Pacific Biodiversity and Climate Change: Ecosystem-Based Adaptation – Analysis and Needs Assessment

Design the Scope of the Project

Summary report of a workshop convened by SPREP on 6th and 7th May 2010

SPREP

Summary

The Pacific Island Countries and Territories are recognised as being particularly vulnerable to climate change. The Secretariat of the Pacific Regional Environment Programme (SPREP) has received funding from the Australian government to undertake an assessment of biodiversity and climate change in the Pacific in relation to ecosystem-based adaptation (EBA), to be completed by 30 June 2011. The primary purpose of the grant is to develop a full size project, while at the same time producing a preliminary assessment of the relationship between, and likely impacts of, climate change and biodiversity.

A two-day workshop was held at the SPREP headquarters in Apia, Samoa in May 2010, to plan how to spend the current grant and to draw together initial ideas for a larger project. Delegates came from ten countries/territories in the region representing both environment and climate change ministries; along with representatives from SPREP, Conservation International, UNDP and UNEP.

The morning of the first day of the workshop was spent providing in plenary a quick overview of the current impacts of climate change in the Pacific, introducing the basic concepts behind EBA, outlining possible uses of EBA in the Pacific (all based on the short overview paper circulated before the meeting) and reviewing the various tools available to develop a baseline of data and knowledge for implementing EBA. Based on that information, in the afternoon two working groups (for larger and small islands) completed a simple gap analysis of information available for developing EBA projects in the region.

The morning of the second day started with a short plenary session reviewing the work of day 1 and providing a quick overview of the suggested objectives and activities in the draft pilot phase project outline, which had been circulated before the meeting. After a short plenary discussion reviewing and elaborating the overall objectives of the project the two working groups were reformed and the morning was spent reviewing the pilot project objectives and considering possible activities. The afternoon was also primarily spent in the two working groups but in this session the objectives and activities of the larger project were discussed.

Overall the workshop was well received by participants, and in an evaluation of the workshop the participatory nature of the process was noted. It was clear however that the possibilities of introducing ecosystem-based adaptation into the Pacific has had relatively little consideration and the development of baseline data analysis and assessment, which is provided by the funding for the pilot phase project, is greatly needed to ensure that a larger project will be capable of delivering EBA in the region.

The major gaps outlined in the meeting, which are reflected in the development of the revised pilot project log-frame in Appendix 1, include:

- Lack of experience in use of ecosystem services within climate change adaptation
- Lack of clarity on the usefulness of climate modelling and predictions for the Pacific region
- The need for climate and biodiversity data in the region to be better documented and harmonised, and for some major gaps in information to be filled. Also capacity development is needed in terms of using data and on-going monitoring.
- The need to review and if necessary adapt tools for using and monitoring EBA in the particular conditions with the Pacific region
- The need to integrate a wide variety of sources of information into data relating to climate change including locally collected data and TEK and further to develop local data, e.g. through community based monitoring etc
- A need to promote greater integration between various regional and international processes, such as the UNFCCC and CBD, with respect to ecosystem based adaptation

Acronyms

CBD: Convention on Biological Diversity
CCA: Community Conserved Areas
COP: Conference of Parties
EBA: Ecosystem-Based Adaptation
ESS: Ecosystem Services
GEF: Global Environment Facility
GIS: Geographic Information System
GTZ: Deutsche Gesellschaft für Technische Zusammenarbeit
HEP: Hydroelectric Power
IBA: Important Bird Areas
ICCA: Indigenous and Community Conserved Areas
ICCAI: International Climate Change Adaptation Initiative (of the Australian government)
IYB: International Year of Biodiversity
KBA: Key Biodiversity Areas
MPA: Marine Protected Area
NAPA: National Adaptation Programme of Action
NBSAP: National Biodiversity Strategy and Action Plan
NCSA: National Capacity Self-Assessment (for Global Environmental Management)
NGO: Non-Governmental Organisation
NTFPs: Non-Timber Forest Products
PA: Protected Area
PACC: Pacific Adaptation to Climate Change
PICTs: Pacific Island Countries and Territories
PoWPA: Programme of Work on Protected Areas (of the CBD)
RAPPAM: Rapid Assessment and Prioritization of Protected Areas Management
REDD+: Reducing Emissions from Deforestation and Forest Degradation[1]
SoE: State of the Environment
SPBCP: The South Pacific Biodiversity Conservation Programme
SPC: Secretariat of the Pacific Community
SPREP: Secretariat of the Pacific Regional Environment Programme
SOPAC: South Pacific Applied Geoscience Commission
TEK: Traditional Environmental Knowledge
UN: United Nations
UNDP: UN Development Programme
UNEP: UN Environment Programme
UNEP-WCMC: UNEP's World Conservation Monitoring Centre
UNFCCC: UN Framework Convention on Climate Change
USP: University of the South Pacific
WH: World Heritage

[1] UNFCCC COP 13 defined REDD+ in the Bali Action Plan as: Policy approaches and positive incentives on issues relating to reducing emissions from deforestation and forest degradation in developing countries; and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries

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Welcoming remarks to the SPREP Workshop on Pacific Biodiversity and Climate Change

David Sheppard, Director, SPREP

Welcome to this important workshop, which links climate change and biodiversity conservation and ecosystem based adaptation.

Welcome to participants. I hope you have all had a good trip here and are energized and ready for a busy two days ahead. It is pleasing to see a good representation of Pacific countries/territories and it is also good that a number of you are staying on next week to attend the PACC – Pacific Adaptation to Climate Change – meeting. Welcome to Nigel Dudley and Sue Stolton, our experienced international consultants.

This is an important workshop and an important topic. Climate Change is the current hot topic throughout the Pacific. We are all aware of the serious and immediate threats facing the low lying atolls and islands of the Pacific. In all our Pacific countries/territories climate change is not just an environmental issue – it is also an issue with major social, economic and moral dimensions. As the President of Kiribati put it in his speech at Copenhagen, *"climate change is overarching and it is a matter of national security".*

Many of us from the Pacific travelled to Copenhagen to participate in the Climate Change Meeting in Copenhagen in December last year. Not only was it very cold but the outcome was far less than expected. It is interesting to note that the organisers of the next UNFCCC meeting in Mexico are lowering expectations – perhaps they have learnt the lesson of Copenhagen.

The key outcome from the Copenhagen Conference was the Copenhagen Accord. In the Pacific this Accord has had a mixed reception. Some countries/territories have signed, some have not, and some are undecided. It is understood that the Government of Japan, as a key donor in the region, has noted that future funding for climate change may be linked to whether or not countries/territories have signed the Accord. Whatever happens with the Accord, it is clear is that there will be a quantum increase in the amount of future funding for the Pacific.

A major slice of this funding will be for adaptation to climate change. What is obvious to us but is perhaps less obvious to others, including those providing the money, is that nature based adaptation offers one of the most cost effective and efficient ways to positively address climate change. We saw in Samoa that the protection of coastal mangroves and vegetation was one of the most effective ways to protect coastal communities from the impacts of the tragic Tsunami in October last year. The protection of the catchment area surrounding Pohnpei in Federated States of Micronesia is one of the most effective ways to ensure water quality and supply in the face of climate change. There are many other examples, but we as professionals in biodiversity must better make the case that an investment in biodiversity is an investment in climate change adaptation. This message is not getting through at the moment, particularly to donors.

Many proposals and suggestions from donors on climate change have crossed my desk in recent times. Very few appear to have made the link between climate change and ecosystem based adaptation. This concerns me. This workshop is thus very important – both in terms of developing a framework for moving forward in this area but also in terms of developing the case and arguments for Ecosystem Based Adaptation as a key tool for addressing climate change in the Pacific. It is particularly important to make the case and linkages at national levels – you as professionals in environmental and natural resource management agencies need to be convincing other Ministries, particularly Ministries of Finance - which will be directly involved in decisions regarding the allocation of climate funds - as to why an investment

in environmental protection is an investment in climate change. We all need to make the economic case of the importance of biodiversity for protecting fundamental requirements for life in the Pacific, such as the provision of clean water, the protection of fisheries, as well as the protection of basic attractions and assets for the tourism sector.

Linkages also need to be made with donors and also within our own organisations. Within SPREP, for example, I think there are opportunities for building strong and effective links between this project and the PACC Project. I understand a number of you will be attending the PACC meeting next week and also that a number of you are PACC national coordinators. Please consider how we can develop these projects in a mutually reinforcing way.

A key outcome of this workshop is to agree the scope of this current project and to discuss options for a future, larger project. In doing this I would urge you to consider the practical issues of implementation – in particular how we can build ownership of the project at the country level, and also which donors may be interested in funding a larger project. In this context the coming GEF 5 may provide a useful opportunity and a potential funding source for this project. However national ownership and buy in will be essential.

I would urge you to consider opportunities for partnership in moving forward on this project. The challenges relating to biodiversity conservation and climate change in the Pacific are too big for any one organisation to tackle – we can and we must work better together. It is good to see Conservation International, UNEP and UNDP and represented here – let's look at how we can develop this as a joint and cooperative project. I would also urge you to be opportunistic in the development of this project

This year is the International Year of Biodiversity (IYB), celebrated in the Pacific under the theme *"Value Island Biodiversity – It's Our Life".* SPREP, working with partners, has developed an Action Strategy for the Year of Biodiversity, which has been widely circulated. We are also strengthening our capacity to help Pacific countries/territories on biodiversity matters and we are delighted to have recently welcomed Easter Galuvao to our team. Additional biodiversity related staff will be starting at SPREP over the next few months, including a Terrestrial Ecosystems Management Officer and a Biodiversity Intern – an exciting opportunity for a young Pacific professional.

