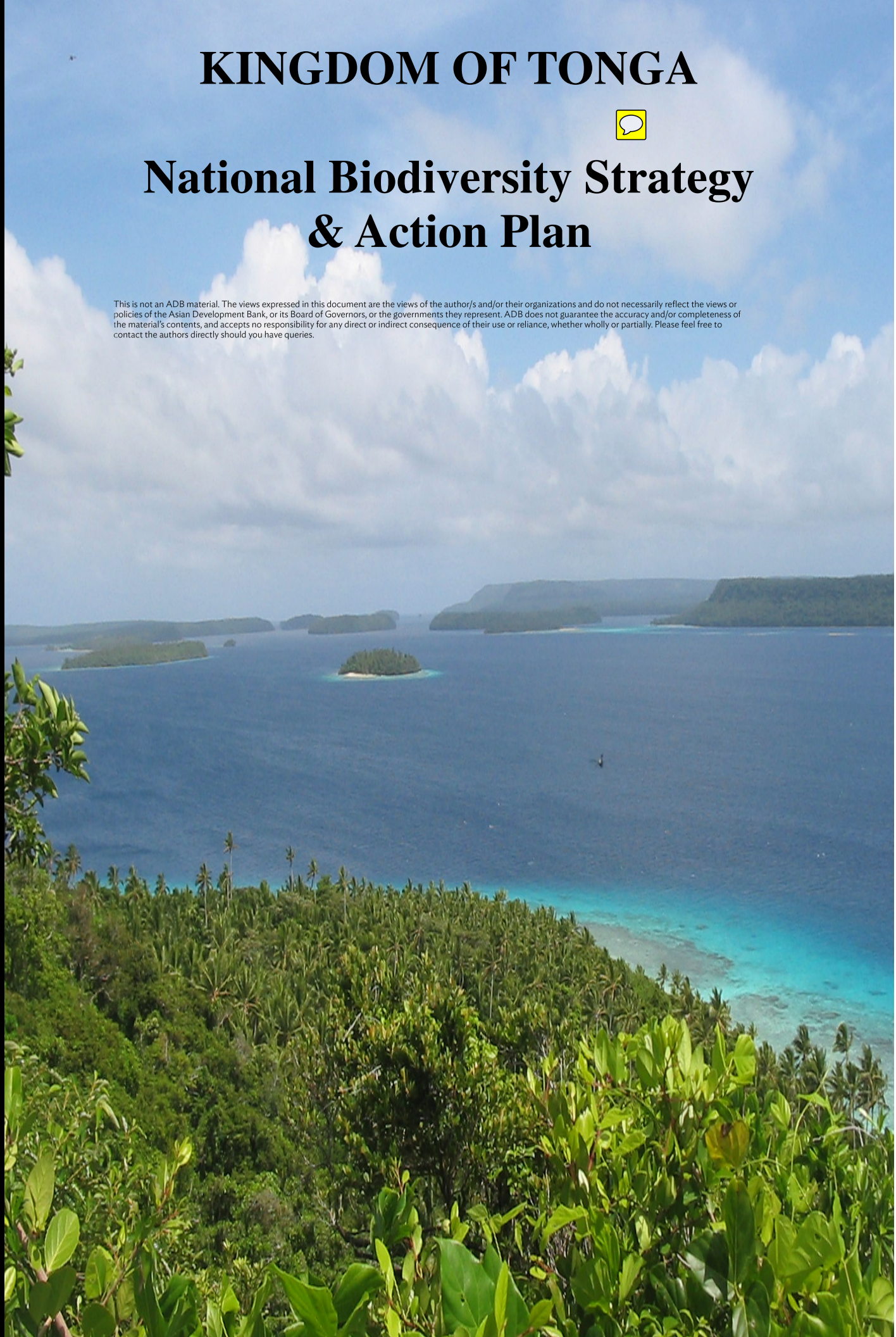
KINGDOM OF TONGA

National Biodiversity Strategy & Action Plan



National Biodiversity Strategy & Action Plan

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Department of Environment
June 2006

CONVENTION ON BIOLOGICAL DIVERSITY

GEF

UNDP

FOREWORD

The Kingdom of Tonga understands the importance of its biodiversity to the livelihood and well being of its people. With that understanding, the Kingdom of Tonga is committed to addressing the biodiversity issues and concerns at a national level, which will also contribute to the global level. Tonga's commitment led to its accession to the United Nations Convention of Biological Diversity (UNCBD), 19 May 1998.

As a party to the UNCBD, Tonga is required to take measures to ensure biodiversity conservation, sustainable use and the equitable sharing of benefits from the use of its biological diversity. The articles of the Convention, outlines the obligations for Tonga to adhere to.

UNCBD Article 6, "General Measures for Conservation and Sustainable Use" requires party countries to develop a national biodiversity strategic action plan. On the 30th June 2003, Tonga commenced the National Biodiversity enabling activity funded by the Global Environment Facility (GEF) with the United Nations Development Program (UNDP), Fiji, as the implementing agency, and the Department of Environment as the executing agency, to develop the NBSAP.

Tonga's NBSAP was developed through dedication, commitment and cooperation from all biodiversity stakeholders of Tonga (public and private sector and also local communities). Community consultation workshops were conducted nationwide to ensure a high participatory, analytic and strategic planning process. Throughout the development of this plan, biodiversity stakeholder findings, comments and inputs were sought and greatly valued.

The plan addresses all issues important for the conservation and sustainable management of Tonga's biodiversity. It draws attention to the different sectors of biodiversity that we heavily depend upon for subsistence, namely Agro-biodiversity, Terrestrial Fauna, Forestry and Marine. In that light, eight thematic areas were developed with strategies and actions to ensure that Tonga's biodiversity is properly conserved and sustain ably managed to be enjoyed by our people and future generations.

As the Minister of Environment and on behalf of the Government of Tonga, I am glad to present this plan. It paves the way for biodiversity conservation effort in the Kingdom of Tonga. May we continue to be great stewards of our biodiversity and its fullness.

.....
Honourable Tuita
Minister of Environment.

Minister of Environment
TONGA

EXECUTIVE SUMMARY

The Kingdom of Tonga ratified the Convention on Biological Diversity (CBD) on May 1998. In doing so, it confirmed its commitment to implement actions at the national level to conserve, sustainably use and protect its biological diversity as its contribution to the conservation and protection of global biodiversity.

The development of a National Biodiversity Action Strategy and Plan (NBSAP) is a critical initial obligation for all parties. Tonga's NBSAP followed the CBD prescribed process of community and public consultation and the stocktaking of existing data and information using local experts. Based on findings of this stocktaking exercise and public consultation, this NBSAP was formulated.

Tonga's known biodiversity is indicative of those genera and species of cultural and economic importance in which considerable investment had been made in research and scientific studies. Thus there is a wealth of information on agro-biodiversity, fisheries and tree species with cultural and medicinal values. But some of this information is dated or incomplete and needs re-surveying to reaffirm their current statuses and to provide baselines for future conservation action and monitoring. There is also a dearth of information on several taxa.

Threats

Of the biodiversity that is known and documented, the main threat is from the indiscriminate expansion of agriculture. The resulting impacts are loss of habitats for native fauna, extinction of rare flora species and the undermining of essential ecosystem functions and services including hydrological cycle, microclimate conditioning, and the loss of forest wood and non-wood products. Degraded and disturbed ecosystems provide conditions conducive to the spread of invasive weed and fauna species. Other threats are the over-harvesting of forests, mangroves and marine fin-fish resources and the

degradation of the mangrove areas by reclamation and waste dumping.

Constraints

Against this backdrop of threats and limited scientific information, the major constraints to effective implementation are the lack of, technical information for conservation planning, technical expertise and capacity, public awareness and appreciation of conservation and weak and ineffective legislation.

NBSAP focus

Tonga's NBSAP seeks to achieve the convention's objectives by targeting these issues and constraints. Strategies are outlined and specific actions prescribed for dealing with them. The NBSAP is organized into key issues areas reflecting a combined emphasis on the ecosystems approach and species-specific focus. A section on agro-biodiversity is indicative of the cultural and economic importance of agriculture and the need to document and preserve its species diversity. Access and benefit sharing issues, local communities and civil society participation and mainstreaming are treated separately, reflecting their relative importance. A final section is dedicated to discussing ways of funding NBSAP implementation.

The main threat of agro-deforestation is perceived as rooted in the absence of an integrated and holistic land-use planning approach. The NBSAP recognizes the priority given to food security and export oriented crop production but advocates for a balance to be struck to ensure ecological sustainability. Specific actions are therefore proposed to protect essential ecosystems, ecological functions and services, and habitats for species of national and international significance.

The threat of over-harvesting both of marine and terrestrial resources is indicative of ineffective legislation and enforcement on one hand, and the lack of public awareness and support on the other. The NBSAP seeks to promote a culture of self-regulation and greater community responsibility, based on heightened awareness and understanding of the biodiversity conservation at all levels of schools, government and local communities.

It also calls for strengthened legislation and enforcement capacity.

The importance of mainstreaming conservation in all levels of development planning in Tonga cannot be overstated. While a section of the NBSAP is dedicated to specific mainstreaming actions of priority, mainstreaming is a cross-cutting and overarching strategy for all levels of the community as well as government. It is the underpinning rationale for all actions promoting awareness raising and education.

Implementation, Review and Monitoring

The NBSAP is designed to be a stand-alone document with clearly defined objectives, strategies and actions. It is designed not for the conservationist, but for the average citizen with an interest in conservation of Tonga's biodiversity as well as its sustainable development. The basis for action in each section is designed to explain and educate readers of the key issues, and to encourage a commitment to implement the prescribed actions.

The NBSAP also features (1) along each action and in brackets, those agencies and organizations to be responsible for implementation, and (2) a matrix of monitoring indicators for all proposed actions to guide implementers and monitors. Most indicators are impact based with some output indicators where impacts indicators are less obvious.

Finally, as a document that will guide the biodiversity conservation in Tonga, the NBSAP sets out the institutional mechanism that will oversee and coordinate its implementation. This same arrangement has responsibility for its regular review and updating.

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ACRONYMS

CBD	Convention on Biological Diversity
CL	Crown Law
CPD	Central Planning Department
DOE	Department of Environment
DO	District Officers
EIA	Environment Impact Assessment
GEF	Global Environment Facility
GMO	Genetically Modified Organisms
GR	Government Representatives
IUCN	International Union for the Conservation of Nature
LMO	Living Modified Organisms
MAF	Ministry of Agriculture and Food Forestry and Fisheries
MEA	Multilateral Environmental Agreements
MOE	Ministry of Education
MOFi	Ministry of Fisheries
MOFo	Ministry of Forestry
MOH	Ministry of Health
MOW	Ministry of Works
MOP	Ministry of Police
MMP	Ministry of Marine and Ports
MLC	Ministry of Labour Commerce and Industries
MLSNR	Ministry of Land and Survey and Natural Resources
NBAC	National Biodiversity Advisory Committee
NBSAP	National Biodiversity Strategies and Action Plans
NGO's	Non Governmental Organisations
PMU	Project Management Unit
PSC	Public Services Commission
SPREP	Secretariat for the Pacific Regional Environment Programme
TCG	Technical and Consultancy Group
TO	Town Officers
TTC	Tonga Traditional Committee
TVB	Tonga Visitors Bureau
TWB	Tonga Water Board

ACKNOWLEDGEMENTS

This plan was made possible with the support, dedication and commitment from the biodiversity stakeholders of Tonga and international organizations. This opportunity is taken to thank the following organizations and individuals for their efforts in producing Tonga's NBSAP.

This plan was funded by the Global Environment Facility (GEF) as an enabling activity, with the United Nations Development Programme (UNDP) as the implementing agency. We take this opportunity to acknowledge GEF and UNDP for their great contribution.

Sincere thanks, is extended to the Department of Environment as the executing agency, especially the Director of Environment, Mr Uilou Fatai Samani and his staff for their continuous support.

Two nationals committees were establish to guide and coordinate the management of the project. The National Biodiversity Advisory Committee (2003 – 2004) and the Biodiversity Technical Consultancy Group provide great support and advice are greatly acknowledged.

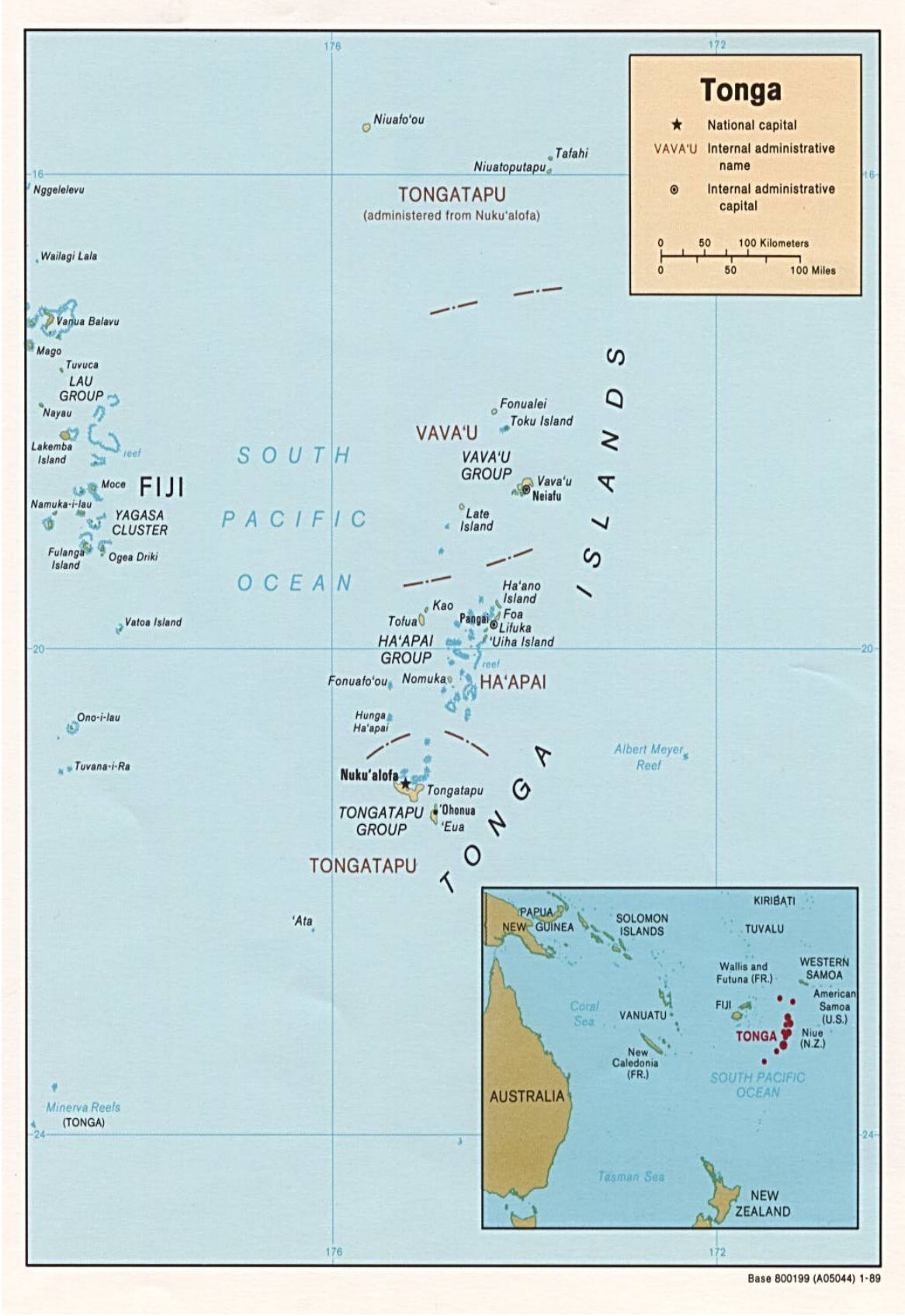
Biodiversity stakeholders were consulted in consultation workshops throughout the project for the development of the plan. Great thanks are due to the government ministries, civil societies, non-government organizations, local villages and schools for offering valuable information.

Mr Sam Sesega of the International Consultancy Group Limited of Apia, Western Samoa was a valuable asset in drafting this plan. Sincere thanks is given to Mr Sam Sesega for his tireless effort in drafting the NBSAP.

Mrs 'Evaline Ha'angana is also acknowledged for editing the Tongan translation. Mr Talolakepa Fulivai is also greatly thanked for formatting this plan. Special thanks is extended to the Project Management Unit for their commitment to produced the plan.

Lastly a great thank you to everyone who offered comments for better sustainable use, conservation and sharing of benefits of Tonga's biodiversity.

Map of Tonga


Tonga
National capital
VAVA'U Internal administrative name
Internal administrative capital
0 50 100 Kilometers
0 50 100 Miles
Niuafo'ou
Tafahi
Niuatoputapu
TONGATAPU
(administered from Nuku'alofa)
Nggelelevu
Wailagi Lala
Vanua Balavu
Mago
Tuvuca
LAU GROUP
Nayau
Lakemba Island
reef
Moce
FIJI
Namuka-i-lau
YAGASA CLUSTER
Fulanga Island
Ogea Driki
Vatoa Island
SOUTH PACIFIC OCEAN
Fonualei
Toku Island
VAVA'U
VAVA'U GROUP
Vava'u
Neiafu
Late Island
TONGA ISLANDS
Ha'ano Island
Kao
Tofua
Pangai
Foa
Lifuka
'Uiha Island
HA'APAI GROUP
reef
Fonuafo'ou
Nomuka
HA'APAI
Hunga Ha'apai
Ono-i-lau
Tuvana-i-Ra
Albert Meyer Reef
Nuku'alofa
Tongatapu
'Ohonua
'Eua
TONGATAPU GROUP
TONGATAPU
'Ata
Minerva Reefs
(TONGA)
PAPUA NEW GUINEA
SOLOMON ISLANDS
KIRIBATI
TUVALU
Wallis and Futuna (FR.)
WESTERN SAMOA
American Samoa (U.S.)
Coral Sea
VANUATU
FIJI
TONGA
Niue (N.Z.)
New Caledonia (FR.)
SOUTH PACIFIC OCEAN
AUSTRALIA
Tasman Sea
NEW ZEALAND
Base 800199 (A05044) 1-89

A. INTRODUCTION

Biological diversity means the variability among living organisms from all sources existing on Earth. It includes the terrestrial, marine and other aquatic ecosystems, and the ecological complexes of which they are part, and this includes diversity within species, between species and ecosystems.

