



TUVALU NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN

Fourth National Report to the Convention on Biological Diversity



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COVER PHOTO

“The Back Reef of Fuafatu” Photo by Andrew Tilling

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ACRONYMS

AusAID	Australian Agency for International Development
EU	European Union
CBD	Convention on Biological Diversity
ESCAP	United Nations Economic and Social Commission for Asia and the Pacific
FSPI	Foundation of the People of the South Pacific.
HDI	Human Development Index
HPI	Human Poverty Index
IWP	International Waters Programme
MDG	Millennium development goals
NBSAP	National Biodiversity Strategy Action Plan
NGO	Non Governmental Organisation
RNZAF	Royal New Zealand Air Force
SLM	Sustainable Land Mangement
SNC	Second National Communication
SPC	South Pacific Community
SOPAC`	South Pacific Islands Applied Geoscience Commision.
SPREP	Secretariat of the Pacific Regional Environment Programme
TANGO	Tuvalu Association of NGOs
UNDP	United Nations Development Programme

EXECUTIVE SUMMARY

This, the first report, to the CBD marks the beginning of an impetus that was started with the inception of National Biodiversity Strategy and Action Plan (NBSAP) Project. Since February, 2009 when the project started, much work has been carried out consulting local communities in Funafuti and the Outer Islands to determine local knowledge about the environment, perceived trends and threats to biodiversity.

It is apparent that these local communities have a great deal of indigenous knowledge and are keen to undertake conservation efforts through their own initiatives. More conservation areas have been established under local Kaupules (island councils). The challenge now is to institute management systems that will be on-going and self financing.

Management plans have been or are being prepared for conservation areas, yet there are considerable constraints arising from the lack of systematic surveys and baseline data. A number of one-off studies have been made but mostly these have not been on-going. Hence, only perceived or subjective assessments of changes to biological diversity have been made. This is insufficient for sound management.

In addition, the conservation of biodiversity depends on a broader perspective than a focus on conservation areas, as there are many areas which are outside formally declared or designated protected areas, and ecosystems are interconnected. Processes and development activities on the high seas and inshore (such as commercial fishing) in the upper atmosphere (climate change) in urban areas (pollution from liquid and solid wastes) and in rural areas (vegetation clearance for agriculture) all have potential negative impacts on biodiversity and have already adversely affected conservation areas. Unfortunately, too little is known about these processes and activities.

Despite the apparent critical importance of the natural environment to rural and urban livelihoods in Tuvalu, its significance is undervalued, especially in socio-economic and monetary terms. Just how depend communities are on natural systems is unknown. Whilst the consequences of adverse changes are beginning to be appreciated at the macro, climate change level, the short-to-medium term livelihood consequences at the micro, household level, need to be articulated. If this was determined, greater emphasis on, and appreciation of biodiversity conservation would probably result.

Nevertheless, many initiatives are being undertaken by NGOs and by central and local government agencies, with donor funding. These projects have a bearing on biodiversity conservation, such as through the managements of liquid and solid wastes, the promotion of mangrove and tree planting and the promotion of tourism. As many of these programmes are getting underway, there is an opportunity to ensure that environmentally friendly policies and actions are developed by each agency and by NGOs. So far, the NBSAP project has revealed that environmental laws and regulations need to be further developed and articulated, especially in regards to biodiversity conservation. Climate change policies and adaptive strategies should have a

positive impact, as they will promote environmentally beneficial actions. They can become a focus, catalyst and imperative for conservation in the widest sense.

1 OVERVIEW OF BIODIVERSITY STATUS, TRENDS AND THREATS

i) Background

Tuvalu is a small island state located in the Central Pacific 5-11°S, 176-179°E, comprising nine atolls and low islands (Nanumea, Niutao, Niulakita, Nanumaga, Nui, Vaitupu, Nukufetau, Funafuti and Nukulaelae) with a total land area of only 26 sq km. The present population was estimated to be 11,636 (July 2005, growing at an annual rate of 1.47 percent per annum, excluding ex-patriot communities mainly in Australia, New Zealand and Kiribati. Nearly 50% of the population is located on Funafuti, on Fongafale motu (the main settlement area). It has a land area of about 1.9 sq. km with an estimated population of 4,418, giving a population density of 2,325 persons/ sq. km.¹

Six of the islands are low lying atolls made up of motus (islets) fringing the edges of lagoons, made up of young, poorly developed, infertile, sandy or gravel coralline soils. Nanumaga, Niutao and Niulakita are raised limestone reef islands. Soils are generally of poor quality, supporting a limited variety of flora. Indigenous plants are rare, partly because of habitat modifications such as the extensive planting of coconuts and other food plants by early settlers. Just over 300 species have been recorded, of which about 65 are native species; the rest are introduced. Most are ornamentals and shrubs.² There are probably no indigenous land mammals. Twenty eight species of indigenous birds are known, approximately 20 species being sea birds, a few of which are migratory. There are also insects, land crabs and a few species of lizards of which only one has been confirmed to be endemic.³

Tuvalu experiences a hot, humid tropical maritime climate, between the intertropical and South Pacific convergence zones, with near constant temperatures throughout the year. There is a significant seasonal variability in precipitation with a May to October dry season and a November to April wet season. The average annual rainfall is 3,000 mm although rainfall can exceed 4,000 mm per annum at times, though Tuvalu often experiences droughts because of its location near the Pacific equatorial dry zone. Dry periods are more severe in the northern than the southern islands, notably in the months of August-October. Dry years in Tuvalu are associated with a positive Southern Oscillation Index (the cold phase of ENSO). There are frequent thunderstorms in the wet season. Tropical cyclones mainly develop in the Tuvalu area and move to higher latitudes with a few hitting the islands in the warm, rather than the cold phase of ENSO.⁴ As the average elevation in Tuvalu is one metre above mean sea level (MSL), with the highest being less than 5 metres MSL, the islands are highly vulnerable to cyclones and

¹ UNDP, 2007

² Government of Tuvalu, 1999

³ CBD, 2009.

⁴ Vavae, 2009

tsunamis. Tuvalu is one of the most vulnerable countries in the world to climate change and rising sea levels.⁵ The population of Fogaale, Funafuti, where nearly half of the country's population is concentrated, is on average less than 100 metres wide, making it extremely susceptible.⁶

The marine environment is comprised of six major ecosystem types (oceanic, outer reef, lagoonal, back reef, lagoon floor, patch reefs and natural channels between the ocean and lagoon). These ecosystems produce the sediment required for island building and maintenance and support communities of corals, other invertebrates, algae, plankton, fish and marine mammals and reptiles. Approximately 350 species of fish have been recorded. As a result of the spread of islands over a vast expanse of sea, Tuvalu's Exclusive Economic Zone (EEZ) covers an oceanic area of approximately 900,000 sq km.

ii) The socio-cultural and economic significance of plants and aquatic species

Over a period of millennia, Tuvaluans have developed an intimate knowledge of plants and marine resources, which are of specific and general use. Plants are used as a food source and many other uses including house construction, household products, medicine, canoe construction, firewood, compost, fishing gear, cash crops, handicrafts and dancing costumes. Tuvaluans also have a deep knowledge of marine species, habitats and life cycles, such as where and when to fish and what baits to use.⁷ Local knowledge of terrestrial and marine species and their state and condition was recently updated and reported on four islands: Funafuti, Nanumaga, Nanumea and Niutao⁸.