We heard about many exciting national level IYB activities in Pacific countries/territories at the recent CBD workshop held here last month: TV documentaries in Tonga, holding a Lagoon Day in the Cook Islands, the development of a biodiversity phone book in Palau, and many others. There are also a number of key events coming up, including the Pacific Nature Conservation Roundtable, to be hosted by SPREP in Apia in July, and the CBD COP 10 in Japan in October. I would urge this workshop to look at how we can use these events and activities as opportunities to move forward the development and implementation of this project on biodiversity and climate change in the Pacific.

Thanks again for coming to this important workshop and I look forward to hearing the result. I am very confident of an excellent outcome given the quality of the participants and the quality of our consultants. Samoa is a beautiful country and there is a long weekend coming up. So please also take the opportunity to look around and visit some of Samoa's many sites and attractions. I wish you all a productive and successful workshop and I look forward to joining you for the final sessions tomorrow.

Thank you
Fa'afetai lava

Background to workshop

The Pacific Island Countries and Territories or PICTs (i.e. American Samoa, Cook Islands, Fiji Islands, French Polynesia, Guam, Kiribati, Commonwealth of the Northern Marianas, Marshall Islands, Federated States of Micronesia, Nauru, New Caledonia, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu, Vanuatu, Wallis and Futuna) are recognised as being particularly vulnerable to climate change.

The Secretariat of the Pacific Regional Environment Programme (SPREP) has received funding from the Australian government through its International Climate Change Adaptation Initiative (ICCAI) to undertake an assessment of biodiversity and climate change in the Pacific, to be completed by 30 June 2011. The primary purpose of the grant is to develop a full size project, while at the same time producing a preliminary assessment of the relationship between, and likely impacts of, climate change and biodiversity. The project will examine how these impacts can be addressed through ecosystem-based adaptation measures, including approaches to biodiversity conservation such as protected area networks, watershed protection, landscape and 'ridge-to-reef' approaches, etc.

A workshop was held at the SPREP headquarters in Apia, Samoa in May 2010, to plan how to spend the current grant and to draw together initial ideas for a larger project. Delegates came from ten countries/territories in the region, along with representatives from SPREP, Conservation International, UNDP and UNEP.

Day 1: Pacific Biodiversity and Climate Change. EBA Analysis and Assessment

Introduction

Following an introduction by SPREP director **David Sheppard** (reproduced above) **Stuart Chape** provided some background information about the project. There are already a number of climate change projects in the Pacific – SPREP's concern is to move forward on adaptation. To do this we need to look at whole ecosystems; which are vital for natural resource sustainability. There is some opportunity to initiate this process through Australian funding in the shape of a small project over the next 12 months. This is in effect a scoping exercise in preparation for a much bigger project to be carried out throughout the region. A lot of activities and money is already going into climate change activities in the Pacific – but there is a need to pull these all these initiatives together and ensure that ecosystem based adaptation is integrated into other programmes. The project therefore aims to produce some concrete achievements over the next 12 months and also to serve as a platform for something much bigger in the future.

Status of climate change in the Pacific and the potential for ecosystem-based adaptation

Sue Stolton, Equilibrium Research

The presentation provided a brief overview of climate change in the region along with an introduction to ecosystem-based adaptation (EBA) and some of the challenges in introducing EBA in the Pacific. The Pacific Islands could become a model for demonstrating EBA as a response to climate change.

Problems from climate change: include sea-level rise, increasing temperatures, changes in rainfall, ocean acidification, decline of coral reefs and increased storm activity. There is also a particular issue of vulnerable species: the Pacific is a biodiversity hotspot with high levels of endemism and many new species being described. Mangroves, montane species and dryland vegetations are particularly at risk from climate change; pressures are increased because of existing damage to ecosystems and also because a number of species are over-exploited. These problems translate directly into impacts on human livelihoods: loss of non-timber forest products (NTFPs), decline in soil fertility, increased vulnerability to disasters, decline in fisheries and water stress.

The challenge of ecosystem-based adaptation: EBA is defined as the use of biodiversity and ecosystem services as part of adaptation strategies to help us cope with the adverse effects of climate change. Unfortunately, the Millennium Ecosystem Assessments says that 60 per cent of ecosystem services are already under stress: both from long-term and short-term stresses, so the potential for EBA is declining at the same time as the need for EBA is being increasingly recognised.

The opportunity: in practice use of EBA in the Pacific will require a mixture of conserving and where necessary rebuilding useful natural ecosystems: ***protect***, ***manage*** and ***restore***. Protection can in this case include many different approaches, from government protected areas to community reserves. Protecting, managing and restoring natural systems through the conservation of biodiversity can contribute to responses in many ways:

- ***Water***: natural vegetation almost always increases water purity and in some cases (e.g. in tropical cloud forests) also quantity
- ***Fisheries***: much research shows that protecting fish stocks helps to builds numbers resulting in spill-over outside reserved areas and thus increased fish catch, often within 2 or 3 years
- ***Health***: intact habitat can often directly help protect against the spread of diseases and natural biodiversity can also provide medicines for both traditional use and as a basis of pharmaceuticals

- ***Food***: biodiversity provides agricultural genetic material from crop wild relatives and traditional land-races and also provides necessary pollination services and sources of subsistence food
- ***Natural disasters***: natural ecosystems can absorb many of the impacts of floods, land slips and storm surges and can help to protect against droughts and desertification

For example, in the Pacific, natural ecosystems can:

- Buffer against sea level rise
- Protect against natural disasters such as flooding, tidal surge, land slip and drought – particularly forests (especially on steep slopes), coastal mangroves, coral reefs and wetlands
- Help to maintain healthy fisheries
- Help preserve water quality and sometimes water flow
- Buffer against the spread of some invasive species

Challenges within EBA: however, ecosystem-based adaptation is still a relatively new concept for many people and has challenges of its own. Some key issues that need to be addressed by the workshop, and by the follow-up projects relate to:

- **Information base**: do we know enough to understand the impacts or plan responses?
- **Policy**: is there an effective enabling environment to link biodiversity and climate change?
- **Trade-offs**: what may be good for pure biodiversity conservation may not have the same role in EBA and *vice versa*; which will take precedence and where?
- **Resilience**: how do we build resilience to climate change in the Pacific?
- **Monitoring**: any EBA needs good monitoring and evaluation incorporated into the project and how to do this is still not fully understood
- **Partnerships**: need to be developed with relevant sectors, communities, ministries and also other agencies (e.g. disaster relief agencies) and this will take time and effort
- **Integrity of protected areas**: it will be important to ensure that if we are using conservation strategies for ecosystem based adaptation that they are effective

Discussion on ecosystem based adaptation: The following points were brought up by participants:

✓ Malaria in **Papua New Guinea** is spreading into areas in the highlands that have never had the disease before and where people have no natural resistance – this now affects almost half the population. Landslides are increasing – these are affecting infrastructure and are occurring on such a scale that it is hard to know how to respond. Populations in some low-lying islands are already at risk from inundation and the government is talking about trying to move people to the mainland

✓ There have already been many conservation interventions in the Pacific over the years yet species continue to decline: perhaps we need a **new approach**.

✓ The issue of traditional ecological knowledge (TEK) has frequently been discussed but generally TEK has not been applied to these issues

✓ In **Tonga** the sea is starting to inundate; some regions have built foreshores but mangroves are used to strengthen foreshores: perhaps we need a mixture of EBA with built infrastructure. Mangrove restoration is monitored and villagers give informal information on their protective function.

✓ The question of **carbon fertilisation** needs to be addressed including lack of data. Most carbon dioxide fertilisation studies are laboratory based and therefore not based on real world monitoring.

- ✓ In terms of **adaptation** work, we need to focus on win-win situations; i.e. building resistance to stress that is already present.

- ✓ There is an opportunity to link EBA with the ongoing **PACC** project – e.g., the climate proofing of the circum-island road on Kosrae and protection of mangroves and wetland ecosystems – adding a monitoring element to the existing PACC project could be useful. REDD+ is critical here – adaptation and mitigation financing could be combined. SPREP should consider an ecosystem approach to a REDD+ project linked to existing projects

- ✓ A recent **coral reef and community workshop** with UNEP-WCMC addressed the same challenges and issues so the results should be incorporated into the current project.

- ✓ Countries/territories have already prepared **NBSAPs**, along with planning for the **NAPA** project, **PACC** project etc so links are important. The PACC project has local examples and should serve as a source.

- ✓ It is difficult to distinguish climate and **non-climate impacts** at a local level; now climate change is seen as providing funding opportunities it has come up the agenda of governments and communities.

- ✓ Another element to consider is the **Pacific Climate Change Science** project which includes work on downscaling of climate models and getting more specific information for countries/territories. Within a year there should be far more detailed modelling information available in some countries/territories.

- ✓ Incursion of **salt-water into cropland** is also a serious problem; can this be addressed by EBA? Many atoll islands are on average only 3 metres above sea-level. Groundwater is the major source of water during drought so that inundation becomes critical. Mangrove rehabilitation is one response – there has been a Ramsar project working with a community willing to have its foreshore declared as a protected area. One of the major problems with EBA is engagement with the community – hard to get them involved because they want something (usually money) as well and this is not always available.