To say that conserving biodiversity is important to human well-being is a gross understatement. But the dependence is mutual. The well-being of humanity is intricately intertwined with the health of the biological environment surrounding him. The ability of humans to alter and transform his environment purposefully for his economic gain, however, makes him the major culprit for its over-exploitation and degradation. By the same token, it befalls on humans the prime responsibility for its conservation and proper stewardship.

This document deals with Tonga's biodiversity. It's a plan for its conservation and sustainable management - discussing issues, defining strategies and prescribing actions for addressing them. It is based on the best information available, and developed based on the expertise, knowledge and experience of Tongan scientists, environment specialists, resource managers, users and owners.

The NBSAP is designed principally to guide the Government ministries whose assumes the lead role in environmental management and conservation, as well as civil society organizations, NGOs and individuals already committed to the conservation of Tonga's biodiversity. The document will also inform Tonga's traditional development partners and other funding organizations who may be interested in contributing to its implementation. Last but not least, the NBSAP aims to inform, educate and to remind all Tongans to value and have pride in their natural heritage, and to encourage them to contribute to its conservation and sustainable management.

B. IMPORTANCE OF TONGA'S NBSAP

The Kingdom of Tonga became a party to the Convention on Biological Diversity on

May 1998. This gesture reaffirms its expressions of commitment and support for the concept of sustainable development during the Earth Summit in 1992 and subsequently, the 1994 United Nations Conference for the Sustainable Development of Small Islands Developing States in Barbados.

Since these events, sustainable development has become an overarching goal for Tonga's National Sustainable Development Plans and of its Vision for Tonga 2025.

Under the Convention on Biological Diversity (CBD), Tonga commits itself to the conservation, sustainable use and the equitable sharing benefits from the use of its biological diversity. Amongst its first obligations, under Article 6, Tonga is required to develop national strategies and plans or programmes or adapt for this purpose existing plans, which sets out how she intends to give effect to its obligations. This National Biodiversity Strategies and Action Plans (NBSAP) fulfill this obligation. And while partly prompted by the requirements of the Convention, the NBSAP initiative supported with GEF funding, provided for Tonga a timely opportunity to formalize plans for actively pursuing its commitment to the concept of sustainable development.

C. BIODIVERSITY CONSERVATION AND SUSTAINABLE DEVELOPMENT IN THE TONGAN CONTEXT

Tonga's sustainable development relies on a narrow and finite base of natural capital, with agriculture, fisheries, forests and tourism its economic mainstay providing both for its exports as well as the livelihoods of its people. The degree of dependence is significant as there is limited value added processing to enhance market value and foreign exchange earning power.

This direct dependence on primary extraction and exploitation of a few finite natural resources – the levels of which are rapidly dwindling - underscores the need for careful and wise resource stewardship and management.

As a group of tropical small islands with significant low-lying areas, Tonga is extremely ecologically vulnerable. The threats of increasing frequency and intensities of cyclones, extreme climatic events like El Nino and other environmental changes linked to global warming are already a reality. Tonga's ability to adapt and recoup from the impacts of these events is dependent on the resilience and recuperative ability of its ecosystems and the adaptability of its species. But ecological stability relies on diversity. Preserving genetic variability of ecosystems and species is therefore crucial.

In this context, conserving biodiversity is made infinitely more complex. Ecologically, biodiversity comprises interrelated living systems of flora, fauna and genetic life forms and the deterioration of one part will affect the others. There are already glaring evidences of unsustainable trends, as for instance, in the impact of rapid agricultural expansion and the use of many environmentally unfriendly technologies on forests and terrestrial ecosystem services. Economically, a sustainable solution is a trade-off with some short-term loss in benefits for long-term availability of goods and services. Tonga faces this difficult situation.

Policy makers and planners are urged to recognize these trends and to put in place policies that would ensure an approach to resource use that is systematic, integrated, equitable in its distribution of benefits and, above all, sustainable.

The emphasis is on sustainable use and conservation of resources reflecting the overriding priority on food security and providing sustainable livelihoods. But exceptions must be made where the threat of extinction, total resource depletion or irreversible degradation is clearly evident, particularly for priority species and ecosystems.

Biodiversity is also important to Tonga's cultural heritage. There is a wealth of traditional ecological knowledge, practices and innovations that is relevant and applicable to modern Tonga. They form an integral part of Tongan culture and identity as a people. These should be documented, and for practices and innovations with

practical and environmentally friendly applications, promoted for wider use. Traditional healing methods and knowledge of the medicinal and pharmaceutical properties of many plants and animal parts offer potential opportunities for commercial exploitation. Allowing the extinction of species forego forever these possibilities for all generations. These potentials provide another argument for conservation and protection while scientific investigations are carried out.

D. THE NBSAP FORMULATION PROCESS

The following chronicle of events records the activities and processes adopted for the production of Tonga's NBSAP.

May 1998	-	Tonga ratified the Convention of Biological Diversity
	-	Project approved by UNDP
March 2002	-	Establishment of National Biodiversity Advisory Committee approved by cabinet
June 2003	-	Project Management Unit recruited

Activity 1 – Stocktaking of Tonga's Biodiversity

July 2003	-	Prepare Terms of Reference for Local Consultants to conduct the stocktaking activity
	-	National Biodiversity Advisory Committee 1st meeting
August 2003	-	National Biodiversity Advisory Committee 2nd meeting
September 2003	-	Advertising of Expression of Interest for Stocktaking Activity (Local Consultants)
	-	Selecting of Local Consultants to form the Biodiversity Technical and Consultancy Group (BTCG)
October2003	-	Meetings with BTCG to decide time to take leave without pay to conduct the stocktaking activity
	-	Consultation with Civil Society
November 2003	-	8 SBSTTA Meeting attended by Project Manager
January 2004	-	BTCG signing Activity One contract

March 2004 - Reports from BTCG due

April – June 2004 - Editing and layout of Stocktaking Report

August 2004 - Tonga Biodiversity Stocktaking Technical Report 1 Published

May 2005 - Stocktaking Database established.

Activity 2 – Identification and analysis of options

May – August 2004 - Consultation Workshop 1
(Present stocktaking findings and identify biodiversity strategies)

September – October 2004

- PMU prepare and edit Tonga Biodiversity Consultation Workshop 1, Technical Report 2 based on findings from Consultation Workshop 1.

December 2004 - Tonga Biodiversity Consultation Workshop 1, Technical Report 2 published

Activity 3 – Planning and preparation of NBSAP

September 2004 - Preparing TOR for consultant to draft the NBSAP

- Expression of Interest for consultant to draft NBSAP advertised

October 2004 - Consultant selected

- Consultant signed contract and visited Tonga to review Tonga Biodiversity Stocktaking, Technical Report 1 and Tonga Biodiversity Consultation Workshop 1, Technical Report 2 and for further consultation with relevant stakeholders.

November 2004 - First NBSAP draft submitted from consultant

November 2004 – April 2005

- Consultation Workshop 2

(To present the NBSAP draft and allow for comments and feedbacks)

May 2005 - Consultant to finalise NBSAP based on feedbacks from Consultation Workshop 2

June - September 2005

- Consultation Workshop 3 (Prioritising NBSAP strategies and actions)

October—December 2005

- Tongan translation of the NBSAP

January 2006 - Finalise the threatened species list for Tonga based on NBSAP consultation workshops

March - May 2006 - Format, layout and publishing of NBSAP

- Preparation of priority NBSAP strategies and actions report.

June 2006 - Launching of the NBSAP (Environment Week, 4 – 9 June 2006)

E. TONGA'S VISION, GUIDING PRINCIPLES AND GOALS

E.1. VISION

Tonga's biological diversity and natural resources are protected, conserved and enriched and are appreciated and enjoyed by her present and future generations and the rest of the world.

E.2. GUIDING PRINCIPLES

1. **Tonga's sovereign right**

Tonga has full sovereign rights over her biological diversity and natural resources.

2. **Good governance and leadership**

The Government of Tonga takes the leading role to ensure the protection, conservation and sustainable management of its biodiversity, through effective

governance and leadership and in full consultation with all stakeholders.

3. Collective responsibility

The protection, conservation and sustainable management of Tonga's natural heritage is the responsibility of all Tongans and visitors to Tonga, as individuals and collectively through its Government, civil society groups and non governmental organizations.

4. Stakeholder participation

The full participation and collaboration of all stakeholders is required for the effective coordination and implementation of the NBSAP.

5. Integrated and multidisciplinary

An integrated and multidisciplinary approach is fundamental to the success of biodiversity and sustainable resource management. It calls for the working together of different agencies, disciplines and organizations to achieve common goals and objectives.

6. Commitment to sustainable development and hardship alleviation

The long term and sustainable well being of the Tongan people is at the center of all sustainable development initiatives.

7. Traditional knowledge, practices and innovation

Tongan traditional knowledge, innovations and sustainable practices which are important for the protection and conservation of biodiversity, should be fully recognized, preserved and maintained.

8. In situ and ex-situ conservation

Biodiversity is best conserved in those places where it naturally occurs (in situ) however ex-situ conservation may be needed to assist in the conservation management of threatened species or forms.

9. Transparency and Accountability

Tonga's biodiversity is a national and collective asset and the state of its health should at all times be a matter of public knowledge. Information describing its status, extent, diversity and activities for its conservation should be collected and made accessible to all sectors of society.

10. NBSAP – A living document

The NBSAP is a living document designed to address priorities as defined now but able to incorporate and address new issues and priorities that will emerge in the future. It is capable of self-assessment and self-reflection.

E.3. STRATEGIC GOALS –

Forest ecosystems –

Tonga's forest ecosystems and resources are sustainably managed with in-situ and ex-situ means and providing the full range of services and products essential for Tonga's economic and social well-being, within a land management system that integrates all land uses in an optimal allocation.

Marine ecosystems –

Priority ecosystems and habitats including coral reefs, slope fisheries areas, priority spawning and feeding sites are productive, healthy and sustainably managed.

Species Conservation –

Tonga's priority species are protected and thriving in their natural habitats, and diversity of endemic, native and non-native species comprising Tonga's natural heritage is well documented, effectively conserved and managed sustainably.

Agro-biodiversity –

Tonga's rich agro-biodiversity is protected, conserved and sustainably managed, supported by progressing science-based initiatives to enrich and enhance its diversity for

greater productivity and genetic stability.

Local communities and civil society –

Local communities and civil society have pride in Tonga's natural heritage and are active advocates and participants in its protection and management.

Genetic resources and traditional ecological knowledge –

Tonga's genetic resources and traditional ecological knowledge are fully protected from unlawful exploitation, documented and profitably used with benefits equitably distributed and shared.

Mainstreaming biodiversity conservation –

Biological diversity is recognized, respected and integrated into all social and economic sectors strategies and plans for its economic, ecological, social, cultural and spiritual values.

Financial resources and mechanisms –

Tonga's NBSAP is financed from resources generated from a diversified and reliable mix of local and external funding sources.

F. STRATEGIES AND ACTION PLANS

F.1 Theme Area 1 - FOREST ECOSYSTEMS

Basis for Action –

Continuing expansion of large-scale commercial agriculture constitutes the most significant cause of forest ecosystem degradation and habitat loss in Tonga and the biggest threat to the conservation of its biodiversity. The priority on agriculture for food security and for export dictates that in terms of land use, agriculture will continue to dominate.

The continued loss of forests however poses a threat not only to species, but also to other

ecosystem services essential to Tonga's sustainable development. Forests are essential for water resources replenishment and storage, contributes to soil stability and nutrient cycles, provide timber and non-timber products, traditional medicines, fuelwood, traditional building materials and others.

As habitat for birds and other terrestrial fauna, forests plays a major role in maintaining ecological balance by hosting species that are critical to the human food chain and which ecological interrelationships are essential for proper ecosystem functioning.

Objective 1.1 – Arresting Agro-deforestation

To minimize the loss and degradation of forest ecosystems and habitats as a result of agricultural expansion.

Strategies –

Indiscriminate agro-deforestation needs to be curbed. At the same time, forests essential for water conservation, soil protection and forest ecosystems of high conservation value need protection. A major part of the solution is an comprehensive integrated land use planning exercise that will define a holistic allocation of land to all legitimate uses essential to Tonga's sustainable development. But this solution will take time as data needs collection, capacity built and legislation developed. There may also be political and institutional constraints that may lead to delays.

Given these risks, it is imperative that short-term measures are taken to stem agro-deforestation in the immediate term while medium term plans and solutions are being developed. Both approaches are proposed.

Actions –

	Responsible Agencies
1. More effectively enforce existing legislation to protect the remaining primary natural forests particularly the remaining primary forests on 'Eua, Kao, Tofua, Niuatoputapu and Niuafo'ou, and all water catchment areas.	**1. MAFF/DO/GR/ MOPo/DOE**

2. Review forest act and legislations.	**2. MOFo/DO/ NGO's**
3. Discourage the felling of native forest species in agricultural lands.	**3. MOFo/MAF/ DOE/NGO's/DO/ GR**
4. Promote the replanting of trees along farm boundaries and the replanting with trees of degraded sites.	**4. MOFo/MAF/ DOE/NGO's**
5. Review existing land-use plans and resource maps of all the main islands of Tonga and identify forest areas essential for biodiversity conservation and water catchment areas.	**5. MOFo/ MLSNR/DOE/ MAF**
6. Develop and implement management plans for areas identified for protection in (1) above.	**6. MOFo/DOE/ MLSNR**
7. Promote the use of traditional and non-traditional agroforestry systems of mixed species planting as buffer for protected and other sensitive areas including habitats for threatened species and water catchments.	**7. MOFo/NGO's/ TWB**
8. Promote the replanting of coconuts in appropriate and previously cleared areas. .	**8. MOFo/MAF/ NGO's**

Objective 1.2 – Integrated Land Use Planning

To ensure the optimal and sustainable allocation and use of Tonga's biodiversity and natural resources.

Strategies -

It is essential that the use of land in Tonga is reviewed within the framework of an integrated plan to ensure that all legitimate and priority uses are properly accommodated

in a land use mix that is optimal and sustainable. In other words, while agriculture will continue to be the priority land use, forest areas essential for water resources management, biodiversity conservation, human settlement, infrastructure development, waste disposal, industries, social amenities and others are clearly defined and set aside.

Such an exercise demands up-to-date information, the use of planning tools such as GIS and remote sensing, supportive legislation, and an inclusive planning process that promotes a multidisciplinary approach and provides for public consultation and input.

Recognizing that this solution may take time to implement, it is important that immediate actions are identified and implemented to minimize the impact of agro-deforestation and protect priority ecosystems in the interim. In this noteworthy in this context that Tonga is in the early stages of designing and implementing a Sustainable Land Management Project under GEF funding. This is an opportunity to advance the concept of an integrated approach to national land use planning for possible external support. This possibility should be explored. Synergies between the Sustainable Land Management Project and the proposed integrated land use planning initiative should be pursued fully.

Actions –

1. Develop and implement a national integrated land-use plan to ensure the sustainable allocation of land for all priority land uses including agriculture, watersheds, forestry, settlements, industries, waste disposal, infrastructure and the protection of key habitats and ecosystems.	**1.MOFo/DOE/ MLSNR/MAF/CPD/ MOW/PSC/NGO's**
2. Review existing legislation and where necessary enact new ones to support the development of an integrated land use plan and its subsequent implementation.	**2. DOE/MOFo/CL**
3. Establish a pilot project.	**3. MOFo**

4. Support the implementation of the Sustainable Land Management Project and where possible, influence its design to promote the integrated approach to land use planning and management.

4. MOFo/DOE/ MLSNR/MAF/ NGO's

Objective 1.3 – Sustainable Forest Management

To ensure the sustainable management of Tonga's natural forest resources.

Strategies -

The remaining natural primary forests in Tonga are concentrated mainly in Eua, Kao, Tofua, Late and Tafahi Islands. These forests are not under significant pressure from agriculture due to their remoteness, and in some cases, steepness and inaccessibility. They should be protected fully immediately until the proposed integrated land-use planning exercise determines otherwise. Protecting now will preserve land use options for the planning exercise.

Most of the remaining forest ecosystems in Tonga, particularly on Tongatapu, are secondary, relatively disturbed and often hosting a variety of exotic and or alien invasive tree species. These forests however provide services such as soil stability, fuelwood, shade and building materials. For these values, they should be improved and retained. Others more exposed to threats, particularly mangroves, needs protection from reclamation, unlawful mining activities, and pollution. In some cases, replanting with appropriate tree species should be encouraged.

At the policy level, a national forest policy should be developed to define the long term goals and objectives for managing Tonga's forest resources. It is important that the forest policy complements the objectives and strategies of the NBSAP.

Actions -

1. Formulate and implement a national forest policy taking into account the results of

the national forest inventory, the strategies proposed in this NBSAP and based on principles of sustainable forest and land-use management.	**1. MOFoy/DoE/ MLSNR/MAF**
2. Review and update forest legislation and effectively enforce it to support the implementation of the national forest policy and NBSAP.	**2. MOFo/CL/DoE**
3. Encourage the replanting of trees for fuel wood and for raw material for cultural, social and economic purposes.	**3. MOFo/DOE/ NGO's/DO/TO**
4. Strengthen the Ministry of Forests' technical capacity in specialized areas of forest management and science.	**4. MOFo**

Objective 1.4 – Conservation Areas

To improve the management of existing parks and reserves and, consistent with the integrated land use plan, to expand the conservation area network to cover a representative samples of all major terrestrial ecosystems.

Strategies –

Tonga's land tenure system dictates that the protection of priority areas for conservation objectives lies primarily with the Crown. There are already efforts underway in this regard with the 'Eua National Park project. Building on this initiative, and as part of the information gathering phase of the proposed integrated land use plan, it is necessary to identify, describe and map all existing ecosystems in the country, and use this information to determine areas of high conservation value and of priority for protection.

The proposed 'Eua National Park Management Plan needs to be executed. However public concerns about the lack of community involvement and sustainable management of resources should be addressed first.

Finally, despite the centralized nature of the land tenure system, the involvement of local communities that are directly impacting areas of high conservation value should be encouraged and, where appropriate, incorporated into protected area management.