The local communities were well aware of terrestrial and marine species of importance and have a perception of the state and condition they are in:

- In Funafuti the community identified 220 important marine species, 113 plant species, 22 avifauna and 46 other terrestrial species, their perceived abundance and vulnerability.⁹
- Stakeholders in Nanumea identified a number of trees that have immense value. They include Pandanus (*Falakai*), Nonu, Pawpaw, Breadfruit tree, Fetau; none of which are endemic.¹⁰

⁵ Government of Tuvalu, 1999.

⁶ UNDP, 2007

⁷ Seluka, et al, 1998

⁸ NBSAP Reports: Paeniu, L & Seluka, S, 2009

⁹ Seluka, S 2009

¹⁰ Paeniu, L 2009

- In Naitao stakeholders were able to identify many marine and terrestrial species that are readily available and to indicate those that they considered to be endangered.¹¹

The marine environment provides the main local source of protein and the major natural resource base for economic exploitation, both for local use and through foreign licensing agreements with foreign fishing nations.¹² Exploitation at the local level is mainly for subsistence use. Fishing is carried out by men but women may also, from time to time, be involved in inshore and shallow water fishing.¹³ In recent years there has been a more regular commercial operation on Funafuti and traditional fishing methods have been modified or given way to more modern methods and gear. There are about 30 commercial fishermen on Funafuti Island.

Offshore, deep-water fisheries are of commercial importance. Although Tuvalu controls a large EEZ, to date this has not generate employment as the government sells licenses to foreign ships wishing to fish for tuna in the zone. There is one joint venture with a Taiwanese company, targeting tuna. Tuvaluans are not yet employed but 15 trainees are to be trained in Taiwan and will become crew members later. At present a Tuvaluan is employed as an observer. The revenue earned from licenses is over the past five years is small and though recently rising, is estimated to be a fraction of the potential partly due to the lack of on-shore facilities and local processing.

Table 1. Value of Offshore Licenses

Value of Offshore Licenses	
Calendar year	A\$ millions
2004	4.178
2005	3.055
2006	5.433
2007	4.527
2008	8.863

Source: Offshore Fisheries Surveillance, Funafuti

Generally in the Pacific, management of EEZs has been fraught with problems associated with weak control and the migratory nature of the main species, tuna. Many distant water fishing fleets, both licensed and unlicensed, exploit the lack of enforcement capabilities in the region and

¹¹ Seluka, Saini M, 2009.

¹² SPC, 1992.

¹³ Seluka et al, 2009

engage in illegal, unreported and unregulated fishing, including fishing without licenses, falsely reporting catches, illegally trans-shipping catches and avoiding vessel monitoring systems.¹⁴ Tuvalu has one patrol boat. A monthly air patrol is carried out by the RNZAF.

The effect of deleterious fishing activities on the high seas to inshore waters has not been documented. Other actions on the high seas by passing vessels, such as oil spill and the dumping waste pose a threat. They are not monitored. Already, the exchange of ballast water in or near the Funafuti lagoon has introduced invasive species, such as the crown of thorns, which has spread to other lagoons, at Nukufetau and Nukulaelae, and Vaitupu¹⁵.

iii) Status of Marine and Terrestrial Ecosystems and Species

A preliminary assessment of Tuvaluan plants, fishes, birds and Insects was carried out in 1998.¹⁶ This was a checklist of species. No detailed surveys of plants or avifauna has been carried out, hence current knowledge of the abundance, state, and condition of species is based on observation and anecdotal evidence, not systematic study. An assessment of avifauna was carried out in the Funafuti Marine Conservation Area in 1998, but this was only a preliminary study by Watling.¹⁷ He quoted a lament by Child in 1960 that no comprehensive survey of Tuvalu had been carried out by a competent ornithologist. That was nearly fifty years ago; nothing has changed.

Baseline data is now being collected for the inshore Funafuti fishery on quantity, mass and species caught. The ongoing survey started in December 2008. In the outer islands, except Niulakita, Community Fisheries Centres are collecting data on fish mass and species only. The specific condition of inshore fishery resources is difficult to gauge until this data is analysed and reported on and, until then, effective management is impossible. . Data and information about the economic and social value of this fishery is also unavailable, with the sectors' contribution to GDP and livelihoods underestimated or merely guestimates. A beche de mer harvesting operation is a case in point. There are concerns about the impact of the operation but no hard data is to hand.

The Secretariat of the Pacific Community (SPC) undertakes research on the state and condition of offshore fisheries in the Pacific. However, progress has been slow, since data collection and statistics has not been a priority concern of Pacific Island administrations. The SPC is far from having meaningful standards against which to measure performance in managing coastal

¹⁴ UNDP, in press

¹⁵ Alefaio, S 2009

¹⁶ Seluka, et al, 1998.

¹⁷ Watling, 1998.

fisheries and other marine environmental "assets", though they have a better grasp of the governance of oceanic (tuna) fisheries.¹⁸

1. Invasive and alien species

Invasive and alien species are a major threat to biodiversity in the Pacific Islands.¹⁹ As mentioned above, nearly 65% of the flora found in Tuvalu is alien. The most persistent and widespread invasive species are *Wedelia trilobata*, *Lantana camara*, Three species of *Rattuss*, are common in all Tuvalu islands a major threat to avifauna species, poultry livestock and other terrestrial. Another emerging alien/invasive marine species, crown-of-thorns (*Acanthaster planci*) which is brought into Tuvaluan waters through discharge of ballast water and other carrying water cargos.

Three of the major IAS in Tuvalu are the coconut scale insect (*Aspidiotus destructor*) which damages food crops (e.g., breadfruit [*Artocarpus altilis*], sweet potatoes [*Ipomoea batatas*]), and impacts both social and economic systems; the termite (*Neotermes rainbowi*), which topples coconut palms, and the pink mealy bug (*Macinelliococcus hirsutus*), a pest of the food staple breadfruit.

A biological control programme exists for the coconut scale insects. The Secretariat of the South Pacific (SPC) provides the control agents and they are released at the site of infestation. The agricultural department also provides advice on how to treat pests and planting of resistant trees. The Secretariat of the Pacific Regional Environmental Programme (SPREP) also works closely with the Environment Department and the Funafuti Kaupule (island council).²⁰

Many of the issues associated with alien species in the Pacific, noted at a workshop in Nadi, Fiji in 1999, apply to Tuvalu:

- Lack of information on the basic biology of many invasive species
- Lack of monitoring of high-risk areas
- Lack of understanding of the major threats posed by pests
- Competition between conservation and other interests
- Accidental introductions
- Lack of personnel and infrastructure

¹⁸ UNDP, in draft

¹⁹ UN ESCAP 2005. State of the Environment in Asia and the Pacific.

²⁰ Vaiutu,

- inadequate or the absence of protocols, such as those to warn of threats, predict invasiveness of new species at the border, maintain quarantine procedures and set priority
- Absence of, or inadequate legislation and enforcement, and
- Inadequate funding²¹

A SPC/SPREP initiative eradicating rats on all the islands finished in 2007 but the results are not available.

iv) Land Tenure

About 95% of the total land area in Tuvalu is owned by individuals, with some communal lands and crown land on a few of the islands. The land tenure system is based on inheritance from father or mother to sons and daughters and sub-division of land between the landowners themselves. This has led to the fragmentation of land by continual division, multiple ownership and disputes over land boundaries.

v) Land-use

The table below shows vegetation by class in Tuvalu and other land uses, circa 1998.