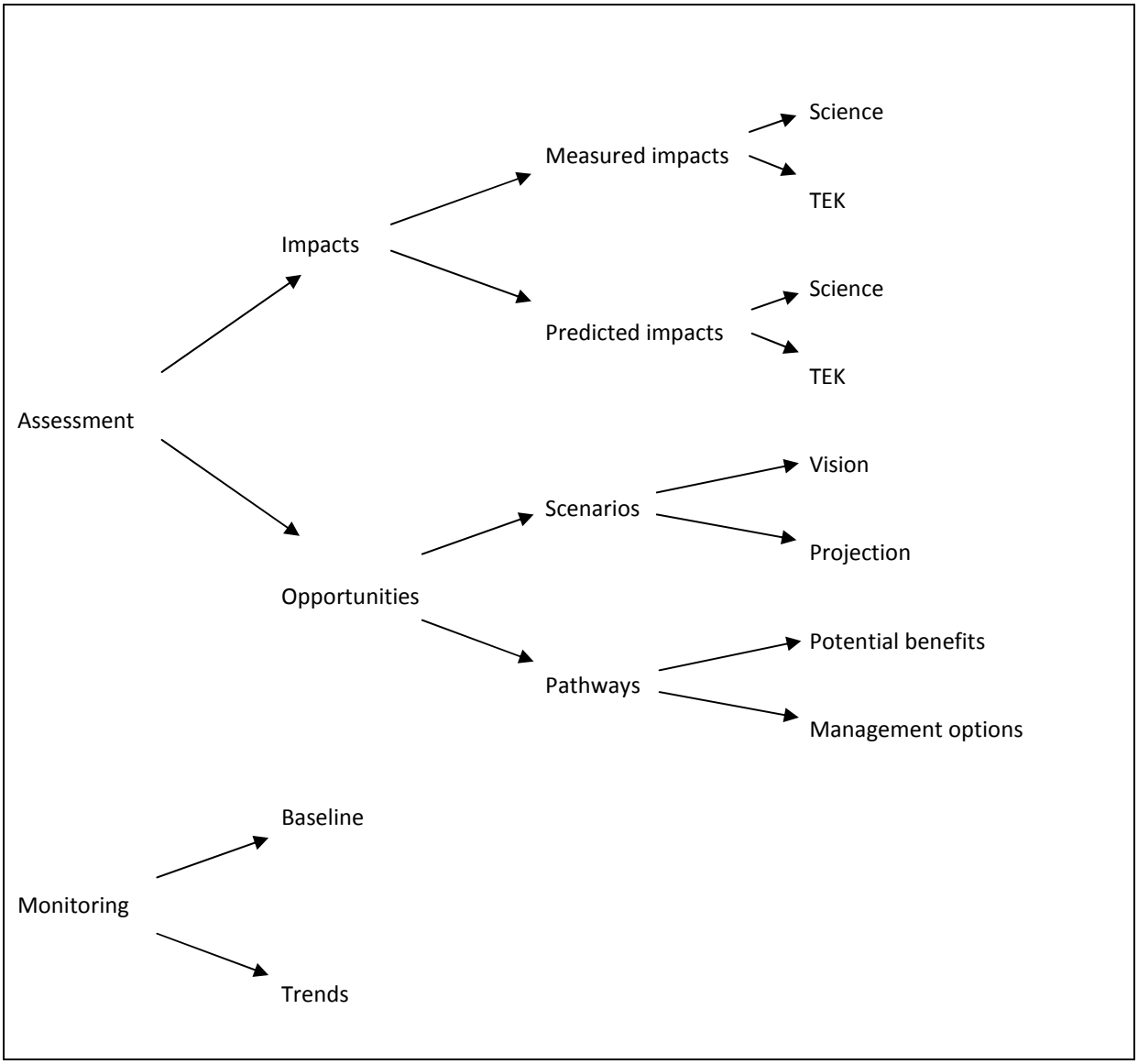
Overview of tools for EBA

Nigel Dudley, Equilibrium Research

Some existing tools were outlined (and PDF versions given to all participants):

- ***Biodiversity tools***: Global 200 ecoregions, Key Biodiversity Areas, Centres of Plant Diversity, Important Bird Areas, Important Plant Areas. Are there serious gaps in terms of biodiversity knowledge and are existing efforts for biodiversity prioritisation giving a sufficient base-line?
- ***Climate change into conservation guidance***: guidelines and methods on biodiversity conservation, engaging stakeholders, marine protected areas etc
- ***How to manage for climate change resistance***: speculative guidance rather than guidance based on long-term evidence; most of these should be regarded as works in progress.
- ***Mitigation tools***: important to recognise mitigation also a major focus for international activity and funding – and may be linked to adaption projects through, for example, REDD+

What tools do we need in the current project to develop management options for EBA? The following diagram is a suggested framework:



Baseline biodiversity data: what is the information base we need to act on – and to measure against?
Impacts: predictions on impacts are inexact. Modelling in the Pacific is based on sea not on land conditions. One option to be considered is the linking of global climate model with observations from local people and presenting this in an easily understood format.

Sources of data: information and on status and trends of climate impacts can be obtained from a variety of sources

- Scientific research
- Land managers (who often have access to information that can feed into research)
- Traditional ecological knowledge – we need to understand how useful this can be in practice

Presentation of knowledge: it is suggested that the project might invest in developing quick ways of presenting information to key decision makers for quick assimilation and decision making using colour coding and arrows to indicate status and trends, suitable for quick reference by policy-makers; e.g.

Observed and predicted impacts for a particular habitat or island

Key issues	Western science	Rating			TEK	Rating			Likely impacts
Sea level rise	Recorded increases throughout the region, predicted to intensify (include references)	↓			Noted that some islands now virtually uninhabitable	?			Some islands and many coastal communities at risk
Fisheries	Measured decline in populations of some species linked to changing water temperatures		?		Catches becoming more erratic	↓			Potential food shortages, particularly for protein amongst coastal communities
Crop success	Likely increase in droughts		↓						No changes in crop yield observed so far
Etc…									

Observed and predicted impacts for particular ecosystems

Ecosystem	Pressure from climate change													
	Sea-level rise		Increased natural disasters		Coastal decline		Food supply		Reduced water		Invasive species		Cumulative impacts	
	Sci	TEK	Sci	TEK	Sci	TEK	Sci	TEK	Sci	TEK	Sci	TEK	Sci	TEK
Coastal areas	↓	↓	↓	↓	↓	↓			↓	↓		↓	↓	↓
Forests	/		↓	↓	↑	/	↓	↓			↓	↓	↓	↓
Etc…														

Opportunities for EBA

Scenarios: given land tenure in the Pacific we need to know what people want in terms of EBA. Use of scenarios to get information on peoples' wishes or expectations can be a powerful tool that can be used at all levels (from ministries to local people). Various methodologies exist.

Once the potential for EBA has been identified, there are many possible ways in which land or water can be managed to maximise these ecosystem services. Some of these are outlined in the table below:

Examples of management approaches that could be considered for EBA

Strategies and categories	**Types** (selection)
Ecosystem protection	
Protected areas	State, private or community conserved areas
Cultural protection	
Customary management	Community Conserved Areas

Strategies and categories	**Types** (selection)
Voluntary agreements	Sacred natural sites
Legally-established system	Cultural site with biodiversity
Marine fishing	
Legally-established system	Government no-take zones
Voluntary agreements	Community no-take zones
Third party certification	Marine Stewardship Council
Tax / incentive	Tradable fishery catch quotas
Voluntary agreements	Codes of practice
Freshwater fishing	
Legally-established system	Fish management areas
Third party certification	Organic aquaculture certification
Second party certification	ISO certification for fisheries
Voluntary agreements	Voluntary landowner agreement
Agriculture	
Third party certification	Organic certification
Tax / incentive	Easements, set aside schemes
Forest management	
Legally-established system	Forest reserves
Concessions for forest mgt	Government forests
Third party certification	Forest Stewardship Council
Second party certification	ISO-14000 forest standards
Tax / incentive	Grants
Voluntary agreements	Codes of practice
Ecosystem services	
Legally-established system	Watershed management
Tax / incentive	Payment to keep forest for HEP
Voluntary agreements	Retention of mangroves for fish
Third party certification	Forest managed for water quality
Second party certification	ISO 1400 certification for
Hunting	
Tax / incentive	Protecting elephants for hunting
Voluntary agreements	For-profit hunting reserves
Legally-established system	Hunting reserves
Second party certification	Bushmeat controls
Wildlife protection	
Tax / incentive	Paying farmers for wildlife losses
Recreation / tourism	
Legally-established system	Recreational park with wildlife
Voluntary agreements	Protection of breeding sites
Cultural and built heritage conservation	
State or voluntary conservation	Large heritage site with natural areas

A number of tools exist for integrating these into land and water management strategies, many of which could be adapted for use with EBA, for example:

- **Protected area gap analysis**: integration climate change into biodiversity conservation, including overlaying carbon and include EBA
- **Legislative gap analysis**: where policy and legislation do not support EBA and what changes are needed
- **Protected areas and other conservation areas**: Looking at all different management and governance types and their effectiveness. Recognising values of protected areas (protected area benefits assessment tool) by different stakeholders. Use to identify benefits and potential EBA

Baseline information: a proposed matrix of an information baseline for EBA was introduced as a background to work undertaken during the afternoon.

Discussion

- ✓ What **variables** are being used elsewhere in the world for EBA projects? Most EBA projects focus on monitoring wider values of biodiversity apart from focussing on the specific objective of the EBA.

- ✓ These are **small scale** areas – what scale makes sense in term of monitoring for climate change? What is an ecosystem in the sense of EBA? Ecosystem often defined at a fairly small-scale, i.e. a watershed; which is better scale to monitor and see results for EBA.

- ✓ Lack of a **central depository for data** is also a problem and there is a limited capacity to fill gaps

- ✓ Much current **inventory** work is very specific, e.g. forestry species information – and costly with specialised training. Need baseline data for reporting, but lack this so tend to report the same figures every year. The regions should seek funding for institutional capacity building to develop better baseline information, or possibly collate a state of biodiversity to find out the current knowledge.