Actions –

1. Conduct an ecological survey to identify, describe and map all the major terrestrial ecosystems comprising Tonga's terrestrial environment.	**1. MOFo/DOE/ MLSNR**
2. Identify ecosystems of high conservation value and promote their conservation within the framework of an integrated national planning exercise.	**2. MOFo/DOE/ MLSNR**
3. Review the 'Eua National Park Management Plan as part of the proposed national ecosystem conservation program, to integrate conservation and sustainable use objectives.	**3. MOFo/DOE/MAF**
4. Facilitate the effective implementation of the 'Eua National Park Management Plan.	**4. MOFo/DOE**
5. Encourage and facilitate the involvement of local communities and resource owners in the conservation of areas and resources under their direct control.	**5. MOFo/DOE/DO/ TO**
6. Establish a national herbarium targeting threatened endemic and culturally important species to complement in -situ conservation initiatives.	**6. MOFo**

Objective 1.5 – Information, research and monitoring

To promote the effective and systematic collection and management of relevant

information through scientifically designed research studies and surveys.

Strategies -

A science-based and systematic approach to biodiversity conservation is necessary to ensure the correct targeting of conservation effort and resources, and the optimal allocation of land. For instance, given Tonga's limited land area, it is highly desirable that areas set aside for protection constitute representative samples of ecosystems that are of national, regional and global significance. Similarly where scarce resources are invested in the protection of species, the status of those species as priorities for conservation funding is based on universally accepted scientific criteria i.e. IUCN criteria.

A science-based biodiversity conservation program demands the collection of baseline data to management planning, and to provide baselines for future monitoring. Once collected, this information needs to be stored in databases that will give it security without compromising easy access for retrieval and use.

Actions –

1. Support the implementation of an ecological survey to identify, describe and map all major terrestrial ecosystems comprising Tonga's terrestrial biodiversity.	**1.MOFo/DOE/ MLSNR/MAF**
2. Ensure the proper collation and storage of existing and new data on Tongan biodiversity in properly designed and managed databases for efficient access and retrieval to support conservation planning and decision-making.	**2. MOFo/DOE**
3. Coordinate all environment-related scientific studies and	**3. DOE**

investigations by private and government investigators to ensure non-duplication, legitimacy, relevance to Tonga's priority research needs, and to protect against the loss of sensitive biodiversity information.

4. Initiate and maintain an on-going program of monitoring of key threats to terrestrial ecosystem health and ensure the regular reporting of monitoring results to appropriate stakeholders and decision-makers.	**4. MOFo/DOE**

Objective 1.6 – Public awareness and education

To increase public understanding of and support for the conservation and sustainable use of forest biodiversity.

Strategies –

Increasing public awareness calls for the right combination or choices of media outlets (TV, radio, printed media etc) to reach out to the largest numbers. At the same time, information needs to be properly packaged to communicate effectively, recognizing the diverse nature of different target groups and their varied ability to access and understand scientific and technical information.

For forest conservation objectives, key target groups are sawmilling and logging operators and farmers.

Actions -

1. Initiate a program of public awareness and education using all types of media outlets to promote a. the importance of Tonga's forest ecosystems to the ecological sustainability of Tonga's socio-economic development; b. public understanding of the adverse impacts of	**1. MOFo/MAF/DOE/ MOH**

unplanned agricultural expansion on Tonga's biodiversity,

c. understanding of the cultural and economic importance of threatened endemic forest tree species.

2. Conduct awareness activities targeting local farmers to promote tree planting and agroforestry systems.

3. Support on-going efforts to strengthen and or integrate conservation and sustainable development principles into school curricula.

2. MOFo/MAF/ MOH/DOE

3. MOFo/DoE/MOE

F.2 Theme Area 2 – MARINE ECOSYSTEMS

Basis for Action –

Coastal and marine ecosystems such as mangroves, coral reefs, seabed grasses and lagoon areas serve important functions as spawning and feeding areas for many species, habitats for others and offer coastal protection from storm surges and tidal activities. The ability of coastal and marine ecosystems to perform these functions have been severely impaired by poorly planned development activities including infrastructure, land reclamation, sand mining, waste disposal and settlements. Pollution from land-based activities including residues of agricultural chemicals threatens not only soil micro-organisms but also coastal and marine habitats and species. Discharges of ballast water from ships not only pollute coastal environments but also often introduce new species that often become invasive.

Protecting marine ecosystems and habitats involve minimizing the impacts of land-based activities, the sustainable management of coastal and marine areas and the strict protection of sensitive and critically threatened habitats.

Objective 2.1 – Managing Impacts of Land-based Activities

To minimize the adverse impact of land based activities on coastal and marine species and ecosystems.

Strategies –

Direct actions through the enforcement of legislation, and the use of economic incentives to discourage unsustainable practices are likely to be most effective in the short term. Compliance with the Environment Impact Assessment legislation is vital to minimizing the impact of many land-based activities.

Actions –

1. Strengthen existing legislation and or introduce new ones to support effective EIA procedures as a means of regulating sand mining, land reclamation, coral quarrying, mangrove destruction and waste disposal	**MOFi/DOE/MLSNR**
2. Implement Environmental Impact Assessments procedures to assess and mitigate against adverse impacts of development activities on coastal environments.	**2. DOE/CPD/MLC/ MLSNR/MOF/MOW MOFi**
3. Discourage unsustainable agricultural practices including the use of inappropriate agricultural chemicals.	**3..MAF/MOF/DOE**
4. Reduce discharge of wastes to coastal areas from point source pollution	**4.DOE/MAFF/MOH/ MMP/MOFi**

Objective 2.2 – Marine conservation areas

To expand the existing network of protected areas to effectively conserve major coastal and marine ecosystems and habitats of biological and socio-economic value.

Strategies –

Open and unlimited access to marine areas for fishing and harvesting of other marine resources is not conducive to sustainable resource management. For conservation purposes, direct government intervention with legislative or enforceable policy instruments is, by necessity, critical for protecting priority marine sites. Such sites include coral reefs, mangroves, seabed grass ecosystems, fish breeding areas and sites critical to the reproductive cycle of priority species including marine turtles.

Appropriate tools include marine reserves, parks, sanctuaries, and community-based marine protected areas. In the longer term, the success of any of these tools and areas may lead to nomination for consideration as World Heritage properties, or as wetland sites under the Ramsar Convention or Man and Biosphere Reserves.

In the long term resource users, local communities must be encouraged to assume greater responsibility for the sustainable management of marine resources under their control through education and awareness raising programmes and where necessary, the innovative use of economic incentives..

Actions -

1. Identify critical coastal and marine areas vital as habitats and for the spawning and breeding of species of high economic, conservation, and or cultural importance and promote their strict protection as managed marine parks, reserves and or sanctuary areas.	**1. MOFi**
2. Explore the possibility of nominating select areas of global significance such as coral reefs and mangroves as World Heritage properties, or as Wetland Areas under the Ramsar Convention, or as MAB sites.	**2. MOFi**
3. Promote and facilitate the setting up of community-based	**3.MOFi/DO/TO**

marine conservation areas involving local communities and resource users where there is local interest and commitment. This may include some of the protected area options referred to above.	
4. Draw on the experiences, lessons learned and best practices from the Ha'apai Marine Conservation Area Project, International Waters Project and other similar initiatives, and use these, where appropriate, to guide the design and management of new conservation areas	**4. MOFi/DOE**
5. Formulate management plans for Tonga's existing five (5) marine parks where none currently exists, and ensure their effective implementation. Review, update and implement existing ones..	**5.MOFi/DOE/ MLSNR/DO/TO**
6. Identify beach areas vital to hawksbill and green turtles nesting and initiate actions to ensure their effective protection.	**6. MOFi**
7. Support the existing moratorium on whale harvesting within Tonga's EEZ and regional efforts for the setting up of a South Pacific Whales Sanctuary.	**7.MOFi**

Objective 2.3 – Sustainable management of marine biodiversity

To promote the use of environmentally sound practices in the management of marine resources.

Strategies –

Tonga's deep slope fishery is seriously threatened and in need of urgent and decisive conservation action. Several species of economic and cultural value in this fishery are reported to be endangered and easily susceptible to overfishing.

To address this, current initiatives such as the Tuna Management Plan and the South Pacific Whale Research Project should be supported. Similarly existing legislation and policies regulating the use of destructive fishing practices and unsustainable fishing technologies should be more strictly enforced.

Open and unlimited access rights to marine resources demands the use of top-down control-and–command approaches to achieve conservation objectives. At the same time, public awareness raising and education activities are necessary to encourage supportive attitudes.

The impact of climate change of marine biodiversity requires close monitoring and effective adaptation measures. Measures to address these impacts should be incorporated into new and existing marine resource management plans including the Tuna Management Plan.

Actions –

1. Develop and implement management plans to conserve Tonga's deep slope fishery with emphasis on the sustainable management of stocks of the following pelagic species – Palu tavake (Long ailed snapper), Palu malau (Short tailed snapper) and [1]Mohuafi (Convict grouper).	**1. MOFi**
2. Support and reinvigorate action to more effectively enforce legislation to eliminate the use of destructive traditional fishing practices, and the use of modern and unsustainable fishing technologies (refer to Annex 4).	**2. MOFi**
3. Enact and enforce legislation regulating the harvesting and sale of undersized catches.	**3.MOFi**

4. Support existing programs promoting the sustainable management of marine species including the South Pacific Whale Research Project and the Tuna Management Plan (2003).	**4. MOFi**
5. Ensure the enforcement of existing Whale Watching Operators and Guides Guidelines to minimized negative impacts of whale watching activities, anchoring of yachts etc on whale populations and environments.	**5. MOFi/TVB**
6. Implement the PacPOL programme to protect native marine biodiversity against the threat of invasive alien species introduced through ballast water discharges from ships.	**6. MOFi**
7. Collaborate closely with local communities regarding the reporting and implementation of measures against algae bloom and outbreaks of crown-of-thorns.	**7. MOFi**
8. Review existing marine resources policies and plans and incorporate measures to address the impact of climate change on marine resources and environments.	**8. MOFi**

Objective 2.4 – Information, research and monitoring

To promote scientific research and regular monitoring of critical marine ecosystems, and the proper management of scientific data to support the conservation and sustainable management of marine ecosystems.

Strategies –

A well designed monitoring program should be initiated targeting Tonga's deep-water slope fishery. Regular monitor of other marine environments (e.g. turtle nesting areas, mangroves and aggregation sites for certain species; e.g. seamounts) is also necessary to

facilitate regular assessments of species and ecosystem health and to inform conservation and resource management planning.

Information regarding the impact of climate change on marine environments also requires close collaboration with regional and international organizations like SPREP and World Resources Institute. Close contacts with these agencies and organizations for information is necessary to maintain access to up-to-date scientific knowledge.

The proper storage of data in well designed databases that allows easy access and retrieval is important.

Actions –

1. Design and implement a monitoring program targeting the deep -water slope fishery areas, to generate accurate data on the impact of fishing on the ecosystem and on priority species namely - Palu tavake (Long ailed snapper), Palu malau (Short tailed snapper) and Mohuafi (Convict grouper).	**1. MOFi**
2. Initiate monitoring programs for sensitive and priority marine ecosystems to inform marine resource management planning and decision-making.	**2. MOFi**
3. Ensure the proper storage and management of scientific data and their effective use to support planning and decision-making.	**3.MOFi /DOE**

Objective 2.5 – Public awareness and education

To enhance public knowledge and understanding of Tonga's marine ecosystems and of issues related to their conservation as a means of fostering public support for marine conservation objectives.

Strategies –

Increasing public awareness of conservation issues calls for the right combination or choices of media outlets (TV, radio, printed media etc) to reach out to the largest numbers. At the same time, information needs to be properly packaged to communicate effectively, recognizing the diverse nature of different target groups and their varied ability to access and understand scientific and technical information.

For certain messages and themes, engaging high profile individuals, and using outlets such as the preaching of conservation in churches, is known to have worked well in many Pacific Island countries.

Actions –

1. Promote public awareness and understanding of: a. the impacts of land-based activities on coastal environments and species, b. the ecological significance of mangroves for the breeding and spawning of marine species and for coastal protection, c. the destructive impacts of many traditional and modern fishing methods on Tonga's marine resources and environment, and d. existing legislation related to marine resource management.	**1. MOFi/NGO's/ DOE**
2. Use innovative approaches to delivering conservation messages including drama, TV and radio programs and the use of strategic gatekeepers such as local church leaders and high profile sports people.	**2. MOFiNGO's/DOE**

F.3. Theme Area 3 – SPECIES CONSERVATION

Basis for Action –

Tonga's biodiversity include several species that are considered globally significant such as whales, hawksbill turtles, megapodes and several others that are endemic and found nowhere else on the planet. Several of these are either endangered or critically endangered according to the IUCN's Red List of Endangered Species. These include the hawksbill turtle (*Eretmochelys imbricata*, CR), langakali vao (*Aglaia heterotricha*, CR), megapode (*Megapodius pritchardii*, EN), the Pacific sheath-tailed bat (*Emballonura semicaudata*, EN), green turtle (*Chelonia mydas*, EN) and the giant wrasse (*Cheilinus undulates,* EN) and the Phoenix petrel (*Pterodroma alba*). All of these species are noted to be declining in population. Noted Pacific botanist Arthur Whistler also recorded 11 flowering plants species that are endemic to Tonga, and a subsequent study (Park and Whistler (1998)) identified other endemics.

Several other species of shared endemism between Tonga and other Pacific Islands and of global significance are endangered or vulnerable, such as the megapode, iguana (*Brachylophus fasciatus*).

These species constitute an important component of the natural heritage of Tonga and for the endemic species, represents Tonga's contribution to global biodiversity. On this basis alone, they should be protected.

Other species that are now rare and possibly endangered are several plant species that are of important for cultural reasons, either as use for traditional medicinal purposes, or for decorative uses associated with important traditional ceremonies.

Objective 3.1 – Protection of priority species

To ensure the protection of viable populations of all priority species of Tonga.

Strategies –

The 2003/4 IUCN's Red List of Endangered Species identifies 3 species that are 'Critically Threatened' and a further 3 that are 'Endangered'. These species should be targeted for priority protection. .

At the same time, information from other sources, recent and currently on-going studies, needs to be consolidated to update conservation planners and policy makers. This information should contribute to the development of species conservation plans for confirmed species, at the same time, enable the identification of other species that should be targeted.

Critical to the effective implementation of management plans is a supportive legal framework. Existing legislation should be reviewed and where appropriate, amended or new legislation developed and enacted to give effect to conservation plans. Some of the existing legislation and plans include Fisheries Regulation 1994, Bird Preservation Act 1988 and the Tuna Management Plan 2003.

In addition to in-situ approaches implied in management plans, ex-situ approaches should be investigated and implemented. For many flowering species, the option of gene banks or seed orchards to preserve genetic variability and safeguard against impacts of cyclones, diseases etc should be explored.

Actions -

1. Conduct desk reviews of recent and on-going research in terrestrial fauna to consolidate information and to identify other priority species.	**1.MAF/DOE/MOFi/ MOFo**
2. Conduct rapid assessment surveys to provide up-to-date information on the 'critically endangered' and 'endangered	**2. MAF/DoE/MOFi/ MOFo**

species' of Tonga as classified by IUCN's 2003 Red List of Endangered Species (See Annex 1).	
3. Based on results and information from surveys proposed above, review and update existing plans, or develop new conservation/ recovery plans and implement them effectively to protect viable populations of selected priority species and their habitats.	**3.MAF/DOE/MOFi/ MOFo**
4. Continue to enforce existing legislation promoting the conservation of endangered species including the Terrestrial and Fisheries (Conservation and Management) Regulation 1994 with regards to the conservation of hawksbill and green turtles.	**4.MAF/DOE//MOFi/ MOFo**
5. Promote the sustainability of whale-watching activities in Vava'u by enforcing the use of sustainable management guidelines and best practices and by providing information, training and other assistance to tour operators.	**5.MAF/DOE/MOFi/ TVB/MOFo**
6. Establish gene conservation stand/seed orchard or botanical gardens in the main island centers in Tonga for ex situ conservation of priority species including Heilala (*Garcinia cessilis),* Tava *(Pometia pinnata),* Moli *(Citrus spp)* and fekika *(Syzygium malaccense).*	**6. MOFo**
7. Collaborate with regional conservation programmes on species of regional and international significance found in Tonga.	**7.MAF/DOE/MOFi/ MOFo**
8. Integrate species conservation planning with conservation/ protected area management to provide for the protection of other species including avifauna and hepterofauna.	**8.MAF/DOE/ MOFiMOFo**

Objective 3.2 – Sustainable use and management of species

To ensure the sustainable use and management of species of economic and cultural significance.

Strategies -

Many native and introduced species of high economic and cultural importance are reported to be rare and disappearing. Some are no longer profitable for agricultural cultivation due to changing market demands and low prices. Species traditionally used for medicinal purposes are also increasingly overlooked in favour of modern medicines.

The sustainable management of threatened species will require an increase in replanting effort. There is a demand for them but planting material are lacking. Ex situ measures including herbaria, gene banks or seed orchards for priority species are options that will preserve genetic resources for future replanting if it is nearing extinction in the wild. At the same time, encouraging local people to replant them by providing planting stocks should contribute to their conservation.

Actions -

1. Promote and encourage the replanting of priority trees and crops species including the production of high quality seedlings for public sale and distribution.	**1. .MOFo**
2. Assist the public in tree planting by providing more information on how to propagate and care for priority species.	**2. MAF/MOFo**
3. Ensure that all species of cultural significance are represented and protected in a national herbarium.	**3.MAF/MOFo**
4. Support the application of tree improvement methods to improve the genetic make-up of selected species of forest plantation tree species.	**4.MAF/MOFo**

5. Support the replanting of native forest species in Tonga's plantation program.	**5. MAF/MOFo**

Objective 3.3 – Invasive species

Prevent the accidental introduction of known invasive alien species and reduce the adverse impact of invasive species on indigenous species and ecosystems, and agricultural biodiversity.

Strategies -

The effective management of alien invasive species requires a regional approach and collaboration amongst Pacific Island Countries. Regional programs in this area are currently coordinated by FAO/SPC and SPREP. At the national level, tight border control measures are essential to prevent accidental introductions. Where feasible, direct measures should be taken to reduce or eradicate species. At present, a number of initiatives are already underway in the form of the Pacific Islands Ecosystems at Risk initiative and the nationally executed MAFF Quarantine Project. These programmes should be supported fully.

Actions –

1. Support the Pacific Islands Ecosystems at Risk (PIER) Project and border control operation of the MAFF Quarantine Service particularly those targeting high priority invasive species.	**1. MAF/DOE/MOFo**
2. Support regional invasive species programmes involving Tonga but ensure targeted invasive species are those of the highest priority to Tonga.	**2.MAF/MOFi/MOFo**

Objective 3.4. Research and Monitoring

To encourage basic scientific research and monitoring surveys to identify, document and monitor progress in the conservation of priority species and to support on-going planning and conservation efforts.

