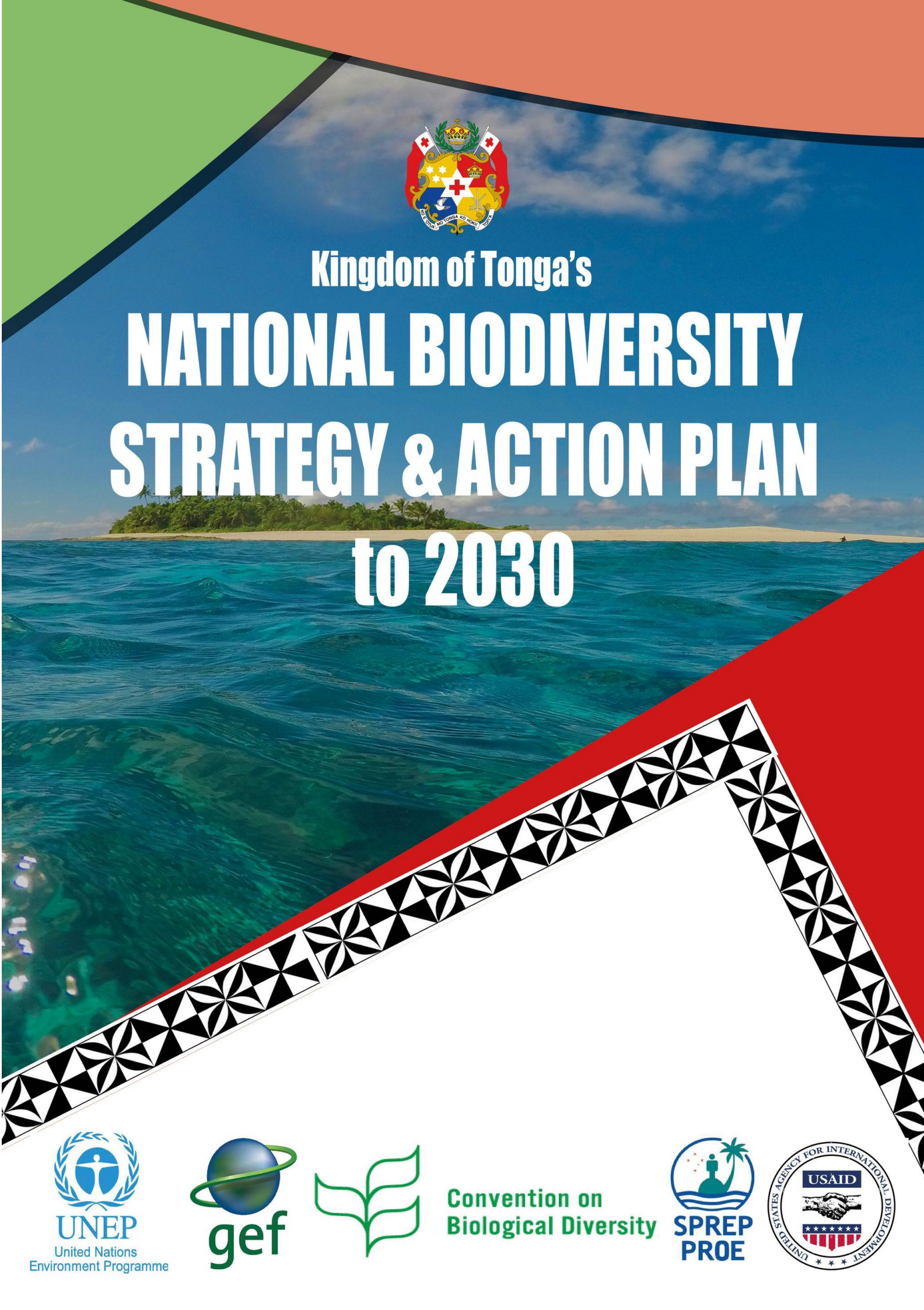

Kingdom of Tonga's

NATIONAL BIODIVERSITY STRATEGY & ACTION PLAN to 2030

UNEP
United Nations
Environment Programme

gef

Convention on
Biological Diversity

SPREP
PROE

USAID

KINGDOM OF TONGA's

National Biodiversity Strategy & Action Plan to 2030

FOREWORD

It is with great pleasure that I, on behalf of the Government of Tonga, present the revised and updated National Biodiversity Strategy and Action Plan to 2030 (NBSAP) for the conservation and sustainable development of our country's biological resources. Tonga signed the Convention on Biological Diversity in May 1998 to show its commitment to the global efforts of preserving our planet's fragile environment. Since then, Tonga completed its first NBSAP in 2006. Its revision involved extensive collaboration and consultations with the communities across Tonga, civil society organisations, private sector and government organisations.

The finalisation of the revised and updated Plan could not wait until the delayed 15th Meeting of the Conference of the Parties to the Convention on Biological Diversity because actions were identified and ready to be implemented and needed government approval. Our analysis shows that using the current Aichi Biodiversity Targets (ABT) suffices for the time being and that any necessary updates to reflect actions agreed as part of the post-2020 global biodiversity framework will be included, if needed, at the time of the next update.

Tonga is blessed with unique natural resources and much of its economic, environmental and social well-being is derived from its rich environment. However, there are natural and human-induced threats to the conservation and sustainable use of our resources. During the writing of this revised and updated NBSAP, Tonga experienced the global covid-19 pandemic and the effects of the Hunga Tonga-Hunga Ha'apai volcanic eruption. Biodiversity ties into many sectors that depend on it for the sustainable growth of Tonga's economy. Biodiversity is the foundation for three of the top contributors to our GDP – tourism, agriculture and fisheries. Therefore, we must ensure the protection of our biological resources if we are to steer our development towards a sustainable future.

I commend those who have been instrumental in putting this document together, and I am particularly thankful to the Global Environment Facility and USAID for funding the revision of this document. It is with hope that this revised Strategy and Action Plan to 2030 will be effectively implemented and help guide our citizens to restore, preserve and sustain Tonga's rich biodiversity for our present and future generations.

Malo 'Aupito

Honourable Poasi Mataele Tei

Minister for Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communications

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EXECUTIVE SUMMARY

Tonga is endowed with unique resources that have supported life for the many generations that have lived in harmony with the environment over the years. The environment provides food, shelter, fresh water, wood, fibre, medicine, fuel, tools, and raw materials. It also provides spiritual and recreational values, educational references, and contributes to the economy, livelihoods, and culture of Tonga. Our ecosystems maintain and provide protection against diseases, climate, natural disasters, while also supporting nutrients cycling, and aids in sand and soil formation. The Government of Tonga is committed to conserve and use its natural resources sustainably for the benefit of the country's present and future generations.

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

Two major threats to Tonga's sustainable development were verified: indiscriminate expansion of commercial agriculture, and overharvesting of land and marine-based forests ecosystems, resulting from rapid population growth and people migrating to town centres. These threats are generally blamed on lack of technical information, technical expertise and capacities, public awareness, appreciation of conservation, and an ineffective legal framework. Values on socioeconomic and ecological aspects are often incomplete, thus needing further resources and statistical assessments.

The NBSAP is organized into key issue areas reflecting a combined emphasis on the ecosystems approach and species-specific focus including different sectors of biodiversity that we heavily depend upon for subsistence, namely Agro-biodiversity, Forestry and Marine. In that light, nine thematic areas were developed with strategies and actions to ensure that Tonga's biodiversity is properly conserved and sustainably managed to be enjoyed by our people and future generations.

Therefore, to maximize the benefits of available resources, the focus of the NBSAP is basically on managing the threats to forests, marine life, agro-biodiversity, priority species, and managing invasive alien species. It provides for the protection of people's livelihoods and for the conservation of biodiversity. It also guides to capture the state of Tonga's biological resources and materialize actions to restore the vulnerable environment, reduce degradation, promote sustainable development, and establish regional and global partnerships to fulfil its obligations under the Convention of Biological Diversity (CBD).

ACRONYMS

AGO	Attorney General's Office
ABT	Aichi Biodiversity Targets
ADB	Asian Development Bank
CBD	Convention on Biodiversity
CBOs	Community-based organisations
CCAM	Conformal Climate Atmospheric Models
CITES	Convention on International Trade of Endangered Species
CMS	Convention on Migratory Species
CoP	Conference of the Parties
CROP	Council of Regional Organisations of the Pacific
CSFT	Civil Society Forum of Tonga
CSOs	Civil Society Organisations
EIA	Environmental Impact Assessment
ERP	Early Response Plan
FAO	Food and Agriculture Organisation
FFA	Forum Fisheries Agency
GCF	Green Climate Fund
GDP	Gross Domestic Product
GIS	Geographical Information Systems
GEF	Global Environment Facility
HMAF	His Majesty's Armed Forces
IAS	Invasive Alien Species
IUCN	International Union for Conservation of Nature and Natural Resources
JICA	Japan International Cooperation Agency
JNAP	Joint National Action Plan on Climate Change and Disaster Risk Management
LEDS	Low Emissions Development Strategy
LMOs	Living Modified Organisms
MAFF	Ministry of Agriculture, Food and Forestry
MARPOL	International Convention for the Prevention of Pollution from Ships
MEAs	Multilateral Environmental Agreements
MEIDECC	Ministry of Meteorology, Environment, Information, Disaster Management, Environment, Climate Change & Communications
MIA	Ministry of Internal Affairs
MLNR	Ministry of Lands and Natural Resources
MoET	Ministry of Education and Training

MOF	Ministry of Fisheries
MoFinance	Ministry of Finance
MoH	Ministry of Health
MOI	Minstry of Infrastructure
NASP	National Agriculture Sector Plan
NBSAP	National Biodiversity Strategy and Action Plan
NCSA	National Capacity Self-Assessment
NDC	Nationally Determined Contribution to the Paris Agreement
NECC	National Environment Coordinating Committee
NGO	Non-Government Organisation
NISSAP	National Invasive Species Strategic Action Plan
PACCSAP	Pacific-Australia Climate Change Science and Adaptation Planning Project
PIFS	Pacific Islands Forum Secretariat
PMO	Prime Minister's Office
POPs	Persistent Organic Pollutants
POWPA	Programme of Work on Protected Areas
SDGs	Sustainable Development Goals
SGP	Small Grants Programme
SOPAC	South Pacific Applied Geoscience Commission
SP	Samoa Pathway
SPC	Secretariat of the Pacific Community
SPREP	Secretariat of the Pacific Regional Environment Programme
SPTO	South Pacific Tourism Organisation
TCCP	Tonga Climate Change Policy
TEK	Traditional Ecological Knowledge
TSDF	Tonga Strategy Development Framework
TWG	Technical Working Group
UNCCD	United Nations Convention to Combat Desertification
UNCLOS	United Nations Convention on Law of the Sea
UNFCCC	United Nations Framework Convention on Climate Change
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
VEPA	Vava'u Environment Protection Association
WAL	Waste Authority Limited
WB	World Bank

ACKNOWLEDGEMENTS

The Government of Tonga extends its sincere gratitude to the UNEP and GEF for providing financial support to pursue the revised NBSAP document from 2014-2016. In addition, our gratitude goes to SPREP for their continuous support and excellent guidance towards the NBSAP review. Unfortunately, high-staff turnover and financial constraints resulted in an incomplete and draft revised NBSAP document. However, the Actions under the draft revised NBSAP were still being implemented under the various Sector Plans.

The Government of Tonga was most fortunate to receive financial assistance from USAID Climate Ready in 2021 to update and finalise the revised NBSAP, and to align the biodiversity framework with the Tonga Climate Change Policy (TCCP) and the Joint National Action Plan (JNAP) on Climate Change and Disaster Risk Management.

Special thanks are extended to the Minister, Hon. Poasi Tei, and Chief Executive Officer for Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communications (MEIDECC), Mr. Paula Ma'u, for their direction and continued support with the NBSAP review process.

The NBSAP Technical Working Group (TWG), from relevant sectors, provided valuable contributions and support during the review process and completion of the NBSAP document.

Finally, a thank you is also extended to the communities for their valued input and participation during the consultation process; and to the staff of the Department of Environment and the Department of Climate Change for their continued assistance and coordination in completing this very important task.

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1.0 OVERVIEW

1.1 INTRODUCTION TO TONGA AND ITS BIODIVERSITY

1.1.1 Geographical and geological context

The Kingdom of Tonga is a small, but large ocean State, in the South Pacific comprising about 176 islands, 36 of which are inhabited, lying between 15 degrees and 23.5 degrees South, within the tropics but further south than most other Pacific Island countries, giving Tonga more distinct seasonal temperature variation and slightly different marine resources (Figure 1). The total land area is only about 700 square kilometers (sq km) but the territorial waters cover about 700,000 sq km[1].

The Tonga Islands are built on two ridges, the Tonga Ridge and the Tofua Ridge, running in parallel to one another in a southwest-northwest direction. In parallel to these ridges is the axis of the Tonga-Kermadec Trench, which is one of the deepest locations on earth. The islands on the Tonga Ridge are coral in origin and low and flat; these include the Tongatapu Group and, Ha'apai and Vava'u Groups. The Tonga Ridge is not volcanic but it is tectonically active. The islands on the Tofua Ridge are volcanic in origin, high and rugged, including the islands of 'Ata (southernmost Island), Kao and Tofua (Ha'apai Group), Late Island (Vava'u Group), and the Niuas (Figure 2)[2].

Despite such a small land territory, Tonga has a varied topography. Tongatapu is characterized by its flat and fertile plains. The Tongan Volcanic Arc has been important in supplying the islands on the Tonga ridge with an andesite tephra soil that has resulted in an extremely rich soil capable of supporting a high-yield, short-fallow agricultural system and forestry. The Ha'apai group is comprised mostly of small coral atolls and extensive lagoons, but it is also home to one dormant and one active volcano. The Vava'u islands are surrounded by high limestone cliffs and meandering bays. 'Eua is virtually a mountain top rising from the sea.

[1] Government of Tonga (2020). **6th National Report to the Convention on Biological Diversity**. Ministry of MEIDECC, Tonga.

[2] Gassner P., Westerveld L., Fonua E., Takau L., Matoto, A. L., Kula T., Macmillan-Lawler M., Davey K., Baker E., Clark M., Kaitu'uJ., Wendt H., Fernandes L. (2019) **Marine Atlas. Maximizing Benefits for Tonga**. MACBIO (GIZ/IUCN/SPREP): Suva, Fiji. 84 pp. https://www.dropbox.com/s/94wy31nr9wuhrel/TongaAtlas_final.pdf?dl=0

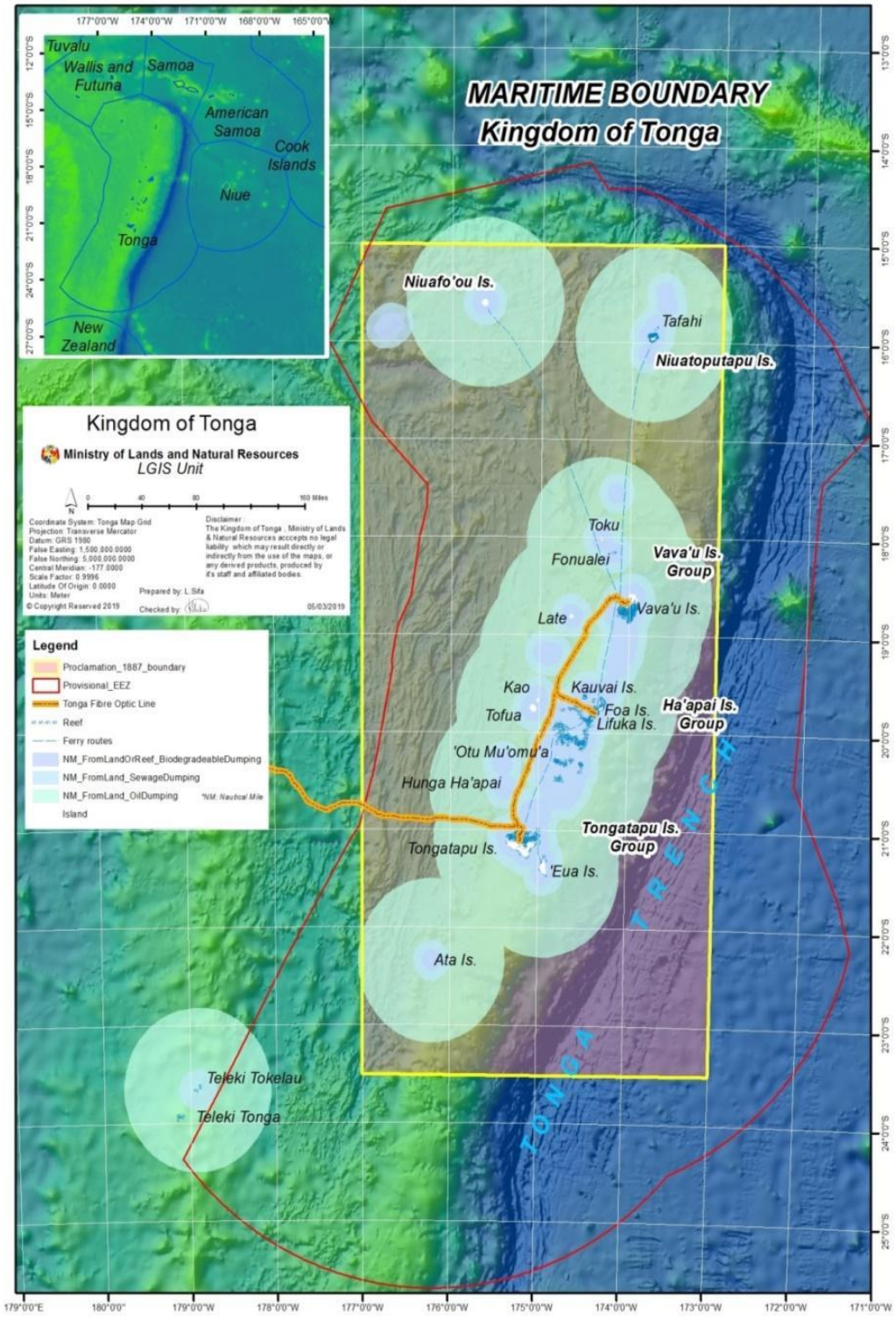

Figure 1: Map of the Kingdom of Tonga (Source: GIS Section, MLNR 2019).

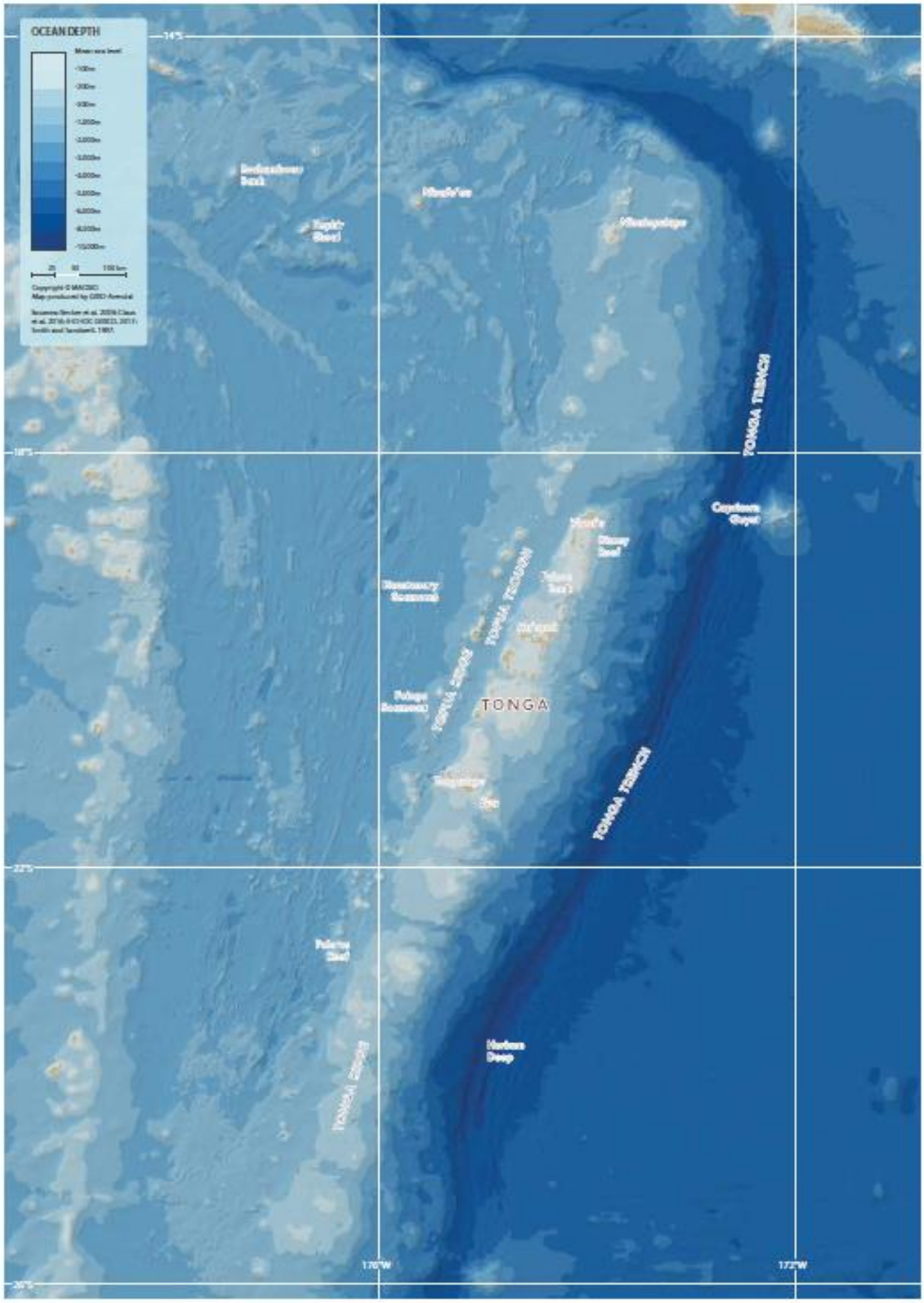

Figure 2: The Tonga Islands built on two ridges, the Tonga Ridge and the Tofua Ridge (Source: Gassner P. *et.al.*2019).

1.1.2 Climate, climate change and disaster risk

The climate of Tonga is characterized as sub-tropical with a wet season during November to April and a dry season from May to October. On the island of Tongatapu, the average annual temperature is 23°C with a maximum of 32°C and a minimum of 11°C. The annual rainfall is from 1,700 to 2,970 mm as one moves from Tongatapu in the south to the more northernly islands closer to the equator. The wettest period is around March, and average daily humidity is 80%[1].

Cyclones in Tonga commonly occur between November and April, on average 1.3 times per year. Cyclones causing serious damage occur approximately once every 10 years. Tonga's southwestern location bordering the Pacific "Ring of Fire" increases its risk to tsunamis. This area of high tectonic activity has had 115 tsunamis since 1900. Tonga's volcanic activity has been recorded since 1839, including submarine eruptions and emerging and disappearing islands. In terms of impact on human settlement, the Hunga Tonga-Hunga Ha'apai volcano erupted in January 2022; although there were few reported deaths, an estimated 84% of the Tongan population were affected. The island of Mango lost all its homes and other islands saw scores of homes destroyed. The last three major droughts that have occurred in Tonga in 1983, 1998, and 2006 have been directly linked to the May 1982–June 1983, May 1997–April 1998, and September 2006–January 2007 El Niño events. Since the mid-1970s, there has been a tendency for more frequent El Niño episodes, and without significant intervening La Niña events, points to more prolonged drought periods in the Pacific under future climate trends.

Tonga and its biological resources are very vulnerable to natural hazards because of the islands' low elevation above sea level, in particular sea-level rise, volcanic activity, earthquakes, drought and tsunamis. As discussed in the 6th National Report[1], regional assessments have discovered evidence that climate change is having an increasingly serious impact on biodiversity. These include impacts on terrestrial ecosystems through disruptions to rainfall patterns -- increased rainfall and storm intensity, increased incidence or intensity of droughts; greater variability in the amount of rainfall – as well as increases in average ambient temperatures and temperature extremes. These changes in turn are causing incidents of plant diseases that were either absent or rare in the past; greater intensity and frequency of fires; phenological changes in plant and animal populations; and degradation of ecosystems.

The Pacific-Australia Climate Change Science and Adaptation Planning Project (PACCSAP) is using Conformal Climate Atmospheric Models (CCAM), at 60km downscaled dynamic modeling, to predict the possible impacts of climate change in the Pacific Islands over the coming 90 years. CCAM predictions have indicated that there could be a 2-3°C warming of air temperatures across the PACCSAP region by the end of the 21st century. However, future temperature models supported by statistical downscaling models of the Tonga region indicate that this increase could be in the region of 0.5°C by 2055. Statistical modeling of the rainfall for neighboring islands of Fiji and Samoa indicate that the number of rain days is projected to have little change during the period 2020-2040. However, median and 90th percentile results are projected to increase, suggesting that events may decline in frequency but increase in severity. This is supported by trends in

observed data, which for Fiji, showed the median rainfall on rain days increased at the rate of 0.08 ± 0.02mm per year and the number of rain days decreased by 0.3 ± 0.1% per year over the observation period (1961 – 2009). Using the CCAM dynamic downscaling models, in Tonga the change is predicted to be in the region of ±1 days of heavy rainfall per year. Wind speed shows a minimal decrease of 0.2mm per second by 2055 in Tongan waters and this is predicted to continue decreasing over time.

Tropical cyclone predictions indicate a decrease in the frequency of cyclone events in the southeast basin of the Pacific. There is very little consistency though between the six models used for the spatial patterns of the predicated change in wind hazard, and so cyclone frequency and intensity under future climate conditions remains a matter of debate. However, trends toward drier and warmer climate and an increase in sea surface temperatures point to a likely increase in intensity. Expected sea level rise may completely inundate the villages of Kanokupolu-Ha'akili-'Ahau, Nukuleka-Talafo'ou-Navutoka-Manuka, and all the areas east of Sopu and Siesia at Nukunukumotu Island and Atata Island.

Despite less frequent disasters as compared to other Pacific Island Countries, Tonga experiences a high degree of economic and social shock during disaster years: over 40 percent of the population of Tonga is affected during a typical disaster year and Tonga's economic losses are equivalent to 14 percent of gross domestic product (GDP). The probability and likelihood of natural disasters increasing under future climate events would bring more serious and greater economic losses. In the capital city of Tonga, a cyclone with a 100-year return period, or with a 50% chance of occurring within the current generation, could likely inflict damage equivalent to 60 percent of GDP.

Climate change is also affecting the coastal and marine environment. Examples of climate-induced impacts include submergence and loss of beaches, atolls, estuaries and mangroves; salination of freshwater and estuarine ecosystems; and disturbance to coral reefs and marine fisheries from increasingly severe cyclones, pH and O_2 reduction and higher water temperatures.

1.1.3 Socioeconomic overview

The Kingdom of Tonga is a constitutional monarchy, making it unique in the Pacific. In 2016 Tonga's population was at 100,651.[3] Almost two-thirds of the population live on the main island of Tongatapu, where the capital city of Nuku'alofa is located.

Ninety-seven percent of the population is Polynesian, 3% are Chinese, European, and residents of other Pacific islands according to a 2016 census. With an average age of 24 years, the population is young. The literacy rate is 98%.

Tonga is a lower middle income country. It has a small open economy vulnerable to external shocks and significantly reliant on remittances from its citizens working overseas, in particular in New Zealand, Hawaii, and Australia. Agriculture is the leading

[3] Government of Tonga (2019). **Tonga 2016 Census of Population and Housing – Key Facts and Figures of Constituencies.** Tonga Statistics Department, Tonga.

productive sector, comprised mainly of vegetables, fruits, and nuts; and is highly developed, accounting for nearly one-fifth of the gross domestic product. The most important export goods currently include vanilla and fish. Tourism is the country's second most important source of foreign currency income. Tonga remains one of the best performers in the Pacific in terms of progress on the Sustainable Development Goals.

1.1.4 Overview of biodiversity importance and status

The Kingdom of Tonga supports a wide diversity of flora and fauna[1], both terrestrial and marine. According to one recent estimate, about 66% of the total population's livelihood depends upon seafood.[4] Figure 3 depicts the value of marine ecosystem services and how goods and services provided by Tonga's marine ecosystems are huge, and larger than the country's total export of TOP28M.[5]

The volcanic islands of Late and Tofua have some of Tonga's best remaining high diversity native forest and still support large populations of birds and reptiles. Tonga has a hierarchical land ownership system. The relationship between land use and biodiversity are fundamental to understanding the links between people and their environment. Land use change and transformations are key drivers of changes in biodiversity, both in terrestrial and marine environments. Due to increased demand for agricultural activities and urbanization, clearing of native vegetation and reclamation of coastal areas have taken place.[6]

It is well known that Tonga's landscape has been extensively modified over the years by natural disasters and particularly by human activity leading to the loss of much of the native vegetation that once covered the islands. This trend continues at a faster rate in Tongatapu Island than other parts of Tonga. Further, the Nuku'alofa area bares the full effect of human activity, followed by main townships across the main island groups. It is well known that land allotments continue to be subdivided for residential and business purposes, even in vulnerable areas such as the wetland areas around Fanga'uta Lagoon and west of Nuku'alofa[,6].

The exclusive economic zone (EEZ) of Tonga, nearly 700,000 km2 of ocean, is 1000 times larger than the country's land area. Coastal and marine resources provide the

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[4] Purkis, S., Dempsey, A., Carlton, R., Samaniego, B., Lubarsky, K. and Renaud, P.G.(2020). **Kingdom of Tonga Global Reef Expedition Final Report.** Khaled bin Sultan Living Oceans Foundation, Annapolis, MD. Vol. 8. https://www.livingoceansfoundation.org/publication/global-reef-expedition-kingdom-of-tonga-final-report/

[5] Salcone J, Tupou-Taufa S, Brander L, Fernandes L, Fonua E, Matoto L, Leport G, Pascal N, Seidl A, Tu'ivai L, Wendt H (2015) **National marine ecosystem service valuation: Tonga**. MACBIO (GIZ/IUCN/ SPREP) : Suva, Fiji. 86 pp. http://macbio-pacific.info/wp-content/uploads/2017/08/Tonga-MESV-Digital-LowRes.pdf

[6] Government of Tonga (2018). **Joint National Action Plan 2 on Climate Change and Disaster Risk Management (JNAP 2) 2018 – 2028**. Department of Climate Change, Tonga. https://library.sprep.org/sites/default/files/jnapdrm-2018-2028.pdf

Government of Tonga, businesses, and its people with a myriad of benefits including economic, cultural, social, and environmental.

Of particular biological importance are coral reefs. A recent survey found that coral reefs in the Kingdom of Tonga were moderately healthy, but the reef fish and invertebrate communities were in need of attention. Some reefs had lower coral cover than expected. However, of most concern was the state of the coral reef fish communities, which were dominated by small fish low on the food chain. Few large and commercially valuable fish were found, pointing to the need for continued and enhanced coral reef and fisheries conservation action.

These resources have supported life for the many generations that have lived in harmony with the environment over the years, providing food, shelter, fresh water, wood, fibre, medicine, fuel, tools, and raw materials. They also provide spiritual and recreational values, educational references and contribute to the economy, livelihoods and culture of Tonga. Our ecosystems maintain and provide protection against diseases, climate, and natural disasters, while also supporting nutrients cycling and aiding sand and soil formation.

The Government of Tonga is committed to conserve and use its natural resources sustainably for the benefit of the country's present and future generations. However, due to the growing pressures on nature, the NBSAP will promote nature-based solutions to protect, sustainably manage, and restore natural or modified ecosystems. Nature-based solutions, with healthy and biodiverse ecosystems at their core, are central to achieving the objectives of this strategy and sustainably tackling wider societal, economic, and environmental challenges (Figure 4).

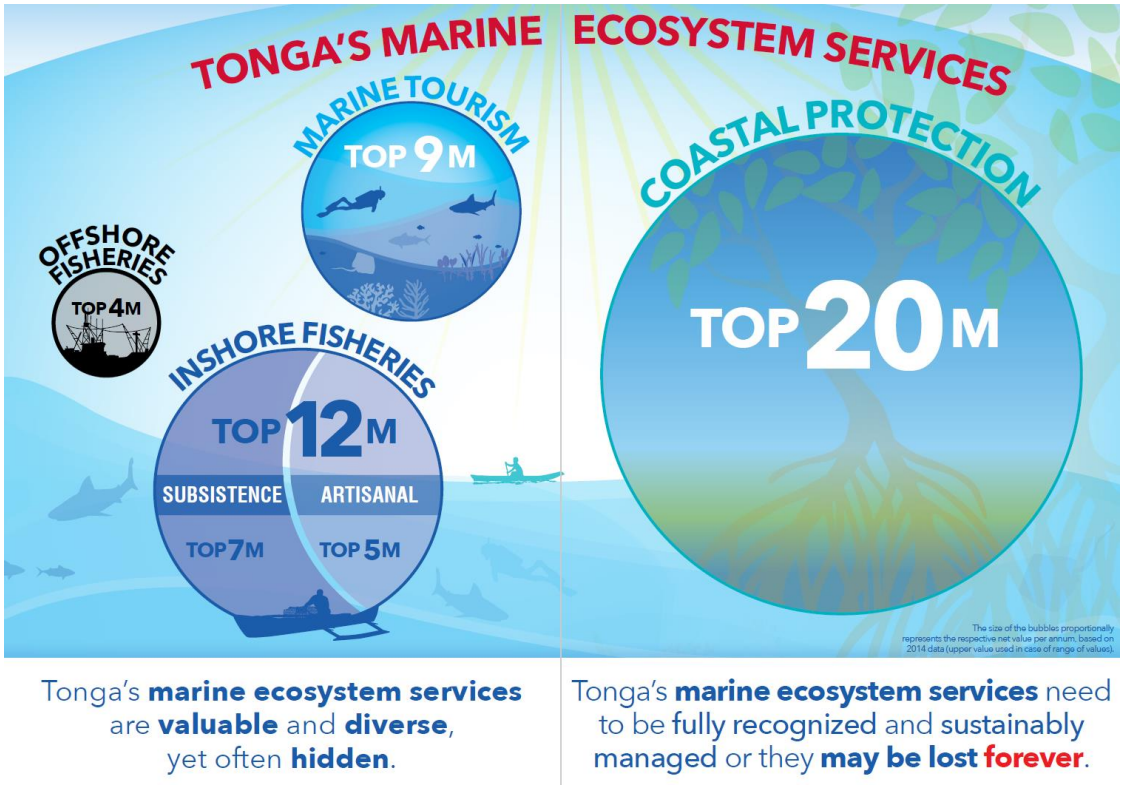

Figure 3: Tonga's Marine Ecosystem Services (Source: Gassner P, *et. al,* 2019)

Figure 4: Nature-based Solutions
(Source: https://www.naturebasedsolutionsinitiative.org/what-are-nature-based-solutions/)

A series of regional and national reports have discussed the status of biodiversity in Tonga. Despite the wealth of information gathered, values on socioeconomic and ecological aspects were noted as incomplete, thus needing further research and statistical assessments. Two major threats to sustainable development were verified: indiscriminate expansion of commercial agriculture, and overharvesting of land and marine-based forests ecosystems, resulting from rapid population growth and people migrating to town centers. These threats are generally blamed on limited technical information, technical expertise and capacities, public awareness, and appreciation of conservation, as well as an ineffective legal framework[7].