- ✓ Existing **UN conventions** should be analysed to find out gaps in current knowledge and capacity

- ✓ **TEK** has generally not been explored specifically with respect to climate change. It is anticipated that some GEF-5 funding might be used to capture knowledge of older people that might be useful for EBA

- ✓ There is generally **lack of capacity** to develop baseline information on biodiversity

- ✓ Limited information on biodiversity is available in **Nauru** –introduced species are used in EBA responses. There is little scientific monitoring but some community information

Identifying state of knowledge and needs for an information base for EBA

In the first part of the afternoon, participants divided into working groups (one representing small islands and one larger islands) to complete a matrix that summarised their information needs relating to EBA, as shown below.

Information Baselines	Baseline requirement for EBA	
	Vital - present	Vital - priority
Conservation priorities (e.g. KBAs; Important Bird Areas)		
Biodiversity monitoring (e.g. long term trend monitoring)		
Carbon (e.g. stores and sinks)		
Ecosystem services (e.g. watersheds; fisheries; disaster mitigation)		
PA monitoring and assessment (e.g. management effectiveness, managing for climate change)		
Community status, vision and scenarios		
Climate impacts (e.g. long-term monitoring methodologies; modelling)		
Traditional Ecological Knowledge of climate change impacts & adaptation		
Other threats (e.g. information invasive species, land degradation)		

The results of the discussions are presented in the tables below in alphabetical order of countries/territories.

Cook Islands

Information Baselines	Baseline requirement for EBA	
	Vital and present	Vital and priority to complete
Conservation priorities (e.g. Key Biodiversity Areas; Important Bird Areas)	NBSAP/SPBCP	IBA about to happen
Biodiversity monitoring (e.g. long term trend monitoring)	On-line biodiversity database*; MPA monitoring; terrestrial monitoring on-going	Monitoring could be improved
Carbon (e.g. stores and sinks)		**Needs to be done**
Ecosystem services (e.g. watersheds; fisheries; disaster mitigation)	Watershed mapping, soil surveys and fisheries catch	**Overview of ecosystem service provision required**
PA monitoring and assessment (e.g. management effectiveness, managing for climate change)		**Gap**
Community status, vision and scenarios		**Gap**
Climate impacts (e.g. long-term monitoring methodologies; modelling)		**Gap**
Traditional Ecological Knowledge of climate change impacts & adaptation	NAPA project	Need information at local level
Other threats (e.g. information invasive species, land degradation)	Agriculture monitoring	Threat assessment needed

* The database went online in 2003 and by mid-2007 it recorded 4,500 species, about 65% of the estimated total biodiversity, marine and terrestrial. Reptiles, fish, plants and birds are around 90% complete, while fungi and insects are incomplete. In mid-2007 the database was closed so it could be restructured; online editorial and contributory systems will be in place towards the end of 2010. The new database will enable geo-referencing and have "google" mapping.

Kiribati

Information Baselines	Baseline requirement for EBA	
	Vital and present	Vital and priority to complete
Conservation priorities (e.g. Key Biodiversity Areas; Important Bird Areas)	NBSAP and IBA	
Biodiversity monitoring (e.g. long term trend monitoring)	Monitoring TEK based	**Science based monitoring needed**
Carbon (e.g. stores and sinks)		**Needs to be done**
Ecosystem services (e.g. watersheds; fisheries; disaster mitigation)	Fisheries information	**Overview of ecosystem service provision required**
PA monitoring and assessment (e.g. management effectiveness, managing for climate change)	ICCA's in coastal regions, information for Phoenix Islands (on WH tentative list), assessment of effectiveness of bird conservation	
Community status, vision and scenarios	NBSAP process for national exercise	**Need to be replicated method for local level information**
Climate impacts (e.g. long-term monitoring methodologies; modelling)		**Information needed**
Traditional Ecological Knowledge of climate change impacts & adaptation	NAPA project	Need information at local level
Other threats (e.g. information invasive species, land degradation)	Invasive species	Threat assessment needed

Nauru

Information Baselines	Baseline requirement for EBA	
	Vital and present	**Vital and priority to complete**
Conservation priorities (e.g. Key Biodiversity Areas; Important Bird Areas)	NBSAP	
Biodiversity monitoring (e.g. long term trend monitoring)	Research on plant species	**Marine monitoring a gap**
Carbon (e.g. stores and sinks)		**Needs to be done**
Ecosystem services (e.g. watersheds; fisheries; disaster mitigation)	Fisheries catch data on-going	**Overview of ecosystem service provision required**
PA monitoring and assessment (e.g. management effectiveness, managing for climate change)	No PAs (yet!)	
Community status, vision and scenarios		**Gap**
Climate impacts (e.g. long-term monitoring methodologies; modelling)		**Gap**
Traditional Ecological Knowledge of climate change impacts & adaptation	NAPA project	Need information at local level
Other threats (e.g. information invasive species, land degradation)	Some info	Need more assessment on invasive species

Niue

Information Baselines	Baseline requirement for EBA		
	Vital and present	**Vital and priority to complete**	
Conservation priorities (e.g. Key Biodiversity Areas; Important Bird Areas)	NBSAP and SoE repot	Review and update needed	
Biodiversity monitoring (e.g. long term trend monitoring)	Project-based and ad hoc	**Build capacity to use/expand existing information**	
Carbon (e.g. stores and sinks)		**Needs to be done**	
Ecosystem services (e.g. watersheds; fisheries; disaster mitigation)	National forestry inventory and fish catch data	**Overview of ecosystem service provision required**	
PA monitoring and assessment (e.g. management effectiveness, managing for climate change)		Needed	
Community status, vision and scenarios	NBSAP process for national exercise	**Need to be replicated method for local level information**	
Climate impacts (e.g. long-term monitoring methodologies; modelling)	GIS and local land mapping exists	Need to build capacity to use information	
Traditional Ecological Knowledge of climate change impacts & adaptation	Some information available at a regional level	Needs review and local level of information	
Other threats (e.g. information invasive species, land degradation)	Invasive species and loss of TEK	Priority is on action rather than further assessment	

Papua New Guinea

Information Baselines	Baseline requirement for EBA	
	Vital and present	**Vital and priority to complete**
Conservation priorities (e.g. Key Biodiversity Areas; Important Bird Areas)	Trade in crocodile skins, uncontrolled trade, NBSAP	Strengthening of capacity
Biodiversity monitoring (e.g. long term trend monitoring)	Monitoring by NGO	Further capacity needed
Carbon (e.g. stores and sinks)		**Needs knowledge for REDD+ along with funding mechanisms etc- basic concept not known**
Ecosystem services (e.g. watersheds; fisheries; disaster mitigation)	HEP known	Smaller-scale wetland issues not known
PA monitoring and assessment (e.g. management effectiveness, managing for climate change)	Mainly by NGOs, RAPPAM	More needed
Community status, vision and scenarios	NGOs etc in consultation with the government	Needs greater consultation
Climate impacts (e.g. long-term monitoring methodologies; modelling)	Some monitoring of climate	**More capacity needed**
Traditional Ecological Knowledge of climate change impacts & adaptation	Lots of knowledge	**Not collected systematically**
Other threats (e.g. information invasive species, land degradation)	Resource extraction without proper damage costings	

Samoa

Information Baselines	Baseline requirement for EBA	
	Vital and present	**Vital and priority to complete**
Conservation priorities (e.g. Key Biodiversity Areas; Important Bird Areas)	NBSAP, KBA, National Ecological surveys	Needs revision but basically OK
Biodiversity monitoring (e.g. long term trend monitoring)	On-going in places fairly strong biodiversity monitoring	Needs to be strengthened
Carbon (e.g. stores and sinks)		**Needs to be done**
Ecosystem services (e.g. watersheds; fisheries; disaster mitigation)	Monitoring of mangroves crab resources/market survey MPA study of no take zones	Patchy knowledge and awareness arising
PA monitoring and assessment (e.g. management effectiveness, managing for climate change)	RAPPAM looked at government PAs	Needs to be used in wider governance areas
Community status, vision and scenarios	Community managed MPA study in only areas of mangroves/protected by village bylaws Increase capacity to manage NPs and reserves in 2 trail sites	Needs to be replicated
Climate impacts (e.g. long-term monitoring methodologies; modelling)	2nd National communications	Expand
Traditional Ecological Knowledge of climate change impacts & adaptation	NAPA project community consultations, coastal infrastructure management plans Traditional knowledge across the Pacific (10 years ago)	
Other threats (e.g. information invasive species, land degradation)	Some information on pest risk assessment Forestry mapping of deforestation	More work needed

Tonga

Information Baselines	Baseline requirement for EBA	
	Vital and present	**Vital and priority to complete**
Conservation priorities (e.g. Key Biodiversity Areas; Important Bird Areas)	NBSAP and CBD 4th Report	Constant revision needed
Biodiversity monitoring (e.g. long term trend monitoring)	Ongoing but only for coral reefs	Baseline information needed for other marine and for terrestrial sites
Carbon (e.g. stores and sinks)		Need to link carbon sinks and ecosystems
Ecosystem services (e.g. watersheds; fisheries; disaster mitigation)	One project from GTZ looking at forestry and watershed management	Implementing other ecosystem services projects
PA monitoring and assessment (e.g. management effectiveness, managing for climate change)	POWPA project looking at management effectiveness of 5 MPAs, measuring water quality etc	Enforcement and legal strengthening needed
Community status, vision and scenarios	Some community based management, initiated by both government and the private sector	Replication of lessons learned
Climate impacts (e.g. long-term monitoring methodologies; modelling)	Measurement of greenhouse gas emissions	Reviews and updates needed along with a transfer of knowledge to the public
Traditional Ecological Knowledge of climate change impacts & adaptation		Link TEK to biodiversity and adaptation, transfer information to the public
Other threats (e.g. information invasive species, land degradation)	Quarantine laws for invasive species, GEF project on control	Need to identify the most dangerous invasive species