Strategies –

The lack of scientific information on the state of resources and biodiversity in Tonga is a major constraint to biodiversity conservation planning. Baseline studies and research are essential to provide up-to-date information and to establish baselines for monitoring.

A systematic and scientific approach to research and monitoring is needed. They should build on existing scientific data. They should identify and address gaps in knowledge relevant to the conservation of selected priority species. They should also complement conservation management actions on priority species by putting in place appropriate monitoring systems.

Actions –

1. Conduct a thorough review of the state of scientific knowledge of Tonga's biological diversity to determine gaps in information and priority areas for research including information related to species currently classified Critically Endangered in the 2003 *IUCN Red List of Endangered Species*.	**1. DOE/MAF/MOFi/ MOFo**
2. Develop and implement a systematic program of baseline surveys and basic research to address critical gaps.	**2.DOE/MAF/MOFi/ MOFo**
3. Develop and implement a systematic program of monitoring critically threatened species of high conservation value including the megapode, hawksbill, and green turtles.	**3.DOE/MAF/MOFi/ MOFo**
4. Establish and empower a multi-agency committee under the auspices of the DOE to screen, approve and coordinate the implementation of all conservation-related research activities for all fauna and flora to ensure non-duplication, proper targeting of approved priorities, and control the release of	**4.DOE/MAF/MOFi/ MOFo**

sensitive scientific information.

5. (MAFF/DOE/Forestry/MOF/MOE)

6. Ensure the proper storage and collation of all existing datasets and new scientific data in properly designed databases.

7. Need to enlarge current insect collections to include other terrestrial fauna which is with MAFF.

5. MAF/DOE/ MOFiMOE/MOFo

6.MAF/DOE/ MOFiMOE/MOFo

7.MAF

Objective 3.5 – Public Awareness and Education

To enhance public knowledge and understanding of priority species and their importance for conservation as part of Tonga's natural heritage, as a way of fostering public support for species conservation objectives.

Strategies –

Experience in other Pacific Islands shows that public support for conservation objectives can be effectively stimulated by engendering pride in the exclusive stewardship of unique sites or species. Tonga's biodiversity include species of global significance which endemism it shares with a few other countries.

Public awareness and education programmes can be designed around these flagship species using a wide range of approaches and media options.

Actions –

1. Initiate public awareness and education programmes promoting the importance of biodiversity conservation to Tonga's sustainable development using a range of innovative approaches including, posters, leaflets and other printed materials, postage stamps, TV and radio spots, locally community workshops, drama, and others.

1. DOE

2. Cultivate national pride in rare species that are of global significance that are either endemic and unique to Tonga or which endemism is shared by Tonga and a few other countries.	**2. MOE/NGO's**
3. Promote awareness of invasive species and their negative impacts on local biodiversity.	**3.MAF/MOFi/ NGO's/MOFo**
4. Promote awareness of and appreciation of Tonga's existing terrestrial and marine protected areas including the 'Eua National Park.	**4. MAF/DOE/MOFi/ MOFo**
5. Encourage public access to and use of available scientific information for educational, awareness raising and planning purposes.	**5. MAF/DOE/MOFo/ MOFi/MOE**

Objective 3.6 – Capacity Building

To strengthen the technical, management and research knowledge and skills of local scientists and researchers, and the capacity of responsible agencies and organizations to effectively implement research programmes supporting the protection, conservation and sustainable management of Tonga's priority species.

Strategies –

Building skills and capacities in research and conservation management calls for intensive short term specialized training and long term formal university level training leading to advance degrees. Short term skills-transfer can be achieved through mentoring or attachments to local or visiting experts, as well as through participation in relevant training courses. Promising officers with field experience and proven commitment should be encouraged to pursue higher level specialized training in areas of priority need.

Actions –

1. Liaise with relevant regional organizations including SPC and SPREP to provide short specialized training in specific skills areas for local researchers and management staff.	**1.MAF/MOFo/MOFi/ DOE**
2. Encourage counterpart or mentoring arrangements for local staff with visiting experts and consultants.	**2. MAF/MOFi/DOE/ MOFo**
3. For all scientific surveys and research projects, incorporate into project designs, formal and hands-on training opportunities for local staff.	**3.MAF/Fi/DOE/ MOFo**
4. Secure and make available graduate and post-graduate level training programs for interested and promising staff in areas most in need of technical expertise.	**4MAF/MOFo/MOFi/ DOE/MOE**
5. Provide field research equipment including computers to support local research initiatives.	**5.MAF/MOFo/MOFi/ DOE**
6. Identify, and where necessary, establish three separate positions responsible for coordinating research in (a) marine biodiversity in MOF, (b) terrestrial flora in Forestry, and (c) terrestrial fauna and freshwater biodiversity in DOE.	**6. MOFo/MOFi/DoE/ MAF**
7. Ensure the effective coordination and oversight of all conservation related research as a key responsibility of these positions in a multi-agency task force under the overall oversight of DOE.	**7. DOE**

F.4. Theme Area 4 – AGROBIODIVERSITY

Basis for Action –

Genetic diversity and variability is critical to species survival and resilience in the face of threats of diseases, invasive species, predators, changing climate and other environmental conditions, and extreme natural events. The ability of species to survive depends on their ability to adapt and to evolve effective behavioural and physiological adaptations and this ability in turns depends significantly on how diverse and variable their gene pool is. Thus species with limited gene variability will have less ability to adapt or resist and are likely to disappear.

As an agricultural economy, preserving and protecting the genetic variability of Tonga's main agricultural crops should be preserved and protected.

Objective 4.1 – Conservation and sustainable use of threatened agro-biodiversity

To preserve the genetic variability of Tonga's agrobiodiversity and promote the conservation and sustainable use of threatened agrobiodiversity species of economic and socio-cultural importance.

Strategies –

Genetic variability may be preserve through a combination of in-situ and ex-situ approaches. The immediate focus should be on species that are already rare and endangered. Ex situ means such as gene banks, seed orchards etc are options to consider. Subsidized programs of replanting for rare and non-commercial traditional species also need to be promoted possibly with government nurseries providing planting stocks. .

Promoting mixed cropping and agroforestry farming practices offers an effective in-situ approach that should be encouraged. Mixed planting of a different species, often with strong symbiotic interrelationships, promote ecological stability at the same time providing a range of produce. Many of these are traditional systems that supported subsistence livelihoods for many generations but have more recently been taken over and

replaced by commercial monocultural agriculture.

Actions -

1. Discourage and reduce the use of unsustainable farming practices. This includes excessive machine tillage of farming lands, misuse of inorganic fertilizers and agrochemicals.	**1. MAF/NGO's**
2. Promote organic farming, mixed farming and agro-forestry farming systems wherever possible.	**2.MAF/MOFoNGO's**
3. Encourage traditional and sustainable farming practices using incentive schemes including provision of free-seedlings and technical advice.	**3.MAF**
4. Encourage replanting programmes aimed at preserving and widening of the gene pools of rare and endangered agrobiodiversity including *Citrus spp., Saccharum officinarum, Sysygium malaccense, Spondius cytherea, Broussonetia papyrifera*, *Xanthosoma spp*.	**4.MAF/MOFo**
5. Conduct desk reviews of recent and on-going research in forestry and agro-biodiversity to consolidate information and to identify other priority species.	**5. MOFo/MAF**

Objective 4.2 – Research and development

To promote and support research initiatives that contribute to the conservation of threatened species and the sustainable use of commercial and traditional agrobiodiversity.

Strategies –

Research activities should be threat-driven and priority species based. Target threats include invasive species and LMOs or GMOs. Establishment of gene banks/seed orchards of rare varieties is important to preserving the genetic variability of Tonga's agrobiodiversity. Priority species are those identified to be rare and endangered but of significance culturally and biologically (in terms of genetic variability).

Actions –

1. Protect priority agrobiodiversity species from the impact of alien and invasive species by supporting research for resistant varieties.	**1.MAF**
2. Establish herbaria to preserve specimens of native and 'naturalized' species of cultural and economic importance.	**2.MAF/MOFo**
3. Establish gene banks or seed orchards of rare and or superior varieties of priority species to facilitate large-scale propagation. Encourage the use of high skilled propagation methods e.g. budding, grafting and breeding for new hybrids in these initiatives.	**3.MAF/MOFo**
4. Assess the impact of new biotechnologies (genetic impressions, Living or Genetically Modified Organisms and Genetically Engineered Organisms) on agrobiodiversity.	**4.MAF/MOFo/DOE**
5. Conduct researches on different farming systems including; organic farming, traditional and sustainable farming systems, mixed farming and agro forestry farming.	**5.MAF/MOFo**

Objective 4.3 – Public Awareness and Education

To foster public support for the conservation of threatened agro-biodiversity by

enhancing awareness and understanding of their importance.

Strategies –

Different approaches may be used to raise public awareness and understanding of the importance of protecting agrobiodiversity. But these approaches must be integrated with other conservation awareness raising activities. An issue such as biotechnology and terminologies associated with LMOs and GMOs that are new and likely to pose language/translation problems demand innovative ways of communicating to the public. Key issues include encouraging replanting of rare species of cultural significance, biotechnology and invasive species.

Actions –

1. Coordinate public awareness and education campaigns for all conservation issues including agrobiodiversity to maximize cost effectiveness.	**1. DOE**
2. Use innovative media outlets to promote awareness of the threat of alien invasive species to Tonga's economic development and to educate the public on appropriate actions to take to contribute to their exclusion or containment.	**2.MAF/MOFo**
3. Raise public awareness and understanding of biotechnology and the potential threat to agrobiodiversity pose by Living Modified Organisms through the use of all appropriate media. .	**3.MAF/MOFo/DOE**

Objective 4.4 – Capacity Building

To strengthen the capacity of local farmers, agriculturalists and scientists to effectively implement programmes for the protection, conservation and sustainable management of Tonga's agrobiodiversity.

Strategies –

Skills training and transfer of technical expertise needs strengthening through formal long and short-term training, mentoring and counterpart arrangements.

Strengthening organizational capacities, particularly of MAF, involve the integration of agrobiodiversity conservation into MAF plans, and providing material and equipment support to facilitate the delivery of conservation research outputs.

Actions -

1. Provide training to local farmers on appropriate agroforestry farming systems. • These trainings are also to be in the same context as 4.3.1.	**1.MAF**
2. Strengthen technical and operational capacity of MAF to effectively execute border control biosecurity functions internationally and interislands.	**2.MAF**
3. Design and implement a program of long and short term training to systematically strengthen technical and management skills of MAFF personnel and scientists in skills areas related to research, extension and crop production.	**3.MAF**

F.5. Theme Area 5 – LOCAL COMMUNITY AND CIVIL SOCIETY

Basis for Actions –

Many negative impacts on biodiversity are the result of the collective actions of many individuals. Local communities who often have a direct dependence on the use of natural resources at their disposal, generate a significant proportion of this collective impact.

At the same time, lasting conservation solutions depend on fundamental changes in attitudes and values of people. In Tonga, as in most other Pacific Island Countries, the

level of understanding of the importance of biodiversity to sustaining livelihoods is low. For instance, the ecological linkages between the health of mangrove areas and the level of population of mullets, and other finfish species are not well appreciated. Similarly is the connection between land-based pollution and the deterioration of coral reefs. But communities, once empowered with knowledge and information, can be a effective agent force for change.

Local communities also possess knowledge of the traditional uses of biodiversity for medicinal purposes, or of resource management practices that are effective, low cost, environmentally friend and which can be effective substitutes for modern methods and technologies that are environmentally destructive and unsustainable. This knowledge needs to be captured, promoted and where appropriate patented to protect local ownership and to ensure the equitable flow of benefits.

As resource users, local communities are also stewards and custodians of resources directly accessible to them. They have a role to play and a responsibility for their conservation and sustainable use.

Objectives 5.1 – Local communities and resource owners

To empower local communities and resource owners to effectively participate in the conservation and sustainable use of biodiversity resources in areas under their control.

Strategies –

Empowering local communities and resource owners can be achieved through a number of ways. Improving access to information, promoting their involvement in participatory planning approaches, offering incentives and providing opportunities for engaging in conservation management are some of the ways of achieving this.

Actions –

1. Consult local communities and resource owners in all conservation planning affecting resources and areas of importance to them.	**1. DOE/NGO's**
2. Ensure access of local communities and resource owners to up-to-date and relevant information relevant to decision-making.	**2.All Government Ministries**
3. Provide opportunities for the participation of local community representatives in the management of conservation areas and in national coordination and planning mechanisms.	**3.NGO's**
4. Encourage local communities to manage resources under their control in a sustainable manner and to use tools such as conservation areas and fisheries reserves.	**5. DoE/ MOFi**
5. Collaborate closely with local communities regarding the reporting and implementation of measures against algae bloom and outbreaks of crown-of-thorns.	**6. All Government Ministries/NGO's**

6. Objective 5.2 – Civil Society

To empower civil society organizations and groups to be effective advocates of biodiversity conservation.

Strategies –

Local conservation NGOs, church organizations and other civil society groups should be empowered to be stronger advocates of environmental issues by improving their access to sound and up-to-date information on all issues, and by providing opportunities for them to participate in development planning and decision-making processes, and to

benefit from government and donor funded initiatives for capacity building.

Actions –

1. Encourage the formation of new local conservation groups and strengthen existing groups.	**1. DOE/MLC/NGO's**
2. Encourage the involvement of local NGOs including Youth Groups' in conservation activities.	**2.DOE and relevant Ministries**
3. Create formal mechanisms and opportunities for ensuring the participation of civil society organizations in national policy and development planning exercises.	**3.All Government Ministries**
4. Provide membership opportunities for the participation of civil society representatives in the Board of Directors of government corporations involved in resource exploitation.	**4. All Government Ministries**
5. Make technical information on environmental issues including those related to multilateral environmental agreements wherein Tonga is a party, accessible to interested NGOs.	**5. DoE**
6. Encourage the involvement of churches and church leaders as advocates of environment conservation and sustainable resource use by involving them in awareness raising and public education programs, and by improving their access to relevant information.	**6. DoE/NGO's**

Objective 5.3 – Schools

To ensure the full integration of biodiversity conservation concepts into school curricula at all levels.

Strategies –

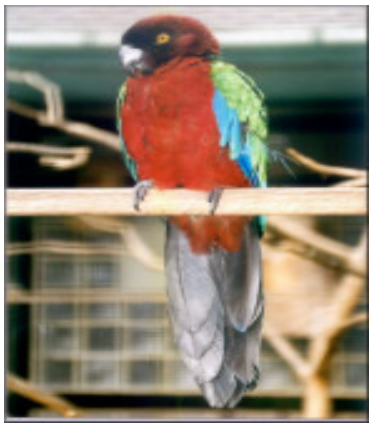
Collaboration with the Ministry of Education and educators of church organizations is necessary to ensure conservation themes and principles are integrated into science curriculum at primary and secondary school levels. They should be provided with relevant materials and resources to support and reinforce the teaching of conservation themes.

Schools also represent a strategic target for all awareness raising campaigns on specific issues, and a vehicle for delivering conservation messages into homes. They should be engaged.

Actions –

1. Strengthen and update school curriculum at primary and secondary schools to incorporate relevant biodiversity conservation issues.	**1. MOE/Relevant Ministries**
2. Encourage and support activities aim at repackaging technical conservation information for educational and awareness raising purposes for schools, local communities and the public at large.	**2.DOE/MOE/ Relevant Government Ministries**
3. Develop a core set of educational materials that can distributed to all schools to support their environmental curriculum activities.	**3.DOE/MOE and other relevant Gov-ernment Ministries**
4. Encourage and facilitate the participation of schools in national events promoting conservation objectives.	**4.DOE/MOE**

F.6. Theme 6: ACCESS & BENEFIT SHARING FROM THE USE OF GENETIC RESOURCES &TRADITIONAL ECOLOGICAL KNOWLEDGE



Basis for Action

Tonga's genetic resources have the potential to generate financial and academic benefits to those who use it. In many countries, foreign interests who are aware of these benefits have taken advantage of countries where laws and policies are not in place to regulate resource access or the use of local traditional knowledge. In many cases, none of these benefits return to local owners of resources and owners or holders of knowledge.

One of the major objectives of the Convention on Biological Diversity is to ensure regulatory regimes are developed in each countries to protect against illegal bioprospecting, and the inequitable sharing of benefits from the use of genetic resources and traditional knowledge.

Objective 6.1 – Access to genetic resources

To prevent illegal access to and unlawful exploitation of Tonga's genetic resources.

Strategies –

A legal framework and the organizational capacity to regulate access and to prevent the unlawful exploitation of Tonga's genetic resources are needed. The framework should facilitate and encourage the continual availability of genetic resources for future scientific studies but ensure that benefits derived are equitably shared. The framework should define responsibilities and procedures for receiving and reviewing of research applications and for issuing research and access/collection licenses. Appropriate multi-agency mechanisms should be considered to ensure effective coordination of all agencies with shared interests and expertise to offer.

Actions -

1. Enact legislation to regulate access to Tonga's genetic resources for bioprospecting, research and other forms of exploitation.	**1. CL/DOE/MLC**
2. Develop and implement strict procedures to support bioprospecting regulation.	**2.CL/DOE/MLC**
3. Review and strengthen existing arrangements governing the review and approval of all research proposals, including bioprospecting activities.	**3.CL/DOE/MLC/ MAFF/MOFi/MOFo**
4. Explore opportunities for repossessing Tonga's endemic biodiversity in the form of botanical and museum collections, gene banks and other forms where these are held in collections outside of Tonga.	**4.DOE**

Objective 6.2 - Fair and Equitable Sharing of Benefits

To ensure the fair and equitable sharing of benefits generated from the use of genetic resources.

Strategies –

Formal mechanisms for benefit sharing that are fair and equitable should be developed. More importantly, to safeguard the interests of holders of traditional knowledge and owners of resources involved in bioprospecting, procedures for negotiations should provide for the involvement of competent legal representation provided by the Government.

Actions –

1. Develop benefit-sharing mechanisms for holders of knowledge and owners of resources utilized in bioprospecting.	**1. DOE/MLC**

2. Put in place appropriate mechanisms and procedures to ensure fair and equitable outcomes of negotiations with bioprospectors for all local parties involved.	**2. DOE/MAF/MLC**
3. Actively encourage and assess bio-prospecting in Tonga.	**3.DOE**

Objective 6.3 – Traditional practices and ecological knowledge

To prevent the loss of traditional ecological knowledge.

