudes about climate change to the environment and some of their observations of the changes based on individuals’ recollection. Feedback indicates that changes were noted, but the causes were not clear, especially as they relate to climate change. The WWF team is looking at secondary impacts of climate change, and apply some monitoring and evaluation tools to record the status and change of the size of islands, changes in the shorelines (trees lost, sand barriers shifted, shifts in the location of fish spawning, signs of bleaching, etc.) from the local community and their own surveys. They are currently developing a “climate witness” story from one set of eco-lodge island managers who have tried many different approaches to protect their island over the years.

Discussion

After the four presentations, questions were taken from the floor and discussed freely by presenters and participants. Much of the discussion was about climate data issues, particularly the lack of long-term data to guide CCA planning. For the most part across the CT6, global and regional data were available, but national data, and especially community data, were scarce. Said Mr. Kauhiona: “We do have at the national level certain climate data, mainly rainfall, temperature, and humidity, from as far back as 50 years ago. The data are not as strong or as reliable as we want them to be, however, so we tend to rely more on other data sources for climate analysis, and we are still using global models.”

He added: “Based on the information we have, we can tell that temperature is rising, and rainfall is decreasing. With regard to sea level rise, we only have one gauge that has been in use since 1994, and the time series it has generated from that time shows that sea level has risen 0.73m. But we have to be careful in interpreting these data, because they do not necessarily tell us everything we need to know to predict climate change impacts. For example, while rainfall is decreasing overall, what this actually could mean is that rainfall events are fewer but on average are more intense, which therefore could mean increased risk of flooding.”

Participants acknowledged the value of local knowledge, which could be used to inform adaptation planning, in some cases perhaps as effectively as scientific knowledge. But Ms. Miledel Christine Quibilan of the University of the Philippines-Marine Science Institute (UP-MSI) pointed out, “We also need scientific data to show policy makers that climate change is really happening.” She explained, “We don’t make the decisions on where adaptation actions are undertaken; it’s our national and local leaders who do. There must be a more objective, less political way of making those decisions. If we don’t already have a climate monitoring system that can effectively guide our leaders, then that system must be set up.”

There was a general agreement that sea level rise (SLR) and coastal erosion were the top concerns for most communities because they threatened homes and livelihoods. These were also major concerns for government because of their potential to create land use and ownership issues.

Participants also stressed the importance of climate change education. Some delegates reported ongoing efforts at the country level to integrate disaster preparedness and environmental science into the school curriculum. Mr. Syofyan Hasan, Head of the Climate Change Adaptation Section of Indonesia’s Ministry of Marine Affairs and Fisheries (MMAF), reported that his government also introduced a program that trained families how to respond to a tsunami event so that they did not have to learn it the hard way. “But climate change is another matter -- there are not many people in Indonesia who understand climate change,” he said, noting that educating people about climate

change was a difficult challenge, because the changes and their impacts happen over several years and are not immediately observable.

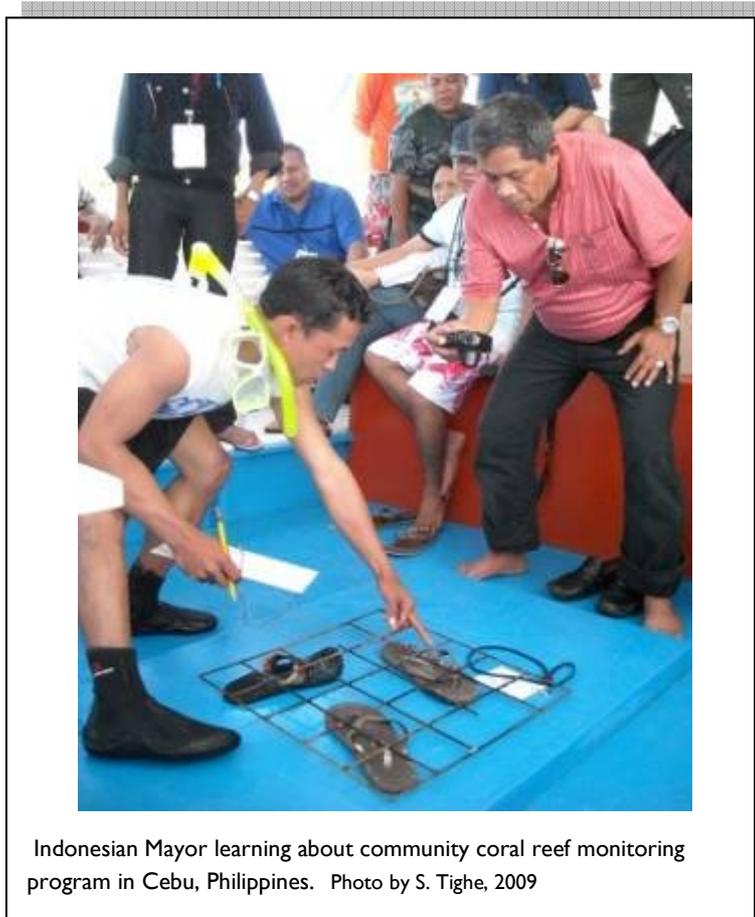
There was also a need to “teach the teachers first,” because there are not many teachers within the school system who are competent to teach environmental science, said Mr. Kauhiona. “But the demand [for information] is there,” he added. “Almost every day, students come to my office to [do] research on climate change. We lack capacity to meet such demand, and it is a challenge we have to address.”

To further the discussion on learning exchange and knowledge sharing, Dr. Tighe made a presentation on “Learning destinations, Learning Networks, Integration Sites and More.” Dr. Tighe reported that, following the CTI Regional Learning Network Planning Meeting held in the Philippines just a few weeks prior to this event (March 2011), there has been a high level of interest among the CT6 for certain modes of learning exchange. “One of the topics that came up was learning destinations, and one question about this that was put forward was whether learning destinations are the same as integration sites,” she said. The terminology needed to be clarified, she added, so that “we’re using the same words when we mean the same thing.”

A learning destination may be defined as “a city, town or area with ongoing activities where people come to hear and see from stakeholders the story about how they started and how they are doing something,” Dr. Tighe said. “Some destinations appear better than others because their stories are being told better than the others, and that’s part of what we want to do, to make sure that the stories from CTI sites are being told well.”

Dr. Tighe also reported that one of the outputs from last March’s learning network planning meeting in the Philippines was the following definition of a learning network: “A group of practitioners who work across organizational or geographical boundaries to collectively create, apply and test solutions to one or more common challenges.” As with other activities that involve learning exchange, managers of learning destinations or programs could come together as members of a learning destinations network, Dr. Tighe said.

As to integration sites, Dr. Tighe that there are various ways to interpret or implement an “integration” site, using simple leveraging of different projects or activities, or expanding participation from other sectors, to achieve a fully integrated resource managed area that includes ecosystem, community and economic activities and impacts. The CTI focuses on five goals, and a start would be to integrate those themes in one site with a full set of stakeholders, and then to expand to include



Indonesian Mayor learning about community coral reef monitoring program in Cebu, Philippines. Photo by S. Tighe, 2009

other themes and sectors until all influences and consequences are managed within the integrated system.

In the short discussion that followed Dr. Tighe’s presentation, Mr. Knight (CTSP) offered additional insights on the idea of integration. “Integration is not a project or one area of concern,” he explained. “When the CT6 came together to sort out the RPOA and identify the areas in which they could work, they broke up the plan into smaller pieces – the five RPOA goals on protected seascapes, MPAs, EAFM, CCA and threatened species – to make them more manageable. But we cannot talk about one piece without talking about the others because they are all naturally linked. The idea of integration grew out of this realization, that everything is naturally linked even if we broke it up into smaller pieces that we could manage separately. It is not about having one project or one funding agency or one unit working on integration, because integration should happen naturally.”

Mr. Sore (MECDM) voiced his concern about the sustainability of CTI activities. “When we talk about integration sites, I have to ask, how sustainable are they? What happens after the partners are gone?” he said. “We must also consider sustainability and explore options for eco-financing and payment for services.”

Dr. Tighe assured Mr. Sore that the planning workshop in Honiara (see Section III of this report) would include a full session (Session 2) on financing.

The forum ended at 7:30 p.m.

DAY 2, 15 APRIL 2011

ISLAND TOUR

The tour covered three small islands, namely, Kennedy Island, Njari Island and Sepo Hite. These otherwise pristine islands are seemingly being eaten up slowly by the sea, with coastal erosion clearly visible particularly on Kennedy and Njari.



Exterior and Interior shots show the trees and shelter of the very small but historically important Kennedy Island and its potential for short stay visitors and a simple interpretive trail of markers and benches.
(photo by S.Tighe, 2011)

The short visit to Kennedy highlighted not only the island's vulnerability to sea level rise, evident in fallen trees along the beach that had been standing the week before, but also the need to preserve the island for its historical significance. Except for one salaried caretaker, the island is uninhabited and showed little sign of its special place in history. Some of the participants suggested that well constructed and weather resilient interpretive markers, a heavy table and benches be installed around the island so that visitors would be informed of its historical value and have a nice spot to visit.

On Njari, participants saw more signs of coastal erosion. The reef off Njari, a protected area, is said to have one of the highest number of fish and coral species in the world, second only to sites at Raja Ampat in Indonesia. This reef was reduced to rubble by a tsunami that hit the islands in 2007 – the damage was still visible during this visit, but signs of reef recovery were also evident. The group's last stop on this island tour was Sepo Hite, a small coral island 10 minutes by motorboat from Ghizo Island where the provincial capital Gizo is located. Here they met the island's owner, Mr. Patson Baea, and heard about his struggle to save the island from the rising sea.

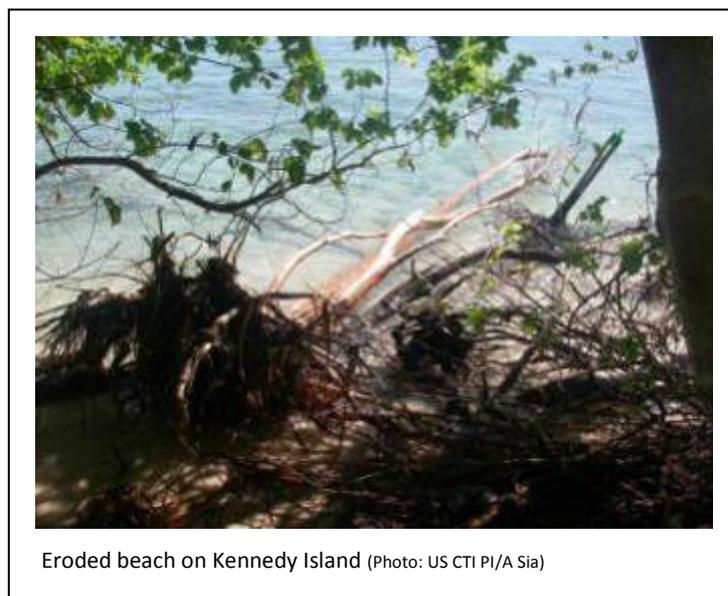
So far, nothing that Mr. Baea had tried had worked, but he remained optimistic. "I still have hope, and I still have plans of doing something here," he said. "I'm thinking about building sea walls, planting mangroves and doing whatever I can to preserve this place. At the same time, I am conditioning my mind to accept that I will, eventually, lose this island to the sea."



Mr. Baea also talked at length about farming corals for export, which he hoped would become a major source of income for the people of Gizo, "although at the moment it's the ideology in coral farming that interests me." Because farmed corals are indistinguishable from wild corals, he said he visited the coral farms often to check that the farms were properly stocked and that the corals that were supplied to him were in fact sourced from the farms and not the wild.

While admitting to knowing little about the CTI, Mr. Baea nonetheless said he looked to the "human family" for solutions to the climate change issue. "It's not something that we should blame one country or some people about," he said. "We have to understand ourselves and look at ourselves and ask ourselves, what do we want in the future? I guess at some point, if it's not too late, the human family will do something about it – not just talk, but really do something about it. I have not given up hope."

The island tour ended at 1:30 p.m; the field visit ended on Day 3 with the participants' departure for Honiara.



III. WORKSHOP PROCEEDINGS

The 2nd CTI Regional Exchange on CCA:Tools for Action was held from the afternoon of 18 April, Monday, through the morning of 21 April, Thursday. It was preceded on April 17th by a dinner reception hosted by the MECDM for the CT6 delegates and development partners. The reception was attended by the Hon. Moffat Fugui, Solomon Islands Minister for Environment, Climate Change, Disaster Management and Meteorology; MECDM Permanent Secretary Rence Sore; and US Embassy Consular Agent for Solomon Islands Keithie Saunders. In his welcome remarks at this reception, Minister Fugui called on the delegates to use the Regional Exchange to work together in order to create opportunities for building capacities in CCA, particularly in the two most vulnerable countries in the CT region, namely, Solomon Islands and Timor-Leste.

Ms. Saunders, speaking on behalf of the US Government, cited the collaborative effort being undertaken by the US CTI Support Program to facilitate the “sharing of US science and technology expertise,” as demonstrated by the participation of US National Oceanic and Atmospheric Administration (NOAA), US National Aeronautics and Space Administration (NASA), USAID and NGO partners in the workshop. She assured the delegates that the US Government “remains committed to work with the CTI governments and development partners to address CCA issues in this region.”

The overall design and conduct of the workshop was facilitated by Ms. Britt Anne Parker, Climate Coordinator of the NOAA Coral Reef Conservation Program, and Dr. Catherine Courtney, Senior Coastal Management Advisor of the US CTI PI, with support from the CCA Regional Exchange Planning Team. The workshop sessions were organized so that each session would build on the outputs of the sessions preceding it. Most of the sessions involved facilitated breakout group and plenary discussions, but expert presentations were also included to further inform the discourse.

DAY I, 18 APRIL 2011

Preceding the Regional Exchange, two simultaneous activities were scheduled for the morning of 18 April. The first activity was the kick-off meeting of the CCA-TWG, which was chaired jointly by Mr. Rence Sore, Solomon Islands MECDM Permanent Secretary and Dr. Gellwynn Jusuf, Secretary-General of Indonesia’s Ministry of Marine Affairs and Fisheries. This meeting tackled a six-point agenda, as follows, with a separate full report on the meeting produced:

- 1) Review results of the 1st Regional Exchange on CCA in Ancol, Jakarta in October 2010.
- 2) Review status of the three CCA regional priority actions identified in June 2010.
- 3) Provide input for the CCA training course by the University of Rhode Island-Coastal Resources Center (URI-CRC).
- 4) Introduce TWG Operational Decision Memo to be sent to the CT6 capitals for response.
- 5) Decide how to operate for the short term (until the next full TWG meeting).
- 6) Plan next TWG meeting and agenda.

The second preparatory activity was a data/GIS working session that reviewed existing climate data resources and needs in the Coral Triangle (CT) region. Information generated from this review would be reported in Session 6a (Day 3), which would look at available local, national and regional data sets and where they could be found, and what other information was needed.

Day I sessions were hosted by Ms. Agnetha Vave-Karamui (MECDM, Solomon Islands).

OPENING SESSION

MECDM Permanent Secretary Rence Sore, CTI CCA TWG co-chair, presided over the opening of the workshop, which began at 1:30pm. In his brief opening remarks, he commended the CT6 for their commitment “to ensure that the pledge made by the leaders in Manado (the 2009 CTI Leaders’ Declaration) is carried out,” and urged the workshop participants to “plan and make decisions for our people in the CT region.”

Asked to introduce themselves, most participants also voiced their expectations from the almost four days of workshop discussions. For the most part, the country delegates said they expected to “learn from each other” about adaptation practices that they could apply in their own countries.

Mr. Sore noted the vast CCA experience in the room and said he hoped it would “trigger really good discussions.”

SESSION I. BUILDING THE REGION-WIDE EARLY PLAN OF ACTION FOR CLIMATE CHANGE ADAPTATION

The objective of this session was to build a common understanding among workshop participants of the REAP-CCA framework that came out of the 1st Regional Exchange on CCA in Ancol, Jakarta, Indonesia in October 2010, and to improve on the framework if necessary.

The session started with a review of the REAP-CCA framework, which Dr. Catherine Courtney, Senior Coastal Management Advisor of the US CTI PI, presented on behalf of Dr. Jusuf of Indonesia, who had hosted the First CCA Regional Exchange. Dr. Courtney’s presentation highlighted the following features of the framework that would be used as the main talking points for this session:

- 1) Purpose
 - a. Maintain the biological diversity and the ecosystem services provided by marine and coastal resources that are particularly critical to income, livelihoods and food security of coastal communities.
 - b. Support diversification strategies that build the coastal communities’ resilience to climate change.
- 2) Themes
 - a. Improve governance.
 - b. Assess risk and improve disaster preparedness.
 - c. Protect marine and coastal ecosystems.
 - d. Improve livelihoods and food security.
 - e. Reduce risk to coastal infrastructure.
- 3) Targets
 - a. Capacity-building
 - b. Financing
 - c. Monitoring and evaluation

The participants broke out by country to discuss the above points, guided by the following questions:

- 1) Is the purpose and need for the REAP-CCA clearly stated and understood?
- 2) Are the themes in keeping with RPOA goals?
- 3) To what extent does the organization and breakdown of themes address key climate adaptation issues in your country?
- 4) What is missing?

Results and Discussion

After a 30-minute discussion, participants met in plenary session to address some issues about the scope and language of the REAP-CCA framework. Most country teams agreed that the purpose and the need for the REAP was clearly stated, but there were requests to clarify that the outlook included both national and regional components in scope, but that it refrain from being a “guide” to the countries (i.e., less compulsory) and that it should include specific sections on data sharing, financing and implementation mechanisms. The more salient issues appeared to center on the following key points:

- 1) Data sharing – The country delegates were concerned not only about data gaps, but about what kind of information could be shared and how it should be shared. Pointing out that the individual countries already had their own information systems, they asked: How could the CTI improve the inter-operability of these systems? Will there be a common central information system?
- 2) Relevance – There was general agreement among the delegates that the REAP-CCA should “recognize,” “complement” or “build on” existing national frameworks and plans rather than “guide” country plans. All countries felt that the Draft Framework did address their national NPOA issues, or could as their Adaptation policies are in development.
- 3) Scope – Delegates from Indonesia and the Solomon Islands, in particular, wanted the scope of the REAP-CCA to be defined more clearly: CCA (which covers all climate issues) is broader than the CTI CCA (which is mostly marine-centric) – how focused should the CTI REAP-CCA be? What CCA activities should be included in the REAP-CCA vs. broader CCA programs? Everything is important and cross-cutting, so at what point should the scope of these activities be limited or segregated or merged and integrated at the national levels?
- 4) Financing – This was a recurring theme that delegates wanted to be emphasized in the REAP-CCA because “this will be the driver of the REAP-CCA at the end of the day.”

The delegates also put forward the following action items that they said should be considered in the REAP-CCA:

- 1) Use local knowledge and community-based approaches.
- 2) Address immediate adaptation needs, including those from “National” EAPs.
- 3) Establish institutional mechanisms for plan implementation.
- 4) Link monitoring and evaluation to the State of the Coral Triangle Report (SCTR).
- 5) Develop simple climate change scenarios that the CT6 can use for planning.
- 6) Consider ridge-to-reef approach to include land-based threats to the reef ecosystem and to help link to national CCA broader approach.
- 7) Elaborate on the “cross-cutting components” related to the principles that CTI has adopted, including IEC, governance, capacity building, communication, etc.
- 8) Focus on actions at the community and local government levels (in addition to national level actions).

SESSION 2. FINANCING CCA ACTIVITIES

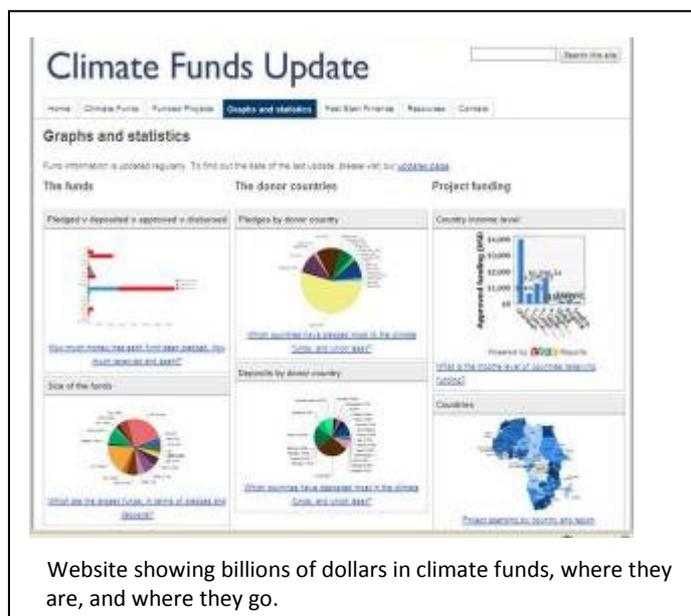
This session tackled one of the delegates’ biggest concerns, financing. In this session, participants heard and discussed three expert presentations aimed at introducing ideas for financing CCA and early actions. Ideas generated from this session would be revisited at the end of the Regional Exchange to help push forward the early actions.