Table 2. Land-use Cover

Land-use Cover		
Type of cover/vegetation	Area (ha)	Percentage
Coconut woodland	1, 619	53.9
Broadleaf woodland	122	4.1
Coconut & broadleaf woodland	51	1.7
Scrub	419	13.9
Pandanus	10	0.3
Mangroves	515	17.1
Pulaka pits & pulaka basin	65	2.2
Village, buildings	172	5.7
Other (i.e. low ground cover)	33	1.1
Total	3, 006	100

Source: Seluka et al, 1998

²¹ SPREP, 2000

No recent data have been collected to update these figures and land-use and vegetative class definitions currently used differ to those used in 1998, so comparisons cannot be made or trends accurately deduced. The overall deforestation rate cannot be given as no assessment has been undertaken. Approximately 8ha (20 acres) of coconuts on Nanumea, Nanumaga, Nanumea and Nui have been lost because of the incursion of sea water during high tides. Village settlements have expanded and coconuts and pandanus have been replanted. Under the Community Tree Care Project multipurpose tree nurseries have, since 2008, been established on the outer islands. Those on Nanumea, Naumga, Niutao, Nui and Nukulaelae have been completed. The local tree species that have been planted (callophyllum, pandanus and casuarinas) will be useful for planting on coastal eroded sites on these islands in the near future. The cultivation of breadfruit and pulaka (*Cyrtosperma chamissonis*) in dug-out pits continues to expand. Mangrove replanting has also recent taken place. 3,200 coconut seedlings have been planted in Nanumea.²² The Tuvalu Overview Project has planted mangroves in a community project at Funafala motu, Funafuti.



Mangrove Planting at Funafala motu, Funafuti atoll, Tuvalu. Photo by Andrew Tilling

²² Mataio, 2009

vi) Legal and Institutional setting

Tuvalu is a parliamentary democracy. Executive power rests in the cabinet, which consists of the Prime Minister, who is elected by Parliament from among its members. The cabinet is collectively responsible to Parliament for its actions.

The unicameral Parliament, called *Fale o Palamene* in Tuvaluan, has the power to make laws and consists of fifteen elected members. Seven islands send two members each, and one, Nukulaelae, with the smallest population, sends one member. Elections are by universal suffrage of all citizens over eighteen years of age.

Under the Laws of Tuvalu Act 1987, there are five sources of law in Tuvalu; the constitution, acts of Parliament, customary law, applied laws, and the common law. In addition, international law also applies in Tuvalu.

There is no formal integrated environmental protection and conservation legislation. Environmental protection provisions are found in a raft of different laws:

- Public Health Ordinance, 1926
- Local Government Ordinance 1966
- Foreshore and Land Reclamation Ordinance 1969
- Wildlife Conservation Ordinance 1975
- Plants Ordinance 1977
- Fisheries Ordinance 1978
- Pesticides Act 1990²³

Central government has devolved many powers to local governments, which were first established in 1965. The Falekaupule Act, 1997 established island councils on Funafuti and seven other islands. The Kaupule is the executive arm of the Falekaupule. Generally the duty of every kaupule is to maintain order and good government and promote development within its area and to carry out functions conferred on it by the Falekaupule or any other Act.²⁴ One of the strategies of the National Strategies for Sustainable Development is to decentralize services where this is practical and cost effective.²⁵ This has included environmental responsibilities.

Over time it is expected that the implementation of the Falekaupule Act will transform the Kaupule from being simply providers of basic services into

²³ UNDP, 2007

²⁴ Government of Tuvalu, 1997.

²⁵ Government of Tuvalu, 2005

development planners, managers and part-financiers of all aspects of island development.²⁶

However, the Falekaupule follows the laws established by Parliament, which has overriding powers. Falekaupules have been constrained by the lack of comprehensive environmental legislation and policies, the unconstrained rights of landowners and meager financial and human resources to undertake detailed planning.

Central government pays for five key staff members in all Kaupule: the Secretary, Development Planner, Womens' and Community Officer, Kaupule Clerk and the Kaupule Treasurer. No full-time environmentally trained staff are supported. A voluntary environment worker responsible for conservation areas on each island manages the CA. They are all men and are members of the Kaupule decision-making body.

vii) CBD Status

Tuvalu signed the Convention on Biological Diversity in 1992 and ratified it on 20 December 2002. Tuvalu has actively participated in various national, regional, and international capacity-building environmental initiatives. One such initiative is the UNDP-funded South Pacific Regional Capacity 21 programmes through which the country focused its efforts on the development and formulation of a National Environmental Strategy (NEMS).²⁷

The NEMS provided a framework for environmental efforts in Tuvalu and enabled the development of key environmental policies that have guided the management of Tuvalu's limited resources over the last 12 years.²⁸

Tuvalu has established ten conservation areas (CA) on eight of its nine islands, only one of which has been established under formal legislation; the rest have been established by local communities and managed by traditional systems. The Funafuti Marine Conservation Area (FMCA) was established with the assistance of the South Pacific Biodiversity Conservation Programme (SPBCP - a GEF funded initiative), AusAID and SPREP. The CA is managed by the kaupule.

Other biodiversity initiatives include an Island Care project monitoring turtles, the establishment of a plant genetic collection by the Department of Agriculture, work on a Whale and Dolphin Action Plan and also the Regional Action Plan on Turtles in collaboration with the Secretariat of the Pacific Regional Environment Programme (SPREP). A local NGO, TANGO has been facilitating the planting trees and mangroves and has been working with Kaupule to establish CAs and to produce management plans for them. So far two management plans have been produced, whilst another two are

²⁶ UNDP, 2007.

²⁷ SPREP, 1997

²⁸ CBD, 2009

underway. The FMCA still does not have a plan though the CA was established ten years ago. There are many issues and conflicts to resolve, mainly arising out of the fact that there are increasing demands being placed on marine resources from residents (indigenous and non-indigenous) of Funafuti.²⁹ Fishing and resource harvesting in the FMCA is banned (for both local indigenous residents living adjacent to the CA and to non-indigenous residents of Funafuti). However, illegal harvesting takes place. With the assistance of the SPBCP a patrol boat was purchased, but once the programme ended in 2001, a lack of funds led to the curtailment of patrols. These have only recently been resumed, with new funding support from GEF in 2009, which will last for two years.³⁰

viii) Trends and Threats

1. Climate change

Climate change is rapidly emerging as the greatest long-term threat to biodiversity in Tuvalu.

In 1993, Tuvalu established a tide gauge to monitor sea level rise, sea pressure, sea temperature, wind speed and wind direction. Between March 1993-September 2009 the average sea level trend for Tuvalu has been 5.3mm per year.³¹ (The global average is 1-2 mm per year).³²

Generally, the major impacts of sea level rise are increased risks of inundation and coastal flooding, erosion, saltwater intrusion into rivers and underground aquifers and changes in sediment deposition patterns.³³ Although there are no rivers in Tuvalu, seawater wells out of the ground during high tides, causing inland flooding. These events have become more intense, i.e., larger land areas are inundated, and are more frequent, i.e. flooding can occur in any month, not necessary between January-March. Swells regularly affect the coast and even inland areas.³⁴

The extreme impact of inundation and flooding is to make very low islands uninhabitable. Funafuti with a mean elevation of approximately 1.5 m above MSL is particularly vulnerable as sea level rise would shorten the return period of storm surges and exacerbate the damage caused by wave overwash.³⁵ Other future impacts arising from climate change are predicted to be:

²⁹ Alefaio, 2009.

³⁰ Tili, 2009.

³¹ Government of Tuvalu, 1999.

³² Australian Government Bureau of Meteorology, 2009

³³ Minura, 1999.