Strategies –

Traditional ecological knowledge needs to be documented by directly engaging custodian and holders of traditional knowledge. Key knowledge areas are those related to traditional medicines, resource harvesting and management practices. This knowledge should be promoted where they are environmentally friendly for wider use, particularly in place of other modern methods that may not be ecologically sound.

Actions –

1. Systematically identify and document traditional ecological knowledge including cultivation practices, fishing methods, names of local plants of medicinal value, methods used for their preparation and application, methods of predicting harvesting, fishing seasons etc.	**1. DOE**
2. Promote awareness of and the use of traditional ecological knowledge and practices that are environmentally friendly and sustainable.	**2.DOE**
3. Enact legislation and take other appropriate measures to protect and safeguard ownership of traditional ecological knowledge and other intellectual property rights associated with them, and to ensure equitable benefit sharing resulting from their	**3.DOE/CL/MLC**

commercial use

4. Preserve traditional artifacts and other forms of expressions of traditional ecological knowledge in local museums and other secured collections and promote their existence for educational and awareness raising purposes.	**4. DOE/TTC/NGO's/ TVB**

Objective 6.4 – Public Awareness and Education

To raise public awareness and understanding of the importance of Tonga's genetic biodiversity resources and traditional ecological knowledge.

Strategies –

A range of media types should be employed to raise public awareness and understanding. Success stories of progress made by other countries e.g. Samoa in securing international partnerships for the development of specific aspects of their genetic resources, should be used.

Actions –

1. Raise awareness of the importance of Tonga's biodiversity and their value as a source of traditional medicine and potentially other pharmaceutical products.	**1. DOE/MOE/TVB**
2. Stimulate local interest by widely disseminating information on the successful experiences of other Pacific Island countries in the use of their genetic resources and the access and benefit sharing arrangements involved.	**2.DOE**
3. Make readily accessible and available to the general public relevant information on Tonga's biodiversity using modern computer/internet technology.	**3.DOE**

4. Explore and implement innovative ways to promote awareness of Tonga's biogenetic resources. **4. DOE**

5. Encourage and support programmes utilizing traditional ecological knowledge. **5.DOE**

F.7 Theme Area 7 – MAINSTREAMING BIODIVERSITY CONSERVATION

Basis for Action –

Most human-induced impacts affecting and threatening biodiversity are the results of legitimate activities essential to the economic development of Tonga and the social and economic well-being of its people. Land clearing is inevitable for commercial and most other forms of agriculture. Infrastructural development, the building of homes and others involve some transformation of the natural environment. These activities are often driven by government initiatives and policies.

These impacts however can be minimized through appropriate designs, the use of alternative technologies or even in some cases, by rescheduling construction to avoid aggravating environmental conditions.

In reality however, most development proposals are passed on the strength of their technical and financial feasibility, with no consideration given to environmental impacts. In the past, part of the problem was that most environmental impacts were difficult to quantify and therefore not easily factored into economic and financial analyses. This is no longer the case, except where there are no effective legislation to ensure this is done.

In biodiversity conservation, considerable progress has been made in developing valuation methods for quantifying values and benefits generated by ecosystem services,

or from the use of biodiversity resources. These values constitute the opportunity cost foregone from the economy when they are destroyed or degraded.

It is essential for sustainable development that these 'external' costs are factored into planning and decision-making. This integration is a significant aspect of mainstreaming biodiversity conservation and environment in general.

Objectives 7.1 – Legislation, policies and plans

To integrate concepts of conservation and sustainable use of biodiversity into all relevant sectoral policies, programmes and plans.

Strategies –

Legislation needs to be reviewed and where necessary amended, or new legislation enacted to ensure the principle of environmental sustainability is integrated into economic development planning. Making this principle work in practice calls for the enactment of a strict environmental assessment procedure for vetting all economic development initiatives.

These changes should filter down and be reflected into national development strategies and plans, requiring participatory planning processes. Development strategies and plans should be explicit about environmental sustainability as a goal. It is universally accepted as one of the three pillars for sustainable development.

At the operational level, mechanisms for ensuring integration need to be put in place. Often these are multi-disciplinary and multi-agency teams tasked with ensuring a holistic approach is taken in ensuring the proper design of projects and programmes. Environmental advocacy should be ingrained in the work of these mechanisms.

Actions –

1. Review and enact legislation to give effect to Tonga's obligations under multilateral environmental agreements.	**1. DOE**

2. Ensure the integration of biodiversity conservation priorities in national sustainable development policies and plans and into sector plans of key sectors including agriculture, forests, fisheries, tourism and works.	**2. DOE**
3. Encourage and support the effective enforcement of the EIA and other environmental regulations.	**3.DOE**
4. Strengthen the Environment section in the Sustainable Development Plan, where it is a collaboration of international projects and DoE point of view.(Needs clarification).	**4. DOE/CPD**
5. Review Environment's Corporate Plan to appropriately address the priorities for biodiversity conservation in this NBSAP.	**5. DoE**
6. Encourage the active participation of the Department of Environment in all national planning exercises.	**6.DOE**
7. Provide relevant biodiversity reports and technical information on new technologies accessible through various MEA secretariats to other sectors.	**7.DOE**

Objective 7.2 – Multi-sectoral collaboration

To improve and strengthen multisectoral collaboration amongst all relevant sectors and stakeholders in support of biodiversity conservation and natural resources management. .

Strategies –

Multi-stakeholder and multi-agency coordinating mechanisms are the most common means of ensuring multi-sectoral coordination and collaboration. But these need to meet regularly and peopled by senior level staff from different agencies.

Actions –

1. Formally establish a NBSAP National Coordinating Group to have overall coordination and oversight of NBSAP implementation under the auspices of DOE.	**1. DOE**
2. Set up different inter-agency task groups to have lead responsibility for promoting and leading the implementation of each of the different theme areas of the NBSAP.	**2.DOE**
3. Ensure regular communication between interagency task forces and the NCG on progress in implementation and issues/constraints faced.	**3.DOE**
4. Encourage and facilitate public dialogue and discussion forums engaging expert-representatives from different sectors to share perspectives on major environmental issues facing the country.	**4.DOE**

Objectives 7.3 – Environmental Impact Assessment

To ensure that environmental and social impacts of all proposed major projects and activities are thoroughly assessed using approved EIA guidelines and standards prior to their implementation.

Strategies –

The newly passed EIA legislation needs political commitment and the strengthening of the DoE with adequate expertise and resources to ensure its effective implementation.

Actions –

1. Enact supportive regulation and policies to ensure the effective implementation of the EIA legislation. (DOE other ministries in the EIA process, for all the 7.4 actions)	**1.DOE and the other ministries in the EIA process, for all the 7.4 actions**
2. Provide training for DoE staff to ensure thorough and sound	

administration of the EIAs.

3. Regularly review and, where necessary, update EIA procedures.

4. Actively promote and raise awareness amongst the private sector and the public sector about the EIA legislation and its requirements.

Objective 7.4 - Economic Valuation

To encourage the quantification of benefits derived from the use of biodiversity and from other ecosystem services to support the full integration of biodiversity conservation into sustainable development planning and decision-making.

Strategy –

A program of economic valuation of biodiversity benefits should be initiated. At the same time, the capacity of DOE should be strengthened in the methods for economic valuations of different biodiversity as well as other ecosystem services.

Actions -

1. Initiate a program of valuing benefits derived from the use of different biodiversity services.	**1. DOE**
2. Provide training for staff of appropriate agencies needing skills in this area, and encourage consultants to mentor counterpart staff in the use of different methodologies.	**2. All Government Ministries**
3. Collect and collate baseline data related to economic valuation such as number of visitors to parks and reserves, travel and other costs associated with visits to protected areas; local income generated from tourists to protected areas and others.	**3. All Government Ministries**

4. Design and pilot an income generating projects in association with conservation areas to monitor and measure income flow and other useful data.

4. DOE

5. Encourage the use of income data collected above in national and sector reports.

5. All Government Ministriers

Theme Area 8 – FINANCIAL RESOURCES and MECHANISMS

Basis for Action -

Implementing the NBSAP requires human and financial resources. And while some of the activities proposed may be funded from external sources, many will need to be funded from locally generated revenue.

For activities for which there are external funding sources, accessing those sources require skills in proposal writing largely based on a good understanding of donors requirements and processes. Training in this area is necessary.

Informing local groups eligible for funding of potential sources of funding and funding requirements needs the support and coordination from a central government agency and DOE is a logical candidate for this role.

The long term sustainability of funding for biodiversity conservation actions can only be assured by having local funding mechanisms that are designed to be sustainable. This calls for innovative ideas with good political support. A number of Pacific Island Countries have experience with conservation trust funds and other mechanisms that Tonga can draw on.

Objective 8.1 – Assessment of biodiversity conservation capacities

To ensure a thorough and comprehensive assessment of the technical, managerial and administrative capacity for implementing biodiversity conservation within Tonga's relevant

line ministries and all conservation organizations.

Strategies –

A national capacity self assessment is needed to identify existing capacity needs for implementing the NBSAP. A GEF-funded UNDP initiative is currently underway for national capacity self assessment that should be tapped into.

Actions -

1. Implement a National Capacity Self Assessment project to identify areas of capacity needs.	**1.DOE**
2. Develop a capacity building programme based on the result of the NCSA to build capacity across all sectors involved in the NBSAP implementation.	**2.DOE**

Objective 8.2 – Collation and dissemination of donor-related information

To inform all interested organizations of potential funding sources for biodiversity conservation and of donors funding requirements.

Strategies –

Information on current and potential funding sources and their requirements for assistance should be readily accessible to all potential implementers of the NBSAP to facilitate access and solicitation of funds and other forms of assistance.

Actions –

1. Develop a database listing all donor organizations active in environmental projects in Tonga and other Pacific Islands, their areas of funding interests, requirements for eligibility, contact details etc and make this database accessible to all potential implementers of the Tongan NBSAP.	**1.DOE**

2. Coordinate proposal formulation and fund raising activities with regional implementing agencies including FFA, SPTO, SPREP, SPC and SOPAC to ensure inclusion of Tonga in relevant regional projects or regionally disbursed technical and financial assistances.	**2.DOE**
3. Organize public meetings and workshops to explain different funding mechanisms and applications/eligibility requirements.	**3.DOE**

Objective 8.3 – Capacity Building in Conservation Fund Raising and Management

To strengthen the capacity of key stakeholders in planning and implementing fund raising strategies and in the management of conservation funds.

Strategies –

Formal training in proposal writing, and fund-raise planning should be provided for all local implementing organizations including NGOs to enhance their capacity to attract donor funding to biodiversity conservation in Tonga.

Actions -

1. Organize formal short training in proposal writing and fund raising planning for NGOs and government agencies.	**1.DOE**
2. Facilitate opportunities for major donor organizations to meet and promote conservation funding programmes with local implementing organizations.	**2.DOE**
3. Update implementing organizations and other local NGOs with up-to-date information on available opportunities for funding biodiversity activities, as they come on hand.	**3.DOE**
4. Conduct workshops to explain to local NGOs and other eligible implementing agencies different donors eligibility requirements and procedures for accessing funds.	**4.DOE**

Objective 8.4 – Economic Tools and Instruments for Conservation Funding

To generate local funding sources for biodiversity conservation.

Strategies –

Whilst funding biodiversity conservation is likely to be sourced from external funding partners, local funding should also be encouraged. A number of mechanisms can be investigated for their feasibility to generate conservation funding.

Actions -

1. Explore the feasibility of setting up a national funding mechanism for biodiversity conservation.	**1.DOE**
2. Promote the use of economic instruments such as permit and access fees for bioprospecting, eco-tourism fees, EIA related levies, national lotteries and other gaming revenues to fund a national funding mechanism for biodiversity.	**2.DOE**

Objective 8.5 – Partnerships

To build effective partnerships with key local and international organizations to support the implementation of biodiversity conservation programmes.

Strategies -

All relevant agencies, local conservation NGOs and 'like-minded' civil society groups and private sector representatives should be encouraged to work together in informal and formal arrangements to support biodiversity conservation. Official recognition for participating in not-for-profit and community-spirited endeavors such as environmental protection and biodiversity conservation can be a strong motivation for many organizations.

Similarly, many international conservation organizations should be targeted and partnerships developed. Many are useful sources of conservation information, technical expertise and sometimes of funding. Often, close partnerships with some of these organizations can bring in

other new partners and donors, and their support and involvement can provide a useful leverage for major international donors.

Actions –

1. Establish an official 'environment conservation' award to recognize outstanding contributions to the conservation of Tonga's environment and biodiversity by members of the public, civil organizations and private sector companies.	**1. .DOE**
2. Create opportunities for representatives of the private sector and conservation NGOs to sit on national coordinating committees dealing with different environmental issues.	**2. DOE**
3. Encourage regular consultations with representatives of civil society and the private sector on issues of national policies.	**3.All Government Ministries**
4. Use every opportunity to advance formal partnerships with private sector and civil society organizations to collaborate and co-implement conservation initiatives.	**4.All Government Ministries**
5. Encourage contact with international conservation NGOs and where possible, provide them with reports on work carried out in Tonga.	**5. DOE**
6. Develop a website for DOE as a tool for making access to Tongan conservation information easier for local and in particular, international conservation organizations.	**6. DOE**

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G. IMPLEMENTATION AND MONITORING

G.1. Current Situation

The Department of Environment was established in 2001 as a separate agency of government responsible for the coordination and implementation of environmental matters in Tonga. The Department works in close collaboration and consultation with other ministries including the Ministry of Fisheries (MOF), Ministry of Agriculture, Forestry and Food (MAFF), local NGOs and local communities in the execution of its responsibilities.

A 1993 Action Strategy defined the key environment issues facing the Kingdom and identified strategies for addressing them. More recently, Tonga's *Strategic Development Plan Seven, 2001-2004* reaffirms a commitment to the maintenance of a healthy and unpolluted environment and to the thoughtful management of natural resources for present and future generations. It also targeted as a priority objective the prevention or minimization of the degradation of the environment and the misuse of resources.

Over the years, Tonga has also ratified or acceded to 15 multilateral environment agreements (MEAs) and therefore have international obligations under these agreements for national implementation. In terms of biodiversity conservation, the main ones are the Convention on Biological Diversity (CBD), Cartagena Protocol on Biosafety and the World Heritage Convention. Tonga is also party to the SPREP Convention.

G.2 Existing Arrangements for NBSAP formulation –

Since January 2005, Cabinet approved the formation of the National Environment Coordinating Committee (NECC) with oversight responsibilities for all existing and future donor funded environmental projects. The NECC is chaired by the Minister for the Environment and has representatives from 8 government ministries including DOE, MAFF, MoFish, MoForests, Ministry of Foreign Affairs, Solicitor General. Although this Committee has yet to meet, its mandate requires that DOE reports to it for the major part of its work programme that is donor-funded.

The NBSAP Project thus reports through the DOE Director to the NECC in terms of overall implementation. The NBSAP formulation, however, revolves around a process driven by DOE, engaging an International Consultant and a core team of local experts (CGLE) drawn from MAFF, MoF and DoF. The local experts subsequently evolved into an informal Technical Experts Group (TEG) providing technical advice and guidance to the PMU. Coordination and administration support is provided by the NBSAP Project Management Unit (PMU) headed by the NBSAP Coordinator. The local experts had primary responsibility for compiling stocktaking assessments within their respective sector, and this were consolidated into the NBSAP Stocktaking Report. They also worked jointly with DOE's PMU on community consultations.

G.3 Implementing the NBSAP

The NBSAP is a holistic strategy and plan requiring a multidisciplinary approach. Its implementation is therefore a multi-agency multi-sectoral responsibility.

Implementers of the NBSAP are identified alongside each prescribed action, identified by the NBSAP PMU and the Technical Experts Group. The prominent agencies are DOE, MAFF, MoF and DoF. But there are actions proposed for the Solicitor General, other Government agencies, local NGOs and civil society groups.

The range of implementers and players, all engaged either individually or jointly in implementing actions that are scheduled either simultaneously or sequentially, indicates that the challenge for the effective implementation of the NBSAP would be one of coordination.

The NBSAP targets 8 theme areas under which proposed actions are organized. For each thematic area, a lead organization or agency is identified to promote and coordinate implementation. In most cases, because prescribed actions fall within their legal mandates, these agencies will also take the lead role for implementation. Thus there is logic in appointing the Department of Forests to coordinate the Forest Ecosystems Theme Area, and of MAFF coordinating the Agro-biodiversity, and so on. For some

theme areas that are cross-cutting in nature, the responsibility for coordination is assigned to DOE. But coordinating other cross-cutting theme areas and issues are proposed to be shared amongst lead agencies. These are detailed in Annex 1.

The overall coordination is assigned to the NBSAP Biodiversity Technical Consultancy Group (NBSAP-BTCG) currently comprising of reps from the four leading agencies namely, DOE, MAFF, MoForests and MoFish. A representative of civil society would strengthen this composition. This Group is chaired by the DOE Director or in his absence, the NBSAP Coordinator and will meet on a regular basis, preferably monthly in Year 1, to assess progress in the implementation of each theme area. The NBSAP-BTCG through the DOE Director, in turns reports to the NECC.

The existing NBSAP-PMU is proposed to lead the implementation of NBSAP activities assigned to DOE. The NBSAP Coordinator is also to provide secretariat support to the NBSAP-BTCG.

G.4 The NEXT STEPS

The next steps in the finalization of the NBSAP are given in the following diagram –

1. Prioritization

Not all actions prescribed are designed for immediate or simultaneous implementation and even if it were desirable, it would not be possible due to resources and capacities constraints. It is necessary to prioritize and this exercise will be coordinated by NBSAP PMU and with the active involvement of the NBSAP-TEG. The expected outcome will form the basis of the NBSAP Implementation Plan.

2. Formulation of the Implementation Plan

All stakeholders should be engaged in this exercise at some stage. NBSAP-TEG and DOE may develop a preliminary draft plan for consultation before finalization.

3. Cabinet Approval

Cabinet needs to give the NBSAP its official blessing and commitment to its implementation. The NBSAP-PMU will coordinate this stage within DOE.

4. Submission to the CBD Conference of the Parties as part of Tonga's National Communications.

As an important part of Tonga's obligation under the Convention on Biological Diversity, the NBSAP will be submitted with Tonga's National Communications instruments to the CBD Conference of the Parties.