In the first presentation, Mr. Richard Leck (WWF) talked about the application of the **marketplace** concept to CCA financing in the CT region. There are billions of dollars available for CCA from several sources, Mr. Leck noted, citing the website <http://www.climatefundsupdate.org>. But accessing these funds can be challenging, and from the donors’ perspective the absorptive capacity of aid

recipient countries is also an issue. “We’re talking about disconnect between what people want to develop and what investors want to put their money into,” Mr. Leck said. “One of the problems is simply the knowledge of what’s available, access to those funds, and managing the funds if one is successful in accessing them. This is where we come to the marketplace idea.”

The CCA Financing Marketplace is envisioned to provide the following services:

- 1) Provide essential information on funds for CCA projects focusing on coastal and marine issues and present to project developers in an efficient and more accessible format;
- 2) Assist donors/investors in understanding CT adaptation needs and selection of projects that match their funding requirements, while also reducing the burden of excessive consultation that impacts the capacity of countries to absorb funds;
- 3) Propose matches to connect investors with project developers according to matchmaking criteria in an interactive forum;
- 4) Provide direct support to capacity and project development.



Website showing billions of dollars in climate funds, where they are, and where they go.

Supported by the CTSP, work on the Financing Marketplace had started, primarily desktop work “to see what funding is available, some ideas of early projects that we can match up with funds, and how to build a portfolio of projects that donors can consider,” Mr. Leck reported.

As a follow-up to Mr. Leck’s presentation, Dr. Teresa Elizabeth Leonardo (USAID) provided an overview of the **Asia Climate Change Adaptation Project Preparation Facility (ADAPT)**, an upcoming USAID finance facility program targeting 13 countries, including three of the CT6 countries (the Philippines, Indonesia and Timor-Leste).

The program will have four major components, namely:

- 1) Regional knowledge sharing platform
- 2) Annual forums to bring together fund managers and project managers.
- 3) CCA capacity development.
- 4) Technical assistance in preparing project proposals.

Dr. Leonardo said the project is expected to be awarded before the end of 2011.

Mr. Willie Atu (TNC) presented on the **Climate Change Adaptation Partnership Project** which TNC is implementing in the Solomon Islands; Manus Bay, PNG and Marshall Islands with funding from AusAID. Mr. Atu described the project as “different” because of its extensive partnerships. The project engaged the various levels of government, as well as NGOs and other members of the civil society, so “there’s a better chance for continuity,” he said. He added that he hoped the project, currently operating with funding for one year, would “go beyond pilots” and create opportunities to engage new partners and donors.

Mr. Atu also noted that, with Australia being a major player both in the CT region and in the global CCA work, CTI’s agenda on climate change could help bring in Australian funding for early CCA actions in the CT6 countries.

In the ensuing discussion, participants raised issues concerning access and the need for guidance on “appropriate funding.” Mr. Leck said a “central facility,” perhaps the planned Financing Marketplace, where information of what funds are available and how they can be accessed, could answer at least some of these issues. Its primary role, he added, would be to provide guidance, donor-recipient matchmaking services, and possibly management of portfolio requirements.

Mr. Leck stressed that the Marketplace would not just be a website, but “must be a physical presence, where you have someone who is in touch with what funds are available and keeping in step with the funding process.” He urged the delegates to contribute ideas toward the development of the Marketplace – “in order for this to work, we need you to tell us what you want to achieve,” he said.

Dr. Leonardo’s presentation also generated much interest, particularly from the delegates of the three target CTI countries (Indonesia, the Philippines and Timor-Leste), who wanted to know more about ADAPT. Dr. Leonardo said there were as yet very few details that she could share about the project, which was still under solicitation. The request for proposals (RFP) had been issued, she explained, but “we won’t know exactly what the program is going to look like until it is awarded.” “It is difficult to predict how these things will play out, but we think this is a program that really has potential for high impact,” she said.

SESSION 3. LINKING CLIMATE CHANGE IMPACTS TO RESOURCE MANAGEMENT

In this session, participants buckled down to begin identifying issues, early actions and tools, data and information gaps that would provide essential input to the REAP-CCA. A matrix template (Matrix Box 1) was used to generate the required information, with the Gizo Field Trip Report (see below) serving as illustrative example. The work was spread over six sessions (Sessions 3-6) and would not be completed until Day 3.

For this session, participants were asked to use the template to identify their asset of concern, the location of the asset, impact, cause of impact, and affected sector, and then compose an issue statement based on their priority asset. The issue statements would be presented at the start of the first session on Day 2 because of time overrun.

To provide some context and example of climate adaptation in the CT setting while also illustrating how the outputs of this and subsequent workshop sessions might look like, Dr. Anne-Maree Schwarz (WorldFish Center) presented on the **Gizo field trip** using the same matrix template that the participants were asked to work on, thus highlighting the climate issues, actions taken, data issues and next steps with regard to CCA in the Solomon Islands. The top issues were listed as follows:

- 1) Salinization of gardens
- 2) Flooding at high tides
- 3) Erosion of small islands
- 4) Increased storm intensity or frequency

CCA REX – EARLY ACTION WORKSHEET – ILLUSTRATIVE EXAMPLES
1. Compose climate issue statement based on priority assets (natural or built)
<i>Climate Issue #1</i>
Asset: Estuaries and wetlands
Location: throughout the country
Impact (current and projected): are experiencing changes in ecosystem structure and function
Due to (climate and non-climate): saltwater intrusion and sedimentation
Caused by: sea level rise, increased storm surge, and land-based pollution
Sectors Affected: Natural Resources

Matrix Box 1 used in Session 3 by the participants to formulate their issue statements.

- 5) Marine habitat degradation (bleaching, acidification, habitat destruction and associated reduced resilience)
- 6) Lack of long-term and local scale exposure data and models

Dr. Schwarz said these issues were being tackled using an approach that she described as focused on community-based activities and “no-regrets” adaptation measures. She noted that adaptation work was “in the assessment stage,” and that mangrove management was the default early action in most cases in the Solomons. “At the moment, actions are catalyzed by the government (led by the MECDM) and NGOs (the CTSP as well as other organizations such as World Vision). As the communities become more aware, they start to join in,” said Dr. Schwarz. Community participation helped to increase adaptive capacity, she added.

The Solomon Islands government, in consultation with development partners and community members, identified the following “next steps” in their CCA initiative:

- 1) Agree on a national approach to implementing the NAPA.
- 2) Pool together methodologies and replicate if appropriate.
- 3) Continue “no-regrets” approaches, such as community-based resource management and mangrove replanting.
- 4) Implement adaptation activities at identified locations with specific and clear threats, such as high erosion in steep catchments.
- 5) Identify other adaptation activities in partnership with communities using traditional knowledge.

Dr. Schwarz said CCA in the Solomon Islands was likely going to be “a staggered approach, with the most vulnerable communities targeted first.”

Except for the presentation of the CT6 countries’ issue statements, all sessions scheduled for Day 1 were completed by 5:15 p.m.

Day 2, 19 April 2011

SESSION 3. LINKING CLIMATE CHANGE IMPACTS TO RESOURCE MANAGEMENT (Continued from Day 1)

Day 2 opened at 8:30am with the presentation of Session 3 outputs, which listed the top climate issues affecting the CT6 that emerged from the break out sessions the day before. These issues included the following:

- 1) Rivers and estuaries are experiencing changes in ecosystem structure, function, and services due to siltation from upland logging and saltwater intrusion from sea level rise.
- 2) Mangroves are experiencing changes in ecosystem structure, function, and services due to overexploitation from domestic use (firewood) and livelihoods (logging, boat building) and saltwater intrusion from storm surge and sea level rise.
- 3) Bays and coves in rural and urban coastal areas are experiencing changes in ecosystem structure, function, and services due to increasing sedimentation and other land-based pollution from upland logging, industrial, maritime shipping and other human activities and severe storms.
- 4) Coral reefs are experiencing changes in ecosystem structure, function, and services due to overexploitation from fishing, coral harvesting (lime production, roads); increasing sedimentation from logging (palm oil) and other land-based pollution, and coral bleaching and degradation from increasing sea surface temperature and ocean acidification
- 5) Coastal communities living on small islands and in low lying coastal areas are experiencing increased coastal erosion, flooding, and inundation caused by sea level rise and severe storms.
- 6) Critical coastal infrastructures in coastal areas are experiencing repetitive damages, loss, and

disruption of services, due coastal erosion, flooding, and inundation caused by sea level rise and severe storms.

- 7) Coastal livelihoods and businesses are experiencing economic losses due to degradation of natural resources from overexploitation and due to flooding, storm surge, and strong winds from increased frequency and intensity of typhoons.

The full list of these climate issues can be found in the Full Consolidated Outputs from Sessions 3-5b, which can be downloaded from the CTI web portal. (See Annex 5 for access instructions.)

Today's sessions were moderated by Ms. Nesta Leguvaka (MECDM).

SESSION 4a. CCA CASE STUDIES

In this session, participants heard case studies on climate issues and actions from Indonesia, PNG, Malaysia and Kiribati. To help inform further discussion on the REAP-CCA, participants were instructed to consider the following while listening to the case studies:

- 1) Are there early actions in the case studies that could help address the issues identified in Session 3?
- 2) What early actions are already going on that should be highlighted in the REAP-CCA?

Mr. Syofyan Hasan (Ministry of Marine Affairs and Fisheries) presented on **Indonesia's** policy on climate change and a case study in **Pekalongan City**. He said the average temperature in Indonesia is predicted to rise by 3.5 degrees Celsius by 2100, but the current biggest problem was SLR. The mean SLR in Jakarta Bay was already estimated at 0.57cm per year, causing flooding in some areas in Jakarta. By 2080, said Mr. Hasan, almost half of Jakarta may be flooded by ocean water, and the country could lose 2,000 islands.

To address this and other climate-related problems, Indonesia adopted a National Action Plan Addressing Climate Change and the Indonesia Climate Change Sectoral Roadmap (ICCSR) focused on five sectors, including the marine and fishery sector, CTI's main concern. The strategy involved capacity building, promoting public awareness, improving economic and food security, managing coastal and other environmental resources, and rehabilitating and building coastal infrastructure. Several laws had been passed and various institutional arrangements established to support CCA, said Mr. Hasan.

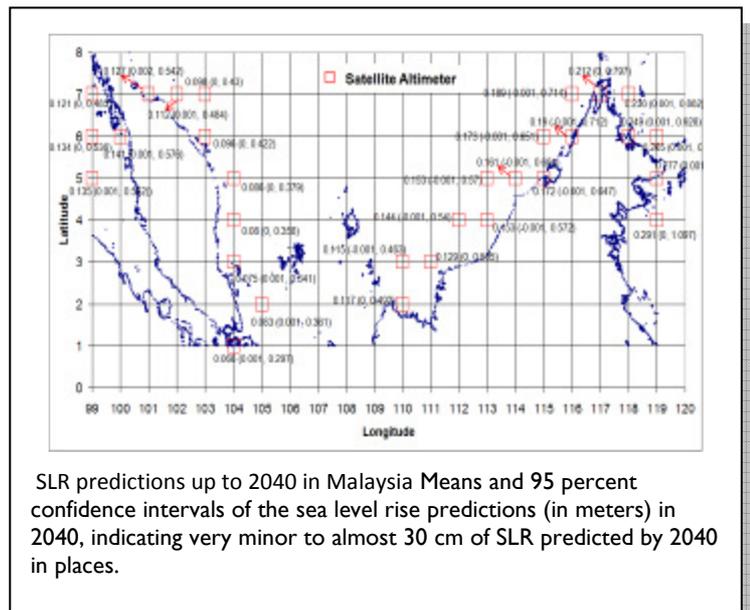
One area that was the focus of some early CCA actions was Pekalongan City on the northern coast of Java, which was facing problems with SLR, erosion, sedimentation, pollution and flooding. Mr. Hasan said that in 100 years, the city could be flooded by seawater up to 2.85km from the present shoreline. Sea walls, mangrove rehabilitation, public awareness programs and capacity building for CCA were some of the strategies being used by the government to address the problems. "We're in the early stages of CCA, but we are optimistic about the prospects for Pekalongan," said Mr. Hasan. "One item that we need to address here is the need for integrated coastal management (ICM). We need help to validate our data."

Ms. Luanne Losi (Office of Climate Change and Development [OCCD]) presented on national level CCA strategies in **PNG** and Ms Edvinah Irale (Department of Environment and Conservation [DEC]) presented one case study at the provincial level (**Manus Province and West New Britain**). Ms. Losi reported that the government has an interim national action plan that was developed based on results of a climate risk and hazard assessment showing the magnitude of the expected climate impacts and how the government could respond. Six top climate issues were identified (coastal flooding, inland flooding, landslides, malaria, agricultural yield and coral reef degradation), and from these six, three issues were chosen for priority action, namely, malaria, coastal flooding and inland flooding.

Interventions – some in the planning stage, others already being implemented – included mangrove rehabilitation and planting, the establishment of a coastal early warning system, coral farming and community-based resource management. The OCCD mostly coordinated these activities with NGOs who were working on the ground, said Ms. Losi. In one area encompassing Manus Province and West New Britain, the government was working with donors and other partners, including communities that were affected, to address issues like coastal erosion, coastal flooding, harvesting of coral for lime production, resource decline and “sinking islands.”

Ms. Irale reported that the approach involved all levels of government but was largely community-based and NGO-led, and this was one lesson that the PNG could share with other CT6 countries. “CCA should involve people at the community level, from planning to implementation,” Ms Irale said. “There should be effective communication between stakeholders and partners, as well as a strong commitment from government.” The government was developing a coastal early warning system, added Ms. Losi. This system would involve most of the government agencies working together and with a local mobile provider to get the word out to the community before an impending calamity happens.

In Malaysia, the government worked with the California Hydrologic Institute to collect data on SLR along the coastlines of peninsular Malaysia, Sarawak and Sabah, reported Mr. Karthigeyan Veerasamy (National Hydraulic Research Institute of Malaysia [NAHRIM]). The estimated SLR would be highest in the northern part of the country, but the southern area was projected to be more severely affected and thus was chosen to be the case study area.



The case study, presented by Ms. Lay Hoon Teh (The Maritime Institute of Malaysia) focused on **Tioman Island**, a small volcanic island in southern Malaysia off the east coast of peninsular Malaysia where the sea level was projected to rise by 0.8 cm by 2040. The area has rugged mountainous terrain and very narrow fringes of beach. “The houses and resorts are very near the coast, and therefore very vulnerable to flooding during high tide,” said Ms. Teh.

Local residents tried to address the flooding problem by building gabion sea walls, but the infrastructure was collapsing, and roads were being eroded. People had retreated inland, but the area suitable for settlement was limited by the rugged terrain. During the monsoon season, when the wave height could reach up to 4 meters, the place would get inundated; communication would often go down, making it difficult to get information to the villages.

Adaptation recommendations that had been put forward included: 1) In the short term, curb saltwater intrusion through rainwater harvesting and reinforce flood control and coastal erosion management; 2) For the medium term, review development policies to include provisions for architectural designs suitable for the rising sea level; and 3) Over the long term, include strategic measures in zoning and land use management plans aimed at decreasing the vulnerability of existing and future developments to SLR, prohibiting developments close to the coastline, and gradually relocating settlements from the danger zones.

Ms. Teh said the adaptation guidelines had not been updated, but “the government is looking into it and most of the actions needed are already highlighted in the NPOA.” Mr. Veerasamy added that areas in Malaysia that are part of the CT region, namely Sabah and Sarawak, “are very vulnerable to climate risk, so we have ongoing CCA projects there, particularly in the Sabah area. We are looking to do much more and look to you all to help us.”

In the ensuing discussion, in response to questions from the floor, the presenters said the government was working with big companies to help educate the communities on how to “reduce the impacts.” Ms. Teh said relocation was not an urgent issue at the moment, but the government understood that it was an “impending challenge, and we hope that when the time comes for us to deal with it, we would learn from the experience of others.”

Dr. Simon Donner (University of British Columbia [UBC]) presented an example of CCA in **Kiribati**, an island nation located in the central tropical Pacific Ocean composed of 32 atolls and one raised coral island covering a total land area of 811 sq km, most of it less than two meters



Coastal erosion, Kiribati, 2005 (Photo: S Donner).

above sea level. The islands – and the 110,000 people living there – face multiple threats from climate change, including coastal erosion, saltwater inundation, threats to the tuna fishery (an important source of income), coral bleaching, and ocean acidification. A number of these threats are visible along the coasts in the form of damage to infrastructure particularly in the low-lying areas. During an El Niño event, the water can be 20-30cm higher, which is particularly significant given the islands’ low elevation. The islands have naturally been changing over the years, but human impacts have accelerated the

natural processes, Mr. Donner noted. People built causeways and other infrastructure that impeded the natural flow of currents and sometimes caused the islands to expand but in other cases also resulted in land loss, he said.

One key action to address the threats is the Kiribati Adaptation Project, a World Bank initiative supported by the Global Environment Facility and other donors that is scheduled for implementation in 2011. Planned adaptation actions under this project include climate proofing, such as the construction of sea walls in areas of high population, mangrove planting and rainwater harvesting in the less populated areas.

Another activity that has been going on is a project in the Phoenix Islands in the central part of Kiribati dealing primarily with the impacts of climate change on coral reefs. The Phoenix Islands is a UNESCO (United Nations Educational, Scientific and Cultural Organization) World Heritage Site with a caretaker population of about 30 people. “The country earns income for agreeing not to have people fish in the waters around the islands,” said Dr. Donner. But there are other threats: reefs in the area were subjected to high temperature stress during the El Niño events in 2002, 2004 and 2009 which caused significant coral bleaching.

Assessment actions that have been undertaken so far include scientific expeditions to the islands in 2002, 2005 and 2012 to analyze climate impacts and reef resilience; training for government staff in coral reef monitoring; and the development of a reef monitoring protocol for local use. There have been constraints related to the availability of equipment and funding, access, safety issues and

inconsistent government support, but there are lessons to be learned from these constraints. For one, “short-term training is not good enough on its own,” said Dr. Donner. “People are energized about it, but you need not only really dedicated staff but also their superiors to support the program.”

In the ensuing discussions, Dr. Donner noted that after being subjected to several sea warming events, corals in the Phoenix Islands are “tougher, more resilient and able to recover fast,” but there has been a noticeable shift in coral species composition. He stressed the importance of involving the community in reef monitoring, and reiterated that “a one-off training is not enough,” training must be continuous. Furthermore, he said, “it is not realistic for the country to build hard infrastructure; the definition of success for the project is not in the construction of sea walls but in the policy development side of it.” And while relocation appears to be an attractive option for government – i.e., the government sees opening the migration channel as economically beneficial – it must be emphasized that adaptation is already a way of life for the people of Kiribati. “When you have a bunch of consultants coming in and telling people that this is what’s happening to their islands, that kind of scares them,” said Dr. Donner. “But the islands do change naturally, and people adapt, as they have been adapting for centuries.”

SESSION 4b. DEFINING EARLY ACTIONS FOR CCA

During plenary discussion at the start of this session, participants listed ten adaptation measures cited in the case studies in Session 4a that appeared to them to be the most relevant to the CTI. These measures were: 1) mangrove replanting/coral farming; 2) house retrofitting/climate-proof architectural design; 3) establishing early warning systems; 4) implementing community-based resource management; 5) rainwater harvesting; 6) relocating of vulnerable communities; 7) constructing sea walls; 8) introducing community ordinances; 9) land use zoning; and 10) promoting public awareness of climate issues. Participants then broke out into small discussion groups to continue the work they started in Session 3. This time, their task was to complete a second matrix template (Matrix Box 2) with “early actions” that were already being implemented or could be implemented to address the issues they had identified in Session 3. The following questions guided their discussions:

- 1) What early actions are underway or need to be taken? (Summarize.)
- 2) Are many of the same early actions applicable to different climate issues?