Tuvalu

Information Baselines	Baseline requirement for EBA	
	Vital and present	**Vital and priority to complete**
Conservation priorities (e.g. Key Biodiversity Areas; Important Bird Areas)	NBSAP and SPREP	
Biodiversity monitoring (e.g. long term trend monitoring)	SPBCP and NGO monitoring projects	**Build capacity in science based monitoring**
Carbon (e.g. stores and sinks)		**Needs to be done**
Ecosystem services (e.g. watersheds; fisheries; disaster mitigation)	Water supply, fish catch data and agricultural data	**Overview of ecosystem service provision required**
PA monitoring and assessment (e.g. management effectiveness, managing for climate change)	Some reviews of Community Conserved Areas (CCA)	Capacity building in assessment needed
Community status, vision and scenarios	NBSAP process for national exercise	**Need to be replicated method for local level information**
Climate impacts (e.g. long-term monitoring methodologies; modelling)	GIS and sea-level monitoring	Need to build capacity to use information
Traditional Ecological Knowledge of climate change impacts & adaptation	Project in 2000	
Other threats (e.g. information invasive species, land degradation)	Invasive species, loss of TEK, salt water inundation	More assessment needed

Vanuatu

Information Baselines	Baseline requirement for EBA	
	Vital and present	**Vital and priority to complete**
Conservation priorities (e.g. Key Biodiversity Areas; Important Bird Areas)	NBSAP completed and some marine surveys	More needed particularly for terrestrial systems,
Biodiversity monitoring (e.g. long term trend monitoring)	No regular monitoring, occasional research by outside researchers, biodiversity database (note: the flora and fauna database is not working and needs a review/revision), fisheries department monitoring using the PROC- fish method and the coral reef monitoring	**More monitoring needed and research for a baseline - baseline data for Vanuatu needs to be reviewed as there has been several research undertaken and not incorporated**
Carbon (e.g. stores and sinks)	Responsibility of the Forestry Department, no groundwork yet,	More work and capacity building needed
Ecosystem services (e.g. watersheds; fisheries; disaster mitigation)	Watershed Catchment research by the Department of Geology,	More work and capacity building needed,
PA monitoring and assessment (e.g. management effectiveness, managing for climate change)	Under POWPA actions, revision of management plans every 5 years; some monitoring by NGOs, currently the Community Conservation Area registration process is being reviewed; this is the national guideline which will help with PA monitoring and assessment	More work and capacity building needed
Community status, vision and scenarios	Some awareness raising activities; Crab Bay assessment by NGO, Reef Check Vanuatu Ltd	More work and capacity building needed
Climate impacts (e.g. long-term monitoring methodologies; modelling)	Research by meteorological office and some by foreign researchers	Information on climate change and biodiversity not coordinated; need central database of impacts
Traditional Ecological Knowledge of climate change impacts & adaptation	Most local people see changes but does not have the knowledge to change management in response	Need systematic collection of TEK, Review existing TEK database at cultural centre
Other threats (e.g. information invasive species, land degradation)	Sand mining, invasive plants responding to climate change	

Identifying tools and information needs

At the end of the afternoon on the first day there was a brief discussion on needs for tools and information in the Pacific, based around the following four main questions:

- What are you using already?
- What is needed?
- How can we build and adapt tools?
- What are the capacity buildings needs?

The following notes capture the main points from the subsequent discussion:

✓ **Key Biodiversity Area** (KBA) gap analysis has already been carried out for Samoa (cost US$30,000 approx), Kiribati and Fiji, aimed at filling the gaps in protected areas. Rolling out biological gap analysis in other islands, three steps:

1. Looking at information gaps
2. Overlaying an ideal set of conservation areas
3. Considering management effectiveness of existing protected area systems

An additional stage would be further to overlay ecosystem services/EBA onto these data – this is a methodological advance recognised as being important by the CBD but not yet developed.

✓ **NCSA** assessment – capacity for governments to manage some information captured in the process. Build on existing projects and information base.

✓ **Important Bird Areas** (IBA) analysis has produced data for about 50 per cent of countries/territories/territories. Could therefore use birds as indicator species. Important Plant Area (IPA) analysis has been done on an island level for a few broad areas but not at site level. There has been some marine gap analysis. Marine KBA work being carried out by SPREP. Phoenix Island proposed WH area and Coral Triangle areas have been studied and there are some forest inventories.

✓ **Knowledge management** and **capacity building** are both needed to build on existing monitoring. Need to standardise guide approaches to inventory methods – inventories are often project led and methods are different – harmonisation of tools would be a valuable output from the project.

✓ **Which types of information can we consistently extract as a baseline across the region?** The project could identify common data variables across the region – notes the gaps and build on these, using what is already available as a basis for selection: e.g. from Bishop Museum, College of Micronesia, USP, Australia and NZ. Check the SOPAC Environmental Vulnerability Index data . Use *State of Environment* Reporting – but some reports are very out of data (but the basis of trends). The SSC review of Red List in Pacific found that only 3% of birds had been assessed, so this source needs to be included but is of limited value as yet.

✓ **Traditional ecological knowledge**: lots of information is available about observed changes and opinions but it has not been collated. Solomon Island research is starting but has found difficulties in identifying methodologies.

✓ **SPREP NAPA** – vulnerability and assessment process is documented. Identify linkages vulnerability causes, capacity and community to address vulnerability.

✓ **Scenarios** – EBA relies on local support because of governance structures. Lots of resources are available within the region for community consultation process. What if scenarios are also needed – e.g. what if you don't protect your reefs – what if you do, also for watersheds.

DAY 2: Pilot project and large scale project design

Overview of day one

Sue Stolton, Equilibrium Research

Sue provided a résumé of day 1 including a summary of the main presentations and a review of the needs for EBA following the discussions during the afternoon of the first day; which included:

- There was a variable situation on identifying conservation priorities and biodiversity monitoring in the PICTs – some is good, some needs updateing etc. Tools, techniques and regional experience is however available and there are some on-going projects.
- There is currently no data on carbon stores or sinks in the region. The only project underway to collect data is in Vanuatu. However some information on carbon is presented in the 2nd National Communications to UNFCC and REDD+ process.
- There is quite a lot of data on individual ecosystem services which could be derived from fish catch data, forest monitoring, information on watersheds etc but there is very little *systematic* data on ecosystem services as a whole or attempts to use these to develop arguments for natural resource conservation
- There is relatively little information on protected area management effectiveness from small island states, there is however slightly more from large states
- There is considerable experience in using community consultation techniques and using community based information in the region
- Science coverage (i.e. biodiversity monitoring, metrological data) is variable with some major gaps identified in the gap analysis carried out on the first day of the project. However even where the information exists there is often a lack of capacity in country on how to use the information in decision making
- Information about pressures and threats to biodiversity have been gathered in some countries/territories – but generally information is patchy and some gaps were identified. The need to contextualise current threats with increasing pressures such as CC was noted
- Traditional Ecological Knowledge (TEK) has been gathered in relation to understanding climate change impacts at a national level in many countries/territories through National Adaptation Programme of Action (NAPA) development; but information on impacts has not been systematically developed at a local level. Techniques for collecting TEK have been developed through the NAPA project.
- Generally there is a need to find ways to better convey messages about climate change and the role of EBA to the public

Some key proposals emerged including:

- The small-scale project could assemble a state of biodiversity (and gaps in knowledge) for the Pacific region based around a standard set of indicators (which can be identified from currently available datasets). Gaps in knowledge can be identified in the large project proposal.
- Conservation gap analysis information could be supplemented by overlaying carbon data and ecosystem services information – assuming systems for measuring these can be developed
- Use the approaches already available to collect data on using TEK for EBA at a local level

Pilot project and large scale project design

Nigel Dudley, Equilibrium Research

Nigel introduced the draft small-scale project log-frame developed and circulated prior to the meeting. The plenary discussion then focussed on updating the 4 original objectives based on the discussions of day 1.

The gaps identified yesterday focused on collecting base-line information in the objectives. It was acknowledged that the revised objectives would need editing/revising and possibly re-ordering but the overall concepts for the project were captured as follows:

Objective 1: Identify, adapt, harmonise (and if necessary develop) a set of tools for EBA tailored for the Pacific
Objective 2: Use these to assemble state of biodiversity and current threats to biodiversity (and gaps in knowledge) for the Pacific region (drawing on State of Environment Reporting) to assemble a baseline (based around identified indicators) against which to measure EBA effectiveness:

Note: State of the Environment Reporting is ongoing and the current project should use resources already available as a starting place as the reports will focus on climate change with some biodiversity data included.

Objective 3: Test tools to put in place case studies and monitoring these for EBA

Objective 4: Explore opportunities, partnerships and donor cooperation in delivering EBA in the Pacific through NAPA, NBSAP, Island Biodiversity Programme of Work, Protected Area PoWPA and other complementary initiatives

Objective 5: Use the above components in developing a full size project applying EBA in up to 10 sites in the Pacific

It was also suggested, and agreed, that where possible the pilot project should capitalise on 2-3 on-going projects, e.g. Micronesia Challenge, Solomon Islands Project, Fiji Sovi Basin forest carbon project, as the infrastructure was in place and thus activities could start relatively quickly and it would show leverage possibilities for the larger project.

It was questioned whether the pilot project could get as far as developing responses – or would focus solely on data-collection.