5. NBSAP Awareness Raising and Implementation

The NBSAP has to be officially launched and publicized to promote awareness and interest as well as support for its subsequent implementation.

6. Review and updating

The NBSAP is a living document that needs to be reviewed regularly to take into account progress made in implementation, new priorities and emerging issues. A review after two years of implementation would be appropriate.

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G.5 NBSAP MONITORING MATRIX –

NBSAP Vision	Tonga's biodiversity and genetic resources are protected, conserved and sustainably managed		
Theme 1 Objective	**Forest Ecosystems**		
Objective 1.1	To minimize the loss and degradation of forest ecosystems and habitats as a result of agricultural expansion.		
Intended Outcomes	**Indicators**	**Means of measurement**	**Assumption**
The expansion of agriculture is minimized and contained.	Total area of pristine and established secondary forests remaining at 2005 levels.	Aerial photos, satellite images. MoForests reports.	Logging of native forests is limited to current areas or reducing. No severe natural disaster (cyclones, fires) occurring.
Objective 1.2	To ensure the optimal and sustainable allocation and use of Tonga's and natural resources.		
Intended Outcomes	**Indicators**	**Means of measurement**	**Assumption**
Forest ecosystems and ecosystem services are protected.	An integrated land use plan is adopted & implemented. Legislation and policies adopted & enforced.	MLNR reports & maps MoForests reports	Political and public support exist. Funding and capacity is not constraining.
Agricultural expansion is managed within predetermined areas.	1. Reducing loss of forest cover.	Aerial photos & GIS maps Forest boundary surveys.	Political and public support exist.
Objective 1.3	To ensure the sustainable management of Tonga's natural resources.		
Intended Outcomes	**Indicators**	**Means of measurement**	**Assumption**
Reduction in the annual area of forest lost.	National Forest Policy is adopted and implemented. Forest legislation is updated DoF staff and budget increases.	GIS maps MoForests Annual reports MoForests' approved budgets.	Political support exists.
Objective 1.4 Conservation Areas	To improve the management of existing parks and reserves and, consistent with the integrated land use plan, to expand the conservation area network to cover representative samples of all major terrestrial ecosystems.		
Intended Outcomes	**Indicators**	**Means of measurement**	**Assumptions**
Improved management of parks and reserves	No. of management plans developed & implemented; Increasing trend in funding Increase in visitations.	Existence of management plans. Visitors book from parks etc.	Increasing funding correlates to increasing no. of PA staff and investment in PA development.
More ecosystems under conservation management.	No. of new conservation areas; No. of previously unrepresented or under-represented ecosystems under conservation management.	GIS maps No. of CA management plans. Aerial photos & satellite pictures.	No drastic natural disaster or environmental event happening.
Objective 1.5 Information, research and monitoring	To promote the effective and systematic collection and management of relevant information through scientifically designed research and surveys.		
Intended Outcomes	**Indicators**	**Means of measurement**	**Assumptions**

Knowledge of the status of forest biodiversity is up-to-date and verifiable.	Regular and up-to-date information available. Ecosystem survey completed. Data available on databases	No. of technical survey reports. Amount of data stored on databases.	Technical capacity exists.
Objective 1.6 – Public awareness and education	To increase public understanding of and support for the conservation and sustainable use of forest biodiversity.		
Intended Outcomes	**Indicators**	**Means of measurement**	**Assumptions**
Supportive public of forest conservation actions.	No. of people participating in forest activities e.g. tree planting; No. of people surveyed with supportive responses.	Polls and attitude surveys	Positive attitude translates to positive actions.
Theme Area 2 –	**Marine ecosystems**		
Objective 2.1 – Minimize the impact of Land based activities.	To minimize the adverse impact of land based activities on coastal and marine species and ecosystems.		
Intended Outcomes	**Indicators**	**Means of measurement**	**Assumptions**
Healthy coastal ecosystems and habitats for priority species.	Reducing no. of algae bloom outbreaks. Reducing trends of eutrophication. Evidence of good coral growth.	Coastal, coral reefs & marine surveys	No significant El Nino event.
Objective 2.2 – Marine conservation areas	To expand the existing network of protected areas to effectively conserve major coastal and marine ecosystems and habitats of biological and socio-economic value.		
Intended Outcomes	**Indicators**	**Means of measurement**	**Assumptions**
A 50% increase in the total area of marine ecosystems under conservation management in 10 years.	No. of new marine areas under conservation management.	GIS maps showing new marine areas Management plans approved and under implementation.	Supportive local communities.
Objective 2.3 – Sustainable management of marine biodiversity.	To promote the use of environmentally sound practices in the management of marine resources.		
Intended Outcomes	**Indicators**	**Means of measurement**	**Assumptions**
Marine resources are managed sustainably.	No. of management plans developed & implemented. No. of fishing practices & technologies banned by legislation. Legislation banning undersized catches enacted and enforced. Declining no. of adverse reports of negative impacts of whale watching activities. Declining no. of incidences of algae bloom and COT. PacPOL implemented successfully.	Physical existence of management plans. Copies of legislation Reports of MoFish. Reports of whale watching operators PacPOL reports	Legislation will be enforced. Cooperation of whale watching operators.

Obj. 2.4 – Information, research and monitoring	To promote scientific research and regular monitoring of critical marine ecosystems, and the proper management of scientific data to support the conservation and sustainable management of marine ecosystems.		
Intended Outcomes	**Indicators**	**Means of measurement**	**Assumptions**
Knowledge of the state of health of critical marine ecosystems is current and regularly updated.	No. of marine survey reports of critical ecosystems and species; Amt of data on database.	Reports of marine surveys Database & amt of data stored.	Technical expertise is not a constraint.
Obj. 2.5 – Public awareness and education	To enhance public knowledge and understanding of Tonga's marine ecosystems and of issues related to their conservation as a means of fostering public support for marine conservation objectives.		
Intended Outcomes	**Indicators**	**Means of measurement**	**Assumptions**
A general public that is well informed of marine conservation issues and supportive of marine conservation objectives.	No. of local initiatives supporting marine conservation; No. of local communities, schools, organizations etc interested and are involved in community conservation work.	Polls and questionnaire surveys. Count of supportive communities or local initiatives.	Locals are willing to express support and participate in polling and questionnaire surveys.
Theme Area 3	**Species Conservation**		
Obj. 3.1 – Protection of priority species	To ensure the protection of viable populations of all priority conservation species of Tonga		
Intended Outcomes	**Indicators**	**Means of measurement**	**Assumptions**
Priority species are well protected & their populations are increasing.	Populations of priority species increasing. Associated habitats are healthy	Species survey reports Aerial photos and satellite pictures	No drastic natural disaster or environmental event happening.
Obj. 3.2 – Sustainable use and management of species	To ensure the sustainable use and management of species of economic and cultural significance.		
Intended Outcomes	**Indicators**	**Means of measurement**	**Assumptions**
Targeted species are managed sustainably.	Populations of targeted species are increasing ex situ and or in-situ	Regular population count. MAFF and DoF reports	No drastic natural disaster or environmental event happening
Obj. 3.3 – Invasive Species	Prevent the accidental introduction of known invasive species and reduce the adverse impact of invasive species on indigenous species and ecosystems, and agricultural biodiversity.		
Intended Outcomes	**Indicators**	**Means of measurement**	**Assumptions**
Local biodiversity is free of the threat of invasive alien species.	No new accidental introductions. No. of seizes of threatening biological specimens made at borders. Populations and spread of known declining.	MAFF (Quarantine) reports. SPREP reports on PIER	Data on seizes at border control operations are made and reported.
Obj. 3.4 – Research and Monitoring	To encourage basic scientific research and monitoring surveys to identify, document and monitor progress in the conservation of priority species and to support on-going planning and conservation efforts.		
Intended Outcomes	**Indicators**	**Means of measurement**	**Assumptions**

Better understanding of what is known and not known about Tonga's priority species ecological requirements for conservation management.	Completed review of existing information about priority species. Monitoring programs initiated and maintained.	Reports of MAFF, MoF, DoF and DOE.	Technical capacity is not a constraint.
Obj. 3.5 – Public awareness and education	To enhance public knowledge and understanding of priority species and their importance for conservation as part of Tonga's natural heritage, as a way of fostering public support for species conservation objectives.		
Intended Outcomes	**Indicators**	**Means of measurement**	**Assumptions**
A general public that is well informed of Tonga's natural heritage and priority species, and supportive of species conservation work.	No. of local initiatives supporting species conservation; No. of local communities, schools, organizations etc interested and are involved in species conservation work.	Polls and questionnaire surveys. Count of supportive communities or local initiatives.	Locals are willing to express support and participate in polling and questionnaire surveys.
Obj. 3.6 – Capacity Building	To strengthen the technical, management and research knowledge and skills of local scientists and researchers, and the capacity of responsible agencies and organizations to effectively implement research programmes supporting the protection, conservation and sustainable management of Tonga's priority species.		
Intended Outcomes	**Indicators**	**Means of measurement**	**Assumptions**
Adequate expertise and capacity exists locally to independently address Tonga's priority research needs.	No. of graduates returning. No. of staff attending specialized training; National herbarium is established. Specialized equipment procured; Increasing trend in research funding. No. of research papers published.	Reports of MAFF, MoForests, MoFish, DOE.	Appropriate overseas education and research institutions are supportive and appropriate training courses are on offer.
Theme Area 4	**AGRO-BIODIVERSITY**		
Obj. 4.1 – Conservation and sustainable use of threatened agro-biodiversity	To preserve the genetic variability of Tonga's agrobiodiversity and promote the conservation and sustainable use of threatened agro-biodiversity species of economic and socio-cultural importance.		
Intended Outcomes	**Indicators**	**Means of measurement**	**Assumptions**
Populations of all targeted priority species are increasing in the wild and ex -situ.	No. of seedlings of priority species planted. No. of mixed planting and agroforestry farms established. No. of ex-situ initiatives established. Decline in the use of unsustainable farming practices.	MoForests reports MAFF reports	No drastic natural disaster or environmental event happening.
Obj. 4.2 – Research and development	To promote and support research initiatives that contribute to the conservation of threatened species and the sustainable use of commercial and traditional agrobiodiversity.		
Intended Outcomes	**Indicators**	**Means of measurement**	**Assumptions**

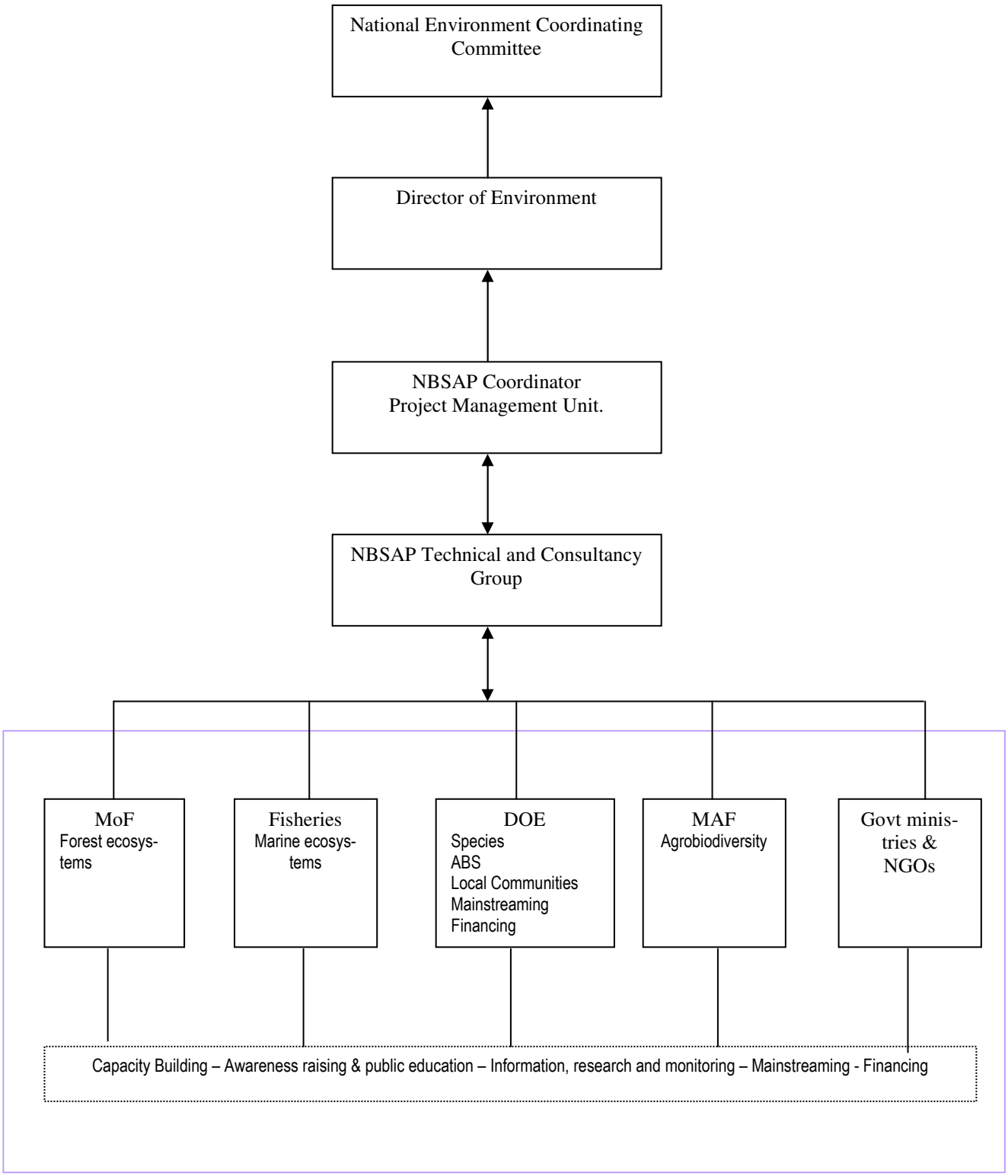
Improved understanding of the conservation requirements of targeted species and their habitats and of associated threats.	No. of research initiatives implemented. No. of scientific research papers/reports published.	MAFF reports Scientific journals.	All research projects are relevant and targeting approved NBSAP priorities.
Obj. 4.3 – Public awareness and education	To foster public support for the conservation of threatened agro-biodiversity by enhancing awareness and understanding of their importance.		
Intended Outcomes	**Indicators**	**Means of measurement**	**Assumptions**
Tongan public is well informed about the importance of protecting threatened agrobiodiversity and supportive of agro-biodiversity related initiatives.	No. of local farmers participating in replanting programmes; No. of local communities, schools, organizations etc interested and are involved in species conservation work.	Polls and questionnaire surveys.	Locals are willing to express support and participate in polling and questionnaire surveys.
Obj. 4.4 – Capacity Building	To strengthen the capacity of local farmers, agriculturalists and scientists to effectively implement programmes for the protection, conservation and sustainable management of Tonga's agro-biodiversity.		
Intended Outcomes	**Indicators**	**Means of measurement**	**Assumptions**
Technical and management capacity are strengthened at all levels.	No. of successful privately managed agroforestry or mixed planting farms. Level of innovation demonstrated by farmers. No. of scientists, farmers, biosecurity officers trained.	MAFF extension reports Site assessment of innovation. MAFF training reports	MAFF extension reports cover privately managed farms.
Theme Area 5	**Local Community and Civil Society**		
Obj. 5.1 – Local communities and resource owners.	To empower local communities and resource owners to effectively participate in the conservation and sustainable management of biodiversity resources in areas under their control.		
Intended Outcomes	**Indicators**	**Means of measurement**	**Assumptions**
Local communities and resource owners are active and effective contributors to biodiversity conservation and resource management.	No. of national level planning processes involving local communities and resource owners. Amt. and quality of conservation and resource related information accessed by locals. No. of community-based conservation area projects initiated. No. of multi-sectoral project task teams with local NGO, civil society representation.	Polling of planning processes & multi-sectoral task teams; No. & type of requests received for technical information from local people. MoFish, DOE and MLSNR reports.	National level planning processes are participatory and accessible to local people. Local people are interested and available to participate.
Obj. 5.2 – Civil Society	To empower civil society organizations and groups to be effective advocates of biodiversity conservation & sustainable resource management.		
Intended Outcomes	**Indicators**	**Means of measurement**	**Assumptions**

Civil society organizations and groups are active advocates of biodiversity conservation.	No. of civil society advocacy initiatives. No. of new environmental groups established. No. of government multisectoral committees with civil society reps.	Polling	No political restriction on formation of and activities of civil society groups.
Obj. 5.3 - Schools	To ensure the full integration of biodiversity conservation concepts into school curricula at all levels.		
Intended Outcomes	**Indicators**	**Means of measurement**	**Assumptions**
School children understand and are supportive of conservation objectives early in life.	No. of schools with environmental conservation projects; No. of students supportive of conservation initiatives.	Polling and questionnaire surveys	Increase in understanding will result in positive changes in behaviour.
Theme Area 6 -	**Access & Benefit Sharing from the Use of Genetic Resources and TEK**		
Obj. 6.1 – Access to Genetic resources	To prevent illegal access to and unlawful exploitation of Tonga's genetic resources.		
Intended Outcomes	**Indicators**	**Means of measurement**	**Assumptions**
Tonga's genetic resources are fully protected from unlawful exploitation.	No. of illegal access cases prosecuted. No. of applications received, and legally approved.	Polling MoJustice reports.	Legal framework is in place and enforced.
Obj. 6.2 – Fair and Equitable Sharing of Benefits	To ensure the fair and equitable sharing of benefits genenrated from the use of genetic resources.		
Intended Outcomes	**Indicators**	**Means of measurement**	**Assumptions**
Local owners of resources and TEK are receiving equitable share of benefits.	No. legally binding agreements signed benefiting local owners of resources and TEK.	Polling	Information on benefits sharing are accessible
Obj. 6.3 – Traditional practices & ecological knowledge	To prevent the loss of traditional ecological knowledge.		
Intended Outcomes	**Indicators**	**Means of measurement**	**Assumptions**
Traditional ecological knowledge is documented, protected from unlawful use and where appropriate, promoted.	Reports, database etc capturing TEK. Legislation enacted and enforced. Appropriate TEK applied in conservation management.	DOE reports and databases. Crown Law Office reports. MLC reports.	Holders and custodians of traditional knowledge willing and able to share TEK.
Obj. 6.4 – Public Awareness and Education	To raise public awareness and understanding of the importance of Tonga's genetic biodiversity resources and traditional ecological knowledge.		
Intended Outcomes	**Indicators**	**Means of measurement**	**Assumptions**
Tongans have pride in their natural heritage, are well informed about their TEK and supportive of efforts to protect them.	Increasing use of traditional healing methods, and other TEK.	Polling and questionnaire surveys.	Pride and improved awareness of natural heritage will result in support for conservation efforts.
Theme Area 7	**Mainstreaming Biodiversity Conservation**		
Obj. 7.1 – Legislation, policies and plans	To integrate concepts of conservation and sustainable use of biodiversity into all relevant sectoral policies, programmes and plans.		

