



KINGDOM OF TONGA'S SIXTH NATIONAL REPORT TO THE CONVENTION ON BIOLOGICAL DIVERSITY



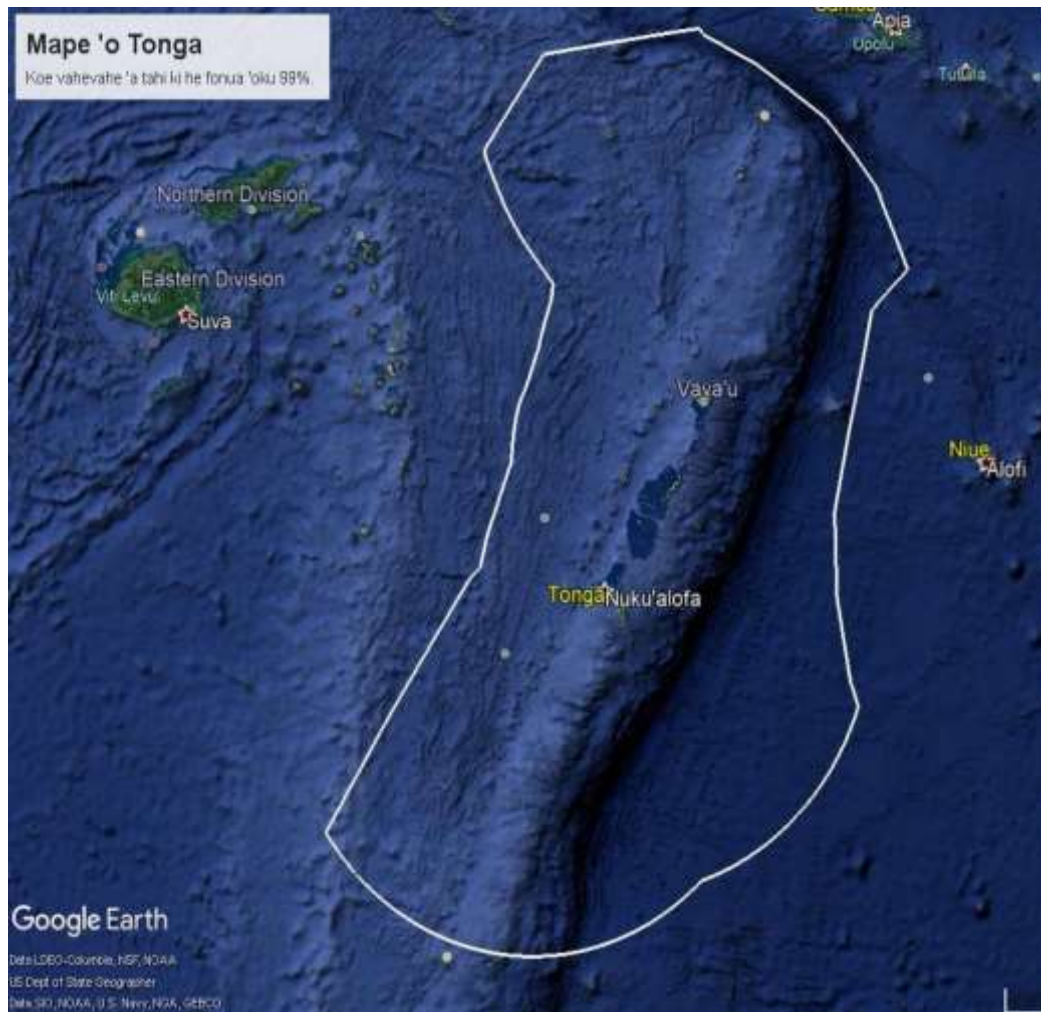
Convention on
Biological Diversity





GOVERNMENT OF TONGA

TONGA'S SIXTH NATIONAL REPORT TO THE CONVENTION ON BIOLOGICAL DIVERSITY



Prepared by the Department of Environment, Ministry of Meteorology, Energy, Information Disaster Management, Environment, Climate Change and Communications (MEIDECC) in collaborations with Tonga's national stakeholders.

September, 2020.



© His Majesty's Government of the Kingdom of Tonga, 2020 rights for commercial/for profit reproduction or translation, in any form, reserved.
Original text: English.

Produced with the financial support of the United Nations Environment Programme (UNEP) and the Department of Environment under the Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communication of the Government of Tonga, Convention on Biological Diversity (CBD) and Global Environment Facility (GEF).

The contents of this publication are the sole responsibility of the Government of Tonga and in no way be taken to reflect the views of the donors and partners.



Convention on
Biological Diversity



Review of Tonga's National Biodiversity Strategy and Action Framework – Sixth Report

Contributors:

Ms. Halalilika 'Etika	(GIS) MLNR
Mr. Māna'ia Halafihī	(Agriculture) MAFFF
Mr. Sitiveni Hamani	(Forestry) MAFFF
Ms. Ta'hirih Hokafonu	(DoE) MEIDECC
Ms. Sesimani Lokotui	CSFT
Ms. Ana Maea	(Natural Resources) MLNR
Ms. Mafile'o Masi	(DoE) MEIDECC
Dr. Siola'a Malimali	MOF
Ms. Atelaite Lupe Matoto	(DoE) MEIDECC
Ms. Lilu Moala	(DoE) MEIDECC
Ms. Lynette Sifa	(GIS) MLNR
Mr. Semisi Tongia	(Tourism) MTLC
Ms. 'Elisapeti Veikoso	MLNR

Editors:

Mr. Paula Ma'u
 Ms. 'Atelaite Lupe Matoto
 Ms. Ta'hirih Fifita Hokafonu
 Ms. 'Elisapeti Veikoso
 Ms. Monalisa Tukuafu

NBSAP Project Management Unit

Ms. Ta'hirih Hokafonu Project Coordinator
 Ms. Elisapeti Veikoso Project Assistant

SEPTEMBER 2020

Table of Contents

Executive Summary	7
Acronyms	8
Acknowledgement	12
Forward	13
1.0 Introduction	14
1.1 Methodology	16
1.2 Geographical Characteristics	17
2.0 Section I: Information on Targets Being Pursued at the National Level	20
3.0 Section II: Implementation Measures Taken, Assessment of their Effectiveness, and Associated Obstacles and Scientific and Technical Needs to Achieve National Targets	40
3.1 Describe the measures taken and indicate which ABT, and National targets each measure contributes to?	40
3.2 Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes, and the tools and methodology used to achieve it.	42
3.3 Obstacles encountered during the implementation of each measure, and the requirements to overcome them described?	102
3.4 Are revisions recommended for measures that can be more effectively implemented to achieve desired results?	104
4.0 Section III: Assessment of Progress towards Each National Target	106
5.0 Section IV: Describe the national contribution to the achievement of each global ABT	141
6.0 Section IV: National Biodiversity Profile	152
6.1 Forest Ecosystems	152
6.2 Marine Resources	154
6.3 Coral Reefs	156
6.4 Protected Areas	157
6.5 Agro-biodiversity	158

6.6	Species conservation	166
6.7	Threats and Pressures of Pollution on Biodiversity	170
7.0	Mechanism for Monitoring and Reviewing Implementation	174
8.0	References	175
	Annexes	183
	Annex 1: Maps of Tourist Sites in Tonga	183
	Annex 2: International Conventions relevant to Pollution Control and Management	185
	List of Figures and Tables	187

Executive Summary

The Sixth National Report provides a 4-yearly update on the Kingdom of Tonga's progress against biodiversity targets, as required under the Convention on Biological Diversity (CBD). This Report covers the period 2014-2018 which captures progress against:

- Tonga's National Biodiversity Strategy and Action Framework (NBSAF) its implementation and the mainstreaming of biodiversity;
- The progress towards the 2020 Aichi biodiversity targets and the relevant Sustainable Development Goals (SDG)

This report covers five sections focusing on the following key areas:

1. Information on the targets being pursued at the national level;
2. Implementation measures taken, assessment of their effectiveness, associated obstacles and scientific and technical needs to achieve national targets;
3. Assessment of progress towards each national target;
4. Describe the national contribution to the achievement of each global Aichi Biodiversity Targets; and
5. Updated biodiversity country profiles.

This National Report is part of an on-going work of the Kingdom of Tonga in its effort to remain committed to the objectives of the CBD as well as meeting its national priorities. Along with the submission of its previous National Reports, Tonga has also updated its NBSAP as Tonga's National Biodiversity Strategy and Action Framework (NBSAF) for the period 2018-2025, covering 8 thematic areas with planned strategies and actions for the conservation of biodiversity and its sustainable use. The national targets emphasized under the framework of the Aichi Biodiversity Targets reflect Tonga's ongoing efforts to align closely its national strategies and action plans accordingly.

There are several Multilateral Environment Agreements (MEAs) relevant for NBSAF activities and actions to meet respective obligations of which Tonga is a party of. The primary instruments relevant to biodiversity are the CBD and its protocols, CITES, CMS, RAMSAR, and MARPOL. NBSAF actions are relevant to and potentially impacted by climate agreements, such as the Paris Agreement, and development agenda, including the SAMOA Pathway and the Framework for Resilient Development in the Pacific, as well as supporting Tonga's Joint National Action Plan 2 on Climate Change and Disaster Risk Management (JNAP2).

National reports are essential tools in allowing the Conference of the Parties (COP) to keep track of the implementation of the Convention by providing information for the preparation of the Global Biodiversity Outlook (GBO). The recent Fifth National Report (5NR) provided a key source of information for a mid-term review of the implementation of the Strategic Plan for Biodiversity 2011-2020.

The Sixth National Report makes updates on previous National Reports by providing more transparent and specific information on how we are progressing towards Tonga's national and international targets and includes improved benchmarks to evaluate the effectiveness of our actions. The report also outlines some of the significant national actions being undertaken through the combined efforts of the national government, NGOs and local communities. These initiatives and actions are vital for putting a halt on the decline of biodiversity, which poses a significant challenge and therefore needs a sustained collaborative effort across the Kingdom.

Acronyms

5NR	-	Fifth National Report
6NR	-	Sixth National Report
ABT	-	Aichi Biodiversity Targets
AGC	-	Agriculture Growth Committee
BIORAP	-	Biological Rapid Assessments
CBA	-	Climate Based Adaptation
CBD	-	Convention of Biological Diversity
CITIES	-	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMS	-	Convention on Migratory Species
CL	-	Crown Law
COP	-	Conference of the Parties
DoE	-	Department of Environment
DoFo	-	Department of Forestry
ECCD	-	Environment and Climate Change Department
EIA	-	Environmental Initial Assessment
FAO	-	Food and Agriculture Organization of the United Nations
FSP	-	Fanga'uta Stewardship Plan
GBO	-	Global Biodiversity Outlook
GEF	-	Global Environment Facility
GEF-SGP	-	GEF Small Grant Program
GIS	-	Geographic Information System
GL	-	Government and Local Communities

IAS	-	Invasive Alien Species
IFAD	-	International Fund for Agricultural Development
JNAP2	-	Joint National Action Plan 2 on Climate Change and Disaster Risk Management
MACBIO	-	Marine and Coastal Biodiversity Management in the Pacific Islands
MAFFF	-	Ministry of Agriculture, Food, Forestry and Fisheries
MAFF	-	Ministry of Agriculture, Food and Forestry
MARPOL	-	International Convention for the Prevention of Pollution from Ships
MCTL	-	Ministry of Commerce, Trade and Labor
MEAS	-	Multilateral Environment Agreements
MECC	-	Ministry of Environment and Climate Change
MECCDMMIC	-	Ministry of Environment, Climate Change, Disaster Management, Meteorology, Information and Communications
MEIDECC	-	Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communications
MET	-	Ministry of Education and Training
MEWAC	-	Ministry of Education, Women's Affair and Culture
MFAT	-	Ministry of Foreign Affairs and Trade for New Zealand
MFP	-	Ministry of Finance and Planning
MFNP	-	Ministry of Finance and National Planning
MIA	-	Ministry of Internal Affairs
MIC	-	Ministry of Information and Communications
MLCI	-	Ministry of Labor, Commerce and Innovation
MLNR	-	Ministry of Lands and Natural Resources
MOE	-	Ministry of Education

MOFi	-	Ministry of Finance
MOFo	-	Ministry of Forestry
MOH	-	Ministry of Health
MOI	-	Ministry of Infrastructure
MOJ	-	Ministry of Justice
MOTEY	-	Ministry of Training, Employment, Youth and Sports
MPs	-	Members of Parliament -
NBSAF	-	National Biodiversity Strategy and Action Framework
NBSAP	-	National Biodiversity Strategy and Action Plan
NGO	-	Non-Government Organisation
PMO	-	Prime Minister's Office
POPs	-	Persistent Organic Pollutant
PRRP	-	Pacific Risk Resilience Program
RAMSAR	-	The Convention on Wetlands of International Importance
R2R	-	Ridge to Reef program
SAMOA Pathway		SIDS Accelerated Modalities of Action
SDG	-	Sustainable Development Goals
SIDS	-	Small Island Developing States
SMA	-	Special Management Areas (community-based marine reserve)
SPC	-	The Pacific Community
SPCZ	-	South Pacific Convergence Zone
SOE	-	State of Environment
TBC	-	Tonga Broadcasting Commission
TEK	-	Traditional Ecological Knowledge

TERM	-	Tonga Energy Road Map
TWB	-	Tonga Water Board
TWG	-	Technical Working Group
TEK	-	Traditional Ecological Knowledge
TFP	-	Tonga Forest Product Ltd
UNEP	-	United Nation Environment Program
VEPA	-	Vava'u Environment Protection Association
WB	-	World Bank

Acknowledgement

The Government of Tonga extends its sincere gratitude to the UNEP and GEF for providing financial support to pursue this Sixth National Report.

Special thanks are extended to the Hon. Minister, Mr. Poasi Mataele Tei; and Chief Executive Officer for Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communications (MEIDECC), Mr. Paula Pouvalu Ma'u, for their leadership and continued support with this Report. In addition, there is much gratitude to the Director of Environment for her continuous support and excellent guidance towards this edition.

The advisory support of the Technical Working Group (TWG), from relevant sectors, is also acknowledged as they had provided valuable contributions and assistance during the collection of data.

Finally, a thank you is also extended to the communities for their valued input; to the staff of the Environment Department, as well as the Project Management Unit, for their continued assistance and coordination in completing this very important task.

Forward

As the Minister for Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communications (MEIDECC), it gives me great pleasure to present to you our Sixth National Report as part of Tonga's commitment to the Convention of Biological Diversity. It has been produced in response to the *Decision XIII/27 National Reporting* at the Conference of the Parties in 2016.

Being a Small Island Developing State that relies significantly on the limited biodiversity that we have, we recognize the importance of preserving and promoting the sustainable use of our biodiversity, not only for its uniqueness but also because it is the foundation of every facet and fiber of our society and our general way of life.

This National Report is part of an on-going work of the Kingdom of Tonga in its effort to remain committed to the objectives of the CBD as well as meeting its national priorities. Along with the submission of its previous National Reports, Tonga has also updated its National Biodiversity Strategy and Action Framework (NBSAF) for the period 2018-2025, covering 9 thematic areas with planned strategies and actions for the conservation of biodiversity and its sustainable use. The national targets closely supports the global targets for Aichi Biodiversity Targets and the Sustainable Development Goals in Tonga's efforts to end poverty, protect the planet and ensure its people enjoy peace and prosperity.

I commend all those who were instrumental in putting this Report together, and I am most grateful to the Global Environment Facility (GEF) financial assistance through the United Nation Environment Program for funding the development of this important document and for their technical support. It is my hope that this Report will not only serve to provide updates on the progress Tonga has made in achieving its national and international targets, but also provide opportunities for Tonga to seek innovative means to tackle the challenges that our fragile biodiversity is facing as a large ocean State.



Hon. Poasi Mataele Tei

Minister for Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communication (MEIDECC)

1.0 Introduction

The Kingdom of Tonga is a country located in the central south Pacific, lying between 15° and 23° 30' South and 173° and 177° West. It has a combined land and sea area of 720,000 km² and consists of an archipelago of 172 islands with a land area of approximately 747 km². There are 36 inhabited islands with an area of 670 km². In 2016 Tonga's population was at 100,651.¹

The following Map shows the country in its entirety with all the 4 island groups including its Maritime boundary, which encompasses all marine and terrestrial biodiversity in the Kingdom of Tonga, from its EEZ down to the island groups and each locality.

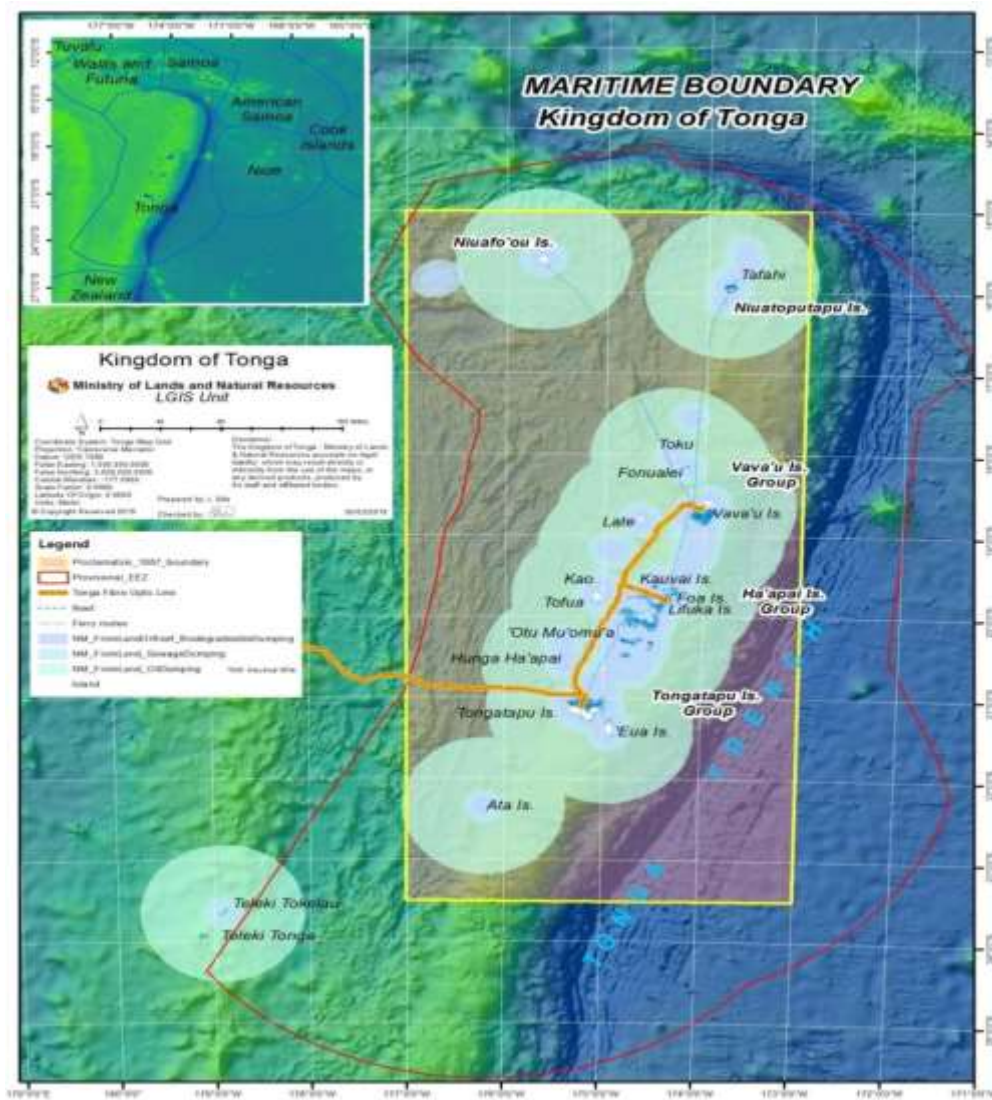


Figure 1: Map of the Kingdom of Tonga. (Source: GIS Section, MLNR, 2019)

¹ Tonga Statistics Department, (2016). Population Statistics. (2016, November 30). Retrieved June 20, 2020, from <https://tongastats.gov.to/statistics/population-statistics/>

Despite such small land territory, Tonga has a varied topography. Tongatapu is characterized by flat, fertile plains; the Ha'apai group is comprised mostly of small coral atolls and extensive lagoons but is also home to one dormant and one active volcano; Vava'u islands are surrounded by high limestone cliffs and meandering bays; Eua is virtually a mountain top rising from the sea. The Kingdom of Tonga supports a wide diversity of flora and fauna. The volcanic islands of Late and Tofua have some of the best remaining high diversity native forest and still support large populations of birds and reptiles.

Tonga's flora includes 419 fern and angiosperm species. Tonga is also home to 20 species of terrestrial and sea birds of which two are endemic to Tonga and Near Threatened (NT), such as Tongan whistler (*Pachycephala jacquinoti*) and Polynesian Megapode. According to the latest survey conducted in Late and Fonualei Islands in September 2013, the Polynesian megapode was not located on Late but continues to survive in good numbers on Fonualei, along with more than 100 000 sooty terns (*Sterna fuscata*).²

The current critical environmental concerns in Tonga have arisen due to both natural and anthropogenic pressures such as deforestation, damage to coral reefs and the introduction, spread of invasive alien species, climate change and natural disasters.

The Sixth National Report is important not only as to raise awareness around Tonga's progress towards our national targets but more importantly serves as a national benchmark for more urgent, effective and scaled-up action in the future.

² Tonga. Department of Environment, Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communication. (2018). *National biodiversity strategy and action framework to 2030 draft*.

1.1 Methodology

The methodologies used for gathering of data for this Report includes literature review, desktop review of each relevant Sectors Plans and Strategies that are relevant for biodiversity in Tonga as well as using of Geo-spatial data and Geographic Information System (GIS) for data analysis. Tonga's previous National Reports and previous NBSAP review reports were also taken into consideration when drafting of this Report. The online resources also offer sources of information for this Report.

The representatives of key stakeholders together with civil society representatives that served as the Technical Working Group (TWG) for biodiversity were invited to provide data and information in various sections of this report, as well as having regular inputs from each key line Ministry and national stakeholders in other similar spaces in the development of the report. This was verified in the continuous meetings of the Technical and Steering Committee for the program during 2019. Selection of various case studies of communities' involvement was also determined by the key line stakeholders to inform learning at specific areas of the report. This method also served to ensure that the whole country is inclusive in this Report, from all islands of Tonga (shown in the map below), to reflect the different types of biodiversity found within each different locality.