CCA REX – EARLY ACTION WORKSHEET – ILLUSTRATIVE EXAMPLES	
1. Compose climate issue statement based on priority assets (natural or built)	2. Identify early actions to decrease impact/increase resilience
<p>Climate Issue #1 Asset: Estuaries and wetlands Location: throughout the country Impact (current and projected): are experiencing changes in ecosystem structure and function Due to (climate and non-climate): saltwater intrusion and sedimentation Caused by: sea level rise, increased storm surge, and land-based pollution Sectors Affected: Natural Resources</p>	<p>Ongoing actions:</p> <ul style="list-style-type: none"> • Work with stakeholders to minimize non-climate stressors such as land erosion and sedimentation <p>Proposed Actions:</p> <ul style="list-style-type: none"> • Develop a national inventory of estuaries and wetlands • Identify priority estuaries and wetlands based on risks from climate and non-climate stressors • Establish baseline conditions and monitoring in priority estuaries and wetlands • Improve management of watersheds that feed into priority estuaries and wetlands

Matrix Box 2 used in Session 4b by the participants to define early actions

Listed below are some of the more salient ongoing and proposed early actions identified in the breakout discussions. The full list of early actions identified by the participants can be found in the Full Consolidated Outputs from Sessions 3-5b, which can be downloaded from CTI web portal. (See Annex 5 for access instructions.)

- 1) Enact/enforce relevant laws.
- 2) Document local climate knowledge.
- 3) Rehabilitate mangroves/reforest uplands to protect embankments.
- 4) Set up/strengthen early warning system.
- 5) Identify vulnerable communities/conduct detailed studies on most vulnerable areas.
- 6) Relocate vulnerable communities.
- 7) Protect coastal areas with appropriate infrastructure (sea walls, etc.).
- 8) Strengthen EIA system and procedures.
- 9) Prohibit mining in small islands.
- 10) Promote public awareness of climate issues and adaptation measures.
- 11) Rehabilitate/protect coral reefs.

SESSION 5a. CCA Tool Case Studies

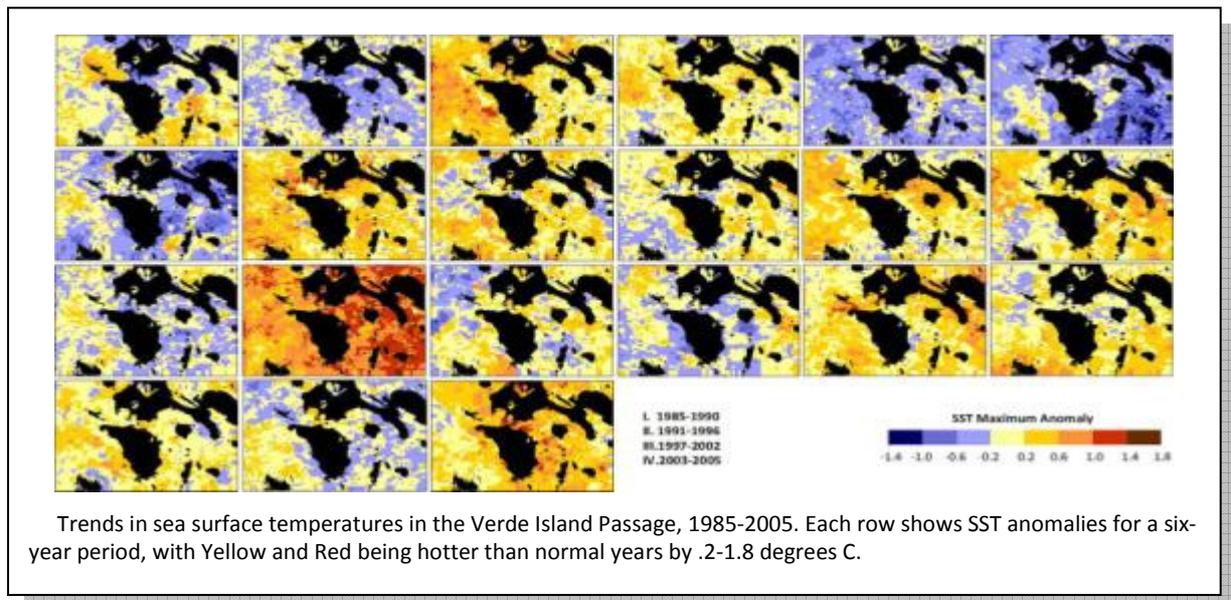
In this session, participants went back to plenary to hear case studies on adaptation tools, including VA, community mapping, climate field schools, tools for identifying and prioritizing adaptation options, social science tools and communication, data and MPA tools. The presentations were intended to inform the next round of breakout discussions (Session 5b) that would identify the tools and approaches to support the early actions identified in the previous session.

Ms. Miledel Christine Quibilan (UPMSI) presented on the **Vulnerability Assessment study** undertaken jointly by CI, WWF and UPMSI at the Verde Island Passage in central Philippines. The Verde Island Passage, a key biodiversity area tagged as “the center of the center of marine shorefish diversity” encompassing five provinces and 33 towns, faces a host of threats, including a growing coastal population, urbanization and coastal development leading to increased pollution, clearing of upland areas for human settlement and farming, clearing of mangroves for aquaculture, overfishing, etc. The nine-month study, which also involved the Department of Environment and Natural Resources (DENR) and Philippine Atmospheric, Geophysical and Astronomical Service Administration (PAGASA), focused on the biophysical aspects, including coral bleaching associated with the El Niño-Northern Oscillation (ENSO), ocean acidification, storminess, changes in rainfall pattern and SLR,

The study was participatory but largely expert-driven, employing more data collation and analyses than actual data collection in order to build exposure scenarios or models that provided input to the local governments’ climate change outreach and community strategy, and that helped in the identification of early adaptation measures. “We also tried to link biophysical and the socio-economic aspects – we wanted to see how biodiversity was affected by climate change impacts and how that linked to ecosystem services, such as tourism and fisheries,” said Ms. Quibilan. “In hindsight, this was the toughest part – we’re a long way from getting to that convergence point.”

Some key findings include the following: 1) Sea surface temperature (SST) increased by 0.06 degree Celsius per decade in the last 100 years, and by 0.2 degree per decade in the last 20 years, coinciding with the 1998 ENSO event, which indicated that SST was sensitive to the ENSO and the Pacific Decadal Oscillation; 2) Storm frequency within 200km of the Verde Island Passage was about 28 storms per decade, with the frequency decreasing in recent years (the storms were moving northward instead of crossing the Philippines); 3) There was not enough SLR data to determine site-specific SLR impacts, but shoreline tracing based on maps and satellite data from 1977 to 2009 indicated that SLR, along with seismic activity, man-made coastal structures and changes in rainfall patterns, may enhance coastal erosion processes and salinity intrusion; and 4) Potential impacts on coral reefs seemed low (e.g. in Batangas province, where coral cover was considered “poor,” the potential loss of coral cover ranged from 3 percent to 22 percent, which probably also indicated that the reefs had a low adaptive capacity and low vulnerability to elevated SSTs).

Ms Quibilan also enumerated the following lessons from the study: 1) It was difficult to link biophysical and socioeconomic aspects of adaptation; 2) VAs should be inter-disciplinary; 3) VAs should be participatory in order to incorporate local knowledge and some validation of scientific observations; 4) It was better to define a spatial domain; 5) It was useful to have a monitoring scheme; 6) Data gaps still existed, such as rainfall data, long-term data, spatial data; 6) There was a need to develop tools for decision-makers at both national and local scales; 7) The process needed to be tested for replicability in different areas; and 5) Early actions must be done now and done better. “If you’re not already doing it, do it now. If you are already doing it, do it better,” Ms. Quibilan said.



Ms. Mauli (TNC/Solomon Islands) presented on the same topic that she discussed during the Gizo field visit: the AusAID-funded **Climate Change Adaptation Partnership Project**. The project involved the use of participatory tools to support V&A assessment, namely 1) Participatory 3-D Modeling, ; 2) household surveys; 3) participatory video; and 4) cultural heritage mapping. (See also Section I.)

Mr. Raimundo Mau (Ministry of Agriculture and Fisheries, Timor-Leste) presented on a **climate field school program** undertaken by the Timor-Leste government to disseminate climate and adaptation information to vulnerable communities and strengthen the use of local knowledge in CCA planning. The focus was on the agriculture sector, said Mr. Mau, “because climate variability affects agriculture the most.” No VA was done, he added, “but I would say all areas are vulnerable.” The program was implemented in two villages, using focus group discussions involving 20 farmers per group. Held twice weekly over six weeks, each discussion lasted about three hours. Mr. Mau said program sustainability is uncertain because funding is limited, and there is no guarantee the communities will use the information they learned. Still, the government hopes to replicate the program in other vulnerable areas in order to “change the attitudes and practices of farmers, and hopefully improve their livelihood,” Mr. Mau added. “We need technical and financial support to do this.”

Mr. Glenn Ricci (URI-CRC) introduced three methods of **identifying and prioritizing adaptation options**, namely benefit-cost-analysis, scenario analysis and multi-criteria analysis. The first method, benefit-cost analysis, is the traditional method of choice, he noted, but it is “incomplete” (it does not consider other parameters) and therefore it may not be suited to climate adaptation planning, where there is a high level of uncertainty. The second method, scenario analysis, can be used to evaluate the types of decisions that must be made under certain conditions and the

resulting impacts of varying adaptation options, but in many cases, it can be very expensive as it often requires extensive data collection and modeling. The third method, multi-criteria analysis, is a method that is used in a collaborative planning process and can be quickly adapted for the local context. It involves the use of multiple criteria, including costs, implementation aspects, and impacts on other parts of the system. Multi-criteria analysis is the method currently preferred by most people because “it can be very simple, and you can use any criteria you want that are relevant to the issues you want to address,” said Mr. Ricci. “The key message is that there are many tools out there -- you can have pretty high end tools or you can have some very low end tools. It’s a social process; the design does not have to fit perfectly.”

Mr. Ravic Nijbroek (CI, USA) presented on **social science tools** for adaptation, a topic he introduced by pointing out that “there is no such thing as ecological vulnerability; vulnerability is always human.” The most common adaptation framework includes exposure and sensitivity, which are well-defined variables, Mr. Nijbroek noted. But while exposure is more related to environmental factors and sensitivity is somewhat related to geographical location, adaptive capacity is more closely associated with existing socio-economic vulnerabilities. “With exposure and sensitivity, there are a lot of data, but in most of the places where we work, there is a lack of socio-economic data,” he added. There are several established methods for collecting socio-economic data, including interviews, surveys, focus groups, secondary data, participatory methods, etc.; the choice of method will depend on the area and its needs, the costs involved, time, and accessibility. Two tools were highlighted: 1) Climate Witness Community Toolkit, a set of participatory VA technologies developed by WWF and 2) SocMon or Global Socioeconomic Monitoring Initiative for Coastal Management, “an initiative aimed at helping coastal managers better understand and incorporate the socio-economic context into coastal management programs.” Mr. Nijbroek also directed the participants to the SocMon website (<http://www.socmon.org>), which includes a database containing monitoring reports from 30 countries.

Who should participate in the adaptation decision-making process would be another important consideration, said Mr. Nijbroek. He presented several types of public participation ranging from one-way processes where the government informs the public of its decision to citizen-led participation, where citizens are actively engaged in decision-making processes, citizen decisions become binding, and citizens share ownership and responsibility over outcomes. It is generally accepted that if adaptation were to be holistic, then it must participatory, but in reality, it is difficult to say how much public participation is actually going on, said Mr. Nijbroek, adding that “your domain of participation will get more and more complex as you go towards full participation.” He also noted that the level of participation necessary for the REAP-CCA themes seemed to be “leaning toward planned adaptation” rather than community-level adaptation.

In the ensuing discussions, it was pointed out that one advantage of being in a data-poor country is that “the only way we can look at exposure is to go to the people for the information, because we don’t have enough data to predict it.”

After the plenary presentations, participants broke out into three groups for a “gallery walk” where they had the opportunity to listen to presentations on communication, data and MPA tools.



Dr. John Marra of NOAA presenting on CCA data tools.

Ms. Parker (NOAA) presented a **community CCA outreach toolkit** developed by the Micronesia Conservation Trust and its Micronesia Challenge Partners through a collaborative process with community members, resource managers, conservation practitioners, and climate change experts in Micronesia. The toolkit contains the following tools that reflect local needs to overcome challenges in adapting to regional climate change conditions:

- 1) Large flipcharts graphically depicting climate change concepts and actions that can be carried out by communities to prepare and adapt to climate change impacts
- 2) Facilitators' guide to accompany the flipcharts, which includes page-by-page notes on items to point out on the flipcharts and concepts to explain
- 3) Booklets that provide the same visual content as the flipchart but offer more explanations. These are to be used by community members both during the presentation of the flipcharts and afterward during their adaptation projects.

Mr. Nate Peterson (TNC/Australia) presented on a case study on **designing a resilient MPA network** in Kimbe Bay, PNG. Conservation action planning was used to identify key threats and strategies, and systematic conservation planning (similar to that used for eco-regional assessments) was used to design a network of MPAs to be resilient to climate change. Based on an assessment of biodiversity and socio-economic parameters, the MPA design identified 14 areas that met specific conservation goals. TNC, along with its development partners, used this experience in Kimbe Bay and other project sites to develop a guide that describes tested techniques for designing and implementing effective MPA networks that are resilient to human and environmental threats.

Dr. John Marra (NOAA) shared **climate data tools and systems**, including web-based climate information system and resources, such as the Global Observing Systems Information Center (GOSIC) Portal (<http://gosic.org>). The GOSIC Portal provides easy access to the global and regional climate data and information systems, explains the data systems, provides integrating overviews of the programs and online access to their data, information and services, and maintains information about the datasets and products, and points to the centers holding them.

SESSION 5b. IDENTIFYING TOOLS FOR EARLY ACTIONS

In this session, participants went back to their breakout groups and continued their work from Sessions 3-4, this time looking at what tools would be useful for implementing the early actions which they identified in Matrix Box 2 (Session 4). Discussions were guided by the following questions:

- 1) What tools are available to support early actions?
- 2) What are the applications and limitations of each tool?

Discussion results were reported back to plenary, and highlighted the early actions listed below. The full list of tools identified by participants can be found in the Full Consolidated Outputs from Sessions 3-5b, which can be downloaded from CTI web portal.

- 1) Legislation/policy tools
- 2) Outreach/awareness/education/communication tools
- 3) Benefits-cost analysis
- 4) Land use analysis tools
- 5) V&A and other assessment tools
- 6) Financing tools
- 7) Monitoring and evaluation (M&E) tools
- 8) Environment-friendly livelihood technologies
- 9) MPA networks
- 10) Data-sharing tools
- 11) Trainers' toolkit

Before the session ended, participants were reminded that the outputs of this workshop would be used as inputs to the CTI REAP-CCA and that they should start “building something on a regional scale” based on the common issues that were identified at the national level and think about what would be the priority actions at the regional level for 2012.

All sessions calendared for Day 2 were completed as scheduled by 5:00 p.m.

DAY 3, 20 APRIL 2011

Day 3 began promptly at 8:30am, but before the start of the day’s scheduled sessions, Dr. Courtney took time to review with the participants the previous sessions’ outputs and how the ideas could be structured to best fit the REAP-CCA framework and subsequently to contribute to the formulation of the REAP-CCA. Discussions then ensued on how best to structure the Themes/Tools (Actions) Matrix. A consensus was reached to categorize the climate issues identified in the previous sessions under three main themes, namely 1) Marine/coastal ecosystems (viewed through the MPA/seascapes and CCA lenses; 2) Livelihoods and food security (viewed through the Fisheries and CCA lenses; and 3) Coastal community and infrastructure (viewed as a CCA core theme). The participants also agreed that the remaining workshop sessions would focus on how the issues may be addressed using the following general types of tools/actions:

- 1) Risk and VA
- 2) Capacity building (Technical, training, institutional development)
- 3) Data/information management
- 4) Disaster preparedness
- 5) Public awareness (Information, education and communication)
- 6) Governance, policy and enforcement
- 7) Financial resources
- 8) Research and technology
- 9) Monitoring, evaluation and reporting
- 10) Partnership building

The revised Themes/Tools (Actions) Matrix Template that resulted from this discussion is shown in Annex 7.

Dr. Schwarz served as moderator for the day’s sessions.

SESSION 6a. DATA AND INFORMATION TO SUPPORT CCA EARLY ACTIONS

In this session, Mr. Nate Peterson (TNC) presented the **CT Atlas**, an online GIS database that is being developed with the support of the US CTI Support Program to provide governments, NGOs and researchers with a view of spatial data at the regional scale (<http://ctatlas.reefbase.org/>). The Atlas is a collaborative effort between six NGOs, namely WWF, TNC, IUCN, the Wildlife Conservation Society, ReefBase and Worldfish Center. The work has so far focused on collecting data from NGOs that had a long history of working in the region and



had accumulated a significant amount of spatial data, Mr. Peterson reported. He added, “We are now in Phase 2 focused on working with governments to share data.”

The project has three goals: 1) Compile the base layers essential for measuring CTI’s success; 2) Compile and visualize the indicators developed by USAID’s Coral Triangle Support Partnership and the CT6 to measure progress; and 3) Provide the foundation for a regionally accessible platform that informs regional, national and sub-national scale decisions regarding coastal and marine resource management and conservation.

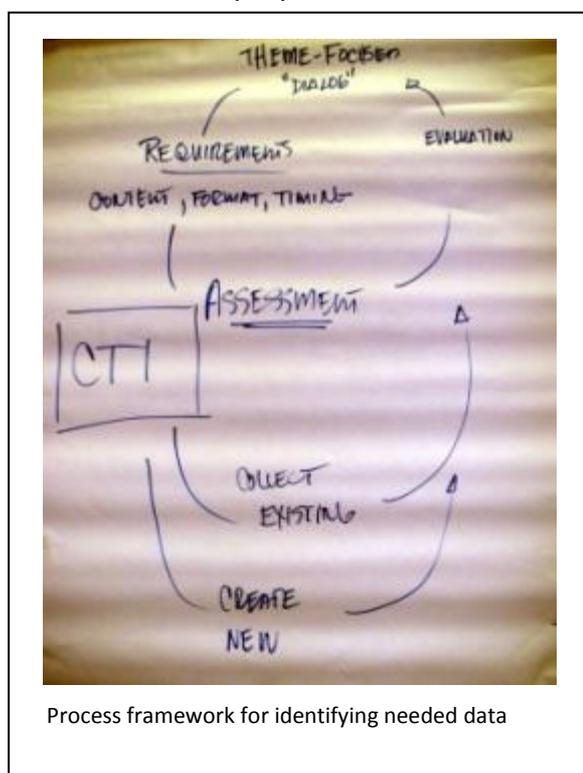
In the next months, the project will work with the Universiti Sabah Malaysia (UMS) on a training course for government staff from the CT6, “to teach them how to use the Atlas,” Mr. Peterson stated. “We are offering this as a resource that everybody can share.” Efforts are also underway to develop tools for analysis that would allow users to “cut out only the information in their area of interest,” he added.

The next steps would involve working with NOAA, the University of Queensland and other parties that could contribute data and other services, and engaging the CT6 governments to identify national partners. “We are trying to find a champion within each country that can represent the CT region,” Mr. Peterson said. The most likely “champions” would be the people that will attend the training at UMS, he added, stressing that the CT Atlas will be open information and “is for the people in the region, especially the communities.”

In the ensuing discussion, questions were raised about how the CT Atlas would be administered, and how it would fit into existing information systems, including the systems that already existed in each country and the Knowledge Management (KM) Project being planned by the Asian Development Bank (ADB). There were also questions about data utilization, particularly by the local governments and how all the different organizations involved in data capture and utilization could be linked together. No consensus was reached on these points and participants agreed to take up the matter again at the next opportunity.