Intended Outcomes	Indicators	Means of measurement	Assumptions
Concepts of conservation and sustainable use of biodiversity are integrated into sectoral policies, programmes and plans.	No. of sector plans, policies & legislation that specifically integrate conservation and sustainable use of biodiversity. No. of projects & programs implemented by Government agencies integrating conservation and sustainable use of biodiversity. The NBSAP is recognized as a authoritative reference for economic planning purposes. No. of projects redesigned to comply with EIA recommendations.	DOE reports.	Greater integration of conservation and sustainable use concepts will result if NBSAP is recognized in national planning as the source document for national environmental issues and priorities. EIA is consistently enforced.
Obj. 7.2 – Multi-sectoral collaboration	To improve and strengthen multi-sectoral collaboration amongst all relevant sectors and stakeholders in support of biodiversity conservation and sustainable development.		
Intended Outcomes	**Indicators**	**Means of measurement**	**Assumptions**
Agencies and organizations of varied interests and areas of specialization work collaborate regularly on conservation work.	No. of conservation projects involving organizations from different sectors. No. of environmental initiatives initiated by non-conservation organizations and companies.	DOE Reports	Collaboration indicates shared concern and commitment to conservation objectives.
Obj. 7.3 – Environmental Impact Assessment	To ensure that environmental and social impacts of all proposed major projects and activities are thoroughly assessed using approved EIA guidelines and standards prior to implementation.		
Intended Outcomes	**Indicators**	**Means of measurement**	**Assumptions**
EIA is an accepted planning requirement for all development activities.	No. of development projects redesigned to take into account EIA recommendations. No. of major projects with EIA reviewed and approved by DOE.	DOE reports.	There is political commitment to enforce EIA legislation without discrimination.
Obj. 7.4 – Economic valuation	To encourage the quantification of benefits derived from the use of biodiversity and other ecosystem services to support the full integration of biodiversity conservation into sustainable development planning and decision-making.		
Intended Outcomes	**Indicators**	**Means of measurement**	**Assumptions**
Biodiversity valuation results are accepted and incorporated into cost-benefit analyses of development proposals.	No. of conservation with biodiversity benefits fully quantified and built into cost-benefit analyses.	DOE reports.	Biodiversity valuation results are accepted by Central Planning officials when reviewing economic analyses of development proposals and projects.

Objective 8	Financial Resources and Mechanisms		
Obj. 8.1 – Assessment of biodiversity conservation capacities.	To ensure the thorough and comprehensive assessment of the technical, managerial and administrative capacity for implementing biodiversity conservation within Tonga's line ministries and all conservation organizations.		
Intended Outcomes	**Indicators**	**Means of measurement**	**Assumptions**
Gaps in Tonga's technical, scientific, technological, managerial and administrative capacity are identified and a plan for filling them is implemented.	NCSA report is compiled. No. of capacity building measures identified in NCSA and NBSAP implemented.	NCSA report. NBSAP DOE reports on capacity building initiatives. Meeting or workshop reports.	Capacity building initiatives are driven by the needs and gaps identified in the NCSA and NBSAP.
Obj. 8.2 – Collation and dissemination of donor-related information.	To inform all interested organizations of potential funding sources for biodiversity conservation and of donors funding requirements.		
Intended Outcomes	**Indicators**	**Means of measurement**	**Assumptions**
All interested organizations, groups and individuals are informed on possible sources of conservation funding and or funders requirements.	No. of meetings/ workshops held. No. of organizations attending. Quality of funding proposals received.	DOE reports and database. DOE workshop reports. Qualitative assessment of proposals.	Accessibility to DOE database is feasible for most organizations.
Obj. 8.3 – Capacity building in conservation fund raising and management.	To strengthen the capacity of key stakeholders in planning and implementing fund raising strategies and in managing conservation funds.		
Intended Outcomes	**Indicators**	**Means of measurement**	**Assumptions**
Amount of project funding received by conservation organizations register a significant increase over previous years.	No. of successful fund raising initiatives including proposals.	Reports of Conservation NGOs and donors.	NGO and donor reports are accessible.
Obj. 8.4 - Economic tools and instruments for Conservation Funding	To generate local funding sources for biodiversity conservation.		
Intended Outcomes	**Indicators**	**Means of measurement**	**Assumptions**
The establishment of local funding mechanisms well endowed with locally generated funding.	Funding mechanism idea supported and viable. No. of economic instruments introduced to generate income from biodiversity related services, and others.	DOE reports & database Report of feasibility study on funding mechanism	There is political support for a conservation funding mechanism.
Obj. 8.5 - Partnerships	To build effective partnerships with key local and international organizations to support the implementation of NBSAP.		
Intended Outcomes	**Indicators**	**Means of measurement**	**Assumptions**
Increasing number of partnerships between local conservation organizations and outside organizations.	Increasing no. of foreign organizations active in biodiversity conservation work in Tonga. Increasing no. of multi-donor funded projects implemented in Tonga.	DOE reports Donor reports	There are no political barriers to the participation of any foreign organizations in biodiversity conservation in Tonga.

Annex 1: Implementing, Coordinating and Reporting Arrangements



Annex 2: SUMMARY DESCRIPTION OF TONGA'S BIODIVERSITY

1. Introduction –

Tonga's flora and fauna is limited in diversity. This is partly the result of the lack of research and scientific investigation. On the other hand, low biological diversity is consistent with the diminishing gradient of species diversity relative to Tonga's remoteness and distance from the continental landmasses to the west.

The significance of agriculture and fisheries in the social and economic life of Tonga invariably result in these areas being better studied and understood. Consequently, information on agro-biodiversity and marine resources is considerably more plentiful than other components of Tonga's natural environment.

The following section provides a summarized description of Tonga's biodiversity based on the Tonga National Biodiversity Stocktaking Report. This report should be referred to for more detail.

2. Agro-biodiversity –

Tonga's agro-biodiversity comprises of the following groupings of crops – root crops, fruit and food tree crops, fruits, vegetables, traditional crops and livestock.

Root Crops

Traditionally, root crops form the most important part of Tonga's agriculture and the main carbohydrate source for the traditional Tongan diet. Root crops comprises of a number of different plant families, genus and species.

Yam (*Discorea spp.*) is the most valued of all food crops, has the highest social value; being the first crop reserved for presentation to royalty and nobility, and for ceremonial functions and feasts. Six species of *Dioscorea* are found in Tonga, some are almost extinct. Only three species are being cultivated, and even some varieties of these species are threatened of being disappearing (extinct). These are - *Dioscorea alata, D. esculenta, D. bulbifera, D. pentaphylla, D. nummularia and D. rotundata.*

Aroids is another major group of the root crops with social and economic importance. Only three species are being cultivated; and some varieties of these are in danger of being lost to a point of extinct. The species are: *Colocasia esculenta*, *Xanthosoma spp*, and *Alocasia macrorrhiza*. Other species are *) Tacca leonopetaloides* (Mahoa'a Tonga or Koka'anga)*, Amorphophallus campanulatus* (Teve), *Cyrtosperma chamissonis* (Giant Swamp Taro; Pula'a); *Ipomoea batatas* (Sweet Potato; kumala); economically important and second only to cassava as a staple food crop; and *Manihot esculenta* (Cassava, Manioc or Tapioca; manioke) - most widely consumed staple food and well adapted to a wide range of habitats.

3. Terrestrial fauna –

Knowledge of Tonga's terrestrial fauna is limited with most past researches and investigations concentrated on agricultural-related fauna. Tonga's Stocktaking report (2004) reviewed the terrestrial fauna in terms of vertebrates and invertebrates. Invertebrates are mostly agricultural pests widely found throughout the Pacific and tropical environments and include beetles, moths, flies and worms which prominence relate more to their destructive impact on agriculture as oppose to being biologically rare and unique.

Of vertebrates, other than the domesticated ones of low conservation significance, birds has the highest diversity. Watling reported 74 species (Watling, 2001) 51 of which are resident breeding species, 22 native land birds, 23 sea bird species, and 6 introduced. The remaining 23 species are migrant or vagrants of which are 6 shore birds, 13 seabirds and 3 land and wetland species (ibid.). Endemism is low with only one (Hengahenga or Tonga whistler; *Pachycephala jacquinoti*) species, while the Niuafo-ou megapode (*Megapodius pritchardii*) is known to also exist in Vanuatu. The megapode is listed by the IUCN as an endangered species.

Other fauna species are hepterofauna of which some 20 species are reported, two species of fruit bats (*Pteropus tonganus* and *P samoensus*), rodents and cats.

4. Terrestrial Flora

4.1. Drylands and wetlands flora

Tonga's ecological zones are classed into drylands and wetlands. Dryland ecosystems include tropical moist forests, tropical grasslands and tropical volcanic crater zone. Moist forests are found along the coastal fringes of all the Tonga islands with species of *Hibiscus*, *Calophyllum*, *Pometia*, *Casurina, Barringtonia* and *Scaevola* the most common. In the interior, many of the cleared areas previously under agricultural cultivation are dominated by *Lantana, Psidium* scrub and *Sorghum*.

Tropical grasslands is dominated by *Panicum maximum* which prevalence is attributed to clearing and destruction of the natural vegetation for agricultural purposes.

The volcanic crater zone is found in Kao, Fonualei, Late, Niuatoputapu and Niuafoou. The crater zone offers diversity with about 770 species of vascular plants recorded including 70 ferns (three endemic species), three gymnosperms (one endemic) and 698 angiosperms (including nine endemic species (Dahl, 1986).

Wetlands ecosystems occupy an estimated 2,963 hectares. These consists of mangroves, volcanic crater lakes on Niuafo'ou, Tofua, Kao and Late, brackish lagoons on Nomuka and 'Uta Vava'u, and a fresh-water marsh near Tu'anuku on 'Uta Vava'u.

Mangroves are dominated by *Rhizophora*, (3 species), *Xylocarpus* (2 species), *Bruguiera gymnorrhiza* and *Lumnitzera littorea.* Total mangrove areas is estimated at 1,000 ha.

Table1: Mangrove species Found in Tonga

Scientific name	Nomenclature	Tongan name
Rhizophora mangle	L (Rhizophoraceae)	Tongolei or tongo
Rhizophora stylosa	Griff. (Rhizophoraceae)	Tongolei or Tongo
Bruguiera gymnorrhiza	(L.) Lamk (Rhizophoraceae)	Tongo taane
Excoecaria agallocha	L. (Euphorbiaceae)	Fetaanu
Lumnitzera lottorea *Heritiera littoralis*	(Jack) Voigt Dryand	Hangale Mamea
Xylocarpus granatum	Konig	Lekileki
Xylocarpus moluccensis	(Lamarck) Roemer	Lekileki

Source: Department of Environment. 2004. Tonga Biodiversity Stocktaking. Technical Report 1.

4.2 Forest Biodiversity –

Of Tonga's total land area of 691 km^2, 8,000 ha (about 80 km^2 or 11%) is covered by natural primary and secondary growth (Desloges, 1994). On the island of Tongatapu itself, Wiser et al (1999) estimated 862 ha of natural forests only. Eua, an 8,900 ha island with significant forest areas, was estimated to be 43% covered in forests in 1994 (Bellingham and Fitzgerald, 1996). The Tofua and Kao islands contain some of Tonga's best preserved forest ecosystems (possibly due to its isolation) but they are poor in terms of species diversity (Park & Whistler, 1998) despite their isolation.

There is an expanding Ministry of Forests (MoForest) replanting programme on Eua Island with over 750 ha of exotic species of *Pinus caribaea*, *Toona ciliate*, *Swetenia macrophylla*, *Agathis robusta* and *Eucalyptus spp* planted. An additional 50 ha of exotic forests, mostly on Eua, is privately owned.

The rest of Tonga's land area is covered by agricultural crops (48,000 ha or 64% of the total land area) and coconuts (*Cocos nucifera;* 74% of agricultural lands, Burrows and Douglas, 1996).

4.3 Weed and Invasive species –

Approximately 200 species were introduced accidentally to Tonga as 'weeds', with the early Polynesian settlers thought to have introduced 70 weeds prior to European arrival. (Whistler, 1991). A more recent study (Space and Flynn, 2001) reported 31 introduced species that are invasive elsewhere and in Tonga, and another 135 species already considered invasive in other countries, and are already common but yet to reach invasive status in Tonga. A further 9 species of native origin exhibit aggressive behavior.

4.4 Species Richness and Endemism

Whistler (1989) recorded about 330 flowering plants described as native to Tonga, approximately one-third of them ferns. Only 11 species however are identified as endemic, with most (2/3) found in Samoa and even more in Fiji. Endemic tree species include Langakali vao (*Aglaia heterotricha*), Mo'otamea (*Dysoxylum tongense*), and Uhiuhi (*Podocarpus pallidus*) – all confined to the island of Eua.

Several others (19 species) are proposed by the Stocktaking report to be 'likely endemics'.

4.5 Species of cultural and medicinal significance

Fusimalohi (1998) identified 5 species of highest cultural significance namely *Garcinia sessilis* (heilala), *Aglaia saltatorium* (Langakali), *Cananga odorata* (Mohokoi), *Fragaea berteria* (Puatonga) and *Cardinia toitensis* (Sialetonga). These are non-edible but have valuable cultural uses such as oil making and flower for decorations.

Many species have traditional medicinal value. Fusimalohi (ibid.) identified 59 and Whistler (1992) 77. The former's top five medicinal species are *Tarenna sambusina* (Manonu), *Morinda citrifolia* (nonu), *Euodia hortensis* (Uhi), *Xylocarpus gradatum* (Lekileki) and *Syzygium corynocarpus* (Hehea).

5. Marine Biodiversity

5.1 Pelagic diversity

The following table shows species abundance and diversity based on Bone and Marshall 1992, Castro and Huber 2000, and Bell et al, King 1995:

Table 1.1: Identified Pelagic Species found in Pelagic Zone (Coastal and Oceanic)

Common name	Family name	No. of species recorded in Tonga	Coastal orOceanic
Finfishes 1. Tuna, mackerel and horse mackerel	Scombridae	7	Tuna – Both Mackerel - Both
2. Mackerel	Carangidae	1	Coastal
3. Barracuda	Sphyraenidae	3	Coastal
4. Dolphin fish, mahimahi	Coryphaenidae	1	Oceanic
5. Flying fish	Exocoetidae	4	Oceanic
6. Garfish	Hemiramphidae	1	Coastal
7. Anchovies	Engraulididae	1	Coastal
8. Herring. Sprat. sardine	lupeidae	8	Both
9. Scad, trevally	Carangidae	6	Both
10. Billfish, swordfish, wahoo, sailfish		6	Oceanic
Marine mammals - Whales	Cetacea	12	Both
Marine turtles		6	Both
Mollusc - Octopus and cuttlefish		Unknown species	Octopus – both Cuttlefish – oceanic
Marine plants Marine microscopic algae (phytoplankton)		Unknown species	Both
Crustaceans Prawns and krill	Crustacea	Unknown species	Oceanic

Sources: Bone and Marshall 1992, Castro and Huber 2000, Bell et al. 1997, King 1995).

5.2 Endangered and threatened species –
Endangered pelagic species found in Tongan waters are humpback and blue whales, and hawksbill turtles (Wilkinson, 1977). Donoghue et al (1996) also listed bottlenose whale as highly threatened. Both whales and hawksbill turtles are protected under Tongan legislation.

Other turtle species are fished seasonally (Nov – Feb) with a minimum size specified. But anecdotal evidence suggests also that over-fishing is driving to dangerously low levels, the populations of tunas, billfish and sharks.

King (1992) also reported that snapper and grouper fisheries are very fragile and easily susceptible to overfishing. These species, usually found in seamounts at depths of more than 200 meters, are highly sought after for export and is a valuable resource for sustainable management. The main smaller species are Palu tavake (long-tailed snapper), Palu malau (short-tailed snapper), and Mohuafi (Convict grouper).

6. Critical marine ecosystems – coral reefs, shelf breaks and sea mounts.
Research suggests that tunas, sharks, sea turtles and other large oceanic predators concentrate in diversity hotspots much like those on land. The distinct locations of these hotspots occur at intermediate latitudes close to habitat features like coral reefs, shelf breaks and seamounts. The protection and proper management of these ecosystems is central to any fishery management regime. However there is little information on their locations (particularly seamounts), distribution, extent and the species diversity inhabiting them.

6.1 Coral reefs –
Coral reefs are widely distributed and three reef types are found – fringing, barrier and submerged reefs. Lovell and Palaki (2001) estimated the number of reefs in each types – 37 fringing reefs; 7 submerged reefs and 6 barrier reefs. The following map gives the distribution of coral reefs in Tonga.