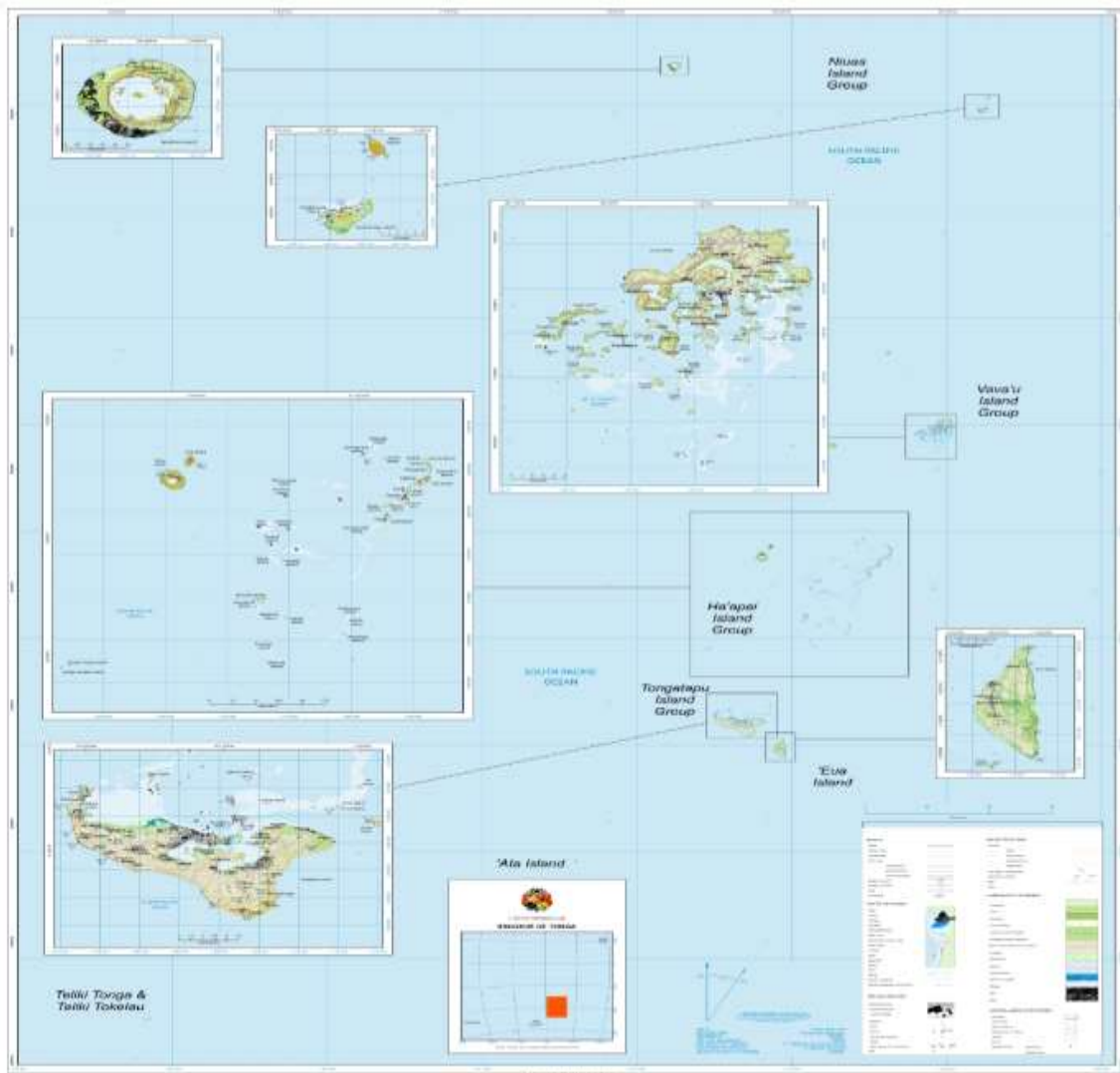


Figure 2: The extent of the Kingdom of Tonga, showing island groups where status, threats and trends of Biodiversity are clearly identified and illustrated in this Report. (Source: MLNR, 2019)

1.2 Geographical Characteristics

Overview:

Tonga's biodiversity is affected by both natural and man-made factors. This section is important in-order to provide consistency for comparison purposes from previous National Reports. It will also maintain similar thematic areas as parameters to assess the status, trend and threats of Tonga's biodiversity.

1.2.1 Climate

Tonga's climate is tropical and characterized by the contrasting wet season (Nov-Apr) and a dry season (May-Oct). Its annual rainfall is influenced by the movement of the South Pacific Convergence Zone (SPCZ), where the most northern islands of Tonga receive more rainfall approximately 2500mm/year whilst the southern islands received about 1700mm/year. The average wettest period is around March, and the driest month varies between June and July. The mean annual temperature for Tonga ranges from 23-28°C but seldom reaches above 35°C with average daily humidity of 80%. Tonga Meteorological Services, (2006). Thus, rainfall and temperature are factors that influence the varieties of biodiversity in Tonga.

1.2.1.1 Impacts of Climate Change on Biodiversity

Climate change will affect biodiversity in many different ways depending on the adverse effects and its response. Climate change will affect individuals, populations, species, and ecosystems which have been adversely impacted by coastal inundation, extreme weather events with high winds, storm surge, increased wave action and flooding and changes in precipitation that impact water resources.

Many studies and assessment of impacts of climate change on biodiversity have been conducted at regional scales and there is sufficient evidence to suggest that climate change is having an increasingly serious impact on biodiversity. In Tonga climate change impacts on terrestrial biodiversity include a) Increased rainfall and intensity of storms; b) Increased drought; c) Increased rainfall variability; d) Rising temperature; e) Disproportionate increases in extreme temperatures; f) Increased diseases; g) Increased fire risk (intensity and frequency); h) Alterations in seasonal drivers (e.g. flowering and fruiting periods, phenological characteristics); i) Increased carbon dioxide and j) Inundation of terrestrial ecosystems.

Climate change will also impact the marine environment such as the following impacts: a) Submergence/loss of beaches, atolls, estuaries, mangroves; b) Increased salination of freshwater and estuarine ecosystems; c) Increased sea and air temperature; d) Increases in cyclone and storm surge; e) Altered ocean circulation f) Alterations in seasonal cycles and impacts on rainfall patterns; g) Reduction in pH and increased impacts on cold water areas due to increased solubility of CO₂ in cold water; h) Increased CO₂; i) Rising sea levels.

1.2.2. Geology

Tonga archipelago is actually made of two geologically different parallel chains of islands which influence the range of biodiversity, both marines and terrestrial species as reflected in Figure 1.

The western islands, such as 'Ata, Fonuafo'ou, Tofua, Kao, Late, Fonualei, Toku, Niuatoputapu, and Tafahi, make up the Tongan Volcanic Arch and are all of volcanic origin. They were created from the subduction of the western-moving Pacific plate under the Australia-India plate at the Tonga Trench. The Tongan Islands sit on the Australia-India plate just west of the Tonga Trench. These volcanoes are formed when materials in the

descending Pacific plate heat and rise to the surface. There is only limited coral reef development on these islands, except for Niuatoputapu.

The eastern islands are non-volcanic and sit above the mostly submerged Tonga ridge that runs parallel to the Tongan Volcanic Arch and the Tongan Trench. Of these islands, only 'Eua has risen high enough to expose its underlying Eocene volcanic bedrock, the rest are either low coral limestone islands or sand cay islands. These islands are surrounded by "a protective and resource-rich of fringing, apron and off-shore barrier reefs" that have supported most of the human settlement in Tonga.

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.

1.2.3 Land-Use Planning

Tonga has a hierarchical land ownership system which provides benefits for land owners and its society. 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 at terrestrial and marine life. As noted due to increased demand for agricultural activities and urbanization clearing of vegetations have taken place; as well as reclamation of coastal areas.

The following maps highlighted how changes in land use have impacts on the surrounding environments and the different species that are found or used to be found in these areas. In this case, it's the Fanga'uta lagoon of Tongatapu island, with the enclave surroundings and their different land-use that had seen various impacts on the lagoon itself through the years.

As noted most changes observed in the example below is occurring at area with great demand for urbanization and also high demand for residential space, due to Tongas population census as of Nov 2016 of about 100,651 people.³

³ Tonga Statistics Department. (2016). *Population Statistics*.

FINDINGS FROM FANGA'UTA LAGOON INSPECTION 22/08/2017

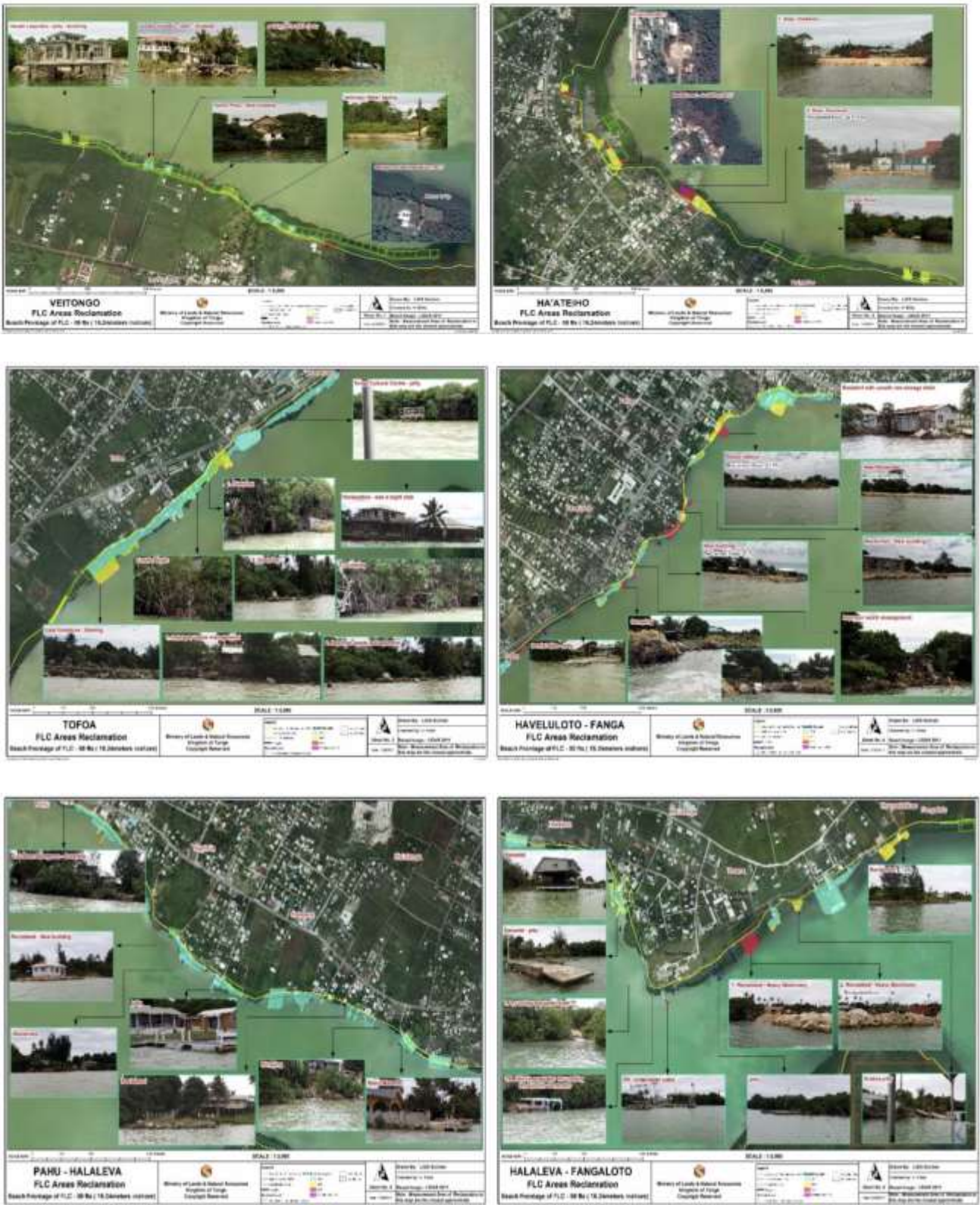


Figure 3: Land-use around Fanga'uta lagoon in the main island of Tongatapu (Source: MLNR, 2019)

2.0 Section I: Information on Targets Being Pursued at the National Level

The Kingdom of Tonga ratified the Convention on Biological Diversity (CBD) in 1998 gaining national commitment to implementation of actions at national level to conserve, sustainably use and protects its biological diversity. The CBD objectives align with Tonga’s Strategic Development Framework II (TSDF) of 2015-2025, and in the national framework it also supports Tonga’s NBSAF under its national outcome F which is for effective land, environmental management and resilience to climate change and risks.

Tonga’s Sixth Report, like its NBSAF is designed to be a stand-alone document with clearly defined objectives, strategies and actions. The NBSAF is a national working document under the Department of Environment. It seeks to achieve the Aichi Biodiversity Targets (ABT) of the Strategic Plan for Biodiversity 2011-2020 by targeting arise issues and constraints, and also supports the global Sustainable Development Goals (SDG). Tonga had reviewed its previous NBSAP document with its present 2018-2025 framework (NBSAF) reflecting its various national commitments and priorities on conservation of biodiversity and also other relevant international goals that Tonga is committed to.

In the development of each of the targets, each national stakeholder engaged in this process had provided their updated key strategies and targets that is directly linked to their core functions supporting too their various Corporate Plans, and in some thematic areas they also maintain some of their previous targets from the former NBSAP that are still valid. This was achieved through the various spaces of stakeholders’ engagement at national level, the technical/steering committee meetings and also at the state of environment stakeholder meetings that took place in 2018 and in 2019. Equal distribution between the gender engaged, of which 50% were of male and women involved in the process.

Tonga’s NBSAF has identified nine thematic areas that are essential to conservation of biodiversity as shared below with a summary of the number of strategies and targets identified respectively. These strategies and targets are to be implemented nationally

Table 1: Summative Thematic Areas and number of National strategies and targets

Thematic Areas	No. of Strategies	No. of Targets
1. <i>Forestry Ecosystem</i>	13	18
2. <i>Marine and Coastal Ecosystems</i>	6	21
3. <i>Agro Biodiversity</i>	3	7
4. <i>Species Conservation</i>	5	13
5. <i>Invasive Alien Species</i>	5	11
6. <i>Local Community and Civil Society</i>	1	10
7. <i>Access and Benefit Sharing from the genetic resources and Traditional Ecological Knowledge</i>	4	4
8. <i>Mainstreaming Biodiversity Conservation</i>	5	16
9. <i>Financial Resources and Mechanisms</i>	5	16
Total	47	116

There is a total of 47 national strategies and 116 national targets identified in the NBSAF of which the bulk falls under Forestry Ecosystem, Marine and Coastal Ecosystem as well in Mainstreaming Biodiversity Conservation and Financial resources and Mechanism. A summary of Tonga's current national strategies and targets for biodiversity is provided below in *Table 2*. There are some targets with optimistic expectations to be achieved earlier in the 8-year framework action plan for biodiversity efforts in the Kingdom.

Below are the relevant websites, links and files that were considered in the development of these targets and strategies for Tonga.

1. Tonga Energy Strategy: <https://drive.google.com/file/d/1CJWK3XVkfT-441TM3GN43D1fqPKv3RDM/view?usp=sharing>
2. Tonga Joint National Action Plan 2 for Climate Change and Disaster Risk Management: https://drive.google.com/file/d/1YL9kirz-UVMn4cYt_P0e8WeCM0U4BpGR/view?usp=sharing
3. Tonga BIORAP synthesis report: <https://drive.google.com/file/d/1V8WaGx9MTRf3RN20TOWqXWa-8wuluNEP/view?usp=sharing>
4. MEIDECC Corporate Plan 2016-2019: <https://drive.google.com/file/d/1Gi5bYHIQiqAezkePPG1TVdFHWSg9IAre/view?usp=sharing>
5. MEIDECC Corporate Plan 2019-2021: <https://drive.google.com/file/d/1O5FN6zVR1uxu8kkvP6wTTrxUhwaAIAOo/view?usp=sharing>
6. Tonga National Invasive Species Strategic Action Plan 2014-2020: <https://drive.google.com/file/d/1unJuul-lwCaRUI3l9kCs1WdhF70JDenz/view?usp=sharing>
7. Fanga'uta Stewardship Action Plan 2017-2021: https://drive.google.com/file/d/1swN_B7-7Hh6OOS0xDliE1wGwOr2xsWEK/view?usp=sharing
8. Gazetted Fanga'uta Stewardship Plan: https://drive.google.com/file/d/1jfu58q_wBC-gv_ZuW6dxx9Xs5EtTh6bQ/view?usp=sharing
9. Government Priorities 2019-2020: https://drive.google.com/file/d/153AnqYP_ArnkcPZCEbli8BnQel5b65n8/view?usp=sharing
10. Ministry of Infrastructure Revised Corporate Plan 2016-2018: <https://drive.google.com/file/d/1Zb7O-LzWqul2fssV8GRuClrkSIR1E-dm/view?usp=sharing>
11. Tonga National Action Plan: Shark Plan 2014-2016: <https://drive.google.com/file/d/12ztcQTDVRxuiTDpygKlzLrsR-UyMmgqd/view?usp=sharing>
12. Tonga Fifth National Report: <https://drive.google.com/file/d/1t8Qd506qxjdb3EHBAgPRmLCQigzOrly/view?usp=sharing>
13. Toloa Forest Operation Plan 2014-2020: https://drive.google.com/file/d/1mp5H0gM-KCLrNALV0OKGbpq29udX4_bk/view?usp=sharing
14. Tonga Agriculture Sector Plan 2016-2020: https://drive.google.com/file/d/1NgMqSnTCQZJ0r6hfv46_WBdCYaOcFnqU/view?usp=sharing
15. Tonga Fisheries Sector Plan 2016-2024: https://drive.google.com/file/d/1xTCUsWwEbckaa42OhT9RWM9x_okz9A3Y/view?usp=sharing
16. Tonga International Determined Contributions: <https://drive.google.com/file/d/1zXx4MZ1VoR8k0GfhZY74xYYzqgMTzPGM/view?usp=sharing>
17. Tonga Strategic Development Framework II 2015-2025: <https://drive.google.com/file/d/1ZyS4Vs3VSlzKmyo9SyBD4GSw0SZOCcsr/view?usp=sharing>
18. Management Plan for Forest and Tree Resources of Tonga 2017
https://drive.google.com/file/d/1UubgiibGmjda020m7BU5Gw_9MXcLIWo7/view?usp=sharing

Additional relevant legislations:

1. Forest Acts:

<https://drive.google.com/file/d/1bc3LzBJAGTmC4CNvrHR3wvjYQZ8mI0kR/view?usp=sharing>

Table 2: Tonga targets: Tonga National Biodiversity Strategy Action Framework (NBSAF) 2018 – 2025

No.	Thematic Areas	Objectives/Strategies	Targets	Related Biodiversity (ABT) and Sustainable Development Goals (SDG) Aichi Targets
1	Forest Ecosystem	1.1 Develop and promote sound policy and legal frameworks	1.1.1 Established the National Agriculture Sector Plan by 2015 with full implementation by then, and carry out interim review before 2020 1.1.2 National Forest Policy revised and updated 1.1.3 Complete 100% development of National Land Use Plan/Policy by 2015	ABT: 2, 4, 7, 17 SDG: 15, 12,
		1.2 That the Forest Act is revised and that the corresponding regulations are being revised and developed concurrently. <i>[Promote and develop robust MAFFF Legal and Policy Settings]</i>	1.2.1 MAFFF, in collaborations with regional partners secure funding and TA to complete revision of Forest Act by mid-2015; Planning and implementation of the revision works be completed by June 2016	ABT: 2, 4, 7, 17, 20 SDG: 15, 12, 1
		1.3 To engage each Member of Parliament in respective constituencies on biodiversity activities in each area. <i>[Enhance and encourage political support towards forest ecosystems development]</i>	1.3.1 Involve MPs as leaders in biodiversity development in respective constituencies & Identify and support biodiversity advocate politicians to lead community developments by 2020	ABT: 1, 2, 20 SDG: 12, 15, 1
		1.4 Develop and sustain sound capacity building processes	1.4.1 To provide at least 10 formal degree programs (post grad programs included) in biodiversity and related fields by 2020 1.4.2 To ensure that appropriate levels of technical knowledge are being delivered to communities by 2020	ABT: 1, 2, 4 SDG: 4, 12

			1.4.3 To increase engagement of local leaders in leading biodiversity initiatives to ensure full community participation, sustainability and community ownership by 2020.	
		1.5 To introduce biodiversity values into primary and secondary school's syllabus <i>[Ensure that educational values and processes are being promoted and mainstreamed]</i>	1.5.1 Step up efforts in mainstreaming biodiversity values (most probably in considerations of related environment and climate change related values) into school syllabus with 50% to be achieved by 2020. 1.5.2 Provide financial support to produce and disseminate appropriate media tools to enhance public awareness, education, and sense of ownership of any forestry biodiversity development initiatives by 2020.	ABT: 18 SDG: 1 ABT: 1, 20 SDG: 1, 12
1	Forest Ecosystem	1.6 To promote public and private partnership aiming at involving all relevant stakeholders in Forestry Ecosystem development	1.6.1 By 2020 to establish a National Biodiversity PPP in action Group (NBPPG) to lead and provide policy role. To establish also a village or district level PPP sub-groups to drive community level initiatives and inform the national level.	ABT: 1, 2, 7 SDG: 4, 12
		1.7 To have all the forest resources in the whole of Tonga surveyed (for the first time) and published. <i>[Promote and update appropriate forest ecosystems resources assessment and documentation to determine accurate statistics to guide policy development decisions].</i>	1.7.1 National Inventory on Forest Ecosystem fully implemented by 2020.	ABT: 2, 7, 12 SDG: 2, 15, 12
		1.8 To have a PMU responsible for securing and management of funds necessary to implement designated tasks <i>[Actively and adequately secure fund and financial mechanisms]</i>	1.8.1 Department of Environment establishes finance PMU that is responsible for biodiversity financial management and mobilization & Secure external funding sources, potentially available for both short and long-term to finance biodiversity activities by 2020.	ABT: 20 SDG: 1

		<p>1.9 To have all the reserved/ remaining forest ecosystems identified, declared conservation areas, and managed appropriately <i>[Appropriately conserve the remaining as well as vulnerable forest ecosystem resources.]</i></p>	<p>1.9.1 By 2020 The National Park Management plan is revised; Increase the contribution of national parks in foreign earning through tourism activities like camping and sightseeing activities. Etc; Install signage and visitor guides to provide in-depth education for locals and visitors alike;</p>	<p>ABT:7</p> <p>SDG: 12</p>
		<p>1.10 To have deforested area (on public and private lands) reforested immediately <i>[Actively Replenish and Restore lost Forest Ecosystems]</i></p>	<p>1.10. 1By 2020 Enforces M&E of the Tonga Forest Product reforestation programs to ensure that the demanded replanting is done according to MOA with the government; <i>Confirm “Zonation” of the ‘Eua Forest Plantation; Complete enrichment planting of “deforested sites” around the fringes of the ‘Eua Forest national parks immediately; Promote town-allotment home gardening and engage women and youth in planning, implementation, and monitoring duties.; Engaged communities in leading and forestry replenishment duties such as running of community-based forest nurseries, village woodlots, coastal protection projects, etc; Upgrade schools reforestation projects for economic (sandalwoods), social (firewood plots), and ecological (shelterbelts) purposes</i></p>	<p>ABT: 1, 7, 18</p> <p>SDG: 12, 4, 1</p>
		<p>1.11 To have clear and practical frameworks for implementing set actions <i>[Promote sound water resources management systems]</i></p>	<p>1.11.1 By 2020 Formulate watershed management strategies for Tonga with specific watershed management work plan to suit different geological sites;</p>	<p>ABT: 2, 18</p> <p>SDG: 1,</p>
		<p>1.12 To have appropriate policy guidelines endorsed by Cabinet for stakeholder’s information and use <i>[Promote Sustainable utilization of the forest resources]</i></p>	<p>1.12.1 To establish a business plans for commercial forest operations for Tonga by 2020; ‘Eua Forest management committee term of reference and composition established; Enforce ‘Code of practice for forest harvesting’.</p>	<p>ABT: 2, 18</p> <p>SDG: 1, 15</p>