Working groups

Following the short resume of day 1 and overview of the pilot project objectives and draft activities the meeting broke into two working groups (smaller and larger islands) to discuss in the session before lunch activities which could take place within objectives 1-4 (with a focus on activities 1-3) of the pilot project, and to discuss in the session after lunch the broad scope of the large-scale project (i.e. objective 5).

Suggested activities for the pilot project from the Cook Islands, Kiribati, Nauru, Niue and Tuvalu

The first agreed action was to reorder the first two objectives – the gap analysis objective coming before the data collecting objective and that the objectives should be rewritten and simplified to reflect:

Objective 1: Information gathering for EBA (e.g. gap anlaysis)

Objective 2: Collect (after identifying gaps)

Objective 3: Implementation

A series of activities were suggested under these objectives:

Activity 1: Assessment of climate modelling for the Pacific looking at how useful is it and how it should be used for small islands, i.e. can information on a local scale be collected to inform modelling, is modelling useful for advocacy only or for advocacy and decision making. If not what is needed to make it useful – noting the liaison with Australian downscaling project/Galapagos local-scale predictive work which is about to start looking at this challenge in the Pacific.

Activity 2: Review and establish monitoring of locally collected data (e.g. sea surface temperature, rainfall, land temperature etc) to develop climate models which allow adaptation to current changes rather than relying on predictive models which are at least regional in scale and therefore not applicable (a last minute addition to the activity was suggested outside of the main workshop to also look at geological data in the review as some small islands are uplifting and some subsiding, which affects climate impacts)

(*Activity 3*: Visualising climate impacts – if activity 1 concludes that climate modelling and mapping is effective in terms of advocacy/decision making in the Pacific, or some of the Pacific, an additional activity could review more appropriate ways of visualising climate impacts and showing change)

Activity 4: Review/compile current TEK information base and develop guidance on how to integrate TEK into science for EBA for climate change in the Pacific.

Activity 5: A short paper highlighting the possible economic and social implications of climate change on 'socio-economic keystone species' (e.g. taro, cassava, coconut, specific fish species, key wild terrestrial resource species etc). This can inform EBA approaches to climate change in the large-scale project which take into consideration these vital resources.

Activity 6: Carry out an analysis of current projects in the region (looking at biodiversity, threats to biodiversity and climate adaptation projects) and review how/when to integrate climate change EBA into them.

Activity 7: Cultural and language implications of EBA: A short paper discussing the ways EBA can be communicated to stakeholders (from local people to scientists) within their cultural context

Activity 8: Guidance on using local community capacity for monitoring local impacts of climate change to provide information for adaptive management measures

Activity 9: Collect data on how climate change is affecting the distribution of threatened species and communities and invasive species, and review how to adapt conservation management in response to climate change.

Activity 10: Review and adapt the applicability of EBA tools for the Pacific region (e.g. looking at issues such as feasibility / cultural appropriateness / language and necessity for translation/ simplification / harmonisation / capacity to implement/ who is the audience / formats - e-formats, simple questionnaires etc / are there non-textual means of using the tool communicating the message etc)

Activity 11: Testing techniques/appropriate tools in the Pacific for EBA to climate change in cooperation with existing projects in the region to develop case studies on EBA

Criteria/considerations for case studies (for pilot and larger project)

1. Will need to raise awareness of the project at community and policy level
2. Include local communities in the project
3. Take account of local governance structures using methods which account for the power structure of the countries/territories' administration
4. Generating meaningful advice for future management
5. Assess practical considerations in terms small scale (e.g. travel costs etc)

Possible case studies for pilot project:

- Forest management in Niue
- Fiji community-based monitoring system(WWF project)
- PACC Kosrae climate proofing project
- UNDP community development programme (Cook islands, Tokelau, Samoa) which is developing sustainable use village plans
- Line Islands in Kiribati

Objective 4: Advocacy at both climate change (UNFCC) and biodiversity (CBD) forums
It was noted that the way this was currently written was as an activity – it was suggested that the objective be rewritten and it was noted that this was a key activity.

Objective 5: Large-scale project
Activity 1: Once basic concept developed review how the objectives link/have synergies with on-going and planned national, regional and global projects (e.g. of UNDP, UNEP)

Suggested activities for the pilot project from Papua New Guinea, Vanuatu, Samoa and Tonga

First, some revisions were suggested to the rewording of the objectives suggested in the morning:

- Objective 2: ~~Use these to~~ **A**ssemble a state of biodiversity and current threats to biodiversity (and gaps in knowledge) **report** for the Pacific region to assemble a baseline against which to measure EBA based around identified indicators
- Objective 3: test tools ~~to put in place case studies and monitoring these for EBA~~ **for implementation and monitoring of EBA in some case study sites**

Then the objectives were discussed in turn and some activities suggested.

Objective 1: tools

- Carry out a gap analysis of available tools and recommendations for how these could be adapted to the Pacific
- Explore initial ideas about harmonising approaches between countries/territories

- Research the extent to which traditional ecological knowledge (TEK) has been used to collect data on climate change impacts (e.g. on fisheries, agriculture) and level of understanding in communities
- Research techniques for TEK suitable for the Pacific (e.g. 3-D models etc)

Objective 2: baseline data
- Build a region-wide compilation of biodiversity information, using NBSAPs as an initial basis and collecting other data as necessary (e.g. on invasive species, Red List, *State of Environment*, Global Biodiversity Outlook etc)
- Identify gaps (both in terms of geographical coverage and age of data)

Objective 3: field testing
- Focus some initial field testing on existing projects (e.g. PACC, NAPA, Solomon Islands also Micronesian Challenge, Coral Triangle etc) – SPREP to identify potential sites
- Test the tools in one or more countries/territories during the project

Objective 4: policy promotion
- Produce an overview paper of options on the potential to link better between UNFCCC and CBD (plus other instruments)
- Identify some flexible funding for responding to the recommendations of the study (e.g. local meetings, one workshop at SPREP etc
- Investigate presentation of an early version of the biodiversity baseline review to donors and governments at CBD COP 10 in Japan
- Investigate integration of this information into national reports to the UNFCCC and CBD
- Develop publicity material or similar to promote the ideas of EBA and climate change
- Explore activities to mainstream EBA into relevant national policy and planning frameworks
- Do an analysis of policy including identification of gaps and needs

Initial concept for a large-scale project

The workshop then went on to brainstorm scope, outcomes and activities for the larger-scale project.

Suggested project concept from the Cook Islands, Kiribati, Nauru, Niue and Tuvalu

Project scope
- Multi-focal approach to biodiversity and climate change
- Minimum 5 years and multi-million $

Outcomes

Two outcomes which inform each other:

1. *Country-based long-term programmes which are promoting ecologically sustainable development adapted to climate change.*

The aim being to create whole government/island approaches to ensure that ecologically sustainable development has relevance to all levels of management in a country (e.g. land use planning, ocean planning, agricultural planning to local community practices).

2. *Country-specific projects which demonstrate country/island wide EBA based on adaptive management and downscaling information to island level.*

Possible demonstration projects, which need to be interactive with communities, include TEK and generating and capturing local information, were discussed and include:

- Testing the feasibility of national level modelling on changes/impacts to threatened species and the development of management responses using these models (using data which is appropriate to country scale and hopefully based on the Australian downscaling project)
- Creation of national development planning for ecologically sustainable development under climate change scenarios
- Assess the need for landscape corridors and connectivity as part of the UNEP global project looking at this (recognising the possibility of species moving attitudinally in response to climate change)
- National focus on consequences of climate change on keystone species (e.g. species of major economic importance)
- Development of climate resliance options (EBA) for coastal habitats
- Regional projects for developing on-going processes to list species and ecosystems most at risk from climate change
- Implications of climate change on specific conservation areas looking at different governance types and biomes (e.g. from government managed protected areas to community conserved areas)
- Local sites which demonstrate using TEK for EBA for climate change
- Local projects which look at EBA responses for salt water intrusion

Suggested project concept from Papua New Guinea, Vanuatu, Samoa and Tonga

- Complete biodiversity baseline data (and update NBSAP)
- Develop monitoring systems and national biodiversity databases
- Roll out EBA drawing on experience in first project, criteria for identification of countries/territories
- Capacity building including: training (of trainers, on site); awareness and information; knowledge management (data, publications and experience); network of EBA specialists
- Policy relating to legislation at national and regional level; coordination and mainstreaming; targeting regional and global meetings; identifying long-term funding for ecosystem services)
- Project management

The countries/territories also recommended a minimum of five years and a multimillion ($10 million?) project. This implies working hard with GEF and governments from now to identify and secure sufficient funding.