A diversity of all life forms are found on coral reefs, albeit very little have been described. Some of that diversity which has been described is provided below –

Figure 6.1: Coral Reef distribution in Tonga

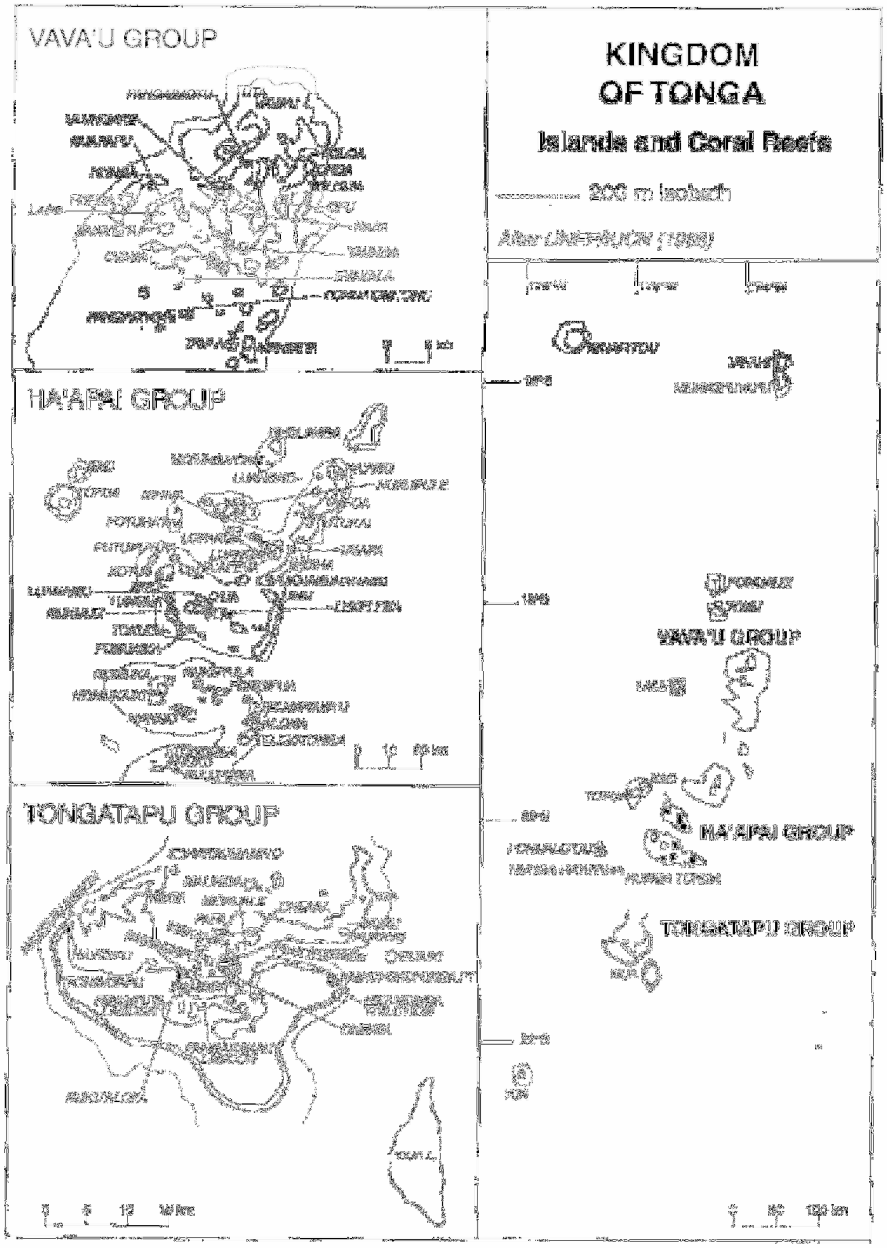


Table 2: Corals Species in Tonga

Species	Species number	Family Number	Sources of information	Dominant Family
Scleractinian Corals	192	39	JICA/environment in 1996 Holthus 1991	Acroporidae
Soft Corals	7	1	JICA	Alcynacea
Black Corals	3	1	Chesher	Antipathes
Non Scleractenian Reef Building corals	3	1	JICA 2001	Milleporidae

Source: Department of Environment. 2004. Tonga Biodiversity Stocktaking. Technical Report No. 1.

Table 3: Reef Fish of Tonga

Species	Species number	Family number	Dominant Family	Sources of information
Finfish	229 300 plus	39	Labridae	Marine Parks Center of Japan Smithsonian Institute Fenn 1972
Elasmobranch	16	3		Thaman et.al 1996; Mann 1987; Fenn 1972.
Muraenidae	7	1		Thaman et.al 1996; Mann 1987; Fenn 1972.

Source: Department of Environment. 2004. Tonga Biodiversity Stocktaking. Technical Report No. 1.

Table 4: Mollusc found in Coral Reef of Tonga

Major Class	Species Number	Location	Common Name
Bivalve	57	To	Shellfish
Gastropoda	85	To	Shellfish
Cephalopoda	7	To	Squids, octopus, cuttlefish
Polyplacophora	1	To	Chitons

Source: Marine Parks Center of Japan 1997, Ministry of Fisheries Mollusc of Tonga, Thaman 1996

Table _: Most Common Reef Species in Tonga

Reef fish	**Family**	**Species Number**	**Commom Name**
	Labridae	41	Wrasses
	Pomacentridae	35	Damsel Fish
	Chaetodontidae	24	Butterfly Fish
	Scaridae	19	Parrotfish
	Acanthuridae	12	Surgeon fish
	Mullidae	10	Goatfish
	Blennidae	9	Blennies
	Gobbidae	8	Gobies
Molluscs	**Major Class**	**Species Number**	**Common Name**
	Bivalve	57	Shellfish
	Gastropoda	85	Shellfish
	Cephalopoda	7	Squids, octopus, cuttlefish
	Polyplacophora	1	Chitons
Echinoderms	**Major Class**	**Species Number**	**Common Name**
	Asteroidea	5	Sea star or star fish
	Echinoidea	4	Sea urchin
	Holothuroidea	19	Sea cucumber
	Cronoidea	2	Feather Star
	Ophiuroidea	3	Brittle stars
Crustaceans	**Family Name**	**No. of Species**	**Tongan Name**
	Decapodia	20	Paka
	Panularis	4	Uo
	Penaeus	2	uloulaavai

Source: Marine Parks Center of Japan 1997, Ministry of Fisheries Mollusc of Tonga, Thaman 1996

Table 6.1.7 Major Class of planktonic organisms found in Tonga.

Major Class	Phytoplank-ton	Zooplankton
Ctenophore		1
Chaetonath		1
Copepods		1
Diatoms	1	
Plankton Larvae		4
Dinoflaggelate	2	
Foraminifera	1	

Source: Marine Parks Center of Japan 1997, Ministry of Fisheries Mollusc of Tonga, Thaman 1996

Annex 3 Tonga's Protected Areas

No.	Category	Area	Areas under Conservation Management
	Reserves (6)		
1	Ha'atafu Beach	80	**ü**
2	Hakaumama'o Reef	260 ha	**P**
3	Malinoa Island Park & Reef	73	**P**
4	Monuafe Island Park & Reef	33 ha	**P**
5	Mui Hopo Hoponga Coastal Reserve	-	r
6	Pangaimotu Reef	49 ha	**P**
	Parks/Managed Historical Sites (2)		
7	Ha'amonga Trilithon Park	23 ha	**P**
8	Vava'u Coastal Gardens Marine Park	-	r
	Faunal Reserve (1)		
9	Volcanic Island Forest Reserve	-	r
	Marine Reserves (1)		
10	Fanga'uta and Fanga kakau Lagoons	2,835 ha	**P**
	Multiple Use Conservation Area (1)		
11	Haapai Conservation Area	1,000,000 ha	**P**
	National Parks (4)		
12	'Eua NP	450 ha	**P**
13	Kao NP	1,250 ha	r
14	Mt Talau NP	-	r
15	Tofua NP	4,990 ha	r
	Nature Reserve (1)		
16	Vaomapa	20 ha	r
	Other Areas (2)		
17	Neiafu Harbour Wreck		r
18	Swallows Cave		r
	Sanctuary		
19	Mounu Reef		r

Annex 4. THREATENED SPECIES OF TONGA (NBSAP)

Outline below is a list of threatened species identified by stakeholders during consultation workshop1. Categories for threatened state are Critically Endangered (CE), Endangered (E), and Vulnerable (V).

	Threatened State	**Scientific Names**
Threatened Insects		
Fokai	CE	*Iguana iguana*
U'u	CE	*Birgus latro*
Ofato	E	*Oleghrius spp*
Moko	E	Crytodactylus Pelagius
		Gehyra oceanica
		Lepidodactylus lugubris
		Lepidodactylus euaensis
Pili	E	Cryptoblepharus eximius
		Emoia cyanura
		Emoia pheonura
		Lipinia noctua
Threatened Birds		
Manuma'a	CE	*Ptilinopus perousii*
Lafu	CE	*Pterodroma neglecta*
Hengehenga	CE	*Vini australis*
Toloa	E	*Anas superciliosa*
Malau	CE	*Megapodius pritchardii*
Tu	CE	*Gallicolumba stairi*
Threatened Agro-biodiversity		
Talo Tonga	CE	*Colocasia esculenta*
Ufi (lauvehi)	CE	*Dioscorea alata cv. Lauvehi*
Ufi (malekini)	CE	*Dioscorea alata cv. Malekini*
Ufi (paholohina)	CE	*Dioscorea alata cv. Paholohina*
Siaine tonga	CE	*Musa spp*
Siaine fisi	CE	*Musa spp*
Lemani petepete	CE	*Citrus spp*
Niu ta'okave	CE	*Cocos nucifera cv. ta'okafa*
Niu vai	CE	*Cocos nucifera cv. vai*
Niu kafa	CE	*Cocos nucifera cv. kafa*
Niu 'utongau	CE	*Cocos nucifera cv. 'utongau*
Niu matakula	CE	*Cocos nucifera cv. matakula*

'Ava	CE	Chanos chanos
Kuku	V	Modiolus spp.
Uloula'avai	E	Penaeus semisulcatus/ Metapenaeus ensis
Nga'ito	V	Holothuria scabra
Huhu valu (Hinehina)	V	H.fuscogilva
Huhu valu ('Uli'uli)	V	H.nobilis
Tekanoa	E	Tridecna derasa
Toki	CE	T.devoroa
Matahele	E	T.squamosa
Kukukuku	V	T.maxima
Kanahe	V	Mugil cephalus
Fua	V	Vulmugil seheli
'Uo Tavake	V	Panulirus versicolor
'Uo Tonga	V	P. penicillatus
'Uo Fisi	V	P. longipes
Fonu Koloa	E	Eretmochelys imbricata
Fonu Leta	E	Dermochelys coriacea
Threatened Plants		
Ovava Tonga	CE	Ficus oblique
Fangu	CE	Benincasa hispida
Fonua malala	CE	Homalanthus nutuns
Kulutuma	E	"Unknown plant" according to Thaman & Whistler 1996
Pua tonga	E	Fagraea berteroana
Pukovili	CE	Gyrocarpus americanus
Tongota'ane	E	Rhizophora mangle, Rhizophora stylosa
Pipitui	E	Atuna racemosa
Fisi'uli	E	Bidens pilosa
Hangale	CE	Lumnitzera littorea
Huni	E	Phaleria disperma
Takafalu	CE	Micromelum minutum
Te'ete'emanu	E	Ervatamia obtusiuscula
Ake	CE	Zanthophyllum pinnatum
Filimoto	CE	Xylosma obbiculatum Thaman (1976)
		Xylosma simulans Wiser (1999)
Futu	E	Barringtonia asiatica
Kotone	E	Myristica hypargyraea
Manaui	E	Garunga floribunda
Masikoka	CE	Glochidion ramiflorum
Mau	CE	Crytocarya fusca
Mo'otakula	E	Disoxylum forsteri
Pipi	E	Atuna racemosa
Piu tonga	E	Pritchardia pacifica
Puopua	E	Cebera floribunda
Tamatama	E	Achyranthes asperav
Tatangia	E	Acacia mangium

Toto	E	*Cerbera manghas*
Unuoi	E	*Eugenia reinwardtiana (samoa unuoi)*
Volovalo	E	*Premna serratifolia*
Apele Tonga	E	*Annona squamosa*
Falahola	V	*Pandanus orbiculatum*
Fanakio	E	*Sterculia fanaiho*
Feto'omaka	E	*Garcinia myrtifolia*
Hakato	V	*Acrostichum aureum*
Hea	E	*Parinarium insularum*
Heavula	E	*Syzygium richii*
Kau	V	*Syzygium neurocalyx*
Kolivai	V	*Syzygium corynocarpium*
Kulukona	E	*Polyscias multijuga*
Lalatahi	V	*Vilex trifolia*
Ma'ama'alava	E	*Elaeocarpus tonganus*
Mamea	CE	*Heritiera littoralis*
Masalumaka	V	*Schizaea dichotoma*
Masi'ata	V	*Ficus oblique (Thaman 1976)*
		Ficus tinetori (Wiser 1999)
Mo'onia	CE	*Garcinia spp*
Mo'otamea	E	*Dysoxylum tongense*
Motou	V	*Cryptocaria spp*
Olomaka	E	*Canthium barbatum (Thaman 1976)*
		Canthium vitiensis (Thaman 1976) mentioned twice same text
		Cyclophyllum barbatumm (Wiser 1999)
Olonga	CE	*Pipturus argenteus*
Fao	V	*Neisosperma oppositifolium*
Kavakava'ulie	V	*Macropiper puberulum*
Kolitoto	E	*Syzygium neurocalyx*
Monomono'ahina	V	*Mussaenda raiateensis*
Ngatata	E	*Ellatostachys falcate*
Vavaetonga	E	*Gossypium barbadense*
Sialetafa	E	*Bikkia tetrandra*
Kakamika	E	*Siegesbeckia orientalis*
Kukuvalu	V	*Pandanus spp*
Polotonga	E	*Solanum viride*
Alu	E	*Epipremnum pinnatum*
Sialetonga	E	*Gardenia taitensis*

Annex 5: Multilateral Environmental Agreements Adopted by Tonga

	International Agreement	Date Adopted
1	United Nations Convention on the Law of the Sea	31 July 1995
2	Convention on Biological Diversity	19 May 1998
3	Convention to Combat Desertification	25 September 1998
4	Cartagena Protocol on Biosafety	18 May 2003
5	United Nations Framework Convention on Climate Change	29 July 1998
6	Vienna Convention on the Ozone Layer	29 July 1998
7	Montreal Protocol	29 July 1998
8	Stockholm Convention on Persistent Organic Pollutants	22 May 2002
9	Marine Pollution Convention (London)	1 May 1996
10	Convention for the Prevention Pollution from Ships (MARPOL)	1 May 1996
11	Protocol to the Convention on the Prevention of Marine Pollution by Dumping Wastes and other Matters	18 September 2003
12	Waigani Convention	16 September 1995*
13	Agreement Establishing SPREP	15 September 1995
14	Agreement Establishing SOPAC	1972
15	World Heritage Convention	30 April 2004*

Annex 5: List of People Consulted

The National Biodiversity Advisory Committee (NBAC) was active for the period June 2003 till December 2004. A National Environment Coordinating Committee (NECC) was established in 2005 to replace the NBAC and to overlook all environment projects in the Department of Environment.

National Biodiversity Advisory Committee (June 2003 – December 2004)
Director of Environment
Director of Agriculture and Food
Director of Tonga Visitors Bureau
Director of Education
Secretary of Land and Survey and Natural Resources
Secretary of Fisheries
Secretary of Foreign Affairs
Secretary of Labour and Commerce and Industries
President of TANGO
President of Chamber of Commerce
Director of Central Planning

Technical and Consultancy Group

Uilou Samani	Director of Environment
Dr Netatua Prescott	Department of Environment
Paula Taufa	Department of Environment
'Asipeli Palaki	Department of Environment
Lupe Matoto	Department of Environment
Tupe Samani	Department of Environment
Taniela Hoponoa	Forestry Division
Finau Pole	Ministry of Food and Food
Viliami Kami	Ministry of Agriculture and Food
Mana'ia Halafihi	Ministry of Agriculture and Food
Poasi Ngaluafe	Ministry of Fisheries
Tuna Fielakepa	NGO - Langafonua 'a fefine Tonga
Hauoli Vi	NGO - Langafonua 'a fefine Tonga
Betty Blake	NGO -Catholic Women's League
Vanessa Heleta	NGO - Catholic Women's League

Project Management Unit

Patisepa Saafi-Folaumoetu'i	NBSAP Project Manager
Kulaea Kilisimasi	NBSAP Project Officer

The NBSAP Project conducted three lots of consultation workshop for the development of the NBSAP. These government ministries and villages were visited for gathering of information. The project also worked closely with 4 NGO's where they organized consultation workshops for all the NGO's in Tongatapu, Vava'u, Ha'apai and 'Eua.

Government Ministries
Ministry of Agriculture and Food
Ministry of Fisheries
Forestry Division
Department of Environment

Local Villages
Tongatapu
Kolomotu'a
Kolofo'ou
Kolovai
Fo'ui
Nukunuku
Houma
Veitongo
Longoteme
Fua'amotu
Lavengatonga
Kolonga
Fua'amotu
Talafo'ou

Vava'u
Neiafu
Pangaimotu
Tefisi
Ha'alaufuli
Holonga
Leimatu'a

Ha'apai
Pangai
Koulo
Foa
Hihifo
Ha'ano
'Uiha

'Eua
'Ohonua
Angaha
Sapa'ata
Houma

Non Governmental Organisations
Langafonua 'a fefine Tonga
Catholic Women's League
Kolomotu'a Development Group
Fanga 'o Pilolevu Ex-students Association

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	Threatened State	Scientific Names
Threatened Insects		
Fokai	CE	*Iguana iguana*
U'u	CE	*Birgus latro*
Ofato	E	*Oleghrius spp*
Moko	E	Crytodactylus Pelagius
		Gehyra oceanica
		Lepidodactylus lugubris
		Lepidodactylus euaensis
Pili	E	Cryptoblepharus eximius
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Malau	CE	*Megapodius pritchardii*
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Talo Tonga	CE	*Colocasia esculenta*
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Siaine tonga	CE	*Musa spp*
Siaine fisi	CE	*Musa spp*
Lemani petepete	CE	*Citrus spp*
Niu ta'okave	CE	*Cocos nucifera cv. ta'okafa*
Niu vai	CE	*Cocos nucifera cv. vai*
Niu kafa	CE	*Cocos nucifera cv. kafa*
Niu 'utongau	CE	*Cocos nucifera cv. 'utongau*
Niu matakula	CE	*Cocos nucifera cv. matakula*
Threatened Marine Species		
'Ava	CE	*Chanos chanos*
Kuku	V	*Modiolus* spp.
Uloula'avai	E	*Penaeus semisulcatus/ Metapenaeus ensis*
Nga'ito	V	*Holothuria scabra*
Huhu valu (Hinehina)	V	*H.fuscogilva*
Huhu valu ('Uli'uli)	V	*H.nobilis*
Tekanoa	E	*Tridecna derasa*
Toki	CE	*T.devoroa*
Matahele	E	*T.squamosa*
Kukukuku	V	*T.maxima*
Kanahe	V	*Mugil cephalus*
Fua	V	*Vulmugil seheli*
'Uo Tavake	V	*Panulirus versicolor*
'Uo Tonga	V	*P. penicillatus*
'Uo Fisi	V	*P. longipes*
Fonu Koloa	E	*Eretmochelys imbricata*
Fonu Leta	E	*Dermochelys coriacea*