³⁴ Vavae, 2009

³⁵ Minura, *ibid.*

- Increases in ocean surface and island air temperatures
- Rising sea levels
- More severe weather events. Tropical cyclone wind intensities will increase.
- Decreased water availability, leading to water shortages
- Acidification of the ocean
- Coral bleaching.³⁶

Tuvalu has no options in the face of a huge tidal wave. Another grave danger to Funafuti comes from tropical storms. The islands' vulnerability has increased by actions like the reduction in tree cover and damage to reefs.³⁷ Future rises in sea level, together with human pressure on the coast will significantly increase beach erosion. The most significant impact of saltwater intrusion into aquifers will likely be on agriculture, especially in small low-lying islands. Infrastructure would also be affected, necessitating remedial action and adaptation.³⁸

Adaptation strategies to sea level rise can be categorised as planned retreat, accommodation and protection. A two-dimensional approach to the latter, consisting of natural systems and artificial structures are more efficient in protecting the land, than relying on physical measures alone, such as sea walls.³⁹ Thus, the preservation of natural barriers such as mangroves, coral reefs and sandy beaches is critically important. Native plants that are adapted to drier and saline conditions should be promoted and grown extensively, e.g. *te futu (Barringtonia asiatica)*.⁴⁰ Such actions would be an added bonus to the maintenance and enhancement of biodiversity.

II. Major threats to island biodiversity identified by communities

Community consultations have taken place on four islands to collect relevant information on island biodiversity, so as to incorporate this into the National Biodiversity Strategy and Action Plan. The perceived threats are shown below.

Table 3. Perceived major threats to island biodiversity

³⁶ Vavae, 2009

³⁷ Levine. ND

³⁸ Minura, *ibid.*

³⁹ Minura, *ibid.*

⁴⁰ Vavae, 2009

	Nanumaga	Funafuti	Nanumea	Nuitao
High consumption		x		
Little replanting		x	x	
Increased population density		x		
Overuse and overharvesting	x	x	x	x
Availability of guns for hunting birds and fish/use of guns		x		x
Uncontrolled use/uncontrolled pigs		x	x	
Commercialisation		x		
Ovecrowding by people		x		
Increased construction/village expansion	x	x		x
Hurricane Bebe		x		
Not using as often as before		x		
Loss of knowledge and skills		x		
Lack of legal protection		x		
Climate change	x	x	x	x
Loss of habitat/vegetation		x		
Increasing preference for imported food resources rather than local ones. Ignoring local species		x		
Human actions	x	x	x	x
Invasive (pests, animals, plants)	x	x	x	x
Salt water intrusion	x		x	x
Prolonged drought	x	x	x	
Pests			x	

	Nanumaga	Funafuti	Nanumea	Nuitao
Waste water/solids/toxic waste	x	x	x	x
War debris			x	
Natural Disaster	x			x
Waves	x			x
Littering		x		x
Customary laws				x
Land clearing		x		x
Coastal erosion	x	x	x	x

Source: Adapted from Paeniu, 2009a; Paeniu, 2009b and Saini, 2009

Perceived threats can be summarised as arising from deleterious human actions and negative attitudes to the environment, leading to inappropriate behaviour, such as littering, over-fishing and hunting, using fishing nets and modern fishing method, the use of guns and the introduction of pests; the use of inappropriate technologies, such as solid and liquid waste water disposal systems; uncontrolled use of resources and control of livestock; increasing consumption patterns, arising from increases in human populations, demands and changing lifestyles; institutional weaknesses; ignorance and lack of knowledge; natural factors and climate change.

Local perceptions have also been confirmed by research findings. For instance, as long ago as 1998 the principal threats to seabirds in the Funafuti Marine Conservation Area was attributed to hunting and disturbance from shotguns and speedboats and the loss of habitat through the conversion of woodlands to coconuts.⁴¹

III. Sustainability

A perennial issue in Tuvalu is the reliance on international development assistance and hence the sustainability of conservation and development efforts. The pool of local experts is small and the available finance miniscule. This poses a major challenge, given the vast distance between islands and the expanse of the EEZ, the size of conservation areas, the inter-relationships between urban settlements and marine and terrestrial ecosystem and the complexity of issues that need to cover to manage effectively. Consultants come and go, but do they empower local communities to manage themselves? It seems obvious that more community-based efforts are needed to ensure that conservation efforts are on-going when project funding

⁴¹ Watling, 1998.

ends. In part, this requires a change in mind set by decision-makers and local communities themselves.

IV. Social attitudes and conflicts

There are many actions that local communities can take to conserve resources and biodiversity, but these depend on communities being motivated to act. This in turn depends on social attitudes and an awareness of the issues at stake. These are critical elements in the adoption of policies and practical measures to mitigate the negative impact of climate change and the adoption of environmentally beneficial practices. A number of education and awareness raising workshops have been held, but it is evident that good environmental practices are not being followed. For instance, people continue to dispose of rubbish in pulaka pits and along the foreshore in Funafuti. Pig and human wastes seep into the lagoon. Domestic refuse is dumped at the north-eastern extremity of Fongafale. Rubbish is not sorted and no recycling scheme is in operation. Without an environmental ethic and deep-seated care for the environment and biodiversity, management efforts are thwarted.

The reason why environmental knowledge is not translated into positive public actions remains a mystery. It is claimed that, on Funafuti, in-migrants do not have a stake in resources; they are not “theirs”. However, this lack of ownership has also been given as a reason why indigenous Funafuti people are not fully committed to the CA. Some say the CA belongs to the Funafuti Kaupule – that it is not really a community initiative; it is institutionally-based, managed and enforced.

V. Alternatives

One of the reasons why people perpetuate deleterious practices is that they have few other choices, or they are not aware of alternatives. For instance, a waste management project funded by AusAID from 2000 to 2002 had four components:

- Reduction in Waste (recycling)
- Municipal and Solid Waste management
- Waste water improvements
- Hazardous and Medical Wastes

Some important initiatives were undertaken. An attempt was made to separate garden and toxic wastes. A private recycling operation was set up. The landfill site (refuge dump) was controlled. Septic tanks were provided for public facilities (the schools, the wharf, hospital and terminal). Medical wastes were incinerated.

However, the landfill was not lined, so leachates continue to seep into the lagoon. The incinerator broke down after 2004. A new one was purchased in 2008 but has not been installed due to the need to acquire a site from landowners and the lack of funding for a building. The private recycling

scheme closed. Hazardous wastes are stored in a hanger at the end of the runway. There is no inter-governmental programme to deal with these wastes.

A new EU funded five year project, which started this year, will address some of these issues and find financial mechanisms to sustain water, wastes, and sanitary systems. An IWP project promoted composting toilets; this will now be continued with AusAID's help. TANGO has a composting trial and the PWD has two projects. Another NGO, Alofa Tuvalu, is trying to produce biogas from piggery wastes at a trial at the Amatuku Training Centre, Funafuti.⁴²

The important principal that these initiatives demonstrate is that people require alternative systems and practical measures to enable them to change their current practices. Sometimes these succeed, but at other times there may be resistance due to socio-cultural taboos (for instance to composting toilets) market failures (recycling initiatives) or other factors, like tenure or institutional failures. Without addressing these, conservation efforts will fail.