Mr. Veerasamy (Malaysia) reported on the **outputs of the data/GIS working session** that was held before the start of the workshop sessions on Day 1 to review existing data resources in the CT region and share data that would inform the drafting of the REAP-CCA. “We had quite a big argument about how much data can be shared, because we need permission from our government to share certain (sensitive) data,” Mr. Veerasamy related, stressing that there were data sharing issues that needed to be resolved. “We need to think about this. Perhaps at this point, we can help by showing people where to get the data,” he added.

There were two main outputs from the Day 1 working session: 1) a preliminary list of data types that might be useful for planning based on the themes of the REAP-CCA framework, and 2) a summary of data available in each country (see Annex 8 for additional notes from the data review session held on Day 1).



SESSION 6b. NEEDED DATA AND INFORMATION TO SUPPORT EARLY ACTIONS

Dr. Marra and Mr. Peterson facilitated the plenary discussion in this session to answer the following questions:

- 1) What regional/global datasets are available that everyone can use?
- 2) What is the difference between climate variability and change and how might this be reflected in data?
- 3) What data sources are available for different scale questions?
- 4) How do we move forward when lacking scientific data (using local knowledge)?

As an introduction to the discussion, Dr. Marra described a framework that could be used to identify and meet the data and information requirements of CCA planning. The framework involves three basic steps: 1) Conduct a dialogue on what information and data are available and where to find them; 2) Conduct a gap analysis to determine what information and data are missing; and 3) Fill the gaps. In CCA, “you have a whole range of users to think about in terms of what information they need in order for them to take the necessary step, and you have to consider other parameters, such as data format, scale and timeframe,” Dr. Marra reminded the participants. “For example, there is a significant amount of regional climate data available, so your challenge is most likely going to be how to downscale them so they are applicable at the local level, and then you need to know what information will be useful and to what level of detail.”

Data sharing issues were again brought into the discussion. There was general agreement on the following points:

- 1) Data sharing arrangements must be decided “at a high level” and should be included in the SOM agenda and subsequently elevated to the ministerial level.
- 2) Discussions must begin at the country level to define the national policies or protocols for regional data sharing on datasets for CTI.
- 3) At the regional level, discussions could focus initially on formulating guidelines for identifying critical minimum data, developing a standard or common dataset and formats and clarifying the mechanism for data sharing.
- 4) The various CTI data teams – including the KM Team being organized by ADB – must work together.

Participants also generally agreed that discussions during this workshop could only go as far as identifying the data requirements for CCA planning and what data and information were already available. “We do not have the proper authority here to decide on what data to share or how to share them,” said one participant.

SESSION 7a. DEVELOPMENT OF COUNTRY REPORTS

This session opened with a plenary presentation by Mr. Knight (CTSP), who gave an **overview of the US CTI Support Program** and the funding opportunities it offers for projects in “priority geographies.”

The US CTI Support Program is a USD41 million, five-year program implemented by a consortium of NGOs, including WWF, CI and TNC, and a Program Integrator (PI) “to transform the management of marine and coastal resources in the CT region.” In addition, NOAA is providing technical assistance and capacity-building support and training on enforcement tools to reduce illegal, unregulated and unreported fishing (IUU), assisting with the development of effectively managed MPAs and fisheries resources in the region, as well as providing technical support (as in this meeting) for CCA data, tools and approaches.

“Funding is immediately available for priority geographies or integration sites,” Mr. Knight revealed. These geographies include 1) Savu Sea, Indonesia; 2) Tun Mustapha Park, Kudat Banggi, Malaysia); 3) Nuakata-labam-Phailele MPA, Milne Bay Province, PNG; 4) Manus Island, Manus Province, PNG; 5) Municipalities of Dumarán, Taytay and Araceli, Palawan, Philippines; 6) Municipalities of Languyan, Sitangkai and Sibutu, Tawi-Tawi, Philippines; 7) Municipalities of San Juan, Lubang/Looc and Calatagan, Batangas, Philippines (Verde Island Passage); 8) Gella-Russell-Savo natural resource management network, Central Province, Solomon Islands; 9) Gizo Island, Western Province, Solomon Islands; and 10) Nino Konis Santana National Park, Timor-Leste.

“When you do your planning, think about these priority geographies, because we may be able to respond immediately to the needs you identify in these sites,” Mr. Knight told the participants.

After the presentation, the participants were divided into breakout groups by country to synthesize (from the data matrix they prepared in the previous sessions) information pertinent to their country into a country report to take back to their National CTI Coordinating Committee (NCC). The following questions were used to guide the breakout discussions:

- 1) What are your top two priority climate issues?
- 2) What are your priority early actions to address these issues?
- 3) What do you need to implement these early actions (tools, data/information, capacity, etc.)?
- 4) What top two projects would you propose for the CTI priority geographies?

The country delegates were also directed to focus on their country’s overarching needs and issues, common issues across countries, and opportunities to integrate CCA into ongoing planning activities.

SESSION 7b. PRESENTATION OF COUNTRY REPORTS

Back in plenary, the delegates presented their country reports, and discussed opportunities for trans-boundary cooperation and regional actions that could go into the REAP-CCA.

The participants from **Indonesia** identified coastal erosion and “resilient villages in coastal areas” as their top two priorities, and the following early actions as “the most important”: 1) Establish TWG-CCA at the national level; 2) Capacity-building for the TWG-CCA and concerned primary stakeholders (e.g. local governments, research institutions, universities, NGOs, etc.); 3) Vulnerability and risk assessment; and 4) Public awareness promotion. These early actions would require financing, and research and technology assistance for vulnerability and risk assessment, they added.

One project put forward by the Indonesian delegation for possible funding by the US CTI Support Program involved the mapping of coastal erosion and VA in coastal villages in the West and South Sulawesi Provinces and Lesser Sunda Eco-region (including West and East Nusa Tenggara, Savu Sea).

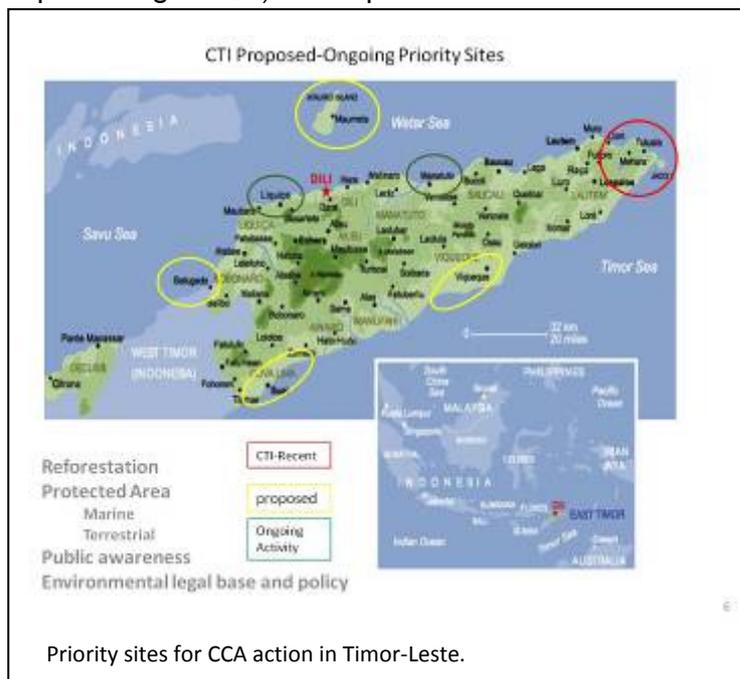
For **Malaysia**, the top priority climate issues were those affecting the rivers and estuaries in Sabah and Sarawak, including SLR, saltwater intrusion, changes in ecosystem formation, siltation, flooding, and soil instability due to logging. National SLR projections were already available and laws were in place to address key issues; work was underway to develop a river modeling system that integrated coastal modeling, and to collect data for the development of a numerical climate model that could help predict the extent of saltwater and flooding, and guide policy for relocation of agriculture and aquaculture. In addition, dredging was planned to prevent sedimentation overload in the river basins.

Ten early actions were proposed, as follows: 1) Develop an SLR index adapted to local scale and inundation maps based on SLR projections up to 2040; 2) Verify inundation areas using digital elevation models (DEM) and SLR projections; 3) Stabilize hills and slopes using local plants; 4) Conduct benefit-cost analysis; 5) Enforce pertinent laws; 6) Reinforce river walls to prevent river bank erosion; 7) Conduct research on species and modified agriculture/aquaculture methods

suitable for operation in a higher saline environment; 8) Strengthen coordination among the Sabah Environment Education Network (SEEN) members to better undertake environmental education efforts in Sabah; 9) Establish inter-sectoral committee to develop a guide to the implementation of ICM plans at Sulu-Sulawesi Marine Eco-region; and 10) Develop EAFM strategy for Sabah fisheries.

Activities at Tun Mustapha Park (Sabah) that were proposed for funding under the US CTI Support Program included the following: 1) Coral mapping at Kudat-Banggi area; 2) Coral restoration (artificial reefs; nursery); 3) Public awareness program; 4) Campaign against destructive fishing (fish bombing, cyanide fishing); 5) Sustainable management of live reef fish trade in Sabah; 6) Land-based pollution monitoring (point source).

Mangrove deforestation was the top priority issue for **Timor-Leste** – about 80% of the country’s mangroves were lost to deforestation between 1940 and 2008. Some early actions being undertaken or planned to address this issue included the following: 1) Conduct coastal habitat mapping; 2) Replant mangroves; 3) Develop alternative livelihoods for affected sectors; 4) Conduct land use



analysis; 5) Implement integrated mangrove management; 6) Promote community awareness of the need to conserve mangrove resources; 7) Identify vulnerable mangrove areas; and 8) Develop a national legal and policy framework for environmental protection and management.

Financing was a constant challenge, the Timor-Leste participants noted. US CTI Support Program funding was sought for biodiversity conservation at the priority geography in Ninos Konis Santana National Park, primarily to support the establishment of a protected area, VA, reforestation, public awareness promotion, and alternative livelihoods.

The officials from the **Philippines** focused on the following three priority issues out of the several priority areas identified in the country’s draft national climate change action plan: 1) Degradation of coastal and marine ecosystems; 2) Decline in ecosystem functions and services; and 3) Climate impacts on coastal settlements, businesses and livelihoods.

The Philippine report noted several ongoing CCA initiatives led by various organizations, including government, NGO, private sector and donor-funded projects; the proposed early actions were chosen to complement and reinforce these initiatives. They included: 1) Update information on the distribution and status of coastal and marine ecosystem; 2) Establish MPA networks; 3) Conduct Information, Education and Communication (IEC) and capacity-building activities; 4) Improve enforcement of laws on pollution control through community empowerment; 5) Incentivize local enforcement of pollution control and fishery laws; 6) Reforest mangrove areas and critical watersheds; 6) Conduct inventory and mapping of coastal settlements and economic activities; 7) Overlay inventory and mapping of coastal settlements and economic activities with other climate stressors; and 8) plan CCA in consultation with key stakeholders.

Three priority actions in the CTSP integration sites were proposed for US CTI Support Program funding, namely: 1) CCA plan development/integration into local government plans; 2) Coastal and

marine risk mapping; and 3) Ridge-to-reef projects (e.g. eco-towns). The report also included “other proposed projects,” as follows: 1) Scaling up of projects; 2) Survival Fund (a proposed facility for adaptation to assist communities affected by climate impacts); 3) Valuation studies; 4) IEC; and 5) Local V&A and risk assessments.

Two priority issues were identified by the **PNG** participants: 1) Destruction of mangrove areas due to domestic use and various economic activities; and 2) Damage to coastal infrastructure from SLR, storm surges and wave action. They put forward the following early actions to address these issues: 1) Provide incentives for alternative livelihoods; 2) Adopt/strengthen policy to protect mangroves; 3) Integrate risk reduction measures such as coastal setbacks, infrastructure siting and design into urban policy and planning to minimize impacts; and 4) Do Light Detection and Ranging (LiDAR) mapping and inundation modeling.

The PNG officials listed two activities for possible funding by the US CTI Support Program: 1) Rehabilitation and sustainable harvesting of mangroves in Manus Province; and 2) A series of public awareness dialogues with local communities and developers on issues affecting coastal infrastructure and ecosystems.

The **Solomon Islands** participants did not specify their priority issues, but enumerated the following early actions: 1) Promote public awareness; 2) Establish a networking system to improve communication between the location of climate events and central database; 3) Link with provincial and national government agencies; 4) Mainstream CCA into other sectors; 5) Conduct community-based resource management outreach, including livelihood development; 6) Do studies on SLR, storminess, elevations, topography, bathymetry and mapping, and digitize the information; 7) Analyze and map coastal infrastructure; 8) Conduct EIA and rapid ecological assessment in the priority sites; 9) Conduct habitat mapping; and 10) Replant mangroves.

Activities proposed by the Solomon Islands participants for financing under the US CTI Support Program included the following: 1) V&A and EIA training/capacity-building at community, provincial and national levels; 2) Infrastructure assessment and mapping in provincial urban centers; 3) Scenario mapping for coastal infrastructure using bathymetry, SLR and currents data; and 4) Nation-wide assessment of the state of marine and coastal resources.

From the six country reports, the following common areas of concern were culled out for further discussion on how they could be addressed at the regional CTI level:

- 1) Mangroves
- 2) Coastal settlements, erosion and infrastructure
- 3) Risk and vulnerability assessment and mapping
- 4) Capacity building
- 5) Policy and enforcement
- 6) Livelihood
- 7) Public awareness
- 8) Standard tools to improve comparability of results
- 9) Climate modelling

The participants suggested the following areas where regional cooperation could help address these common concerns:

- 1) Knowledge/information sharing to support capacity-building, development of standard tools, as well as risk and vulnerability assessment and mapping
- 2) Transboundary cooperation in relevant action areas, such as the protection and management of shared resources (e.g. watershed, mangroves, rivers and estuaries).

All sessions scheduled for Day 3 were completed by 5:00 p.m.

SESSION 8. CAPACITIES TO IMPLEMENT TOOLS/EARLY ACTIONS

This session, facilitated by Mr. Ricci and Ms. Quibilan, explored the capacities needed to implement the tools and early actions identified in Session 7. The session started at 9:00a.m. in plenary with an announcement about two upcoming CCA training activities to be funded by the USCTI Support Program and guided in design by the CCA Technical Working Group that the CT6 could use strategically to advance their national and regional capacity. The present proposed design includes first conducting a CCA training for planners and implementers (target is local governments and partners) to be held in PNG with the University of Rhode Islands Coastal Resources Center serving as lead facilitator. Geographic teams from priority sites would bring their management priority issues to the training and work through a decision process towards developing vulnerability assessments and defining actions, returning home to directly implement plans made. The focus for the first training would be for the eastern three countries (Solomon Islands, PNG and Timor-Leste) and would be followed immediately by a Training of Trainers short program to help country teams develop the programs within their own national institutions. A second course, similar in approach but focusing on the western CT countries (Malaysia, Indonesia, Philippines) would be conducted in the Philippines, lead by the Univ of Philippines Marine Science Institute. “They are not technology courses, they are mostly to get your mid-level policy makers engaged and focused on the big picture or larger management issues,” Mr. Ricci said.

UP-MSI, with support from the USCTI Support Program, is also offering, initially, to host a CCA learning network of sorts, providing some follow on advisory or mentoring on the CCA activities developed during the trainings. Commenting on the value of having a CCA learning network, Ms. Quibilan said, “There is no single institution that can do all adaptation work; we must have partners that we can work with.”

Breakout group discussions were done by country and guided by the following questions:

- a. Which institutions (academe, national agencies, big and small/local NGOs, local planners, etc.) in your country can help you advance CCA work (early actions) in your areas?
- b. What can they bring to the table?
- c. What do you have now and what do you need?

The country teams each selected a priority management issue, and first mapped out the capacities they already had at country level and the capacities they needed to implement the tools and early actions they identified in Session 7, looking at skills and training, information and the tools to generate and make use of such information, and policies and system. When this exercise was completed, the charts were posted to allow the different country delegates to compare notes and identify the opportunities for sharing capacities at the regional level. All agreed that the “mind mapping” technique was very useful in grouping tasks and visualizing a simplified understanding of the elements needed to move forward on that issue. The seven “mind maps” are included in Annex 9.

Most countries selected Sea Level Rise or Flooding their priority management issue, with the Philippines selecting Sea Surface Temperature. In general, the country teams indicated four capacities where regional information sharing or coordination could be most beneficial are: 1) Public awareness/communication, particularly in the sharing of materials; 2) Public-private partnerships through sharing of model agreements and approaches; 3) Policy Coordination through Councils and examples ; and 4) Scenario projections and models for the predictions. For example, the Indonesian delegation reported that they could use public awareness materials produced by the Philippines, and also benefit from the Philippines’ experience in public-private partnership that allowed projects to tap into corporate social responsibility (CSR) funds. They said they could also benefit from

information on the public coordination work being done by Malaysia's Regional Climate Council. With regard to SLR projections, Malaysia said they could share "expertise, maps and contours," adding that "we are on track, but we need funding to complete our work."

These early recommendations will be included in the Draft REAP as early actions for review and further development by the CCA Technical Working Group.

Before the session ended, the resource team offered more insights for the delegates to consider. Dr. Marra illustrated how, even with limited data and using a simple technique, it is possible to develop accurate, if not highly precise, maps or projections. He cited an example where a very precise map was produced at considerable expense, while a much less expensive exercise "actually resulted in a map that was pretty close to what they were aiming for" (although not precise, it was accurate). In the low-tech/low-cost case, he described a community effort to "mark" how a one meter increase in sea level might impact the area by having folks use the beach line of the current high-water mark and then measure up one meter in elevation (can be done with simple tools) and then "marking" the location of the "new" beach line with blue paint at the one-meter water mark (if on buildings), or shrubs/plants or a line of rocks along the coast. Using this simple technique, the community gained a broad sense of awareness about climate change and sea level rise impacts, and they could gauge and discuss what infrastructure or activities might be affected, and take action immediately to protect or adapt to the possible changes.



Mapping CCA capacities and needs at the national level.

Dr. Kate Lance expressed to participants that the SERVIR program, supported by the US National Aeronautics and Space Administration (NASA) and USAID, is exploring opportunities to expand to Asia and the Pacific. SERVIR is an acronym standing for the Spanish words meaning Mesoamerican Regional Visualization and Monitoring System; through this program, scientists combine satellite data with ground observations to improve the quality of information that national leaders can use to make informed political decisions about environmental management and disaster response. With expansion to the CT region, SERVIR would be able to enable countries to tap technical support from NASA, such as near-real time access to satellite imagery, modeling capability, and grants for young scientists through SERVIR's capacity building activities. "As I hear you discussing your mapping and forecasting needs, I'm thinking that there is an appropriate role for SERVIR to assist," Ms. Lance said. "As you further identify your requirements in terms of data and training, I hope that SERVIR can be in a position to serve your needs."

Finally, Ms. Quibilan encouraged the delegates to "seek opportunities to work together [with the other CT countries]." Working together, she said, "provides opportunity for us to converge, find complementarities and move adaptation forward."

SESSION 9. WRAP-UP AND NEXT STEPS

To wrap up the meeting, Dr. Tighe reviewed the objectives, and outputs of this 2nd CCA Regional Exchange, and presented the “next steps” in the REAP-CCA process and follow up on other proposed objectives. Participant feedback has been incorporated in the summary below.

Overall, participants agreed that the objectives of sharing of information during the workshop, including strategies, early actions, priority data and information needed had been achieved. The remaining objectives of identifying tools and methodologies to help identify and implement early actions, assessments and strategies; and of identifying prioritized regional and national actions from the Draft REAP had also been achieved.

However, progress in the development and sharing of preliminary GIS maps for CCA fell short of target. “We were trying since last October to get some data to add to the CT Atlas but time and staff and data boundaries didn’t allow us to do that,” Dr. Tighe told the participants.

Throughout the workshop, participants identified the following issues related to climate data: 1) data sharing issues; 2) data gaps; 3) gaps in data collection capacity at national and sub-national levels; 4) need to link in situ climate data with regional/global datasets; and 5) need to downscale global/regional datasets for national or local application. They agreed that these challenges could be partly overcome by the emergence of opportunities for financing, access to existing tools, and building partnerships for CCA, such as with NASA’s SERVIR program and the CT Atlas.

“We did get to see what was already available and hopefully we can build on that in the near future with your help,” said Dr. Tighe.