A country assessment was carried out to provide the overall state of conservation of Tonga's ecosystem using indicators that would provide information about the state of conservation. The assessment report also identifies the pressures and threats Tonga's ecosystem is facing and what actions are being taken to halt further loss or degradation and improve long-term sustainability. Table 1 summarises the status of ecosystems in Tonga[7]. It shows that terrestrial ecosystems are in a poor state, with an increase in

[7] Government of Tonga (2021). **State of Conservation in Tonga**. Department of Environment, Tonga. https://tonga-data.sprep.org/dataset/state-conservation-tonga

invasive species that threatens the state of native/endemic plant and bird species. The marine ecosystem is in fair condition but species are in a declining state.

Protected areas are a key means of reducing risks and avoiding adverse impacts on biodiversity and other values, including erosion and water contamination through silt runoff, loss of ecotourism opportunities, and declines and extinctions of threatened and endemic species. Approximately 15.9% of terrestrial areas[8] and 30% of marine areas are protected.[9]

Table 1: Summary of indicator assessment on ecosystems

Details	Indicator	Status		Trend	Data quality
		State	Pressures & Threats		
Terrestrial ecosystems	Forest Cover	Poor	Poor	Deteriorating	Medium
Freshwater ecosystems	Freshwater ecosystems	Fair	Fair	Unknown	Low
Coastal Ecosystems	Coral reef Mangrove ecosystem Seagrass beds	Fair Fair Fair	Fair Poor Fair	Deteriorating Deteriorating Mixed	Medium
Marine Ecosystem	Ocean health Utilised species	Fair Fair	Fair Fair	Deteriorating Deteriorating	Medium
Native Species	Threatened species Endemic species Threatened marine migratory species	Poor Fair Fair	Poor Poor Fair	Deteriorating Deteriorating Mixed	Medium Medium

A number of ongoing projects are being undertaken to address these issues. For example, the Pacific-European Union Marine Partnership (PEUMP) Programme, which consists of eight integrated areas including marine spatial planning; integrated 'ridge to reef' ecosystem strategies and coastal zone management planning; development and integration of climate change adaptation strategies into coastal community plans; assessment of bycatch of endangered species and extinction risk; development and implementation of bycatch mitigation strategies; capacity development through research grants to citizens of Pacific island countries; support for community monitoring and protection of endangered species; and capacity development of Non-Detrimental Findings process for CITES partners.

1.2 TONGA'S BIODIVERSITY GOVERNANCE NEEDS

1.2.1 CBD and NBSAP creation as a way to address Tonga's needs

The Kingdom of Tonga ratified the Convention on Biological Diversity (CBD) in 1998, sealing its commitment to implement actions at the national level to conserve,

[8] Government of Tonga (2018). **Tonga State of Environment Report 2018**. Department of Environment, Tonga. https://tonga-data.sprep.org/dataset/tonga-state-environment-report-2018

[9] Government of Tonga (2021). **Tonga Ocean Management Plan**. Department of Environment, Tonga.

sustainably use, and protect its biological diversity. The CBD objectives align with Tonga's Strategic Development Framework *II (T*SDF*II*) 201*5*–20*25* that expresses aspirations of the Tongan people and guides the ultimate effort to meet the national development vision (MFNP, 201*5*). The principal instrument for implementing the CBD at the national level is the National Biodiversity Strategy and Action Plan (NBSAP). Tonga developed a NBSAP in 2006 formulating a strategy and planned actions for the conservation of biodiversity and its sustainable use. This plan was reviewed in 2014.

For the review, an inclusive national consultation was conducted on every island by a technical working group (a coordinator and one person from each thematic area) over a period of six months. The consultations involved diverse groups of Tongan society, including women, men, youth, church groups, and NGOs, with civil society and private sector consultations held separately from government groups. A key outcome of the review was the need for cross-cutting management integrated across sectors.

The NBSAP is a guide to capture the state of Tonga's biological resources and describe actions to restore the vulnerable environment, reduce degradation, promote sustainable development and establish regional and global partnerships to fulfil its obligations under the CBD.

The three main objectives of the CBD are: 1) The conservation of biological diversity; 2) The sustainable use of the components of biological diversity; and 3) The fair and equitable sharing of the benefits arising out of the utilization of genetic resources. A total of 19*6* countries including Tonga are parties to the Convention.

In 2003, the Government of Tonga ratified the Cartagena Protocol on Biosafety. The Cartagena Protocol on Biosafety to the CBD is an international agreement which "… aims to ensure the safe handling, transport and use of living modified organisms (LMOs) resulting from modern biotechnology that may have adverse effects on biological diversity, taking also into account risks to human health." It was adopted in 2000 and came into force in 2003. Tonga is in the process of becoming a Party to the Nagoya Protocol.

The CBD Strategic Plan for Biodiversity, including the twenty **Aichi Biodiversity Targets**[10], for the period 2011–2020 provides an overarching framework on biodiversity, not only for the biodiversity-related conventions but also for the entire United Nations system and all other partners engaged in biodiversity management and policy development. Countries are encouraged to establish national targets in the framework of the Aichi Biodiversity Targets and to revise and update national biodiversity strategies and action plans in line with the Strategic Plan for Biodiversity 2011–2020. This revised version of the NBSAP has been done prior to finalization of the delayed post-2020 Framework and will be updated at a later time to incorporate considerations from the post-2020 Framework (see discussion below).

[10] Convention on Biological Diversity Strategic Plan for Biodiversity 2011-2020 – Aichi Biodiversity Targets: https://www.cbd.int/sp/targets/

The CBD is divided into themes, with each having a programme of work. For example, Protected Areas is a thematic programme within the CBD as akin to island biodiversity, mountain biodiversity, forest biodiversity, inland water ecosystems, etc., with the Parties obligated to a Programme of Work on Protected Areas (PoWPA). A "protected area" is defined in Article 2 of the CBD as "a geographically defined area, which is designated or regulated and managed to achieve specific conservation objectives". Countries are also required to submit action plans related to the PoWPA. Tonga has submitted a thematic report on Protected Areas in 2003 and a PoWPA Action Plan in 2011[11] outlining actions for implementation to achieve the priority PoWPA goals.

1.3 POST-2020 GLOBAL BIODIVERSITY FRAMEWORK

The Convention on Biological Diversity's CoP 15 was held virtually in mid-October 2021 due to the ongoing pandemic. The second part of CoP 15, scheduled to be in December 2022 in Montreal and hosted by China, is expected to result in an agreed post-2020 Framework following face-to-face negotiations. The Framework looks forward to the year 2030, however, with the delay in reaching an international agreement on a post-2020 global biodiversity framework, it is not possible to incorporate post-2020 framework elements into this update of the Tonga NBSAP at this time. Consequently, a comparison of the current Strategic Plan 2011-2020 with the First Draft of the Post-2020 Global Biodiversity Framework (Post-2020 Framework) was undertaken (Appendix A). While recognizing that changes will certainly be made to the draft Post-2020 Framework document, this comparison helped determine where there might be a need to anticipate emerging biodiversity issues. When a global agreement is reached on a post-2020 framework, it will be reflected in an updated Tonga NBSAP at some future date.

1.4 SYNERGY AMONG BIODIVERSITY EFFORTS AND OTHER KEY GLOBAL FRAMEWORKS AND MULTILATERAL ENVIRONMENTAL AGREEMENTS (MEAS)

The NBSAP is formulated as the national framework through which Tonga will implement its obligations under the Convention on Biological Diversity and its protocols – Cartagena and Nagoya. It also covers the other biodiversity related conventions including the CMS, CITES, Ramsar, and the Noumea Convention. Tonga is not a Party to some of these conventions but intends to carry out activities through the NBSAP that address these conventions.

There are synergies with the waste and climate change cluster of MEAs. The NBSAP will contribute to and be affected by the implementation of waste conventions such as the Basel, Rotterdam, Stockholm, MARPOL, Ballast Water, and the Waigani Convention (Appendix C).

[11] Government of Tonga (2011). **Tonga's Action Plan for Implementing the Convention on Biological Diversity's Programme of Work on Protected Areas**. Department of Environment, Tonga. https://drive.google.com/file/d/1ipBXU8De1WZi56nRRqi5l3B8AqOA7k9m/view?usp=sharing

Similarly, the NBSAP will contribute to the implementation of the UNFCCC and the Paris Agreement, contributing significantly to achieving Tonga's NDCs. It complements and supports mitigation and adaptation objectives outlined in the climate change policy and action plans focusing on nature-based solutions, ecosystem-based adaptation, and conservation efforts. Strategic actions from the NBSAP are also included as part of Tonga's National Determined Contributions[12] under the UNFCCC, demonstrating the alignment between the NBSAPs and JNAPs (See Appendix B).

In 2021, global experts from the biodiversity and climate change fields met to identify synergies and trade-offs between biodiversity conservation and climate change mitigation and adaptation.[13] They discussed the essential links between climate change and biodiversity and the need to address both areas in a coordinated way because resolving issues in one field often requires consideration of the other. They also recognized an existing functional separation between the two fields in practice. Consequently, the experts identified 41 points where biodiversity and climate change, when considered together, offer opportunities for synergy and, conversely, require trade-offs in instances where there are risks of one negatively affecting the other. Those of most relevance to Tonga are summarized here:

(i) Policies that simultaneously address synergies between mitigating biodiversity loss and climate change, while also considering their societal impacts, offer the opportunity to maximize co-benefits and help meet development aspirations for all.

(ii) As climate change progresses, extinction risks are highest on biodiversity hotspots such as islands, coral reefs and coastal embayments, or fragments of formerly more extensive habitats, now separated by altered land-, freshwater- and sea-scapes less supportive of biodiversity. Coral reefs and coastal ecosystems are among the most vulnerable ecosystems and require robust interventions to enhance their adaptive capacity.

(iii) Addressing the overlapping objectives of climate change mitigation/adaptation, biodiversity protection, and quality of life can be improved through management of multifunctional 'scapes (land, freshwater and ocean scapes).

(iv) Nature-based solutions can be important for climate change mitigation and adaptation. Maintaining or regenerating terrestrial and marine ecosystems that are carbon- and species-rich is of highest importance for accomplishing synergy between biodiversity and climate change, including both mitigation and adaptation. These ecosystems include, among others, forests, wetlands, coral reefs, mangroves, salt marshes and kelp and seagrass beds. Ecosystem restoration can be among the cheapest and quickest nature-based solutions.

(v) Sustainable agriculture and forestry practices, such as diversification of crops and forest species, agroforestry and agroecology, can enhance local adaptation to climate change, improve biodiversity, and affect climate mitigation through carbon storage and reduction in greenhouse gas emissions.

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[12] Government of Tonga (2020). **Tonga's Second Nationally Determined Contribution.** Department of Climate Change, Tonga. https://climatechange.gov.to/wp-content/uploads/2021/03/Tongas-Second-NDC.pdf

[13] Portner, H.O. et al. 2021. **Scientific outcome of the IPBES-IPPC co-sponsored workshop on biodiversity and climate change**. IPBES secretariat, Bonn, Germany.

(vi) Care must be taken, however, to avoid unintended consequences of nature-based and technology-based solutions. For example, afforestation or reforestation with monocultures can increase a carbon sink but result in adverse biodiversity impacts. Renewable energy projects can impinge on biodiversity areas. Measures for managing more frequent cycles of flood and drought, such as dams, or constructing sea walls to mitigate sea level rise. can have profound biodiversity impacts. The reverse is also true, as several technological measures related to climate change mitigation and adaptation can benefit biodiversity. There is an urgent need to better understand and account for the impacts of technical and technological measures and also for complementarities between nature-based solutions.

(vii) A properly managed protected area system can greatly benefit both biodiversity and climate change mitigation and adaptation. In particular, this can be achieved using spacial planning approaches that integrate multiple management objectives.

(viii) Explicit consideration of the interactions between biodiversity, climate change, and social well-being will maximize co-benefits and minimize maladaptation and other unintended consequences. National level reporting under UNFCCC and CBD frameworks provides a significant opportunity to align national mitigation and biodiversity goals.

(ix) Strong and robust mechanisms which ensure timely and transparent mechanisms for stakeholder participation greatly improve the chances for achieving synergy or avoiding unintended consequences between biodiversity and climate change actions.

(x) Flexible and adaptive mechanisms work more successfully within goal-based approaches, such as the Post-2020 Framework or the Paris Agreement. Global targets aligned with local conditions can help strengthen governance.

The Sustainable Development Goals (SDGs) provide an integrated global framework through which all countries will work toward the 17 agreed global goals with 169 targets. Tonga's NBSAP integrates the SDGs and will contribute towards Tonga's SDG aspirations as well as national efforts towards implementing the SAMOA Pathway and the Nationally Determined Contributions (NDCs) and Tonga's Low Emission Development Strategy (Tonga LEDS) to reduce GHG emissions (Appendix D).

1.5 REGIONAL FRAMEWORKS

The Pacific has a network of regional organisations, frameworks, and partnerships that are relevant to the NBSAPs (Figure 5). Tonga's NBSAP implementation will contribute towards these regional frameworks and also be able to draw on the organisations and partnerships for assistance.

The lead biodiversity-mandated organisations present in the Pacific region are the Secretariat of the Pacific Regional Environment Programme (SPREP), International Union for Conservation of Nature (IUCN), United Nations Development Programme (UNDP), and United Nations Environment Programme (UNEP). There is a wider partnership through the Pacific Islands Roundtable on Nature Conservation and its supplementary partnerships on invasive species and mangroves working towards implementation of the "Framework for Nature Conservation and Protected Areas in the Pacific Region *2021-2025*."[14]

Waste and pollution management is also led by SPREP and UNEP through the Cleaner Pacific 2025 Strategy[15]. For fisheries, forests, and agriculture, there is a Pacific partnership led through the The Secretariat of the Pacific Community (SPC) and Food and Agriculture Organization (FAO). For ocean management, the Pacific Islands Forum Secretariat (PIFS) is the lead through the Pacific Oceanscape Framework[16] and the Pacific Ocean Alliance.

In the Pacific context, climate change resilience is synonymous with sustainable development. Pacific partnerships and frameworks are led by PIFS through the "Framework for Resilient Development in the Pacific[17]" and "the Pacific SDG Roadmap[18]." The overall coordination is done through Council of Regional Organisations of the Pacific (CROP) Working Groups such as the Sustainable Development Working Group and the Marine Sector Working Group.

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[14] SPREP (2021). **Pacific Island Framework for Nature Conservation and Protected Areas 2021-2025**. Secretariat of the Pacific Regional Environment Programme, Samoa. https://pacific-data.sprep.org/dataset/pacific-islands-framework-nature-conservation-and-protected-areas-2021-2025#:~:text=This%20Pacific%20Islands%20Framework%20for,and%20implementation%20in%20our%20region

[15] SPREP (2016). **Cleaner Pacific 2025: Pacific Regional Waste and Pollution Management Strategy 2016-2025.** Secretariat of the Pacific Regional Environment Programme, Samoa. https://www.sprep.org/attachments/Publications/WMPC/cleaner-pacific-strategy-2025.pdf

[16] Pratt, C. and Govan, H. (2011). **Framework for a Pacific Oceanscape: a catalyst for implementation of ocean policy**. PIFS, Fiji. https://www.forumsec.org/wp-content/uploads/2018/03/Framework-for-a-Pacific-Oceanscape-2010.pdf

[17] Pacific Community (SPC), Secretariat of the Pacific Regional Environment Programme (SPREP), Pacific Islands Forum Secretariat (PIFS), United Nations Development Programme (UNDP), United Nations Office for Disaster Risk Reduction (UNISDR) and University of the South Pacific (USP) (2020). **Framework for Resilient Development in the Pacific**. USAID, Fiji. http://tep-a.org/wp-content/uploads/2017/05/FRDP_2016_finalResilient_Dev_pacific.pdf

[18] PIFS (2020). **The Pacific Roadmap for Sustainable Development**. PIFS, Fiji. https://www.forumsec.org/wp-content/uploads/2018/10/The-Pacific-Roadmap-for-Sustainable-Development.pdf

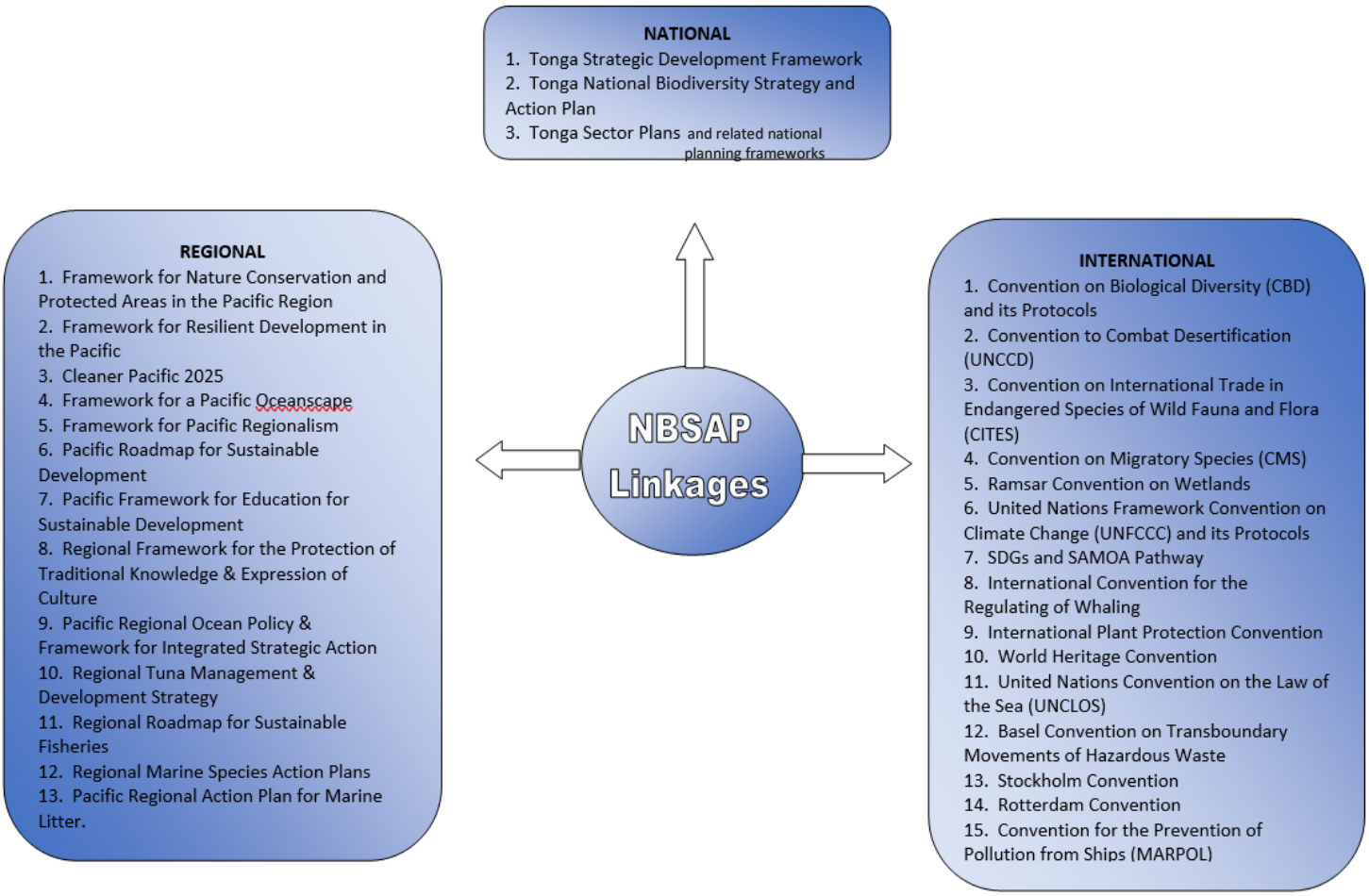


Figure 5: NBSAP Linkages with National, Regional, and International Frameworks
(Source: Department of Environment)

1.6 NATIONAL CONSTITUTIONAL, LEGAL, AND INSTITUTIONAL FRAMEWORK

Within the Government policy frameworks, environmental and economic sustainability is heavily represented and acknowledged, including the Tonga Strategic Development Framework 2015-2025 (TSDF II) that aims to "enhance our inheritance" of which a large component is the marine and coastal resources. In fact, sustainable development of Tonga's natural assets is a key component of forward planning for Tonga. All seven of the national outcomes identified in the TSDF II require sustainability.[19]

Supporting legislation

There are multiple national plans that can help support Tonga's conservation endeavours. The existence of the National Spatial Planning and Management Act helps give spatial priorities to high risk areas such as the coastal zone. The threat of inundation is a sufficient deterrent to curb development initiatives, thus allowing regrouping and re-growth of biodiversity hubs and sites.

The establishment of a National Infrastructural Implementation Plan (NIIP) also guides specific priority areas for development which feature climate-prone areas with the funding to revegetate these areas as an adaptation and mitigation initiative, thus streamlining the principle of biodiversity protections. The National Invasive Species Strategic Action Plan (NISSAP) also gives credit to the Ministry's commitment to combatting threats to biodiversity and refocusing conservation issues on specific sites that need to be conserved.

The Marine Pollution Act provides some protection for marine resources, coupling with the newly cabinet-endorsed Deep Sea Mining Act, in cooperation with the International Sea Authority (ISA) with its arm under the United Nations Convention on the Law of the Sea (UNCLOS), of which Tonga is a Party. The Tonga Climate Change Fund Act 2021 aims to assist Tonga to achieve the goals of the three RIO Conventions (UNFCCC, UNCBD, UNCCD). Appendix C outlines the linkages of national legislation, policies and plans, and the global and regional frameworks to the NBSAP.

[19] Government of Tonga (2015). **Tonga Strategic Development Framework 2015-2025**. Ministry of Finance, Tonga. http://www.finance.gov.to/node/299

2.0 TONGA'S NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN (NBSAP)

2.1 NBSAP FOCUS

Tonga's goal for biodiversity conservation has at its heart the quality of life and wellbeing of Tonga's people.

The NBSAP provides for the protection of people's livelihoods and for the conservation of biodiversity. To maximise the benefits of available resources, the focus of the NBSAP is on managing the threats to forestry, marine, agrobiodiversity, and priority species, as well as the threats posed by invasive alien species.

The revised NBSAP is for the period 2018–2030, but the document is meant to be dynamic and one that will be updated as more information becomes available, including the post-2020 global biodiversity framework.

The first NBSAP[20] articulated various strategies on how to arrest the deterioration of biodiversity. Despite achievements and positive trends, the previous NBSAP 2006 did not attenuate the main drivers of biodiversity loss in Tonga. The NBSAP 5th report demonstrated the continuing decline of biodiversity in all three of its main components: genes, species, and ecosystems. The challenges and lessons learned from the earlier NBSAP and the process of developing the updated NBSAP are included in sub-section 2.2.

The NBSAP is organised into key issue areas reflecting a combined emphasis on the ecosystems approach and species-specific focus including different sectors of biodiversity that we heavily depend upon for subsistence, namely Agro-Biodiversity, Forest and Marine. In that light, nine thematic areas were developed with strategies and actions to ensure that Tonga's biodiversity is properly conserved and sustainably managed to be enjoyed by our people and future generations, as follows:.

1. Forest Ecosystem
2. Marine & Coastal Ecosystem
3. Agro-Biodiversity
4. Species Conservation
5. Invasive Alien Species
6. Local Community and Civil Society
7. Access and Benefit Sharing from the genetic resources and Traditional Ecological Knowledge
8. Mainstreaming Biodiversity Conservation
9. Financial Resource Mechanisms

[20] Government of Tonga (2006). **Kingdom of Tonga National Biodiversity Strategy and Action Plan**. Department of Environment, Tonga. https://www.cbd.int/doc/world/to/to-nbsap-01-en.pdf

The NBSAP is designed to be a living document with clearly defined objectives, strategies, and actions. It is designed not only for the conservationist, but also for the average citizen with an interest in conservation in 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 along each action those agencies and organisations to be responsible for implementation, monitoring and reporting.

Finally, as a document that will guide 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.

2.2 LESSONS LEARNED

The first NBSAP 2006 document was reviewed through a multi-sectoral consultative process involving representatives of various government and non-government organisations and local communities. The technical assistance for this review was given by SPREP in Apia. Financial assistance was provided by the Global Environment Facility Enabling Activities with UNEP as the Implementing agency. Coordinating this project is the Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communications (MEIDECC) with the continuous and endless support of the NBSAP Technical Working Group.

The NBSAP 2006 was promoted as a "stand alone document". This review suggests a more holistic approach that links to other related documents in other fields, namely climate change adaptation and mitigation, disaster risk management, community participation, women and youth involvements, active financial mechanisms to drive the NBSAP proposed activities, and improved legal frameworks. The suggested change of the NBSAP is to accommodate all other national sector plans developed in the past years which also aligns to the sector plans mentioned in this framework whilst adjusting to evolving regional and national frameworks.

However, over the course of implementation since expiration of the previous NBSAP (2006) to the living document of the NBSAP since 2014-2018, there were additional lessons learnt throughout the implementation of this framework, provided below, demonstrating that the NBSAP will continue to be a living document which will adapt accordingly to the changing sector, national, and regional plans.

Table 2: Adapted from Tonga's Sixth National Report - Summary of National targets implementation progress and effectiveness.

National Targets	Implementation Progress				Effectiveness of Measures			
Thematic Areas	**Not yet started**	**Planning Stage or Early implementation**	**Actively under implementation**	**Completed**	**Effective**	**Partially effective**	**Ineffective**	**Not known**
Forest Ecosystem	2	1	12	3	13	1		3
Marine Ecosystems		2	23		12	13		
Agro-biodiversity		1	6		5	2		
Species Conservation		3	17		9	10		1
Local Community /CSO		4	6			10		
Invasive Alien Species		3	8		7	4		
ABS/TEK		9	7		5	12		
Mainstreaming Biodiversity Conservation		1	19		6	14		
Financial Resources/ Mechanisms		11	5		8	5		3
Total	**2**	**35**	**103**	**3**	**65**	**71**		**7**
Percentage	**1%**	**25%**	**72%**	**2%**	**45%**	**50%**		**5%**

About 72% of the plan is actively being implemented with 3% completed. About 50% of the plan is effective, with an increasing number of monitoring and evaluation frameworks linked to sector action plans and frameworks (Table 2).

Below are some of the successful lessons learnt, adapted from Tonga's Sixth National Report to CBD which focused mainly on:

1. Success of the implementation of Local Marine Protected Areas (MPAs) implemented through the Special Management Plans led by Fisheries and local communities.
2. Increased appreciation of traditional knowledge and cultural heritage led by the Tourism Sector in their tourism related activities.
3. Strengthened collaboration in the Civil Society Forum efforts with community in related conservation and climate resilience activities.
4. Increased participation from local communities in agro-biodiversity to ensure higher food security.
5. Improved institutional capacity in an integrated management approach for the Fanga'uta catchment with a Stewardship Plan in place.
6. Improved strengthening of institutional capacity in implementing the invasive alien species programs.
7. Increased awareness programs and appreciation on conservation and resiliency promoted through the national campaigns in the observance of Earth Day and Climate Change Day.

8. Successful development of Tonga's Marine Spatial Plan (Ocean Management Plan) through nationwide implementation of collective consultations, sector collaborations, partnerships and ongoing science-based research that strengthen decision-making at institutional arrangements in place.

However, there were challenges that arose in the implementation of the NBSAP as alluded to in Tonga's Sixth National Report (Table 3):

Table 3: The obstacles and capacity needs identified under each thematic area

Thematic Areas	**Obstacles and Capacity Needs**
1. Forestry Ecosystem	• Land ownership issues • Capacity needs on further awareness program to emphasize importance of national reserves • Agriculture clearing, including fire • Unsustainable cutting of sandalwood and other tree crops • Lack of funding and need financial sustainability to look after cultural and biodiversity sites of importance • Lack of management skills • Lack of technical skills (data maintenance, conservation, landholders to self-manage, monitoring, confidence to enforce forestry officer role • Increased demand on commercial tree crops versus sustainable use of tree crops • Lack of enforcement • Threats and pressures of pollution (heavy metals, pesticides, litter, solid waste, petroleum, POPs, nutrients, sedimentation, sewage) • Increased climate change impacts • Waste management issue of processed timber • Increased market demand for evidence of sustainability and legality • Limited public access to forest reports
1. Marine and Coastal Ecosystems	• Lack of financial resources (e.g.: transportation, funding availability, conflicting financial priorities) • Lack of human resources • Limited technical skills and knowledge • Inconvenient weather conditions • Lack of community participation and community ownership in protected areas • Improper data management • Lack of enforcement of current legislations (sand mining, development, fisheries, rebuilding of fish stocks vs increased consumptions, etc.) • Lack of inventory and monitoring aspects for SMAs • Overfishing and sustainable fishing practices • Pressure from commercial fisheries on communities • Threats and pressures of pollution (heavy metals, pesticides, litter, solid waste, petroleum, POPs, nutrients, sedimentation, sewage) • Fragmented legislation that requires a taskforce to ensure compliance

	• Lack of local data and science on whales • Increased climate change impacts
3. Agro Biodiversity	• Unsustainable use of fertilisers and pesticides • Traditional practices giving way to more mechanisation • Abandonment of mixed cropping and crop rotation to single cropping repetitively • Reduction in number of species and varieties used • Conversion of natural ecosystems to agriculture • Over-exploitation of ground waters for agriculture • Lack of enforcement of biosecurity protocols
4. Species Conservation	• Increased climate change impacts • High turnover of staff • Limited technical skills and knowledge • Limited funding for systematic monitoring of various ecosystems at national level • Conflicting priorities vying for the same government funding pool • Lack of awareness and understanding at public level • Lack of skills in data management • Unclear responsibilities and overlapping jurisdictions between the Departments that negatively affected management of protected areas
5. Invasive Alien Species	• With increasing warming air and climate change impacts, new and increased IAS is noted • Lack of systematic monitoring due to technical and financial limitations at country level • Lack of technical skills and knowledge at community level • Limited collaboration with community of hotspot site • Lack of enforcement • Lack of public awareness on biosecurity information and protocols • Limited land to declare as reserves/parks for conservation of endemic species • Limited coordination in outreach and training programs
6. Local Community and Civil Society	• Limited skills at community level on project management and reporting of community-based projects • Limited skills and knowledge at community level to access funding • Limited technical skills on monitoring, data management, financial management at community level • Financial sustainability is always a challenge for communities • Lack of community ownership at protected areas • Limited awareness resources available at local language
7. Access and Benefit Sharing from Genetic Resources and Traditional Ecological Knowledge	• Insufficient data available • Limited skills in data management

	• Limited capacity at regulatory institutions due to the need to sustain capacity and knowledge because of staff turnover • Limited coordination in documenting traditional knowledge on sustainable use of biodiversity • Reports not always available in local language to the public
8.Mainstreaming Biodiversity Conservation	• Limited knowledge of protected areas network at grassroot level • Limited coordinated collaboration with areas of biodiversity significance • Limited technical skills and data management
9. Financial Resources and Mechanisms	• Revolving financial priorities at national level affecting systematic operation on conservation work • Limited technical skills to access funding • Some funding concepts and design needs to be user-friendly • Limited coordination for transparency of information to assist with decision making process

To counter the above challenges, the following recommendations were noted from the Sixth National Report (Table 4) to inform the successful implementation of the NBSAP beyond 2018.