		1.13 To have necessary research and extension works implemented. <i>[Carry out strategic appropriate research and extension]</i>	1.13.1 Promote traditional Tongan farming systems in rural and vulnerable communities with minimum mechanization and use of agri-chemicals by 2020.	ABT: 1, 7, 8 SDG: 4, 12, 14
2	Marine Ecosystems	2.1 Conservation and protection of marine and coastal ecosystem:	2.1.a.1A 50% increase in the total area of marine ecosystem under conservation management in 10 years.	ABT: 11, 14, 15, 17 SDG: 15, 6
		2.1a) To expand the existing network of protected areas to effectively conserve major coastal and marine habitats of biological and socio-economic value. (Marine conservation areas). <i>[FURTHER EXPAND THE EXISTING NETWORK OF PROTECTED AREAS TO EFFECTIVELY CONSERVE MAJOR COASTAL AND MARINE ECOSYSTEMS AS WELL AS HABITATS OF BIOLOGICAL AND SOCIO-ECONOMIC VALUE.]</i>	2.1.a.2 230% of Marine Managed Areas are established and fully implemented by 2030.	SDG: 15, 6
			2.1.a.3 By 2020, Tonga has established and implemented an ocean-wide policy and marine and coastal spatial planning framework.	ABT: 20
			2.1.a.4 By 2020, a financial mechanism and legal framework is established to support enforcement and compliance work for protected areas.	SDG: 1,
		2.1b) Promote innovative use of economic incentives	2.1.b.1 By 2020, marine and coastal ecosystems areas mainstreamed into related sectoral plans and the National Strategic Development Plan.	ABT: 11,17 SDG: 14, 15
			2.1.b.2 By 2020, a well-established agreed guidelines and procedures used nationally for managing of Marine Conservation and Protected Area.	ABT: 11
			2.1.b.3 By 2020, well establish studies and researches undertaken to assess and document and assign estimated value of goods and services of biodiversity and ecosystem	SDG: 14
		2.2 (1) Capacity building and technological transfer and development <i>[Strengthen the National Capacity to Manage Marine and Coastal Biodiversity]</i>	2.2.1.1 By 2020, well establish studies and researches undertaken to assess and document and assign estimated value of goods and services of biodiversity and ecosystem	ABT: 1, 19 SDG: 4, 12, 17

		2.2 (2): Capacity building and technological transfer and development <i>[Strengthen the capacity of national focal point and operational focal points for implementing multilateral environment agreements.]</i>	<p>2.2.2.1 By 2020, at least 30% increase in resources made available from various donor agencies towards conservation activities.</p> <p>2.2.2.2 By 2020, further 30% increase in technical support and appropriate activities to strengthen required capacity.</p> <p>2.2.2.3 By 2020, 50% improvement in this area for the target groups through activities such as workshops, trainings, etc.</p>	<p>ABT: 1, 19, 20</p> <p>SDG: 4, 12, 17, 1, 10</p>
		2.3 Minimise direct pressures on Marine and Coastal Biodiversity and promote sustainable use. <i>[Promote use of environmentally sound practices to minimise impacts on marine and coastal resources.]</i>	<p>2.3.1 By 2018, all Deep-Sea Mining, Coastal Sand Mining and related activities are in full compliance with EIA requirements.</p> <p>2.3.2 By 2018, Identify at least 50% of important damaged habitats and ecosystem that need rehabilitation and restoration. By 2020, Develop and implement a monitoring and evaluation system for rehabilitation activities (to monitor progress and improvement).</p>	<p>ABT: 8, 9 10</p> <p>SDG: 14, 15</p>
2	Marine Ecosystems	2.4 Public awareness and education <i>[Foster Public support for Coastal and Marine Conservation efforts and Sustainable Use]</i>	<p>2.4.1 By 2020, 20% increase in effectiveness of community-based activities such as SMA and similar projects in promoting biodiversity.</p> <p>2.4.2 By 2020, complete review and update and put in appropriate place all national legislations and policies related to Biodiversity.</p>	<p>ABT: 1, 4</p> <p>SDG: 4, 12, 8</p>

		<p>2.5 Information, research and monitoring <i>[To promote scientific research and regular monitoring of critical marine ecosystems, and the proper management of scientific data]</i></p>	<p>2.5.1 Financial and human resources for government institutions have increased by 20% for conservation, protection and sustainable use of natural resources</p> <p>2.5.2 At least a 30% progression on this by 2030, with a baseline from 2015.</p> <p>2.5.3 Identify invasive species and pathways in critical sites, both native and alien and assess impacts to ecosystems and biodiversity by 2017.</p> <p>By 2020, identify and implement prevention, control, or eradication measures on invasive species</p>	<p>ABT: 9, 18, 19</p> <p>SDG: 15, 1, 17</p>
		<p>2.6 Sustainable Management of Coastal Marine and Terrestrial Ecosystems <i>[Application of GIS for improvement in control of loss of critical coastal marine ecosystems.]</i></p>	<p>2.6.1 By 2020, Capacity of GIS for monitoring coastal marine ecosystems are improved and; 60% of coastal marine ecosystems are monitored and status of depletion are identified</p> <p>2.6.2 By 2020 a GIS system for mapping of coastal habitats such as seaweeds is established.</p> <p>2.6.3 By 2020 capacity of GIS for monitoring coastal marine ecosystems are improved and 100% of coastal terrestrial ecosystems such as mangrove ecosystems are monitored and status of changes over time are identified.</p>	<p>ABT: 11</p> <p>SDG: 14</p>
3	AGRO-BIODIVERSITY	<p>3.1 To reinforce conservation of genetic resources valuable as food sources, promote good agricultural practices which contribute towards the preservation of genetic diversity and the reduction of pollution especially by linking agricultural support to ecological criteria, establish agriculture-environmental</p>	<p>3.1.a.1 Developed a National Database for Agricultural genetic resources.</p> <p>3.1.a.2 Arrest the erosion of genetic diversity with communal partnership</p>	<p>ABT: 7, 13</p> <p>SDG: 2, 12</p>

		measures, promote trade policies which encourage respect for biodiversity, etc. <i>3.1 (a) To conserve the farm genetic resources</i>	3.1.a.3 Increase the diversity of farm genetic resource by at least 3% per cent annually.	
		<i>3.1 (b) To conserve the Agricultural Ecosystem Services</i>	3.1.b.1 Resilience of Agricultural Ecosystem Services increased by at least 2% annually.	ABT: 7, 13, 14 SDG: 12, 2, 6
		<i>3.1 (c) To conserve the Bio-diverse Agricultural Landscapes</i>	3.1.c.1 Biodiversity of Agricultural landscapes increase by at least 2% annually. 3.1.c.2 By 2020, - An improved monitoring GIS system is established for monitoring Land Use and Land Cover Changes. 3.1.c.3 Design an institutional framework for agriculture that allows for monitoring of major sustainability areas.	ABT: 7, 8, 13, 14 SDG: 12,14,2,6
4	Species Conservation	4.1 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. <i>[4.1.1 To set up an enabling environment for systematic and scientific research and monitoring of priority species]</i>	4.1.1 By 2020, an Environment portal and information management system for biodiversity will be established. 4.1.2 To complete a baseline survey for the whole of Tonga, by 2020.	ABT: 12, 14, 19 SDG: 15, 6, 17
		<i>4.2.1: Prioritise the species under the IUCN's Red list of Endangered Species that are critically threatened or endangered.</i>	4.2.1.1 By 2021, Complete 25% of BIORAP surveys for Ha'apai, 'Eua, Niua and Tongatapu island groups. 4.2.1.2 By 2024, the implementation of the Malau Species Recovery Plan should be completed and no longer threatened.	ABT: 11, 12 SDG: 11, 14, 15

			<p>4.2.1.3 Implement and enforce CITES by 2020.</p> <p>4.2.1.4 By 2025, management plans for all protected areas would be developed and fully implemented.</p> <p>4.2.1.5 By 2020, 10% of a national botanical garden will be established.</p>	
		<p>4.3 Sustainable use and management of terrestrial species.</p> <p><i>[4.3.1 – Develop Replanting Programmes and Explore Ex-situ measures including herbaria, gene banks or seed orchards for priority species.]</i></p>	<p>4.3.1.1 By 2020 Toloa rainforest would have established a national herbarium for educational and eco-tourism purposes.</p> <p>4.3.1.2 By 2020, 60% of threatened flora will be recovered.</p> <p>4.3.1.3 By 2020, 10% in developing a research lab to be operational for genetic modification.</p> <p>4.3.1.4 By 2020, the production of seedlings for priority species would be increased by 50%.</p>	<p>ABT: 13</p> <p>SDG: 2</p> <p>ABT: 12, 14, 15</p> <p>SDG: 15, 6</p>
4	Species Conservation	<p>4.4 Public Awareness and Education.</p> <p><i>[4.4.1 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.]</i></p>	<p>4.4.1.1 By 2020, ERIC would be operational for the public.</p>	<p>ABT: 1, 19</p> <p>SDG: 4,12,17</p>
		<p>4.5 - Capacity Building.</p> <p><i>[4.5.1 To strengthen the technical management and research knowledge and skills of local scientists and researchers, and the capacity of</i></p>	<p>4.5.1.1 By 2020, 80% of local staff would be trained by relevant regional expertise.</p>	<p>ABT: 1, 19</p> <p>SDG: 4, 12, 17</p>

		<i>responsible agencies and organisations to effectively implement research programmes supporting the protection, conservation and sustainable management of Tonga’s priority species.]</i>		
5	Invasive Alien Species	5.1 A strong legal policy framework for invasive species management. <i>[Appropriate legislation, policies, protocols and procedures are in place and operating, to underpin the effective management of invasive species].</i>	5.1.1 By 2018, laws addressing invasive species management will be reviewed. 5.1.2 Appropriate legislation, policies, protocols and procedures are in place and operating, to underpin the effective management of invasive species	ABT: 9 SDG: 15
		5.2 Increased capacity for invasive species management through strengthened institutions, skills, infrastructure, technical support, information management, networks and exchanges required to manage invasive species effectively.	5.2.1 Invasive species activities are coordinated through a national network by 2020. 5.2.2 Tonga’s invasive species management facilities and equipment are reviewed and improved. 5.2.3 By 2025, quarantine staff are trained to identify and respond to invasive species.	ABT: 9 SDG: 15
		5.3 Strengthened procedures for management control of invasive species. <i>[Systems are in place to generate baseline information on the status and distribution of invasive species, detect changes, including range changes and emerging impacts.]</i>	5.3.1 Prioritize invasive species identified by 2020 5.3.2 Inspection and treatment procedures are improved to reduce the risk of new invasive species threats to Tonga and between islands in Tonga. 5.3.3 Inter-agency cooperation established by 2020. ERP drafted & endorsed. 5.3.4 By 2020, baseline studies have been completed and management actions using native species implemented in selected sites	ABT: 9, 19 SDG: 15, 17

5	Invasive Alien Species	5.4 Communicate the benefits of invasive species management to stakeholders	<p>5.4.1 By 2020 Government support for invasive species management is improved and the importance of IS environmental, social, and economic impacts is more widely understood. All activities maximise community involvement in planning, implementation, and monitoring as appropriate.</p> <p>5.4.2 By 2023 The impact of priority invasive species on biodiversity, economies, livelihoods, and health are widely understood and actions to manage and reduce them are supported</p>	<p>ABT: 16, 18</p> <p>SDG: 1, 16, 15</p>
6	Local Community and Civil Society	6.1 Attain development through integrated community efforts	6.1.1 By 2020, percentage 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 benefits	<p>ABT: 1, 2, 3, 5, 14, 15, 18</p> <p>SDG: 1, 15, 6, 12, 14, 4</p>
			6.1.2 By 2020, percentage is achieved to improve the management of existing parks and reserves and, consistent with the integrated land use plan, to expand the conservation area network to cover a representative sample of all major terrestrial ecosystems.	<p>ABT: 1, 3, 6, 7, 11, 14, 18</p> <p>SDG: 1, 15, 6, 11, 14, 12, 2, 4</p>
			6.1.3 By 2020, percentage is achieved for Better formulation and implementation of outer island and rural development programs through local communities	<p>ABT: 2, 15</p> <p>SDG: 15</p>
			6.1.4 Improving gender equality by implementing the government's gender development policy with percentage being achieved by 2020	<p>ABT: 4</p> <p>SDG: 12</p>

			6.1.5 Improve Services for the elderly and other vulnerable groups, including investigation of the potential private sector role with percentage being achieved by 2020	ABT: 4 SDG: 12, 9
			6.1.6 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 programs, including community economic development and the consideration of a National Youth Service with percentage being achieved by 2020	ABT: 4, 1, 2 SDG: 12, 4, 15
			6.1.7 By 2020 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.	ABT: 5 SDG: 15
			6.1.8 Greater Valuing Tonga’s cultural traditions within an evolving culture with certain percentage achieved by 2020.	ABT: 18 SDG: 1
			6.1.9 Ensuring sustainable use of the environment, by enforcing Environmental Impact Assessments (EIAs), and strengthen the national capability for environmental management to create incentives for limiting the use of resources and production of waste by 2022.	ABT: 7, 8, 18 SDG: 16, 14, 2, 12
6	Local Community and Civil Society	6.1 Attain development through integrated community efforts	6.1.10 Promote and facilitate the use of renewable energy and energy efficient technologies at household and institutional levels. Train artisans,	ABT: 3

			install demonstrations and provide subsidies with some achievements by 2020	SDG: 14
7	Access and Benefit Sharing from the genetic resources and Traditional Ecological Knowledge	7.1 To prevent illegal access to and lawful exploitation of Tonga's genetic access. (Access to Genetic resources)	<p>7.1.1. Tonga's genetic resources are fully protected from unlawful exploitation</p> <p><i>[A legal framework and the organizational capacity to regulate access and prevent the unlawful exploitation of Tonga's genetic resources is 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.]</i></p>	<p>ABT: 13, 16</p> <p>SDG: 2, 15</p>
		7.2 To ensure the fair and equitable sharing of benefits generated from the use of genetic resources. (Fair and equitable Sharing of Benefits) <i>[Formal mechanisms for benefit sharing that are fair and equitable should be developed. More importantly, to safeguard the interests of holders of traditional knowledge and owners of resources involved in bioprospecting, procedures for negotiations should provide for the involvement of competent legal representation provided by the Government.]</i>	7.2.1 Local owners of resources and Traditional Ecological (TEK) are receiving equitable share of benefits	<p>ABT: 16, 18</p> <p>SDG: 15, 1</p>
		7.3 To prevent the loss of traditional ecological knowledge (TEK) (Traditional practices & ecological knowledge) <i>[Traditional ecological knowledge needs to be documented by directly</i>	7.3.1 Traditional ecological knowledge (TEK) is documented, protected from unlawful use and where appropriated promoted.	ABT: 15, 18, 1

		<i>engaging custodians and holders of traditional knowledge. Key knowledge areas are those related to traditional medicines, resource harvesting and management practices. This knowledge should be promoted where they are environmentally friendly for wider use, particularly in place of other modern methods that may not be ecologically sound.]</i>		SDG: 1, 15, 4, 12
7	Access and Benefit Sharing from the genetic resources and Traditional Ecological Knowledge	7.4 To raise public awareness and understanding of the importance of Tonga's genetic biodiversity resources and Traditional Ecological Knowledge (TEK) (Public Awareness and Education) <i>[A range of media types should be employed to raise public awareness and understanding. Success stories of progress made by other countries.]</i>	7.4.1 Tongans have pride in their natural heritage, are well informed about their TEK and supportive of efforts to protect them.	ABT: 1, 16, 18 SDG: 4, 12, 15, 1, 16
8	Mainstreaming Conservation	8.1 Increased national collaboration among sectors for the sustainable use and management of biodiversity in Tonga. <i>[Strengthen policy and legislative framework for sustainable use and management of biodiversity in Tonga]</i>	8.1.1. Compliance and Enforcement legislations and policies take into account biodiversity and livelihood. 8.1.2. By 2025, biodiversity is mainstreamed into corporate sector plans. 8.1.3. By 2020, protected area network expanded and representative, with functional corridors.	ABT: 10, 11, 17, 19 SDG: 11, 14, 15, 17

			8.1.4. Established budget guideline for protected area by 2020	
		8.2 integrated land-use planning and management	<p>8.2.1 By 2025, land use plans completed and Land-use policy completed by 2019.</p> <p>8.2.2 Complete GIS and Lidar surveys of all outer islands by 2027;</p> <p>8.2.3 Complete hydrological surveys for water-use management by 2027</p>	<p>ABT: 10, 17, 19</p> <p>SDG: 14, 15, 17</p>
		8.3 Strengthened awareness, communication and knowledge management for biodiversity <i>[Communicate the goals and approach of Tonga's NBSAP]</i>	<p>8.3.1 Established and maintain protected areas, including marine areas, for priority species and livelihood</p> <p>8.3.2 Established communication strategy on good practices and sustainable used of biodiversity</p> <p>8.3.3 Best practices guidelines are produced and distributed</p> <p>8.3.4 National Clearing House mechanism established by 2025.</p> <p>8.3.5 National environmental database established by 2025.</p> <p>8.3.6 Synergistic implementation through the NBSAP, by 2027 Agreement by CBD and other biodiversity MEA COPs for synergistic reporting.</p>	<p>ABT: 11, 17, 19</p> <p>SDG: 11, 14, 15, 17</p>
		8.4 Strengthened mechanisms for ecosystem-based management, adaptation and mitigation	8.4.1 National target for sustainable energy growth is achieved.	ABT: 4, 10, 15, 19

			<p>8.4.2 By 2027, implement through NBSAP to contribute to NDCs.</p> <p>8.4.3 Established national coastal management plan including economic development.</p> <p>8.4.4 Species and ecosystem resilience to climate change is documented</p> <p>8.4.5 Sector plans incorporate ecosystem-based solutions.</p>	SDG: 12, 14, 15, 17
8	Mainstreaming Conservation	8.5 Mainstream biodiversity into cross-sectoral community planning and management	<p>8.5.1 By 2020, mainstream biodiversity into community development plans.</p> <p>8.5.2 By 2025, effective implementation of EIA tools and other development controls.</p> <p>8.5.3 By 2020, communities are engaged in all planning, implementation and monitoring for biodiversity management, including information collection.</p> <p>8.5.4 Commitment to cross-sector implementation of NBSAP by 2020</p>	<p>ABT: 4, 15, 17, 18, 19</p> <p>SDG: 12,15,1,16,17</p>
9	Financial Resources and Mechanisms	9.1 To ensure the through and comprehensive assessment of technical, managerial and administrative capacity for implementing biodiversity conservation within Tonga’s line ministries and all conservation organisations. (Assessment of biodiversity conservation capacities)	<p>9.1.1 By 2020, a National Capacity Self-Assessment tool will be in use.</p> <p>9.1.2 By 2020, a capacity building programme would be implemented.</p>	<p>ABT: 17, 20</p> <p>SDG: 15, 1</p>

		<p>9.2 To inform all interested organisations of potential funding sources for biodiversity conservation and of donors funding requirements. (Collation and dissemination of donor related information) <i>[Information on current and potential funding sources and their requirements for assistance should be readily accessible to all potential implementers of the NBSAP to facilitate access and solicitation of funds and other forms of assistance.]</i></p>	<p>9.2.1 By 2025, a donor database would be established for potential investors of the NBSAP.</p> <p>9.2.2 By 2020, Tonga would be the recipient of many donor funding for NBSAP implementation.</p> <p>9.2.3 By 2020, 80 percent of Tonga will understand the funding schemes for conservation activities</p>	<p>ABT: 20</p> <p>SDG: 1, 10, 17</p>
		<p>9.3 To strengthen the capacity of key stakeholders in planning and implementing fund raising strategies and in managing conservation funds. (Capacity building in conservation fundraising and management) <i>[Formal training in proposal writing and fund-raising planning should be provided for all local implementing organizations, including NGOs, to enhance their capacity to attract donor funding to biodiversity conservation in Tonga.]</i></p>	<p>9.2.4 By 2020, NGOs, Government and private sector would have annual trainings for proposal writing.</p> <p>9.2.5 By 2020, local implementing organizations will have all the skills and networking for conservation programme implementation.</p> <p>9.2.6 By 2020, online portals will be updated regularly for donors to observe local progress on conservation activities.</p> <p>9.2.7 Promote donor requirement and proceeding for accessing funds</p>	<p>ABT: 20</p> <p>SDG: 1, 10, 17</p>
9	Financial Resources and Mechanisms	<p>9.4 To generate local funding sources for biodiversity conservation. (Economic tools and instruments for conservations funding) <i>[Although funding biodiversity conservation is likely to be sourced from external funding partners, local funding should also be encouraged. A number of mechanisms can be investigated for their feasibility to generate conservation funding.]</i></p>	<p>9.4.1 By 2020, an Environment Trust Fund will be established.</p> <p>9.4.2 By 2025, the Environment Trust fund will be sustainably able to support eco-tourism projects</p>	<p>ABT: 20</p> <p>SDG: 1</p>

		<p>9.5 To further strengthen effective partnerships with key local and international organizations to support</p> <p>the implementation of biodiversity conservation programmes.</p> <p><i>[Similarly, many international conservation organizations should be targeted and partnerships developed. Many are useful sources of conservation information, technical expertise and sometimes of funding. Often, close partnerships with some of these organizations can leverage new partnerships and donors, and their support and involvement can provide a useful leverage for major international donors.]</i></p>	<p>9.5.1 By 2020, an Environment Conservation award will be an annual event given out during Environment Week.</p> <p>9.5.2 By 2020, NGO representatives will be part of the National Environment Coordinating Committees for decision making.</p> <p>9.5.3 By 2020, national policies would have been developed with extensive involvement of private sector and community consultations.</p> <p>9.5.4 By 2020, the network with private sector and NGOs with government sectors will be well established.</p> <p>9.5.5 By 2020, networking with international bodies will be strengthened for partnership in achieving the Aichi targets.</p>	<p>ABT: 20</p> <p>SDG: 1, 10,17</p>
--	--	--	---	---

3.0 Section II: Implementation Measures Taken, Assessment of their Effectiveness, and Associated Obstacles and Scientific and Technical Needs to Achieve National Targets

In the revised NBSAF for Tonga it has identified 143 actions and measures to support its 47 national strategies and 116 targets it has identified. In their distribution across the 9 thematic areas, most actions and measures are found in the Marine and Coastal Ecosystems, Mainstreaming Biodiversity Conservation, Forest Ecosystems and Species Conservations whilst the rest of thematic areas receives the remaining number of actions and measures. This reflects that attention is given to the area of greater coverage in in the Kingdom which is its' marine environment of 700,000 km² in its size comparative to 750km² of its land size.