2 CURRENT STATUS OF NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN

i) Biodiversity Conservation in Tuvalu

Tuvalu is now developing its NBSAP with the NBSAP Project. Up to now it has largely relied on the Tuvalu National Environmental Management Strategy (NEMS) that was published in 1997.⁴³ The Environment Department has been strengthened and now comprises three full time professional staff and two clerks. Many of the activities recommended in NEMS have been actioned, including the production of:

- EIA Guidelines
- The National Environment Protection Act
- Environmental Education
- Training of Teachers
- Awareness Programmes,
- Development Plans for Funafuti and the outer islands, and
- Investigation of Traditional Knowledge

However, it is now over 12 years since NEMS was released and there are still gaps that need to be urgently addressed. There are still information, survey and data deficiencies. Marine and terrestrial ecosystems are still being used unsustainably. There is no comprehensive land-use plan. Thus, landowners are free to decide what to do with their land, leading to increased tensions and conflicts, arising from the erection of buildings, indiscriminate rubbish disposal, solid and liquid household wastes discharges and clearing of

⁴² Tupulaga, S. 2009.

⁴³ SPREP, 1997

vegetation. Progress on an alternative energy programme has been developed at a small scale piloted at the Tuvalu Maritime Training Institute in Amatuku motu. It is an initiative funded and organized by the Non Government Organization Alofa Tuvalu. An integrated environmental monitoring and reporting system is still to be developed.

Other shortcomings have also been noted, relating to the extent of community involvement, capacity constraints and the lack of actions on systemic and institutional matters.⁴⁴

NEMS drew attention to global warming and sea-level rise and the likely impacts on fresh-water supply but advocated that priorities needed to be balanced:

*....there is a legitimate concern that the issue of climate change and sea-level rise has been so prominent that it could overshadow or lead to the neglect of other equally, if not more important issues such as population growth, pollution, and unplanned development activities.*⁴⁵

Notwithstanding, global warming has now become an even greater concern. Instead of thinking of it as overshadowing other issues, it would be more useful to think of it as a catalyst for both mutually reinforcing short-term and long-term actions.

(See Annex 2: Q&A Checklist of Actions to Meet CBD Targets for a summary).

ii) The National Biodiversity Strategy and Action Plan Project (NBSAP)

- Project Background

The NBSAP Project was established in August 2008 with funds from UNDP.. The intended outcome of the project is stated in the Project Document:

(That) environmental sustainability and sustainable energy are mainstreamed into regional and national policies, policy frameworks and programmes.

The objectives of this enabling activity are:

- To formulate strategies necessary to ensure the protection and sustainable use of Tuvalu's biodiversity, and
- To prepare a plan for the implementation of these strategies.

The expected annual output for 2008 and 2009 is:

⁴⁴ UNDP, 2007

⁴⁵ NEMS, 1997

Enhanced national capacity through multi-stakeholder participation in planning and pre-investment activities to meet commitments and obligations to the Convention on Biological Diversity.

This will be achieved by the following sub-outputs:

- Establishment of the institutional process and engagement of stakeholders for biodiversity conservation
- Production of the National Biodiversity Strategy and Action Plan
- Production of Tuvalu's first and third report to the CBP COP (now the 4th National Report), and
- The establishment of a Clearing House Mechanism. This will principally be a web site.⁴⁶

The intended strategy will involve the establishment of the country's vision, goal and objectives for biodiversity conservation, and cover the status of biodiversity conservation; invasive and alien species management; sustainable use of biological resources; conservation of agro-biodiversity; persistent organic pollutants (POPs); waste management and water quality. Action plans will be developed to implement the strategy. They will define institutional roles and responsibilities and also identify the necessary resources and timescale for implementing the strategy.

- *Progress to date and future activities*

Preliminary meetings were held with stakeholders prior to an inception workshop that was held in Funafuti from 24-27 March. Falekaupule and other stakeholders from outer islands were also invited to attend.

Further consultations took place in May in three northern islands and in Funafuti. An average of two days was spent in each island. In June, consultations were held in Funafuti with migrant communities from other islands now resident in Funafuti. From August to September consultations were held with Nui, Nukufetau and Vaitupu islanders to appraise them of the project and to discuss biodiversity issues and problems. A similar consultation was held on Nukulaelae islands in September.

Follow-up activities will be held between October and December and the reports of all the visits will be completed (four have already been finalized). Once these reports are distributed, the Falekaupule will undertake public consultations on each island to discuss and confirm the community consultation findings and to identify and prioritise biodiversity conservation needs.

A national workshop will be held in Funafuti In February 2010 to decide what to include in the Strategy and Action Plan.

⁴⁶ UNDP, 2008

3 SECTORAL AND CROSS-SECTORAL INTEGRATION (MAINSTREAMING) OF BIODIVERSITY CONSIDERATIONS, WITH REFERENCE TO THE 2010 CBD TARGET

I. A Framework for Environmental and Biodiversity Conservation

A broad framework for environmental and biodiversity considerations has been provided by the National Strategies for Sustainable Development 2005-2015 (NSSD) adopted in 2005. It provides for the sustainable development of resources.⁴⁷ It arose out of the challenge set at the UN Millennium Summit (World Summit for Sustainable Development – WSSD) when the international community agreed to eight Millennium Development Goals (MGDs), one of which encompasses the environment; another poverty reduction.

The NSSD identified eight strategic areas, one of which is Natural Resources: Agriculture, Fisheries, Tourism and Environment. Noting that Tuvaluan society and its subsistence economy have been built on the sustainable use of the nation's limited natural resources, now under threat, the challenge is to reconcile conflicts arising from changing attitudes and a growing cash economy.

The priorities and strategies for the Environment are to:

- Develop and implement an urban waste and management plan for Funafuti
- Establish national climate change adaptation and mitigation policies
- Encourage international adoption of Multilateral Environment Agreements, including the Kyoto Protocol
- Increase the number of conservation areas (CAs) and ensure regulatory compliance

The performance monitoring measure for the Environment is that *“management has improved in general and that progress is made in urban planning, land reform and waste management in Funafuti specifically and to a lesser extent in the outer islands”*.⁴⁸

Biodiversity conservation was not made explicit in the NSSD, but has been subsumed under the strategy for CAs. There are also possible conflicts with key policy objectives for Agriculture and Tourism. For instance, objectives to increase the land available for agricultural production and increase the number of tourists could be environmentally detrimental if not carefully managed.

The NSSD led to the 2007 Kakeega Matrix which presented an up-to-date account of Tuvalu's development needs, where each donor was involved or intended to be involved. It highlighted specific areas, projects or activities where Tuvalu lacked experience, technical experience or financial

⁴⁷ Government of Tuvalu, 2005.

⁴⁸ Government of Tuvalu, 2005

resources.⁴⁹ Some of the projects identified for the Environment for the period 2007-2009 have been actioned, such as finding for a solid waste management plan, the development of the NBSAP, the establishment of more conservation areas, the development and the implementation of Environment Impact assessment policies. The National Development Act was produced and came into force on 24 June, 2008. The Act explicitly provides for the protection of biodiversity in Part IX, setting out the role of the Department of the Environment.⁵⁰

In December 2005 Tuvalu prepared the National Action Programme (NAP) and submitted it to the UNCCD Secretariat. It recognised the connectivity of objectives with other Multi-lateral Environment Agreements (MEAs). It was noted that because land degradation affects and is affected by environmental concerns such as loss of biological diversity and the effect of climate change, the NAP had great potential to promote synergies with other environmental programmes. It provided strategic priority activities on land degradation, inventory and monitoring, the establishment of sustainable land management plans and the integration of traditional knowledge into modern systems. However, a lack of data and poor recognition of the role of the NAP has meant that actions have not been translated into concrete initiatives.⁵¹

In order to assist in the elaboration of the NAP, a Sustainable Land Management Project (SLM) has been funded by UNDP. It will build capacity in two areas:

i) *Mainstreaming SLM:*

This will involve Integrating land resource and degradation issues into national development planning processes, consistent with the objectives of the National Strategies for Sustainable Development 2005-2015.

ii) *Integrated Land Use Planning Systems (ILUP):*

This entails the establishment of development planning systems; strengthening of participatory planning; addressing institutional mechanisms and individual capacities for integrated land-use planning. Implementation will be at the national and local Kaupule levels, with links and co-contributions to support food security and livelihoods initiatives, providing a direction for land use planning suited to customary systems.⁵²

Expected project outcomes

1. Increased knowledge and awareness of land degradation and the importance of sustainable land management.

⁴⁹ Government of Tuvalu, 2007a

⁵⁰ Government of Tuvalu, 2008

⁵¹ UNDP, 2007

⁵² UNDP, 2007

2. Enhanced technical, individual and institutional capacities for SLM.
3. Systemic capacity building and mainstreaming of SLM principles and objectives
4. Enhanced technical support at the local, outer Island and national levels to assist with mainstreaming and integrated decision-making.