Table 4: Recommendations under each thematic area

Thematic Areas	**Recommendations**
1. Forestry Ecosystem	• Strengthen legal actions and enforcement • Strengthen system of accredited Forest Practices Officers for timber harvesting • Provide consistent training on monitoring and enforcement • Enhance communication awareness programs • Develop capacity building training programs (monitoring, enforcement, reporting, data inputting, GIS, etc) • Improve database and data management • Strengthen collaboration between industry and community in the management of forests and tree crops
2. Marine and Coastal Ecosystems	• Strengthen collaboration with communities of protected areas by enhancing management structures in place • Increase training package on capacity building to include communities, private sector, and NGO on current knowledge and technical skills • Develop incentive program which encourages greater participation in the management of protected areas • Strengthen awareness and communication programs to inform communities and public on enforcement protocols • Strengthen enforcement and compliance at grassroot level and within government • Develop implementation plan for the waste and pollution sector to address threats to biodiversity • Further studies on relevant issues with regards to the impact of waste and pollution on biodiversity • Continued community, business involvement in street/beach clean-ups

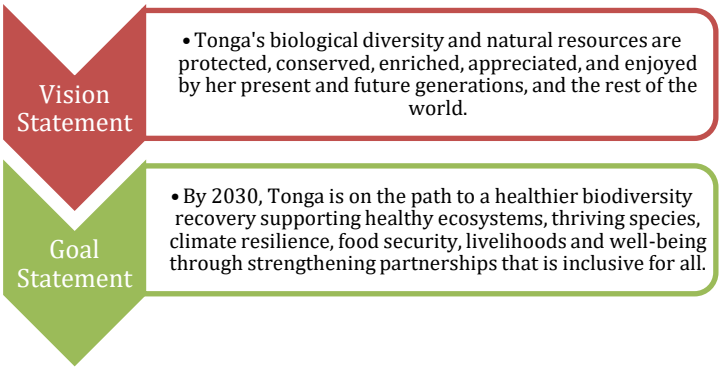
	• Increase coastal protection through improved coastal structures at low inundated areas • Create policies and legislations for better management of coastal areas such as a Coastal Protection and Management Act or Beach Management Act • Establish Flood Management Policy and create Coastal Area Management Policy • Strengthen data capture and knowledge management on the science of whale behaviour
3. Agro Biodiversity	• Preserve genetic resources for agriculture • Strengthen collaboration with landholders and communities by providing regular training opportunities to increase knowledge on sustainable farming practises • Increase public education outreach programmes
4. Species Conservation	• Strengthen decision-making process and implementation by enhancing institutional capacity to better coordinate and oversee conservation related matters • Revise and update relevant legislation on environmental protection and management • Strengthen enforcement of relevant legislation and regulations through public awareness and education • Pollution source survey should be conducted on a yearly basis • Review existing biodiversity related regulation and establish overarching regulations housing all biodiversity related legislation that is clearly linked to development work and management of pollution
5. Invasive Alien Species	• Strengthen enforcement and compliance programs • Establish regular monitoring programs in eradicating IAS annually with financial assistance secured • Increase training opportunities on IAS that is open to communities, private sectors, NGOs, and national stakeholders
6. Local Community and Civil Society	• Increase training opportunities available to communities, private sector and NGOs on relevant skills and knowledge pertaining to environment and climate change issues, accessing funds, project management, monitoring, and reporting. • Strengthen communication and outreach programs relevant to needs as they arise • Ensure there is a formal mechanism for dialogue between civil society sectors, private sector, and government
7. Access and Benefit Sharing from Genetic Resources and Traditional Ecological Knowledge	• Establish regular update of gap analysis on data management • Develop a robust communication and awareness program where the public is fully informed • Systematically document TEK from grassroot level encouraging it through project proposal design, research studies, information sharing with NGOs, private sector, and national agencies • Provide training programs on data management, transfer of information at both national and local level • Strengthen production of awareness materials on TEK and ABS that can be widely distributed, as well as strengthen facilities that cater to awareness and communication outreach on biodiversity conservation

8. Mainstreaming Biodiversity Conservation	• Strengthen mainstreaming biodiversity in sector and community development plans • Develop a M&E framework to ensure biodiversity conservation is mainstreamed across nation to community-level operation • Strengthen coordinated management structures in place for effective decision-making process regarding biodiversity conservation • Enhance institutional capacity on legal areas to assist with enforcement and compliance related work
9. Financial Resources and Mechanisms	• Establish financial mechanisms for the management of protected areas and biodiversity conservation • Prioritize funding opportunities on biodiversity conservation in mitigation and adapting to climate change issues • Strengthen institutional capacity in accessing funds for biodiversity conservation through establishing training opportunities and attending South-South cooperation spaces

2.3 TONGA'S BIODIVERSITY STRATEGY AND ACTION PLAN (NBSAP)

The NBSAP provides the overarching framework and strategic actions for biodiversity conservation in Tonga. Its Vision and Goal Statement provides overarching objectives for conservation, livelihoods and food security, sustainable economic development, and resilience to natural disasters and climate change events.

VISION AND GOAL STATEMENT



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, church groups, and non-governmental organizations. Recognizing this collective responsibility, the full participation and collaboration of all stakeholders ensures the effective coordination and implementation of the NBSAP, as well as gender inclusivity through barrier-free consultation and activities.

4. **Integrated and Multidisciplinary**
   An integrated and multidisciplinary approach is fundamental to the success of biodiversity and sustainable resources management. It calls for the collaborative efforts of different agencies, disciplines, and organizations to achieve common goals and objectives.

5. **Commitment to Sustainable Development and Hardship Alleviation**
The long term and sustainable well-being of the Tongan people is at the heart of all sustainable development initiatives. The NBSAP will contribute to the achievement of the Sustainable Development Goals.

6. **Sustainable Traditional Knowledge, Practices and Innovation**
Tongan sustainable traditional knowledge, innovations, and sustainable practices which are important for the protection and conservation of biodiversity, should be fully recognized, preserved, and maintained.

7. **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.

8. **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, analysed, and made accessible to all sectors and society.

9. **Precautionary principle**
Ensure that a substance or human activity which may cause a threat to biodiversity, the environment or human health is prevented from causing harm, even if there is no conclusive scientific proof of linking that particular substance or human activity to environmental damage or the negative impact on human health. Precautionary measures should be taken even if there is no scientific consensus regarding cause and effect.

2.4 NBSAP MANAGEMENT STRUCTURE

The management structure for implementing the NBSAP lies with the Department of Environment as the focal point and NBSAP Secretariat, as depicted in Figure 5. The Department of Environment plays a coordination role with other relevant stakeholders on planning, implementing, monitoring, and reporting of activities on biodiversity conservation and ecosystems management. Reporting to the UNCBD is every four years, and reports are used to report against the TSDFII, JNAP2, NDCs, SDGs, and so forth by other government agencies.

Regionally, the Department of Environment is the focal point for biodiversity conservation, islands, and ocean ecosystems – ridge to reef, the Pacific Islands Framework for Nature Conservation, for all development partners, multilateral agencies and CROP agencies.

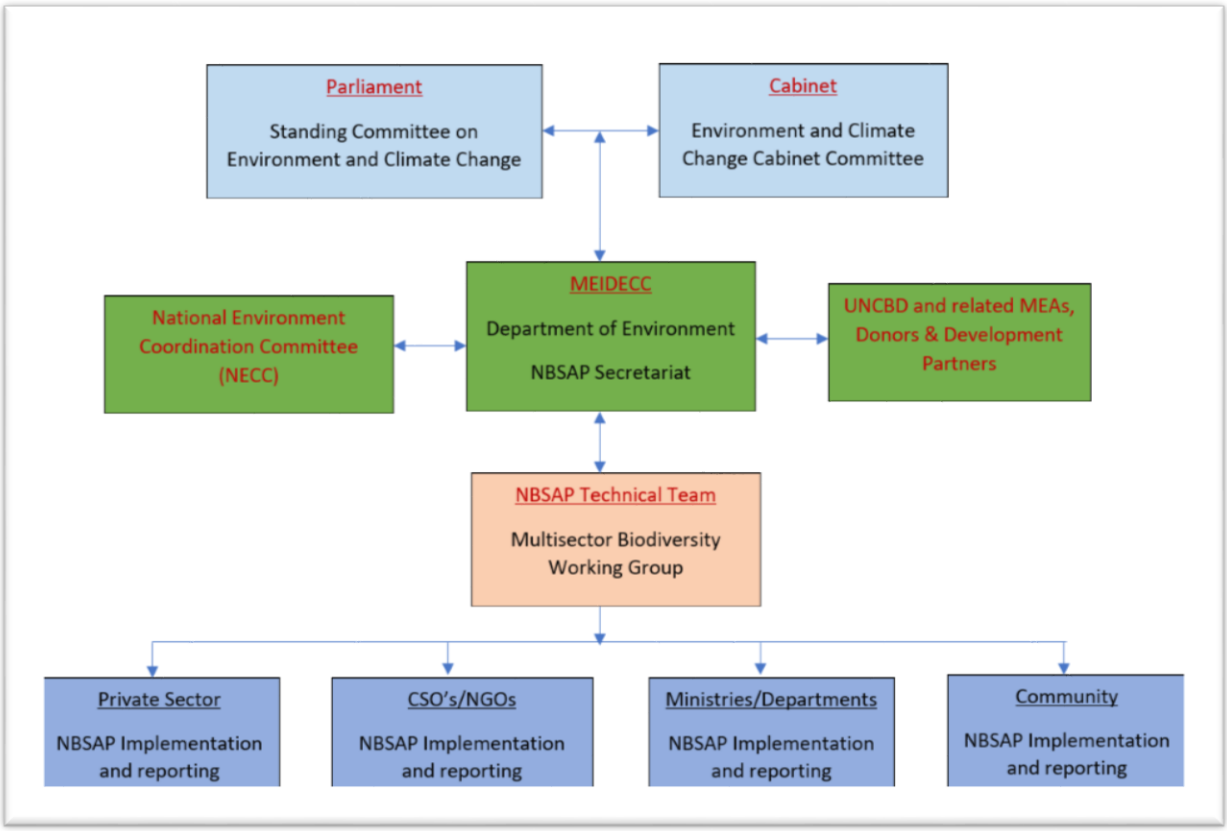


Figure 6: The NBSAP Management Structure

The NBSAP Secretariat sits under one of five (5) Programme Areas of the Department of Environment, Islands and Ocean Ecosystems Management Programme. The Secretariat is coordinated by the Head of Programme and the Director of Environment, until there is funding available to recruit staff. The roles and functions of the management stakeholder groups highlighted in Figure 6 are shown in Table 5.

Table 5: The roles and functions of the NBSAP Management stakeholders

Stakeholder Group	Roles and Responsibilities
Parliament Climate Change Standing Committee	➢ Consider and report any matters relating to climate change, environment and sustainability issues
Cabinet Committee	➢ Advise the Government of Tonga on appropriate and effective policy responses on environmental issues ➢ Endorsement and approval of revised NBSAPs and its donor funded projects
National Environment Coordinating Committee (NECC)	➢ High level oversight, policy guidance and direction. This Committee also includes representatives from private sector, youth groups, church groups, and NGOs. ➢ Coordination of all environment related activities ➢ Review of NBSAP implementation progress
Ministry responsible for Environment (MEIDECC)	➢ High level oversight, policy guidance, and direction

NBSAP Technical Team	➢ Provide high level guidance to the NBSAP Secretariat. This Team also includes representatives from private sector, youth groups, church groups, and NGOs. ➢ Advise the NECC on Technical matters relating to NBSAPs ➢ Liaise with all Ministries to ensure that all mainstreaming, data and information management, capacity building, and resilience building actions are fully implemented.
NBSAP Secretariat	➢ Manage and coordinate all biodiversity conservation and ecosystems management activities in Tonga. This will also assist in avoiding duplication and promoting replication. ➢ Monitor the progress of the implementation of the NBSAP ➢ Liaise with relevant stakeholders to ensure mainstreaming of actions into their Corporate/Sector Plans ➢ Liaise with donors and development partners to secure funding and technical assistance to implement NBSAP activities ➢ Coordinate the national reporting to the UNCBD, and share reports to relevant partners to assist with their reporting requirements ➢ Foster partnership at all levels
Ministries and local partners	➢ Ministries: support the implementation of NBSAP activities and facilitate the mainstreaming of activities into Corporate and Sector Plans ➢ Local partners: Facilitate integration of NBSAP actions into respective planning, and assist with the implementation of NBSAP activities in collaboration with the NBSAP Technical Team
Private Sector	➢ Provide support during the planning and implementation of NBSAP activities and provide feedback for monitoring purposes
CSOs/NGOs/Community Groups	➢ Mainstream NBSAP actions into their planning and implementation programmes ➢ Provide support in reporting of NBSAP related activities, when required
Regional and donor partners	➢ Provide financial and technical support to enable the successful implementation of the NBSAP activities.

2.5 BIODIVERSITY STRATEGIC ACTION PLAN

This Section will describe the nine (9) thematic areas with regards to: Causes and consequences; national constitutional, legal and institutional framework; basis for action; and strategies and actions required to meet objectives under its respective thematic area. Figure 7 maps out the structure of NBSAP 2030.

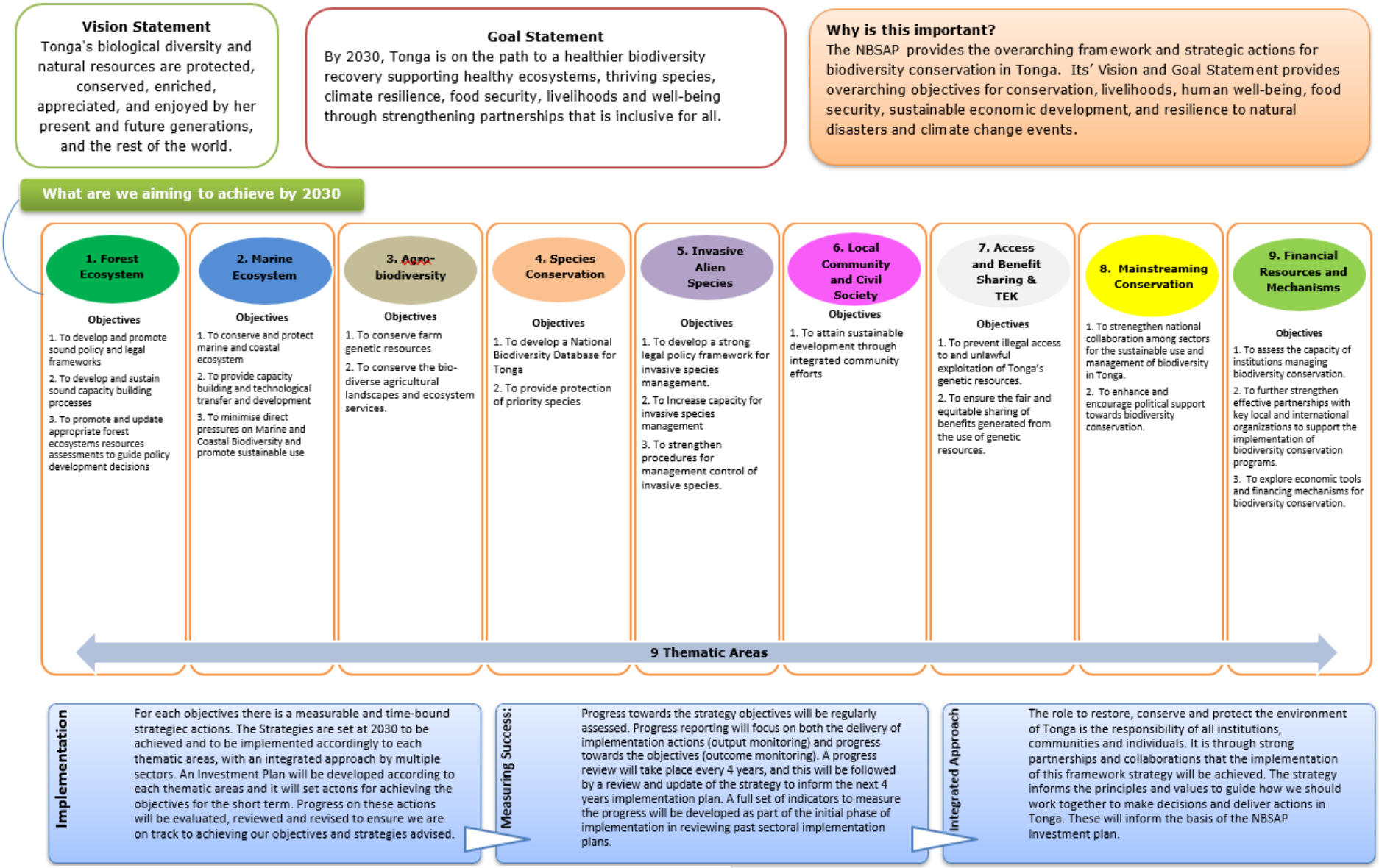


Figure 7: Tonga National Biodiversity Strategy & Action Plan to 2030

THEMATIC AREA 1: Forest Ecosystems

The forest ecosystem in Tonga is important and beneficial locally, nationally, and internationally. We obtain many products from trees. The maintenance of robust forest ecosystems benefits biodiversity and serves as an important tool for both climate change mitigation through carbon sequestration and climate change adaptation.

With current increased threats to forest ecosystems, we see evidence of negative impacts on the livelihoods of the local communities, such as the exponential decline in citrus production in 'Eua. This is caused by local trees being exposed to pest and disease infestations resulting from rapid clearance of native *f*orests. Loss of medicinal plants and valuable woods with social and cultural values has great socio-economic impacts, such as loss of income from selling forest products. Loss of forest cover also impacts soil conditions and crop yields. Sandalwood, the main income source from the forestry sector (90% of the total contribution of forestry to national GDP), has declined drastically due to over-harvesting of the predominantly naturally grown trees.

Forest ecosystems are categorized here based on three major functional roles:

1. Physical and production functions, including food, firewood, dyes, and traditional medicines;
2. Protection functions, including soil stabilization, species habitat, functional diversity creating resilience to infestations and climatic change, shelterbelts, and buffer zones;
3. Intangible functions, including carbon sequestration, shade, freshwater production, and aesthetic values.

A thorough inventory of forest ecosystems in Tonga, launched in 2004, contributed considerably to the completion of the first NBSAP in 2006[20]. It was followed by a series of National Reports on the status of biodiversity in Tonga.

Causes and consequences of forest biodiversity loss

The absence of holistic land-use planning was identified as the main catalyst for agriculture and forestry ecosystems degradation. Additionally, indiscriminate expansion of commercial agriculture and overharvesting of land and coastal forests also threaten the wellbeing of forest biodiversity, along with the increased threats caused by climate change and natural disasters. The increased rate of deforestation in the 'Eua pine plantation, coupled with slow reforestation, is also a concern, as there will be increased pressure on native forests as well as the public water supply on the island.

Limited and project-driven public participation and awareness is another contributing factor. Efforts made to engage small and private land owners in small forestry and agroforestry development initiatives progress slowly and receive limited support from partners. This is mainly due to cultivating land for commercial agricultural purposes, and other uses such as conversion to solar farming, etc., where quick financial gains can be made.

National constitutional, legal, and institutional framework

Lack of appropriate legal frameworks to provide direction and management strategies towards forest conservation and sustainable use continue to be major governance issues. The Forest Act (revised in 1988)[21] remains the key legal document that directly aims to address forestry biodiversity considerations in two regards: forest reserves and forest produce, and town and village forest areas. As with the corresponding regulations, this Act should be revised to broaden its scope to cover areas such as plantation forests, agroforestry system approaches, urban forestry, coastal forest management, community forestry, and so forth.

The Forest Produce Regulations (1979) give the Director of Agriculture the authority to grant approval for export of forest produce. Though vital for forest biodiversity conservation, review of the regulations is required with a view to broaden its scope to ensure illegal export of "vulnerable" and "rare" forest products is prohibited.

The National Forest Policy for Tonga (2009) was a positive legal output recommended in the first NBSAP. The objective of this policy is to support the management of the forests and trees in Tonga. Key directives include a comprehensive natural forest inventory, conservation measures (including forest protection, conservation of biodiversity, soil conservation, coastal protection, and water conservation), climate change mitigation and adaptation, forest reservation (including national parks and forest reserves), forest production (utilization considerations including industrial round woods, wood-based industries, forest plantation, code of forest produce, fuel wood, wood carving), trees on tax allotments (including agroforestry, urban forestry, sandalwoods, and tree planting), forest and tree health, community forestry, tourism and forest recreation, policy, and legislation.

A "Code of Practice for the Sustainable Management of the Forests and Trees Resources of Tonga" was launched in 2010, and "Sandalwood Regulations*" in 2016*. The National Policy for Land Use in the Kingdom of Tonga is still under construction with core objectives including to facilitate and advocate for sustainable land use, to provide a framework upon which consensus can be reached amongst Tonga stakeholders on a national vision, to establish fundamental principles and strategies of land use in Tonga, to set out principles upon which the interests of all stakeholders can be balanced out, to provide a framework for dispute and conflict resolution, to prepare land users to adapt to changing circumstances, and to support the progressive move towards integrated land use.

Basis for Action

The major threats to forest ecosystems include, but are not limited to:

- Land ownership issues;
- Inadequate capacity to develop further awareness programs to emphasize the importance of national reserves;

[21] Government of Tonga (1988). **Tonga Forest Act 1988**. Attorney Generals Office, Tonga. https://pafpnet.spc.int/resources/610-tonga-forest-act-1988-tversion

- Agriculture clearing, including open agricultural burning;
- Unsustainable cutting of sandalwood and other tree crops;
- Inadequate and unsustainable funding for managing cultural and biodiversity sites of importance;
- Lack of management skills;
- Lack of technical skills (data maintenance, conservation, landholders to self-manage, monitoring, confidence of forestry officers);
- Increased demand on commercial tree crops versus sustainable use of tree crops;
- Lack of enforcement;
- Threats and pressures of pollution (heavy metals, pesticides, litter, solid waste, petroleum, POPs, nutrients, sedimentation, sewage);
- Increased climate change impacts;
- Waste management issues related to timber processing; and
- Increased market demand for evidence of sustainability and legality.

Through the consultation process, the following key actions were identified:

- Strengthen legal actions and enforcement;
- Strengthen the accreditation system for Forest Practices Officers in timber harvesting;
- Provide consistent training on monitoring and enforcement;
- Enhance communication awareness programs;
- Develop capacity building training programs (monitoring, enforcement, reporting, data inputting, GIS, etc);
- Improve database and data management;
- Strengthen collaboration between industry and community in the management of forests and tree crops.

THEMATIC AREA 1: FOREST ECOSYSTEMS – National objectives to meet relevant Aichi Strategic Goals and Targets and SDGs

National Objective 1: To develop and promote sound policy and legal frameworks.

Aichi Strategic Goals:
A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society.
B: Reduce the direct pressures on biodiversity and promote sustainable use.
E: Enhance implementation through participatory planning, knowledge management and capacity building.

AICHI TARGETS:

SDGs :

Strategy 1: Develop/update and/or strengthen existing agriculture and forestry sector plans and policies.

Actions	National Targets	Lead Agency and Potential Partners
1.1. Formulation of National Agriculture Sector Plan *(NASP).*	1.1.1 Establish National Agriculture Sector Plan with full implementation, and carry out interim review before 2025.	Lead agency: MAFF Potential partners: MoFinance, Agriculture Association, Grower Federation
1.2 Revise national forest legislation.	1.2.1 Secure funding and technical assistance, in collaboration with regional partners, to enable revision of the Forest Act by 2022. 1.2.2 National Forest Policy revised and updated by 2025. 1.2.3 Revised Forest Act completed by 2025. 1.2.4 Existing Forest Regulations revised by 2025.	Lead agency: MAFF Potential partners: MEIDECC (Environment); MLNR; Public Enterprise; PMO; MoFinance
1.3 Develop National Land Use Plan/Policy.	1.3.1 By 2025, formulate watershed management strategies with specific watershed management work plans to suit different geological sites. 1.3.2 Complete development of the National Land Use Plan/Policy by 2030.	Lead agency: MLNR Potential partners: MAFF AGO, Tourism, MEIDECC

1.4 Develop appropriate policy guidelines for commercial operators.	1.4.1 Develop business plans for commercial forest operations by 2025. 1.4.2 Prepare 'Eua Forest management committee terms of reference and determine composition by 2025. 1.4.3 Enforce Code of Practice for forest harvesting by 2026.	Lead agency: Public Enterprise Potential partners: MAFF; MEIDECC

National Objective 2: To develop and sustain sound capacity building processes.

Aichi Strategic Goals:
A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society.
B: Reduce the direct pressures on biodiversity and promote sustainable use.
E: Enhance implementation through participatory planning, knowledge management and capacity building.

AICHI TARGETS:

SDGs :

Strategy 2: Build capacity and promote awareness to support forest conservation.

Actions	**National Targets**	**Lead Agency and Potential Partners**
2.1. Provide formal training programs.	2.1.1 Provide at least 10 formal degree programs (post graduate programs included) in biodiversity conservation or related fields by 2025. 2.1.2 Mainstream biodiversity values (most probably in consideration of related environment and climate change related values) into school syllabus by 2030.	Lead agency: MoET Potential partners: MEIDECC, MAFF
2.2. Support public-private partnership (PPP) initiatives.	2.2.1 Ensure that appropriate levels of technical knowledge are being delivered to support PPP initiatives. 2.2.2 Develop an effective outreach programme (citizen science) to promote and support PPP initiatives. 2.2.3 Establish a "National Biodiversity PPP in Action Group (NBPPPG)" to provide policy and lead role by 2025.	Lead agency: MAFF Potential partners: MoFinance, MoET, MEIDECC, MLNR, MIA and NGOs
2.3 Build capacities within local governments.	2.3.1 By 2025, engage local leaders (district, town officers, estate owners, church leaders, youth and women group leaders, etc.) in leading biodiversity initiatives to ensure full community participation, sustainability, and community ownership.	Lead agency: MAFF, MEIDECC Potential partners: MoFinance, MIA, PMO

2.4 Develop outreach programmes/citizen science.	2.4.1 Secure financial support to develop and implement a citizen science programme to produce and disseminate appropriate media tools to enhance public awareness, education, and sense of ownership of all forest biodiversity development initiatives by 2022. 2.4.2 Monitor and evaluate effectiveness of outreach programme by 2026.	Lead agency: MEIDECC, MAFF Potential partners: NGOs (VEPA, civil Society, etc.), private sector
2.5 Strengthen research and extension offices.	2.5.1 Promote traditional Tongan farming systems in rural and vulnerable communities with minimum mechanization and use of agri-chemicals by 2022.	Lead agency: MAFF Potential partners, MEIDECC

National Objective 3: To promote and update appropriate forest ecosystems resources assessments to guide policy development decisions.

Aichi Strategic Goal:
A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society.

AICHI TARGETS:

SDGs :

Strategy 3: Strengthen national data on forest ecosystems.

Actions	**National Targets**	**Lead Agency and Potential Partners**
3.1. Develop database for National Inventory on Forest Ecosystems.	3.1.1 National Inventory on Forest Ecosystems fully implemented by 2025. 3.1.2 Identify and digitally map important forest ecosystems by 2026.	Lead agency: MAFF, MEIDECC Potential partner: private sector, MLNR
3.2. Improve GIS systems for monitoring land use and land cover changes.	3.2.1 By 2025, an improved GIS system is established for monitoring land use and land cover changes.	Lead agency: MLNR Potential partners: MEIDECC, MAFF

Strategy 4: Identify remaining forest ecosystems, declare important areas protected and manage all protected sites appropriately.

Actions	**National Targets**	**Lead Agency and Potential Partners**
4.1. Conduct a rapid assessment of forest ecosystems.	4.1.1 Develop or revise national park management plans by 2026. 4.1.2 Identify important forest ecosystems needed to be declared as protected by 2026.	Lead agency: MEIDECC, MLNR, MAFF

		Potential partner: Tourism, Private Sectors,
4.2 Establish new or expand existing terrestrial reserves/ protected areas.	4.2.1 Increase terrestrial protected areas to 17% of Tonga's land area. 4.2.2 Increase the contribution of national parks in foreign earnings through tourism activities like camping and sightseeing activities by 2030. 4.2.3 Engage local communities in overall management of national parks and reserves by 2030. (Note that currently, the communities are "kept out" of forest reserves, thereby depriving them of their role to own and manage the forest resources.) 4.2.4 Upgrade forest parks and reserves to improve conservation of forest ecosystems "in-situ".	
4.3. Restore and conserve forest ecosystems at all levels.	4.3.1 By 2025, enforce M&E of Tonga Forest Product reforestation programmes to ensure that the demanded replanting is done according to MAFF, and other government organisations, approved plan of action. 4.3.2 By 2025, confirm "zonation" of the 'Eua Forest Plantation to ensure forest activities in watershed management areas do not encroach into neighbouring 'Eua National Park. 4.3.3 Complete enrichment planting of "deforested sites" around fringes of national parks and reserves by 2025. 4.3.4 Engage women and youth in planning, implementation, and monitoring duties. 4.3.5 Engage 20% of communities in forestry replenishment duties such as running of community-based forest nurseries, village woodlots, coastal protection projects, etc. 4.3.6 Engage 10% of schools in reforestation projects for economic (sandalwoods), social (firewood plots), and ecological (shelterbelts) purposes.	Lead agency: MEIDECC, MLNR, MAFF Potential partners: Public Enterprise; MoET; NGOs

THEMATIC AREA 2: MARINE AND COASTAL ECOSYSTEMS

Marine and coastal biodiversity and ecosystem services are valuable to Tonga. The marine ecosystem provides us with essential goods and services like food, nutrient cycling, gas, mineral resources, climate regulation, and much more. Marine organisms contribute to many critical processes that have direct and indirect effects on the health of the oceans and humans. This speaks to the fact that there are specific species and functional groups that play critical roles in important ecosystem processes, and the loss of these species may have significant influences on the whole marine ecosystem.

Tonga's marine ecosystems are also regionally and globally valuable. Primary and secondary production are important mechanisms by which marine communities contribute to global processes. It has been estimated that half the primary production on Earth is attributable to marine species. Without primary producers in surface waters, the oceans would quickly run out of food, and we would run out of most of our supply of oxygen: 50-80% of our oxygen comes from the ocean. In addition, without planktonic and benthic organisms to facilitate nutrient cycling, the primary producers would quickly become nutrient limited. The maintenance of robust ecosystems like coastal mangroves, seagrasses, and coral reefs benefit biodiversity and make positive contributions to both climate change mitigation through carbon sequestration and climate change adaptation.

Causes and consequences of biodiversity loss

Overexploitation and unsustainable use of natural resources, as well as habitat degradation and fragmentation are the main drivers of marine and coastal biodiversity loss in Tonga[1]. Pollution from inadequately treated sewage, agricultural run-off, and waste from ships and boats; invasive alien species; climate change[22]; physical destruction such as land reclamation, causeway and wharf construction, sand and coral mining; sedimentation from such activities, as well as soil run off from agricultural clearance are some contributing factors to biodiversity loss. This is a major concern especially in populated and urban coastal areas[1,22].

Lack of attention to these local threats is likely to affect the coastal and marine ecosystems' capability to resist and recover from global-level pressures, and put all ecosystems at high to critical threat level by 2030.

National constitutional, legal, and institutional framework

Appendix C provides an outline of the legal and institutional framework which governs the conservation and management of Tonga's marine and coastal ecosystems. The framework is fragmented across government agencies, hence the need for multi-sectoral planning and reporting, and why this document is very important to ensure that sectors are made aware of what has been planned to meet the various objectives and where sectors can best contribute to meet these objectives and the overall goal. Regular reporting will ensure that sectors are made aware of what will be/has been implemented under their various mandates. These institutional

[22] Government of Tonga (2019). **Tonga's Third National Communication on Climate Change**. Department of Climate Change, Tonga. https://www4.unfccc.int/sites/SubmissionsStaging/NationalReports/Documents/158047_Tonga-NC3-1-Final%20TNC%20Report_December%202019.pdf

arrangements or regimes are important for environmental management and conservation, particularly the implementation and enforcement of national legislation and policies that support the conservation and protection of marine and coastal biodiversity.

Basis for Action

Tonga's natural capital is under threat. These threats impact our food security, our livelihoods, and our economic growth. Mangroves and coastal wetlands are being cut down or built upon, reef and reef flats are being fished and gleaned so that few stocks remain, our oceans are being used with little regard to future potential, management of conflicts, or creation of opportunities, and on top of this, climate change is adding pressure to already stressed ecosystems.

Management of our natural capital contained in coastal and marine ecosystems needs to be radically transformed if we are to leave a viable natural legacy for our children. With the deteriorating rate of our marine and coastal ecosystems as shown in Table 1, recommendations such as those in the NBSAP need to be acted on to help ensure a sustainable future with productive coasts and economically valuable oceans. Some current programs, such as the Special Management Areas (SMAs), are important in helping to counter threats to coastal and marine ecosystems but are not enough.[23] SMAs allow communities to manage fisheries adjacent to their community. Each SMA must include a Fish Habitat Reserve (FHR), which is a no-take area. The size of the FHR is up to the community, but many only allocate about 5% of the SMA area as FHR.

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

Going forward, resource users and 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. The international community should also make available adequate resources to alleviate any disproportionate 'conservation burden' that Tonga may undertake as an ambitious voluntary commitment to conserve vast areas of ocean spaces under their national jurisdiction. Tonga may shoulder the potentially forgone economic benefits that they would have otherwise derived from the use and exploitation of the resources in those areas.

[23] Smallhorn-West P., Sheehan J., Rodriguez-Troncoso A., Malimali S., Halafihi T., Mailau S., Le'ota A., Ceccarelli D., Stone K., Pressey B., Jones G. (2020**) Kingdom of Tonga Special Management Area report** 2020. 86 pp. https://icriforum.org/wp-content/uploads/2020/05/Smallhorn_West_20_Tonga_SMA_Report_2020.pdf

Through the consultation process, the following priority actions were identified:

- Create and strengthen managed area networks;
- Create an ocean-wide policy and marine and coastal spatial planning framework;
- Maintain ecosystem services, with recognition of their economic value;
- Minimize pressures from land-based sources through effective development control that includes rigorous EIA;
- Build capacity for policy development, science and technology;
- Strengthen national coordination for coastal and marine ecosystem management in the development context;
- Manage invasive species;
- Involve communities, including their traditional knowledge and management practices;
- Create awareness and stakeholder participation and communication; and
- Develop implementation plans for effective waste and pollution management to address threats to biodiversity

THEMATIC AREA 2: MARINE ECOSYSTEMS – National objectives to meet relevant Aichi Strategic Goals and Targets and SDGs

National Objective 1: To conserve and protect marine and coastal ecosystems.