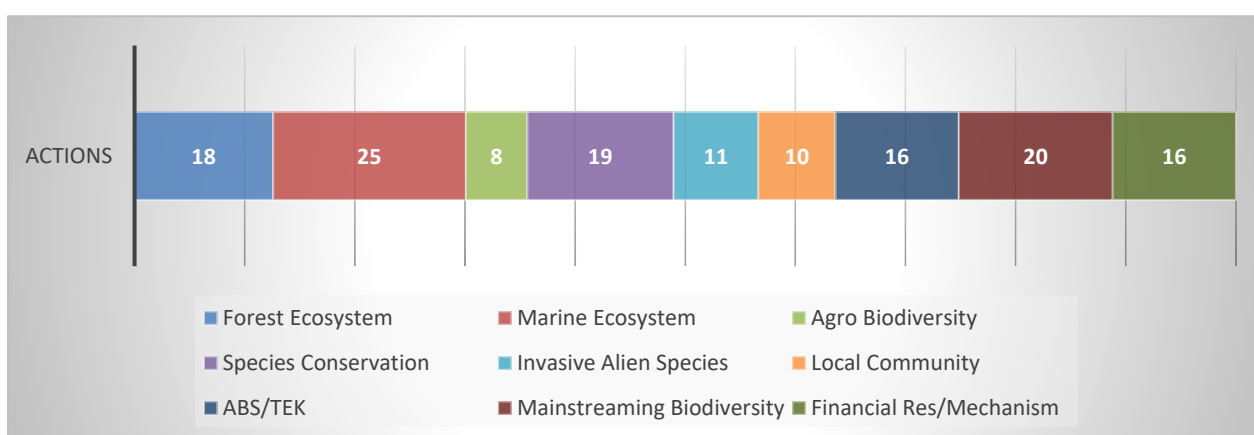


Figure 4: Summary of Actions and Measures distribution in the 9 Thematic Areas of Tonga's NBSAF

The supporting actions and measures ranges from conservation work, policy development, legislation, regulatory, financial, multi-sectoral collaborations, capacity building, research and monitoring as well as public awareness and educations. Table 2 of this report advises the various ABT and SDGs targets in which the national targets and measures contribute towards their achievement.

Although much progress has been made in the implementation of the NBSAF for Tonga but tracking the progress in a single place is an area of great need for consistency. However, there are case studies following in this section which highlights some of the implementation achievement during this period.

3.1 Describe the measures taken and indicate which ABT, and National targets each measure contributes to?

According to Figure 5 below the types of measurements taken by Tonga in the implementation of its NBSAF reflected that the most actions identified under the national targets focused on capacity building, regulatory and policy area, whilst financial and legislation were with the least actions identified.

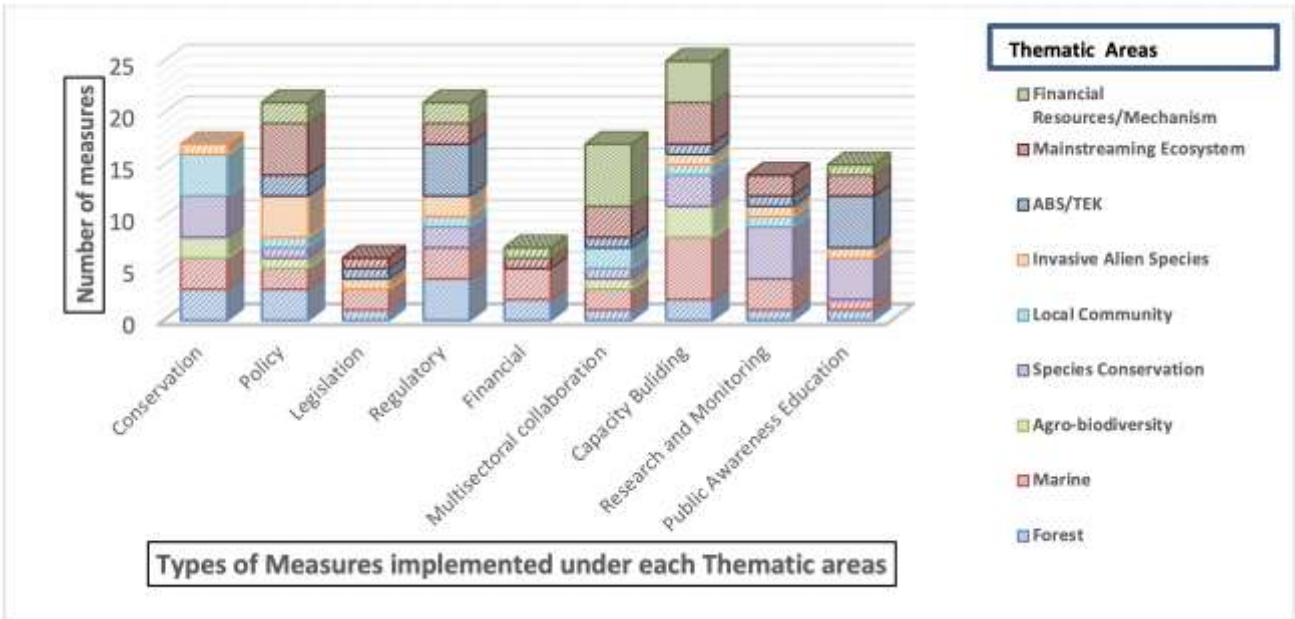


Figure 5: Types of measurements and actions implemented under the Thematic areas of Tonga's NBSAF

Figure 5: National measurements matching Aichi Biodiversity targets. Figure 5 shows the distribution of the national targets across the Aichi Biodiversity Targets its NBSAF. As can be seen clearly all national targets contributes greatly or to some extent all of the ABT, with the most covering ABT1, 2, 7, 17, 18, 19 and 20. The least ABT that is covered by national targets in Tonga is related to ABT 3, 5, 6, 12 and 13. These are mainly from targets covering Civil Society, Species Conservation and also of Agro-biodiversity.

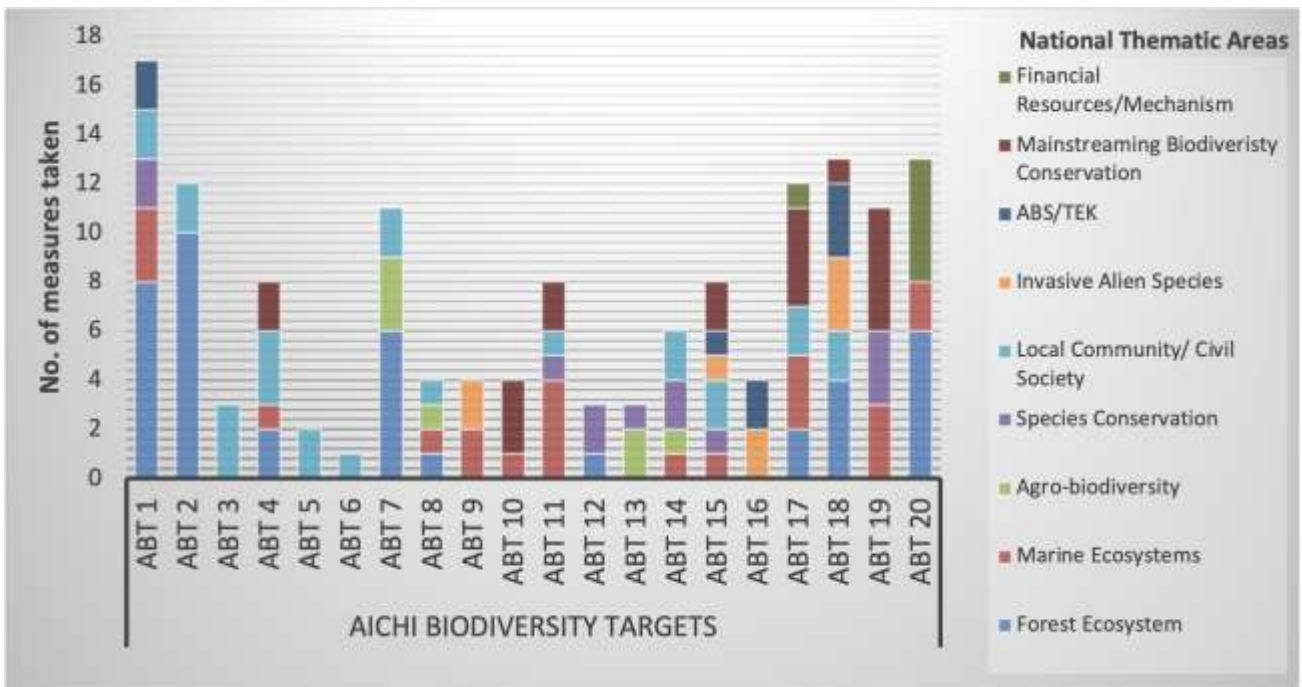


Figure 6: National measurements matching Aichi Biodiversity targets

Figure 6 shows the distribution of the national targets across the Sustainable Development goals as well, as Tonga aligns its national targets to not only meet its national priorities but also it's various international commitments.

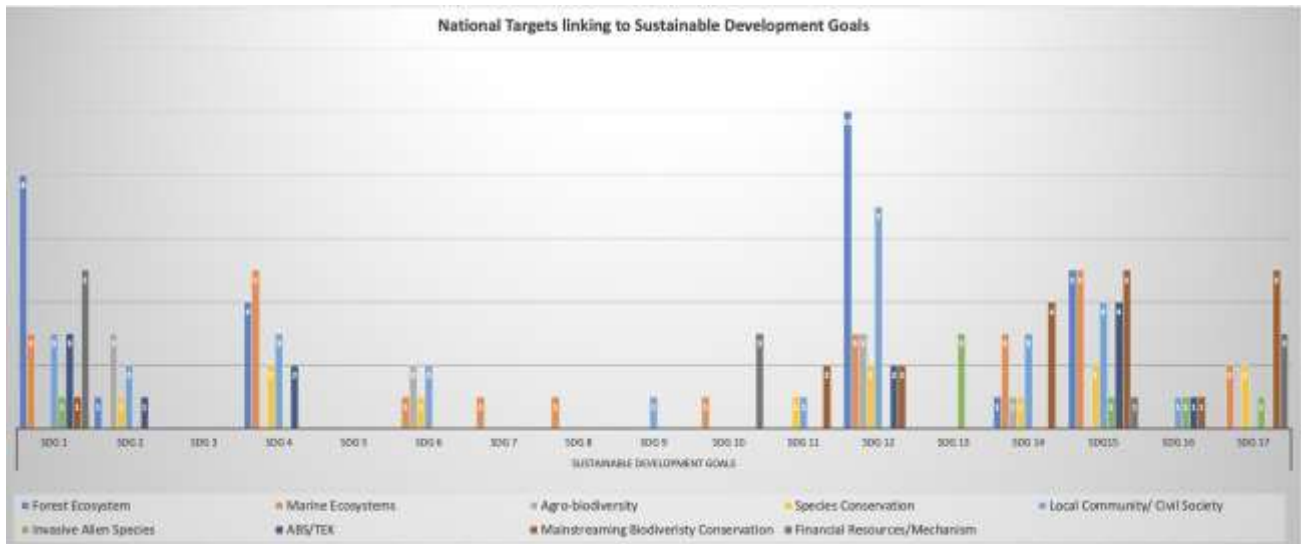


Figure 7: National targets linking to SDGs

3.2 Assessment of the effectiveness of the implementation measure taken in achieving desired outcomes, and the tools and methodology used to achieve it.

With regards to the effectiveness of each measures, further assessment and observation is required to fully observe if transformational change has taken place. However, the followings measures and identified tools were the ones done in the given timeframe of this reporting period as per advice in the summary of Table 3. However, the details of specific measures and tools are reflected in Table 4 in the Annex with detail information of its progress and effectiveness.

Table 3: Summary of National targets implementation progress and effectiveness.

National Targets	Implementation Progress				Effectiveness of Measures			
	Not yet started	Planning Stage or Early implementation	Actively under implementation	Completed	Effective	Partially effective	Ineffective	Not known ⁴
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

⁴ All measures listed under *ineffective* for Tonga, is mainly because there is no new information available in time to the reporting time, as some of these national targets are to be implemented.

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%

As can be observed from Table 3, most of the activities delivered under the current NBSAF is ongoing with 2% of it already achieved. This is mainly because of the time frame of when the NBSAF was ready and its period of operation is from 2018 – 2025, whilst its drafting period began during 2015-2016. Therefore, the reflections provided is based on what has been achieved as to date of this reporting period. However, what is worthwhile to note on the identified measures that almost 50% of the measures observed is effective, and most is on partial effectiveness. The remaining 5% of the measurement’s effectiveness is mainly because these are activities that are yet to be implemented or no information is yet available.

There are several case studies shared in this sections which highlight implementation success on the success of the tools and measures used in Tonga against selected national targets.

MARINE ECOSYSTEM

The need to sustainably manage Tonga’s marine wealth has been enshrined in its legal and regulatory frameworks with relevant management measures, but implementation remains to be strengthened. Tonga has developed a range of fishery-specific management plans where management measures for various fisheries are explained (e.g., Special Management Plans, aquarium fish, tuna, deep-water snapper and sea cucumbers). These form an important cornerstone of the regulatory framework.

Tonga’s main measures to protect inshore fisheries are: regulatory provisions, Special Management Areas (SMAs), and the forthcoming inshore commercial fishery management plan. Under the Fisheries Management Act (2002), coastal communities can establish SMAs to control fishing activities and create resource management rights for areas adjacent to their village. Key features of SMAs include: (i) only registered persons and fishing vessels are authorized to fish in an SMA; (ii) no harvesting of any marine organisms for the aquarium industry (e.g. coral, small invertebrates, fish); (iii) no-take zones; and, (iv) prohibition of destructive fishing methods. SMAs are run by local committees, and there is considerable enthusiasm and support amongst government and coastal communities for the program. The Government’s goal is to implement SMAs for all 100 coastal communities by 2025. Coastal communities are being given the opportunity to set up Special Management Areas (SMAs). These areas give local community committees the power to control fishing, and to determine who can fish, with the

support of the Ministry. A significant expansion of the SMA network is planned with a target of 28 by the end of 2017, to more than 100 by 2025.

Assessment of the effectiveness of the implementation measures:

Assessment of the effectiveness of the SMA program has been partially effective.

Tools use for the assessment:

Tools and methodology used for assessment of the effectiveness of the SMA include:

- In water assessment
- Socioeconomic survey/Household survey
- Program review
- Monitoring program

Relevant websites, documents and files:

- Ministry of Fisheries Annual Reports
- A review of Special Management Areas in Tonga
- The status of sea cucumber in the Kingdom of Tonga in 2016
- Sea cucumber status in Tonga: Preliminary Result Report 2019
- www.tongafish.gov.to
- <http://purl.org/spc/digilib/doc/jjggt>

Special Management Areas Progress

Tonga has progressed significantly since 2006 with respect to Fish Habitat Reserve area coverage in coastal areas. At the end of 2018, Tonga had conserved around 19.9% of its waters through SMAs, and 3.3% through Fish Habitat Reserve or no take areas. The total number of SMAs being established throughout Tonga is 40. Tonga has engaged broadly with partners and stakeholders in making progress toward the target and expanding the SMA network in Tonga.

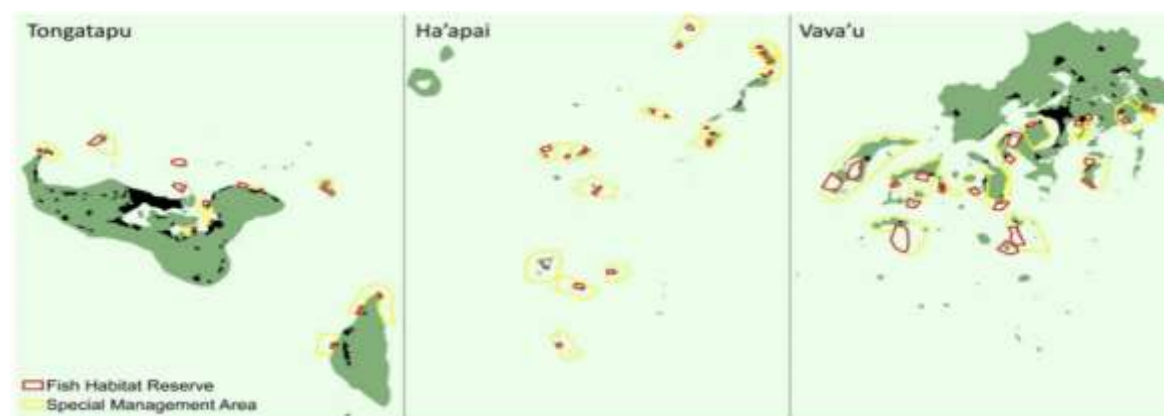


Figure 8: The Special Management Network by end of 2018

The Special Management Areas (SMAs) are key indicators that reflect the efforts given by the government agencies together with local fisheries communities to proclaim their interest, incentivise sustainably

managing their resources, and recognise that adequate community engagement is essential to effective management of these fisheries.

Different plans developed and implemented by the Tonga Fisheries Division assigned and approved Special Management Areas (SMAs) to work in conjunction with the associated local communities in managing them.⁵ These areas are governed under different acts including the Fisheries Management Act of 2002, and are identified and allocated through a legal protocol that involves both the Fisheries Department and the subject community.

The SMAs have expanded since 2008 where four sites were established, and the current extension is shown in *Figure 1.8* above. The majority of these areas are located within the reef zones near the islands of Tonga. This covers the majority of the coastal communities which helps to fully integrate with and compliment the marine parks network as well as facilitate implementation of management plans for the inshore commercial fisheries.

Case Study 1

Case study: Tonga's Special Management Area program

Patrick Smallhorn-West and Siola'a Malimali

The expansion of the Special Management Areas often suffers from one key drawback: how do we incentivize communities to give up areas for fishing when their livelihoods depend on it? Offering long-term assurances of increased food security and ecosystem health might not always be important for people who have more immediate concerns, such as finding food or making a living.

In 2002, from concerns over rapid overexploitation of the marine environment, the Kingdom of Tonga initiated the Special Management Area (SMA) program. The SMA program is a two-part approach: through legislative action each community is granted exclusive access to an area of reef surrounding its village in exchange for making part of that area a permanent no-take zone. The community access only areas are called Special Management Areas (SMA), while no-take zone are called Fish Habitat Reserves (FHR). The formal legal authority for communities to limit outside access to their adjacent marine environment has created a strong incentive for communities to establish permanent no-take zones, and the program has grown rapidly in recent years. From 2006 to 2013, eight SMA communities and associated no-take reserves were gazetted through parliament, and change in the access rights around these initial eight communities raised the awareness of additional communities to the project (Fig.1.8). From 2014 – 2019, due to increased awareness of the program, it was expanded to include 36 additional communities, roughly half of all coastal communities in the country.

The overall impact of Tonga's SMA program has been positive, with greater fish biomass and a significant abundance and diversity inside the FHRs versus outside (Fig.1.9). However, there was no overall difference in fish biomass, abundance, or diversity between SMA and matched control sites. Of the eight FHRs established prior to 2013, 'Atata, Felemea, Nomuka and Ovaka all had positive impacts.

Tonga's SMA network has been expanded to a national scale and it is achieving positive results across all three island groups. It is likely to achieve greater results in the future. However, it is also worth noting that some SMAs did not have positive impacts and it is important to determine what is driving meaningful results for specific

⁵ (Tonga Fisheries Division, 2013; Government of Tonga, 2015; Fisheries Division, 2015)

communities. Ongoing monitoring is crucial to determine which of the over 40 currently implemented SMAs will have positive impacts into the future, and what can be done to support the communities that require the most assistance.

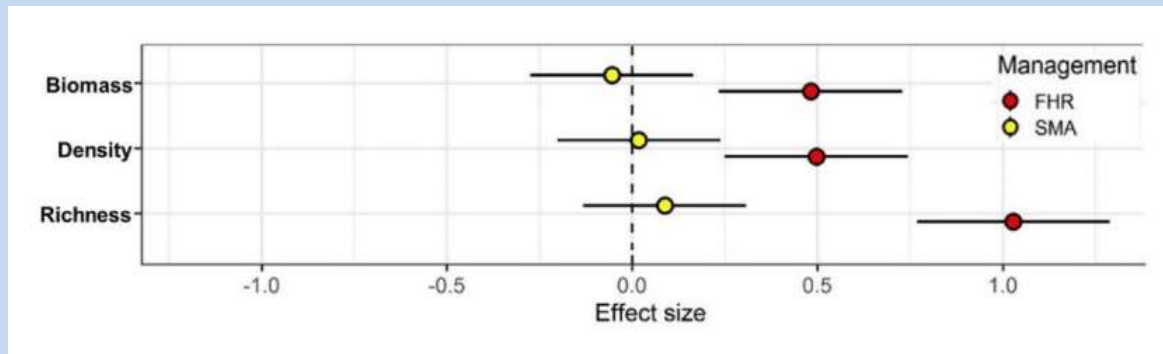


Figure 9: Overall impact of Tonga's SMA program on reef fish (Source: Ministry of Fisheries)

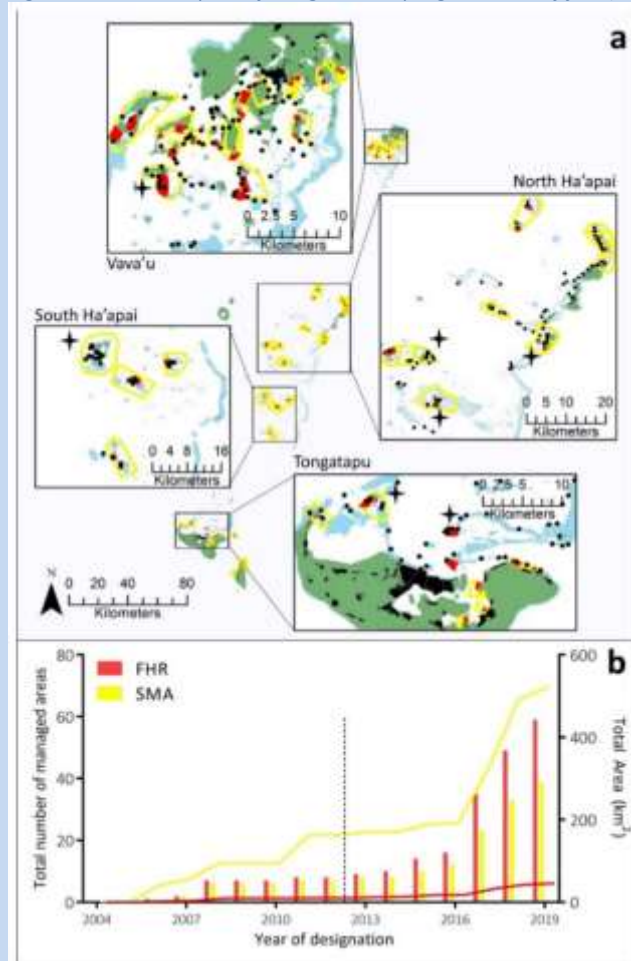


Figure 10: Overall impact of Tonga's SMA program on reef fish (Source: Ministry of Fisheries)

Yellow denotes Special Management Areas (SMAs), where only the community can fish, and red denotes no-take Fish Habitat Reserves (FHRs), which are closed to all fishing. a) Map of Tonga showing all SMAs and FHRs as of May 2019. Black stars indicate those established prior to 2013 and included in the impact assessment. Black circles denote survey sites. b) Growth of the SMA program, with bars indicating the total number of

SMA and FHR lines representing the total area. Only areas established prior to 2013, left of the black dotted line, were included in the impact assessment.