Principally, the project seeks to raise awareness and provide training and tools to empower communities to be more directly involved in decision-making and to consider land use and farming practice choices to deal with the increasing pressures of population growth. It is hoped that communities will be empowered to adapt to maintain food security, by building resilience to detrimental pressures or diverting those pressures, many of which are created or exacerbated by poor land use choices. A GIS mapping system will be developed, incorporating local knowledge and scientific information. At national level, an assessment of the legislative frameworks will be undertaken, initially to seek opportunities for mainstreaming SLM in development policy and decision-making processes.

Under Outcome 3, an integrated land use planning system will be developed for medium-long term development, incorporating a rural land-use policy framework, a consideration of options and a roadmap for the integration of law, administrative processes and fiscal systems.

In the process of achieving these outcomes and outputs, there is clearly an opportunity to piggy-back biodiversity considerations and dovetail the NBSAP, since one of the NBSAP objectives is to mainstream biodiversity. Better environmental information and the gathering of baseline data through the development of a GIS system will be invaluable. This needs to cover more than land-use changes and needs to be on-going, beyond the time frame of the SLM project, in order to produce trend information. Without this, management decisions and interventions about resources and biodiversity conservation will be ill-informed.

Furthermore, though a policy framework is to be developed, at this stage this will not lead to detailed land-use plans, ordinances and regulations. The challenge will be in the translation of policy into concrete actions on the ground, dealing with the vexing issue of curtailing, in the public interest, individual rights to use land and natural resources.

At present, preliminary and full environmental assessments are required under the Environmental Protection (EIA) Regulations 2007. The Minister of Natural Resources and the Environment has considerable discretion as he/she decides whether a preliminary or full environmental assessment is required. The latter may be required by the Minister “*for any development relating to a major project that a preliminary report indicates is likely to have a significant adverse impact on the environment*”.⁵³ Public consultations may be required, at the discretion of the Minister. Residential building and churches that conform to all legal requirements relating to building standards are exempt, as are routine maintenance to public infrastructure. This leaves

⁵³ Government of Tuvalu, 2007

the issue of point and non-point (diffuse) discharges or impacts legally unresolved.

II. Relationship of the NBSAP to MDGs and the contribution of biodiversity conservation

The 2010 Target of the CBD is to:

Achieve a significant reduction of the current rate of biodiversity loss at the global, regional and national level as a contribution to poverty alleviation and to the benefit of all life on Earth

In April 2002, the Parties to the Convention committed themselves to achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level as a contribution to poverty alleviation and to the benefit of all life on Earth. This target was subsequently endorsed by the World Summit on Sustainable Development and the United Nations General Assembly and was incorporated as a new target under the Millennium Development Goals.

- MGD Indicators and their relevance to Tuvalu

Although the NSSD noted that some of the MGD indicators do not work (or work well) in small populations such as Tuvalu, the provisional ones developed by the CBD are valid, even though it is acknowledged that some require more work. In particular, those that indicate the status and trends in biodiversity, sustainable use and threats are fundamental. As noted above, these are areas where Tuvalu is deficient. The link between human welfare and ecosystem integrity has also not been established in monetary terms, nor has the socio-economic importance of biodiversity and ecosystem services and indigenous knowledge or the equitable sharing of benefits and dis-benefits. The Tuvalu Household Income and Expenditure Survey 2004-2005 for instance only recorded monetary income. Of the total household income, 5% was derived from Handicrafts, 8% from Fishing and 3% from Agriculture⁵⁴. However this is not a true reflection of the value of biodiversity to livelihoods as non-monetary values, for instance from subsistence harvesting of marine and terrestrial species is not recorded.

Although Tuvalu ranked 6th out of 13 PICs on the Human Poverty Index (using 2008 data), this tells us nothing of the contribution that biodiversity played as this was not one of the measures used in the calculation of the index, (see Annex 1).⁵⁵

⁵⁴ Government of Tuvalu, 2006.

⁵⁵ UNDP, in draft.

4 CONCLUSIONS: PROGRESS TOWARDS THE 2010 TARGET AND IMPLEMENTATION OF THE STRATEGIC PLAN

One of the most fundamental issues in the realization of biodiversity conservation is the value that we place on the environment, in all its aspects. This is not just about material gains and human centred development, but values based on a deep-seated respect for the environment, based on a moral standard. Aldo Leopold developed a land ethic based on the principal that a thing is right when it tends to preserve the integrity, stability and beauty of the biotic community. It is wrong when it tends otherwise.⁵⁶ In Tuvalu the challenge is to inculcate an environmental ethic that underpins individual, community and institutional behaviour.

The environmental education programmes and the community consultations undertaken so far by the NBSAP Project have been geared to nurturing such an ethic. There might appear to be a long way to go, but the underlying philosophy of the Project is that people's behaviour will change when they become conscious of their actions and have tangible alternatives to their present, sometimes deleterious actions. Building up baseline information is one way of ensuring that adequate information is provided to communities to enable them to make informed decisions.

A related issue is the contribution of biodiversity conservation to rural livelihoods and to poverty alleviation. At present it is impossible to determine the value of biodiversity and ecosystem services to meet local needs. The Strategy and Action Plan will address this issue.

In the past, because environmental initiatives have often come from government or outside agencies, such as SPREP, communities may have felt that they were not central to decision-making; that conservation was being imposed on them from the outside; that they did not own the project, environmental actions or processes. From consultations held so far, it is evident that most enthusiasm is generated when communities take the initiative and are fully involved in the design and implementation of activities.

The future thrust of the NBSAP therefore will be to empower communities to carry out, implement and monitor environmental initiatives themselves. Experts will be required to impart their knowledge to local communities.

The legal framework for environmental protection lacks explicit detail about biodiversity conservation. There are many gaps, such as that covering trees and forests. Hence, although Tuvalu is in the process of signing the International Treaty on Plant Genetic Resources this year, the Department of Agriculture wants to develop a tree policy to facilitate and protect some of its activities, such as the replanting and conservation of mangroves.⁵⁷ An opportunity now exists to take an integrative approach, as some departments are reviewing their legislation and others are undertaking land, water and solid

⁵⁶ Leopold, 1949.

⁵⁷ Mataio, 2009

waste management projects. A climate change strategy should be central to environmental (including biodiversity conservation) and development planning and could provide a catalyst for integrated actions. For example, it could provide an added impetus to a forest and trees programme and the Community Tree Care project.