Aichi Strategic Goal:
C: To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity.
D: Enhance the benefits to all from biodiversity and ecosystem services.
E: Enhance implementation through participatory planning, knowledge management and capacity building.

Aichi Targets:

SDGs:

Strategy 5: Strengthen the existing network of protected areas to effectively conserve major coastal and marine ecosystems as well as habitats of biological and socio-economic value.

Actions	National Targets	Lead Agency and Potential Partners
1. Further strengthen and support government and related organisations for surveying, assessing, establishing, monitoring, and evaluating Marine Managed Areas (SMAs and MPAs).	5.1.1 Maintain 30% of Marine Management Areas, with no further reduction. 5.1.2 Develop/review site management plans for MMAs by 2030. 5.1.3 Monitoring reports to measure effectiveness of MMAs are developed and reported every 5 years.	Lead agency: MEIDECC, MLNR, Fisheries Potential partners: Members of Oceans7 (Finance, Tourism, Marine & Ports, Ports Authority)
2. Develop ocean-wide policy, marine and coastal spatial planning framework, and an implementation and investment plan.	5.2.1 By 2025, establish and implement an ocean-wide policy and marine and coastal spatial planning framework. 5.2.2 By 2025, develop a marine and coastal implementation and investment plan.	Lead agency: MEIDECC, MLNR, Fisheries Potential partners: Members of Oceans7 (Finance, Tourism, Marine & Ports, Ports Authority)

Strategy 6: Promote innovative use of economic incentives.

Actions	National Targets	Lead Agency and Potential Partners
1. Consider economic value of marine and coastal ecosystem services in national development planning.	6.1.1 By 2020, marine and coastal ecosystems are mainstreamed into related sectoral plans and the National Strategic Development Plan.	Lead agency: MEIDECC, Fisheries, MLNR, PMO, Tourism Potential Partners: Oceans7
2. Valuate and account direct and indirect goods and services of biodiversity and ecosystems.	6.2.1 By 2030, undertake well-established studies and research to assess, document, and assign	Lead agency: PMO, Finance

	estimated value of goods and services of biodiversity and ecosystems.	Potential partners: MEDIECC, Fisheries, Tourism
3. Apply the results of the studies and research on economic tools to the management of all marine managed areas.	6.3.1 By 2030, apply a well-established set of economic guidelines and procedures, such as payment for environmental services, nationally for managing Marine Conservation and Protected Areas.	Lead agency: MEIDECC, Fisheries, MLNR, Finance Potential partners: Oceans7

National Objective 2: To provide capacity building and technological transfer and development.

Aichi Strategic Goal:
A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society.
E: Enhance implementation through participatory planning, knowledge management and capacity-building.

Aichi Targets:

SDGs

Strategy 7: Strengthen the national capability to manage marine and coastal biodiversity.

Actions	**National Targets**	**Lead Agency and Potential Partners**
1. Design and deliver classroom and on-site training programs – and monitoring protocol - to raise the level of environmental skills of the professional, resource-based staff of coastal and marine sectors within the Civil Service.	7.1.1 By 2030, increase and improve by an overall 30% the level of environmental skills and knowledge of this target group.	Lead agency: MEIDECC, Fisheries, MoET, Tourism Potential partners: donor agencies, regional and international organisations, and institutions
2. Strengthen institutional capacity of relevant government sectors by recruiting skilled personnel as needed.	7.2.1 By 2030, achieve at least 50% improvement in the capacity of this target sector.	Lead agency: MEIDECC, MLNR, Fisheries, Tourism, MoFinance
3. Investigate and compile appropriate technology/techniques to mitigate impacts on coastal/marine areas.	7.3.1 By 2030, prepare methodological guidelines and handbooks for mitigating impacts on coastal and marine areas that are applied nationwide.	Lead agency: MEIDECC, MLNR, Fisheries Potential partners: Members of Oceans 7 (MOI, Tourism, Ports Authority, Marine & Ports); regional and international organisations, and institutions

4. Improve coordination mechanisms at appropriately high levels within national authorities by mainstreaming NBSAPs into sector plans.	7.4.1 By 2030, implement appropriate agreed mainstreaming programs at national level.	All national authorities
5. Improve hydrographic mapping of Tongan nearshore environments.	7.5.1 By 2030, meet international hydrographic mapping requirements.	Lead agency: MLNR, MEIDECC, HMAF Navy, Potential partners: regional and international organisations, and institutions
Strategy 8: Strengthen the capacity of national focal point and operational focal points for implementing coastal and marine affairs.		
1. Develop a funding library and strategy for accessing international finance directed at marine and coastal conservation.	8.1.1 By 2030, improve government and civil society capacity to elicit financing, and achieve at least a 30% increase in resources made available from various donor agencies.	Lead agency: MEIDECC Potential partners: Tonga national and civil society agencies.
2. Establish a Secretariat to facilitate coordination amongst Oceans 7 for the implementation of Tonga's ocean management areas.	8.2.1 By 2025, make available financial assistance to establish a Secretariat to coordinate implementation, monitoring and reporting of ocean management areas.	Lead agency: MEIDECC, MLNR and Fisheries, Finance Potential partners: Oceans7
3. Strengthen negotiation skills for all sectors implementing MEAs.	8.3.1 By 2030, achieve a 50% improvement in this area for the target groups through activities such as workshops, trainings, etc.	Lead agency: MEIDECC, Fisheries Potential partners: Foreign Affairs, Tourism, PMO, regional and international organisations, institutions, and donor agencies

National Objective 3: To minimise direct pressures on marine and coastal biodiversity and promote sustainable use.

Aichi Strategic Goal:
A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society.
B: Reduce the direct pressures on biodiversity and promote sustainable use.
D: Enhance the benefits to all from biodiversity and ecosystem services.
E: Enhance implementation through participatory planning, knowledge management and capacity building.

Aichi Targets:

SDGs

Strategy 9: Promote the use of nature-based solutions and other environmentally sound practices to minimise impacts on marine and coastal resources.

Actions	**National Targets**	**Lead Agency and Potential Partners**
1. Develop operational guidelines/regulations for enforcing EIA requirements for deep seabed mining, coastal sand mining, and related activities.	9.1.1 By 2030, develop guidelines/regulations to minimize pressures from land and marine-based sources through effective development controls, including EIAs, for deep sea mining, coastal sand mining, and related activities.	Lead agency: MEIDECC, MLNR, Attorney General's Office Potential partners: Police Department, regional and international organisations, institutions, and donor agencies
2. Intensify rehabilitation of critical damaged coastal and marine habitats and ecosystems.	9.2.1 By 2025 identify at least 50% of important damaged habitats and ecosystems that need rehabilitation and restoration. 9.2.2 By 2025, develop and implement a monitoring and evaluation system for rehabilitation activities (to monitor progress and improvement). 9.2.3 By 2030, establish an eco-park showcasing nature-based solutions and their benefits to biodiversity and society.	Lead agency: MEIDECC, MLNR Potential partners: Fisheries, MIA, regional and international organisations, institutions, and donor agencies
3. Promote and increase stakeholder participation and community-based activities for conservation and sustainable use practices.	9.3.1 By 2030, achieve a 20% increase in effectiveness of community-based activities such as SMA in promoting biodiversity from a 2020 baseline.	Lead agency: MEIDECC, Fisheries Potential partners: MLNR, MIA, regional and international organisations, institutions, and donor agencies

Strategy 10: Foster public support for coastal and marine conservation efforts and sustainable use.		
Actions	**National Targets**	**Lead Agency and Potential Partners**
1. Enhance/develop a citizen science programme to foster public support for coastal and marine conservation.	10.1.1 By 2025, establish a Citizen Programme Framework for marine and coastal conservation. 10.1.2 By 202*5*, register 20% of communities/schools to a Citizen Science Programme for marine and coastal conservation.	Lead agency: MEIDECC, Fisheries Potential partners: Fisheries, Tourism, MIA, MLNR, regional and international organisations, institutions, and donor agencies
2. Develop an implementation plan for waste and pollution control to address threats to biodiversity.	10.2.1 By 2025, develop an implementation plan for the waste and pollution sector to address threats to biodiversity.	Lead agency: MEIDECC, WAL Potential partners: Tourism, PMO

Strategy 11: Promote scientific research, regular monitoring of critical marine ecosystems, and proper management of scientific data.		
Actions	**National Targets**	**Lead Agency and Potential Partners**
1. Disseminate tried and tested concepts and instruments for the sustainable management of marine and coastal resource management regionally and internationally.	11.1.1 By 2025, document all available information from assessment of tested instruments on marine and coastal management in Tonga and the neighbouring countries.	Lead agency: MEIDECC, Fisheries Potential partners: MLNR, Tourism, MIA, NGOs, Private Sector
2. Document and promote traditional knowledge practices for biodiversity conservation and environmental protection.	11.2.1 By 2030, documents are produced, widely shared and made available to the public. 11.2.2 At least 10% of national plans have taken into consideration sustainable traditional knowledge practices for biodiversity conservation and environmental protection.	Lead agency: MEIDECC, Fisheries Potential partners: Fisheries, NGOs, regional and international organisations, institutions, and donor agencies
3. Assess impacts of invasive species and prevention and control of their spread in coastal and marine ecosystems.	11.3.1 By 202*5*, identify and implement prevention, control, and eradication measures on invasive species. 11.3.2 Identify invasive species and pathways in critical sites, both native and alien, and assess impacts to ecosystems and biodiversity by 20*30.*	Lead agency: MEIDECC and Fisheries Potential partner: Marine and Ports, Ports Authority, NGOs, private sector

Strategy 12: Apply GIS to improve control over loss of critical coastal and marine ecosystems.		
Actions	National Targets	Lead Agency and Potential Partners
1. Strengthen coordination between government agencies and Ministry of Lands & Natural Resources in applying GIS capacity to monitor coastal and marine ecosystems.	12.1.1 By 2025, improve the capacity of GIS to monitor coastal and marine ecosystems. 12.1.2 By 2025, 60% of coastal/inshore ecosystems are monitored and their status is described.	Lead agency: MEIDECC, MLNR Potential partners: Fisheries, Tourism, NGOs and private sector.
2. Create a system for coastal habitat mapping – seaweeds, coral reefs, mangroves, etc.	12.2.1 By 2025, establish a GIS system for mapping of coastal habitats such as seaweeds.	Lead agency: MLNR Potential partners: MEIDECC, Fisheries, Tourism, regional and international organisations
3. Strengthen GIS capacity in monitoring the status and identifying the changes over time of mangrove ecosystems.	12.3.1 By 2030, update/upgrade the government's current GIS system (software/hardware) to meet and maintain international quality standards. 12.3.2 By 2030, monitor coastal ecosystems, such as mangrove ecosystems, and the status of changes over time.	Lead agency: MLNR Potential partners: Fisheries, MEIDECC, Tourism.

THEMATIC AREA 3: AGROBIODIVERSITY

Tonga depends on its agricultural production for subsistence and livelihoods. Agricultural biodiversity is a subset of biodiversity that is essential to basic human needs for food security. Agricultural biodiversity is basically managed by farmers; hence its conservation in production systems is inherently linked to sustainable use. Sustainable agriculture means that farming systems must remain productive in the long run from a variety of perspectives: biological, economic, and social, not just ecological.

The conservation of biological diversity allows farmers to produce food and non-food products as well as services. It also allows the creation of new plant varieties and animal breeds for the achievement of economic, health, technical, and ecological objectives. The sustainable use of biological diversity in agriculture also contributes to changes in certain practices, by reducing the use of insecticides through the action of beneficial insects, reducing ploughing by increasing soil's biological activity, and preserving yields by increasing pollination.

The traditional farming system of mixed crops and crop rotation is a semi-natural environment where endemic and threatened species have often survived during the bush fallow phase. It also maintains both wild and domesticated plant and animal species, varieties, or breeds, as well as ecosystems, at times under threat of extinction.

Therefore, the strategy for this action plan must cover these three fields of biodiversity: first, the genetic resources of domesticated plants and animals; second, the introduced exotic plants and animals plus wild fauna and flora related to farmland; third, the soil life, pollinators, predators, and all organisms that support the fertility and productivity of agricultural ecosystems.

Causes and consequences that affect agrobiodiversity
The main agricultural practices that affect agrobiodiversity are:

- Unsustainable use of fertilisers and pesticides;
- Traditional practices giving way to more mechanization;
- Abandonment of mixed cropping and crop rotation to single cropping repetitively;
- Reduction in number of species and varieties used;
- Conversion of natural ecosystems to agriculture;
- Over-exploitation of ground water for agriculture; and
- Lack of enforcement of biosecurity protocols.

These changes can result in:

- Degradation of site conditions, in particular soil degradation and erosion (affecting soil fauna);
- Simplification and homogenisation of ecosystems, including loss of beneficial non-target organisms;
- Uncontrolled spread of alien and wild invasive species;
- The intensification of agriculture through ploughing, and the use of fertilizers, pesticides, and mono-cropping has pressured the equilibrium of biodiversity and agriculture resulting in deterioration of these ecosystems and significant losses of biodiversity;

- Reduction in the number of species/races/varieties, threatening the animal and plant genetic potential;
- The use of herbicides affects plants differently, and the use of insecticides affects the microfauna, cycles are disrupted, equilibria are altered by mechanisation, and fertilisation favo*u*rs some species; and
- The disappearance or degradation of indigenous forest, secondary forest vegetation, and shrubs, has a direct effect on the decline of micro-organisms, insects, birds, plants, animals, etc.

National constitution, legal and institutional framework
There are about 60 laws and regulations that currently govern how Tonga's agriculture sector is managed. Many are outdated and should be reviewed and revised with the objective of reducing the number.[24]

Basis for Action:
The changes in land-use in Tonga have caused widespread degradation and destruction of natural habitats. This land-use change is driven largely by the growing population with growing per capita consumption and increased economic demand for the local and export market. Consequently, intensification of agriculture occurs with increased clearance of land and a change from the traditional farming system (cultivation and rotation of mixed crop species/varieties followed by bush fallow to regenerate soil fertility) into a market-driven mono-crop system characterized by a single, high-value cash hybrid variety cultivated repetitiously with the use of mechanized tillage, fertilizer, pesticides, and irrigation.

In addition, the impacts of climate change (rising temperature, changed rainfall patterns rising sea levels, increasing cyclones, etc.) can harm certain habitats or certain organisms, disrupt reproduction cycles, force migration of species to new territories, etc. Additional key pressures include over-exploitation of biological resources, indiscriminate spread of invasive alien species, pollution of the natural environment and natural habitats, globalization (which increases pressures due to trade) and governance failures (the failure to recognize the economic values of natural capital and ecosystem services). These have all led to deterioration of ecosystems and significant losses of biodiversity.

Through the consultation process, the following priority actions were identified:

- Preserve genetic resources for agriculture;
- Strengthen collaboration with landholders and communities by providing regular training opportunities to increase knowledge on sustainable farming practices; and
- Increase public education outreach programmes.

[24] Government of Tonga (2016). **Tonga Agriculture Sector Plan 2016-2020**. MAFF, Tonga. http://extwprlegs1.fao.org/docs/pdf/ton168836.pdf

THEMATIC AREA 3: AGROBIODIVERSITY – National objectives to meet relevant Aichi Strategic Goals and Targets and SDGs

National Objective 1: To conserve farm (livestock species/breeds & plant species/varieties) genetic resources.

Aichi Strategic Goals :
B: Reduce the direct pressures on biodiversity and promote sustainable use.
C: Improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity.

Aichi Biodiversity Targets:

SDGs:

Strategy 13: Reinforce conservation of genetic resources valuable as food sources, and promote good agricultural practices which contribute towards the preservation of genetic diversity and the reduction of pollution.

Actions	**National Targets**	**Lead Agency and Potential Partners**
1. Assess existing national agricultural genetic resources.	13.1.1 By 2030, establish a National Database for Agricultural Genetic Resources.	Lead agency: MAFF Potential partners: MEIDECC, MTED, SPC, FAO, others, farmers, NGOs, communal groups
2. Establish a national participatory system in conservation of agricultural genetic resources.	13.2.1 By 2030, genetic diversity resource information will be accessible, and benefits shared with communal partnership to prevent erosion.	Lead agency: MAFF Potential partners: MEIDECC, MTED, SPC, FAO, others, farmers, NGOs, communal groups
3. Improve the national agricultural genetic resources.	13.3.1 Increase the diversity of farm genetic resources by at least 3 percent annually by 2030.	Lead agency: MAFF Potential partners: MEIDECC, SPC, FAO, others, farmers, NGOs, communal groups

National Objective 2: To conserve bio-diverse agricultural landscapes and ecosystem services

Aichi Strategic Goals :
B: Reduce the direct pressures on biodiversity and promote sustainable use.
C: To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity.
D: Enhance the benefits to all from biodiversity and ecosystem services.

Aichi Biodiversity Targets:

SDGs:

Strategy 14: Strengthen plans to protect agricultural ecosystem services.

Actions	**National Targets**	**Lead Agency and Potential Partners**
1. Strengthen agricultural ecosystem services.	14.1.1 Increase the resilience of agricultural ecosystem services by at least 2 percent annually.	Lead agency: MAFF Potential partners: Universities, Research Institutions, Farmers, communal groups
2. Construct bio-diverse agricultural landscapes.	14.2.1 Increase the biodiversity of agricultural landscapes by at least 2 percent annually.	Lead agency: MAFF Potential partners: MLNR, MIA, farmers, community
3. Establish an improved GIS system for monitoring land use and land cover changes.	14.3.1 By 2025, establish an improved GIS system for monitoring land use and land cover changes.	Lead agency: MAFF Potential partners: MLNR, MEIDECC,
4. Develop and promote sustainable agriculture development and practices, including sustainable harvest, production, distribution, and consumption.	14.4.1 By 2025, design an institutional framework for agriculture that allows for monitoring of major sustainability parameters.	Lead agency: MAFF Potential partners: MEIDECC, MLNR, Civil Society, Finance,

THEMATIC AREA 4: SPECIES CONSERVATION

The foundation of life on Earth is made up of plants and animals, thus it is crucial to protect them from extinction and keep a healthy population of them in order to increase biodiversity. Biodiversity creates healthy ecosystems that produce oxygen and clean water, pollinate plants for food, control pests, process sewage, and provide many other ecosystem services. Many leisure activities, including birdwatching, hiking, camping, and fishing, depend on our distinctive biodiversity.

Since species are an essential part of ecosystems, culture, livelihoods, and peoples' wellbeing, assessments of their value in terms of services ought to be a part of every ecological assessment. However, estimating the worth of species is challenging and may never be complete. With the lack of information on the status of important and rare species in Tonga, there may be more species which are threatened or even extinct than currently known.

The maintenance of robust ecosystems like forests benefit biodiversity and serve as an important tool for both climate change mitigation through carbon sequestration and climate change adaptation. To date, the management of Tonga's species has been limited to controls on harvesting, protected areas, awareness campaigns, and measures limiting the trade of threatened species, as well as monitoring the status of some species and biological surveys to identify the diversity of life in Tonga.

Causes and consequences of species loss

Invasive species have the highest impact on the largest numbers of terrestrial threatened endemic, non-endemic and critically endangered species, followed by impacts of land-use change due to agriculture, farming and forestry activities, and exploitation.[25]

Marine species including marine reptiles, marine mammals, fish, echinoderms, sharks, and rays under fisheries pressure account for the high number of species impacted by exploitation. Marine turtles are highly threatened by climate change and human harvest; cetaceans are threatened by anthropogenic noise, pollution, by-catch, boat strikes, habitat degradation, and human harvest.[14]

National constitution, legal and institutional framework

Tonga is a Party to the CITES Convention, but there is no specific legislation dealing with endangered species in Tonga. However, there are primary pieces of legislation related to protecting species such as the Birds Preservation Act, Environment Management Act 2010, EIA Act, EIA Regulations, Fisheries Management (Conservation) Regulations, and Fisheries Act.

The Ministry responsible for fisheries regulates licensing permits for fishing and related activity, including authorization of activities in Special Management Areas (SMAs). Extraction is prohibited in protected areas unless consent is provided by the Minister responsible for environment. Minister for Agriculture, Forests and Fisheries may with Cabinet's consent permit any person to collect specimens subject to such conditions as he may impose under their mandate.

[25] Government of Tonga (2013). **National Invasive Species Strategy and Action Plan 2013 – 2020**. Department of Environment, Tonga. http://macbio-pacific.info/wp-content/uploads/2017/08/National-Invasive-Species-Strategy-and-Actions-2013-2020.pdf

There is no legislation specifically on genetic resources, however, there are other pieces of legislation relating to it such as the Birds Act, Parks and Reserves Act, Forest Act, Aquaculture Management Act, and Biosafety Act 2009. The Secretariat of the Pacific Community and other organisations play a vital role in the development of Tonga's genetic resources. The Ministry concerned are the Ministries responsible for Agriculture, Fisheries, Forestry and Health.

Basis for action

In order to maintain Tonga's biodiversity, efforts to conserve species that are endangered must be urgently addressed. Species conservation activities are currently being implemented in Tonga and executed by various stakeholders through external funding. There are several programmes/projects aimed at species conservation currently being executed by MEIDECC, which includes the conservation of the Polynesian megapode[26], strengthening and establishing of marine protected areas, and addressing invasive species[25].

It is critical to develop a National Biodiversity Database for Tonga that provides a platform to document information on species, ecosystems, and designated/protected areas, as well as threats to these species and areas. The design and functionality of this database should be such that it facilitates the development of biodiversity indicators, displays trends in the status of species and ecosystems, and allows all country focal points to the CBD and other multilateral environment agreements to report with ease.

It is critical to keep this data updated on a regular basis so management action is prioritized and implemented at the earliest, helping to mitigate severe impacts. Data generated by researchers and scientists who work in Tonga should be retained by the relevant Government agency so that it may be included in national datasets. More research and studies should be encouraged to evaluate the impact of invasive alien species and other threats on biodiversity and ecosystems in Tonga.

Through the consultation process, the following key actions were identified:

- Establish systems and safeguards to encourage scientific research and monitoring for priority species;
- Conserve priority species through effective habitat and ecosystem protection;
- Raise awareness of the value of biodiversity and the conservation of species; and
- Strengthen knowledge management and research programmes for species management, including retention of data for updated national datasets.

[26] Government of Tonga (2014). **Threatened Species Recovery Plan Polynesian Megapode (*Megapodius pritchardii*) 2014-2024**. Department of Environment, Tonga. https://library.sprep.org/sites/default/files/recovery-plan-Polynesian-megapode-2014-2024.pdf

THEMATIC AREA 4: SPECIES CONSERVATION – National objectives to meet relevant Aichi Strategic Goals and Targets and SDGs

National Objective 1: To develop a National Biodiversity Database for Tonga that provides a framework to document information on species, ecosystems and designated/protected areas, and threats to these species and areas.

Aichi Strategic Goals:
C. To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity.
D: Enhance the benefits to all from biodiversity and ecosystem services.
E. Enhance implementation through participatory planning, knowledge management and capacity building.

Aichi Biodiversity Targets:

SDGs:

Strategy 15: Establish an enabling environment for systematic and scientific research and monitoring for priority species.

Actions	**National Targets**	**Leading Agency and Potential Partners**
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 as Critically Endangered in the most current version of the IUCN Red List of Threatened Species (current version is 2021-3) and placed in a biodiversity database.	15.1.1. By 2025, establish an environment portal and information management system for biodiversity.	Leading Agency: MEIDECC, MAFF, MOF Potential partners: MLNR, SPREP, SPC, IUCN and other regional and international bodies
2. Develop and implement a systematic program of baseline surveys and scientific research to address critical gaps.	15.2.1 Conduct baseline surveys for the whole of Tonga by 2025.	Lead agency: MEIDECC, MAFF, MOF Potential partners: MLNR, SPREP, SPC, IUCN, FAO, and other donor agencies

National Objective 2: Provide protection to priority species to ensure viable populations of all priority species of Tonga.

Aichi Strategic goal:
C: To improve the status of biodiversity by safeguarding ecosystems, species, and genetic diversity.

Aichi Biodiversity Targets:

SDGs:

Strategy 16: Prioritise the species under the IUCN's Red List of Threatened Species that are critically threatened or endangered.

Actions	National Targets	Lead Agency and Potential Partners
1. Conduct rapid assessment surveys of all island groups to update the database on critically endangered, endangered, and vulnerable species of Tonga as classified by IUCN's most current version of the Red List of Threatened Species (current version is 2021-23).	16.1.1 By 2030, complete BIORAP surveys for Ha'apai, 'Eua, Niuas, and Tongatapu island groups.	Lead agency: MEIDECC Potential partners: SPREP, MAFF, MOF, NGOs,
2. 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.	16.2.1 By 2024, complete implementation of the Malau Species Recovery Plan; and ensure a biosecurity plan is developed for protected areas.	Lead agency: MEIDECC Potential partners: MLNR, NGOs, private sector, local communities
3. Collaborate with regional conservation programmes on protection of species of regional and international significance found in Tonga.	16.3.1 By 2025, full implementation and enforcement of the CITES legislation.	Lead agency: MEIDECC, MOF Potential partners: MAFF, Academia, MTED
4. Develop management plans for protected areas to provide effective protection of threatened and endangered flora and fauna species.	16.4.1 By 2025, develop and fully implement management plans for all protected areas.	Lead agency: MEIDECC, MOF, MLNR Potential partners: MIA, Tourism, NGOs, MOF, MAFF

Strategy 17: Develop replanting programmes and explore ex-situ measures including herbaria, gene banks or seed orchards for priority species.

Actions	National Targets	Lead agency and Potential Partners
1. Set up a national herbarium and ensure that all species of cultural	17.1.1 By 2030, establish at Toloa rainforest a national herbarium	Lead agency: MEIDECC, Toloa College

significance are represented and protected.	for educational and eco-tourism purposes.	Potential partners: MAFF, NGOs, local communities
2. Strengthen partnership with the public in tree planting programmes by providing seedlings of priority species.	17.2.1 By 2030, recover 60% of threatened trees.	Lead agency: MEIDECC, MAFF, MLNR Potential partners: NGOs, local communities,
3. Support the application of tree improvement methods to improve the genetic make-up of selected species of forest plantation tree species.	17.3.1 By 2030, establish an operational research lab for genetic modification.	Lead agency: MAFF Potential partners: NGOs, MIA, MEIDECC
4. Promote and encourage the replanting of native forest and priority tree and crop species including the production of high quality seedlings for public sale and distribution.	17.4.1 By 2020, increase by 50% the production of seedlings for priority species.	Lead agency: MAFF, MEIDECC Potential partners: NGOs, MIA, private sector
5. Establish a botanical garden to help preserve all native and culturally significant plant species of Tonga for gene conservation.	16.5.1 By 2030, establish a national botanical garden.	Lead agency: MEIDECC, MLNR, MAFF Potential partner: NGOs, MIA, MOI (Tourism)
Strategy 18: 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.		
Actions	**National Targets**	**Lead Agency and Potential Partners**
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, local community workshops, drama, and others.	18.1.1 By 2030, the public's knowledge of biodiversity conservation issues has improved, with increased public support for species conservation.	Lead agency: MEIDECC, Potential partners: MoET, media outlets, NGOs, MIA, MOF, MAFF
2. Cultivate national pride in rare species that are of global significance and that are either endemic to Tonga or which occur in Tonga and a limited number of other countries.	18.2.1 By 2030, 80% of Tonga would understand the importance of rare and endemic species as part of Tongan heritage.	Lead agency: MEIDECC, Tourism, MAFF, MOF Potential partners: MoET, NGOs, MIA, media outlets.
3. Promote awareness and appreciation of Tonga's existing terrestrial and marine protected areas.	18.3.1 By 2025, 80% of Tonga would have access to awareness materials on protected areas.	Lead agency: MEIDECC, Tourism, MAFF, MOF Potential partners: MoET, NGOs, MIA, media outlets.

4. Revive and update the Environment Resource and Interactive Centre (ERIC) for public access (educational, awareness, and planning purposes).	18.4.1 By 2025, develop user guidelines for use and sharing of analysed data. 18.4.2 By 2030, ERIC is operational and open to the public.	Lead agency: MEIDECC Potential partners: MoET, NGOs, MIA, MAFF, MOF, MLNR, MoFinance, media outlets.
Strategy 19: Strengthen the technical, management and research knowledge and skills of local scientists and researchers, and the capacity of responsible agencies and organisations to effectively implement research programmes supporting the protection, conservation, and sustainable management of Tonga's priority species.		
Actions	**National Target**	**Lead Agency and Potential Partners**
1. Liaise with relevant regional organizations including SPC and SPREP to provide short-term specialized training in specific skilled areas for local researchers and management staff.	19.1.1 By 2030, 80% of local staff are trained by relevant regional/national expertise.	Lead agency: MEIDECC, MAFF, MOF, MLNR Potential partners: SPREP, SPC, UNEP
2. Encourage counterpart or mentoring arrangements for local staff with visiting experts and consultants.	19.2.1 By 2025, an MoA template is developed for mentoring arrangements with counterparts.	Lead agency: MEIDECC, MAFF, MOF, MLNR Potential partners: local communities, NGOs, private sector
3. For all scientific surveys and research projects, incorporate into project designs formal and hands-on training opportunities for local staff.	19.3.1 By 2025, all project concepts/designs include a component on formal and/or hands-on training opportunities for local staff.	Lead agency: MEIDECC, MAFF, MOF, MLNR Potential partners: donor agencies
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.	19.4.1 By 2020, at least 1 graduate level programme will be made available annually.	Lead agency: MEIDECC, MAFF, MOF, MLNR Potential partners: MoET, donor agencies
5. Ensure the Ministry responsible for Environment is effectively resourced to coordinate all conservation-related research, with positions that have key responsibilities in coordinating a multi-agency task force.	19.5.1 By 2025, the Ministry responsible for Environment is well resourced to coordinate conservation efforts effectively and efficiently.	Lead agency: MEIDECC Potential partners: MoFinance

THEMATIC AREA 5: INVASIVE ALIEN SPECIES

Invasive alien species are plants, animals, pathogens, and other organisms that are non-native to an ecosystem, which may cause economic or environmental harm or adversely affect human health. They are known to have affected native biodiversity in almost every ecosystem type on earth and are one of the greatest threats to biodiversity.

Causes and consequences of Invasive species

Invasive species can negatively impact native ecosystems and the species they contain. These impacts may disrupt the ecosystem processes, cause economic losses for food crops and other economic activities, degrade habitats, reduce biodiversity, and introduce diseases to flora and fauna. Small island ecosystems are extremely vulnerable to invasions.

There is a strong belief that invasive plants have caused harm to human beings and the surrounding environment. Tisaipale plant was considered by most as the fastest spreading plant and has caused harm to human beings with its spiky stem and branches. The invasive vine *Merremia peltata* continues to endanger natural forests in ‘Eua and Vava‘u by smothering existing vegetation. This damage is aggravated by climate change, pollution, habitat loss, and human-induced disturbance.

A Tongan community study identified the following species, in descending order, causing the most damage: grasshopper (he’e), rats (kuma), ants (lo), pigs (puaka), dove (lupe), kutu, snails (elili vao), chicken (moa), cow (pulu), and cockroaches (mongomonga). Other harmful species include termites (ane) and kalae (bird). About 22% of people interviewed on Tongatapu believed that there were new plant species in their homes and tax allotments.

National constitution, legal and institutional framework

There is no legislation specific to invasive species. However, there is legislation related to invasive species, such as the Biosafety Act, Birds Preservation Act, Environment Management Act, EIA Act, EIA Regulations, Noxious Weeds Act, Rhinoceros Beetle Act, Fisheries Regulations, Forests Act, and Plant Quarantine Act.

The NBSAP and the Pacific Invasives Initiative are the national and regional frameworks for invasive species in Tonga. The National Invasive Species Strategy and Action Plan (NISSAP)[25] is an implementation plan to prevent the arrival and establishment of new invasive species and to manage existing priority invasive species. It provides for the protection of people’s livelihoods and for the conservation of biodiversity. It has guided Tonga’s efforts to protect its natural heritage and people’s livelihoods from the negative impacts of invasive species. To maximise the benefits of available resources, the focus of the NISSAP is on managing the invasive species threats to priority species and priority sites. The two-pronged strategy tackles the issue by (i) preventing new invasive, or potentially invasive, species from arriving and establishing; and (ii) taking action against existing priority invasive species at priority sites. The NISSAP addresses threats to terrestrial, marine, and freshwater ecosystems. The marine and freshwater components will be expanded as information becomes available. The NISSAP covers the period 2013–2020, but the document is meant to be dynamic and it is currently under review.

Basis for action

The NISSAP is aligned with the Guidelines for Invasive Species Management in the Pacific and contains activities that address invasive species under the Thematic Areas of the Guidelines. Through the consultation process, the following key actions were identified:

- Strengthen regulatory systems and controls for invasive species management;
- Build capacity within *institutions (skills, infrastructure, technical support, information management, networks, and exchanges)* for the effective management and control of invasive species; and
- Strengthen procedures for management control of invasive species.

THEMATIC AREA 5: INVASIVE ALIEN SPECIES – National objectives to meet relevant Aichi Strategic Goals and Targets and SDGs

National Objective 1: To develop a strong legal and policy framework for invasive species management.

Aichi Strategic Goal:
B: Reduce the direct pressures on biodiversity and promote sustainable use.

Aichi Biodiversity Targets:

SDGs

Strategy 20: Put in place and operationalize appropriate legislation, policies, protocols and procedures to underpin the effective management of invasive species.

Actions	National Targets	Lead Agency and Potential Partners
1. Consolidate and harmonise invasive species legislation, regulations, and protocols to improve invasive species management effectiveness.	20.1.1 By 2021, revise and review the National Invasive Species Strategic and Action Plan 2021 - 2026 20.1.2 By 2025, draft and enact a Biosecurity Bill. 20.1.3 By 2025, review laws addressing invasive species management.	Lead agency: MAFF Potential partners: MEIDECC, AGO

National Objective 2: **Increase capacity for invasive species management.**

Aichi Strategic Goal:
B. Reduce the direct pressures on biodiversity and promote sustainable use.