FOREST ECOSYSTEM

In reference to National Target 1.9 from **Tourism Sector**, this target has been developed to educate both locals and visitors alike. In the past two decades, very few signage installed throughout Tonga. However, the passion for information, myths and stories on natural and cultural sites were enormous. Both locals and visitors were hungry for information to give them background stories for significant places. Therefore, the Ministry of Tourism started to put up signage and billboards wherever required. To date, more than 50% of directional and interpretative signage have installed on natural and cultural sites identified by the Ministry of Tourism as relevant throughout Tonga. More than 60% directional sign have been installed at Ha'apai. Conducted surveys to Vavau, Haapai and Eua to assess current signs, and prioritize those that are due for renewal or renovation due to damage and deterioration. For Tongatapu, signs have been installed in major attractions and sites including, Ha'amonga 'a Maui, Ancient Royal Tombs 'Otulangji, Abel Tasman Landing, Tsunami Rocks, Blow Holes, Pea Village, Makatolo 'a Maui, Hule Fort, Captain Cook Landing Place, and Birth Place of Tupou I.

Other sites have also been identified for development and installation, having this information will enhance the visitor experience at the same time developed a more sense of appreciation and understanding for those who visit the sites and attractions. This can be referred to in Annex 1 of this report.

Currently, few activities for this target are in operation. However, there are eco-guided tours in operation in Eua through certain Guest Houses and lodges providing tracking, hiking and cave visits. At Tongatapu there is the Toloa Rainforest which provide hiking and visits to the rainforest in regards to foreign earnings, these exist depending on those who provide visits to the site or those that own the site land.

A plan is in place for the Ancient Royal Tombs to become national park before the final submission of nomination for World Heritage List. A management plan is now in place for the maintenance and to keep the property in good state of conservation and to make tourism at the Ancient Royal Tombs to provide sustainable funding to support the Lapaha community and the management of the Ancient Royal Tombs.

The Ha'amonga 'a Maui Trilithon is now under the community care and maintenance. The Ministry of Tourism funded care takers, built relevant facilities, and provide necessary equipment such as lawn mower. In addition, the community is also allowed to form stalls at the site for selling of their handicrafts thus generating income for their respective families.

Case Study 2

Tonga National Youth Congress Organic Nursery & Farm Project.



Figure 11: TNYC farm projects, Tongatapu

The Organic Nursery & Farm project is a result of the Organic Scheme and the Green Campaign initiatives by the Tonga National Youth Congress in a bid to eradicate POPs pollutants in the environment. It has thus developed and manifested into a organic youth training site open to all communities in the country. The Project looks at innovative farming practices that are POPs-free and encourages the merging to western ideas with traditional and cultural knowledge. Catering to advance the knowledge and skills and in turn the livelihoods of high school drop-outs and young parents. This project is an exemplary youth project at grassroots, in communities, that has been implemented in 'Eua and is now being expanded out to the islands of Ha'apai, Vava'u and the Niua's.

In addition to the many completed and on-going projects implemented using the integrated community efforts are the various workshops, roundtables and dialogues on community actions and implementation in and around the conservation. The focus of the past few years are the empowerment and supporting role to communities with Special Management Area in terms of governances, lessons learnt and best practices for alternative livelihood, restocking methods and innovations. Recently are the workshops and capacity trainings in Nukuleka with the Vai ko Sila group on their integrated project on Special Management Area focusing on alternative livelihoods. The workshop involving youth leaders, civil societies, community based organizations, government departments and other projects to confirm the Country Programme Strategy for GEF7 and lastly on-going through the year is the capacity trainings in governance and project finances and environmental impact studies with member community based organizations which recently was a capacity training for Special Management Area (SMA) Environment of Women which convened women leaders in SMA communities to share knowledge and best practices to develop in their own communities.



Figure 12: From L-R; Green Grant workshop in Nukujleka village with Vai ko Sia group on their integrated project on SMA alternative livelihood project; Country program Strategy for GEF SGP Operational phase 7 workshop; and SMA Environment of Women dialogues

LOCAL COMMUNITY

In reference to National Target 6.1 from **Tourism Sector**, National Cultural Policy for Tonga was completed in 2013. The vision for this Policy acknowledges that culture is intrinsically valuable and an important dimension of identity and a form of capital with the potential to move people out of poverty. Cultural strategies include advocating for culture, capacity building, ensuring research, conduct national inventory and documentation, promoting collaboration with all stakeholders and mobilizing resources for culture. These strategies are an integral part of the Government vision “To create a society in which Tonga enjoy higher living standards and a better quality of life through good governance, equitable environmentally sustainable private sector – led economic growth, improved education and health standards and cultural development.”

Tongan language has been compulsory from Class 1 – Form 5. Based on the Cultural Policy 2013 framework, the Ministry of Tourism Culture Division Corporate Plan 2019 – 2021 specifies Program 3: Culture and Heritage for the development of Culture in Tonga with the mandate to preserve, maintain, support, promote, and safeguard Tonga’s culture for the benefit of generations to come. As a result, Culture Division of the Ministry of Tourism conducted an annual Cultural Day where they filled with programs strengthening the use of local language through singing and poem recital competition. At the same time, the Culture Division also supports funding a USP foundation course on the Niufo’ou language that launch at the beginning of this year. These developments initiated in response to the coming of modern knowledge and greater use of English in daily activities causing erosions in our local language and traditional knowledge.

A National Cultural Inventory program has just been started in Tongatapu, in accordance with the UNESCO Guidelines. A plan is in place to continue this program to all of outer islands which will probably takes several years to complete. Five domains identified by UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage 2003 include *oral traditions and expressions, Performing arts, social practices, rituals and festive events, knowledge and practices concerning nature and the universe and traditional craftsmanship*. These domains will be documented and those that need revival will be identified and a revitalization program will be followed. Heritage sites, natural and cultural, are considered stable. However, climate change may affect some of the historical building like the demolition of the Parliament House by Category 4 Tropical Cyclone Gita in 2918 and historical sites especially those in low-lying areas. A Detailed Damage Assessment conducted in June 2018 to assess the damage caused by Tropical Cyclone Category 4 Gita to heritage buildings and heritage sites. A report of this assessment is available at Ministry of Tourism, Culture Division. A plan is

also in place to revive the Tonga National Museum accommodated at the Queen Salote Memorial Hall has already been started.

MASANI CLEANING CAMPAIGN: 2018 & 2019 - more than 60% Participation for Tongatapu, 50% for Ha'apai, 70% for Vava'u, and 90% for 'Eua in the "Masani Connect" Block Cleaning Inspection - a new Strategy to enhance Tonga Masani Cleaning Up Campaigns. Inspections conducted two (2) times a year, first half Masani Connect Inspection (April - June), second half Inspection (Sept. - November), the vision behind this initiative was to bring to the grassroots level a sense of community in keeping their village clean and green, to be enjoyed by not only our visitors to Tonga but also our local communities.

Measures used:

- i. National parks and reserves (including coastal and uninhabited islands) planning and management
- ii. Requesting appropriate authority for Ancient Royal Tomb to be declared as National Reserve
- iii. Management Plan for Ancient Royal Tombs established to minimize further development around the area and provide guidelines for further burials at the property.
- iv. Educate people and develop protocols for respectful behaviour at the site both monuments and plants.
- v. Promote community cleaning campaign at Tongatapu and replanting of native and culturally significant plant species through home gardening, the Masani Connect Cleaning Campaign
- vi. Encourage community to utilize innovative approach by recycling and reuse waste for gardening and farming activities.
- vii. Collaborate with Ministry of Education and Academia in documentation of traditional knowledge to guide implementation of the ABS protocol.
- viii. documentation of traditional knowledge systems (fishing, farming, navigation, gardening, etc) with intention to safeguard, preserve and revitalize these activities.

Tools and Methodology used:

- i. A National Task Force for World Heritage has been reconvened to carry out assessment of progress effectiveness
- ii. Regular meetings with Lapaha Town Council, meetings with Land and Survey and relevant stakeholders, meetings of National Task Force to discuss the idea of land swap with private property within the buffer zone of the Ancient Royal Tombs.
- iii. Regular meetings with Lapaha Town Council, meetings with Land and Survey and relevant stakeholders, meetings of National Task Force to discuss the idea of land swap with private property within the buffer zone of the Ancient Royal Tombs.
- iv. Note: This activity has not taken place therefore assessment of effectiveness implementation has not started.
- v. This is the third year for Masani Cleaning campaign at Tongatapu and first year for Outer Islands as part of National Beautification program
- vi. An Inspections conducted two (2) times a year, first half Masani Connect Inspection (April - June), second half Inspection (Sept. - November), each year. This is the third year for this Masani Cleaning Campaign at Tongatapu and first year for outer island of Ha'apai, Vava'u and 'Eua. The number of blocks registered for Masani Cleaning Campaign for the first half of 2018 was 60, and it jumped to 214 by the second half of the same year.

Websites and files:

- <https://www.facebook.com/profile.php?id=100007428439146>
- Files: Criteria for the Masani Cleaning Campaign, Tonga Masani Files

- Fakama'unga 'o e Fonua; Tala 'o e Ngaahi Kolo; Culture Week, Ha'a System; *Traditional Knowledge and Wisdom: Themes from the Pacific Islands*; S. E. Graphic Arts. Co. Ltd; Korea; 2014. *Tonga National Cultural Policy, 2013; A Detailed Damaged Assessment and Recovery Plan for Cultural Heritage Sites following Tropical Cyclone Gita September, 2018.*

Case Study 3

TOURISM CASE STUDY; Tonga Masani



Figure 13: These are pictures from various villages and island groups in Tonga during the 'Tonga Masani' national cleaning up program of the Ministry of Tourism

This is a national level initiative carried out by the Ministry of Tourism annually and it plays an important role in raising awareness of country to participate in this initiative. Communities are very creative in their demonstration of support to cleanliness and also establishing various gardens at their individual homes.

Case Study 4

Strengthening Local Community Capacity to participate in Agro-Biodiversity

Kolomotu'a of the Greater Nuku'alofa area is home to large population that saw settlement spill into the wetlands of the low-lying North-western coastline. A GEF Small Grants Programme (SGP) Climate Based Adaptation (CBA) community project of climate resilient Agroforestry is the result of one community block's women-led initiative develop into integrated approach to food security through sustainable practices and innovation. An initiative to reduce and re-use plastic waste for agricultural purposes in an otherwise unfarmable area. The replanting of diminishing native plants indigenous to the wetlands that was cut down

due to development of settlement into the wetlands. The keyhole gardens for vegetable production and innovation of using local materials to farm root crops such as coconut husks, discarded rubber tires and plastic containers that would have otherwise gone to landfill now helps conserve local flora in this area. The interest and engagement of the community block and surrounding blocks into Agroforestry combining native wetland plants and introduced root crops and vegetables for sustenance.



Figure 14: Top left: Keyhole vegetable gardens. Top middle: Innovative use of coconut husks on reclaimed allotments with limited fertile soil; Top right: plastic gardening- recycling waste to garden food. Bottom: aerial view of project site in wetlands

Case study 5:

Ridge to Reef Approach: Establishing an integrated management approach of Fanga'uta Lagoon catchment area.


In 2014-2018, the Integrated Ridge to Reef project under UNDP/GEF5 STAR allocation carried out a national project with the technical assistance of UNDP focusing on improving the ecosystem health and ecosystem services of the Fanga'uta Catchment Area to address food security, poverty reduction and climate resiliency. This project had engaged 26 communities surrounding the catchment area of which focused on 55% of the total population of the mainland Tongatapu. The project successfully developed the Fanga'uta Stewardship Plan in 2017, which provided a framework for decision-making process establishing a management structure engaging representatives from local to national level, provided with the opportunity to voice their concerns with any future developments at the catchment area. Furthermore, it had developed a monitoring manual/guide to be used by the technical committee and communities engaged in the selected sites of the catchment for water quality, sustainable fisheries, coastal environment and waste management with annual monitoring reports produced to assist with informing communities and the government the ecological health

of the lagoon. The results is usually shared at the Community Management structure established in the Stewardship Plan as a forum for sharing information and gathering immediate input of the communities, NGOs and other national stakeholders. Various capacity building training also took place during the project to raise awareness of biodiversity importance and sustainable practises. A 3-D Participatory Modelling training involved all communities including, selected educational institutions within the catchment that resulted in the production of 2mx2.5m size model of the catchment area, which becomes a useful tool for regular awareness outreach opportunity of the public. Lastly, coordinated communication strategy and plans was made possible through systematic outreach carried out that had reach more than 20,000 people during the project term.





Figure 15: Left- Monitoring manual for FL catchment area in 2016; R- The Fanga'uta Stewardship Plan gazetted in 2017 with an Action Plan for 2018-2022

Story 1: Reflecting on the Fanga'uta Lagoon as it was in the past compared to nowadays



Name: 'Amelia Ha'unga Tau
Village: Holonga, Tongatapu

"I moved to this village back in the 90s and my home is right close to the coastal areas. My memory of the lagoon in the past have always been healthy with abundant of marine species population. Communities surrounding Fanga'uta were always content and happy with the abundant supply they obtain from the lagoon for their livelihood and day to day necessity. You can easily get seaweeds, seashells, jellyfish and other marine species close on the shore for your meals. Nowadays it is impossible to find what was available in the past as you walk along the shore. Marine species have disappeared and are rarely seen affecting families who depends their livelihood on the lagoon. Waters in the lagoon has gone muddy with pollutions and wastes from land-based activities affecting marine life. It is a tragic for us living close to the lagoon as we search for other alternatives for our livelihood. It is the wish and hope of the people that this project will improve the status and condition of the lagoon for a much healthier future for the people."

Stories 2: Community Effort Towards Minimizing Adverse Impact of Coastal Erosion



Name: Hulita Fanguna
Village: Navutoka

"I am happy to report that Women's Group Association of Navutoka is making an effort to lessen the impacts of coastal erosion. We are a victim of the adverse impact of climate change on our shores as erosion tend to increase during high tides. As a way forward, Women's Group made a decision to restore coastal trees by collecting trees/plants seedlings and nurture it to be planted along the coasts. The village is also fortunate that the project R2R-FLC will purchase these seedlings to be used by the project."




Figure 16: Stories taken from Tonga's R2R/UNDP Newsletter of 2015, 2nd Quarter

Case Study 6

Invasive Alien Species Program strengthened institutional capacity

In 2011-2016, The project was designed to provide support to Pacific Island countries in their national efforts to implement the *Guidelines for Invasive Species Management in the Pacific – a Pacific Strategy for managing pest, weeds and other invasive species (Tye 2009)* which were developed and adopted as the regional strategic framework for invasive species management in 2009. The project outcomes were across three critical interrelated components, needed to build the foundations and capacity for improved and effective invasive species management in the region. These were i) building awareness, capacity and institutional processes, ii) improving information based decision making and prioritisation and, iii) building experience and management capacity through field based action. It is fair to say that overall, the project was successful in delivering its outcomes in these three key areas and generating impact in the form of improved understanding of the impacts of IAS and strengthened institutions and management capacity in the participating countries. Furthermore, in those instances where direct management action (eradication, bio-control and restoration projects) was undertaken, the project's impact is clearly discernible in terms of improved and restored ecosystems and habitats, as well as development of the National Invasive Strategic Action Plan 2013-2020. This also became the framework to ensure better management of IAS in Tonga.



Figure 17: Tree planting at Toloa Rainforest with seedling selections, Tonga R2R, 2016

Case Study 7

National Awareness Outreach: Environment Day & Climate Change Day



In 2015-2018, the observance of the Environment Day, has become a popular event for the country in which schools, communities, private sectors, NGO and national stakeholders engaged successfully in varying activities of TV programs, talk back radio shows, quizzes, songs/poetry/artistic competitions focusing on the importance of nature and biodiversity. There are also various outreach programs engaging students of primary, secondary and tertiary schools with changing focus yearly. The themes had range from waste management, tree replanting, healthy oceans and marine monitoring, mangroves rehabilitation, EIA are but a few of the

popular themes covered in the year. This has grown to formalizing the Citizen Science Program offered by the Department of Environment, which is inclusive of not just the public, but also strengthened collaboration with private sectors and NGO. Educational Institutions make use of these opportunities to bring the students from the theory aspect of learning to the practical observation of their environment and

best practises to consider and as well as supporting career pathway for the students.



Figure 18: Environment's Day activities, 2016 taken by R2R Project

Case Study 8



Figure 19: MSP consultation in 2018, Department of Environment

Developing of a Marine Spatial Plan for Tonga through using national consultation

Through the close collaboration of IUCN, Ocean 5, Waitt Foundation, MACBIO Project, VEPA and MPA project they assisted Tonga in the development of its Marine Spatial Plan since 2015-2020. In 2018, the program was able to complete successfully their first nation-wide consultation with all stakeholders including individual communities to proposed the marine protected areas protection of 30% from Tonga's EEZ. It successfully had carried out scientific research of Tonga's marine bioregions, established policy reviews, economic valuation of its oceans and also design the proposed marine protected areas for Tonga's 30% of it total EEZ. The successful use of integrated approach in consultations with communities, private sectors, fisheries councils, national stakeholders and NGOs was able to move the program first consultation successfully well in 2018. By 2020 the complete Marine Spatial Plan for Tonga will be made available following its ocean bill and policy once completed.

Table 4: Effectiveness of Implemented Measures to meet Tonga's National targets

Objectives/ Strategies	Targets	Activities	Measures/Indicators	Partners	Progress	Effectiveness of Measures taken
1.1 Develop and promote sound policy and legal frameworks	1.1.1 Established the National Agriculture Sector Plan by 2015 with full implementation by then, and carry out interim review before 2020	Formulation of National Agriculture Sector Plan	Completed formulation of National Agriculture Sector Plan; Forestry economic, social and ecological values shall be highlighted and endorsed Strategic plans and actions for forestry development with targets and institutional frameworks outlined.	Plans in place developed by AGC, MAFFF, WB, IFAD, PRRP, MFP	Completed <i>Refer to Tonga Agriculture Sector Plan</i>	Effective
	1.1.2 National Forest Policy revised and updated	Revise National Forest Policy	Revised NFP in place with financial mechanisms and donor partners identified and secured;	MAFFF, FAO, SPC/GIZ, Farmers, Land	Completed <i>Refer to Management Plan for Forest Resources in Tonga</i>	Effective
	1.1.3 Complete 100% development of National Land Use Plan/Policy by 2015	Confirm National Land Use Plan/Policy	No. of wide community and stakeholder consultations carried out to validate and improve context of NLUP Mainstream core values into line ministries and private sector planning and budget lines	MLNR, MEIDECC, MAFFF AGC, MAFFF, MEIDECC, MLNR	Actively under implementation <i>This is an area that is currently being pursued.</i>	Partly effective

<p>1.2 That the Forest Act is revised and that the corresponding regulations are being revised and developed concurrently. <i>[Promote and develop robust MAFFF Legal and Policy Settings]</i></p>	<p>1.2.1 MAFFF, in collaborations with regional partners secure funding and TA to complete revision of Forest Act by mid-2015; Planning and implementation of the revision works be completed by June 2016</p>	<p>Revise Forest Act</p>	<p>Appropriate regulations formulated concurrent to the review of the Forest Act</p>	<p>MEIDECC reports & maps; MAFFF reports; MAFFF, MoJ, MEIDECC, MLNR, MAFFF, FAO, SPC/GIZ, Farmers, Land Owners, Exporters</p>	<p>Completed</p>	<p>Effective</p>
<p>1.3 To engage each Member of Parliament in respective constituencies on biodiversity activities in each area. <i>[Enhance and encourage political support towards forest ecosystems development]</i></p>	<p>1.3.1 Involve MPs as leaders in biodiversity development in respective constituencies & Identify and support biodiversity advocate politicians to lead community developments by 2020</p>	<p>Engage politicians to lead in biodiversity planning & drive</p>	<p>No. of politicians engaged to lead in biodiversity planning and drive</p>	<p>MPs, MAFFF, MEIDECC, MLNR</p>	<p>Actively under implementation</p>	<p>Effective</p>
<p>1.4 Develop and sustain sound capacity building processes</p>	<p>1.4.1 To provide at least 10 formal degree programs (post grad programs included) in biodiversity and related fields by 2020</p>	<p>Provide formal degree training programs</p>	<p>No. of formal degree training programs in place</p>	<p>MFNP, MoE, MEIDECC, MLNR</p>	<p>Actively under implementation</p>	<p>Effective</p>

	1.4.2 To ensure that appropriate levels of technical knowledge are being delivered to communities by 2020	Support private sector initiatives	No. of private sector initiatives supported	MFNP, MoE, MEIDECC, MLNR, MAFFF, NGOs	Actively under implementation	Effective
	1.4.3 To increase engagement of local leaders in leading biodiversity initiatives to ensure full community participation, sustainability and community ownership by 2020.	Build capacities with local governments	No. of capacity building trainings provided; no. of local leaders engaged in training	MFNP, MIA, MEIDECC, MLNR, MAFFF	Actively under implementation	Effective
1.5 To introduce biodiversity values into primary and secondary school's syllabus <i>[Ensure that educational values and processes are being promoted and mainstreamed]</i>	1.5.1 Step up efforts in mainstreaming biodiversity values (most probably in considerations of related environment and climate change related values) into school syllabus with 50% to be achieved by 2020.	Revise and mainstream biodiversity values into school syllabus	No. of training materials developed (i.e. factsheets, posters, electronic educational programs); complete revision and mainstreaming biodiversity values into school syllabus.	MoE, MIA, MEIDECC, MAFFF, NGOs	Actively under implementation	Effective
	1.5.2 Provide financial support to produce and disseminate appropriate media tools	Use of media tools and materials	No. of Media tools may develop such as; hard documents (leaflets, posters, brochure, operations manuals etc.), TV and	Use of media tools and materials with collaborated	Actively under implementation	Effective

	to enhance public awareness, education, and sense of ownership of any forestry biodiversity development initiatives by 2020.		Radio advertisements and programs, as well as electronic means (websites, mobile phones etc.)	efforts from MoE, MIA, MAFFF, NGOs		
1.6 To promote public and private partnership aiming at involving all relevant stakeholders in Forestry Ecosystem development	1.6.1 By 2020 to establish a National Biodiversity PPP in action Group (NBPPG) to lead and provide policy role. To establish also a village or district level PPP sub-groups to drive community level initiatives and inform the national level.	PPP forum established and operational	Established National Biodiversity PPP Group and District/Community level PPP Sub-group established.	NBPPPG/DPPPG in place with evidence of meeting minutes. AGC, MAFFF, MEIDECC MFNP	Actively under implementation	Effective
1.7 To have all the forest resources in the whole of Tonga surveyed (for the first time) and published. <i>[Promote and update appropriate forest ecosystems resources assessment and documentation to</i>	1.7.1 National Inventory on Forest Ecosystem fully implemented by 2020.	National Inventory on Forest ecosystems implemented	No. of donor partners engaged in securing funds with resources mobilized; Improved data collection system in place with MAFFF by 2015; Establish and upgrade biodiversity information database in order so to realize the current status before planning to fill the gaps when the NIFE inventory is carried out;	Improve statistical production mechanisms and resources to cater for the demand for NIFE inventory and data management with AGC, MAFFF, MEIDECC, MFNP supports.	Not yet started	No information as of yet