Key Outputs included:

- 1) The first meeting of the ad-hoc CCA TWG was held resulting in a next steps to formalizing by SOM 7 their membership, scope, and next steps toward drafting and finalizing the CTI REAP-CCA.
- 2) The REAP Framework was presented and refined
- 3) A list of early actions was identified for possible inclusion in the REAP-CCA.
- 4) A common language and understanding was developed of available tools to implement early adaptation actions, and the capacity to utilize some of those tools built..
- 5) A collective understanding was built of the funding options available for adaptation.
- 6) A proposal was developed and presented to the ad-hoc CCA TWG for the next steps toward adoption and implementation of the CTI REAP-CCA.

Next proposed steps toward adoption and implementation of REAP-CCA

- 1) A defined writing team will prepare a rough draft of the REAP-CCA and circulate to all concerned.
- 2) Inputs from one full draft and a round of conference calls will lead to a second draft.
- 3) The second draft will be delivered to CCA focal points for review before the next TWG Meeting.
- 4) The second draft will be reviewed and next steps defined by the TWG, and presented to SOM 7 for their concurrence/approval
- 5) Finalize REAP by late 2011. (RPOA says by 2012.)
- 6) Start planning and implementing regional and national activities (2012-2015).

The timeline agreed upon for the completion of the REAP-CCA and its presentation to the CCA Ministerial Meeting on July 1 is shown in Annex 6. An ad hoc writing team from the Program Integrator and workshop participants will initially take charge of writing the draft REAP-CCA; after

the CCA focal points shall have been formally appointed, the focal points will become the writing team.

Next proposed steps at country level (for consideration by each country team)

Based on the agreed timeline (Annex 6), Dr. Tighe proposed the steps outlined below for the country teams to consider; each country team will take responsibility for preparing their own work plan and timeline based on their own needs and working arrangements.

- 1) Brief the national NCC and CCA counterparts.
- 2) Review the State of the Coral Triangle and the CTI Annual Report outlines and agree on content relevant to CCA.
- 3) Prepare geographic and institutional capacity teams to participate in the URI/UPMSI Training Programs who could/would compose the start-up CCA Learning Network.
- 4) Refine each country's issue statements and teams in priority geographies and integration sites.
- 5) Connect with/brief local government delegates going to the Mayors' Roundtable in Wakatobi, Indonesia on May 16-20, 2011.
- 6) Create national and priority geographies work plan for Vulnerability Assessment(s) on priority management issue(s).
- 7) Prepare next priority actions for SOM.
- 8) Prepare and review REAP-CCA for TWG and SOM concurrence.

Two trainings are scheduled under the URI/UPMSI Training Program, said Dr. Tighe. The first will be in July 2011 in PNG, and the other will be in October 2011 in the Philippines. Mr. Ricci said a set of criteria will be sent out in due time to help each country identify qualified training participants.

Next proposed steps for capacity building include:

Dr. Tighe also reminded participants of the following additional details about the URI/UPMSI Training Program and other steps to promote capacity building:

- 1) URI/UPMSI Training Program
 - a. For the URI-led training course in July 2011 in PNG, six participants will be invited from each of the priority geographies/integration sites in the Solomon Islands, PNG and Timor-Leste, and two participants (possibly trainers) from Indonesia, Malaysia and the Philippines. For the UPMSI-led course in October 2011 in the Philippines, Six participants will be invited from each of the priority geographies/integration sites in Indonesia, Malaysia and the Philippines, and two participants (possibly trainers) from the Solomon Islands, PNG and Timor-Leste.
 - b. Participants are expected to come with an issue statement developed by their NCC and priority geography teams, and leave with VA design and an understanding of the process to implement the assessment, analysis and adaptation actions.
- 2) Six country teams would return after training to work on Vulnerability Assessment(s) in priority geographies/integration sites and share progress notes through the CCA Learning Network.
- 3) Conduct other activities defined by the REAP-CCA.

Next proposed steps for partners include:

- 1) Join NCC and CCA briefings in the CT6 upon return from this REX.
- 2) Support CCA TWG with technical assistance and secretariat services.
- 3) Prepare URI/UPMSI Training Program(s) and Learning Network start-up.
- 4) Connect with/brief local government delegates to the Mayors' Roundtable Meeting in Wakatobi, Indonesia about CCA and the REAP and the URI CRC/UPMSI training programs
- 5) Help support national and priority geographies work plans for vulnerability assessments.
- 6) Prepare options for next priority actions for SOM. (What are we willing to support?)
- 7) Prepare and review REAP-CCA and provide comments for the TWG and SOM.

- 8) Get the Financing Marketplace, ADAPT and other funding mechanisms online; link designated focal points to the various relevant portal workplaces.
- 9) Talk with both internal (i.e. USCTI SP) and external (i.e., other bilateral or multilateral or private sector) partners about CCA

Next proposed steps for the TWG include:

- 1) Formalize membership and operation mechanisms.
- 2) Coordinate the development and finalization of the REAP-CCA.
- 3) Advocate for development and access to financing mechanisms.
- 4) Help the CTI Atlas to include CCA-relevant data for regional inputs.
- 5) Draft the CCA Section of the State of the Coral Triangle Report.
- 6) Draft the CCA section of the CTI Annual Report to Leaders.
- 7) Others
 - a. Complete the comparative review of country policies, (possibly for COP 17?)
 - b. Draft a CT6 statement to guide the (negotiating text) for the 17th UNFCCC Conference of Parties (COP).

When asked, Dr. Tighe reported that the TWG had recommended that there would be only one CCA TWG member for each country and that a country would only have one vote on issues, but each country could decide how many people from their country could attend a TWG CCA meeting as several of the countries have multiple agencies involved in CCA. The timeline for the tasks listed above will be decided by the TWG CCA.

CLOSING SESSION

At 11:45a.m., MECDM Permanent Secretary Sore officially closed the 2nd Regional Exchange on CCA, thanking participants for their contribution to the development of the REAP-CCA, which he said “belongs to the people of the CT6 – it is because of the people of the CT6 that you are here. What you put in the action plan will benefit the CT6 people and future generations.”



MEDCM Permanent Secretary Rence Sore to participants:
“The REAP-CCA belongs to the people of the CT6.”

ANNEXES

AI. AGENDA

A.I.I. FIELD VISIT, 14-16 April 2011

Day 1: 14 April 2011, Gizo, Western Province		Solomon Islands
13:30	Arrive on Ghizo Island; Briefing on Gizo Field Visit plan – Mr. Brune Manele (WWF)	
14:30	Courtesy call on Office of the Provincial Government Premier	MECDM PS Rence Sore, Dr. Teresa Leonardo (USAID), Mr. Maurice Knight (CTSP), Dr. Stacey Tighe and Resource Team
15:00-19:30	Forum: Telling Our Story; Our Efforts, Our Challenges Welcome statements – Mr. Bruno Manele (WWF) Keynote Address -- Hon. Premier Solingi Lilo (Western Province) Statement -- PS Rence Sore (Solomon Islands MECDM) Overview of climate change work in the Solomon Islands – Mr. Hudson Kauhiona (Solomon Islands MECDM), Agnetha Vave-Karamui (Solomon Islands MECDM) Overview of current climate change work in Gizo integration site -- Dr. Anne-Maree Schwarz (Worldfish Center), Ms. Senoveva Mauli (TNC-Solomon Islands); Mr. Bruno Manele (WWF) Discussion Field visit plan – Mr. Bruno Manele (WWF) Learning Networks, Learning Destinations, Integration Sites and More – Dr. Stacey Tighe	Host: Ms. Nesta Leguvaka (MECDM)
Day 2: 15 April 2011, Gizo, Western Province		Solomon Islands
8:30-9:25	Assemble at Gizo Wharf	
9:30	Depart Ghizo Island for Kennedy Island (Historical significance of island; coastal erosion)	
9:45	Arrive Kennedy Island for Nusatope Island (Worldfish Center station; MPA)	Tour Coordinator: B. Manele (WWF) / Lysa Wini (TNC) / Agnetha Veva-Karamui (MECDM) / Nesta Leguvaka (MECDM)
10:00	Depart Nusatope Island for Njari Island (MPA; coastal erosion; tsunami and earthquake impacts on coral reef/Snorkeling)	
12:00	Depart Njari Island for Sepo Hite (coastal erosion, sea level rise/Lunch)	
13:20	Depart for Ghizo Island	
14:00-17:00	Free time	
17:00	Depart for FatBoys Restaurant (Dinner hosted by Solomon Islands Government)	

Day 3: 16 April 2011, Gizo, Western Province		Solomon Islands
13:00	Depart Ghizo Island for Nusatope Airport	Coordinator: Lysa Wini (TNC) / Agnetha Veva-Karamui (MECDM) / Nesta Leguvaka (MECDM)
14:00	Depart Gizo for Honiara	

AI.2. PLANNING WORKSHOP, 18-21 April 2011

Day 1: 18 April 2011, Heritage Park Hotel		Honiara, Solomon Islands
8:30-12:00	<p>CTI TWG Kick-off meeting</p> <p>CTI CCA data review</p>	<p>Co-chairs: MECDM PS Rence Sore (Solomon Islands) and MMAF Secretary-General Dr. Gellwynn Jusuf (Indonesia)</p> <p>Facilitators: Catherine Courtney (PI) and Stacey Tighe (PI)</p> <p>Facilitators: Britt Parker (NOAA) and Nate Peterson (TNC)</p>
12:00-13:00	Lunch	
13:00-14:45	<p>Opening</p> <p>Welcome Statement -- MECDM PS Rence Sore</p> <p>Session 1: Building the CTI CCA Region-wide Early Action Plan (REAP)</p> <p>Report from the 1st Regional Exchange on CCA, TWG -- Dr. Catherine Courtney (PI)</p> <p>Breakout group discussions on the Draft REAP-CCA framework</p>	<p>Host: Agnetha Vave Karamui (MECDM)</p>
14:45-15:00	Break	
15:00-17:00	<p>Session 2: Financing CCA activities</p> <ul style="list-style-type: none"> CCA Financing Marketplace -- Mr. Richard Leck (WWF) Asia Climate Change Adaptation Project Preparation Facility (ADAPT) – Dr. Teresa Leonardo (USAID) Climate Change Adaptation Partnership Project (AusAID) – Mr. Willie Atu (TNC) <p>Session 3: Linking climate change impacts to resource management</p> <ul style="list-style-type: none"> Gizo Field Trip report – Dr. Anne-Maree Schwarz (Worldfish Center) Introduce CCA Matrix -- Dr. Catherine Courtney (PI)/Ms. Britt Parker (NOAA) Breakout group discussions to define management issues 	<p>Host: Agnetha Vave Karamui (MECDM)</p>
Day 2: 19 April 2011, Heritage Park Hotel		Honiara, Solomon Islands
8:30-10:15	<p>Session 4a: CCA case studies</p> <ul style="list-style-type: none"> Toward CCA in Indonesia – Mr. Syofyan Hasan 	<p>Host: Nesta Leguvaka (MECDM)</p>

	<p>(MMAF)</p> <ul style="list-style-type: none"> • PNG: Status and Example of CCA in PNG – Ms. Luanne Losi (OCCD) and Ms. Edvinah Irale (DEC) • Malaysia: Climate Projections, Impacts and Adaptation/Case Study: Tioman Is, Pahang, Malaysia – Mr. Karthigeyan Veerasamy (NHRI) and Dr. Lay Hoon The (The Maritime Institute of Malaysia) • Status and Example of CCA in Kiribata – Dr. Simon Donner (UBC) 	
10:15-10:30	Break	
10:30-12:00	<p>Session 4b: Defining early actions for CCA</p> <ul style="list-style-type: none"> • Plenary discussion: Review of case studies and identification of adaptation measures relevant to CTI – Dr. Catherine Courtney (PI) • Breakout group discussions – Defining early actions for CCA 	Host: Nesta Leguvaka (MECDM)
12:00-13:00	Lunch	
13:00-14:45	<p>Session 5a: CCA tool case studies</p> <p>Plenary presentations:</p> <ul style="list-style-type: none"> • VA of the Verde Island Passage – Ms. Miledel Christine Quibilan (UPMSI) • Building Resilience of Ecosystems and their Communities to Impacts of Climate Change in the Pacific – Ms. Senoveva Mauli (TNC) • Climate Field School Program, Timor-Leste – Mr. Raimundo Mau (MAF, Timor-Leste) • Adaptation Planning: Identifying and Prioritizing Options – Mr. Glenn Ricci (URI-CRC) • CCA Social Science Tools – Mr. Ravic Nijbroek (CI) <p>Gallery walk:</p> <ul style="list-style-type: none"> • Micronesia Challenge Trust: Community CCA Outreach Toolkit – Ms. Britt Parker (NOAA) • Designing a Resilient MPA Network in Kimbe Bay, PNG – Mr. Nate Peterson (TNC) • Climate Data Tools and Systems – Dr. John Marra (NOAA) 	Host: Nesta Leguvaka (MECDM)
14:45-15:00	Break	
15:00-17:00	<p>Session 5b: Identifying tools for early action</p> <ul style="list-style-type: none"> • Breakout group discussions 	Host: Nesta Leguvaka (MECDM)

Day 3: 20 April 2011, Heritage Park Hotel		Honiara, Solomon Islands
8:30-10:15	<p>Added Session: Climate Issues and the REAP-CCA</p> <ul style="list-style-type: none"> • Plenary discussion: Connecting our work to the REAP-CCA -- Dr. Catherine Courtney (PI) <p>Session 6: Existing Data and Information to Support CCA Early Actions</p> <p>Presentations:</p> <ul style="list-style-type: none"> • CT Atlas -- Mr. Nate Peterson (TNC) 	Host: Anne Schwarz (WorldFish Center)

	<ul style="list-style-type: none"> • Report out on data review session & the existing data matrix -- Mr. Karthigeyan Veerasamy (NAHRIM, Malaysia) <p>Plenary discussion: Information and data sources to inform early actions (global, regional, national, local) -- Mr. John Marra (NOAA)/Mr. Nate Peterson (TNC)</p>	
10:15-10:30	Break	
10:30-12:00	<p>Session 7a: Country Report Development</p> <p>Presentations:</p> <ul style="list-style-type: none"> • CTSP Support for CCA in priority geographies -- Mr. Maurice Knight (CTSP) • Introduction of activity and worksheet <p>Breakout: Country discussions</p>	Host: Anne Schwarz (WorldFish Center)
12:00-1:00	Lunch	
1:00-2:45	<p>Session 7b: Country Report Presentations & REAP</p> <ul style="list-style-type: none"> • Presentations: Country reports • Plenary discussion: Overarching needs and issues, common actions across countries, and opportunities to integrate CCA into ongoing planning efforts 	Host: Anne Schwarz (WorldFish Center)
2:45-3:00	Break	
3:00-5:00	<p>Session 7b: Country Report Presentations & REAP (Continued)</p> <p>Plenary discussion: REAP organization, scope, etc.</p>	Host: Anne Schwarz (WorldFish Center)

Day 4: 21 April 2011, Heritage Park Hotel		Honiara, Solomon Islands
8:30-10:15	<p>Session 8: Capacities to implement tools and early actions</p> <ul style="list-style-type: none"> • Plenary discussion -- Glenn Ricci (URI-CRC) and Miledel Christine Quibilan (UPMSI) 	
10:15-10:30	Break	
10:30-12:00	<p>Session 9: Wrap-up and Next Steps</p> <ul style="list-style-type: none"> • Presentation of 2nd REx-CCA outcomes and next steps to REAP-CCA – Dr. Stacey Tighe (PI) <p>Closing</p> <ul style="list-style-type: none"> • Closing statement – PS Rence Sore (MECDM, Solomon Islands) 	

A2: LIST OF PARTICIPANTS AND RESOURCE PERSONS

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A3. CCA REGIONAL EXCHANGE PARTNERS

A3.1 CCA Technical Working Group

Proposed and informally established during the 1st Regional Exchange on CCA in Ancol, Jakarta, Indonesia in October 2010, the CTI CCA Technical Working Group (TWG) was immediately tasked with developing the CTI CCA Regional Early Action Plan (REAP-CCA). At the time of the 2nd Regional Exchange on CCA in the Solomon Islands on 14-21 April 2011, the TWG was composed of members acting in an ad hoc capacity but its membership and operation were expected to be formalized by 7 May 2011. At present, the TWG is co-chaired by Indonesia and Solomon Islands, defined as leads in the CCA theme during the May 2010 CTI Priority Action and Coordination Workshop; the Indonesia Ministry of Marine Affairs and Fisheries and the USCTI Support Program Integrator are providing some limited staff and technical assistance to the ad-hoc CCA TWG. The TWG's functions, proposed in Oct 2010, include the following: 1) Convene regional CTI-CCA working group meetings/discussions; 2) Coordinate the development and formulation of the REAP-CCA among the CT6 countries and CTI Regional Secretariat and development partners; 3) Organize regional exchanges and workshops on CCA priorities; and 4) Prepare communication materials.

A3.2 Coral Triangle Support Partnership (CTSP)

The Coral Triangle Support Partnership (CTSP) is a five-year project of the US CTI Support Program executed through a cooperative agreement with USAID to the World Wildlife Fund (WWF). This includes a consortium of WWF, Conservation International (CI), and TNC. The CTSP works with government, private sector, and local partners to catalyze transformational change by assisting governments with enabling policy support, strengthening capacity building and institutions, building constituencies, and building decision support capacity.

A3.3 CTI Interim Regional Secretariat

The CTI Interim Regional Secretariat is hosted by the Government of Indonesia and resides in Jakarta. The Secretariat provides long-term, wide ranging support to the CTI governments and partners for implementation of the CTI Regional Plan of Action, particularly through direct support for the various coordination mechanisms. The CTI Regional Secretariat provides coordination, technical, and communications support for CTI-related activities such as the ministerial and senior official meetings, the technical working groups, partners, and the national coordination committees.

A3.4 Solomon Islands Ministry of Environment, Climate Change, Disaster Management and Meteorology (MECDM)

The Ministry of Environment, Climate Change, Disaster Management and Meteorology (MECDM) was established in 2007 and is the lead agency responsible for developing and coordinating the implementation of climate change policy in the Solomon Islands. Originally named "Ministry of Environment, Conservation and Meteorology," it assumed the responsibility for CCA in early 2008 with the creation of its Climate Change Division. In 2010, the agency was also given the responsibility for disaster management, its present name reflecting its expanded scope. The Solomon Islands' CCA framework is based on four major climate-related policy documents, namely, the National Adaptation Program of Action (NAPA), Second Communication to the UNFCCC, National Energy Policy Framework, and National Disaster Management Strategy. The MECDM is now working on developing the Solomon Islands National Climate Change Policy and aims to mainstream CCA in the national development agenda.

A3.5 US CTI Support Program Integrator (PI)

The US CTI Support Program Integrator (PI) provides overarching coordination support to the USG for the implementation of US CTI Support Program. The PI is responsible for coordinating inputs from various US Government (USG) agencies and partners, and for facilitating a unified USG response to the CTI. Activities include facilitating networking and cooperation; promoting information exchange; providing administrative support to USAID's Regional Development Mission for Asia (RDMA); supporting communications and alliance

building among USAID, USG, and other donors to harmonize assistance to the CTI; and providing technical support to the CTI mechanisms to facilitate implementation of the CTI Regional and National Plans of Action.

A3.7 US National Oceanic and Atmospheric Administration (NOAA)

NOAA is a federal scientific agency within the USA Department of Commerce focused on the conditions of the oceans and the atmosphere. It is an important partner in the CTI, providing technical support and capacity building for fisheries management, environmental law enforcement, CCA, and MPA networks.

A4: PARTICIPANTS' BREAKDOWN BY GENDER AND ORGANIZATION

A4.1. FIELD TRIP, GIZO, WESTERN PROVINCE

A.4.1.1. Gender

Category	Male	Female	Ratio
Country Teams	4	4	50/50%
Partners/ Resource persons	6	9	40/60%
Total	10	13	43/57%

A4.1.2. Country Teams' Home Institutions

Government	6	75%
Academe, NGOs and CBOs	2	25%
TOTAL	8	100%

A4.2. CCA PLANNING WORKSHOP, HONIARA

A.4.2.1. Gender

Category	Male	Female	Total	Ratio
Country Teams	18	16	34	53/47%
Partners/ Resource persons	11	10	21	55/45%
Total	29	26	55	53/47%

A4.2.2. Country Teams' Institutions

Government	15	88%
Academe, NGOs and CBOs	2	12%
TOTAL	17	100%

A5: LIST OF PRESENTATIONS

Speeches, presentations and other materials from the 2nd CCA Regional Exchange can be viewed electronically at the US CTI Support Program Integration Portal at www.uscti.org under the Workspaces Section. Photos from the Exchange can also be viewed at the Document Library Section under the Photo Gallery folder and Events sub-folder. To access the portal log in through username: **coral** and password: **triangle** (non-case sensitive).