Aichi Biodiversity Targets:

SDGs

Strategy 21: Undertake institutional strengthening required to manage invasive species effectively.

Actions	**National Targets**	**Lead Agency and Potential Partners**
1. Strengthen invasive species management coordination.	21.1.1 Coordinate invasive species activities through a national network by 2020.	Lead agency: MEIDECC Potential partners: MAFF, Customs and Revenue, Toloa, MoFinance
2. Improve invasive species management infrastructure.	21.2.1 Review and improve Tonga's invasive species management facilities and equipment.	Lead agency: MEIDECC, MAFF Potential partners: donor agencies
3. Train quarantine staff in identification of potential new invasive species.	21.3.1 By 2025, train quarantine staff with background on invasive species management and biosecurity, entomology, conservation biology, and botany to identify and respond to invasive species occurrences.	Lead agency: MAFF Potential partners: MEIDECC to work with MAFF-Research Section

National Objective 3: Strengthen procedures for management control of invasive species.

Aichi Strategic Goals:
B: Reduce the direct pressures on biodiversity and promote sustainable use.
E: Enhance implementation through participatory planning, knowledge management and capacity building.

Aichi Biodiversity Targets:

SDGs

Strategy 22: Systems are in place to generate baseline information on the status and distribution of invasive species, and to detect changes, including range changes and emerging impacts.

Actions	**National Targets**	**Lead Agency and Potential Partners**
1. Establish a national risk assessment system for invasive terrestrial, freshwater, and marine species.	22.1.1 Identify and prioritize invasive species by 2021.	Lead agency: MEIDECC, MAFF Potential partners: SPREP, International Relevant Agencies
2. Establish biosecurity mechanisms to prevent the spread of invasive species across international or internal borders and quickly detect and respond to those that arrive.	22.2.1 By 2022, improve inspection and treatment procedures to reduce the risk of new invasive species threats to Tonga and enforce inter-island biosecurity.	Lead agency: MAFF Potential partners: MEIDECC, Police, MoRC, MOFI
3. Adapt the generic SPC Emergency Response Plan (ERP) to address threats to the natural heritage and livelihoods of the people of Tonga.	22.3.1 By 2020, establish inter-agency cooperation. 22.3.2 By 2022, ERP drafted & endorsed.	Lead agency: MAFF, MEIDECC, Potential partners: MOF, Marine & Ports
4. Restore sites and biodiversity after invasive species management is carried out.	22.4.1 By 2024, complete baseline studies and implement management actions using native species in selected sites.	Lead agency: MAFF, MEIDECC, Potential partners: MoF, Marine & Ports, MLNR

THEMATIC AREA 6: LOCAL COMMUNITIES, CIVIL SOCIETY AND PRIVATE SECTOR

Ecosystem services provide benefits to people that support livelihoods and human well-being, such as by generating income or providing nutritional diversity in diets. The quality and type of benefits received from ecosystem services depend on biological processes, creating socio-ecological systems. The concept highlights that people and nature are tightly linked. The presence, recognition, and distribution of ecosystem services and their benefits drive societal choices and can create or reduce livelihood options. Human actions and land/marine-use choices affect the processes that provide ecosystem services, and their flow and distribution. These feedbacks and complexities highlight the fact that beneficiaries (people) and providers (ecosystems) of ecosystem services are intrinsically linked. Involvement of communities and the civil sector is vital because their future quality of life depends on how they use the finite resources available to them.

Causes and consequences of diminishing ecosystem services
Unsustainable levels of exploitation of ecosystems and the resultant loss of ecosystem services will continue unless we address pressures from unplanned conversion of land into residential areas, unsustainable removal of trees for timber and firewood, haphazard town expansion and encroachment, and other unsustainable forms of resource exploitation.

National constitution, legal and Institutional framework
Local communities and the Civil Society Forum of Tonga (CSFT) are bound to national legislation related to environmental management. CSFT fully supports the development of the NBSAP. It is also conscious that the development of the NBSAP should be in accordance with Article 6(a) of the CBD and is the cornerstone to fulfilling the requirement of Article 6(b) to mainstream biodiversity and the three objectives of the CBD. This should occur across all sectors of government, as well as economic sectors, and involve other actors who have an impact on biodiversity, through relevant sectoral or cross-sectoral plans, programs, and policies. An NBSAP developed in isolation from other sectoral policies and programs will be ineffective in protecting biodiversity and the integrity of critical ecosystem functions.

CSFT programmes of action are derived from the TSDF and its national plans, such as the NBSAPs and JNAPs. With these plans, NGOs are able to mobilise resources to enable the implementation of community plans or proposed projects. CSFT actions also form an important gateway for integrating biodiversity and ecosystem management with other sectors through the EIA process.

Basis for Action
CSFT advocates for sustainable development as a vital tool to achieve a stable government and healthy society where there is an equal emphasis on the three pillars of sustainability: social, economic, and environmental.

CSFT presents a good opportunity to implement community-based initiatives to empower and mobilize rural-based communities in the Island Groups to take the lead in sustainable resource management at the local level and, at the same time, generating global environmental benefits.

With the provision of GEF Small Grants Programme (SGP) funding, CSFT is able *to* pursue a more engaging and collaborative partnership with the Local Government Offices and the

Planning Officers in identifying priority areas at the Island Group and District level, as well as creating synergies in planning, implementation, and monitoring processes. CSFT delivery will also continue through the SGP national network and traditional partners, including Provincial/District Offices, NGOs, CBOs, academia, and relevant government agencies mandated in areas of Agriculture, Forestry, Sustainable Land Use, Climate Change, International Waters, and PoPS.

Sectoral action and mainstreaming into development and community livelihoods are priorities, with the objective of eliminating extreme poverty as well as preparing them to adapt to and mitigate the impact of climate change. This is the most challenging part for the CSO as they do not have the mandatory power to implement and enforce mainstreaming of biodiversity into national plans and policy. What we can do is to ensure that the conservation initiatives that the CSO sector are undertaking align with the national development framework and complement each of the NGO focal areas of work. The CSFT Plan is designed to maximize its influence by immersing itself in conservation initiatives by encouraging community-based conservation.

THEMATIC AREA 6: LOCAL COMMUNITIES, CIVIL SOCIETY AND PRIVATE SECTOR - National objectives to meet relevant Aichi Strategic Goals Targets and SDGs

National Objective 1: To attain sustainable development through integrated community efforts.

Aichi Strategic Goals:
A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society.
B: Reduce the direct pressures on biodiversity and promote sustainable use.
D: Enhance the benefits to all from biodiversity and ecosystem services.

AICHI TARGETS:

SDGs

Strategy 23: Strengthen the capability of communities to sustainably manage their natural resources.

Actions	**National Targets**	**Lead Agency and Potential Partners**
1. Use every opportunity to advance formal partnerships with private sector and civil society organizations to collaborate and co-implement conservation initiatives.	23.1.1 By 2020, fully establish the network between private sector/NGOs and government sectors.	Lead agency: MEIDECC Potential partners: NGOs and private sectors, relevant government agencies

2. Strengthen community-based approaches and market mechanisms for the sustainable use of biodiversity established in production landscapes/seascapes, (including agriculture, forests, fisheries, and tourism).	23.2.1 By 2025, create awareness on the standards and quality issues on marketable products. 23.2.2 By 2030, establish green payments from public funds, which rewards producers for good conservation practices. 23.2.3 By 2030, develop market-based environmental standards and certifications that add value to products and services, such as those that promote farming practices that alleviate poverty and enhance biodiversity.	Lead agency: MTED, Tourism, Fisheries (MOF), Potential partners: MEIDECC, MoH, MAFF, and relevant regional organisations
3. Strengthen involvement of local communities in applying nature-based solutions.	23.3.1 By 2025, formulation and implementation of outer island and rural development programs through local communities includes the application of nature-based solutions to benefit biodiversity conservation, livelihoods and human well-being. 23.3.2 By 2025, increase public participation, from a 2018 baseline, in community environment conservation programmes combined with other programs that promote alternative livelihoods and alleviate poverty.	Lead agency: MEIDECC, MOF, MAFF Potential partners: MIA, PMO, MOI
4. Strengthen the involvement of youth and women in the design and management of projects, and ensure equitable share of benefits to all levels in society, including the elderly, those with disabilities, and other vulnerable groups.	23.4.1 Improve gender equality by implementing the government's gender development policy, with 60% being achieved by 2030. 23.4.2 Improve services for the elderly and other vulnerable groups, including investigation of the potential private sector role, with 60% being achieved by 2030. 23.4.3 Instill discipline, basic life skills and good values in the youth, in particular addressing the needs of those who are unemployed, by promoting youth development programmes, including community economic development and the consideration of a National Youth Service with 50% being achieved by 2030.	Lead agency: MIA, MEIDECC Potential partners: Civil Society, Tourism, PMO, Red Cross, and other relevant NGOs
5. Strengthen the value of Tonga's cultural traditions, community historical sites,	23.5.1 By 2030, 80% of the following is achieved: Cultural awareness, environmental sustainability, disaster risk management, and climate change adaptation, integrated into all planning and implementation of programs, by	Lead agency: MIA, MEIDECC, MoET Potential partners: Civil Society, Tourism, PMO, Red Cross, and other relevant NGOs

and cultural awareness programmes.	establishing and adhering to appropriate procedures and consultation mechanisms. 23.5.2 Within an evolving culture, the value of Tonga's cultural traditions are integrated into national policy and plans by 2030.	
6. Strengthen community awareness programmes regarding opportunities for development projects in local communities.	23.6.1 By 2030, 60% is achieved for strong conservation inclusive of communities, by engaging districts/villages/communities in meeting their service needs and ensuring the prioritized and equitable distribution of development benefit. 23.6.2 By 2030, communities appreciate the importance of environmental impact assessments for major development projects by complying with its legislation	Lead agency: MEIDECC, Fisheries Potential partners: Civil Society, Tourism

THEMATIC AREA 7: ACCESS AND BENEFIT SHARING FROM THE USE OF GENETIC RESOURCES AND TRADITIONAL ECOLOGICAL KNOWLEDGE

One of the main objectives of the Convention on Biological Diversity is to ensure the equitable sharing of benefits from the use of genetic resources. To date, foreign interests have benefited both financially and academically from the use of Tonga's genetic resources with almost none of it returning to the traditional scientists that nurtured and first identified the pharmaceutical, ornamental, or economic value of such resources, and to the country where the resources were found. It is local scientists' rights that have been infringed here and the collective national rights.

Furthermore, the ownership of such genetic resources now resides with most of these outside interests. Tonga, therefore, needs to put in place legal frameworks and infrastructure to facilitate the continual availability of its genetic resources for future scientific purposes. Incorporation of traditional knowledge into policy and management frameworks is part of building knowledge/science management capacity.

Causes and consequences

The conversation about access benefit sharing (ABS) is often only about external concerns (sharing knowledge outside of Tonga), but there are aspects that should be addressed internally as well, part of valuing this knowledge and ensuring it benefits Tongans. Much of the traditional knowledge throughout the world is being lost due to generational changes, and the environmental changes brought on by development and climate change are outpacing the creation and transmission of traditional knowledge and science. Formalising the inclusion of this knowledge can help preserve, create and incorporate it into national planning.

National constitutional, legal and institutional framework

A legal framework and the organizational capacity to regulate access and prevent the unlawful exploitation of Tonga's genetic resources are vital. 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 multiagency mechanisms should be considered to ensure effective coordination of all agencies with shared interests and expertise to offer.

Basis for Action

Tonga's genetic resources have the potential to generate financial and academic benefits to those who use them. 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 resource owners and holders of knowledge. One of the major objectives of the Convention on Biological Diversity is to ensure regulatory regimes are developed in each country to protect against illegal bioprospecting, and the inequitable sharing of benefits from the use of genetic resources and traditional knowledge.

Through the consultation process, the following key actions were identified:

- Develop legal and institutional frameworks to safeguard Tonga's genetic resources;
- Ensure the fair and equitable sharing of benefits generated from the use of genetic resources;
- Safeguard traditional practices and ecological knowledge; and
- Increase public awareness of the values of genetic resources.

THEMATIC AREA 7: ACCESS AND BENEFIT SHARING FROM THE USE OF GENETIC RESOURCES AND TRADITIONAL ECOLOGICAL KNOWLEDGE – National objectives to meet relevant Aichi Strategic Goals and Targets and SDGs

National Objectives 1: To prevent illegal access to and unlawful exploitation of Tonga's genetic resources.

Aichi Strategic Goals:
C: To improve the status of biodiversity by safeguarding ecosystems, species, and genetic diversity.
D: Enhance the benefits to all from biodiversity and ecosystem services.
E: Enhance implementation through participatory planning, knowledge management, and capacity-building.

Aichi Targets:

SDGs:

Strategy 24*: D*evelop legal and institutional frameworks to safeguard Tonga's genetic resources.

Actions	**National Targets**	**Lead Agency and Potential Partners**
1. Review and strengthen existing arrangements governing the review and approval of all research proposals, including bio-prospecting activities.	24.1.1 By 2025, complete a legislative review for safeguarding Tonga's genetic resources.	Lead agency: MEIDECC Potential partners: Fisheries, MTED, AGO, MLNR, PMO, Fisheries
2. Enact legislation to regulate access to Tonga's genetic resources for bioprospecting, research, and other forms of exploitation in alignment with the Nagoya Protocol.	24.2.1 By 2030, Tonga has legislation in place to regulate access to Tonga's genetic resources for bioprospecting, research, and other forms of exploitation 24.2.2 By 2030, Tonga has legislation with appropriate measures to protect and safeguard ownership of traditional ecological knowledge and other intellectual property rights associated with	Lead agency: MEIDECC Potential agency: AGO, MTED, Fisheries, MLNR, PMO

	them, and ensure equitable benefit sharing resulting from their commercial use.	
3. Develop and implement strict procedures to regulate and implement legislation pertaining to research and other forms of exploitation.	24.3.1 By 2030, guidelines and procedures will be in place for the regulating of access to information and sharing of benefits derived from genetic resources in alignment to the Nagoya Protocol	Lead agency: MEIDECC, MTED, Fisheries, MLNR, PMO

National Objective 2: To ensure the fair and equitable sharing of benefits generated from the use of genetic resources.

Aichi Strategic Goals:
C: To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity.
D: Enhance the benefits to all from biodiversity and ecosystem services.
E: Enhance implementation through participatory planning, knowledge management and capacity-building.

Aichi Targets:

SDGs:

Strategy 25: Safeguard the interests of holders of traditional knowledge and owners of resources.

Actions	**National Targets**	**Lead Agency and Potential Partners**
1. Develop a mechanism that would ensure protection and sharing of traditional ecological knowledge, and outcomes from academic and institutional research.	25.1.1 By 2030, a system will be in place to register and monitor research requests and reports. 25.1.2 By 2030, local owners of resources and traditional eco-knowledge are well informed of the procedures for access and benefit sharing through various workshops, meetings and one on one consultations.	Lead agency: MTED, MEIDECC, MIA Potential partners: Tourism, Fisheries, MoET, PMO, Civil Society and other relevant NGOs
2. Put in place appropriate mechanisms and procedures to ensure fair and equitable outcomes of negotiations with bio-prospectors for all local parties involved.	25.2.1 By 2030, appropriate mechanisms and procedures will be in place to ensure fair and equitable outcomes of negotiations with bio-prospectors.	Lead agency: MEIDECC, MTED, MAFF, Fisheries Potential partners: PMO, MLNR, academic institutes and regional partners
3. Engage custodians and holders of traditional knowledge related to traditional medicines, resource	25.3.1 By 2030, establish a system to capture, document, and store traditional	Lead agency: MEIDECC, MIA, MTED

harvesting and management practices, and so forth.	ecological knowledge (TEK) so it won't be lost.	Potential partners: Tourism, PMO, Fisheries
4. Promote awareness and use of traditional ecological knowledge and practices that are environmentally friendly and sustainable.	25.4.1 By 2030, mainstream TEK in school curriculums or into teaching materials. 25.4.2 By 2030, communities will be aware of their TEK rights through the use of a range of media types, workshops, ongoing dialogues with various stakeholders from government, NGOs, and experts.	Lead agency: MoET, MEIDECC, MIA Potential partners: Fisheries, media outlets, Tourism, NGOs
5. Preserve traditional artifacts and other forms of expressions of traditional ecological knowledge through national planning, in local museums and other secured collections and promote their existence, educational, and awareness raising values.	25.5.1 By 2030, establish a facility to store traditional artifacts and other forms of expressions, and genetic resources for promoting their existence, as well as for educational and awareness-raising purposes.	Lead agency: PMO Potential partners: MoET, MEIDECC, MIA Fisheries, media outlets, Tourism, NGOs

THEMATIC AREA 8: MAINSTREAMING BIODIVERSITY

The Tonga Strategic Development Framework (TSDF) 2015-2025[19] has been prepared after wide consultations with communities, the private sector, community social organisations, and development partners. It sets out the broad framework for our development over a 10-year period. Under the broad framework, implementation of biodiversity conservation falls under the national outcome: land, environment, and climate. To ensure more inclusive and sustainable access to well-maintained and protected resources, the TSDF II requires supporting government outputs to place greater focus on ensuring that their services better address the environment, disaster management, and other needs across the Kingdom.

Mainstreaming biodiversity into national plans and important trade sectors such as agriculture, fisheries, and forestry is vital for economic sustainability. This section describes specific tools and strategies that can be used to mainstream biodiversity concerns into sector and cross-sector plans and programmes. These tools and strategies which can be used as entry points for mainstreaming, include incorporating biodiversity into national development poverty reduction strategies. In addition, strategic environmental assessments (*SE*As) are an important tool for mainstreaming through application of the ecosystem goods and services approach using financial and economic tools.

Biodiversity "mainstreaming" is critical to achieving the long-term vision of a better balance between human activities and conserving the biological resources that sustain them. Some areas where mainstreaming can help to reduce the underlying pressures include: changing public attitudes; linking conservation with poverty reduction; spatial planning to protect areas of particular importance to biodiversity and ecosystem services; use of the tax system; and other incentives to promote positive action. These types of actions can help to ensure that impacts on biodiversity are routinely evaluated across government departments and offer support in developing strategies to make consumption and production more sustainable, including consideration of a country's impact on remote ecosystems.

Causes and consequences of not mainstreaming biodiversity into planning
National strategies have not been fully effective in addressing the main drivers of biodiversity loss. However, the revised NBSAP is one way of helping to mainstream biodiversity to address biodiversity loss. Continuous engagement with the various sectors within the established Committees that addresses environmental issues is important and can ensure that strategies and actions under the NBSAP are effectively addressed and mainstreamed into sector plans for implementation.

Prior to the NBSAP, sector plans were developed in silos, which led to duplication of effort in programmes being implemented, overlapping challenges, fragmented legislation, and so forth. Targets have been developed under the NBSAP to assist with monitoring biodiversity status and trends to be in line with the 2020 Aichi Targets.

Tonga has invested in efforts to reduce biodiversity loss through increased monitoring, increased law enforcement, incentives for sustainable development, and the creation of new protected *a*reas, but it remains to be seen whether our efforts will make a difference in the long run.

National constitutional, legal and institutional framework
There is no legislation pertaining to mainstreaming biodiversity into sector plans. However, there are plans and legislation that do support biodiversity conservation (Appendix C).

Basis of Action
The economic survival of various production sectors on which the people of Tonga depend is intricately connected to the conservation and sustainable use of biodiversity. Mainstreaming biodiversity conservation is perceived to be the most efficient and effective means of enabling a coordinated and systematic approach to biodiversity conservation. Mainstreaming will require the uptake of biodiversity monitoring, management, and review across all levels and sectors of government.

Through the consultation process, the following key actions were identified:

- Strengthen national biodiversity coordination mechanisms between sectors;
- Strengthen coordination amongst government and relevant stakeholders; and
- Strengthen synergies/linkages with TSDF II and other related sectors.

THEMATIC AREA 8: MAINSTREAMING CONSERVATION – National objectives to meet relevant Aichi Strategic Goals and Targets and SDGs

National Objective 1: To strengthen national collaboration among sectors for the sustainable use and management of biodiversity in Tonga.

Aichi Strategic Goals:
B: Reduce the direct pressures on biodiversity and promote sustainable use.
C: Improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity.
E: Enhance implementation through participatory planning, knowledge management and capacity building.

Aichi Targets:

SDGs

Strategy 26: Strengthen the policy and legislative framework for sustainable use and management of biodiversity in Tonga.

Actions	**National Targets**	**Lead Agency and Potential Partners**
1. Strengthen the legislative framework to manage Tonga's unique biodiversity.	26.1.1 By 2027, effectively implement the NBSAP across relevant sectors. 26.1.2 By 2030, compliance and enforcement legislation and policies take into account biodiversity and livelihoods that rely on functioning ecosystem services.	Lead agency: MEIDECC, PMO Potential partners: MAFF, Fisheries, MoET, NGOs, Finance, MLNR, Tourism, Marine & Ports
2. Strengthen networking and coordination mechanisms between sectors for integrated implementation of NBSAP.	26.2.1 By 2025, mainstream biodiversity conservation into the TSDF II. 26.2.2 By 2025, mainstream biodiversity and ecosystem services into corporate sector plans through strong engagement of members in existing multisectoral environmental coordinating committees.	Lead agency: MEIDECC, MAFF, Fisheries, Tourism, MLNR Potential partners: Marine & Ports, NGOs, MIA, MFA, MoET, MTED.
3. Create opportunities for representatives of the private sector and conservation NGOs to sit on national coordinating committees dealing with different environmental issues.	26.3.1 By 2018, NGO and private sector representatives will be part of the National Environment Coordinating Committees for decision making.	Lead agency: MEIDECC Potential partners: Civil Society, NGOs and private sector.
4. Strengthen the protected area network to be ecologically representative of Tonga's ecosystem types.	26.4.1 By 2030, expand the protected area network and ensure it is representative of ecosystem types in Tonga, with functional corridors.	Lead agency: MEIDECC, MLNR, Fisheries, MAFF Potential partners: MOFNP, Tourism.

5. Improve financial planning and establish financial mechanisms to secure and maintain funding to drive biodiversity initiatives.	26.5.1 By 2025, establish and properly resource a Coordinating Section, with personnel, at the Department of Environment responsible for coordinating the implementation, monitoring, and reporting of the NBSAP. 26.5.2 By 2025, secure both short- and long-term external funding sources to finance biodiversity activities. 26.5.3 By 2025, secure funding from government recurrent budgets annually with relevant line Ministries for NBSAP implementation. 26.5.4 By 2030, establish a "trust fund" (maybe in close collaboration or jointly with related schemes such as "Climate Change Trust Fund") .	Lead agency: MEIDECC, MAFF, Fisheries, Tourism, MLNR Potential partners: NGO, MoFinance, and donor agencies.
6. Establish or strengthen legal and policy frameworks and their enforcement backed by an effective financial mechanism.	26.6.1 By 20*25*, establish a financial mechanism and legal framework to support enforcement and compliance work for protected areas.	Lead agency: MEIDECC, MLNR, MAFF, Fisheries, Finance Potential partners: MTED, MoET, Tourism,
Strategy 27: Develop an integrated land-use plan.		
Actions	**National Targets**	**Lead Agency and Potential Partners**
1. Prepare national land use planning for Tonga	27.1.1 By 2030, develop land use plans and finalise land use policy.	Lead agency: MLNR, MEIDECC, MAFF Potential partners: NGOs, private sectors and communities.
2. Strengthen capacity for mapping and GIS-based management, including data management.	27.2.1 By 2027, complete GIS and Lidar surveys for all outer islands. 27.2.2 By 2027, undertake hydrological surveys for water-use management.	Lead agency: MLNR Potential partners: MEIDECC, Fisheries, MAFF, Tourism
Strategy 28: Enhance awareness, communication and knowledge management for biodiversity.		
Actions	**National Targets**	**Lead Agency and Potential Partners**
1. Increase awareness of protected area approaches relevant to community livelihoods.	28.1.1 By 2025, maintain protected areas for priority species relevant to community livelihoods.	Lead agency: MEIDECC, MAFF, Tourism, Fisheries Potential partners: NGOs, MLNR
2. Improve communication between Government/NGOs and associated	28.2.1 By 2025, develop a communication strategy on good	Lead agency: MEIDECC, MAFF, Tourism, Fisheries

institutions for biodiversity and food security.	practices and sustainable use of biodiversity.	Potential partners: NGOs, MLNR
3. Share good practices and lessons learned for protected areas, both marine and terrestrial, to contribute to community livelihoods.	28.3.1 By 2025, good practices and lessons learned for protected areas are well documented and shared with the public, and they are implemented by communities on the ground with technical assistance from government.	Lead agency: MEIDECC, MAFF, Tourism, Fisheries Potential partners: NGOs, MLNR
4. Knowledge management and data sharing.	28.4.1 By 2025, establish a National Clearing House mechanism. 28.4.2 By 2025, develop a national environmental database for multiple users.	Lead agency: MEIDECC, MAFF, Tourism, Fisheries Potential partners: NGOs, MLNR
5. Strengthen synergistic implementation, monitoring, and reporting to meet MEA obligations.	28.5.1 By 2027, achieve synergistic implementation and reporting through the NBSAP, supporting other reporting requirements under relevant MEAs.	Lead agency: MEIDECC, MAFF, Tourism, Fisheries Potential partners: NGOs, MLNR
6. Strengthen training in biodiversity and ecosystem-based management in formal education systems at all levels.	28.6.1 By 2025, develop a programme of work to deliver training to teachers.	Lead agency: MEIDECC and MoET Potential partners: Teachers Science Association.
7. Communicate and educate the public through an interactive resources facility.	28.7.1 By 2030, establish an Environment Resource Interactive Center (ERIC) to better inform and educate the public on conservation work in Tonga, and to garner support for conservation.	Lead agency: MEIDCC, MoET Potential partner: Fisheries, MAFF, Tourism,
8. Establish an advocacy campaign to convince leaders to prioritize biodiversity conservation, protection, and sustainable management by mainstreaming biodiversity into national development plans and provide appropriate financial and human resources.	28.8.1 Increase financial and human resources for government institutions by 20% for conservation, protection and sustainable use of natural resources from a 2020 baseline.	Lead agency: MEIDECC, Fisheries, Tourism Potential partners: MLNR, WAL, NGOs, Private sector, regional and international organisations, institutions, and donor agencies
Strategy 29: Strengthen mechanisms for ecosystem-based management, adaptation and mitigation.		
Actions	**National Targets**	**Lead Agency and Potential Partners**
1. NBSAP, JNAP, and National Strategy frameworks are aligned to contribute to climate resilience.	29.1.1 National reporting will include targets under NBSAP, JNAP, NDCs, and other relevant targets for ecosystem-based management, adaptation, and mitigation.	Lead agency: MEIDECC, PMO Potential partners: Fisheries, MAFF, Tourism, Ports Authority, Marine

		and Ports, NGOs and partners
2, Promote adaptation for coastal protection and shoreline changes, including ecosystem-based disaster risk reduction.	29.2.1 By 2022, develop a State of the Coast report. 29.2.2 By 2027, develop coastal management plans, including consideration of economic development aspects.	Lead agency: MLNR, MEIDECC, Fisheries Potential partners: Ports Authority, Marine and Ports, NGOs and private sector
3. Improve food security and community livelihoods by increasing resilience of ecosystems, including agriculture, forests, and coastal and marine systems, to climate change and extreme events.	29.3.1 By 2025, planning by all sectors will apply the ridge to reef approach and consider nature-based solutions to increase ecosystem resilience and support food security.	MAFFF, MEC, MLSNR, NGO, PMO
Strategy 30: Mainstream biodiversity into cross-sectoral community planning and management.		
Actions	**National Targets**	**Lead agency and Potential Partners**
1. Increase community participation in planning, implementation, and monitoring as appropriate.	30.1.1 By 2020, communities are engaged in all planning, implementation, and monitoring for biodiversity management, including information collection.	Lead agency: MIA, PMO, MEIDECC Potential partners: MAFF, NGO, MoFinance
2. Strengthen synergistic, cross-sectoral management of biodiversity.	30.2.1 By 2020, there is commitment to cross-sector implementation of the NBSAP.	Lead agency: PMO, MEIDECC, MAFF, Fisheries, MLNR, Tourism Potential partners: NGOs, private sector, Academia, International organisations
3. Strengthen community participation in planning and management of biodiversity.	30.3.1 By 2025, mainstream biodiversity into community development plans.	Lead agency: MEIDECC, MAFF, Fisheries, Tourism, NGO, PMO Potential partners: MoFinance.
4. Strengthen development control processes, such as EIA, to safeguard Tonga's biodiversity.	30.4.1 By 2025, achieve effective implementation of EIA tools and other development controls.	Lead agency: MEIDECC, Potential partner: VEPA, NGO, MOI, MLNR
5. Establish and develop capacity for operating a biodiversity and climate change early warning system using earth observation.	30.5.1 By 2025, an operational early warning system is directed especially at sites of high biodiversity, including ocean sites, and at sites of high risk due to climate change impacts.	Lead agency: MEIDECC, Fisheries Potential partners: MLNR, Marine & Ports, Tourism

National Objective 2: Enhance and encourage political support towards biodiversity conservation.

Aichi Strategic Goals:
E: Enhance implementation through participatory planning, knowledge management and capacity building.

Aichi Targets:

SDGs :

Strategy 31: Enhance and encourage political support from respective constituencies on forest and biodiversity conservation activities.

Actions	**National Targets**	**Lead Agency and Potential Partners**
1. Engage politicians to lead in biodiversity planning & drive actions.	31.1.1 By 2030, double the number of politicians identified supporting and advocating biodiversity conservation activities from a 2020 baseline. 31.1.2 By 2030, biodiversity or forest conservation supported activities are planned into constituency budgets for implementation.	Lead agency: MEIDECC Potential partners: Civil Society, NGOs, MAFF, MLNR, PMO

THEMATIC AREA 9: FINANCIAL MECHANISMS

Government and donor finances are currently the most important sources of resources for biodiversity conservation in the country. Government and donors offer predictable and generally large quantities of resources for biodiversity conservation activities and are therefore important sources of resources. In addition, the government and donor support systems also form the foundations of the governance arrangements for resource mobilization and compliance, enforcement and monitoring arrangements. Therefore, it is essential that these financing mechanisms continue to be a central component of future biodiversity finance.

Causes and consequences

The majority of biodiversity activities in Tonga have given a strong focus to process aspects -- assessments and planning – rather than on the ground action, resulting in only 21% of NBSAP activities achieving satisfactory levels of implementation to date.[27] The seemingly slow progress toward achieving satisfactory levels of implementation across all eight thematic areas of the NBSAP 2006 can largely be attributed to the significantly limited financial resources afforded to biodiversity conservation and management, and the lack of human resources and capacity development necessary for the implementation of the NBSAP.[28] Consequently, any current or future endeavours to achieve satisfactory levels of implementation require a significant increase in both human and financial resources, as well as strengthened coordination and implementation arrangements.

In general, financing for the implementation of the NBSAP is channeled from a country's own public and private sectors. However, given Tonga's status as a Small Island Developing State (SIDs), Overseas Development Aid (ODA) is the main source of funding, and substantial new and additional funding for sustainable development and implementation of the NBSAP will be required. Currently there is significant financing available for biodiversity conservation activities, including financial resources from crosscutting themes such as climate change. Given that these funds will rapidly increase in the near future, it must be recognized that as new and additional biodiversity and crosscutting funding becomes available, Tonga should be in a position to effectively access, manage, and maximize the availability and long-term sustainability of these resources.

National constitutional, legal and institutional framework

Options for improved access to, management, and long-term sustainability of biodiversity resources, at the national level, and where appropriate regional and international options, should be considered. A number of Pacific Island Countries including Tonga have experience with sustainable finance mechanisms such as climate change, and conservation trust funds, as well as other financing modalities, which Tonga can draw from. The long-term sustainability of funding for biodiversity conservation actions can be achieved through the establishment of sustainable finance mechanisms, which calls for innovative ideas and strong political support.

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[27] Government of Tonga (2014**). Kingdom of Tonga's Fifth National Report to the Convention on Biological Diversity**. Department of Environment, Tonga. http://macbio-pacific.info/wp-content/uploads/2017/08/NBSAP-Fifth-Report-2014.pdf

[28] Government of Tonga (2004). **The National Capacity Self-Assessment for Global Environment Management – Stocktaking and Thematic Assessment Report**. Department of Environment, Tonga. https://library.sprep.org/sites/default/files/50_8.pdf

However, biodiversity projects in Tonga are currently funded on a piecemeal project-by-project basis. *All* biodiversity conservation actions are tied to the funding guidelines of the project under implementation. Consequently, coordination between sectors is undertaken for the life of the project and under the direction of the project guidelines. At the conclusion of the project, the communication channels are no longer active, as the funding to support management and coordination between sectors is no longer available. Consequently, it is difficult to gain traction in biodiversity conservation under the project-based funding model.

Therefore, it is vitally important to transition from the current project-by-project support model to a more systemic support model. Importantly, this provides benefits not only through improved financial mechanisms in country and more sustainable investments in biodiversity conservation, but also ensures that Tonga is well-placed to provide critical input into the establishment of a national financing arrangement.

Basis for Action

Payments for environmental services and climate finance are important sources of finance that Tonga is currently exploring. Tonga is considering payments for environmental services initiatives with carbon payments being dominant. There are innovations such as the creation of Tonga's Climate Change Fund, and room to explore other payments for environmental services which are allowing for a pool of international funds.

Informing local groups of potential sources of funding and funding requirements is a necessity for progressing NBSAP activities, and will demand support and coordination from a central government agency with the Department of Environment as the logical candidate for this role.