<i>determine accurate statistics to guide policy development decisions].</i>						
1.8 To have a PMU responsible for securing and management of funds necessary to implement designated tasks <i>[ACTIVELY AND ADEQUATELY SECURE FUND AND FINANCIAL MECHANISMS]</i>	1.8.1 Department of Environment establishes finance PMU that is responsible for biodiversity financial management and mobilization & Secure external funding sources, potentially available for both short and long-term to finance biodiversity activities by 2020.	Improve financial planning and establish financial mechanisms to secured and maintain funding to drive biodiversity development initiatives	Secure funding from government recurrent budget in the annual budgets of relevant line Ministries Consider establishing a “trust fund” (maybe in close or joint efforts with related schemes such as “Climate Change Trust Fund”)	financial mechanisms established; JNAP secretariat maybe utilized to take lead role (amongst its many current roles) in securing, mobilization, and monitoring of the “Biodiversity Trust Fund”. MEIDECC, MFNP, MAFFF	Planning Stage	No information as of yet
1.9 To have all the reserved/ remaining forest ecosystems identified, declared conservation areas, and managed appropriately <i>[APPROPRIATELY CONSERVE THE REMAINING AS WELL AS VULNERABLE FOREST ECOSYSTEM RESOURCES]</i>	1.9.1 By 2020 The National Park Management plan is revised; Increase the contribution of national parks in foreign earning through tourism activities like camping and sightseeing activities. Etc; Install signage and visitor guides to provide in-	National parks and reserves (including coastal and uninhibited islands) planning and management	National parks and reserves (including coastal and uninhibited islands) planning and management in place with designate MAFFF mandates (Forestry Division) in park management; Engage the local communities in the overall management of the national parks and reserves; Upgrade forest parks and reserves to improve forestry ecosystems “in-situ” conservation, Promote ex-	Management plans established and enforced at national and community level. MEIDECC, MLNR, MFNP, MAFFF	Not yet started	No information as of yet

	depth education for locals and visitors alike;		situ conservation through home gardening, urban forestry, agroforestry systems, etc.			
1.10 To have deforested area (on public and private lands) reforested immediately <i>[ACTIVELY REPLENISH AND RESTORE LOST FOREST ECOSYSTEMS]</i>	1.10.1 By 2020 Enforces M&E of the Tonga Forest Product reforestation programs to ensure that the demanded replanting is done according to MOA with the government	Restoration and conservation of forest ecosystems at all levels	No. of reforestation programs in place; no. of zonation established at 'Eua Forest Plantation; No. of tree replanting at deforested sites; No. of town-allotment home gardening established; No. of women/youth engaged; No. of communities engaged in forestry replenishment; no. of schools engaged in reforestation projects for Social, economic and ecological purposes	Forestry reports and DoE reports on status of reforestation programs implemented; MEIDECC, MLNR, MFNP, MAFFF	Actively under implementation	Effective
1.11 To have clear and practical frameworks for implementing set actions <i>[PROMOTE SOUND WATER RESOURCES MANAGEMENT SYSTEMS]</i>	1.11.1 By 2020 Formulate watershed management strategies for Tonga with specific watershed management work plan to suit different geological sites;	Watershed management and conservations; Undertake appropriate trainings for all relevant stakeholders to encourage partnership efforts in managing of the natural resources via forest resources management; Engage communities in watershed management	Established watershed management work plans; no. of participants trained on management of natural resources and forest resources; no. of communities engaged in watershed management	Watershed management work plans in place and implemented; MEIDECC, MLNR, MFNP, MAFFF	Actively under implementation	Effective
1.12 To have appropriate policy guidelines endorsed by Cabinet for	1.12.1 To establish a business plans for commercial forest operations for Tonga by	Business plans for commercial forest operations	No. of business plans on commercial forest operations established; established management committee for 'Eua	Business plans for commercial forest in place with management	Actively under implementation	Effective

<p>stakeholder's information and use <i>[PROMOTE SUSTAINABLE UTILIZATION OF THE FOREST RESOURCES]</i></p>	<p>2020; 'Eua Forest management committee term of reference and composition established; Enforce 'Code of practice for forest harvesting'.</p>		<p>Forest completed with clear term of reference; no. of no-compliance cases in file;</p>	<p>committee established for 'Eua Forest; MEIDECC, MLNR, MFNP, MAFFF</p>		
<p>1.13 To have necessary research and extension works implemented. <i>[CARRY OUT STRATEGIC APPROPRIATE RESEARCH AND EXTENSION]</i></p>	<p>1.13 Promote traditional Tongan farming systems in rural and vulnerable communities with minimum mechanization and use of agri-chemicals by 2020.</p>	<p>TRADITIONAL FARMING SYSTEMS APPROACHES</p>	<p>No. of ex-situ and in-situ forest conservations established; no. of crop diversification established; no. of communities engaged in tree physiology & silviculture practices; no. of communities engaged in "on-farm" & "farmer-field school" research</p>	<p>Agriculture report on progress; MEIDECC MLNR, MFNP, MAFFF</p>	<p>Actively under implementation</p>	<p>Effective</p>
<p>2.1 Conservation and protection of marine and coastal ecosystem: 2.1a) To expand the existing network of protected areas to effectively conserve major coastal and marine habitats of biological and socio-economic value.</p>	<p>2.1.1 A 50% increase in the total area of marine ecosystem under conservation management in 10 years. 2.1.2 30% of Marine Managed Areas are established and fully implemented by 2030.</p>	<p>Further strengthen and support government and related organisations for surveying, assessing, establishing, monitoring, and evaluating Marine Managed Areas (SMAs and MPAs</p>	<p>No. of new marine areas under conservation management. No. of surveys, assessments, monitoring and evaluation activities of SMA/MPAs</p>	<p>MMAs are proposed and gazetted; Management plans approved and under implementation Monitoring/Evaluation reports of SMA/MPAs effectiveness;</p>	<p>Actively under implementation</p>	<p>Effective</p>

				MEIDECC, MAFFF, MLNR, MIC, MCTL, and related Associations		
<p>2.1a) To expand the existing network of protected areas to effectively conserve major coastal and marine habitats of biological and socio-economic value. (Marine conservation areas)</p> <p><i>[FURTHER EXPAND THE EXISTING NETWORK OF PROTECTED AREAS TO EFFECTIVELY CONSERVE MAJOR COASTAL AND MARINE ECOSYSTEMS AS WELL AS HABITATS OF BIOLOGICAL AND SOCIO-ECONOMIC VALUE.]</i></p>	<p>2.1.a.1 By 2020, Tonga has established and implemented an ocean-wide policy and marine and coastal spatial planning framework.</p>	<p>Develop ocean-wide policy and marine and coastal spatial planning framework.</p>	<p>No. of ocean-wide policy and marine and coastal spatial planning framework developed.</p>	<p>MEIDECC, MAFFF, MLNR, MCTL, Ports Authority, and related Associations</p>	<p>Planning stage or early implementation</p>	<p>Measures taken has been partially effective</p>
	<p>2.1.a.2 By 2020, a financial mechanism and legal framework is established to support enforcement and compliance work for protected areas.</p>	<p>Establish or strengthen legal and policy framework and its enforcement</p>	<p>No. of legal and policy framework established and its enforcement strengthened.</p>	<p>financial mechanism established and enforced; MEIDECC, MAFFF, MLNR, MIC, MCTL</p>	<p>Planning stage or early implementation</p>	<p>Measures taken has been partially effective</p>

2.1b) Promote innovative use of economic incentives	2.1.b.1 By 2020, marine and coastal ecosystems areas mainstreamed into related sectoral plans and the National Strategic Development Plan	Consider economic value of marine and coastal ecosystem services in national development planning	No. economic value of marine and coastal ecosystem services report included in national development planning	Valuation reports available; MEIDECC, MAFFF, MFP	Actively under implementation	Effective
	2.1.b.2 By 2020, a well-established agreed guidelines and procedures used nationally for managing of Marine Conservation and Protected Area.	Best practices for the management of marine managed areas, including payment for environmental services, and the resulting benefits, are demonstrated at selected sites	No. of Best practices for the management of marine managed areas; no. of demonstrated sites	national guidelines for Marine Conservation and Protected Area established; MEIDECC, MAFFF, Communities	Actively under implementation	Effective
2.1b) Promote innovative use of economic incentives	2.1.b.3 By 2020, well establish studies and researches undertaken to assess and document and assign estimated value of goods and services of biodiversity and ecosystem	Valuate and account direct and indirect goods and services of biodiversity and ecosystem	No. of studies and researches taken on the valuation of biodiversity and ecosystem	Valuation reports on biodiversity and ecosystem; MEIDECC, MAFFF, Civil Society, donor agencies	Actively under implementation	Measures taken has been partially effective
2.2 (1) Capacity building and technological transfer and development <i>[Strengthen the National Capacity to</i>	2.2.1.1 By 2020, a overall 30% increase and improvement of the level of environmental skills and knowledge of this target group	Raise the level of environmental skills of the professional, resource-based staff of coastal and marine sectors within the Civil Service	No. of staff with raise the level of environmental skills on professional, resource-based of coastal and marine sectors within the Civil Service	Increased number of human resources; Donor agencies, regional and international organisations, and institutions.	Actively under implementation	Effective

<i>Manage Marine and Coastal Biodiversity]</i>	2.2.1.2 By 2020, at least 50% improvement in the capacity of this target sector	Strengthen institutional capability of relevant government sectors	No. of government sectors with Increased Institutional capability Strengthened	Increased institutional capacity; MECCDMMIC, MLNR, MAFFF, MOI, MFP	Actively under implementation	Measures taken has been partially effective
	2.2.1.3 By 2020, established agreed methods for mitigating impacts on coastal marine areas based on lessons learnt, knowledge, and experience, to be approved to used nationwide.	Investigate appropriate technology & techniques to mitigate impacts on coastal/marine areas	No. of Investigate appropriate technology/techniques established to mitigate impacts on coastal/marine areas	Increased knowledge management; MEIDECC, MAFFF, MOI, regional and international organisations, and institutions	Actively under implementation	Measures taken has been partially effective
	2.2.1 4 By 2020, appropriate agreed mainstreaming program implemented at national level.	Improve coordination mechanisms at appropriately high levels within national authorities	Established Improve coordination mechanisms at appropriately high levels within national authorities	Mainstreaming reflected at national planning level; All national authorities	Actively under implementation	Effective
	2.2.1.5 By 2027, meet international hydrographic mapping requirements	Improve hydrographic mapping of Tongan nearshore environments	No. of hydrographic mapping of Tongan nearshore environments established	Improved hydrographic mapping capacity; MLNR, MEIDECC, HMAF Navy, regional and international	Actively under implementation	Measures taken has been partially effective

				organisations, and institutions.		
2.2 (2): Capacity building and technological transfer and development	2.2.2.1 By 2020, at least 30% increase in resources made available from various donor agencies towards conservation activities.	International community make available adequate resources to alleviate disproportionate 'conservation burden'	No. of donor pledges financial aid towards conservation	Increased financial resources available; International organisations, and institutions, and donor agencies.	Actively under implementation	Measures taken has been partially effective
2.2 (2): Capacity building and technological transfer and development <i>[Strengthen the capacity of national focal point and operational focal points for implementing multilateral environment agreements.]</i>	2.2.2.2 By 2020, further 30% increase in technical support and appropriate activities to strengthen required capacity.	Increase resources, including required technical support	No. Increase resources, including required technical support established	National government, appropriate development partners, and donors	Actively under implementation	Effective
	2.2.2.3 By 2020, 50% improvement in this area for the target groups through activities such as workshops, trainings, etc.	Strengthen negotiating skills for all sectors implementing MEAs	No. of trained staff with negotiations skills for all sectors implementing MEAs	Increased capacity at national level; MEIDECC, MAFFF, MOI, regional and international organisations, and institutions, and donor agencies	Actively under implementation	Effective
2.3 Minimise direct pressures on Marine and Coastal Biodiversity and	2.3.1 By 2018, all Deep-Sea Mining, Coastal Sand Mining and related activities are in	Enforce EIA requirements for Deep Sea-bed mining,	No. of Enforce EIA requirements for Deep Sea-bed mining, coastal sand mining and related activities	MEIDECC, Police Department, Crown Law, regional and	Actively under implementation	Effective

promote sustainable use. <i>[Promote use of environmentally sound practices to minimise impacts on marine and coastal resources.]</i>	full compliance with EIA requirements.	coastal sand mining and related activities		international organisations, and institutions, and donor agencies		
	2.3.2 By 2018, Identify at least 50% of important damaged habitats and ecosystem that need rehabilitation and restoration. By 2020, Develop and implement a monitoring and evaluation system for rehabilitation activities (to monitor progress and improvement).	Intensify rehabilitation of critical and damaged coastal and marine habitats and ecosystems	No of rehabilitation programs established of critical and damaged coastal and marine habitats and ecosystems	Improved ecosystems from increased rehabilitation and restoration programs established; MEIDECC, MAFFF, MOI, regional and international organisations, and institutions, and donor agencies	Actively under implementation	Effective
2.4: Public awareness and education <i>[Foster Public support for Coastal and Marine Conservation efforts and Sustainable Use]</i>	2.4.1 By 2020, 20% increase in effectiveness of community-based activities such as SMA and similar projects in promoting biodiversity.	Promote and increase stakeholder participation and community-based activities for conservation and sustainable use practices	No. of stakeholder participation and community-based activities established for conservation and sustainable use practices	Increase effectiveness of community-based activities; MEIDECC, MAFFF, MOI, regional and international organisations, and institutions, and donor agencies	Actively under implementation	Effective
2.4: Public awareness and education <i>[Foster</i>	2.4.2 By 2020, complete review and update and put in appropriate place	Enhance and develop a national biodiversity law and relevant environmental	Revised legislation and policies on biodiversity particularly on conservation, pollution, and	Reviewed national legislations and policies related to	Actively under implementation	Effective

<i>Public support for Coastal and Marine Conservation efforts and Sustainable Use]</i>	all national legislations and policies related to Biodiversity.	policies on nature conservation, pollution and other related concerns, including traditional conservation laws and practices	other related concerns, including traditional conservation laws and practices	biodiversity; Crown Law, PM Office, MEIDECC, MAFFF, MOI, regional and international organisations, and institutions, and donor agencies		
	2.4.3 Financial and human resources for government institutions have increased by 20% for conservation, protection and sustainable use of natural resources.	Establish advocacy campaign to convince leaders to prioritize biodiversity conservation, protection and sustainable management by mainstreaming into national development plan	No. of advocacy campaign established to convince leaders to prioritize biodiversity conservation, protection, and sustainable management by mainstreaming into national development plan and provide appropriate financial and human resources	Strengthened institutional capacity; MEIDECC, MAFFF, MOI, MLNR, Fisheries, Tourism, WAL, NGOs, Private sector, regional and international organisations, and institutions, and donor agencies	Actively under implementation	Effective
2.5: Information, research and monitoring <i>[To promote scientific research and regular monitoring of critical marine ecosystems, and the proper</i>	2.5.1 By 2020, documentation of all available information from assessment of tested instruments on marine and coastal management in Tonga and the neighboring countries	Tried and tested concepts and instruments for the sustainable management of marine and coastal resource management are disseminated regionally and internationally.	No. of concepts and instruments developed and tested for the sustainable management of marine and coastal resource management	Increased information developed for effective monitoring and management of marine ecosystems; MEIDECC, MLNR, Ministry of	Actively under implementation	Measures taken has been partially effective

<i>management of scientific data]</i>				fisheries, NGOs, Private Sector.		
	2.5.2 At least a 30% progression on this by 2030, with a baseline from 2015.	Document and promote traditional knowledge practices for biodiversity conservation and environmental protection	No. of Documents developed on TK practices for biodiversity conservation and environmental protection	MEIDECC, MAFFF, MOI, NGOs, regional and international organisations, and institutions, and donor agencies	Actively under implementation	Measures taken has been partially effective
2.5: Information, research and monitoring [<i>To promote scientific research and regular monitoring of critical marine ecosystems, and the proper management of scientific data]</i>	2.5.3 Identify invasive species and pathways in critical sites, both native and alien and assess impacts to ecosystems and biodiversity by 2017. 2.5.4 By 2020, identify and implement prevention, control, or eradication measures on invasive species	Assess impacts of invasive species and prevent and control their spread	No. of assessment reports on the impacts of invasive species, prevention and control	Invasive species reduced and controlled; MEIDECC, MAFFF, Civil Society	Actively under implementation	Effective

2.6 Sustainable Management of Coastal Marine and Terrestrial Ecosystems <i>[Application of GIS for improvement in control of loss of critical coastal marine ecosystems.]</i>	2.6.1 By 2020, Capacity of GIS for monitoring coastal marine ecosystems are improved and;	Strengthen GIS capacity for monitoring coastal marine ecosystems Applying GIS for identifying depleting marine ecosystems	No. of GIS staff with increased capacity for monitoring coastal marine ecosystems and no. of marine ecosystems monitored	Improved sustainable management of coastal marine ecosystems; MLSNR, Fisheries Department, MEIDECC	Actively under implementation	Measures taken has been partially effective
	2.6.2 60% of coastal marine ecosystems are monitored and status of depletion are identified					
	2.6.3 By 2020 a GIS system for mapping of coastal habitats such as seaweeds is established.	A system for Coastal Habitat mapping – Seaweeds, etc.	60% of coastal habitat is mapped; no. of developed systems for Coastal Habitat mapping – Seaweeds, etc.	developed coastal habitat mapping in place; Fisheries Department, MEIDECC	Planning Stage or Early Implementation	Measures taken has been partially effective
	2.6.4 By 2020 capacity of GIS for monitoring coastal marine ecosystems are improved and 100% of coastal terrestrial ecosystems such as mangrove ecosystems are monitored and status of changes over time are identified	Strengthen GIS capacity in monitoring the status and identifying changes over time of mangrove ecosystems	No. of important coastal and marine ecosystems developed and monitored; no. of staff with increased capacity to monitor status/identify change over time on ecosystems.	Increased institutional capacity to advise Ecosystem status reports; MLSNR, MAFF, MEIDECC	Actively under implementation	Measures taken has been partially effective

3.1 To reinforce conservation of genetic resources valuable as food sources, promote good agricultural practices which contribute towards the preservation of genetic diversity and the reduction of pollution especially by linking agricultural support to ecological criteria, establish agriculture-environmental measures, promote trade policies which encourage respect for biodiversity, etc. <i>(a) To conserve the farm genetic resources</i>	3.1.a.1 Developed a National Database for Agricultural genetic resources	Assessment of the existing national agricultural genetic resources	No. of assessment reports on existing national agricultural genetic resources	National Database in place on Agricultural genetic resources; SPC, /FAO, /others, Farmers, / NGOs, Communal groups	Actively under implementation	Effective
	3.1.a.2 Arrest the erosion of genetic diversity with communal partnership	Establishment of the national participatory system in conservation of agricultural genetic resources	Establishment of the national participatory system in conservation of agricultural genetic resources	Effective national system established; SPC, /FAO, /others, Farmers, / NGOs, Communal groups	Actively under implementation	Measures taken has been partially effective
	3.1.a.3 Increase the diversity of farm genetic resource by at least 3% per cent annually	Improvement of the national agricultural genetic resources	Increased No. of improved national agricultural genetic resources	SPC, /FAO, /others, farmers, / NGOs, communal groups	Actively under implementation	Effective
3.1 (b) To conserve the Agricultural Ecosystem Services	3.1.b.1 Resilience of Agricultural Ecosystem Services increased by at least 2% annually	Strengthen agricultural ecosystem services	No. of agriculture ecosystems strengthened	MAFF reports from Universities, /Research Institutions, / Farmers, / communal groups	Actively under implementation	Effective

3.1 (c) To conserve the Bio-diverse Agricultural Landscapes	3.1.c.1 Biodiversity of Agricultural landscapes increase by at least 2% annually	Construction of bio-diverse agricultural landscapes	No. of biodiverse agriculture landscapes constructed	Ministry of Lands, Ministry of Internal Affairs IA, farmers, community	Actively under implementation	Effective
	3.1.c.2 By 2020, - An improved monitoring GIS system is established for monitoring Land Use and Land Cover Changes	An improved GIS system for monitoring Land Use and Land Cover Changes is established	60% of terrestrial ecosystems such as Land Use and Land Cover Changes are fully monitored; No. of government sectors that align Agriculture plans into their programs	An improved GIS system for monitoring Land Use and Land Cover Changes is established MLSNR, MAFF, ECCD MAFF, ECCD	Planning Stage or Early Implementation	Effective
3.1 (c) To conserve the Bio-diverse Agricultural Landscapes	3.1.c.3 Design an institutional framework for agriculture that allows for monitoring of major sustainability areas	Develop and promote sustainable agriculture development and practices, including sustainable harvest, production, distribution and consumption	No. of sustainable agriculture development and practices promoted and developed, including sustainable harvest, production, distribution, and consumption	MAFFF, MEC, MLSNR, Civil Society, MFNP	Actively under implementation	Measures taken has been partially effective
4.1 Develop a National Biodiversity Database for Tonga that provides a framework to document data and information on species, ecosystems	4.1.1.1 By 2020, an Environment portal and information management system for biodiversity will be established.	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	Status of Biodiversity Report established with priority areas identified linking to 2010 IUCN Red List of Endangered Species and placed in a Biodiversity database.	Status of Environment report developed; Updated IUCN Redlist of Endangered species reflected in biodiversity	Actively under implementation	Effective

and designated /protected areas, and threats to these species and areas. <i>[4.1.1 TO SET UP AN ENABLING ENVIRONMENT FOR SYSTEMATIC AND SCIENTIFIC RESEARCH AND MONITORING FOR PRIORITY SPECIES.]</i>		species currently classified as Critically Endangered in the 2010 IUCN Red List of Endangered Species and placed in a Biodiversity database.		database; DOE, /MAF, /MOFi, /MOFo		
	4.1.1.2 To complete a baseline survey for the whole of Tonga, by 2020.	Develop and implement a systematic program of baseline surveys and scientific research to address critical gaps.	Systematic baseline survey program in place and implemented; no. of scientific research.	Baseline of biological diversity in Tonga established. MAF, /DOE, / MOFi, MOE, /MOFo	Actively under implementation	Measures taken has been partially effective
<i>4.2.1: PRIORITISE THE SPECIES UNDER THE IUCN'S RED LIST OF ENDANGERED SPECIES THAT ARE CRITICALLY THREATENED OR ENDANGERED.</i>	4.2.1.1 By 2021, Complete 25% of BIORAP surveys for Ha'apai, 'Eua, Niuas and Tongatapu island groups.	Conduct Rapid assessment surveys of all island groups to update database on the critically threatened and endangered species of Tonga as classified by IUCN's 2003 Red List of Endangered Species	no. of conducted BIORAP surveys completed; no of threated/endangered species identified and classified in IUCN RL Endangered Species	BIORAP for all island groups completed: SPREP, MAFFF, NGOs, DOE	Actively under implementation	Effective
<i>4.2.1: PRIORITISE THE SPECIES UNDER THE IUCN'S RED LIST OF ENDANGERED SPECIES THAT ARE CRITICALLY THREATENED OR ENDANGERED.</i>	4.2.1.2 By 2024, the implementation of the Malau Species Recovery Plan should be completed and no longer threatened.	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.	no. of protected areas with revised management plans established for Malau Species Recovery and implemented	Developed and implemented management plans for Malau Species in place: DOE, MAFFF, NGOs, private sector, Local Communities	Planning stage or early implementation	Measures taken has been partially effective