A.5.1. TELLING OUR STORY FORUM, 14 APRIL 2011, GIZO, WESTERN PROVINCE

- 1) Keynote Address
Western Province Minister of State Richard Tekifono on behalf of Western Province Premier George Solingi Lilo
- 2) Statement
Rence Sore, Permanent Secretary, Ministry of Environment, Climate Change, Disaster Management and Meteorology, Solomon Islands
- 3) Addressing Climate Change in the Solomon Islands
Hudson Kai Kauhiona, Deputy Director, Climate Change Division, Ministry of Environment, Climate Change, Disaster Management and Meteorology, Solomon Islands
- 4) Climate Change Adaptation Partnership Project: Building Resilience of Ecosystems and their Communities to Impacts of Climate Change in the Pacific
Senoveva Mauli, Information/Data Officer, The Nature Conservancy
- 5) Climate Change Vulnerability and Adaptation
Dr. Anne-Marie Schwarz, Country Manager, The WorldFish Center
- 6) Learning Networks, Learning Destinations, Integration Sites and More
Stacey Tighe, Senior Regional Coordinator, US CTI Support Program Integrator

A.5.2. CCA Tools For Action WORKSHOP, 17-21 APRIL 2011, HONIARA, SOLOMON ISLANDS

- 1) Welcome Remarks
Minister Moffat Fugui, Ministry of Environment, Climate Change, Disaster Management and Meteorology, Solomon Islands
- 2) Statement
Rence Sore, Permanent Secretary, Ministry of Environment, Climate Change, Disaster Management and Meteorology, Solomon Islands
- 3) Statement
Keithie Saunders, US Embassy Consular Agent, Solomon Islands
- 4) Status of the Draft Framework for a CCA Region-wide Early Action plan
Catherine Courtney, Senior Coastal Management Advisor, US CTI Support Program Integrator
- 5) CCA Financing Marketplace for CTI
Richard Leck, Climate Change Strategy Leader for the Coral Triangle, WWF-Australia
- 6) Asia Climate Change Adaptation Project Preparation Facility (ADAPT)
Teresa Leonardo, USAID/Asia
- 7) Climate Change Adaptation Project (AusAID)
Willie Atu, Country Manager, TNC

- 8) Gizo Field Trip Report
Anne-Maree Schwarz, Country Manager, The WorldFish Center
- 9) Toward CCA in Indonesia
Syofyan Hasan, Ministry of Marine Affairs and Fisheries
- 10) Status and Example of CCA in PNG
Luanne Losi, Office of Climate Change and Development / Edvinah Irale, Department of Environment and Conservation
- 11) Malaysia: Climate Projections, Impacts and Adaptation/Case Study: Tioman Is., Pahang, Malaysia
Karthigeyan Veerasamy, National Hydraulic Research Institute of Malaysia / Lay Hoon Teh, The Maritime Institute of Malaysia
- 12) Status and Example of CCA in Kiribati
Simon Donner, University of British Columbia
- 13) Vulnerability Assessment of the Verde Island Passage
Miledel Christine Quibilan, University of the Philippines-Marine Science Institute
- 14) Climate Field School Program, Timor-Leste
Raimundo Mau, Ministry of Agriculture and Fisheries
- 15) Adaptation Planning: Identifying and Prioritizing Options
Glenn Ricci, University of Rhode Island-Coastal Resources Center
- 16) CCA Social Science Tools
Ravic Nijbroek, Conservation International
- 17) CT Atlas
Nate Peterson, The Nature Conservancy
- 18) Report-Out on Data Session (Day 1) and Existing Data Matrix
Karthigeyan Veerasamy, National Hydraulic Research Institute of Malaysia
- 19) CTSP Support for CCA in Priority Geographies
Maurice Knight, Chief of Party, Coral Triangle Support Partnership
- 20) Country Reports
 - 20.1. Indonesia
 - 20.2. Malaysia
 - 20.3. PNG
 - 20.4. Philippines
 - 20.5. Solomon Islands
 - 20.6. Timor Leste
- 21) 2nd REx-CCA Outcomes and Next Steps
Stacey Tighe, Senior Regional Coordinator, US CTI Support Program Integrator
- 22) Closing Remarks
Rence Sore, Permanent Secretary, Ministry of Environment, Climate Change, Disaster Management and Meteorology, Solomon Islands

Other Workshop Outputs

1. Data Sharing Matrix (consolidated)
2. Full Consolidated List of Climate Issues and Actions from Sessions 3-5b
3. Capacity Building Initial Desktop Assessments and Plans for Priority CCA Issue

A6: TIMELINE OF REAP-CCA ACTIVITIES

Week Ending		Activities	Roles
1	29-Apr	Incorporate outputs from REx2 into initial draft REAP Review REx2 outputs, existing NAPAs, and country priorities	PI WT
2	06-May	Revised draft REAP sent to Writing Team (WT) (May 3)	PI
3	13-May	Review and input on draft REAP Conference call with WT to discuss inputs	WT WT, PI
4	20-May	Incorporate inputs and comments	WT, PI
5	27-May	Revised Draft REAP sent to WT	WT, PI
6	03-Jun	Consultation with and inputs from NCCs	WT
7	10-Jun	Consultation with and inputs from NCCs	WT
8	17-Jun	Review and finalization of REAP	WT, PI
9	24-Jun	Final consultation with NCCs and bring comments to TWG	WT
10	01-Jul	CCA TWG-Ministerial Meeting	

PI = US CTI Support Program Integrator

WT = Writing Team

A7: REVISED THEMES/TOOLS (ACTIONS) MATRIX TEMPLATE (FROM ADDED SESSION ON DAY 3) USED IN THE DEVELOPMENT OF COUNTRY REPORTS (SESSION 7A)

Themes/Tools (Actions)	Marine/Coastal Ecosystems (MPA/Seascapes & CCA Lens)	Livelihoods and Food Security (Fisheries & CCA Lens)	Coastal Community and Coastal Infrastructure (CCA Core)
Climate Issue #			
Risk & Vulnerability Assessment			
Capacity Building (Technical, Training, Inst Development)			
Data/Information Management Monitoring			
Disaster Preparedness			
Public Awareness (IEC, Communication, Education)			
Governance/Policy/Enforcement			
Financial Resources			
Research & Technology			
Monitoring Evaluation & Reporting			
Partnership Building			

A8: ADDITIONAL NOTES FROM THE DATA REVIEW SESSION (HONIARA WORKSHOP, DAY 1, 18 APRIL 2011)

The Data Session was attended by Data/GIS Representatives from the CT6 countries. Its objectives were as follows:

1. Identify data resources that exist in each country and capacity of each country partner to use GIS technology.
 - a. What data are countries currently using to address CCA?
 - b. What are the key layers that should be used to inform CCA?
2. Identify ways of using local information to augment scientific data or deal with lack of scientific data.
3. Identify the challenges of and opportunities for sharing data (technical, political, etc.) and draft a data sharing agreement for the REAP-CCA.
4. Inform country representatives on the tools, data and partners that exist that can help put together information for VA.
5. Inform country representatives of the climate change predictions for the region, countries and specific sites.

Ms. Britt Parker (NOAA) and Mr. Nate Peterson (TNC) facilitated the discussions.

Data Session I: Available data and information for VA at global and regional Scales

Presentation: CT Atlas (<http://ctatlas.reefbase.org>)

Presentation and plenary discussion (Presenter: Nate Peterson / Facilitators: Nate Peterson and Britt Parker)

The CT Atlas is an online web-mapping service for sharing data (particularly spatial data) that is currently being developed as a collaborative effort between five NGOs. Now in its Phase 2 of development focused on working with governments to share data, the Atlas is hosted by Reefbase, and data are contributed by the partners working in the region to collect spatial data.

The CT Atlas addresses three main objectives for the US CTI Support Program, said Mr. Peterson. These are:

1. To compile base layers essential for measuring the success of CTI.
2. To compile and provide a visual representation of the indicators developed by CTSP and the CT6 to measure progress.
3. To provide the foundation for a regionally accessible platform that informs regional, national and sub-national scale decisions regarding coastal and marine resources management and conservation.

A summary of the CT Atlas datasets were handed out to participants for review.

To demonstrate the Atlas's features, Mr. Peterson showed participants screenshots of the CT Atlas web interface using a few examples of current data holdings, as well as two examples of maps produced using datasets from the Atlas. The first map, produced by the Wildlife Conservation Society (one of the CT Atlas partners), illustrated the "Marine Human Footprint"; the second was an analysis by the IUCN showing Red List Data for Corals and Groupers. The Atlas uses a Google Application Programming Interface for online web mapping.

Emphasizing the US-CTI partnership, Mr. Peterson explained that the CT Atlas can facilitate coordination between CTI partners on the ADB-led SCTR, data management to promote KM, and the measurement of indicators by M&E groups. The Atlas initially focused on MPAs and the associated habitats, but is now moving towards incorporating data to support CCA and fisheries as well. The CT Atlas partners hope to identify a champion in each of the CT6 countries to help review priority layers for management and identifying gaps in data layers and capacity.

Discussion

Following his presentation, Mr. Peterson answered questions from the participants.

Q: Is contribution to the CT Atlas voluntary?

A: It is completely voluntary, and it takes into account the data sharing regulations of each country. Varying

degrees of access to information can be granted for different user categories.

Q: How are the CT Atlas and data connected?

A: The Atlas functions as a tool to connect data users with the data. Some data are available and stored on the Reefbase servers, some data are linked to the Atlas from other sources, and other data may have a description but cannot be accessed directly from the Atlas.

Q: Is there a standard for CT Atlas data?

A: There are no firm rules on datasets but we do have a standard for metadata.

Q: In Philippines, datasets are available for VA to support the CTI's goals, but these datasets are not listed in the CT Atlas summary.

A: Each country has regulations, culture and systems for data sharing, and in some countries we have yet to establish a point of contact to facilitate data collection. The CT Atlas portal can be a place where each country can share data and still control access to such data.

Presentation: Threat analyses for coral reefs (www.wri.org/reefs)

Presentation and plenary discussion (Presenter: Nate Peterson in behalf of Ms. Elizabeth Macleod (TNC/World Resources Institute / Facilitators: Nate Peterson and Britt Parker)

This presentation on “Threat analyses for coral reefs” was made by Mr. Peterson in behalf of Ms. Elizabeth Macleod (TNC/World Resources Institute). Focusing in particular on local threats to coastal development, watershed-based pollution, marine-based pollution and damage, and overfishing and destructive fishing, Mr. Peterson explained the drivers of high vulnerability using a global-scale map of high vulnerability nations and territories, which included five of the CT6 countries.

The analyses employed historical SST study derived from Coral Reef Temperature Anomaly Database. Based on the distribution, it can be seen that reef areas in the Bismarck Sea, Papua, and Lesser Sunda Eco-regions experienced the highest mean annual maximum degree heating weeks (DHWs) over the 10 year dataset (1996–2005), followed by the Solomon archipelago and Halmahera Eco-regions. The Palawan/North Borneo and Northeast Sulawesi Eco-Regions had the lowest mean annual maximum DHWs over the time series. Subsequently, climate projections of regional patterns of thermal stress by 2100 were derived using coupled global circulation models. As a result, the decadal average (2091–2100) of the annually accumulated DHWs was projected for the CT region and compared for each Eco-region: Halmahera and the Bismarck Sea are expected to have the highest annually accumulated DHWs, and the Lesser Sunda and Palawan/North Borneo are expected to have the lowest annually accumulated DHWs for the decade in review.

As a final result, a map of eco-region distribution of integrated thermal stress from historical SST/climate projections and human regions was presented. Thermal stress is estimated as the combination of historical thermal stress and projected thermal stress, and local stress is the combination of coastal development, marine-based pollution, overexploitation of marine resources, inland pollution and erosion (from Reefs at Risk). The distribution indicates that North Maluku of Indonesia and Bismarck Sea have the highest thermal stress index while Kupang, Indonesia, Celebes Sea and Polillo Island, Philippines have a high local stress index.

In the ensuing discussion, participants suggested the establishment of a “share point,” where scientific publications could be geo-referenced to areas in the CT. They said having a centralized access to this type of materials would benefit the CT6 countries.

Data Session 2: Going local – Traditional knowledge, local knowledge, and community participatory processes to complement scientific data

Presentation and plenary discussion (Presenter: Senoveva Mauli / Facilitators: Senoveva Mauli and Nate Peterson)

Ms. Mauli presented on the P3DM exercise conducted in three Pacific countries as part of the AusAID-funded Climate Change Adaptation Partnership Project. Led by TNC, the Project is being implemented by partners and communities specifically in Choiseul Province, Solomon Islands; Manus Province, PNG; and the Marshall Islands. The Project utilizes four participatory tools to build capacity and develop adaptations: (1) P3DM,

(2) household surveys, (3) participatory video and (4) cultural heritage mapping. The presentation focused on P3DM, a participatory mapping methodology that allows communities to visualize their village environment under different climate change scenarios (in this project, sea-level rise issue was highlighted) and to understand what areas will be affected and how the community might respond. The P3DM activity in Choiseul Province took place on 21-26 February 2011.

The first step in the P3DM process is to determine the study area and prepare base maps. For Choiseul, 5- and 10-meter contour lines were traced from the base maps onto large cardboard sheets. After gluing the cardboard sheets together to form a 3D relief model of the area, the model was painted by the community to identify key features. Pins and strings with different colors were also used to identify significant features. The community had the lead role in building the model with guidance from TNC and staff from the PNG group Partners in Melanesia.

Ms. Mauli said other activities were being conducted to build on the community learning derived from P3DM. Mr. Javier Leon (University of Wollongong, Australia) used a professional grade GPS to build a local DEM to show the extent of previous tsunami events and display possible levels of inundation. A “participatory video” exercise is also currently underway in Chivoko Village, Choiseul Province, Solomon Islands, and cultural heritage mapping will be conducted in June and July in the Arnavon Community Managed Marine Area, also in the Solomons.

Data Session 3: Defining data and information by country, theme and scale

Ms. Parker and Mr. Peterson asked the participants to break out into country groups where they discussed and compiled a list of potential data layers then fed them into the Country Data Matrix (see Annex 5 for access instructions). Considerations taken into account in compiling the matrix were relevancy to management questions and data scale of regional, national and local, as well as the type of data available.

The participants were divided into three break-out groups according to geographical similarities, as follows: (1) Indonesia, (2) PNG and the Solomon Islands, and (3) Malaysia and the Philippines, facilitated by Dita Anggraeni, Nate Peterson and Kate Lance, respectively. The summary results are compiled below, and the detailed country reports can be found on the www.uscti.org website with other session material from this REX.

COLLATED: INITIAL EXISTING DATA AND INFORMATION ON CLIMATE CHANGE ADAPTATION COMPILED FROM THE CTI PARTNERS AND CT6

No		Indonesia	Malaysia	Papua New Guinea	Philippines	Solomon	Timor-Leste
1.	Governance						
	Administrative						
	Jurisdictional boundaries	Yes	Yes	Yes	Yes	Yes	Yes
	Political boundaries	Yes	Yes	Yes	Yes	Yes	No
	Population	Yes	Yes	Yes	Yes	Yes	Yes
	Land use		Yes	Yes	?	Maybe	Yes
2.	Risk Assessment and Disaster Preparedness						
	Hazards						
	Sea Level Rise	Partial	Yes	Yes	?	No	No
	Coastal erosion	Partial	Yes	Yes	?	No	No
	ENSO events	Partial		Yes	Yes	?	No
	Hurricanes/Typhoons	Partial	Yes	Yes	Yes	?	No
	Flooding	Yes	Yes	Yes	Yes	?	Yes
	Drought	Yes	Yes	Yes	Yes	?	Yes
	Volcano (added)	Yes	-	-	-	-	-
	Tsunami (added)	Yes	-	-	-	-	-
	Gempa (added)	Yes	-	-	-	-	-

COLLATED: INITIAL EXISTING DATA AND INFORMATION ON CLIMATE CHANGE ADAPTATION COMPILED FROM THE CTI PARTNERS AND CT6

No		Indonesia	Malaysia	Papua New Guinea	Philippines	Solomon	Timor-Leste
	Vulnerability	Yes	Yes	Yes	Yes (?)		Partial
	Vulnerability - Climate Change (added) Vulnerability - Coastal Hazards (added)	Yes Yes	- -	- -			
	Population	Yes	Yes	Yes	Yes	Yes	Yes
	Critical Infrastructure		Yes	Yes	Yes	Maybe	Yes
	Pollution (added) Air Water Land	Yes Yes Yes	-	-	-	-	-
	Forest Fire (added)	Yes	-	-	-	-	-
	Disaster Preparedness						
	Early Warning systems	Yes	No	Yes	Yes	?	No
	Community Preparedness	Yes	No	Yes	Yes	?	No
	Emergency Response	Yes	No	Yes	Yes	?	No
	Recovery		No	Yes	Yes	?	No
3.	Marine and Coastal Ecosystems						
	Physical Environment						
	Sea surface temperature	Yes	Yes	No	Yes	No	No
	Currents	Yes	Yes	No	Yes	No	
	Rivers and river outlets	Yes	Yes	Yes	Maybe	Yes	Yes

COLLATED: INITIAL EXISTING DATA AND INFORMATION ON CLIMATE CHANGE ADAPTATION COMPILED FROM THE CTI PARTNERS AND CT6

No		Indonesia	Malaysia	Papua New Guinea	Philippines	Solomon	Timor-Leste
	Topographic features	Yes	Yes	Yes	Yes	Yes/Maybe	Yes
	DEM	No	Yes	Yes	Yes	Maybe	Yes
	Bathymetry	Yes	Yes	Yes	Yes	No	No
	Natural Resources						
	Fish biodiversity	Yes	Yes	Yes	Yes	No (except for very local sites)	Partial
	Coral biodiversity	Yes	Yes	Yes	Yes	No (except for very local sites)	Partial
	Seagrass biodiversity	Yes	Yes	Yes	Yes	No (except for very local sites)	Partial
	Marine Species biodiversity Benthos Community (added)	Yes	Yes	Yes	Yes	No (except for very local sites)	Partial
	Habitat Features						
	Landmass	No	Yes	Yes	Yes	Yes	No
	Coastline	Yes	Yes	Yes	Yes	Yes	Yes
	Wetlands/Mangroves/Marshes	Yes	Yes	Yes	Yes	Yes	Yes
	Beaches	Yes	Yes	No	Yes	No	Yes
	Estuary	Yes	Yes	No	Yes	No	Yes
	Coral Reef	Yes	Yes	No	Yes	Yes	Yes

COLLATED: INITIAL EXISTING DATA AND INFORMATION ON CLIMATE CHANGE ADAPTATION COMPILED FROM THE CTI PARTNERS AND CT6

No		Indonesia	Malaysia	Papua New Guinea	Philippines	Solomon	Timor-Leste
4.	Coastal Infrastructure						
	Critical infrastructure	Yes	Yes	Yes	Yes	Yes	Yes
	Ports and Airports	Yes	Yes	Yes	Yes	Yes	Yes
	Schools	Yes	Yes	Yes	Yes	Yes	Yes
	Urban areas	Yes	Yes	Yes	Yes	Maybe	Yes
5.	Food Security and Livelihoods						
	Forestry	?	Yes	Yes	Yes	Yes	Yes
	Fisheries	Yes	Yes	Yes	Yes	?	Yes
	Tourism	Yes	Yes	Yes	Yes	?	Partial
	Aquaculture	Yes	Yes	Yes	Yes	?	Partial
	Rainfall (added)	Yes	-	-	-	-	-