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ANNEX 1

Pacific Human Poverty Index

	C1	C2	C3	C4	C5	C6	C7	C8
	% of people expected not to survive to age 40	% of adults who are illiterate	% of female adults who are illiterate	% of people without access to safe water	% of people without access to health services	% of children < 5 yrs who are under- weight	% children not attending primary school	Human Poverty Index
Cook Is	7.0	1.0	1.0	4.9	n.a.	10.0	0.0	6.3
Fiji Is	7.7	7.0	9.0	7.3	n.a.	15.0	6.0	9.0
FSM	9.9	7.2	8.1	13.0	n.a.	15.0	0.0	11.1
Kiribati	15.2	8.0	8.1	48.0	n.a.	13.0	3.0	22.0
Marshall Is	14.3	3.0	2.8	15.3	n.a.	13.0	10.0	12.4
Nauru	20.4	1.0	1.0	18.3	n.a.	6.0	40.0	15.0
Niue	-	0.0	0.0	1.0	n.a.	0.0	7.0	n/a
Palau	10.3	2.0	2.0	4.3	n.a.	0.0	10.0	7.2
PNG	23.6	50.8	56.1	60.3	n.a.	25.0	58.0	41.8
Samoa	4.6	1.4	1.7	7.4	n.a.	2.0	10.0	4.1
Solomon Is	17.8	23.4	33.0	70.2	n.a.	14.0	6.0	31.3
Tokelau	-	2.9	4.0	1.8	n.a.	-	0.0	n/a
Tonga	6.3	2.3	2.0	1.0	n.a.	2.0	5.0	4.4
Tuvalu	13.1	1.0	1.0	7.5	n.a.	2.0	0.0	9.2
Vanuatu	11.8	25.0	28.0	24.7	n.a.	12.0	7.0	19.8

Sources:

C1:SPC live tables

C2-C3-C7: derived from table 6

C5-C6: MDG reports, DHS reports

Note:

C7 - Changed heading to '% of children not attending primary school' from % 10-14 year olds not attending

Source: UNDP, in draft.

ANNEX 2 Q&A CHECKLISTS OF ACTIONS TO MEET CBD TARGETS

OVERVIEW OF BIODIVERSITY STATUS, TRENDS AND THREATS

1. Is your country monitoring the status and trends of various components of biodiversity at genetic, species and ecosystem levels in your country?	
a) No	
b) Yes, a few components being monitored at one of the levels (please specify)	√
c) Yes, a few components being monitored at all levels (please specify)	
d) Yes, most of the components being monitored at one of the levels (please specify)	
e) Yes, most of the components being monitored at all levels (please specify)	
Please provide further details below.	
2. Has your country assessed and identified major threats to various components of biodiversity in your country?	
a) No	
b) Yes, a few major threats identified (please specify)	
c) Yes, most of the major threats identified (please identify)	√
Please provide further details below.	
Overharvesting of marine and terrestrial species; the use of unregulated equipments; the impacts of invasive species such as <i>Acanthaster planci</i> just naming a few threats.	

STATUS OF NATIONAL BIODIVERSITY STRATEGY and ACTION PLAN (NBSAP)

7. Has your country updated its national biodiversity strategy and/or action plan in light of developments under the Convention and at the national level?	
a) No	√
b) NBSAP is being updated A strategy is being developed	
c) Yes, completed (please provide details of updates to NBSAP)	
d) Yes, completed and adopted	
Please provide further details below.	
8. Has your country identified priority actions for its national biodiversity strategy and/or action plan?	
a) No	
Island Care Turtle Monitoring & Tagging Programme	
b) Priority actions are being identified Whale & Dolphin Action Plan	√
c) Some priority actions have been identified, (Please provide details below)	
Marine Protected & Conservation Areas	
Please provide further details below.	
National Environment Act & EIA introduced 2008	
9. Has your country established adequate capacity for implementation of priority actions in its national biodiversity strategy and action plan?	
a) No	√
b) An action plan is being developed Relevant plans and programmes under development	
c) Yes, completed	
c) Yes, capacities established for some priority actions	
d) Yes, completed and adopted	
Please provide further details below.	
d) Yes, capacities established for most priority actions	
NBSAP Project underway to produce Tuvalu BSAP.	
Please provide further details below.	
10. Is your country actively implementing the priorities in national biodiversity strategies and action plans as a means to achieve national implementation of your country developed and adopted to implement your national strategy or other relevant programmes?	

the Convention?	
a) No	
b) Priority actions are being identified	
c) Yes some priority actions being implemented	√
d) Yes, most priority actions being implemented	
Please provide further details below.	
11. Has your country assessed the obstacles to implementation of its national biodiversity strategy and/or action plan?	
a) No	
b) Assessment is under way	√
c) Yes	
Please provide further details below.	
12. Are your national biodiversity strategies and actions plans (including updated NBSAPs) or other programmes and plans developed or adopted for the implementation of the Convention available on the Internet?	
a) No	√
b) No, but relevant documents have been submitted to the Secretariat	
c) Yes, (please provide details below)	
Please provide website address below.	

3.1 PROGRESS TOWARDS 2010 TARGET AND IMPLEMENTATION OF THE STRATEGIC PLAN.

Goal 1. Promote the conservation of the biological diversity of ecosystems, habitats and biomes.

13. Has your country established a system of protected areas of various types to protect areas of particular importance to biodiversity and contribute to the conservation of the world's ecological regions? (Targets 1.1 and 1.2)	
a) No	
b) Relevant plans or programmes are under development	
c) Yes, a system is in place but not adequate for conservation objectives	√
d) Yes, an adequate system is in place	
Please provide further details below.	
10 Conservation Areas have been established, Management Plans exist for 2 and 2 are being prepared.	

Goal 2. Promote the conservation of species diversity

14. Has your country taken measures to restore, maintain or reduce the decline of populations of species of selected taxonomy groups? (Target 2.1)	
a) No	
b) Relevant measures are being developed	
c) Yes, some measures in place	√
d) Yes, comprehensive measures in place	
Please provide further details below	

Kaupules (Island Councils) have some restrictions on harvesting specific species for instance giant clams and coconut crabs, sizes of fish nets, etc	
15. Has your country taken measures to improve the status of threatened species? (Target 2.2)	
a) No	
b) Some measures are being developed	
c) Yes, some measures in place	√
d) Yes, comprehensive measures in place	
Please provide further details below.	
Turtle monitoring and raising public awareness.	

Goal 3. Promote the conservation of genetic resources of genetic diversity

16. Has your country taken measures to conserve genetic diversity of crops, livestock, harvested species of trees, fish, wildlife and other valuable species, as well as maintain associated indigenous and local knowledge? (Target 3.1)	
a) No	
b) Relevant measures are being developed	
c) Yes, some measures in place	√
d) Yes, comprehensive measures in place	
Please provide further details below.	
The Department of Agricultural has established a plant genetic pool, focusing on food crops such as pawpaw, bananas, pulaka (<i>Cyrtosperma chamissonis</i>).	

Goal 4. Promote sustainable use and consumption

17. Has your country taken any measures to ensure that biodiversity-related products are derived from sources that are sustainably managed and production areas are managed consistent with the conservation of biodiversity? (Target 4.1)	
a) No	√
b) Relevant measures are being developed	
c) Yes, some measures in place	
d) Yes, comprehensive measures in place	
Please provide further details below.	
Currently there is one commercial operation targeting Beche-de-mer. However it is not sustainably managed.	
18. Has your country taken measures to reduce unsustainable consumption of biological resources? (Target 4.2)	
a) No	√
b) Relevant measures under development	
c) Yes, some measures in place	
d) Yes, comprehensive measures in place	
Please provide further details below.	
19. Has your country taken measures to avoid or minimize negative impacts of international trade on species of wild flora and fauna? (Target 4.3)	
a) No	
b) Relevant measures are being	

considered	
c) Yes, some measures in place	√
d) Yes, comprehensive measures in place	
Please provide further details below.	
Certificates under CITES are issued.	