Through the consultation process, the following key actions were identified:

- Assess national capacities for biodiversity management;
- Develop a donor database;
- Build capacity for proposal writing and resource mobilization;
- Promote economic tools and financing mechanisms for biodiversity conservation; and
- Strengthen partnerships.

THEMATIC AREA 9: FINANCIAL MECHANISMS – National objectives to meet relevant Aichi Strategic Goals and Targets and SDGs

National Objective 1: To assess the capacity of institutions managing biodiversity conservation.

Aichi Strategic Goals:
E: Enhance implementation through participatory planning, knowledge management and capacity building.

Aichi Targets:

SDGs

Strategy 32: Conduct a national capacity self-assessment to identify existing capacity needs for implementing the NBSAP.

Actions	National Targets	Lead agency and Potential Partners
1. Implement a National Capacity Self-Assessment (NCSA) project to identify areas of capacity needs.	32.1.1 By 2025, implement a National Capacity Self-Assessment tool.	Lead agency: MEIDECC Potential partners: MAFF, MLNR, MIA, MTED, Tourism, MoET, Fisheries, NGOs and related Associations
3. Develop a capacity building programme based on the result of the NCSA to build capacity across all sectors involved in NBSAP implementation.	32.2.1 By 2025, implement a capacity building programme.	Lead agency: MEIDECC, MAFF, Tourism, MLNR, Fisheries

National Objective 2: To further strengthen effective partnerships with key local, regional and international organisations to support implementation of biodiversity conservation programmes

Aichi Strategic Goals:
E: Enhance implementation through participatory planning, knowledge management and capacity building.

Aichi Targets:

SDGs

Strategy 33: Document information on current and potential funding sources and their requirements for assistance. The information should be readily accessible to all potential implementers of the NBSAP to facilitate access and solicitation of funds and other forms of assistance.

Actions	National Targets	Lead Agency and Potential Partners
1. Develop a donor 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.	33.1.1 By 2025, establish a donor database for potential implementers of the NBSAP.	Lead agency: MEIDECC Potential partners: MAFF, MLNR, Fisheries, Tourism, Finance, Civil Society
2. Coordinate proposal formulation and fund-raising activities with regional implementing agencies including PIFs, FFA, SPTO, SPREP, SPC, and SOPAC to ensure inclusion of Tonga in relevant regional projects or regionally disbursed technical and financial assistance.	33.2.1 By 2025, Tonga will be implementing at least two biodiversity conservation-related projects as a recipient of several donor funds for NBSAP implementation.	Lead agency: MEIDECC, Fisheries, PMO, MAFF, Tourism, MLNR, Civil Society.
3. Organize public meetings and workshops to explain different funding mechanisms and applications/eligibility requirements	33.3.1 By 2025, 80 percent of participants in public meetings and workshops will understand the funding schemes for conservation activities.	Lead agency: MEIDECC, Fisheries, PMO, MAFF, Tourism, MLNR, Finance, Civil Society.

Strategy 34: Provide formal training in proposal writing and fund-raising planning for all local implementing organizations, including NGOs, to enhance their capacity to attract donor funding to biodiversity conservation in Tonga.

Actions	National Targets	Potential Partners
1. Organize formal short training in proposal writing and fund-raising planning for NGOs and government agencies.	34.1.1 By 2020, provide annual training to NGOs, Government, and the private sector on proposal writing.	Lead agency: MEIDECC, Fisheries, PMO, MAFF, Tourism, MLNR, Finance, Civil Society.
2. Encourage contact with international conservation NGOs and, where possible, provide them with reports on work carried out in Tonga.	34.2.1 By 2020, strengthen networking and partnerships with international bodies to help achieve NBSAP targets.	Lead agency: MEIDECC, Civil Society, Fisheries, Tourism, Finance
3. Facilitate opportunities for major donor organizations to meet and promote conservation funding programmes with local implementing organizations.	34.3.1 By 2025, establish a dedicated forum for the purpose of meeting with major donor organisations to fund conservation programmes.	Lead agency: MEIDECC and Finance Potential partners: Fisheries, MAFF, MLNR, Tourism
4. Update implementing organizations and other local NGOs with up-to- date information on available opportunities for funding biodiversity activities, as they come on hand.	34.4.1 By 2025, regularly update online portals for donors to observe local progress on conservation activities.	Lead agency: MEIDECC and Finance Potential partners: Fisheries, MAFF, MLNR, Tourism
5. Conduct workshops to explain to local NGOs and other eligible implementing agencies the different donors' eligibility requirements and procedures for accessing funds.	34.5.1 By 2025, hold at least 2 information sharing workshops for local NGOS and eligible implementing agencies on accessing external environmental funds.	Lead agency: MEIDECC and Finance Potential partners: Fisheries, MAFF, MLNR, Tourism
6. 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.	34.6.1 By 2025, an Environment Conservation award will be an annual event given out during Environment Week.	Lead agency: MEIDECC and Finance Potential partners: Fisheries, MAFF, MLNR, Tourism

National Objective 3: To explore economic tools and financing mechanisms for biodiversity conservation.

Aichi Strategic Goals:
E: Enhance implementation through participatory planning, knowledge management and capacity building.

Aichi Targets:

SDGs

Strategy 35: Explore economic tools and financing mechanisms for biodiversity conservation.

Actions	National Targets	Potential Partners
1. Promote the use of economic instruments such as permit and access fees for bio-prospecting, eco-tourism fees, EIA related levies, national lotteries, and other gaming revenues to fund a national sustainable financing mechanism for biodiversity.	35.1.1 By 2025, conduct a review of existing economic instruments that support conservation. 35.1.2 By 2025, develop a report with recommendations on a sustainable financing mechanism to support biodiversity conservation.	Lead agency: MEIDECC Potential partners: Fisheries, Tourism, MLNR, Finance.
2. Explore the feasibility of setting up a national sustainable financing mechanism for biodiversity conservation.	35.2.1 By 2030, establish an Environment Trust Fund, or the like, to sustainably support eco-projects.	Lead agency: MEIDECC and Finance Potential partners: Fisheries, Tourism, MLNR.

3.0 COMPLEMENTARY IMPLEMENTATION PLANS

Table 6 presents a summary of action plans already in place to support each of the thematic areas discussed in this NBSAP. The capacity development actions for NBSAP implementation, including a technology needs assessment, are addressed in the Implementation Plans for each Thematic Area. The human and technical needs to implement the thematic area actions and how they may be mobilized are described in the implementation plans.

In addition to the financial mechanism efforts described in Thematic Area 9, each implementation plan also considers resource mobilization for NBSAP implementation and how resources will be mobilized through all sources, including the domestic budget, external assistance (where relevant), and innovative financial mechanisms.

Tonga is committed to inclusive implementation.

Table 6: Sector implementation plans

Thematic Areas	**Related Implementation Plan from various Sectors**
1. Forestry Ecosystem	Management Plan for Forest and Tree Resources of Tonga 2017 Toloa Forest Operation Plan 2014-2020 Tonga National Invasive Species Strategic Action Plan 2014-2020
2. Marine and Coastal Ecosystems	Fanga'uta Stewardship Action Plan 2017-2021 Tonga National Action Plan for Shark 2014-2016 Tonga Fisheries Sector Plan 2016-2024 Maninita, Taula and Lualoli Park Management Plan Tonga Ocean Management Plan (MSP) Tonga Deepwater Fishery Management Plan Ministry of Fisheries Corporate Plan and Budget MEIDECC Corporate Plan 2018-2021
3. Agro Biodiversity	Tonga Agriculture Sector Plan 2016-2020 Fanga'uta Stewardship Action Plan 2017-2021 Tonga National Invasive Species Strategic Action Plan 2014-2020
4. Species Conservation	Tonga Revised National Action Plan for Shark 2018-2022 Tonga Fisheries Sector Plan 2016-2024 Toloa Forest Operation Plan 2014-2020 Tonga Deep Water Snapper Fisheries Management Plan 2020-2023 Tonga National Sea Cucumber Fishery Management and Development Plan Tonga National Tuna Fishery Management and Development Plan 2018-2022
5. Invasive Alien Species	Tonga National Invasive Species Strategic Action Plan 2014-2020
6. Local Community and Civil Society	Community Management Plans for SMAs; Community Development Plans.

7. Access and Benefit Sharing from the Genetic Resources and Traditional Ecological Knowledge	Tonga Private Sector Development Strategy Tonga Joint National Action Plan 2 for Climate Change and Disaster Risk Management MEIDECC Corporate Plan 2018-2021
8. Mainstreaming Biodiversity Conservation	Tonga National Invasive Species Strategic Action Plan 2014-2020 Management Plan for Forest and Tree Resources of Tonga 2017 Tonga Fisheries Sector Plan 2016-2024 Tonga Agriculture Sector Plan 2016-2020 Tonga Private Sector Development Strategy Vision for Health Sector in Tonga Ministry of Education and Training Corporate Plan in Tonga Tonga Tourism Sector Roadmap MEIDECC Corporate Plan 2018-2021 Tonga Joint National Action Plan 2 for Climate Change and Disaster Risk Management Ministry of Finance Corporate Plan 2018-2022
9. Financial Resources and Mechanisms	Tonga Joint National Action Plan 2 for Climate Change and Disaster Risk Management Tonga National Infrastructure Investment Plan 2013-2023 Ministry of Finance Corporate Plan 2018-2022 Tonga Climate Change Policy - A resilient Tonga by 2035 MEIDECC Corporate Plan 2018-2021

4.0 INSTITUTIONAL MONITORING AND REPORTING

Biodiversity information is crucial to well-informed decision making in the implementation of biodiversity conservation action, yet this information is not readily available. One of the problems is the complexity of biodiversity data in terms of bio-status and distribution. Also, information is dispersed, sometimes outdated, and not available in ready-to-use and compatible formats. Therefore, it is through the sector plans at national level that the sector agencies have identified a monitoring and evaluation framework unique to their needs which reflect the implementation progress mentioned in the previous section.

Baseline information on the status and distribution of biodiversity and natural resources serves as a benchmark for monitoring and the development of biodiversity indicators and trends. Data on the distribution of endemic and native species, their conservation status, the extent and distribution of IAS and other threat information are all critical for the prioritization of conservation action and necessary for reporting and planning future action. Planning action related to the sustainable use of island biodiversity including resource assessment requires socio-economic data- such as data on population and human development, and economic conditions.

Below are some existing monitoring and evaluation frameworks in Tonga in relation to the various thematic areas promoted in this NBSAP, which are monitored and reported by the various national and local sectors in Tonga (Table 7). They contain the data available to inform progress in the implementation of the NBSAP strategic action plan. Note that thematic area 7 seems to be the only area in Tonga where there is poor data collection and an undeveloped M&E framework.

Table 7: National monitoring and evaluation frameworks

Thematic Areas	**Related Sector Monitoring and Evaluation Framework in Place**
1. Forestry Ecosystem	Fanga'uta Lagoon Catchment Monitoring Manual Joint National Action Plan 2 Monitoring & Evaluation System Guide Pacific Islands National Forest Inventory for REDD+ Code of Practise for the Sustainable Management of the Forests/Tree Resources of Tonga Voluntary National Review 2019
2. Marine and Coastal Ecosystems	Fanga'uta Lagoon Catchment Monitoring Manual Joint National Action Plan 2 Monitoring & Evaluation System Guide Framework for Strengthening development of Implementation Plan for MPA in Tonga Integrated Island Biodiversity Project Marine Ecosystem Health Monitoring Program HNC remote Water Quality Monitoring System Voluntary National Review 2019 Marine Ecosystem Rapid Assessment Post TC Harold
3. Agro Biodiversity	Fanga'uta Lagoon Catchment Monitoring Manual Joint National Action Plan 2 Monitoring & Evaluation System Guide

	Voluntary National Review 2019 The State of Tonga's Biodiversity for Food and Agriculture
4. Species Conservation	Fanga'uta Lagoon Catchment Monitoring Manual Framework for Strengthening development of Implementation Plan for MPA in Tonga Voluntary National Review 2019 IUCN Summary Species List for Tonga The State of Tonga's Biodiversity for Food and Agriculture
5. Invasive Alien Species	Voluntary National Review 2019 Monitoring Report of Polynesian Megapode in Tonga Battle Invasive Species that threaten Marine Managed Area Invasive Species Early Detection and Early Rapid Response
6. Local Community and Civil Society	Voluntary National Review 2019 Economic Impacts of Natural Hazards on Vulnerable Populations in Tonga Monitoring Framework of the Community Management Plans (SMA) Tonga SMA Report 2020 Review of SMA in Tonga 2017
7. Access and Benefit Sharing from the Genetic Resources and Traditional Ecological Knowledge	*This is yet to be developed.*
8. Mainstreaming Biodiversity Conservation	Joint National Action Plan 2 Monitoring & Evaluation System Guide Voluntary National Review 2019
9. Financial Resources and Mechanisms	Climate Financing and Risk Governance Assessment - Tonga Technical Assistance Report - Climate Change Policy Assessment 2020 Green Climate Fund Country Program for Tonga Economic Impacts of Natural Hazards on Vulnerable Populations in Tonga

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6.0 APPENDIX

APPENDIX A: A BRIEF COMPARISON OF THE STRATEGIC PLAN FOR BIODIVERSITY 2011-2020 AND THE AICHI BIODIVERSITY TARGETS WITH THE FIRST DRAFT OF THE POST-2020 GLOBAL BIODIVERSITY FRAMEWORK

INTRODUCTION

The Kingdom of Tonga's draft National Biodiversity Strategy Framework to 2030 (NBSF), an updated version of its National Biodiversity Strategy and Action Plan, is near finalization. The draft was prepared in reference to, among other documents, the globally agreed Strategic Plan for Biodiversity 2011-2020 and the Aichi Biodiversity Targets (Strategic Plan 2011-2020), which remains in force until superseded by a new agreement.

As the document's title indicates, the draft NBSAP looks forward to the year 2030. Because of the delay in reaching international agreement on a post-2020 global biodiversity framework, it is not possible to incorporate post-2020 framework elements into the document at this time. Consequently, a comparison of the current Strategic Plan 2011-2020 with the First Draft of the Post-2020 Global Biodiversity Framework (Post-2020 Framework) was undertaken. While recognizing that changes will certainly be made to the draft Post-2020 Framework document, this comparison will help determine whether there is a need to anticipate emerging biodiversity issues, which may be considered in the finalization of the NBSF, until such time as a global agreement is reached on a post-2020 framework and subsequently reflected in an updated NBSF at some future date.

CoP 15 was originally to held in Kunming, China 15-28 October 2020, but was postponed due to the covid pandemic, and a decision was made to hold the CoP in two phases. Phase 1, which included a high-level segment, was a virtual conference that took place 10-15 October 2021. The meeting produced the Kunming Declaration which, among other issues, stated that (i) the drivers of biodiversity loss are broadly similar to drivers in climate change, land and ocean degradation and pollution; (ii) protection of biodiversity is vital to economic growth and sustainable development more generally; (iii) achieving successful implementation of the post-2020 biodiversity framework is a defining challenge of this decade; (iv) many countries have called for conserving 30% of the earth's land and sea area by 2030 (30-by-30 target); and (v) national leaders have committed to facilitating implementation, monitoring, reporting and review of the post-2020 biodiversity framework.

According to the Earth Negotiations Bulletin (ENB), participants were concerned that a focus on overall patterns of destruction – particularly unsustainable production and consumption patterns – might be lost to a narrower focus on conservation goals. The ENB reported that, "A focus on goals may also "create a path to failure" without accounting for the consequences of other environmental threats, such as climate change: almost no targets can be achieved by focusing on the remit of the CBD alone, said a participant. Therefore, outcomes in other ongoing negotiations (e.g., fishery subsidies under the World Trade Organization) may provide clear signals regarding the GBF's potential overall ambition."

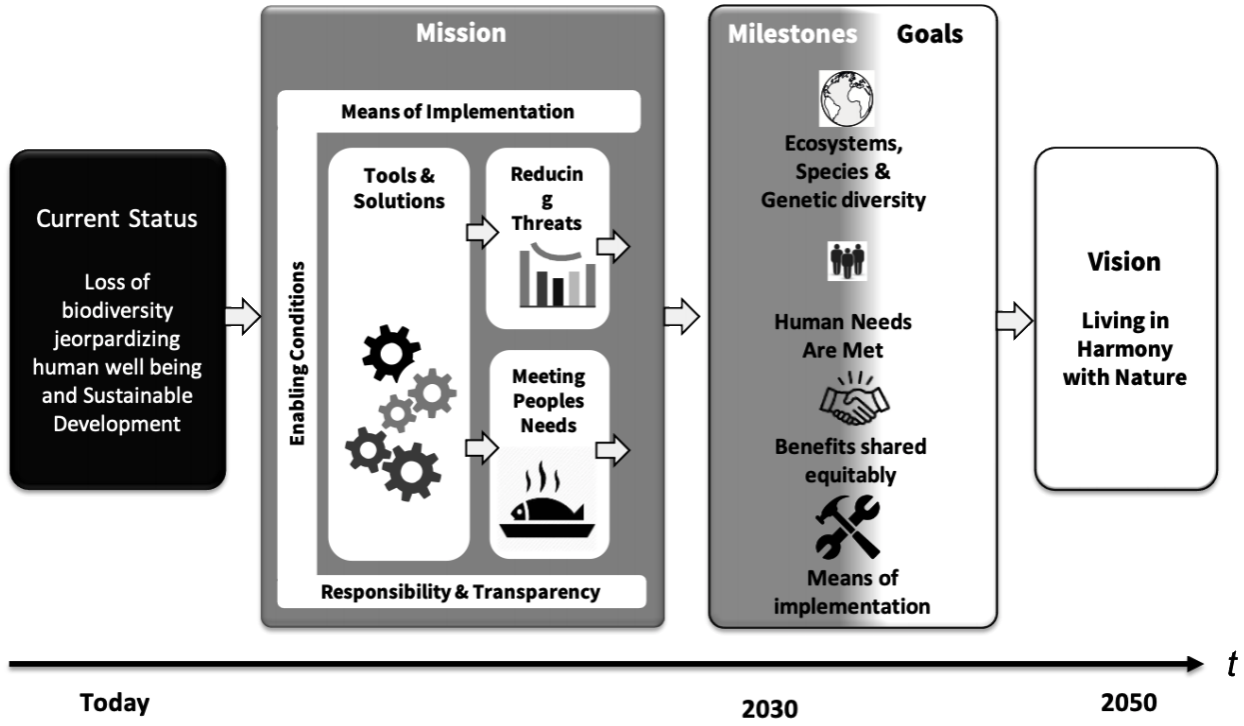
As of the writing of this paper, it is understood that the CoP 15 second phase, a planned face-to-face negotiation, is tentatively scheduled for December 2022 in Montreal with China as host.

MAIN FINDINGS

A. Introductory Sections

The rationale for the Strategic Plan 2011-2020 and the Post-2020 Framework is similar. However, the Post-2020 Framework introduces a "theory of change which recognizes that urgent policy action globally, regionally and nationally is required to transform economic, social and financial models so that the trends that have exacerbated biodiversity loss will stabilize in the next 10 years (by 2030) and allow for the recovery of natural ecosystems in the following 20 years, with net improvements by 2050 to achieve the Convention's vision of 'living in harmony with nature by 2050'." The theory of change is illustrated in the following figure:

Figure 1. Theory of change of the framework



The theory of change may be at least partly in response to the fact that previous iterations of global biodiversity agreements have failed to meet their targets. It would seem to be largely in line with the philosophy behind the current draft NBSF.

B. Vision, Goals, Mission and Targets

For this discussion, the reader may wish to refer to the table at the end of this paper, which provides a line-by-line comparison of the vision, goals, mission and targets between the Strategic Plan 2011-2020 document and the draft Post-2020 Framework document.

The **vision** of the draft Post-2020 Framework is unchanged, that is, a world living in harmony with nature where by 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining healthy planet and delivering benefits essential for all people.

The Post-2020 Framework has four **long-term goals for 2050** and a number of milestones for 2030 under each long-term goal, which were not mentioned in the Strategic Plan 2011-2020. Notably, this first draft includes a goal of increasing by at least 15% the area, connectivity and integrity of natural ecosystems. .

The draft Post-2020 Framework has made the framework's **mission** much more concise than its predecessor: to take urgent action across society to conserve and sustainably use biodiversity and ensure the fair and equitable sharing of benefits from the use of genetic resources, to put biodiversity on a path to recovery by 2030 for the benefit of planet and people.

A comparison of the **targets** between the two documents shows, not unexpectedly, that they are generally in line with one another. However, the draft Post-2020 Framework more consistently provides numeric targets rather than targets that are descriptive only. It also lays out more energetic and concise targets for area-based planning and restoration with perhaps more attention to restoring degraded ecosystems. It mentions a need to prevent, manage or control adverse impacts of biotechnology for the first time. It also gives greater attention to documents are broadly overlapping, with the draft Post-2020 Framework having 21 rather than 20 targets.

C. Support Mechanisms and Enabling Conditions

The draft Post-2020 Framework contains some helpful new considerations on support mechanisms and enabling conditions that may be of interest in connection with finalization of the NBSF. Regarding mobilizing resources, the draft Post-2020 Framework suggests, among others, (i) reducing or redirecting resources causing harm to biodiversity; and (ii) preparation of national finance plans to support implementation.

D. Conclusion

It will be helpful to refer to the table below when finalizing the NBSF though, based on this review, the proposed changes introduced in the first draft Post-2020 Framework are unlikely to profoundly influence finalization of the NBSF.

A Comparison of the Strategic Plan 2011-2020 and the First Draft Post-2020 Framework

Strategic Plan for Biodiversity 2011-2020 and the Aichi Biodiversity Targets	First Draft of Post-2020 Global Biodiversity Framework
2050 Vision	
"Living in harmony" where "By 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people."	Unchanged. The same "Vision" is proposed for the post-2020 framework.
Strategic Goals/2050 Goals	
Goal A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society. (Covers Targets 1-4)	Goal A: The integrity of all ecosystems is enhanced with an increase of at least 15 percent in the area, connectivity and integrity of natural ecosystems, supporting healthy and resilient populations of all species, the rate of extinctions has been reduced at least tenfold, and the risk of species extinctions across all taxonomic and functional groups is halved, and genetic diversity of wild and domesticated species is safeguarded, with at least 90 percent of genetic diversity within all species maintained.
Goal B: Reduce the direct pressures on biodiversity and promote sustainable use. (Covers Targets 5-10)	Goal B: Nature's contributions to people are valued, maintained or enhanced through conservation and sustainable use supporting the global development agenda for the benefit of all.
Goal C: Improve the status of biodiversity be safeguarding ecosystems, species and genetic diversity. (Covers Targets 11-13)	Goal C: The benefits from the utilization of genetic resources are shared fairly and equitably, with a substantial increase in both monetary and non-monetary benefits shared, including for the conservation and sustainable use of biodiversity.
Goal D: Enhance the benefits to all from biodiversity and ecosystem services. (Covers Targets 14-16)	Goal D: The gap between available financial and other means of implementation, and those necessary to achieve the 2050 Vision, is closed.
Goal E: Enhance implementation through participatory planning, knowledge management and capacity building. (Covers Targets 17-20)	
Mission/2030 Mission	
The mission of the Strategic Plan is to "take effective and urgent action to halt the loss of biodiversity in order to ensure that by 2020 ecosystems are resilient and continue to provide essential services, thereby securing the planet's variety of life, and contributing to human well-being, and poverty eradication. To ensure this, pressures on biodiversity are reduced, ecosystems are restored, biological resources are sustainably used and benefits arising out of utilization of genetic resources are shared in a fair and equitable manner; adequate financial resources are provided, capacities are enhanced, biodiversity issues and values mainstreamed, appropriate policies are effectively implemented, and decision-making is based on sound science and the precautionary approach."	The 2030 Mission for this framework is: "To take urgent action across society to conserve and sustainably use biodiversity and ensure the fair and equitabe sharing of benefits from the use of genetics resources, to put biodiversity on a path to recovery by 2030 for the benefit of planet and people."

2030 Milestones (in draft Post-2020 Framework only)	
	Goal A: Milestone A.1 Net gain in the area, connectivity and integrity of natural systems of at least 5 per cent. Milestone A.2 The increase in the extinction rate is halted or reversed, and the extinction risk is reduced by at least 10 per cent, with a decrease in the proportion of species that are threatened, and the abundance and distribution of populations of species is enhanced or at least maintained. Milestone A.3 Genetic diversity of wild and domesticated species is safeguarded, with an increase in the proportion of species that have at least 90 per cent of their genetic diversity maintained.
	Goal B: Milestone B.1 Nature and its contributions to people are fully accounted and inform all relevant public and private decisions. Milestone B.2 The long-term sustainability of all categories of nature's contributions to people is ensured, with those currently in decline restored, contributing to each of the relevant Sustainable Development Goals.
	Goal C: Milestone C.1 The share of monetary benefits received by providers, including holders of traditional knowledge, has increased. Milestone C.2 Non-monetary benefits, such as the participation of providers, including holders of traditional knowledge, in research and development, has increased
	Goal D: Milestone D.1 Adequate financial resources to implement the framework are available and deployed, progressively closing the financing gap up to at least US $700 billion per year by 2030. Milestone D.2 Adequate other means, including capacity-building and development, technical and scientific cooperation and technology transfer to implement the framework to 2030 are available and deployed. Milestone D3 Adequate financial and other resources for the period 2030 to 2040 are planned or committed by 2030.
Aichi Biodiversity Targets/2030 Action Targets	
Target 1: By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.	Target 16: Ensure that people are encouraged and enabled to make responsible choices and have access to relevant information and alternatives, taking into account cultural preferences, to reduce by at least half the waste and, where relevant the overconsumption, of food and other materials. Target 20: Ensure that relevant knowledge, including the traditional knowledge, innovations and practices of indigenous peoples and local communities with

	their free, prior, and informed consent, guides decision-making for the effective management of biodiversity, enabling monitoring, and by promoting awareness, education and research.
Target 2: By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.	Target 14: Fully integrate biodiversity values into policies, regulations, planning, development processes, poverty reduction strategies, accounts, and assessments of environmental impacts at all levels of government and across all sectors of the economy, ensuring that all activities and financial flows are aligned with biodiversity values.
Target 3: By 2020, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio-economic conditions.	Target 18: Redirect, repurpose, reform or eliminate incentives harmful for biodiversity, in a just and equitable way, reducing them by at least US$ 500 billion per year, including all of the most harmful subsidies, and ensure that incentives, including public and private economic and regulatory incentives, are either positive or neutral for biodiversity.
Target 4: By 2020, at the latest, Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits.	Target 15: All businesses (public and private, large, medium and small) assess and report on their dependencies and impacts on biodiversity, from local to global, and progressively reduce negative impacts, by at least half and increase positive impacts, reducing biodiversity-related risks to businesses and moving towards the full sustainability of extraction and production practices, sourcing and supply chains, and use and disposal.
Target 5: By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.	See “Multiple Targets” below
Target 6: By 2020 all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem-based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.	See “Multiple Targets” below
Target 7: By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.	Target 10: Ensure all areas under agriculture, aquaculture and forestry are managed sustainably, in particular through the conservation and sustainable use of biodiversity, increasing the productivity and resilience of these production systems.
Target 8: By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.	Target 7: Reduce pollution from all sources to levels that are not harmful to biodiversity and ecosystem functions and human health, including by reducing nutrients lost to the environment by at least half, and pesticides by at least two thirds and eliminating the discharge of plastic waste.

Target 9: By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.	Target 6: Manage pathways for the introduction of invasive alien species, preventing, or reducing their rate of introduction and establishment by at least 50 per cent, and control or eradicate invasive alien species to eliminate or reduce their impacts, focusing on priority species and priority sites.
Target 10: By 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.	See “Multiple Targets” below
Target 11: By 2020, at least 17 per cent of terrestrial and inland water areas, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.	See “Multiple Targets” below
Target 12: By 2020 the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.	See “Multiple Targets” below
Target 13: By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.	See “Multiple Targets” below
Target 14: By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.	Target 9: Ensure benefits, including nutrition, food security, medicines, and livelihoods for people especially for the most vulnerable through sustainable management of wild terrestrial, freshwater and marine species and protecting customary sustainable use by indigenous peoples and local communities. Target 12: Increase the area of, access to, and benefits from green and blue spaces, for human health and well-being in urban areas and other densely populated areas.
Target 15: By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.	Target 8: Minimize the impact of climate change on biodiversity, contribute to mitigation and adaptation through ecosystem-based approaches, contributing at least 10 GtCO2e per year to global mitigation efforts, and ensure that all mitigation and adaptation efforts avoid negative impacts on biodiversity
Target 16: By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation.	Target 5: Ensure that the harvesting, trade and use of wild species is sustainable, legal, and safe for human health. Target 13: Implement measures at global level and in all countries to facilitate access to genetic resources

	and to ensure the fair and equitable sharing of benefits arising from the use of genetic resources, and as relevant, of associated traditional knowledge, including through mutually agreed terms and prior and informed consent..
Target 17: By 2015 each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plan.	(No closely matching Target)
Target 18: By 2020, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels.	Target 21: Ensure equitable and effective participation in decision-making related to biodiversity by indigenous peoples and local communities, and respect their rights over lands, territories and resources, as well as by women and girls, and youth.
Target 19: By 2020, knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied.	(No closely matching Target)
Target 20: By 2020, at the latest, the mobilization of financial resources for effectively implementing the Strategic Plan for Biodiversity 2011-2020 from all sources, and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilization, should increase substantially from the current levels. This target will be subject to changes contingent to resource needs assessments to be developed and reported by Parties.	Target 19: Increase financial resources from all sources to at least US$ 200 billion per year, including new, additional and effective financial resources, increasing by at least US$ 10 billion per year international financial flows to developing countries, leveraging private finance, and increasing domestic resource mobilization, taking into account national biodiversity finance planning, and strengthen capacity-building and technology transfer and scientific cooperation, to meet the needs for implementation, commensurate with the ambition of the goals and targets of the framework.
(No closely matching Target)	Target 17: Establish, strengthen capacity for, and implement measures in all countries to prevent, manage or control potential adverse impacts of biotechnology on biodiversity and human health, reducing the risk of these impacts
(No closely matching Target)	Target 11: Maintain and enhance nature's contributions to regulation of air quality, quality and quantity of water, and protection from hazards and extreme events for all people
MULTIPLE TARGETS: Aichi Targets 5, 6, 10, 11, 12 and 13 are partly or wholly included in the post-2020 framework targets 1, 2, 3 and 4.	Target 1: Ensure that all land and sea areas globally are under integrated biodiversity-inclusive spatial planning addressing land- and sea-use change, retaining existing intact and wilderness areas. Target 2: Ensure that at least 20 per cent of degraded freshwater, marine and terrestrial ecosystems are under restoration, ensuring connectivity among them and focusing on priority ecosystems.

	Target 3: Ensure that at least 30 per cent globally of land areas and of sea areas, especially areas of particular importance for biodiversity and its contributions to people, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes. Target 4: Ensure active management actions to enable the recovery and conservation of species and the genetic diversity of wild and domesticated species, including through ex situ conservation, and effectively manage human-wildlife interactions to avoid or reduce human-wildlife conflict.