INDONESIA: DRAFT EXISTING DATA AND INFORMATION ON CLIMATE CHANGE ADAPTATION		
No	Participant: Syofyan Hasan, Dirhamsyah, Dita A.	Describe existing datasets and scale of coverage
1.	Governance	
	Administrative	
	Jurisdictional boundaries	Yes, BPS, Ministry of Home Affairs, Villages, Ministry of Foreign Affairs for boundaries with neighboring countries, National Survey, Mapping Agency
	Political boundaries	Yes, See Above
	Population	Yes, Population 2009, National Statistical Bureau, Ministry of Home Affairs (Village)
	Land use	Yes
2.	Risk Assessment and Disaster Preparedness	
	Hazards	
	Sea Level Rise	Partial, HIDROS, Bakosurtanal, LIPI, BRKP (national level)
	Coastal erosion	Partial, PU, KKP (National)
	ENSO events	Partial, BMKG (high resolution)
	Hurricanes/Typhoons	Partial, BMKG (high resolution)
	Flooding	Yes, PU and LH (National and Municipal)
	Drought	BMKG
	Volcano	BMKG, Badan Vulkanology (SDM) – volcanic risk

INDONESIA: DRAFT EXISTING DATA AND INFORMATION ON CLIMATE CHANGE ADAPTATION		
No	Participant: Syofyan Hasan, Dirhamsyah, Dita A.	Describe existing datasets and scale of coverage
	Tsunami	KKP, BPPT (national)
	Earthquake	SDM, BMKG
	Vulnerability (CCA)	Partial, Jawa Bagian Utara
	Vulnerability (Coastal Hazards)	Yes
	Population	Yes, Population 2009, National Statistical Bureau, Ministry of Home Affairs (Village)
	Critical Infrastructure	
	Pollution	Yes, LH
	- Water	Yes
	- Air	Yes
	- Land	
	Fire and Forest	Yes, LH and Forestry (national)
	Disaster Preparedness	Yes, LIPI (National – BNPB)
	Early Warning systems	Yes, DKP, BPPT, BMKG (national)
	Community Preparedness	Yes, LIPI (national)
	Emergency Response	Yes (National Provincial)
	Recovery	
3.	Marine and Coastal Ecosystems	
	Physical Environment	Yes, KKP, LIPI (kabupaten)

INDONESIA: DRAFT EXISTING DATA AND INFORMATION ON CLIMATE CHANGE ADAPTATION		
No	Participant: Syofyan Hasan, Dirhamsyah, Dita A.	Describe existing datasets and scale of coverage
	Sea surface temperature	Yes, KKP, BMKG (national, kabupaten)
	Currents	Yes, LIPI, Hidros, BAKO, Dept Hub. (national)
	Rivers and river outlets	Yes, Forestry, PU (village, high resolution)
	Topographic features	Yes, Bakosurtanal (1:25000)
	DEM	No, Bakosurtanal (ongoing)
	Bathymetry	Yes, Bakosurtanal (ongoing)
	Natural Resources	Yes
	Fish biodiversity	Yes, LIPI (species)
	Coral biodiversity	Yes, LIPI (species)
	Seagrass biodiversity	Yes, LIPI (species)
	Marine Species biodiversity	Yes, LIPI (species - taxa)
	Benthos Community	
	Habitat Features	
	Landmass	No
	Coastline	Yes, KKP and Bakosurtanal
	Wetlands/Mangroves/Marshes	Yes, Forestry, LH (kabupaten)
	Beaches	Yes, Bakosurtanal (villages)

INDONESIA: DRAFT EXISTING DATA AND INFORMATION ON CLIMATE CHANGE ADAPTATION		
No	Participant: Syofyan Hasan, Dirhamsyah, Dita A.	Describe existing datasets and scale of coverage
	Estuary	Yes, LIPI, KKP, Bakosurtanal (villages)
	Coral Reef	Yes, LIPI, time series
4.	Coastal Infrastructure	
	Critical infrastructure	Yes, PU (coastline – data point)
	Ports and Airports	Yes, PELINDO, Dep Hub (data point) – ports Yes, Angkasa (data point)
	Schools	Yes, DIKNAS
	Urban areas	Yes, PU, Home Affairs
5.	Food Security and Livelihoods	
	Forestry	Maybe, Forestry
	Fisheries	Yes, KKP
	Tourism	Yes, Dep Bud Par
	Aquaculture	Yes, KKP
	Rainfall	BMKG

MALAYSIA: DRAFT EXISTING DATA AND INFORMATION ON CLIMATE CHANGE ADAPTATION

No	Participant: Karthigeyan Veerasamy	Describe existing datasets and scale of coverage
1.	Governance	
	Administrative	
	Jurisdictional boundaries	Yes, Malaysia Election Board
	Political boundaries	-
	Population	Yes, National Statistical Dept of Malaysia
	Land use	Yes, Department of Survey
2.	Risk Assessment and Disaster Preparedness	
	Hazards	No, have to check further
	Sea Level Rise	Yes, National Hydraulic Research Inst of Malaysia
	Coastal erosion	Yes, Drainage and Irrigation Dept (National Projection)
	ENSO events	-
	Hurricanes/Typhoons	Yes, Available Malaysian Meteorological Dept
	Flooding	Yes, Flooding information, National level, Drainage and Irrigation Dept
	Drought	Yes, Malaysia Meteorological Dept
	Vulnerability	Yes, National Hydraulic Research Inst of Malaysia
	Population	Yes, Malaysian Statistical Dept

MALAYSIA: DRAFT EXISTING DATA AND INFORMATION ON CLIMATE CHANGE ADAPTATION

No	Participant: Karthigeyan Veerasamy	Describe existing datasets and scale of coverage
	Critical Infrastructure	Yes, Ministry of Transport of Malaysia
	Disaster Preparedness	No, Have to refer to Prime Minister Department
	Early Warning systems	No, Have to refer to Prime Minister Department
	Community Preparedness	No, Have to refer to Prime Minister Department
	Emergency Response	No, Have to refer to Prime Minister Department
	Recovery	No, Have to refer to Prime Minister Department
3.	Marine and Coastal Ecosystems	
	Physical Environment	Yes, National Hydraulic Research Inst of Malaysia (Drainage and Irrigation Dept of Malaysia)
	Sea surface temperature	Yes, Malaysia Meteorological Dept
	Currents	Yes, National Hydraulic Research Inst of Malaysia (Drainage and Irrigation Dept of Malaysia)
	Rivers and river outlets	Yes, National Hydraulic Research Inst of Malaysia (Drainage and Irrigation Dept of Malaysia)
	Topographic features	Yes, Survey Dept of Malaysia
	DEM	Yes, Survey Dept of Malaysia
	Bathymetry	Yes, Royal Naval of Malaysia
	Natural Resources	Yes
	Fish biodiversity	Yes, Fishery Dept of Malaysia
	Coral biodiversity	Yes, Not full update yet Marine Park of Malaysia just started to map new areas and update the old

MALAYSIA: DRAFT EXISTING DATA AND INFORMATION ON CLIMATE CHANGE ADAPTATION

No	Participant: Karthigeyan Veerasamy	Describe existing datasets and scale of coverage
		database
	Seagrass biodiversity	Yes, Not full update yet Marine Park of Malaysia just started to map new areas and update the old database
	Marine Species biodiversity	Yes, Referring to Various Agencies and University Marine Park of Malaysia Fisheries Dept of Malaysia
	Habitat Features	Yes, Not a complete database
	Landmass	Yes, Geological Dept of Malaysia
	Coastline	Yes, National Hydraulic Research Inst of Malaysia (Drainage and Irrigation Dept of Malaysia)
	Wetlands/Mangroves/Marshes	Yes, Forest Dept of Malaysia
	Beaches	Yes, National Hydraulic Research Inst of Malaysia (Drainage and Irrigation Dept of Malaysia)
	Estuary	Yes, National Hydraulic Research Inst of Malaysia (Drainage and Irrigation Dept of Malaysia)
	Coral Reef	Yes, Not complete dataset yet, currently update by Marine Park of Malaysia
4.	Coastal Infrastructure	
	Critical infrastructure	Yes, Survey Dept of Malaysia
	Ports and Airports	Yes, Ministry of Transport
	Schools	Yes, Education Ministry of Malaysia
	Urban areas	Yes, Statistical Ministry of Malaysia

MALAYSIA: DRAFT EXISTING DATA AND INFORMATION ON CLIMATE CHANGE ADAPTATION

No	Participant: Karthigeyan Veerasamy	Describe existing datasets and scale of coverage
5.	Food Security and Livelihoods	
	Forestry	Yes, Forestry Dept of Malaysia
	Fisheries	Yes, Fisheries Dept Malaysia
	Tourism	Yes, Tourism Ministry of Malaysia
	Aquaculture	Yes, Fisheries Development Board of Malaysia

PAPUA NEW GUINEA: DRAFT EXISTING DATA AND INFORMATION ON CLIMATE CHANGE ADAPTATION

No	Participant: Edwinah, Nate	Describe existing datasets and scale of coverage
1.	Governance	
	Administrative	
	Jurisdictional boundaries	Yes. Boundaries for Local Level Government and Provinces. Data sourced from the PNGRIS data set (Univ. of PNG) and the PNG Nat'l Mapping Bureau.
	Political boundaries	Yes. National country boundary Data sourced from the PNGRIS data set (Univ. of PNG) and the PNG Nat'l Mapping Bureau.
	Population	Yes. Data sourced from the PNGRIS data set (Univ. of PNG) and the PNG Census Bureau (Nat'l Statistics Office)
	Land use	Variable. Follow up with Dept of Agriculture and Livestock (DAL), Nat'l Forest Authority (NFA), Dept. of Petroleum and Energy (DPE) – mining leases
2.	Risk Assessment and Disaster Preparedness	
	Hazards	
	Sea Level Rise	Nothing known in country. Follow up with Nat'l Disaster Office (NDO), National Weather Service, National Maritime Safety Authority (NMSA), Port Moresby Geophysical Observatory (PMGO)
	Coastal erosion	Nothing known in country. Follow up with Nat'l Disaster Office (NDO)
	ENSO events	Nothing known in country. Follow up with Nat'l Disaster Office (NDO), Maybe National Weather Service, National Agriculture Research Institute (NARI)

PAPUA NEW GUINEA: DRAFT EXISTING DATA AND INFORMATION ON CLIMATE CHANGE ADAPTATION

No	Participant: Edvinah, Nate	Describe existing datasets and scale of coverage
	Hurricanes/Typhoons	Nothing known in country. Follow up with Nat'l Disaster Office (NDO)
	Flooding	Nothing known in country. Follow up with Nat'l Disaster Office (NDO)
	Drought	Nothing known in country. Follow up with Nat'l Disaster Office (NDO)
	Vulnerability	Office of Climate Change and Development (OCCD)
	Population	Yes. Data sourced from the PNGRIS data set (Univ. of PNG) and the PNG Census Bureau (Nat'l Statistics Office)
	Critical Infrastructure	Need to clarify what these features are. Follow up with Gerard Natera at Dept of Env and Conservation (DEC)
	Disaster Preparedness	
	Early Warning systems	Not known. Follow up with NDO
	Community Preparedness	Not known. Follow up with NDO
	Emergency Response	Not known. Follow up with NDO
	Recovery	Not known. Follow up with NDO
3.	Marine and Coastal Ecosystems	
	Physical Environment	PNGRIS
	Sea surface temperature	None. Source from NOAA
	Currents	No. Although Nate has seen current models for the Bismarck Sea
	Rivers and river outlets	Yes, PNGRIS

PAPUA NEW GUINEA: DRAFT EXISTING DATA AND INFORMATION ON CLIMATE CHANGE ADAPTATION

No	Participant: Edvinah, Nate	Describe existing datasets and scale of coverage
	Topographic features	Yes – UPNG GeoBooks and global sets from Gazetteers (ESRI)
	DEM	Only the SRTM data. Although Nate has heard of some DEM mapping from the Australian Gov't.
	Bathymetry	No local source.
	Natural Resources	
	Fish biodiversity	Only for local sites associated with conservation projects. (UPNG, DEC, NFA)
	Coral biodiversity	Only for local sites associated with conservation projects. (Coral reef data from Millennium Mapping Project – Manus, Kimbe, Moay)
	Seagrass biodiversity	Only for local sites associated with conservation projects. (UPNG)
	Marine Species biodiversity	Only for local sites associated with conservation projects. (UPNG, DEC)
	Habitat Features	
	Landmass	Yes. Country boundary
	Coastline	Yes. Country boundary
	Wetlands/Mangroves/Marshes	Yes – but It's from 1996 – the Forest Information Management System (FIMS) Global source for mangroves from Global Atlas of Mangroves (Spalding et al)
	Beaches	No
	Estuary	No
	Coral Reef	Millennium Coral Reef Mapping in some areas. Global scale data in other areas for full coverage
4.	Coastal Infrastructure	

PAPUA NEW GUINEA: DRAFT EXISTING DATA AND INFORMATION ON CLIMATE CHANGE ADAPTATION

No	Participant: Edwinah, Nate	Describe existing datasets and scale of coverage
	Critical infrastructure	Not known. Follow up with Dept. of Works
	Ports and Airports	Not known. Follow up with Dept. of Works (Civil Aviation Authority (CAA), National Mapping Bureau, PNG Ports)
	Schools	Yes. In PNGRIS through UPNG. Also follow up with Nat'l Census Bureau. (PNGRIS, NSO, Education Dept)
	Urban areas	Yes. In PNGRIS through UPNG. Also follow up with Nat'l Census Bureau. (Office of Urbanization)
5.	Food Security and Livelihoods	
	Forestry	PNG Forest Authority for current data. Or use the FIMS data.
	Fisheries	Not known. Follow up with Nat'l Fisheries Authority
	Tourism	Not known. Follow up with Tourism Promotion Authority (Culture and Tourism)
	Aquaculture	Not known. Follow up with Nat'l and Provincial Fisheries, Dept. of Ag. And Lands, PNG Sustainability Development Program

PHILIPPINES: EXISTING DATA AND INFORMATION ON CLIMATE CHANGE ADAPTATION

No	Participant: Sandee Recabar	Describe existing datasets and scale of coverage
1.	Governance	
	Administrative	Yes - Department of Interior and Local Government (DILG) http://www.dilg.gov.ph
	Jurisdictional boundaries	Yes – DILG
	Political boundaries	Yes - DILG
	Population	Yes – 2007 Census then projected population (annual). Can be seen at the National Statistical Coordination Board (NSCB) http://www.nscb.gov.ph NSCB also provides yearly report that includes population information (projected annually based on the latest Census – 2007) at the LGU level (Provincial/City/Municipal level)
	Land use	Check with the Forest Management Bureau (FMB) and Department of Agriculture (DA), Housing and Land-use Regulatory Board (HLURB), Land Management Bureau (LMB) and NAMRIA for this.
2.	Risk Assessment and Disaster Preparedness	
	Hazards	<ul style="list-style-type: none"> • Yes, Hazard maps as part of the project of the Manila Observatory and the Department of Environment and Natural Resources (DENR) • Manila Observatory has hazard maps for the Philippines and has ranked top 20 provinces vulnerable to hazards such as volcanic eruption, typhoons, droughts, temperature, rainfall, etc. • Geo-hazard maps by the Mines and Geosciences Bureau (MGB) – can be used for vulnerability assessments • PAGASA (weather bureau) for flooding, climate trends and scenarios (national; monthly average projections)
	Sea Level Rise	Check with DENR – PEMSEA; Project ICE CREAM (now called RESILIENT SEAS) – Project funded by Department of Science and Technology (DOST)

PHILIPPINES: EXISTING DATA AND INFORMATION ON CLIMATE CHANGE ADAPTATION

No	Participant: Sandee Recabar	Describe existing datasets and scale of coverage
		There is a graph of Sea Level Rise for Manila, Davao and another City. I just don't know what year it was taken
	Coastal erosion	Check with Marine Science Institute (MSI), DENR
	ENSO events	Yes. Check with PAGASA. They have data for 1998 El Nino
	Hurricanes/Typhoons	Yes, We have data from PAGASA and Manila Observatory (Rainfall)
	Flooding	Yes, Check with Disaster Coordinating Council, PAGASA, Manila Observatory, UP NIGS The Mines and Geosciences Bureau also has a map of landslides and flood prone areas in the Philippines
	Drought	Yes check with PAGASA, Department of Agriculture, Manila Observatory
	Vulnerability	Yes, Depends on the sector. Check with PAGASA, DENR (and its attached agencies), DA, DILG, MANILA OBSERVATORY, MSI, PHILVOLCS. Further vulnerability assessments still needed to be conducted in different sectors.
	Population	Yes – 2007 Census then projected population (annual). Can be seen at the National Statistical Coordination Board (NSCB) http://www.nscb.gov.ph NSCB also provides yearly report that includes population information (projected annually based on the latest Census – 2007) at the LGU level (Provincial/City/Municipal level)
	Critical Infrastructure	Yes, Check with Department of Public Ways and Highways (DPWH), Metro Manila Development Authority (MMDA), National Economic Development Authority (NEDA)
	Disaster Preparedness	Yes, Check with Department of National Defense and the Disaster Coordinating Council
	Early Warning systems	Yes, Check with PAGASA and PHILVOLCS for information on early warning systems. Manila Observatory (MO) has a project with SMART Telecommunications before on Telemetric Rain Gauges.

PHILIPPINES: EXISTING DATA AND INFORMATION ON CLIMATE CHANGE ADAPTATION

No	Participant: Sandee Recabar	Describe existing datasets and scale of coverage
	Community Preparedness	Yes, Check with National Disaster and Risk Management Coordinating Council, DILG, LGUs The Philippines has a DRR law that includes the critical actors and their respective roles for DRR; DRR network in the Philippines
	Emergency Response	Yes, National Disaster and Risk Management Coordinating Council, DILG, LGUs. The Philippines has a DRR law that includes the critical actors and their respective roles for DRR; check with the DRR network in the Philippines
	Recovery	Yes, National Disaster and Risk Management Coordinating Council, DILG, LGUs. The Philippines has a DRR law that includes the critical actors and their respective roles for DRR; check with the DRR network in the Philippines
3.	Marine and Coastal Ecosystems	
	Physical Environment	Yes. Check with Department of Environment and Natural Resources (DENR) and state colleges like Siliman University, Mindanao State University, University of the Philippines - Marine Science Institute (MSI)
	Sea surface temperature	Yes. Check with DENR, MSI, NAMRIA
	Currents	Yes. Check with MSI, Philippine Navy, NAMRIA
	Rivers and river outlets	Check with DENR attached agencies such as Environmental Management Bureau (EMB), Bureau of Soils and Water Management (BSWM)
	Topographic features	Yes. Check with NAMRIA – mapping agency of the Philippines
	DEM	Yes. Check with NAMRIA
	Bathymetry	Yes. Check with MSI, Philippine Navy, NAMRIA

PHILIPPINES: EXISTING DATA AND INFORMATION ON CLIMATE CHANGE ADAPTATION

No	Participant: Sandee Recabar	Describe existing datasets and scale of coverage
	Natural Resources	<p>Yes. Check with DENR specifically its attached agencies such as Protected Areas and Wildlife Bureau (PAWB), Forest Management Bureau (FMB), Environmental Research and Development Bureau (ERDB); Department of Agriculture (DA)</p> <p>NSCB also has some data on Natural Resources, summary data is provided online at http://www.nscb.gov.ph</p> <p>National Statistical Yearbook</p>
	Fish biodiversity	Yes. Check with Bureau of Fisheries, World Fish (database on fish base, sea life base), PCMARRD (Dept of Science and Technology attached agency)
	Coral biodiversity	<p>Yes, Check with DENR, state universities like UP-MSI, Mindanao State University, etc.</p> <p>MPA Support Network</p>
	Seagrass biodiversity	Yes, Check with DENR, state universities like UP-MSI, Mindanao State University, etc.
	Marine Species biodiversity	<p>Yes, Check with DENR, state universities like UP-MSI, Mindanao State University, etc.</p> <p>MPA Support Network</p>
	Habitat Features	Yes. Check with DENR and its attached bureaus such as ERDB, PAWB
	Landmass	Yes. Check with DENR
	Coastline	Yes. Check with DENR esp. NAMRIA
	Wetlands/Mangroves/Marshes	Yes check with DENR and some LGUs with data on mangroves, etc.
	Beaches	Yes. Check with DENR

PHILIPPINES: EXISTING DATA AND INFORMATION ON CLIMATE CHANGE ADAPTATION

No	Participant: Sandee Recabar	Describe existing datasets and scale of coverage
	Estuary	Yes. Check with DENR – need for updating
	Coral Reef	Yes, Check with DENR and state universities MPA Support Network
4.	Coastal Infrastructure	
	Critical infrastructure	Yes, Check with Department of Public Ways and Highways (DPWH)
	Ports and Airports	Yes. Check with DPWH and Department of Transportation and Communication (DOTC)
	Schools	Yes, Check with Department of Education (DepED)
	Urban areas	Yes check with DILG
5.	Food Security and Livelihoods	
	Forestry	Yes check with the Forestry Management Bureau (FMB) – they have data for forest land cover,
	Fisheries	Yes check with Bureau of Fisheries
	Tourism	Yes, check with Department of Tourism (DOT) – Priority Tourism Areas by type on a regional scale Also check the Department of Labor and Employment (DOLE)
	Aquaculture	Yes check with Bureau of Fisheries

SOLOMON ISLANDS: DRAFT EXISTING DATA AND INFORMATION ON CLIMATE CHANGE ADAPTATION

No	Participant: Senoveva Mauli, Willie Atu and Nate	Describe existing datasets and scale of coverage
1.	Governance	
	Administrative	
	Jurisdictional boundaries	Yes. Provincial Boundaries, Constituencies (for elections), and Ward Boundaries Sourced from Dept of Lands
	Political boundaries	Yes. Provincial Boundaries, Constituencies (for elections), and Ward Boundaries Sourced from Dept of Lands
	Population	Yes. Recent census completed. Follow up with Census Office, Ministry of Lands (Nat'l Geophysical Centre)
	Land use	Maybe. Follow up with Ministry of Lands, Ministry of Ag We do have data showing mining leases and logging areas (2008)
2.	Risk Assessment and Disaster Preparedness	
	Hazards	
	Sea Level Rise	Doubtful. Follow up with Nat'l Disaster Management Office within the Ministry of Env, Conservation, Climate Change, and Disaster Management And Meteorology.
	Coastal erosion	Doubtful. Follow up with Nat'l Disaster Management Office within the Ministry of Env, Conservation, Climate Change, and Disaster Management And Meteorology.
	ENSO events	Doubtful. Follow up with Nat'l Disaster Management Office within the Ministry of Env, Conservation, Climate Change, and Disaster Management And Meteorology.