Goal 5. Pressures from habitat loss, land use change and degradation, and unsustainable water use, reduced.

20. Has your country taken measures to declare the rate of loss and degradation of natural habitats? (Target 5.1)	
a) No	√
b) Some measures are being considered	
c) Yes, some measures in place	
d) Yes, comprehensive measures in place	
Please provide further details below.	
Baseline information is lacking. Under the Lands Department and the Sustainable Land Management Project GIS will be further developed.	

Goal 6. Control threats from invasive alien species.

21. Has your country taken measures to control pathways for major potential alien invasive species? (Target 6.1)	
a) No	

b) Relevant measures are being developed	
c) Yes, some measures in place	√
d) Yes, comprehensive measures in place	
Please provide further details below.	
Border controls are in place under the department of Agriculture. Controls on Marine pathways such as ship de-ballasting have not been developed.	
22. Has your country put in place management plans for major alien species that threaten ecosystems, habitats or species? (Target 6.2)	
a) No	√
b) Relevant plans under development	
c) Yes, relevant plans in place	
d) Yes, reports on implementation of relevant plans available	
Please provide further details	

Goal 7. Address challenges to biodiversity from climate change, and pollution.

23. Has your country taken measures to maintain and enhance resilience of the components of biodiversity to adapt to climate change? (Target 7.1)	
a) No	
b) Relevant measures are being considered	
c) Yes, some measures in place	√
Please provide further details below.	
The coastal intertidal area has been planted with mangroves in Funafuti, Nanumea, Nukulaelae. TANGO has initiated a Green Belt programme with	

local communities, planting <i>Calopyllum inopyllum</i> and <i>Barringtonia asiatica</i> spp.	
24. Has your country taken measures to reduce pollution and its impacts on biodiversity? (Target 7.2)	
a) No	
b) Relevant measures are being developed	
c) Yes, some measures in place	√
d) Yes, comprehensive measures in place	
Please provide further details below.	
In place is the Persistent Organic Pollutant' plan of action and the Waste Management Plan is being developed.	

Goal 8. Maintain capacity of ecosystems to deliver goods and services and support livelihoods.

25. Has your country taken any measures to maintain capacity of ecosystems to deliver goods and services? (Target 8.1)	
a) No	
b) Some measures are being considered	
c) Yes, some measures taken	
d) Yes, major measures taken	√
Please provide further details below.	
Restrictions are in force in CAs managed by Kaupules such as coral and sand mining bans, no harvesting of marine and terrestrial spp.	
26. Has your country taken measures to maintain biological resources that support sustainable livelihoods, local food security and health care? (Target	

8.2)	
a) No	
b) Some measures are being developed	
c) Yes, some measures in place	√
d) Yes, comprehensive measures in place	
Please provide further details below.	
Refer to above.	

Goal 9. Maintain socio-cultural diversity of indigenous and local communities.

27. Has your country taken measures to protect traditional knowledge, innovations and practices, including the rights of indigenous and local communities over their traditional knowledge, innovations and practices and to benefit sharing? (Targets 9.1 and 9.2)	
a) No	
b) Not applicable	
c) Some measures are being developed	√
d) Yes, some measures in place	
Please provide further details	
Consultations and assessments have been undertaken but no plans have been developed.	

Goal 10. Ensure the fair and equitable sharing of benefits arising out of the use of genetic resources.

28. Has your country developed any legislation or mechanisms or measures to ensure that all transfers of genetic resources are in line with the Convention on Biological Diversity, the International Treaty on Plant Genetic Resources for Food and Agriculture and other applicable agreements? (Target 10.1)

a) No	
b) Relevant legislations, mechanisms or measures are being considered	√
c) Yes, some legislations, mechanisms or measures in place	
d) Yes, comprehensive legislations, mechanisms or measures in place	

Please provide further details

Legislation on Biosafety has been reviewed since 2008. The final report has not completed by the consultant.

29. Has your country developed any mechanisms for sharing benefits arising from the commercial and other utilization of genetic resources with the countries providing such resources? (Target 10.2)

a) No	√
b) Some mechanisms are being developed	
c) Yes, some mechanisms in place	

Please provide further details below.

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3.2 PROGRESS TOWARDS THE GOALS AND OBJECTIVES OF THE STRATEGIC PLAN OF THE CONVENTION

Goal 1. The Convention is fulfilling its leadership role in international biodiversity issues.

32. Is your country promoting the integration of biodiversity concerns into sectoral or cross-sectoral plans, programmes and policies at the regional and global levels? (Objective 1.5)	
a) No	
b) Relevant mechanisms are being considered	√
c) Yes, in some sectors	
d) Yes, in major sectors	
Please provide further details below.	
The NBSAP Project is considering this.	
33. Is your country promoting collaboration at the regional and sub-regional levels to implement the Convention? (Objective 1.6)	
a) No	
b) Relevant mechanisms are being developed	
c) Yes, some mechanisms established	√
d) Yes, reports on such collaboration available	
Please provide further details below.	
Collaboration programs with the assistance of the regional Environment bodies such as SPREP, FSPI, SOPAC, SPC and so forth.	

Goal 2. Parties have improved financial, human, scientific, technical, and technological capacity to implement the Convention.

34. Is your country promoting scientific and technical cooperation to contribute to capacity building? (Objective 2.5)	
a) No	√
b) Relevant programmes under development	
c) Yes, in some areas	
d) Yes, in many cases	
Please provide further details below.	
35. Has your country provide sufficient resources to implement the three objectives of the Convention? (Objective 2.2)	
a) No	
b) Relevant budgetary sources are being considered	
c) Yes, limited resources provided	√
d) Yes, adequate resources provided	
Please provide further details below.	
Government contribution is very limited.	
36. Has your country received resources from external sources to support the implementation of the Convention? (Objective 2.2)	
a) No	
b) Yes, extremely limited resources received	
c) Yes, limited resources received	√
d) Yes, adequate resources received	
Please provide further details below.	
GEF in particular to help prepare strategy and other biodiversity and climate change enabling activities.	

Goal 3. National biodiversity strategies and action plans and the integration of biodiversity concerns into relevant sectors as an effective framework for the implementation of the objectives of the Convention. (See questions 11 and 41)

Goal 4. There is a better understanding of the importance of biodiversity and of the Convention, and this has led to broader engagement across society in implementation.

37. Is your country implementing a CEPA strategy and promoting public participation in support of the Convention? (Objective 4.1)	
a) No	
b) Relevant strategy and programmes under development	
c) Yes, some programmes and activities being implemented	√
d) Yes, comprehensive programmes and activities being implemented	
Please provide further details below.	
NBSAP have conducted community awareness consultations and the Sustainable Land Management Project have launched a social marketing plan (education and awareness programme)	
38. Has your country taken measures to effectively involve indigenous and local communities in the implementation of the Convention and in the processes of the Convention at national, regional and international levels? (Objective 4.3)	
a) No	
b) Relevant mechanisms are being considered	
c) Yes, in some areas	
d) Yes, in most areas	√
Please provide further details below.	

Marine & Terrestrial Conservation programmes.	
39. Is your country engaging key actors and stakeholders in partnerships to implement the Convention?	
a) No	
b) Relevant mechanisms are being developed	
c) Yes, to a limited extent	
d) yes, to a significant extent	√
Please provide further details below.	
All islands of Tuvalu and Civil Society are widely consulted. A National Meeting will be held next year to discuss the strategy.	