Appendix 1: Comparison of different activities in the 12 month SPREP EBA project

The table summarises outputs from the working groups and the initial proposal from Equilibrium. Specific activities have been grouped under a number of **general areas** (left hand column) and an attempt has been made to suggest a **synthesis** (right hand column). Activities have sometimes been moved between objectives

General area	Small Island States	Large Island States	Equilibrium	Synthesis
Objective 1: **Identify, adapt, harmonise (and if necessary develop) a set of tools for EBA tailored for the Pacific**				
Select the best tools for EBA	Review of EBA tools (with some criteria for review suggested)	Gap analysis of available tools	Take part in efforts to develop guidance on PA management under climate change Revise existing tool for identifying ecosystem services Assess ways of including carbon and ESS into gap analysis	Review current tools for EBA, against agreed criteria and, if necessary, adapt existing tools for use in the Pacific region – such as tools for identifying ecosystem services, including carbon
Harmonise use of assessment tools within and between Pacific states		Start the process of harmonising approaches to use of assessment tools between countries/territories		Develop a concept paper and initial proposals for harmonisation of EBA assessment in the SPREP region
Analyse of climate models to test their usefulness in the Pacific	Assessment of climate models in the Pacific in terms of options, usefulness Review options for using local data in climate models		Issues paper reviewing current climate modelling Undertake rapid assessment of research on climate change in 2 sites	Develop a review and proposals on options for improving climate modelling for EBA, using local data, through new or existing projects
Work with local communities on climate change assessment	Compile existing data on TEK and produce guidance on integrating this with western scientific approaches	Research TEK use for climate-related impacts in the Pacific	Workshop to review strategies for TEK	Synthesise existing research on use of traditional ecological knowledge in identifying climate change impacts in the Pacific
	Guidance on using local community capacity to monitor climate change impacts to provide information for EBA	Research techniques for collecting TEK relating to climate change and for community consultation	Research on different approaches to TEK and scenario-building	Research methods for working with communities to identify climate trends and potential for EBA; and link these to scientific approaches
Investigate socio-economic impacts of climate change	Short paper on potential socio-economic impacts of climate change on keystone species (taro, cassava etc)			Prepare short paper on potential socio-economic impacts of climate change on keystone species (such as important terrestrial wild species, which are not covered by current SPC initiatives)
	Include assessment of geological uplift in climate modelling			Prepare a short analysis on the implications of geological change in the context of climate change in the Pacific

General area	Small Island States	Large Island States	Equilibrium	Synthesis
Objective 2: **Develop a state of biodiversity and current threats to biodiversity (and gaps in knowledge) report for the Pacific region to assemble a baseline against which to measure EBA, based around identified indicators**				
Compile biodiversity information for the Pacific region		Region-wide compilation of biodiversity information, drawing on NBSAPs and other available data		Prepare a regional overview of biodiversity data, drawing on NBSAPs and other available source, which identifies current information gaps
Compile information on climate change impacts on distribution of species	Compile existing information on how climate change is affecting the distribution of threatened species and communities			Synthesise existing information on the likely impacts of climate change on current threats to species and communities in the Pacific
Compile information on EBA potential in the Pacific				Collect and present information and case studies on EBA in the Pacific
Objective 3: **Test tools for implementation and monitoring of EBA in some case study sites**				
Identify potential test sites for EBA	Analyse current projects in the region and review which ones are suitable for being integrated with EBA	SPREP to identify initial sites from existing projects (e.g. PACC, NAPA, Solomon Islands also Micronesian Challenge, Coral Triangle etc)	Develop and implement EBA test programmes in 2 sites Site-based workshops to discuss climate change and EBA	Identify and use agreed criteria to select one or more test sites, working with new and existing projects in the region
	Apply a set of criteria (suggested) for selecting test sites			
Carry out initial tests	Carry out initial tests of EBA	Implement EBA in one or more test sites	Using tools identified in objective 1 to compile baseline data on climate, ecosystem services etc for EBA	Compile baseline social and biological data needed to develop an EBA project in one or more test sites
Objective 4: **Explore opportunities, partnerships and donor cooperation in delivering EBA in the Pacific through NAPA, NBSAP, CBD Island Biodiversity POW, CBD POW on Protected Areas and complementary initiatives**				
Investigate options for closer cooperation between UNFCCC, CBD and other relevant regional and global initiatives	Explore opportunities, partnerships and donor cooperation in delivering EBA in the Pacific through NAPA, NBSAP, CBD Island Biodiversity POW, CBD POW on Protected Areas and complementary initiatives	Produce overview paper on options for coordination between UNFCCC, CBD, NBSAPs, NAPA, PACC etc on EBA Investigate integrating EBA into national reports to CBD and UNFCCC Assign some flexible funding to respond to the results of policy proposals re UNFCCC and CBD	Produce a concept paper on potential funding streams and collaboration in delivering EBA in the Pacific Hold workshop looking at options for integration of CBD and UNFCCC in the context of EBA	Produce issues paper [or hold workshop] on opportunities for better integration of EBA with UNFCCC and CBD (including in national reporting) and with other regional initiatives and funding streams
Utilise opportunities presented by the CBD COP-10		Present early results of study of biodiversity baseline data for the Pacific at COP-10	Raise awareness of EBA issues in the Pacific at COP-10	Present early results of biodiversity baseline study at a government & donor meeting at CBD COP-10 in Japan

General area	Small Island States	Large Island States	Equilibrium	Synthesis
Investigate policy gaps and needs		Investigate options for mainstreaming EBA into national and regional policy		Analyse gaps/conflicts in policy, law and governance likely to hamper introduction of EBA within the Pacific region
		Carry out an analysis of policy gaps in the regional with respect to EBA		
Develop explanatory and promotional material relating to EBA	Research a short paper discussing the ways EBA can be communicated to local people within their cultural context	Produce publicity material on EBA		Produce explanatory and promotional material related to EBA suitable for use within the Pacific
	Investigate producing simple visual material to explain climate models and impacts for the Pacific			

Comparison of baseline requirements for EBA between countries/territories: [✓ = data available; x = no data available; ↑ = some data but more needed]

	Cook Islands			Kiribati			Nauru			Niue			Papua New Guinea			Samoa			Tonga			Tuvalu			Vanuatu		
	✓	x	↑	✓	x	↑	✓	x	↑	✓	x	↑	✓	x	↑	✓	x	↑	✓	x	↑	✓	x	↑	✓	x	↑
Conservation priorities (e.g. Key Biodiversity Areas; Important Bird Areas)																											
Biodiversity monitoring (e.g. long term trend monitoring)																											
Carbon (e.g. stores and sinks)																											
Ecosystem services (e.g. watersheds; fisheries; disaster mitigation)																											
PA monitoring and assessment (e.g. management effectiveness, managing for climate change)							Not applicable: no protected areas																				
Community status, vision and scenarios																											
Climate impacts (e.g. long-term monitoring methodologies; modelling)																											
Traditional Ecological Knowledge of climate change impacts & adaptation																											
Other threats (e.g. information invasive species, land degradation)																											

Note that listing something as "data available" also implies that further work will be needed to keep this information up to date

Appendix 2: Suggested objectives and activities for the pilot project

The text below provides a synthesis of activities drawing together the original log-frame plus the inputs from two working groups and includes two additional activities in *italics* following an analysis of the gaps in baseline requirements for EBA developed on day 1.

Objective 1: **Identify, adapt, harmonise (and if necessary develop) a set of tools for EBA tailored for the Pacific**

- Review current tools for EBA, against agreed criteria and, if necessary, adapt existing tools for use in the Pacific region – such as tools for identifying ecosystem services, including carbon
- Develop a concept paper and initial proposals for harmonisation of EBA assessment in the SPREP region
- Develop a review and proposals on options for improving climate modelling for EBA, including use of local data, learning from current downscaling projects in the Pacific and elsewhere
- Synthesise existing research on use of traditional ecological knowledge in identifying climate change effects and their impacts in the Pacific
- Research methods for working with communities to identify climate trends and potential for EBA; and link these to scientific approaches
- Prepare short paper on potential socio-economic impacts of climate change on keystone species (especially important wild species that are not the subject of current SPC initiatives)
- Prepare a short analysis on the implications of geological change in the context of climate change in the Pacific
- *Outline options for standardising biodiversity and climate change effect monitoring in the Pacific region*
- *Extend protected area monitoring and assessment in the Pacific region as a way of improving capacity of both state protected areas and community conserved areas*

Objective 2: **Develop a state of biodiversity and current threats to biodiversity (and gaps in knowledge) report for the Pacific region to assemble a baseline against which to measure EBA, based around identified indicators**

- Prepare a regional overview of biodiversity data, drawing on NBSAPs and other available source, which identifies current information gaps
- Synthesise existing information on the likely impacts of climate change on current threats to species and communities in the Pacific
- Collect and present information and case studies on ecosystem services in the Pacific

Objective 3: **Test tools for implementation and monitoring of EBA in some case study sites**

- Identify and use agreed criteria to select one or more test sites, working with new and existing projects in the region
- Compile baseline social and biological data needed to develop an EBA project in one or more test sites

Objective 4: **Explore opportunities, partnerships and donor cooperation in delivering EBA in the Pacific through NAPA, NBSAP, CBD Island Biodiversity POW, CBD POW on Protected Areas and complementary initiatives**

- Produce issues paper [or hold workshop] on opportunities for better integration of EBA with UNFCCC and CBD (including in national reporting) and with other regional initiatives and funding streams
- Present early results of biodiversity baseline study at a government & donor meeting at CBD COP-10
- Analyse gaps/conflicts in policy, law and governance likely to hamper introduction of EBA within the Pacific region
- Produce explanatory and promotional material related to EBA suitable for use within the Pacific

Appendix 3: Project concept: Multi-year project on EBA and climate change for the Pacific region

The following is a synthesis of the two working groups and the original ideas from Equilibrium. It remains preliminary and requires further analysis during the 12 months of the pilot project.

Aim

To create whole government/island ecosystem approaches in the Pacific to ensure that responses to climate change include ecologically sustainable development, ecosystem-based adaptation and biodiversity conservation, informed through participatory policy development and best practice examples, based on regionally appropriate science and community understanding.