SOLOMON ISLANDS: DRAFT EXISTING DATA AND INFORMATION ON CLIMATE CHANGE ADAPTATION

No	Participant: Senoveva Mauli, Willie Atu and Nate	Describe existing datasets and scale of coverage
	Hurricanes/Typhoons	Not known. Follow up with Nat'l Disaster Management Office within the Ministry of Env, Conservation, Climate Change, and Disaster Management And Meteorology.
	Flooding	Not known. Follow up with Nat'l Disaster Management Office within the Ministry of Env, Conservation, Climate Change, and Disaster Management And Meteorology.
	Drought	Not known. Follow up with Nat'l Disaster Management Office within the Ministry of Env, Conservation, Climate Change, and Disaster Management And Meteorology.
	Vulnerability	
	Population	Yes. Recent census completed in 2010 (Ministry of Lands, Statistics Office)
	Critical Infrastructure	Need to clarify what these features are. Follow up with Ministry of Infrastructure or Dept. of Lands. Dept. of Lands does have GIS data on bridges, roads, airports.
	Disaster Preparedness	
	Early Warning systems	Not known. Follow up with Nat'l Disaster Management Office within the Ministry of Env, Conservation, Climate Change, and Disaster Management And Meteorology.
	Community Preparedness	Not known. Follow up with Nat'l Disaster Management Office within the Ministry of Env, Conservation, Climate Change, and Disaster Management And Meteorology.
	Emergency Response	Not known. Follow up with Nat'l Disaster Management Office within the Ministry of Env, Conservation, Climate Change, and Disaster Management And Meteorology.
	Recovery	Not known. Follow up with Nat'l Disaster Management Office within the Ministry of Env, Conservation, Climate Change, and Disaster Management And Meteorology.
3.	Marine and Coastal Ecosystems	

SOLOMON ISLANDS: DRAFT EXISTING DATA AND INFORMATION ON CLIMATE CHANGE ADAPTATION

No	Participant: Senoveva Mauli, Willie Atu and Nate	Describe existing datasets and scale of coverage
	Physical Environment	
	Sea surface temperature	None. Source from NOAA
	Currents	No
	Rivers and river outlets	Yes
	Topographic features	Only known from global sets in Gazetteer (ESRI)
	DEM	Only the SRTM data. Although Nate has heard of some DEM mapping from "Intermap"??
	Bathymetry	No local source. (Global Dataset – GEBCO)
	Natural Resources	
	Fish biodiversity	Only for local sites associated with conservation projects. TNC Solomon Isl. Rapid Ecological Assessment (2004) for local sites
	Coral biodiversity	Only for local sites associated with conservation projects. TNC Solomon Isl. Rapid Ecological Assessment (2004) for local sites; Millennium Mapping Project
	Seagrass biodiversity	Only for local sites associated with conservation projects. TNC Solomon Isl. Rapid Ecological Assessment (2004) for local sites
	Marine Species biodiversity	Only for local sites associated with conservation projects. TNC Solomon Isl. Rapid Ecological Assessment (2004) for local sites
	Habitat Features	
	Landmass	Yes. Country boundary
	Coastline	Yes. Country boundary

SOLOMON ISLANDS: DRAFT EXISTING DATA AND INFORMATION ON CLIMATE CHANGE ADAPTATION

No	Participant: Senoveva Mauli, Willie Atu and Nate	Describe existing datasets and scale of coverage
	Wetlands/Mangroves/Marshes	Yes – from old forestry data source. Global source for mangroves from Global Atlas of Mangroves (Spalding et al)
	Beaches	No
	Estuary	No
	Coral Reef	Millennium Coral Reef Mapping for full country.
4.	Coastal Infrastructure	
	Critical infrastructure	Yes. Ministry of Infrastructure or Dept of Lands
	Ports and Airports	Yes. Ministry of Infrastructure or Ministry of Lands
	Schools	Yes. Ministry of Infrastructure or Dept of Lands & Statistics Office
	Urban areas	Maybe. Ministry of Infrastructure or Dept of Lands & Statistics Office
5.	Food Security and Livelihoods	
	Forestry	Yes. Ministry of Forestry
	Fisheries	Not known. Follow up with Ministry of Fisheries
	Tourism	Not known. Follow up with Ministry of Tourism – Visitors Bureau (SI)
	Aquaculture	Not known. Follow up with Ministry of Fisheries.

Data Session 4: Regional data sharing agreements and standards: What works, what doesn't?

Presentation and plenary discussion (Presenter: Kate Lance / Facilitator: Britt Parker and Nate Peterson)

In this presentation, Dr. Lance explained current data sharing practices based on global similarities. For example, various government ministries within one country might hold different data according to their individual functions. Conversely, there are data practices that are driven by inter-ministerial needs which demand sharing of data and devices for efficiency, improvement of public service delivery and monitoring.

Dr. Lance cited the following common issues on data sharing:

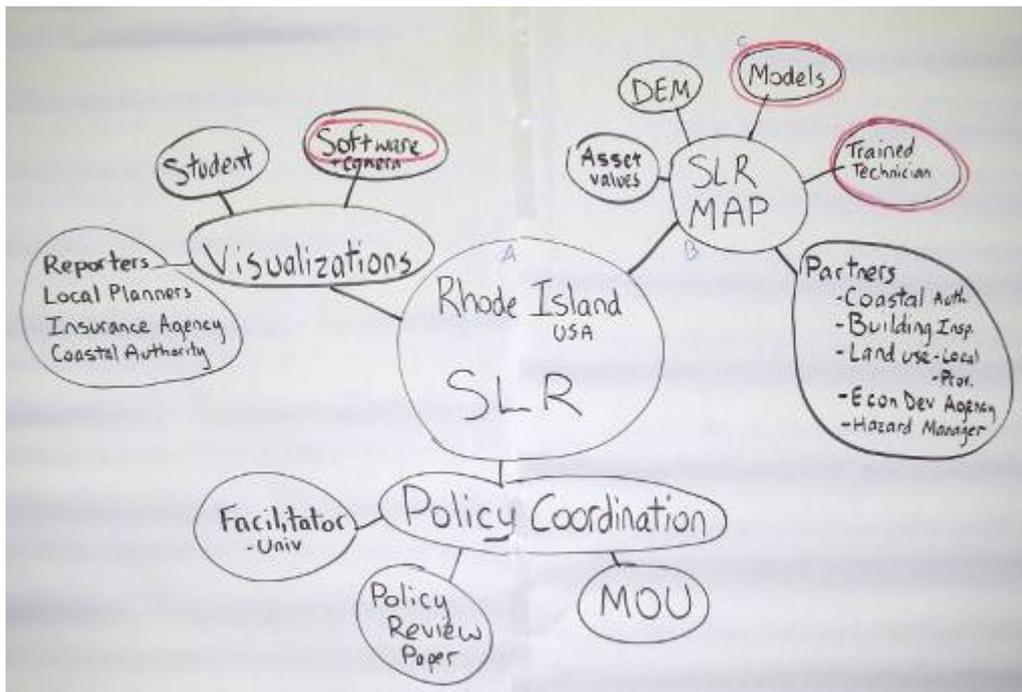
1. Maintaining data control
2. Complicated data sharing agreements
3. Poor data documentation
4. Lack of standards
5. Limited capacity and/or infrastructure
6. Personal privacy and public safety
7. Data misuse and exploitation
8. Differing perspectives

For each issue, Dr. Lance explained what actions and considerations might work and what would not work. She concluded by saying that data sharing is valuable because data quality improves with greater data sharing through broader quality assurance/quality control and greater attention to the organization. Data sharing can also open up opportunities to leverage data and reduces the creation of competing/duplicative datasets.

In the ensuing discussion, participants described some country-specific challenges to data sharing, as follows:

- In Philippines, data sharing is constrained mainly by a lack of common knowledge on data holdings and how they can be shared between the national and local agencies.
- In the Solomon Islands, differences in data standards between the different agencies are a major challenge to data sharing.
- In Indonesia, “ego-sectoral” issues and policies and unclear data sharing rules and policies obscure the benefits that may be derived from data sharing.
- Participants from Malaysia reported that, in their country, data sharing among citizens is well-developed, and some country data are made freely available to other nationals through the various government websites. The data sharing policy needed to be reviewed to allow more sharing with other countries, they added.

A9. DETAILS FROM SESSION 8 ON CAPACITY BUILDING FOR CCA



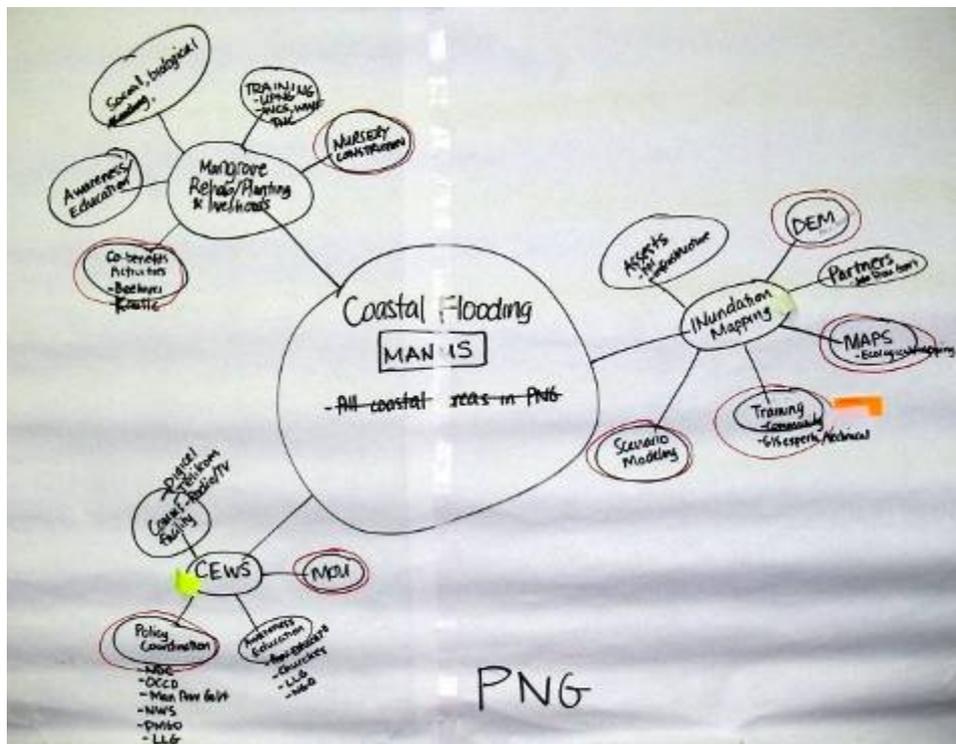
Example of a Mind Map for the State of Rhode Island on the issue of Sea Level Rise, noting the capacities needed for a Map of Sea Level Rise, for Visualizations and for Policy Coordination. Items circled in Red indicate elements that they already have available.



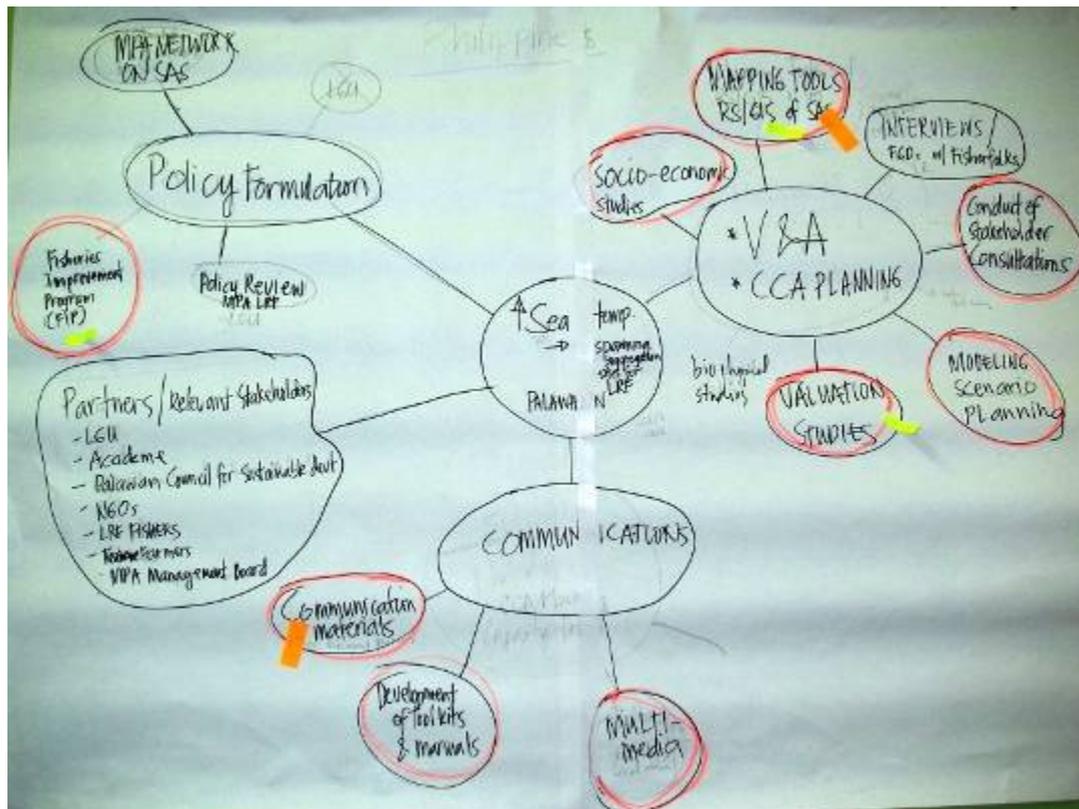
Indonesia: Mind Map of Capacity Building needs for Sea Level Rise issue, focussing on public awareness, policy coordination, and the combination of information and implementation mechanisms to act. Central Circle identifies issues and priority sites. Small tags in yellow and orange indicate elements where other CT6 countries think there is potential for coordination and sharing.



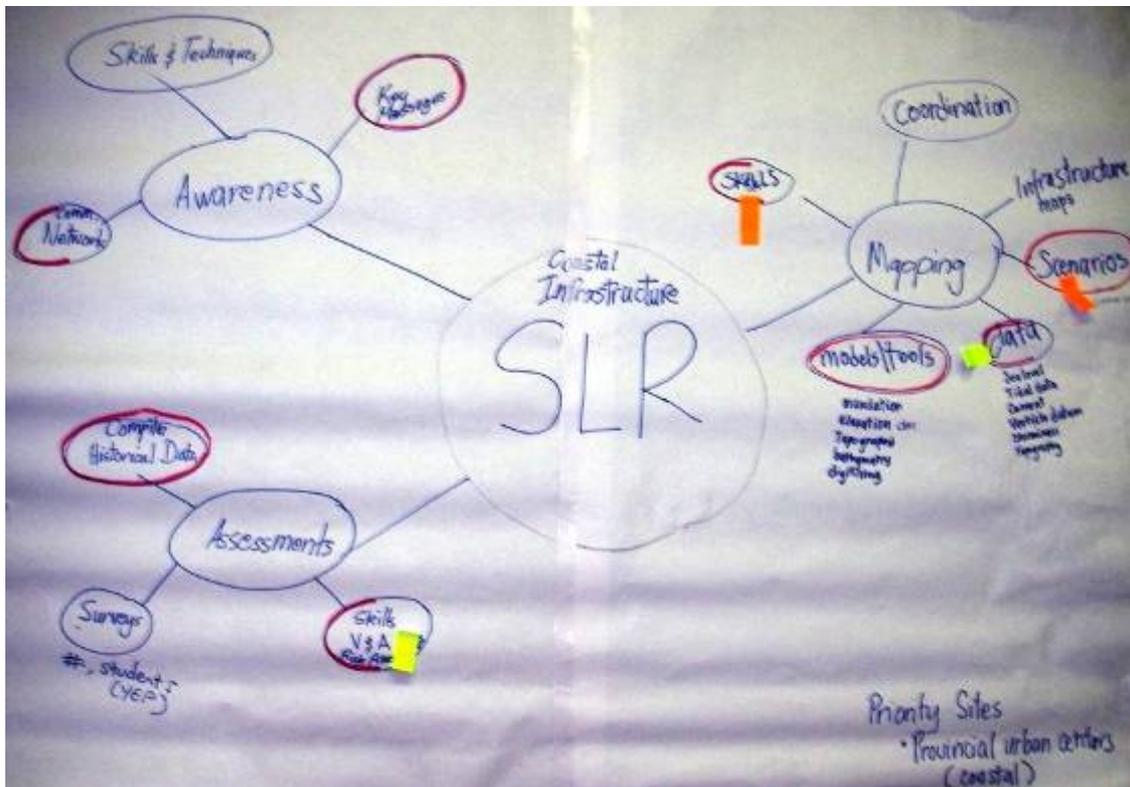
Malaysia: Mind Map of Capacity Building needs for Sea Level Rise issue in Sabah focussing on science and projections where they already have some capacities, as well as Policy Coordination, Public Awareness and Partners which need more effort or support.



PNG: Mind Map of Capacity Building needs for Coastal Flooding issue in Manus Province focussing on science, projections and policy coordination where they already have some capacities, as well as Mangrove rehabilitation, and Public Awareness which need more effort or support. Small tags in yellow and orange indicate elements other CT6 countries think there is potential for coordination and sharing.



Philippines: Mind Map of Capacity Building needs for Sea Surface Temperature issue focusing on V&A and CCA Planning, and Public Awareness/Communications where they already have some capacities, as well as Policy Formulation and Partners which need more effort or support.



Solomon Islands: Mind Map of Capacity Building needs for Sea Level Rise and Coastal Infrastructure in urban coastal areas, focusing on Mapping where they already have information, and Awareness and Assessments where more effort is needed.



Timor-Leste: Mind Map of Capacity Building needs for Flooding issue focussing on Mapping and Modelling where they already have some information and capacity, as well as Interagency Coordination, Reforestation and Early Warning which need more effort or support. Small tags in yellow and orange indicate elements other CT6 countries think there is potential for coordination and sharing.