	4.2.1.3 Implement and enforce CITES by 2020	Collaborate with regional conservation programmes on species of regional and international significance found in Tonga.	25% of CITES implemented and enforced in Tonga	CITES implement and enforced in Tonga; MoF, Ministry of Revenue & Customs	Actively under implementation	Effective
	4.2.1.4 By 2025, management plans for all protected areas would be developed and fully implemented.	Develop Management Plans for protected areas to provide effective protection of threatened and endangered flora and fauna species.	No. of protected areas established with management plans in place and implemented	Increased protected areas with management plans established and enforce; MAFF, MLNR, MoF, MEIDECC, MIA, NGOs, MOFNP	Actively under implementation	Effective
	4.2.1.5 By 2020, 10% of a national botanical garden will be established.	Establish a botanical garden to have all native and culturally significant plant species of Tonga for gene conservation.	No. of botanical garden established;	emergent of botanical garden in place; MAFF, NGOs, MIA, MLNR, MEIDECC, MOI (Tourism)	Planning stage or early implementation	Measures taken has been partially effective
4.3 - Sustainable use and management of terrestrial species. <i>[4.3.1 – DEVELOP REPLANTING PROGRAMMES AND</i>	4.3.1.1 By 2020 Toloa rainforest would have established a national herbarium for educational and eco-tourism purposes	Set up a national herbarium and ensure that all species of cultural significance are represented and protected.	no. of national herbarium established;	Sustainable management of Toloa rainforest; DOE, MAFF(DoFo), NGOs, Local Communities	Actively under implementation	Measures taken has been partially effective

<p><i>EXPLORE EX-SITU MEASURES INCLUDING HERBARIA, GENE BANKS OR SEED ORCHARDS FOR PRIORITY SPECIES.]</i></p>	<p>4.3.1.2 By 2020, 60% of threatened flora will be recovered</p>	<p>Strengthen partnership with the public in tree planting programmes by providing seedlings of priority species.</p>	<p>60% of threatened flora recovered</p>	<p>Sustainable management of terrestrial species; DOE, MAFF, NGOs, Local Communities,</p>	<p>Actively under implementation</p>	<p>Effective</p>
<p>4.3 - Sustainable use and management of terrestrial species. [4.3.1 – DEVELOP REPLANTING PROGRAMMES AND EXPLORE EX-SITU MEASURES INCLUDING HERBARIA, GENE BANKS OR SEED ORCHARDS FOR PRIORITY SPECIES.]</p>	<p>4.3.1.3 By 2020, 10% in developing a research lab to be operational for genetic modification</p>	<p>Support the application of tree improvement methods to improve the genetic make-up of selected species of forest plantation tree species.</p>	<p>no. of tree improvement methods established on selected species for genetic make-up improvement</p>	<p>Genetic modification plans in place and implemented; MAFF, NGOs, MIA</p>	<p>Actively under implementation</p>	<p>Effective</p>
	<p>4.3.1.4 By 2020, the production of seedlings for priority species would be increased by 50%.</p>	<p>Promote and encourage the replanting of native forest and priority trees and crops species including the production of high-quality seedlings for public sale and distribution.</p>	<p>no. of seedlings produced</p>	<p>Increased percentage of native forest, priority trees and crops species; MAFF, DOE, NGOs, MIA</p>	<p>Actively under implementation</p>	<p>Effective</p>
<p>4.4 Public Awareness and Education. [4.4.1 TO ENHANCE PUBLIC KNOWLEDGE AND UNDERSTANDING OF PRIORITY SPECIES AND THEIR IMPORTANCE FOR CONSERVATION AS</p>	<p>4.4.1.1 By 2020, more public awareness materials will be fully distributed throughout Tonga</p>	<p>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</p>	<p>no. of public awareness and materials developed and distributed</p>	<p>increased public awareness; MET, MEIDECC, TBC, Newspaper companies, NGOs, MIA</p>	<p>Actively under implementation</p>	<p>Effective</p>

<i>PART OF TONGA'S NATURAL HERITAGE, AS A WAY OF FOSTERING PUBLIC SUPPORT FOR SPECIES CONSERVATION OBJECTIVES.]</i>		radio spots, locally community workshops, drama, and others.				
	4.4.1.2 By 2020, 80% of Tonga would understand the importance of rare and endemic species as part of Tongan heritage.	Cultivate national pride in rare species that are of global significance that are either endemic and unique to Tonga or which endemism is shared by Tonga and a few other countries.	% of country engaged on public awareness programs and materials	increased awareness; MET, MEIDECC, TBC, Newspaper companies, NGOs, MIA	Actively under implementation	Effective
	4.4.1.3 By 2025, 80% of Tonga would have access to awareness materials on protected areas.	Promote awareness and appreciation of Tonga's existing terrestrial and marine protected areas.	% of country engaged on public awareness programs and materials	increased awareness; MET, MEIDECC, TBC, Newspaper companies, NGOs, MIA	Actively under implementation	Measures taken has been partially effective
4.4 Public Awareness and Education. [4.4.1]	4.4.1.1 By 2020, ERIC would be operational for the public.	Revive and update the Environment Research and Information Centre (ERIC) for public access (educational, awareness, and planning purposes)	established ERIC and no. of public access to ERIC	ERIC operational for public; MET, MEIDECC, TBC, Newspaper companies, NGOs, MIA	Planning stage or early implementation	No new information as of yet
4.5 - Capacity Building. [4.5.1 TO STRENGTHEN THE TECHNICAL, MANAGEMENT AND	4.5.1.1.1 By 2020, 80% of local staff would be trained by relevant regional expertise.	Liaise with relevant regional organizations including SPC and SPREP to provide short specialized training in specific skills areas for local	no. of researchers and management staff trained	Increased institutional capacity; DOE, SPREP, SPC, UNEP	Actively under implementation	Measures taken has been partially effective

<p><i>RESEARCH KNOWLEDGE AND SKILLS OF LOCAL SCIENTISTS AND RESEARCHERS, AND THE CAPACITY OF RESPONSIBLE AGENCIES AND ORGANIZATIONS TO EFFECTIVELY IMPLEMENT RESEARCH PROGRAMMES SUPPORTING THE PROTECTION, CONSERVATION AND SUSTAINABLE MANAGEMENT OF TONGA'S PRIORITY SPECIES.]</i></p>		researchers and management staff.				
		Encourage counterpart or mentoring arrangements for local staff with visiting experts and consultants.	no. trained local staff engaged	Increased institutional capacity; DOE, Local Communities, NGOs	Actively under implementation	Measures taken has been partially effective
		For all scientific surveys and research projects, incorporate into project designs, formal and hands-on training opportunities for local staff.	no. trained local staff engaged	Increased institutional capacity; DOE, MoFi, MoFo	Actively under implementation	Measures taken has been partially effective
		Secure and make available graduate and post-graduate level training programs for interested and promising staff in areas most in need of technical expertise.	no. of grad/post-grad level training programs offered; no. of staff engaged	Increased human resources trained; DOE, SPREP, UNEP, MOET	Actively under implementation	Measures taken has been partially effective
		Ensure the effective coordination and oversight of all conservation related research as a key responsibility of these positions in a multi-agency task force under the overall oversight of DOE.	no. of conservation research study completed	increased information managed and coordinated; DOE	Actively under implementation	Measures taken has been partially effective
5.1 A strong legal policy framework for	5.1.1 By 2018, laws addressing invasive	Consolidate and harmonise Invasive species legislation,	No. of invasive species legislation, regulations or protocols	Strong and effective legal		Effective

invasive species management. <i>[Appropriate legislation, policies, protocols and procedures are in place and operating, to underpin the effective management of invasive species].</i>	species management will be reviewed.	regulations or protocols to improve invasive species management effectiveness.	produced and harmonized to improve invasive species management effectiveness	policy framework for invasive species in place; MEIDECC, CL	Actively under implementation	
	5.1.2 Appropriate legislation, policies, protocols and procedures are in place and operating, to underpin the effective management of invasive species					
5.2 Increased capacity for invasive species management through strengthened institutions, skills, infrastructure, technical support, information management, networks and exchanges required to manage invasive species effectively	5.2.1 Invasive species activities are coordinated through a national network by 2020	Strengthen invasive species management coordination	No. of coordinated activities to improve invasive species management	Increased capacity in coordinating and managing invasive species; MEIDECC, MOFNP	Actively under implementation	Effective
	5.2.2 Tonga's invasive species management facilities and equipment are reviewed and improved.	Improve invasive species management infrastructure	No. of improved invasive species management infrastructure in place	Enhanced institutional capacity; MEIDECC, MOFNP	Planning stage or early implementation	Measures taken has been partially effective
	5.2.3 By 2025, quarantine staff are trained to identify and respond to invasive species	Train quarantine staff in identification of potential new invasive species	No. of Train quarantine staff in identification of potential new invasive species	Enhanced institutional capacity; MAFFF (Quarantine Division), MEIDECC to work with MAFF-Research	Actively under implementation	Measures taken has been partially effective

				Section, MOI, Police		
5.3 Strengthened procedures for management control of invasive species. [Systems are in place to generate baseline information on the status and distribution of invasive species, detect changes, including range changes and emerging impacts.]	5.3.1 Surveys or monitoring systems are implemented to document the status and/or impact of invasive and native biodiversity in marine and terrestrial sites (including protected areas), include in databases by 2020	Establish baselines and monitoring tracking the threats posed by new established invasive species.	Establish baselines; no. of monitoring activities taken	Survey and baseline report available; MEIDECC, MAFFF, NGOs	Actively under implementation	Effective
5.3 Strengthened procedures for management control of invasive species. [Systems are in place to generate baseline information on the status and distribution of invasive species, detect changes,	5.3.2 Prioritize invasive species identified by 2020.	Establish a national risk assessment system for invasive terrestrial, freshwater and marine species.	national risk assessment system established for invasive terrestrial, freshwater and marine species.	Risk Assessment system in place for management of IAS; MEIDECC, NGOs, Relevant Agencies	Planning stage or early implementation	Measures taken has been partially effective
	5.3.3 Inspection and treatment procedures are improved to reduce the risk of new invasive species threats to Tonga	Biosecurity mechanisms are established to prevent the spread of invasive species across international or internal borders and quickly	biosecurity mechanism in place and enforced across national/international borders	Inspection and treatment procedures in place and enforced; MEIDECC, MAFFF –	Actively under implementation	Effective

including range changes and emerging impacts.]	and between islands in Tonga.	detect and respond to those that arrive.		Quarantine, MOI, Police, MRC, MOJ		
	5.3.4 Inter-agency cooperation established by 2020. ERP drafted & endorsed	Adapt the generic SPC Emergency Response Plan (ERP) to address threats to the natural heritage and livelihoods of the people of Tonga	Establish and endorse the generic SPC Emergency Response Plan (ERP)	ERP in place; MEIDECC, MAFFF – Quarantine, MOI, Police, MRC, MOJ	Planning stage or early implementation	Measures taken has been partially effective
	5.3.5 By 2020, baseline studies have been completed and management actions using native species implemented in selected sites	Restore sites and biodiversity after invasive species management is carried out.	No. of Restore sites and biodiversity after invasive species management is carried out.	ERP in place; MEIDECC, MAFFF – Quarantine, MOI, Police, MRC, MOJ	Actively under implementation	Effective
5.4 Communicate the benefits of invasive species management to stakeholders	5.4.1 Government support for invasive species management is improved and the importance of IS environmental, social, and economic impacts is more widely understood.	Develop mechanisms to factor invasive species management into national and regional decision-making processes	Establish Invasive Species Management Mechanisms for decision-making processes at regional/national level	Improved communication of IS with stakeholders; MEIDECC, MAFFF, MOI, MoE, MCTL, MoH, NGO's, communities	Actively under implementation	Effective
	5.4.2 All activities maximise community involvement in planning, implementation, and					

	monitoring as appropriate.					
5.4 Communicate the benefits of invasive species management to stakeholders	5.4.3 The impact of priority invasive species on biodiversity, economies, livelihoods, and health are widely understood and actions to manage and reduce them are supported	Raise awareness and carry out outreach on the impacts of IS	No. of awareness outreach programs on the impacts of Invasive species in place	Improved communication of IS with stakeholders; MEIDECC, MAFFF, MOI, MoE, MCTL, MoH, NGO's, communities	Actively under implementation	Effective
6.1 Attain development through integrated community efforts	6.1.1 By 2020, percentage 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 benefits	Improve sustainability of protected areas and indigenous and community conservation areas through community-based actions	No. of communities with community-based actions for protected areas	Increased integrated community efforts; LA, PMO, MOFNP, MOH, MEWAC, MECC, MOTEYS, MAFFF, MOP, Ministry of Tourism, MLCI	Actively under implementation	Measures taken has been partially effective
6.1 Attain development through integrated community efforts	6.1.2 By 2020, percentage is achieved to improve the management of existing parks and reserves and, consistent with the integrated land use	Strengthen community-based approaches and market mechanisms for the Sustainable use of biodiversity established in production landscapes/seascapes,	No. of community-based initiatives sustainable use of biodiversity	Improved management of biodiversity at grassroots level; LA, PMO, MOFNP, MOH, MEWAC, MECC, MOTEYS,	Planning stage or early implementation	Measures taken has been partially effective

	plan, to expand the conservation area network to cover a representative sample of all major terrestrial ecosystems.	(including agriculture, forests, fisheries and tourism)		MAFFF, MOP, Ministry of Tourism, MLCI		
	6.1.3 By 2020, percentage is achieved for Better formulation and implementation of outer island and rural development programs through local communities	Strengthen involvement of local communities in national adaptation interventions	No. of participation from community in conservation programs to reduce poverty; no. of awareness materials developed on standards and quality use.	Increased community involvement in national adaptations interventions; LA, PMO, MOFNP, MOH, MEWAC, MECC, MOTEYS, MAFFF, MOP, Ministry of Tourism, MLCI	Actively under implementation	Measures taken has been partially effective
6.1 Attain development through integrated community efforts	6.1.4 Improving gender equality by implementing the government's gender development policy with percentage being achieved by 2020	Strengthen involvement of women in the design and management of projects to ensure equitable share of benefits	establish gender development policy; no. of project with gender analysis at grassroots	Developed gender development policy; LA, PMO, MOFNP, MOH, MEWAC, MECC, MOTEYS, MAFFF, MOP, Ministry of Tourism, MLCI	Actively under implementation	Measures taken has been partially effective

	6.1.5 Improve Services for the elderly and other vulnerable groups, including investigation of the potential private sector role with percentage being achieved by 2020	Clustering and coordination of the CSOs to reflect the thematic focal areas and target assistance to marginalized parts of society.	no. of clusters engaged with CSO and marginalized population	Improved services and engagement of elderly and vulnerable groups; LA, PMO, MOFNP, MOH, MEWAC, MECC, MOTEYS, MAFFF, MOP, Ministry of Tourism, MLCI	Actively under implementation	Measures taken has been partially effective
6.1 Attain development through integrated community efforts	6.1.6 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 programs, including community economic development and the consideration of a National Youth Service with percentage being achieved by 2020	Demonstration of community-based approaches for the implementation of SAPs, and best practice relating to water, sanitation, watershed management and coastal protection replicated, up-scaled and mainstreamed	no. of community initiatives on implementing SAPs; no of best practices integrates in community efforts	Increased development through integrated community efforts; LA, PMO, MOFNP, MOH, MEWAC, MECC, MOTEYS, MAFFF, MOP, Ministry of Tourism, MLCI	Actively under implementation	Measures taken has been partially effective
	6.1.7 By 2020 the following is achieved: Cultural awareness, environmental sustainability, disaster risk management and	Sustainable community protected area governance approaches recognized, strengthened and adopted by national partners,	Establish procedures and consultation mechanisms; no. of climate change adaptations initiatives established at community levels; established	Recognized Sustainable community protected areas governance	Actively under implementation	Measures taken has been partially effective

	<p>climate change adaptation, integrated into all planning and implementation of programs, by establishing and adhering to appropriate procedures and consultation mechanisms.</p> <ul style="list-style-type: none"> ✓ Intensify the replication, up scaling or mainstreaming of climate change mitigation adaptation initiatives that have been successfully tested and practically applied at the local level, in national development priorities and plans ✓ Sustainable frameworks in place for implementing local climate change activities that are linked to market mechanisms, policy interventions or Tonga Govt development priorities 	protected area systems, and multilateral processes	sustainable framework in place to implement climate change activities	approaches; LA, PMO, MOFNP, MOH, MEWAC, MECC, MOTEYS, MAFFF, MOP, Ministry of Tourism, MLCI		
--	---	--	---	---	--	--

6.1 Attain development through integrated community efforts	6.1.8 Greater Valuing Tonga's cultural traditions within an evolving culture with certain percentage achieved by 2020.	Collaborate with Ministry of Education and Academia in documentation of traditional knowledge to guide implementation of the ABS protocol.	No. of research on traditional knowledge;	Greater valuing of TK in the country; LA, PMO, MOFNP, MOH, MEWAC, MECC, MOTEYS, MAFFF, MOP, Ministry of Tourism, MLCI	Planning stage or early implementation	Measures taken has been partially effective
	6.1.9 Ensuring sustainable use of the environment, by enforcing Environmental Impact Assessments (EIAs), and strengthen the national capability for environmental management to create incentives for limiting the use of resources and production of waste by 2022.	Innovative and adaptive community-based approaches demonstrated, piloted, and integrated into global efforts to address unsustainable agricultural practices, rangeland and forestry management, while promoting local livelihoods	no. of community-based approaches on waste management, no. of community implementing good practices on waste management, sustainable use of crops, livestock and fisheries; establish bio-fuels crop growing strategy; no. of conservation initiatives addressing carbon stocks	Increased innovation of community-based approach on sustainable agriculture practices and forestry management; LA, PMO, MOFNP, MOH, MEWAC, MECC, MOTEYS, MAFFF, MOP, Ministry of Tourism, MLCI	Planning stage or early implementation	Measures taken has been partially effective
6.1 Attain development through integrated community efforts	6.1.10 Promote and facilitate the use of renewable energy and energy efficient technologies at household and institutional levels.	Promote the demonstration, development and transfer of low carbon technologies at the community level	no. of renewable energy & energy efficient initiatives at households; no. of wind power generation established	Increased development and transfer of low carbon technologies at community; LA, PMO, MOFNP,	Planning stage or early implementation	Measures taken has been partially effective

	Train artisans, install demonstrations and provide subsidies with some achievements by 2020			MOH, MEWAC, MECC, MOTEYS, MAFFF, MOP, Ministry of Tourism, MLCI		
7.1 To prevent illegal access to and lawful exploitation of Tonga's genetic access. (Access to Genetic resources)	7.1.1 Tonga's genetic resources are fully protected from unlawful exploitation <i>[A legal framework and the organizational capacity to regulate access and prevent the unlawful exploitation of Tonga's genetic resources is 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</i>	Enact legislation to regulate access to Tonga's genetic resources for bioprospecting, research and other forms of exploitation.	No. of illegal access cases prosecuted. No. of application received, and legally approved	Polling MoJustice reports; CL, MLCI, DOE, PMO	Actively under implementation	Effective
		Develop and implement strict procedures to support bioprospecting regulation.	No. of illegal access cases prosecuted. No. of application received, and legally approved	Polling MoJustice reports; CL, MLCI, DOE, PMO, MIA	Actively under implementation	Effective
		Review and strengthen existing arrangements governing the review and approval of all research proposals, including bioprospecting activities.	Established framework that guide availability of genetic resources for future scientific studies	Legal framework in place; CL, MLCI, DOE, PMO, MIA, MAFFF	Planning stage or early implementation	No new information as of yet
		Explore opportunities for repossessing Tonga's endemic biodiversity in the form of botanical and museum collections, gene banks and other forms	No. of repossessed opportunities of Tonga's endemic biodiversity from collection outside of Tonga.	Increased ownership of Tonga's endemic biodiversity; DOE, MET, MOFA	Planning stage or early implementation	No new information as of yet

	<i>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.]</i>	where these are held in collections outside of Tonga.				
7.2 To ensure the fair and equitable sharing of benefits generated from the use of genetic resources. (Fair and equitable Sharing of Benefits) <i>[Formal mechanisms for benefit sharing that are fair and equitable should be developed. More importantly, to safeguard the interests of holders of traditional knowledge and owners of resources involved in bioprospecting,</i>	7.2.1 Local owners of resources and Traditional Ecological (TEK) are receiving equitable share of benefits	Develop benefit-sharing mechanisms for holders of knowledge and owners of resources used in bioprospecting.	No. legally binding agreement signed benefiting local owners of resources and TEK	Polling; MLCI, DOE, PMO, MIA	Planning stage or early implementation	Measures taken has been partially effective
		Put in place appropriate mechanisms and procedures to ensure fair and equitable outcomes of negotiations with bio-prospectors for all local parties involved.	no. of successful negotiations with bio-prospect with local parties;	Developed a ABS mechanism in place for national/local level MLCI, DOE	Planning stage or early implementation	Measures taken has been partially effective
		Actively encourage and assess bio-prospecting in Tonga.	formal mechanisms in place for ABS and negotiations	DOE	Planning stage or early implementation	Measures taken has been partially effective