Project scope

- Minimum 5 years duration and multi-million $ project (suggested US$10 million)

Outcomes

Two outcomes which inform each other:

- *Country-based long-term programmes that promote ecologically sustainable development adapted to climate change.*

- *Country-specific projects that demonstrate country or island-wide ecosystem-based adaptation, incorporating accurate, island-level data and adaptive management.*

Amongst potential activities are:

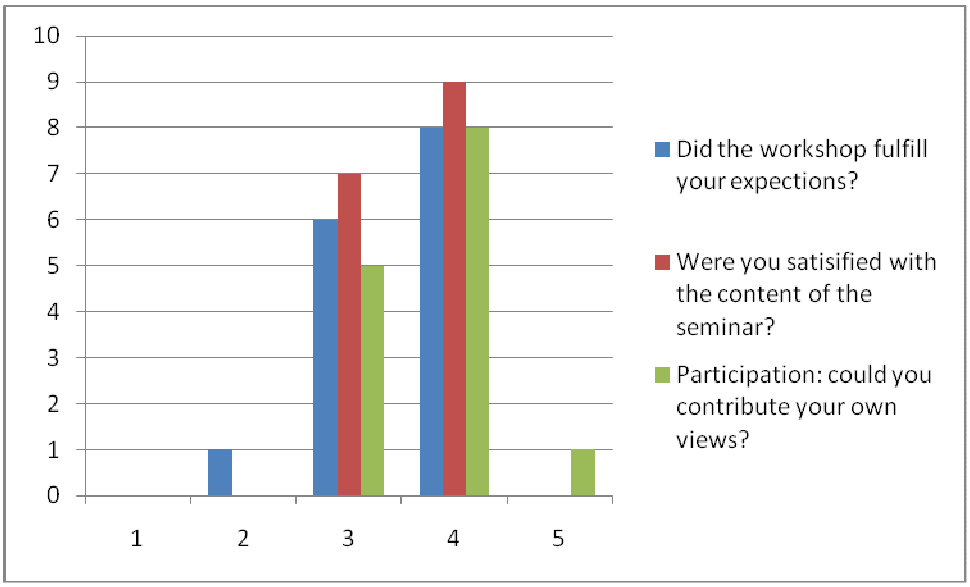
- Completing biodiversity baseline data (and update NBSAP) including identification of ecosystems and indicator species (including socio-economic keystone species) most at risk from climate change
- Developing monitoring systems and national biodiversity databases incorporating both western science and local information sources (e.g. local monitoring and traditional ecological knowledge) that will reveal trends driven by climate change and permit better local-scale prediction and adaptation.
- Testing national level information/modelling of changes/impacts to threatened species and communities from climate change and developing management responses using these models
- Developing best practice (i.e. researched, monitored, demonstrable) on increasing resilience through EBA responses drawing on experience in first project – e.g. for coastal habitats, salt water intrusion, watershed management etc
- Assessing biodiversity conservation responses to climate change in the management of conservation areas, including the need for connectivity and opportunities for different governance types (e.g. from government managed protected areas to community conserved areas)
- Creating national development planning for ecologically sustainable development under climate change scenarios
- Undertaking capacity building including: training (of trainers, on site); awareness and information; knowledge management (data, publications and experience); network of EBA specialists
- Developing policy relating to legislation at local, national and regional level; coordination and mainstreaming; targeting regional and global meetings; identifying long-term funding for ecosystem services)

Partners

The project will need to work with many partners in order to identify and secure sufficient funding.

Appendix 4: Summary of workshop evaluation

Overview of workshop evaluation



(Key: 1 = not at all, 2 = satisfactory, 3 = good (average), 4 = very good, and 5 = excellent)

Summary of comments

Question 1. Did the workshop fulfil your expectations?

- Discussion and content good but concept new so not all easy to understand
- A learning curve/experience/new concept/learned a lot of new things in regards to EBA and climate change and how they harmonise projects
- Covered a lot in a short time – good start to a complex initiative. Great to have climate change and environmental managers together
- Quickly became focused and practical
- More baseline information on EBA in the Pacific collected before hand – and workshop adapting/editing/commenting on that info
- Yes, but perhaps more focus on other programmes/projects in region
- Yes, but background and objectives were not explained clearly
- Good but better is discussions were simplified to clarify points
- 2 days sufficient but could have been structured more constructively
- Good to have participants from Fiji and other Pacific Islands not represented
- Agenda was good although participants should have been notified earlier and been provided more information on EBA

Question 2. Which parts were the most important, relevant and why?

- Scoping and understanding linkages – and gap analysis for exploring options for baseline data
- All important

- Discussion sessions on key components of the project in breakout groups to get participants views, e.g. information gaps and demonstration projects
- Cross linkages between islands in terms of responses to climate change with regard to ecosystems/biodiversity/methodologies/adaptation
- Seeking country views
- Group discussions and brainstorming on expected outcomes and activities of projects
- Discussions on EBA and TEK and harmonisation of tools
- Discussions of activities/case studies/demonstration projects
- Objectives for 12 month project
- Group work and discussions
- Understanding where EBA can be incorporated into existing projects in group discussions
- Articulating bigger project overview and scoping objectives and activities
- Harmonising existing projects in the region
- Groups discussion on large-scale project – this allowed us to highlight what form of implementation we wanted in our countries/territories and what is most important to each country

Question 3. What was missing in terms of content or methods?

- Nothing – a well facilitated workshop / everything pretty much covered
- TEK links to scientific data
- Light on processes towards obtaining workshop outputs
- Proposal should have different components for different countries/territories
- Gap analysis and tools and outputs for project uncertain
- Country-based group discussions
- Discussion of metrological data – is it available for small islands
- More discussion on links with other projects
- Consultants did not fully understand the region – countries/territories should have been given the opportunity to present linkages with other projects
- More examples on new concepts such as ecosystem services
- Presentation on predicted climate change in the Pacific – with current state of knowledge and maps

Question 4. Were you satisfied with the content of the seminar?

- Content was agreeable – was informative on EBA and representative of scope of project and identified gaps in the region
- Yes, issues were explained well
- Good if tools had been adapted for the Pacific and workshop could have been more specific to Pacific
- Presentations were larger island based
- Another day would have been good
- Yes, but more discussion of linkages good
- Smaller groups for discussion
- Workshop materials given earlier

- Given the short time the content was a good introduction to issues and proposal
- Interesting to hear about EBA projects that will be happening in the region

Question 5. Participation: To what extent do you feel you had an adequate opportunity to contribute your own views?

- Sometimes a little lost with the 'highly learned views' of some participants
- Friendly non-threatening style was good
- The group discussions enabled more views to be expressed and idea sharing
- Yes, but not very country specific as project does not have scope to cover all countries/territories
- Same people dominated discussion
- Enough opportunity – overall a worthwhile workshop and very interesting
- More group work
- The consultants were good in listening and understanding our ideas
- Some island participants needed to be encouraged to participate more
- A very participatory-orientated workshop – a lot of opportunities for countries/territories to participate and contribute their ideas
- Each Pacific island contributed a lot on their experiences on CC and adaptation and also the gaps in terms of information
- Ample opportunity in group discussions to give individual views

Appendix 5: Participants list

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Appendix 6: Agenda

SPREP workshop on Pacific Biodiversity and Climate Change – Ecosystem-based Adaptation Analysis and Needs Assessment

Objectives: the workshop will have four main outcomes:

1. Raised awareness about opportunities for ecosystem-based adaptation (EBA) in climate change adaptation strategies in the Pacific, including but not limited to use of protected areas
2. Understanding of the remaining gaps in data, tools and understanding of response strategies
3. Agreement on scope of current project: Pacific Biodiversity and Climate Change Ecosystem-based Adaptation Analysis and Needs Assessment
4. Outline agreement about objectives and content of a future, larger project

The workshop will start with a morning's briefing on progress made by the consultants in collating and analysing information on likely impacts of climate change, potential for EBA and availability of tools; then spend the afternoon in groups or plenary (depending on the number of participants) to feedback on the morning's session, suggest additional information and discuss tools. The second day of the workshop will focus more explicitly on the project proposal, working in groups in the morning and in plenary in the afternoon.

Day 1: S**tatus of climate change in the Pacific, potential for EBA and outline of tools**

9.00 – 9.30	Welcome - David Sheppard, SPREP Director Introduction to the meeting and project objectives – Stuart Chape, Programme Manager - Island Ecosystems Introduction by all participants, giving name, position and hopes for the meeting Group photo
9.30-9.45	*Coffee/tea*
9.45-10.15	Overview of likely climate impacts and potential for EBA – Sue Stolton Results of analysis with particular emphasis on: - Sea-level rise - Increase in natural disasters - Changes in marine and freshwater ecosystems and impacts on fisheries - Reduced water resources - Increase in invasion by non-native species
10.15-11.00	Facilitated discussion on presentation
11.00-12.00	Discussion of potential tools for EBA – Nigel Dudley With a particular focus on: - Protected areas - Other tools for sustainable management (certification, REDD+, etc) - Assessment tools and development of baseline data - Selection and decision-making tools

12.30-13.00 Facilitated discussion on presentation

13.00-14.00 *Lunch*

14.00-15.30 Working groups on knowledge gaps identified in morning (science and TEK)

15.30-16.00 *Tea/coffee*

16.00-17.30 Working groups on tools (both discussion about and if necessary testing of tools)

Day 2: **Developing the current and future projects**

9.00-9.30 Review of outputs from first day – Sue Stolton

9.30-10.00 Outline of proposed stage 1 project – Nigel Dudley
(Greater detail to be available before the meeting regarding content and scope)

10.00-10.15 *Coffee/tea*

10.15-11.00 Facilitated discussion in plenary about scope and objectives of project

11.00-13.00 Discussion on specific aspects of the project, focusing in particular on:
- Case studies (geographical locations)
- Community involvement
- Tools to be developed
- Partnerships
This will probably be in working groups but could also be in plenary

13.00-14.00 *Lunch*

14.00-14.15 Building stage 2 project – Sue Stolton

14.15-15.30 Working group/s to brainstorming options for the stage 2 project including:
- Funding opportunities
- Countries/territories/sites to be included
- Partners

15.30-16.00 Tea/coffee

16.00-17.00 Wrapping up session including:
- Presentation of final proposal for stage 1
- Identification of next steps

17.00 Formal closing of the meeting – David Sheppard