APPENDIX B: COMPARATIVE TABLE ON NBSAP AND JNAP2

Tonga National Biodiversity Strategy Action Framework (NBSAP) 2018 - 2030				Tonga Climate Change Policy /JNAP2
No.	**Thematic Areas**	**Objectives / Strategies (*in italics*)**	**Targets**	
1	**Forest Ecosystem**	1. To develop and promote sound policy and legal frameworks [1. *Develop/update and /or strengthen existing Agriculture and Forestry Sector Plans and Policies*]	1.1.1 Established National Agriculture Sector Plan with full implementation, and carry out interim review before 2025 1.2.1 Secure funding and technical assistance, in collaboration with the regional partners, to enable revision of the Forest Act by 2022 1.2.2 National Forest Policy revised and updated by 2025 1.2.3 Revised Forest Act to be completed by 2025 1.2.4 Existing Forest Regulations are revised by 2025 1.3.1 By 2025, watershed management strategies will be formulated with specific watershed management work plan to suit different geological sites. 1.3.2 Complete the development of the National Land Use Plan/Policy by 2030 1.4.1 Business plans are developed for commercial forest operations in Tonga by 2025 1.4.2 'Eua Forest management Committee terms of reference and composition established by 2025. 1.4.3 Code of Practice for forest harvesting will be enforced by 2026.	**Objective 1: Mainstreaming for a Resilient Tonga** ***Mainstream climate change and disaster risk management approaches into government legislation, policies and plans at all levels*** **JNAP2 Target 7: Forestry and Agroforestry –** 30% of land in Tonga utilized for agroforestry or forestry. Sector responsible – Forestry Department, MAFF
		2. To develop and sustain sound capacity building processes [*2. Build capacity and promote awareness to support Forest Conservation*]	2.1.1 Provide at least 10 formal degree programmes (post graduate programmes included) in biodiversity conservation or related fields by 2025 2.1.2 Mainstream biodiversity values (most probably in consideration of related environment and climate change related values) into school syllabus by 2030 2.2.1 Ensure that appropriate levels of technical knowledge are being delivered to support PPP initiatives 2.2.2 Develop an effective outreach programme (citizen science) to promote and support PPP initiatives 2.2.3 Establish a "National Biodiversity PPP in action Group (NBPPG)" to provide policy and lead role by 2025. 2.3.1 By 2025, engagement of local leaders (district, town officers, estate owners, church leaders, youth and women group leaders, etc.) in leading biodiversity initiatives to ensure full community participation, sustainability and community ownership have increased. 2.4.1 By 2022, financial support to develop and implement a citizen science programme is secured annually to produce and disseminate appropriate media tools to enhance public awareness, education, and sense of ownership of any forest biodiversity. 2.4.2 By 2026, monitoring and evaluation of effectiveness of outreach programmes is reported. 2.5.1 Promote traditional Tongan farming systems in rural and vulnerable communities with minimum mechanisation and use of agri-chemicals by 2022.	**Objective 6: Regional and International Cooperation** ***Develop and maintain strong regional and international partnerships and contribute fully to all relevant negotiations aimed at the required transformation to a resilient and sustainable future***
		3. To promote and update appropriate forest ecosystems resources assessments to guide policy development decisions. [*3. Strengthen national data on forest ecosystems; 4. Identify remaining forest ecosystems and declare important areas protected and to be managed appropriately*].	3.1.1 By 2022, national inventory on Forest Ecosystems fully implemented. 3.1.2 By 2026, important forest ecosystems will be identified and mapped digitally. 3.2.1 By 2025, an improved monitoring GIS system is established for monitoring Land use and Land cover changes. 4.1.1 By 2026, National Park Management plans are developed/revised 4.1.2 By 2026, important forest ecosystems needed to be declared as protected are identified. 4.2.1 By 2030, terrestrial protected areas will increase to 17% of its land space.	**Objective 2: Research, Monitoring and Management of Data and Information** ***To implement a coordinated approach to the collection, monitoring, management and use of all relevant data and information; and to develop a coordinated, multi-sectoral approach to research for building a Resilient Tonga***

			4.2.2 By 2030, contribution of national parks in foreign earnings through tourism activities like camping and sightseeing will increase. 4.2.3 By 2030, local communities in the overall management of national parks and reserves will be engaged. 4.2.4 By 2030, forest parks and reserves will be upgraded to improve forestry ecosystems "in-situ" conservation. 4.3.1 By 2025, enforce M&E of Tonga Forest Product reforestation programmes 4.3.2 By 2025, the zonation of 'Eua Forest Plantation is confirmed 4.3.3 By 2025, enrichment planting of "deforested sites" around needed fringes of National Parks & Reserves will be completed 4.3.4 Women and youth are engaged in planning, implementation, and monitoring duties 4.3.5 20% of Communities are engaged in leading and forestry replenishment duties 4.3.6 10% of schools are engaged in reforestation projects for economic (sandalwoods), social (firewood plots) and ecological (shelterbelts) purposes.	**JNAP 2 Target 22: Information Knowledge Management System –** An efficient and strengthened information and knowledge management and monitoring system. Cross sector target.
2	**Marine Ecosystems**	1. Conservation and protection of marine and coastal ecosystems [*5. To strengthen the existing network of protected areas to effectively conserve major coastal and marine ecosystems as well as habitats of biological and socio-economic value; 6. Promote innovative use of economic incentives]*	5.1.1 Maintain 30% of MMAs, with no further reduction 5.1.2 By 2030, develop/review site management plans for MMAs 5.1.3 Monitoring reports to measure effectiveness of MMAs are developed and reported every 5 years. 5.2.1 By 2025, Tonga has established and implemented an ocean-wide policy. and marine and coastal spatial planning framework 5.2.2 By 2025, a marine and coastal implementation and investment plan is developed. 6.1.1 By 2020, marine and coastal ecosystems are mainstreamed into related sectoral plans and the National Strategic Development Plan 6.2.1 By 2030, well-established studies and research undertaken to assess, document, and assign estimated value of goods and services of biodiversity and ecosystem 6.3.1 By 2030, a well-established set of economic guidelines and procedures, such as payment for environmental services, are applied nationally for managing Marine Conservation and Protected Areas.	**Objective 1: Mainstreaming for a Resilient Tonga** ***Mainstream climate change and disaster risk management approaches into government legislation, policies and plans at all levels*** **JNAP 2 Target 14: Mainstreaming –** Resilience measures are mainstreamed into relevant legislations and are integral to all public and private sector policies, plans and development programmes. Cross sector target. **JNAP 2 Target 1**: **Coastal Management** – Resilient coastal development infrastructures and integrated coastal ecosystems management including the sustainability and resiliency of offshore minerals exploration and mining.
		● To provide capacity building and technological transfer and development *[7. Strengthen the national capability to manage marine and coastal biodiversity; 8. Strengthen the capacity of national focal point and operational focal points for implementing coastal and marine affairs.*]	7.1.1 By 2030, an overall 30% increase and improvement of the level of environmental skills and knowledge of this target group. 7.2.1 By 2030, at least 50% improvement in the capacity of this target sector 7.3.1 By 2030, prepare methodological guidelines and handbooks for mitigating impacts on coastal marine areas that are applied nationwide 7.4.1 By 2030, appropriate agreed mainstreaming program implemented at national level 7.5.1 By 2030, meet international hydrographic mapping requirements 8.1.1 By 2030, Tonga government and civil society have improved their capacity to elicit financing, and there is at least a 30% increase in resources made available from various donor agencies 8.2.1 By 2025, financial assistance is made available to establish a Secretariat to coordinate implementation, monitoring and reporting of ocean management areas. 8.3.1 By 2030, 50% improvement in this area for the target groups through activities such as workshops, trainings, etc	

		3. To minimise direct pressures on Marine and Coastal Biodiversity and promote sustainable use [*9. Promote the use of nature based solutions and environmentally sound practices to minimise impacts on marine and coastal resources; 10. Foster public support for coastal and marine conservation efforts and sustainable use; 11. Promote scientific research, regular monitoring of critical marine ecosystems, and proper management of scientific data; 12. Application of GIS for improvement in control of loss of critical coastal and marine ecosystems.*].	9.1.1 By 2030, guidelines/regulations will be developed to minimise pressures from land and marine-based sources, through effective development controls, including EIAs, for Deep Sea Mining, Coastal Sand Mining and related activities 9.2.1 By 2025 Identify at least 50% of important damaged habitats and ecosystem that need rehabilitation and restoration 9.2.2 By 2025, Develop and implement a monitoring and evaluation system for rehabilitation activities (to monitor progress and improvement) 9.2.3 By 2030, an eco-park showcasing nature based solutions and its benefit to biodiversity and society is established 9.3.1 By 2030, 20% increase in effectiveness of community based activities such as SMA and similar projects in promoting biodiversity from 2020 baseline. 10.1.1 By 2025, a Citizen Programme Framework will be established for marine and coastal conservation 10.1.2 By 2025, 20% of communities/schools are registered to a Citizen Science Programme for marine and coastal conservation. 10.2.1 By 2025, an implementation plan for the waste and pollution sector to address threats to biodiversity will be developed. 11.1.1 By 2025, available information from assessments of tested instruments on marine and coastal management in Tonga and the neighbouring countries are documented to assist decision making. 11.2.1 By 2030, documents are produced, widely shared and made available to the public 11.2.2 At least 10% of national plans have taken into consideration sustainable traditional knowledge practices for biodiversity conservation and environmental protection 11.3.1 Identify invasive species and pathways in critical sites, both native and alien and assess impacts to ecosystems and biodiversity by 2030 11.3.2 By 2025, identify and implement prevention, control, or eradication measures on marine invasive species 12.1.1 By 2025, capacity of GIS for monitoring coastal marine ecosystems are improved 12.1.2 By 2025, 60% of coastal/inshore ecosystems are monitored and status of depletion are identified 12.2.1 By 2025, a GIS system for mapping of coastal habitats such as seaweeds is established 12.3.1 By 2030, the current GIS system will be updated/upgraded within government (software/hardware) for quality standard results and keep up to date to international standards. 12.3.2 By 2030, coastal ecosystems such as mangrove ecosystems are monitored and status of changes over time are identified	**Objective 2: Research, monitoring and management of data and information** ***Implement a coordinated approach to research, monitoring and management of data and information.*** **2.2 Enable effective, interactive and accessible GIS hubs building on the existing environment and climate change portal, (including the private sector, civil society organizations, and communities) to inform wise development for achieving a *Resilient Tonga*** **2.3 Develop fully operational monitoring systems, focusing in particular on groundwater integrity, soil health, coastal and oceanic condition and change, and a comprehensive climate early warning system** **Objective 4: Resilience Building Actions** ***Design and implement on-the-ground actions that build a Resilient Tonga by 2035 at national, island and community levels*** **JNAP 2 Target 4: Fisheries –** Resilient fisheries development and marine and coastal ecosystems (coral reefs, mangroves, sea grass, etc.) Sector responsible: Ministry of Fisheries and Department of Environment, MEIDECC.
3	**AGRO-BIODIVERSITY**	1. To conserve farm genetic resources [*13. To reinforce conservation of genetic resources*]	13.1.1 By 2030, a National Database for Agricultural genetic resources will be established. 13.2.1 By 2030, genetic diversity resource information will be accessible, and benefits shared with communal partnership to prevent erosion 13.3.1 Increase the diversity of farm genetic resource by at least 3 per cent annually by 2030.	**Objective 4: Resilience Building Actions** ***Design and implement on-the-ground actions that build a Resilient Tonga by 2035 at national, island and community levels*** **JNAP 2 Target 6: Agriculture** – Resilient low chemical input or organic farming systems Responsible sector – Agriculture Department, MAFF

		2. To conserve the Bio-diverse Agricultural Landscapes and Ecosystem Services [14. *Strengthen plans to protect agricultural ecosystem services*]	14.1.1 Resilience of Agricultural Ecosystem Services increased by at least 2 percent annually 14.2.1 Biodiversity of Agricultural landscapes increase by at least 2 percent annually 14.3.1 By 2025, an improved monitoring GIS system is established for monitoring Land Use and Land Cover Changes 14.4.1 By 2025, design an institutional framework for agriculture that allows for monitoring of major sustainability areas	
4	**Species Conservation**	1. To develop a National Biodiversity Database for Tonga that provides a framework to document data and information on species, ecosystems and designated /protected areas, and threats to these species and areas. *[15. To set up an enabling environment for systematic and scientific research and monitoring for priority species]*	15.1.1. By 2025, an Environment portal and information management system for biodiversity will be established 15.2.1 Conduct baseline surveys for the whole of Tonga by 2025.	**Objective 2: Research, monitoring and management of data and information** ***Implement a coordinated approach to research, monitoring and management of data and information.*** **2.1 Identify national capacity needs for climate resilience research, monitoring and evaluation, data acquisition and information and knowledge management. Priorities include enhancing data analysis, gender analysis, vulnerability assessment and cost benefit analysis, and developing appropriate capacity building programmes for implementation.**
		2. To provide protection of priority species to ensure viable population of all priority species of Tonga. [*16. Prioritise the species under the IUCN's red list of endangered species that are critically threatened or endangered; 17. Develop replanting programmes and explore ex-situ measures including herbaria, gene banks or seed orchards for priority species; 18. 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; 19. To strengthen the technical, management and research knowledge and skills of local scientists and researchers, and the capacity of responsible agencies and organisations.*].	16.1.1 By 2030, Complete BIORAP surveys for Ha'apai, 'Eua, Niuas and Tongatapu island groups. 16.2.1 By 2024, the implementation of the Malau Species Recovery Plan should be completed and no longer threatened 16.3.1 By 2025, full Implementation and enforcement of the CITES 16.4.1 By 2025, management plans for all protected areas would be developed and fully implemented 16.5.1 By 2030, a national botanical garden will be established 17.1.1 By 2030, Toloa rainforest would have established a national herbarium for educational and eco-tourism purposes 17.2.1 By 2030, 60% of threatened flora will be recovered 17.3.1 By 2030, research lab would be operational for genetic modification 17.4.1 By 2020, the production of seedlings for priority species would be increased by 50% 18.1.1 By 2030, the public's knowledge has enhanced, with increased public support for species conservation. 18.2.1 By 2030, 80% of Tonga would understand the importance of rare and endemic species as part of Tongan heritage 18.3.1 By 2025, 80% of Tonga would have access to awareness materials on Protected Areas 18.4.1 By 2025, user guidelines for use and sharing of analysed data will be developed. 18.4.2 By 2030, ERIC would be operational to the public. 19.1.1 By 2030, 80% of local staff would be trained by relevant regional/national expertise 19.2.1 By 2025, an MoA template for mentoring arrangements with counterparts is developed 19.3.1 By 2025, all project concepts/design will include a component on formal and/or hands-on training opportunities for local staff. 19.4.1 At least 1 graduate level programme will be available annually.	

			19.5.1 By 2025, personnel or newly recruited personnel will be recruited solely to MEIDECC to coordinate conservation related research for an established multi-agency task force.	
	Invasive Alien Species	1. To develop a strong legal policy framework for invasive species management. *[20. Appropriate legislation, policies, protocols and procedures are in place and operating, to underpin the effective management of invasive species].*	20.1.1 By 2021, the National Invasive Species Strategic and Action Plan is revised and reviewed 2021-2026. 20.1.2 By 2025, a Biosecurity Bill will be drafted and enacted. 20.1.3 By 2025, laws addressing invasive species management will be reviewed	
		2. To increase capacity for invasive species management [*21. Institutional strengthening required to manage invasive species effectively*]	21.1.1 Invasive species activities are coordinated through a national network by 2020 21.2.1 Tonga's invasive species management facilities and equipment are reviewed and improved 21.3.1 By 2025, Quarantine staff are trained with background on invasive species management and biosecurity, entomology, conservation biology, botany, to identify and respond to invasive species	
		3. To Strengthen procedures for management control of Invasive Species [22. *Systems are in place to generate baseline information on the status and distribution of invasive species, detect changes, including range changes and emerging impacts*.]	22.1.1 Identify and Prioritize invasive species by 2021 22.2.1 Inspection and treatment procedures are improved to reduce the risk of new invasive species threats to Tonga and inter-island biosecurity needs to be enforced by 2022. 22.3.1 By 2020, Inter-agency cooperation established 22.3.2 By 2022, ERP drafted & endorsed 22.4.1 By 2020, baseline studies have been completed and management actions using native species implemented in selected sites	
6	**Local Community and Civil Society**	6. Attain development through integrated community efforts [*23. Strengthen <u>capability of communities to sustainably manage its natural resources</u>;*	23.1.1 By 2020, the network with private sector and NGOs with government sectors will be well established 23.2.1 By 2025, create awareness on the standards and quality issues on marketable products 23.2.2 By 2030, establishing green payments from public funds, which rewards producers for good conservation practices 23.2.3 By 2030, market-based environmental standards and certifications will be developed that add value to products and services, such as those that promote farming practices that alleviates poverty and enhances biodiversity. 23.3.1 By 2025, formulation and implementation of outer island and rural development programs through local communities includes the application of nature-based solutions to benefit biodiversity conservation, livelihoods and human well-being. 23.3.2 By 2025, increased public participation, from 2018 baseline, in community environment conservation programmes combined with other programs that promotes alternative livelihoods and alleviates poverty. 23.4.1 Improving gender equality by implementing the government's gender development policy with 60% being achieved by 2030. 23.4.2 Improve services for the elderly and other vulnerable groups, including investigation of the potential private sector role with 60% being achieved by 2030. 23.4.3 Instilling discipline, basic life skills and good, values in the youth, in particular addressing the needs of those who are unemployed, by promoting youth development programmes, including community economic development and the consideration of a National Youth Service with 50% being achieved by 2030. 23.5.1 By 2030, 80% of the following is achieved: Cultural awareness, environmental sustainability, disaster risk management, and climate change adaptation, integrated	**Objective 1: Mainstreaming for a Resilient Tonga** ***Mainstream climate change and disaster risk management approaches into government legislation, policies and plans at all levels*** **JNAP 2 Target 18 – Community resilience:** Strengthened capacity and awareness for all families and communities of climate change and disaster risk management with special attention and capacity for disaster preparedness, response, recovery, rehabilitation.

			into all planning and implementation of programs, by establishing and adhering to appropriate procedures and consultation mechanisms. 23.5.2 Within an evolving culture, the value of Tonga's cultural traditions are integrated into national policy plans by 2030. 23.6.1 By 2030, 60% is achieved for strong conservation inclusive of communities, by engaging districts/villages/communities in meeting their service needs and ensuring the prioritized and equitable distribution of development benefit 23.6.2 By 2030, communities appreciate the importance of environmental impact assessments for major development projects by complying to its legislation	
7	**Access and Benefit Sharing from the genetic resources and Traditional Ecological Knowledge**	1. To prevent illegal access to and unlawful exploitation of Tonga's genetic resources. [*24. Develop legal and Institution frameworks to safeguard Tonga's genetic resources;*	24.1.1 By 2025, a legislative review is completed for safeguarding Tonga's genetic resources, as a process to ratify the Nagoya Protocol. 24.2.1 By 2030, Tonga has legislation in place to regulate access to Tonga's genetic resources for bioprospecting, research and other forms of exploitation 24.2.2 By 2030, Tonga has legislation with appropriate measures to protect and safeguard ownership of traditional ecological knowledge and other intellectual property rights associated with them, and ensure equitable benefit sharing resulting from their commercial use 24.3.1 By 2030, guidelines and procedures will be in place for the regulating of access to information and sharing of benefits genetic resources in alignment to the Nagoya Protocol	
		2. To ensure the fair and equitable sharing of benefits generated from the use of genetic resources. [*25. Safeguard the interests of holders of traditional knowledge and owners of resources*]	25.1.1 By 2030, a system will be in place to register and monitor research requests and reports 25.1.2 By 2030, local owners of resources and traditional eco-knowledge are well informed of the procedures for access and benefit sharing through various workshops, meetings and one on one consultations. 25.2.1 By 2030, an appropriate mechanism and procedures will be in place to ensure fair and equitable outcomes of negotiations with bio-prospectors 25.3.1 By 2030, A system will be in place to capture, document and store traditional ecological knowledge (TEK) so it won't be lost. 25.4.1 By 2030, TEK will be mainstreamed into school curriculums or into teaching materials. 25.4.2 By 2030, communities will be aware of their TEK rights through the use of a range of media types, workshops, ongoing dialogues with various stakeholders from government, NGOs and experts. 25.5.1 By 2030, a facility will be established to store traditional artifacts and other forms of expressions, as well as genetic resources for promoting their existence, educational and awareness raising purposes.	
8	**Mainstreaming Conservation**	1. To strengthen national collaboration among sectors for the sustainable use and management of biodiversity in Tonga. *[26. Strengthen policy and legislative framework for sustainable use and management of biodiversity in Tonga; 27. Develop an integrated land-use plan; 28. Enhance awareness, communication and knowledge management for biodiversity; 29. Strengthen mechanisms for ecosystem-based management, adaptation and mitigation; 30. Mainstream biodiversity into cross-sectoral community planning and management]*	26.1.1 By 2027, NBSAP will be effectively implemented across relevant sectors 26.1.2 By 2030, Compliance and Enforcement legislations and policies take into account biodiversity and livelihoods 26.2.1 By 2025, biodiversity conservation will be mainstreamed into the TSDF. 26.2.2 By 2025, biodiversity and ecosystem services is mainstreamed into corporate sector plans through strong engagements of members in existing multisectoral environmental coordinating committees. 26.3.1 By 2018, NGO and private sector representatives will be part of the National Environment Coordinating Committees for decision making 26.4.1 By 2030, Protected Area network expanded and representative, with functional corridors 26.5.1 By 2025, a Coordinating Section, with personnel, at the Department of Environment to be responsible for coordinating the implementation, monitoring and reporting of the NBSAP will be established and properly resourced.	**Objective 1: Mainstreaming for a Resilient Tonga** ***Mainstream climate change and disaster risk management approaches into government legislation, policies and plans at all levels.*** **JNAP 2 Target 14: Mainstream –** Resilience measures are mainstreamed into relevant legislations and are integral to all public and private sector policies, plans and development programmes and projects. 1.3 Develop and implement the prioritized sector resilient plans such as biodiversity, education, energy, fisheries, forestry, health, infrastructure, land, water, and youth, including supporting policies and legislation where necessary

			26.5.2 By 2025, secure external funding sources, potentially available for both short and long-term to finance biodiversity activities 26.5.3 By 2025, secure funding from government recurrent budgets annually with relevant line Ministries for NBSAP implementation. 26.5.4 By 2030, Establish a "trust fund" (maybe in close or joint efforts with related schemes such as "Climate Change Trust Fund") 26.6.1 By 20*25*, a financial mechanism and legal framework is established to support enforcement and compliance work for protected areas 27.1.1 By 2030, land use plans and a land use policy will be developed. 27.2.1 By 2027, complete GIS and Lidar surveys are completed for all outer islands 27.2.2 By 2027, hydrological surveys for water-use management were undertaken. 28.1.1 By 2025, Protected Areas established are maintained for priority species relevant for community livelihoods 28.2.1 By 2025, Communication Strategy on good practices and sustainable use of biodiversity is developed. 28.3.1 By 2025, best practices and lessons learned for Protected areas are well documented and shared to the public, and is practically replicated by communities with technical assistance from government. 28.4.1 By 2025, National Clearing House mechanism will be established. 28.4.2 By 2025, a National environmental database will be developed for users. 28.5.1 By 2027, Synergistic implementation and reporting through the NBSAP, supporting other reporting requirements under relevant MEAs. 28.6.1 By 2025, a Programme of Work will be developed to provide a training programme for teachers. 28.7.1 By 2030, an Environment Resource Interactive Center (ERIC) is established to better inform and educate the public on conservation work in Tonga, and to garner support for conservation. 28.8.1 Financial and human resources for government institutions have increased by 20% for conservation, protection and sustainable use of natural resources from 2020 baseline. 29.1.1 By 2027, implementation through NBSAP will contribute to NDCs 29.2.1 By 2022, a State of the Coast will be developed 29.2.2 By 2027, coastal management plans including economic development will be developed. 29.3.1 By 2025, planning by all sectors, will apply the ridge to reef approach and consider nature based solutions, to increase ecosystem resilience and support food security. 30.1.1 By 2020, communities are engaged in all planning, implementation and monitoring for biodiversity management, including information collection 30.2.1 By 2020, there is commitment to cross-sector implementation of the NBSAP 30.3.1 By 2025, mainstream biodiversity into community development plans 30.4.1 By 2025, effective implementation of EIA tools and other development controls 30.5.1 By 2025, an operational early warning system is directed especially at sites of high biodiversity, including ocean sites, and high risk due to climate change impacts.	i. Review, and if necessary revise the new forestry plan to ensure that it is fully aligned with JNAP 2 adapted targets for a Resilient Tonga; ii. Review, and if necessary revise the new water resources supply and management plan to ensure that it is fully aligned with the JNAP adapted targets for a Resilient Tonga; iii. Develop a national coastal zone management plan and national land use plan integrating the adapted JNAP targets for a Resilient Tonga; iv. Review the National Biodiversity Strategy and Action Plan Objective 2: Research, monitoring and management of data and information *Implement a coordinated approach to research, monitoring and management of data and information.* 2.2 Enable effective, interactive and accessible GIS hubs building on the existing environment and climate change portal, (including the private sector, civil society organizations, and communities) to inform wise development for achieving a Resilient Tonga 2.2.2 Establish accessible GIS hubs for management and use of all relevant data; 2.2.3 Conduct LIDAR surveys aiming to cover the remaining areas of Tonga not yet survey
		2. To enhance and encourage political support towards biodiversity conservation. [*31. Enhance and encourage political support from respective Constituencies on forest and biodiversity conservation activities*]	31.1.1 By 2030, the number of Politicians identified supporting and advocating biodiversity conservation activities have doubled from 2020 baseline. 31.1.2 By 2030, Biodiversity or forest conservation supported activities are planned into Constituency budgets for implementation.	
9	**Financial Resources and Mechanisms**	1. To assess the capacity of Institutions managing biodiversity conservation	32.1.1 By 2025, a National Capacity Self-Assessment tool will be in use 32.2.1 By 2025, a capacity building programme would be implemented	**Objective 5: Finance**

		[*32. Conduct a national capacity self-assessment to identify existing capacity needs for implementing the NBSAP;*		***To secure and mobilise the required finances and resources to build a Resilient Tonga by 2035*** **JNAP 2 Target 20: Climate Finance –** Sustainable funding for climate change resilience building needs. Sector responsible: Department of Climate Change, MEIDECC.
		2. To further strengthen effective partnerships with key local, regional and international organisations to support implementation of biodiversity conservation programmes. [*33. Document information on current and potential funding sources and their requirements for assistance; 34. Formal training in proposal writing and fund-raising planning for local implementing organisations, including NGOs.*]	33.1.1 By 2025, a donor database would be established for potential investors of the NBSAP 33.2.1 By 2025, Tonga will be implementing at least 2 biodiversity conservation related projects as a recipient from several donor's funding for NBSAP implementation 33.3.1 By 2025, 80 percent of participants in public meetings and workshops will understand the funding schemes for conservation activities 34.1.1 By 2020, NGOs, Government, and private sector would have annual trainings for proposal writing 34.2.1 By 2020, networking with international bodies will be strengthened for partnership in achieving the Aichi Targets 34.3.1 By 2025, a dedicated forum will be established for the purpose of meeting with major donor organisations to fund conservation programmes 34.4.1 By 2025, online portals will be updated regularly for donors to observe local progress on conservation activities 34.5.1 By 2025, at least 2 information sharing workshops will be held for local NGOS and eligible implementing agencies on accessing external environmental funds. 34.6.1 By 2025, an Environment Conservation award will be an annual event given out during Environment Week	5.2 Develop and implement a development partner's coordination mechanism for all relevant funding to ensure full alignment with JNAP 2 5.2.1 Implement the Tonga 'no objection procedure' for the Green Climate Fund (GCF) and for accredited entities to work closely with the National Designated Authority (NDA) on project identification and concepts approval aligned with the priorities of JNAP2 5.2.4 Engage with regional agencies to coordinate all climate resilience regional initiatives which closely alignwith JNAP 2 programmes; 5.2.5 Undertake an analysis to determine suitable and applicable institutions for accreditation to Direct Access 103 funds including but not limited to the Adaptation Fund and Green Climate Fund.
		3. To explore economic tools and financing mechanisms for biodiversity conservation. [*35. Explore economic tools and financing mechanisms for biodiversity*]	35.1.1 By 2025, a review of existing economic instruments that support conservation will be conducted. 35.1.2 By 2025, develop a report with recommendations on a sustainable financing mechanism to support biodiversity conservation. 35.2.1 By 2030, an Environment Trust Fund, or the like, will be established to sustainably support eco-projects	5.3 Develop and implement a strategy for supporting communities, including women, youth, and vulnerable groups, to directly access relevant funding to implement community development plans that are fully aligned with the goals and targets of a Resilient Tong 5.3.1 Develop strategies to support communities in sourcing and accessing relevant climate resilience funding for implementing CD Ps

APPENDIX C: LINKS TO NATIONAL PLANS & LEGISLATIONS, GLOBAL AND REGIONAL FRAMEWORKS

NBSAP	Relevant National Legislation	National Policies, Strategies and Plans	Related Conventions & Frameworks
Thematic Area 1. Forest Ecosystems	Act of the Constitution of Tonga Environment Management Act 2010 Environment Impact Assessment Act 2003 Parks and Reserves Act 1989 Land Act 1927	Forest Policy Tongan Strategic Development Framework 2015-2025 National Biodiversity Strategy & Action Plan (NBSAPs) Climate Change Policy 2016 Joint Action Plan 2 on Climate Change Adaptation and Disaster Risk Management, 2018-2028 (JNAP) Tonga Low Emission Development Strategy (Tonga LEDS) Tonga Second NDCs	**Global:** ● Convention to Combat Desertification (UNCCD) ● Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) ● Convention On Migratory Species (CMS) ● Ramsar (wetlands) ● UNFCCC **Regional:** ● *Apia Convention 1976* ● *SPREP Convention 1986* ● *Framework for Resilient Development in the Pacific* ● *Framework for Nature Conservation and Protected Areas in the Pacific Region 2021-2025*
Thematic Area 2. Marine and Coastal Ecosystems	Act of the Constitution of Tonga Aquaculture Management Regulations 2008 Birds Preservation Act Maritime Zones Act 2009 National Spatial Planning and Management Act 2012 Aquaculture Management Act 2003 Biosafety Act 2009 Environment Management Act 2010	Fisheries Sector Plan Tongan Strategic Development Framework 2015-2025 National Biodiversity Strategy & Action Plan (NBSAPs) Climate Change Policy 2016 Joint Action Plan 2 on Climate Change Adaptation and Disaster Risk Management, 2018-2028 (JNAP)	**Global:** ● CITES ● CMS ● United Nations Convention on the Law of the Sea (UNCLOS) ● Ramsar (wetlands) ● UNFCCC **Regional:** ● *Apia Convention 1976*

	Environment Impact Assessment Act 2003 Fisheries Management Act 2002 Fisheries Management Regulations (Processing and Export) Regulations 2008 Fisheries Management (Conservation) Regulations 2008 Fisheries (Coastal Communities) Regulations 2009 Fisheries (Local Fishing) Regulations 2009 Harbours Act 1903 Hazardous Wastes and Chemicals Act 2010 Land Act 1927 Marine Pollution Prevention Act 2002 Maritime Zones Act 2009 Minerals Act 1949 Parks and Reserves Act 1989 Ports Authority Act 1998 Ports Management Act 2001 Petroleum Mining Act 1969 Renewable Energy Act Seabed Minerals Act Tonga Tourism Authority Act Whale Watching and Swimming Act 2009 Shipping Act 1973	Tonga Low Emission Development Strategy (Tonga LEDS) Tonga Second NDCs Coastal Community Management Plans (CCMP) Aquaculture Commodity Development Plans Marine Aquarium Fishery Management Plans Tonga Deepwater Fisheries Management Plan Tonga Tonga National Aquaculture Management and Development Plan Kingdom of Tonga National Shark Plan of Action Tonga National Tuna Fisheries Management and Development Plan Tonga National Sea Cucumber Fishery Management and Development Plan Tonga National Marine Seaweed Fisheries Management and Development Plan National Invasive Species Strategy and Action Plan Tonga Tourism Sector Roadmap	● *SPREP Convention 1986* ● *Framework for Resilient Development in the Pacific* ● *Framework for Nature Conservation and Protected Areas in the Pacific Region 2021-2025* ● *Cleaner Pacific 2025* ● *Framework for a Pacific Oceanscape* ● *Pacific Regional Ocean Policy & Framework for Integrated Strategic Action* ● *Regional Tuna Management & Development Strategy* ● *Regional Monitoring, Control & Surveillance Strategy* ● *Regional Roadmap for Sustainable Fisheries* ● *Regional Marine Species Action Plans* ● *Pacific Regional Action Plan for Marine Litter*
Thematic Area 3: Agrobiodiversity	Act of the Constitution of Tonga Biosafety Act 2009 Environment Management Act 2010	Tongan Strategic Development Framework 2015-2025	**Global:** ● CITES ● CMS

	Environment Impact Assessment Act 2003 Land Act 1927	National Biodiversity Strategy & Action Plan (NBSAPs) Climate Change Policy 2016 Joint Action Plan 2 on Climate Change Adaptation and Disaster Risk Management, 2018-2028 (JNAP) Tonga Low Emission Development Strategy (Tonga LEDS) Agriculture Sector Plan	• UNFCCC **Regional:** • *Apia Convention 1976* • *SPREP Convention 1986* • *Framework for Resilient Development in the Pacific* • *Framework for Nature Conservation and Protected Areas in the Pacific Region 2021-2025* • *Cleaner Pacific 2025*
Thematic Area 4: Species Conservation - to protect the priority species.	Act of the Constitution of Tonga Environment Management Act 2010 Environment Impact Assessment Act 2003 Land Act 1927	Tongan Strategic Development Framework 2015-2025 National Biodiversity Strategy & Action Plan (NBSAPs) Climate Change Policy 2016 Joint Action Plan 2 on Climate Change Adaptation and Disaster Risk Management, 2018-2028 (JNAP) Tonga Low Emission Development Strategy (Tonga LEDS) National Invasive Species Strategy and Action Plan (NISSAP) Threatened Species Recovery Plan Polynesian Megapode 2014-2024	**Global:** • CITES • CMS • Ramsar (Wetlands) **Regional:** • *Apia Convention 1976* • *SPREP Convention 1986* • *Framework for Nature Conservation and Protected Areas in the Pacific Region 2021-2025* • *Framework for a Pacific Oceanscape*
Thematic Area 5: Invasive Species	Act of the Constitution of Tonga Biosafety Act 2009 Environment Management Act 2010 Environment Impact Assessment Act 2003	Tongan Strategic Development Framework 2015-2025 National Biodiversity Strategy & Action Plan (NBSAPs) Climate Change Policy 2016	**Global:** • Ballast Water Management Convention (International Convention for the Control

	Land Act 1927	Joint Action Plan 2 on Climate Change Adaptation and Disaster Risk Management, 2018-2028 (JNAP) Tonga Low Emission Development Strategy (Tonga LEDS)	and Management of Ships' Ballast Water and Sediments, 2004*)* **Regional:** ● *Apia Convention 1976* ● *SPREP Convention 1986* ● *Framework for Resilient Development in the Pacific* ● *Framework for Nature Conservation and Protected Areas in the Pacific Region 2021-2025* ● *Cleaner Pacific 2025* ● *Framework for a Pacific Oceanscape*
Thematic Area 6: Local Community and Civil Society		Tongan Strategic Development Framework 2015-2025 National Biodiversity Strategy & Action Plan (NBSAPs) Climate Change Policy 2016 Joint Action Plan 2 on Climate Change Adaptation and Disaster Risk Management, 2018-2028 (JNAP) Tonga Low Emission Development Strategy (Tonga LEDS)	**Global:** ● CMS **Regional:** ● *Apia Convention 1976* ● *SPREP Convention 1986* ● *Framework for Resilient Development in the Pacific* ● *Framework for Nature Conservation and Protected Areas in the Pacific Region 2021-2025* ● *Cleaner Pacific 2025* ● *Framework for a Pacific Oceanscape*
Thematic Area 7: Access and Benefits Sharing from Genetic Resources	Biosafety Act	Tongan Strategic Development Framework 2015-2025 National Biodiversity Strategy & Action Plan (NBSAPs) Climate Change Policy 2016 Joint Action Plan 2 on Climate Change Adaptation and Disaster Risk Management, 2018-2028 (JNAP)	**Global:** ● CITES ● CMS **Regional:** ● *Apia Convention 1976* ● *SPREP Convention 1986*

		Tonga Low Emission Development Strategy (Tonga LEDS)	• *Framework for Resilient Development in the Pacific* • *Framework for Nature Conservation and Protected Areas in the Pacific Region 2021-2025* • *Regional Framework for the Protection of Traditional Knowledge & Expression of Culture*
Thematic Area 8: Mainstreaming Biodiversity Conservation		Tongan Strategic Development Framework 2015-2025 National Biodiversity Strategy & Action Plan (NBSAPs) Climate Change Policy 2016 Joint Action Plan 2 on Climate Change Adaptation and Disaster Risk Management, 2018-2028 (JNAP) Tonga Low Emission Development Strategy (Tonga LEDS)	**Global:** **Regional:** • *Apia Convention 1976* • *SPREP Convention 1986* • *Framework for Resilient Development in the Pacific* • *Framework for Nature Conservation and Protected Areas in the Pacific Region 2021-2025* • *Cleaner Pacific 2025* • *Framework for a Pacific Oceanscape* • *Framework for Pacific Regionalism* • *Pacific Roadmap for Sustainable Development* • *Pacific Framework for Education for Sustainable Development*
Thematic Area 9: Financial Resource Mechanisms		Tongan Strategic Development Framework 2015-2025 National Biodiversity Strategy & Action Plan (NBSAPs) Climate Change Policy 2016 Joint Action Plan 2 on Climate Change Adaptation and Disaster Risk Management, 2018-2028 (JNAP)	**Global:** • GEF and Implementing Agencies • GCF • USAID • JICA • IUCN • WB • ADB

		Tonga Low Emission Development Strategy (Tonga LEDS)	**Regional:** • NZ • Australia • CROP agencies

APPENDIX D: NATIONAL TARGETS AND RELATED AICHI TARGETS, SDGS, SAMOA PATHWAY

National Targets: Tonga National Biodiversity Strategy and Action Plan (NBSAP) 2018-2030

No.	Thematic Areas	Objectives / Strategies *(in italics)*	Targets	Related Aichi Biodiversity Targets; Sustainable Development Goals; and Samoa Pathway
1	**Forest Ecosystem**	1. To develop and promote sound policy and legal frameworks [1. *Develop/update and /or strengthen existing Agriculture and Forestry Sector Plans and Policies*]	1.1.1 Established National Agriculture Sector Plan with full implementation, and carry out interim review before 2025 1.2.1 Secure funding and technical assistance, in collaboration with the regional partners, to enable revision of the Forest Act by 2022 1.2.2 National Forest Policy revised and updated by 2025 1.2.3 Revised Forest Act to be completed by 2025 1.2.4 Existing Forest Regulations are revised by 2025 1.3.1 By 2025, watershed management strategies will be formulated with specific watershed management work plan to suit different geological sites. 1.3.2 Complete the development of the National Land Use Plan/Policy by 2030	**ABT:** 2, 4, 7, 17 **Post-2020**: A.1, 14 **SDG:** 12, 15, **SP: 2, 6, 94**

			1.4.1 Business plans are developed for commercial forest operations in Tonga by 2025 1.4.2 'Eua Forest management Committee terms of reference and composition established by 2025. 1.4.3 Code of Practice for forest harvesting will be enforced by 2026.	
		2. To develop and sustain sound capacity building processes [*2. Build capacity and promote awareness to support Forest Conservation*]	2.1.1 Provide at least 10 formal degree programmes (post graduate programmes included) in biodiversity conservation or related fields by 2025 2.1.2 Mainstream biodiversity values (most probably in consideration of related environment and climate change related values) into school syllabus by 2030 2.2.1 Ensure that appropriate levels of technical knowledge are being delivered to support PPP initiatives 2.2.2 Develop an effective outreach programme (citizen science) to promote and support PPP initiatives 2.2.3 Establish a "National Biodiversity PPP in action Group (NBPPG)" to provide policy and lead role by 2025. 2.3.1 By 2025, engagement of local leaders (district, town officers, estate owners, church leaders, youth and women group leaders, etc.) in leading biodiversity initiatives to ensure full community participation, sustainability and community ownership have increased. 2.4.1 By 2022, financial support to develop and implement a citizen science programme is secured annually to produce and disseminate appropriate media tools to enhance public awareness, education, and sense of ownership of any forest biodiversity. 2.4.2 By 2026, monitoring and evaluation of effectiveness of outreach programmes is reported. 2.5.1 Promote traditional Tongan farming systems in rural and vulnerable communities with minimum mechanisation and use of agri-chemicals by 2022.	**ABT:** 1**,** 2, 4, 7, 17, 20 **Post-2020**: A.1, 10 **SDG:** 1, 12, 15 **SP: 2, 6, 94** 1

		3. To promote and update appropriate forest ecosystems resources assessments to guide policy development decisions. [*3. Strengthen national data on forest ecosystems; 4. Identify remaining forest ecosystems and declare important areas protected and to be managed appropriately*].	3.1.1 By 2022, national inventory on Forest Ecosystems fully implemented. 3.1.2 By 2026, important forest ecosystems will be identified and mapped digitally. 3.2.1 By 2025, an improved monitoring GIS system is established for monitoring Land use and Land cover changes. 4.1.1 By 2026, National Park Management plans are developed/revised 4.1.2 By 2026, important forest ecosystems needed to be declared as protected are identified. 4.2.1 By 2030, terrestrial protected areas will increase to 17% of its land space. 4.2.2 By 2030, contribution of national parks in foreign earnings through tourism activities like camping and sightseeing will increase. 4.2.3 By 2030, local communities in the overall management of national parks and reserves will be engaged. 4.2.4 By 2030, forest parks and reserves will be upgraded to improve forestry ecosystems "in-situ" conservation. 4.3.1 By 2025, enforce M&E of Tonga Forest Product reforestation programmes 4.3.2 By 2025, the zonation of 'Eua Forest Plantation is confirmed 4.3.3 By 2025, enrichment planting of "deforested sites" around needed fringes of National Parks & Reserves will be completed 4.3.4 Women and youth are engaged in planning, implementation, and monitoring duties 4.3.5 20% of Communities are engaged in leading and forestry replenishment duties 4.3.6 10% of schools are engaged in reforestation projects for economic (sandalwoods), social (firewood plots) and ecological (shelterbelts) purposes.	**ABT:** 1, 2 **Post-2020**: A.1, 10 **SDG:** 1, 12, 15 **SP: 2, 6, 94**

2	**Marine Ecosystems**	1. Conservation and protection of marine and coastal ecosystems [*5. To strengthen the existing network of protected areas to effectively conserve major coastal and marine ecosystems as well as habitats of biological and socio-economic value; 6. Promote innovative use of economic incentives]*	5.1.1 Maintain 30% of MMAs, with no further reduction 5.1.2 By 2030, develop/review site management plans for MMAs 5.1.3 Monitoring reports to measure effectiveness of MMAs are developed and reported every 5 years. 5.2.1 By 202*5*, Tonga has established and implemented an ocean-wide policy. and marine and coastal spatial planning framework 5.2.2 By 2025, a marine and coastal implementation and investment plan is developed. 6.1.1 By 2020, marine and coastal ecosystems are mainstreamed into related sectoral plans and the National Strategic Development Plan 6.2.1 By 20*3*0, well-established studies and research undertaken to assess, document, and assign estimated value of goods and services of biodiversity and ecosystem 6.3.1 By 2030, a well established set of economic guidelines and procedures, such as payment for environmental services, are applied nationally for managing Marine Conservation and Protected Areas.	**ABT**: 11, 14, 15, 17, 20 **SDG:** 1, 14 **Post-2020**: 2 **SP:** 53, 57-58
		● To provide capacity building and technological transfer and development *[7. Strengthen the national capability to manage marine and coastal biodiversity; 8. Strengthen the capacity of national focal point and operational focal points for implementing coastal and marine affairs.*]	7.1.1 By 2030, an overall 30% increase and improvement of the level of environmental skills and knowledge of this target group. 7.2.1 By 2030, at least 50% improvement in the capacity of this target sector 7.3.1 By 2030, prepare methodological guidelines and handbooks for mitigating impacts on coastal marine areas that are applied nationwide 7.4.1 By 2030, appropriate agreed mainstreaming program implemented at national level 7.5.1 By 2030, meet international hydrographic mapping requirements 8.1.1 By 2030, Tonga government and civil society have improved their capacity to elicit financing, and there is at least a	**ABT**: 1, 19, 20 **SDG:** 4, 12, 14, 17 **Post-2020**: 2 **SP:** 53, 57-58

			30% increase in resources made available from various donor agencies 8.2.1 By 2025, financial assistance is made available to establish a Secretariat to coordinate implementation, monitoring and reporting of ocean management areas. 8.3.1 By 2030, 50% improvement in this area for the target groups through activities such as workshops, trainings, etc	
		3. To minimise direct pressures on Marine and Coastal Biodiversity and promote sustainable use [*9. Promote the use of nature based solutions and environmentally sound practices to minimise impacts on marine and coastal resources; 10. Foster public support for coastal and marine conservation efforts and sustainable use; 11. Promote scientific research, regular monitoring of critical marine ecosystems, and proper management of scientific data; 12. Application of GIS for improvement in control of loss of critical coastal and marine ecosystems.*].	9.1.1 By 2030, guidelines/regulations will be developed to minimise pressures from land and marine-based sources, through effective development controls, including EIAs, for Deep Sea Mining, Coastal Sand Mining and related activities 9.2.1 By 2025 Identify at least 50% of important damaged habitats and ecosystem that need rehabilitation and restoration 9.2.2 By 202*5*, Develop and implement a monitoring and evaluation system for rehabilitation activities (to monitor progress and improvement) 9.2.3 By 2030, an eco-park showcasing nature based solutions and its benefit to biodiversity and society is established 9.3.1 By 20*30*, 20% increase in effectiveness of community based activities such as SMA and similar projects in promoting biodiversity from 2020 baseline. 10.1.1 By 2025, a Citizen Programme Framework will be established for marine and coastal conservation 10.1.2 By 202*5*, 20% of communities/schools are registered to a Citizen Science Programme for marine and coastal conservation. 10.2.1 By 2025, an implementation plan for the waste and pollution sector to address threats to biodiversity will be developed. 11.1.1 By 2025, available information from assessments of tested instruments on marine and coastal management in Tonga and the neighbouring countries are documented to assist decision making.	**ABT**: 1, 4, 6, 9, 14, 15, 19 **Post-2020**: D.2, 19 **SDG:** 1, 3, 4, 11, 12, 14, 15 **SP:** 53, 57-58

			11.2.1 By 2030, documents are produced, widely shared and made available to the public 11.2.2 At least 10% of national plans have taken into consideration sustainable traditional knowledge practices for biodiversity conservation and environmental protection 11.3.1 Identify invasive species and pathways in critical sites, both native and alien and assess impacts to ecosystems and biodiversity by 20*30* 11.3.2 By 202*5*, identify and implement prevention, control, or eradication measures on marine invasive species 12.1.1 By 2025, capacity of GIS for monitoring coastal marine ecosystems are improved 12.1.2 By 2025, 60% of coastal/inshore ecosystems are monitored and status of depletion are identified 12.2.1 By 202*5*, a GIS system for mapping of coastal habitats such as seaweeds is established 12.3.1 By 2030, the current GIS system will be updated/upgraded within government (software/hardware) for quality standard results and keep up to date to international standards. 12.3.2 By 2030, coastal ecosystems such as mangrove ecosystems are monitored and status of changes over time are identified	
3	**AGRO-BIODIVERSITY**	1. To conserve farm genetic resources [*13. To reinforce conservation of genetic resources*]	13.1.1 By 2030, a National Database for Agricultural genetic resources will be established. 13.2.1 By 2030, genetic diversity resource information will be accessible, and benefits shared with communal partnership to prevent erosion 13.3.1 Increase the diversity of farm genetic resource by at least 3 per cent annually by 2030.	**ABT**: 7, 13 **Post-2020**: A.3, 4 **SDG:** 2, 12 **SP:** 89-91, 94

		2. To conserve the Bio-diverse Agricultural Landscapes and Ecosystem Services [14. *Strengthen plans to protect agricultural ecosystem services*]	14.1.1 Resilience of Agricultural Ecosystem Services increased by at least 2 percent annually 14.2.1 Biodiversity of Agricultural landscapes increase by at least 2 percent annually 14.3.1 By 2025, an improved monitoring GIS system is established for monitoring Land Use and Land Cover Changes 14.4.1 By 2025, design an institutional framework for agriculture that allows for monitoring of major sustainability areas	**ABT**: 7, 13, 14 **Post-2020**: A.3, 4 **SDG:** 2, 12 **SP:** 59, 63,
4	**Species Conservation**	1. To develop a National Biodiversity Database for Tonga that provides a framework to document data and information on species, ecosystems and designated /protected areas, and threats to these species and areas. *[15. To set up an enabling environment for systematic and scientific research and monitoring for priority species]*	15.1.1. By 2025, an Environment portal and information management system for biodiversity will be established 15.2.1 Conduct baseline surveys for the whole of Tonga by 2025.	**ABT**: 12, 14, 19 **Post-2020**: 20 **SDG:** 14, 15, 17 **SP:** 115,
		2. To provide protection of priority species to ensure viable population of all priority species of Tonga. [*16. Prioritise the species under the IUCN's red list of endangered species that are critically threatened or endangered; 17. Develop replanting programmes and explore ex-situ measures including herbaria, gene banks or seed orchards for priority species; 18. To enhance public knowledge and understanding of priority species and their importance for conservation as part of*	16.1.1 By 2030, Complete BIORAP surveys for Ha'apai, 'Eua, Niuas and Tongatapu island groups. 16.2.1 By 2024, the implementation of the Malau Species Recovery Plan should be completed and no longer threatened 16.3.1 By 2025, full Implementation and enforcement of the CITES 16.4.1 By 2025, management plans for all protected areas would be developed and fully implemented 16.5.1 By 2030, a national botanical garden will be established 17.1.1 By 2030, Toloa rainforest would have established a national herbarium for educational and eco-tourism purposes 17.2.1 By 2030, 60% of threatened flora will be recovered	**ABT**: 11, 12 **Post-2020**: A.2, A.3, 4, 5, 6, 9 **SDG:** 11, 14, 15 **SP:** 58, 94, 95

		Tonga's natural heritage, as a way of fostering public support for species conservation objectives; 19. To strengthen the technical, management and research knowledge and skills of local scientists and researchers, and the capacity of responsible agencies and organisations.].	17.3.1 By 2030, research lab would be operational for genetic modification 17.4.1 By 2020, the production of seedlings for priority species would be increased by 50% 18.1.1 By 2030, the public's knowledge has enhanced, with increased public support for species conservation. 18.2.1 By 2030, 80% of Tonga would understand the importance of rare and endemic species as part of Tongan heritage 18.3.1 By 2025, 80% of Tonga would have access to awareness materials on Protected Areas 18.4.1 By 2025, user guidelines for use and sharing of analysed data will be developed. 18.4.2 By 2030, ERIC would be operational to the public. 19.1.1 By 2030, 80% of local staff would be trained by relevant regional/national expertise 19.2.1 By 2025, an MoA template for mentoring arrangements with counterparts is developed 19.3.1 By 2025, all project concepts/design will include a component on formal and/or hands-on training opportunities for local staff. 19.4.1 At least 1 graduate level programme will be available annually. 19.5.1 By 2025, personnel or newly recruited personnel will be recruited solely to MEIDECC to coordinate conservation related research for an established multi-agency task force.	
	Invasive Alien Species	2. To develop a strong legal policy framework for invasive species management. *[20. Appropriate legislation, policies, protocols and procedures are in place and*	20.1.1 By 2021, the National Invasive Species Strategic and Action Plan is revised and reviewed 2021-2026. 20.1.2 By 2025, a Biosecurity Bill will be drafted and enacted. 20.1.3 By 20*25*, laws addressing invasive species management will be reviewed	**ABT**: 9 **Post-2020**: 6 **SDG:** 14, 15 **SP:** 58, 95

		operating, to underpin the effective management of invasive species].		
		2. To increase capacity for invasive species management [*21. Institutional strengthening required to manage invasive species effectively*]	21.1.1 Invasive species activities are coordinated through a national network by 2020 21.2.1 Tonga's invasive species management facilities and equipment are reviewed and improved 21.3.1 By 2025, Quarantine staff are trained with background on invasive species management and biosecurity, entomology, conservation biology, botany, to identify and respond to invasive species	**ABT**: 9 **Post-2020**: 6 **SDG:** 15 **SP:** 58, 95
		3. To Strengthen procedures for management control of Invasive Species [22. *Systems are in place to generate baseline information on the status and distribution of invasive species, detect changes, including range changes and emerging impacts*.]	22.1.1 Identify and Prioritize invasive species by 2021 22.2.1 Inspection and treatment procedures are improved to reduce the risk of new invasive species threats to Tonga and inter-island biosecurity needs to be enforced by 2022. 22.3.1 By 2020, Inter-agency cooperation established 22.3.2 By 2022, ERP drafted & endorsed 22.4.1 By 2020, baseline studies have been completed and management actions using native species implemented in selected sites	**ABT**: 9, 19 **Post-2020**: 6 **SDG:** 14, 15, 17 **SP:** 58, 95
6	**Local Community and Civil Society**	6. Attain development through integrated community efforts [*23. Strengthen capability of communities to sustainably manage its natural resources;*	23.1.1 By 2020, the network with private sector and NGOs with government sectors will be well established 23.2.1 By 2025, create awareness on the standards and quality issues on marketable products 23.2.2 By 2030, establishing green payments from public funds, which rewards producers for good conservation practices 23.2.3 By 2030, market-based environmental standards and certifications will be developed that add value to products and services, such as those that promote farming practices that alleviates poverty and enhances biodiversity. 23.3.1 By 2025, formulation and implementation of outer island and rural development programs through local communities	**ABT**: 1, 2, 3, 5, 14, 15, 18 **Post-2020**: 9, 20, 21 **SDG:** 1, 4, 6, 12, 14, 15 **SP:** 30, 44, 79

			includes the application of nature-based solutions to benefit biodiversity conservation, livelihoods and human well-being. 23.3.2 By 2025, increased public participation, from 2018 baseline, in community environment conservation programmes combined with other programs that promotes alternative livelihoods and alleviates poverty. 23.4.1 Improving gender equality by implementing the government's gender development policy with 60% being achieved by 2030. 23.4.2 Improve services for the elderly and other vulnerable groups, including investigation of the potential private sector role with 60% being achieved by 2030. 23.4.3 Instilling discipline, basic life skills and good, values in the youth, in particular addressing the needs of those who are unemployed, by promoting youth development programmes, including community economic development and the consideration of a National Youth Service with 50% being achieved by 2030. 23.5.1 By 2030, 80% of the following is achieved: Cultural awareness, environmental sustainability, disaster risk management, and climate change adaptation, integrated into all planning and implementation of programs, by establishing and adhering to appropriate procedures and consultation mechanisms. 23.5.2 Within an evolving culture, the value of Tonga's cultural traditions are integrated into national policy plans by 2030. 23.6.1 By 2030, 60% is achieved for strong conservation inclusive of communities, by engaging districts/villages/communities in meeting their service needs and ensuring the prioritized and equitable distribution of development benefit	

			23.6.2 By 2030, communities appreciate the importance of environmental impact assessments for major development projects by complying to its legislation	
7	**Access and Benefit Sharing from the genetic resources and Traditional Ecological Knowledge**	1. To prevent illegal access to and unlawful exploitation of Tonga's genetic resources. [*24. Develop legal and Institution frameworks to safeguard Tonga's genetic resources;*	24.1.1 By 2025, a legislative review is completed for safeguarding Tonga's genetic resources, as a process to ratify the Nagoya Protocol. 24.2.1 By 2030, Tonga has legislation in place to regulate access to Tonga's genetic resources for bioprospecting, research and other forms of exploitation 24.2.2 By 2030, Tonga has legislation with appropriate measures to protect and safeguard ownership of traditional ecological knowledge and other intellectual property rights associated with them, and ensure equitable benefit sharing resulting from their commercial use 24.3.1 By 2030, guidelines and procedures will be in place for the regulating of access to information and sharing of benefits genetic resources in alignment to the Nagoya Protocol	**ABT**: 13, 16, 18 **Post-2020**: A.3, 4 **SDG:** 2, 14, 15 **SP:** 89-91, 94
		2. To ensure the fair and equitable sharing of benefits generated from the use of genetic resources. [*25. Safeguard the interests of holders of traditional knowledge and owners of resources*]	25.1.1 By 2030, a system will be in place to register and monitor research requests and reports 25.1.2 By 2030, local owners of resources and traditional eco-knowledge are well informed of the procedures for access and benefit sharing through various workshops, meetings and one on one consultations. 25.2.1 By 2030, an appropriate mechanism and procedures will be in place to ensure fair and equitable outcomes of negotiations with bio-prospectors 25.3.1 By 2030, A system will be in place to capture, document and store traditional ecological knowledge (TEK) so it won't be lost. 25.4.1 By 2030, TEK will be mainstreamed into school curriculums or into teaching materials.	**ABT**: 16, 18 **Post-2020**: C.1, C.2, 13, 20 **SDG:** 1, 14, 15 **SP:** 80, 81, 89-91, 94

			25.4.2 By 2030, communities will be aware of their TEK rights through the use of a range of media types, workshops, ongoing dialogues with various stakeholders from government, NGOs and experts. 25.5.1 By 2030, a facility will be established to store traditional artifacts and other forms of expressions, as well as genetic resources for promoting their existence, educational and awareness raising purposes.	
8	**Mainstreaming Conservation**	1. To strengthen national collaboration among sectors for the sustainable use and management of biodiversity in Tonga. *[26. Strengthen policy and legislative framework for sustainable use and management of biodiversity in Tonga; 27. Develop an integrated land-use plan; 28. Enhance awareness, communication and knowledge management for biodiversity; 29. Strengthen mechanisms for ecosystem-based management, adaptation and mitigation; 30. Mainstream biodiversity into cross-sectoral community planning and management]*	26.1.1 By 2027, NBSAP will be effectively implemented across relevant sectors 26.1.2 By 2030, Compliance and Enforcement legislations and policies take into account biodiversity and livelihoods 26.2.1 By 2025, biodiversity conservation will be mainstreamed into the TSDF. 26.2.2 By 2025, biodiversity and ecosystem services is mainstreamed into corporate sector plans through strong engagements of members in existing multisectoral environmental coordinating committees. 26.3.1 By 2018, NGO and private sector representatives will be part of the National Environment Coordinating Committees for decision making 26.4.1 By 2030, Protected Area network expanded and representative, with functional corridors 26.5.1 By 2025, a Coordinating Section, with personnel, at the Department of Environment to be responsible for coordinating the implementation, monitoring and reporting of the NBSAP will be established and properly resourced. 26.5.2 By 2025, secure external funding sources, potentially available for both short and long-term to finance biodiversity activities 26.5.3 By 2025, secure funding from government recurrent budgets annually with relevant line Ministries for NBSAP implementation.	**ABT**: 10, 11, 17, 19 **Post-2020**: 14, 16 **SDG:** 11, 14, 15, 17 **SP:** 6, 18, 54-55, 120

			26.5.4 By 2030, Establish a “trust fund” (maybe in close or joint efforts with related schemes such as “Climate Change Trust Fund”) 26.6.1 By 20*25*, a financial mechanism and legal framework is established to support enforcement and compliance work for protected areas 27.1.1 By 2030, land use plans and a land use policy will be developed. 27.2.1 By 2027, complete GIS and Lidar surveys are completed for all outer islands 27.2.2 By 2027, hydrological surveys for water-use management were undertaken. 28.1.1 By 2025, Protected Areas established are maintained for priority species relevant for community livelihoods 28.2.1 By 2025, Communication Strategy on good practices and sustainable use of biodiversity is developed. 28.3.1 By 2025, best practices and lessons learned for Protected areas are well documented and shared to the public, and is practically replicated by communities with technical assistance from government. 28.4.1 By 2025, National Clearing House mechanism will be established. 28.4.2 By 2025, a National environmental database will be developed for users. 28.5.1 By 2027, Synergistic implementation and reporting through the NBSAP, supporting other reporting requirements under relevant MEAs. 28.6.1 By 2025, a Programme of Work will be developed to provide a training programme for teachers. 28.7.1 By 2030, an Environment Resource Interactive Center (ERIC) is established to better inform and educate the public on conservation work in Tonga, and to garner support for conservation.	

			28.8.1 Financial and human resources for government institutions have increased by 20% for conservation, protection and sustainable use of natural resources from 2020 baseline. 29.1.1 By 2027, implementation through NBSAP will contribute to NDCs 29.2.1 By 2022, a State of the Coast will be developed 29.2.2 By 2027, coastal management plans including economic development will be developed. 29.3.1 By 2025, planning by all sectors, will apply the ridge to reef approach and consider nature based solutions, to increase ecosystem resilience and support food security. 30.1.1 By 2020, communities are engaged in all planning, implementation and monitoring for biodiversity management, including information collection 30.2.1 By 2020, there is commitment to cross-sector implementation of the NBSAP 30.3.1 By 2025, mainstream biodiversity into community development plans 30.4.1 By 2025, effective implementation of EIA tools and other development controls 30.5.1 By 2025, an operational early warning system is directed especially at sites of high biodiversity, including ocean sites, and high risk due to climate change impacts.	
		2. To enhance and encourage political support towards biodiversity conservation. [*31. Enhance and encourage political support from respective Constituencies on forest and biodiversity conservation activities*]	31.1.1 By 2030, the number of Politicians identified supporting and advocating biodiversity conservation activities have doubled from 2020 baseline. 31.1.2 By 2030, Biodiversity or forest conservation supported activities are planned into Constituency budgets for implementation.	**ABT**: 1, 4, 17 **Post-2020**: 14, 16 **SDG:** 14, 15, 17

				SP: 6, 18, 54-55, 120
9	**Financial Resources and Mechanisms**	1. To assess the capacity of Institutions managing biodiversity conservation [*32. Conduct a national capacity self-assessment to identify existing capacity needs for implementing the NBSAP;*	32.1.1 By 2025, a National Capacity Self-Assessment tool will be in use 32.2.1 By 2025, a capacity building programme would be implemented	**ABT**: 17, 20 **Post-2020**: D.1, 19, **SDG:** 1, 15 **SP:** 109
		2. To further strengthen effective partnerships with key local, regional and international organisations to support implementation of biodiversity conservation programmes. [*33. Document information on current and potential funding sources and their requirements for assistance; 34. Formal training in proposal writing and fund-raising planning for local implementing organisations, including NGOs.*]	33.1.1 By 2025, a donor database would be established for potential investors of the NBSAP 33.2.1 By 2025, Tonga will be implementing at least 2 biodiversity conservation related projects as a recipient from several donor's funding for NBSAP implementation 33.3.1 By 2025, 80 percent of participants in public meetings and workshops will understand the funding schemes for conservation activities 34.1.1 By 2020, NGOs, Government, and private sector would have annual trainings for proposal writing 34.2.1 By 2020, networking with international bodies will be strengthened for partnership in achieving the Aichi Targets 34.3.1 By 2025, a dedicated forum will be established for the purpose of meeting with major donor organisations to fund conservation programmes 34.4.1 By 2025, online portals will be updated regularly for donors to observe local progress on conservation activities 34.5.1 By 2025, at least 2 information sharing workshops will be held for local NGOS and eligible implementing agencies on accessing external environmental funds.	**ABT**: 20 **Post-2020**: D.1, 19, **SDG:** 1, 10, 17 **SP:** 109

			34.6.1 By 2025, an Environment Conservation award will be an annual event given out during Environment Week	
		3. To explore economic tools and financing mechanisms for biodiversity conservation. [*35. Explore economic tools and financing mechanisms for biodiversity*]	35.1.1 By 2025, a review of existing economic instruments that support conservation will be conducted. 35.1.2 By 2025, develop a report with recommendations on a sustainable financing mechanism to support biodiversity conservation. 35.2.1 By 2030, an Environment Trust Fund, or the like, will be established to sustainably support eco-projects	**ABT**: 20 **Post-2020**: D.1, 19, **SDG:** 1, 10, 17 **SP:** 109

7.0 GLOSSARY

Adaptive Management: An experimental approach to management, or structured learning by doing. It is based on developing dynamic models that attempt to make predictions or hypotheses about the impacts of alternative management policies. Management learning then proceeds by systematic testing of these models, rather than by random trial and error. Adaptive management is most useful when large complex ecological systems are being managed and management decisions cannot wait for final research results.

Agrobiodiversity: The variety and variability of animal, plant, and microbial organisms on earth that are important to food and agriculture.

Alien Species: A plant or animal species which has been brought to Tonga by humans, either by accident or design.

Biological Diversity (Biodiversity): The variability among living organisms from all sources including inter alia, terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species, and of ecosystems (Convention on Biological Diversity).

Genetic Diversity: The variability in the genetic make-up among individuals within a single species. In more technical terms, it is the genetic differences among populations of a single species and those among individuals within a population.

Species Diversity: The variety of species - whether wild or domesticated - within a particular geo-graphical area. A species is a group of organisms which have evolved distinct inheritable features and occupy a unique geographic area. Species are usually unable to interbreed naturally with other species due to such factors as genetic divergence, different behaviour and biological needs, and separate geographic location.

Ecological (ecosystem) Diversity: The variety of ecosystem types (for example, forests, deserts, grasslands, streams, lakes, wetlands, and oceans) and their biological communities that interact with one another and their non-living environments.

Bioprospecting: The search among biological organisms for commercially valuable compounds, substances, or genetic material.

Bioregion: An area that is defined according to patterns of ecological characteristics in the landscape or seascape. It provides a framework for recognizing and responding to indigenous biodiversity values.

Biosafety: The policies and actions taken to manage risks from the intentional introduction of new organisms, including genetically modified organisms that could adversely affect biodiversity, people, or the environment.

Biosecurity: The protection of people and natural resources, including biodiversity, from unwanted organisms capable of causing harm.

Biota: All the living organisms at a particular locality.

Biotechnology: Any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific use, including genetic engineering (Convention on Biological Diversity).

Border of Control: The policies and actions taken to prevent the accidental or illegal introduction of unwanted organisms across national borders. Border control includes re-import pest control, certification, inspection and surveillance, and emergency responses.

Conservation: The prevention and protection of natural and historic resources for the purpose of maintaining their intrinsic values, providing for their appreciation and recreational enjoyment by the public, and safeguarding the options of future generations.

Convention on Biological Diversity: An international agreement on biological diversity that came into force in December 1993. The objectives of the Convention are: the conservation of biological diversity; the sustainable use of its components; and the fair and equitable sharing of the benefits arising out of the utilisation of genetic generations.

Domesticated or Cultivated Species: Species in which the evolutionary process has been influenced by humans to meet their needs.

Ecosystem: An interacting system of living and non-living parts such as sunlight, air, water, minerals, and nutrients. Ecosystems can be small and short-lived, for example, water-filled tree holes or rotting logs on a forest floor, or large and long-lived such as forests or lakes.

Ecosystem Management: A management philosophy intended to sustain the integrity of ecosystems.

Endemic Species: An indigenous species which breeds only within a specified region or locality and is unique to that area.

Ex-situ Conservation: The conservation of species outside their natural habitat.

Gene: The functional unit of heredity, the part of the DNA molecule that encodes a single enzyme or structural protein unit.

Genetic Erosion: Loss of genetic biodiversity between and within populations of the same species over time; or reduction of the genetic basis of a species due to human intervention or environmental changes.

Genetic Material: All or part of the DNA of a genome or all or part of an organism resulting from expression of the genome.

Genetic Resources: Genetic material of plants, animals, or microorganisms (including modern cultivars and breeds, primitive varieties and breeds, landraces, and wild or weedy relatives of crop plants, or domesticated animals) that has value as a resource for people or future generations.

Germplasm: The genetic material that carries the inherited characteristics of an organism.

Habitat: The place or type of area in which an organism naturally occurs.

Indigenous Species: A plant or animal species which occurs naturally in Tonga. A synonym is "native".

In-situ Conservation: The conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings and in the case of domesticated or cultivated species in the surroundings where they have developed their distinctive properties (CBD).

Invasive Species: An animal pest or weed that can adversely affect indigenous species and ecosystems by altering genetic variation within species, or affecting the survival of species, or the quality or sustainability of natural communities. In Tonga, invasive animal pests or weeds are almost always species that have been introduced to the country.

Living Modified Organism: Any living organism that possesses a novel combination of genetic material obtained through the use of modern biotechnology.

Living Organism: Any biological entity capable of transferring or replicating genetic material, including sterile organisms, viruses, and viroids.

Marine Managed Areas: Any areas from high water mark to high seas that are under some kind of protection. This would include all areas under the Tonga's marine ocean management areas (special management areas (SMAs), no take areas, sustainable use areas – all areas under the typology).

Marine Protected Areas: Protected areas, usually large unmodified or slightly modified areas, retaining their natural character and influence, which are protected and managed so as to preserve their natural condition. These are typically no take areas.

Natural Habitats and Ecosystems: Habitats and ecosystems with a dominant or significant indigenous natural character. They do not include modified areas, such as farm or forestry land, where the indigenous vegetation has largely been replaced, although these areas may still provide important habitat for indigenous species.

Protected Area: A geographically defined area that is protected primarily for nature conservation purposes or to maintain biodiversity values, using any of a range of legal mechanisms that provide long term security of either tenure or land use purpose. It may be either publicly or privately owned.

Special Management Areas (SMAs): Community marine managed areas that are managed primarily for sustainable fishing with allocated no take areas called fish habitat reserves (FHRs).

Species: A group of organisms, sharing common features (similar phenotype) and being isolated from other groups in terms of reproduction.

Sustainable Use: The use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations (CBD)