<p><i>procedures for negotiations should provide for the involvement of competent legal representation provided by the Government.]</i></p>						
<p>7.3 To prevent the loss of traditional ecological knowledge (TEK) (Traditional practices & ecological knowledge) [Traditional ecological knowledge needs to be documented by directly engaging custodians and holders of traditional knowledge. Key knowledge areas are those related to traditional medicines, resource harvesting and</p>	<p>7.3.1 Traditional ecological knowledge (TEK) is documented, protected from unlawful use and where appropriated promoted</p>	<p>Systematically identify and document traditional ecological knowledge including cultivation practices, fishing methods, names of local plants of medicinal value, methods used for their preparation and application, methods of predicting harvesting, fishing seasons etc.</p>	<p>Reports, database etc. capturing TEK.</p>	<p>MEIDECC reports and database.. MCTL reports; MIA, NGOS, MET</p>	<p>Planning stage or early implementation</p>	<p>Measures taken has been partially effective</p>
	<p>7.3.2 Traditional ecological knowledge (TEK) is documented, protected from unlawful use and where appropriated promoted</p>	<p>Promote awareness of and the use of traditional ecological knowledge and practices that are environmentally friendly and sustainable.</p>	<p>no. of awareness materials and practices developed on TK</p>	<p>MEIDECC reports and awareness materials; MEIDECC reports</p>	<p>Planning stage or early implementation</p>	<p>Measures taken has been partially effective</p>

management practices. This knowledge should be promoted where they are environmentally friendly for wider use, particularly in place of other modern methods that may not be ecologically sound.]		Enact legislation and take other appropriate measures to protect and safeguard ownership of traditional ecological knowledge and other intellectual property rights associated with them, and to ensure equitable benefit sharing resulting from their commercial use	Legislation enacted and enforced. Appropriate TEK applied in conservation management	Crown Law Office reports; DOE, MLCI, CL, MIA, MET	Actively under implementation	Measures taken has been partially effective
		Preserve traditional artifacts and other forms of expressions of traditional ecological knowledge in local museums and other secured collections and promote their existence for educational and awareness raising purposes.	no. of preserve traditional artifacts and TEK collected	TEK promoted; DOE, NGOS, MOIT	Actively under implementation	Measures taken has been partially effective
7.4 To raise public awareness and understanding of the importance of Tonga's genetic biodiversity resources and Traditional Ecological Knowledge (TEK) (Public Awareness	7.4.1 Tongans have pride in their natural heritage, are well informed about their TEK and supportive of efforts to protect them	Raise awareness of the importance of Tonga's biodiversity and their value as a source of traditional medicine and potentially other pharmaceutical products. of Tonga's biogenetic resources.	Increasing use of traditional healing methods, and other TEK	Polling and questionnaire surveys. DOE, MOET, MOT	Planning stage or early implementation	Measures taken has been partially effective

<p>and Education) [A range of media types should be employed to raise public awareness and understanding. Success stories of progress made by other countries.]</p>						
<p>7.4 To raise public awareness and understanding of the importance of Tonga’s genetic biodiversity resources and Traditional Ecological Knowledge (TEK) (Public Awareness and Education) [A range of media types should be employed to raise public awareness and understanding. Success stories of progress made by other countries.]</p>	<p>7.4.2 Tongans have pride in their natural heritage, are well informed about their TEK and supportive of efforts to protect them</p>	<p>Stimulate local interest by widely disseminating information on the successful experiences of other Pacific Island countries in the use of their genetic resources and the access and benefit sharing arrangements involved.</p>	<p>no. of Pacific Island countries successful experiences included in ABS</p>	<p>Success stories; DOE, MOET</p>	<p>Planning stage or early implementation</p>	<p>Measures taken has been partially effective</p>
		<p>Make readily accessible and available to the general public relevant information on Tonga’s biodiversity using modern computer/internet technology.</p>	<p>no. of successful access to public information on Tonga’s biodiversity</p>	<p>More biodiversity information accessible; DOE</p>	<p>Actively under implementation</p>	<p>Measures taken has been partially effective</p>
		<p>Explore and implement innovative ways to promote awareness</p>	<p>no. of awareness outreach programs</p>	<p>Promote awareness; DOE</p>	<p>Actively under implementation</p>	<p>Effective</p>

		Encourage and support programmes using traditional ecological knowledge.	no. of awareness outreach programs	Promote awareness; DOE	Actively under implementation	Effective
8.1 Increased national collaboration among sectors for the sustainable use and management of biodiversity in Tonga. <i>[STRENGTHEN POLICY AND LEGISLATIVE FRAMEWORK FOR SUSTAINABLE USE AND MANAGEMENT OF BIODIVERSITY IN TONGA]</i>	8.1.1 Compliance and Enforcement legislations and policies take into account biodiversity and livelihood	Strengthen legislative framework to manage national unique biodiversity	No. of sector legislation that specifically integrate conservation and sustainable use of biodiversity.	sectoral legislations; MAFFF, MOEC, NGO, MFNP	Actively under implementation	Effective
	8.1.2 By 2025, biodiversity is mainstreamed into corporate sector plans	Strengthen networks and coordination mechanisms between sectors for integrated implementation of NBSAP	The NBSAP is recognized as authoritative reference for economic planning purposes.	Multi-sector action plans and reports; MEIDECC, MEC; MAFFF, MEC, NGO, MLSNR	Actively under implementation	Effective
8.1 Increased national collaboration among sectors for the sustainable use and	8.1.3 By 2020, protected area network expanded and representative, with functional corridors	Strengthen protected area network to be ecologically representative of Tonga's ecosystem types	Network on Protected Areas in place	Participate in the PA network; MAFFF, MEC, MOFNP	Actively under implementation	Effective

management of biodiversity in Tonga.	8.1.4 Established budget guideline for protected area by 2020	Secure financial mechanism for biodiversity management and conservation	No. of programs implemented by Government Agencies integrating conservation and sustainable use of biodiversity.	Conservation budget guidelines established; MAFFF, MEC, NGO, MLSNR	Actively under implementation	Measures taken has been partially effective
8.2 integrated land-use planning and management	8.2.1 By 2025, land use plans completed, Land-use policy completed by 2019	Preparation and comprehension of national land use planning for Tonga	no. of land use plans completed; land-use policy in place	Land use plans and policy; MAFFF, MEC, NGO, MLSNR, MFNP	Planning stage or early implementation	Measures taken has been partially effective
	8.2.2 Complete GIS and Lidar surveys of all outer islands by 2027; Complete hydrological surveys for water-use management by 2027	Strengthened capacity for mapping and GIS-based management, including data management	No. GIS and Lidar surveys;	Survey reports; Land, MEC, MEIDECC	Actively under implementation	Measures taken has been partially effective
8.3 Strengthened awareness, communication and knowledge management for biodiversity <i>[Communicate the goals and approach of Tonga's NBSAP]</i>	8.3.1 Established and maintain protected areas, including marine areas, for priority species and livelihood	Increase awareness for the protected area approaches relevant for community livelihood	no. of awareness materials developed;	Promote protected areas and biodiversity; MEC, MAFFF, NGO	Actively under implementation	Effective
	8.3.2 Established communication strategy on good practices and sustainable used of biodiversity	Improved communication between Government/NGO and associated institutions for biodiversity and food security	communication strategy and communication practices in place	Communication strategy; MEC, NGO, GL	Actively under implementation	Effective

	8.3.3 Best practices guidelines are produced and distributed	Share best practices and lessons learned for protected areas, both marine and terrestrial, to contribute to community livelihoods	best practice guidelines produced; no. of lesson learnt and best practices shared	best practice guidelines produced and distributed; MAFFF, MEC, NGO, MLSNR, Regional agencies	Actively under implementation	Effective
8.3 Strengthened awareness, communication and knowledge management for biodiversity	8.3.4 National Clearing House mechanism established by 2025.	Knowledge management and data sharing	knowledge management and data sharing in place;	NBSAP stakeholders. Lead agency = MEIDECC	Actively under implementation	Measures taken has been partially effective
	8.3.5 National environmental database established by 2025					
	8.3.6 Synergistic implementation through the NBSAP, by 2027	Strengthen synergistic implementation, monitoring and reporting to meet MEA obligations	national reports for CBD	Stakeholders reports; MFAT, MEC, MOE, MAFFF, Regional agencies	Actively under implementation	Measures taken has been partially effective
	Agreement by CBD and other biodiversity MEA COPs for synergistic reporting	Strengthen training in biodiversity and ecosystem-based management in formal education systems at all levels	no. of participants and trainings carried out	MEC, MOE	Actively under implementation	Measures taken has been partially effective
8.4 Strengthened mechanisms for ecosystem-based management,	8.4.1 National target for sustainable energy growth is achieved	Promote low carbon, energy-efficient development and monitoring GHG emission	meet national target for sustainable energy growth	Sector report; TERM, MFAT	Actively under implementation	Measures taken has been partially effective

adaptation and mitigation	8.4.2 By 2027, implement through NBSAP to contribute to NDCs	Aligning with JNAP to contribute to climate change mitigation and adaptation	Contribution to NDCs	Sector reports; MOE, MAFFF, NGO, MFNP, MFAT	Actively under implementation	Measures taken has been partially effective
	8.4.3 Established national coastal management plan including economic development	Promote adaptation for coastal protection and shoreline changes, including ecosystem-based disaster risk reduction	national coastal management plan established;	Coastal management plan; MOE, TERM	Actively under implementation	Measures taken has been partially effective
	8.4.4. Species and ecosystem resilience to climate change is documented 8.4.5 Sector plans incorporate ecosystem-based solutions	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	no. of species and ecosystems resilience to climate change documented;	Sector plans; MAFFF, MEC, MLSNR, NGO, MFNP	Actively under implementation	Measures taken has been partially effective
8.5 Mainstream biodiversity into cross-sectoral community planning and management	8.5.1 By 2020, mainstream biodiversity into community development plans	Strengthen community participation in planning and management of biodiversity	no. of community development plans with biodiversity mainstreamed	Community development reports; MAFFF, MEC, NGO, MIA	Actively under implementation	Effective
	8.5.2 By 2025, effective implementation of EIA tools and other development controls	Strengthen development control processes, such as EIA, to safeguard Tonga's biodiversity	no. of projects with EIA	Sector reports; MEC, VEPA, NGO	Actively under implementation	Measures taken has been partially effective

	8.5.3 By 2020, communities are engaged in all planning, implementation and monitoring for biodiversity management, including information collection	Increase community participation in planning, implementation and monitoring as appropriate	no. of communities engaged; no. of information collected	Sector and communities report; MAFFF, MoEC, NGO, MFNP	Actively under implementation	Effective
	8.5.4 Commitment to cross-sector implementation of NBSAP by 2020	Strengthen synergistic, cross-sectoral management of biodiversity	No. sector plans implemented;	Sector reports; National agencies, NGOs, Public and private sector, Academia, International organisations	Actively under implementation	Measures taken has been partially effective
9.1 To ensure the through and comprehensive assessment of technical, managerial and administrative capacity for implementing biodiversity conservation within Tonga's line ministries and all conservation organisations.	9.1.1 By 2020, a National Capacity Self-Assessment tool will be in use.	Implement a National Capacity Self-Assessment project to identify areas of capacity needs.	NCSA report is complied.	MEIDECC reports and database. MEIDECC, MAFFF, MLNR, MIC, MCTL, and related Associations	Planning stage or early implementation	No information as of yet
	9.1.2 By 2020, a capacity building programme would be implemented	Develop a capacity building programme based on the result of the NCSA to build capacity across all sectors involved in the NBSAP implementation.	No. of capacity building measures identified in NCSA and NBSAP implemented	MEIDECC workshop reports. Qualitative assessment of proposals; DOE	Planning stage or early implementation	No information as of yet

(Assessment of biodiversity conservation capacities)						
9.2 To inform all interested organisations of potential funding sources for biodiversity conservation and of donors funding requirements. (Collation and dissemination of donor related information) <i>[Information on current and potential funding sources and their requirements for assistance should be readily accessible to all potential implementers of the NBSAP to facilitate access and solicitation of funds</i>	9.2.1 By 2025, a donor database would be established for potential investors of the NBSAP	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.	No. of meetings, workshops held. No of organisations attending. Quality of funding proposals received	Donor database; MEIDECC, MAFFF, MLNR, MIC, MCTL, and related Associations and donors	Planning stage or early implementation	Measures taken has been partially effective
	9.2.2 By 2020, Tonga would be the recipient of many donor funding for NBSAP implementation	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 assistances.	no. of proposals received; no. of fundraising activities; no. of agencies included	Funders confirmed; donors	Planning stage or early implementation	Measures taken has been partially effective

<i>and other forms of assistance.]</i>	9.2.3 By 2020, 80 percent of Tonga will understand the funding schemes for conservation activities	Organize public meetings and workshops to explain different funding mechanisms and applications/eligibility requirements.	no. of meetings and participants	Increase understanding of funding schemes; MEIDECC, MAFFF, MLNR, MIC, MCTL, and related Associations	Planning stage or early implementation	Effective
9.3 To strengthen the capacity of key stakeholders in planning and implementing fund raising strategies and in managing conservation funds. (Capacity building in conservation fundraising and management) <i>[Formal training in proposal writing and fund-raising planning should be provided for all local implementing organizations, including NGOs, to</i>	9.3.1 By 2020, NGOs, Government and private sector would have annual trainings for proposal writing	Organize formal short training in proposal writing and fund-raising planning for NGOs and government agencies.	No. of trainings and proposals received	training reports; MEIDECC, MAFFF, MLNR, MIC, MCTL, and related Associations	Planning stage or early implementation	Effective
	9.3.2 By 2020, local implementing organizations will have all the skills and networking for conservation programme implementation	Facilitate opportunities for major donor organizations to meet and promote conservation funding programmes with local implementing organizations.	no. of meetings, no. of donors participated	Facilitation capacity; MEIDECC, MAFFF, MLNR, MIC, MCTL, and related Associations	Planning stage or early implementation	Measures taken has been partially effective
	9.3.3 By 2020, online portals will be updated regularly for donors to observe local progress on conservation activities	Update implementing organizations and other local NGOs with up-to- date information on available opportunities for funding	online portals established	DOE	Planning stage or early implementation	Effective

<i>enhance their capacity to attract donor funding to biodiversity conservation in Tonga.]</i>		biodiversity activities, as they come on hand.				
	9.3.4 Promote donor requirement and proceeding for accessing funds	Conduct workshops to explain to local NGOs and other eligible implementing agencies the different donors eligibility requirements and procedures for accessing funds.	No. of workshops;	Workshop reports with MEIDECC, MAFFF, MLNR, MIC, MCTL, and related Associations	Planning stage or early implementation	Measures taken has been partially effective
<i>9.4 To generate local funding sources for biodiversity conservation. (Economic tools and instruments for conservations funding) [Although funding biodiversity conservation is likely to be sourced from external funding partners, local funding should also be encouraged. A number of mechanisms can be investigated for their feasibility to generate</i>	9.4.1 By 2020, an Environment Trust Fund will be established.	Explore the feasibility of setting up a national sustainable financing mechanism for biodiversity conservation.	Funding mechanism idea supported and viable, No. of economic instruments introduced to generated income from biodiversity related services and others.	MEIDECC reports & database report of feasibility study on funding mechanism	Planning stage or early implementation	No information as of yet
	9.4.2 By 2025, the Environment Trust fund will be sustainably able to support eco-tourism projects	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.	Trust Funds established	MEIDECC reports	Planning stage or early implementation	No information as of yet

<i>conservation funding.]</i>						
<p>9.5 To further strengthen effective partnerships with key local and international organizations to support the implementation of biodiversity conservation programmes.</p> <p><i>[Similarly, many international conservation organizations should be targeted and partnerships developed. Many are useful sources of conservation information, technical expertise and sometimes of funding. Often, close partnerships with</i></p>	9.5.1 By 2020, an Environment Conservation award will be an annual event given out during Environment Week.	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.	Environment Conservation Award presented annually	Annual awards, multi-stakeholders, DOE	Actively under implementation	Effective
	9.5.2 By 2020, NGO representatives will be part of the National Environment Coordinating Committees for decision making	Create opportunities for representatives of the private sector and conservation NGOs to sit on national coordinating committees dealing with different environmental issues.	no. of NECC meetings and no. of Private Sectors and NGOs attending	Meeting reports; multi-stakeholders, Doe	Actively under implementation	Effective
	9.5.3 By 2020, national policies would have been developed with extensive involvement of private sector and community consultations.	Encourage regular consultations with representatives of civil society and the private sector on issues of national policies.	No. of stakeholders' consultations; no of partners participating	Stakeholder consultation reports; multi-stakeholders, DOE	Actively under implementation	Effective

<i>some of these organizations can leverage new partnerships and donors, and their support and involvement can provide a useful leverage for major international donors.</i>]	9.5.4 By 2020, the network with private sector and NGOs with government sectors will be well established.	Use every opportunity to advance formal partnerships with private sector and civil society organizations to collaborate and co-implement conservation initiatives.	established network with Private Sectors and NGO in place; no. of formal meetings with partners; no. of partners participating	Meeting and network reports; multi-stakeholders; DOE	Actively under implementation	Effective
	9.5.5 By 2020, networking with international bodies will be strengthened for partnership in achieving the Aichi targets	Encourage contact with international conservation NGOs and where possible, provide them with reports on work carried out in Tonga.	Increasing no. of foreign organisation active in biodiversity conservation work in Tonga. Increasing no. of multi-donor funded projects implemented in Tonga	DOE reports Donor reports; multi-stakeholders and relevant Association/donor	Actively under implementation	Effective

3.3 Obstacles encountered during the implementation of each measure, and the requirements to overcome them described?

The followings are some of the challenges and obstacles identified in the implementation of the national targets for Tonga in the duration of 2015-2018. Some of these challenges are cross-cutting issues listed below in Table 5.

Table 5: The obstacles and capacity needs identified under each thematic areas

Thematic Areas	Obstacles and Capacity needs
1. <i>Forestry Ecosystem</i>	<ul style="list-style-type: none"> ● 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 crop ● Lack of funding and need financial sustainability for looking 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 process timber ● Increased market demand for evidence of sustainability and legality ● Limited public access to forest reports
2. <i>Marine and Coastal Ecosystems</i>	<ul style="list-style-type: none"> ● Lack of financial resources (eg: 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, ● Proper data management, ● Lack of enforcement (sand mining, development, fisheries, rebuilding of fish stocks vs increased consumptions, ● Lack of inventory and monitoring aspects for SMAs ● Overfishing and sustainable fishing practises ● Pressure from commercial fisheries on communities ● Threats and pressures of pollution (heavy metals, pesticides, litter, solid waste, petroleum, POPs, nutrients, sedimentation, sewage) ● Increased climate change impacts
3. <i>Agro Biodiversity</i>	<ul style="list-style-type: none"> ● Land issues ● Unsustainable farming practises at land owners due to high demand for commercial farming ● Lack of landholders' sense of responsibilities to protect important genetic resources in their area ● The need to secure regional and international markets for specific crops

	<ul style="list-style-type: none"> ● Lack of enforcement of biosecurity protocols on produce harvested when transported by middle man. ● Limited transparent report shared with the public
4. <i>Species Conservation</i>	<ul style="list-style-type: none"> ● 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 have negatively affected management of protected areas.
5. <i>Invasive Alien Species</i>	<ul style="list-style-type: none"> ● 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. <i>Local Community and Civil Society</i>	<ul style="list-style-type: none"> ● 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. <i>Access and Benefit Sharing from the genetic resources and Traditional Ecological Knowledge</i>	<ul style="list-style-type: none"> ● 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. <i>Mainstreaming Biodiversity Conservation</i>	<ul style="list-style-type: none"> ● Limited knowledge of protected areas network at grassroot level ● Limited coordinated collaboration with areas of biodiversity significance ● Limited technical skills and Data management
9. <i>Financial Resources and Mechanisms</i>	<ul style="list-style-type: none"> ● 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

3.4 Are revisions recommended for measures that can be more effectively implemented to achieve desired results?

The followings are some but not all of the recommendations identified that are relevant to each of the national targets.

Table 6: Recommendations under each thematic areas

Thematic Areas	Recommendations
1. <i>Forestry Ecosystem</i>	<ul style="list-style-type: none"> ● Strengthening 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. <i>Marine and Coastal Ecosystems</i>	<ul style="list-style-type: none"> ● Strengthen collaboration with communities of protected areas by enhancing management structures in place ● Increase training package on capacity building to include communities, private sectors and NGO on abreast knowledge and technical skills. ● Develop incentive program which encourage 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 ● 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 ● Established Flood Management Policy and Create Coastal Area Management Policy
10. <i>Agro Biodiversity</i>	<ul style="list-style-type: none"> ● Strengthen public education campaigns and publicity on pesticide usage schemes, etc.; ● Strengthen collaboration with landholders and communities by providing regular training opportunities to increase knowledge on sustainable farming practises ● To increase public education outreach on
11. <i>Species Conservation</i>	<ul style="list-style-type: none"> ● Strengthen decision-making process and implementation by enhancing institutional capacity to better coordinate and oversee conservation related matters. ● To revise and update relevant legislations on environmental protection and management;

	<ul style="list-style-type: none"> ● To strengthen enforcement of relevant legislations and regulations through public awareness and education; ● Pollution source survey should be conducted on a yearly basis; ● To review existing biodiversity related regulation and establish overarching regulations housing all biodiversity related legislation that is clearly link to development work and management of pollution
12. <i>Invasive Alien Species</i>	<ul style="list-style-type: none"> ● To strengthen enforcement and compliance programs ● To establish regular monitoring programs in eradicating IAS annually with financial assistance secured ● To increase training opportunities on IAS that is open to communities, private sectors, NGO and national stakeholders
13. <i>Local Community and Civil Society</i>	<ul style="list-style-type: none"> ● To increase training opportunities available to communities, private sectors and NGO on relevant skills and knowledge pertaining to environment and climate change issues, accessing funds, project management, monitoring and reporting. ● To strengthen communication and outreach programs relevant to needs arise.
14. <i>Access and Benefit Sharing from the genetic resources and Traditional Ecological Knowledge</i>	<ul style="list-style-type: none"> ● To establish regular update of gap analysis on data management ● To develop a robust communication and awareness program where the public is fully informed ● To systematically document TEK from grassroots level encouraging it through project proposal design, research studies, information sharing with NGOs, private section and national agencies. ● To provide training programs on data management, transfer of information at both national and local level ● To strengthen production of awareness materials on TEK and ABS that can be widely distributed, as well as strengthening facility that cater for awareness and communication outreach on biodiversity conservation.
15. <i>Mainstreaming Biodiversity Conservation</i>	<ul style="list-style-type: none"> ● To strengthen mainstreaming biodiversity in sector and community development plans ● To develop a M&E framework to ensure biodiversity conservation is mainstreamed across nation to community level operation ● To strengthen coordinated management structures in place for effective decision-making process regarding biodiversity conservation ● To enhance institutional capacity on legal areas to assist with enforcement and compliance related work
16. <i>Financial Resources and Mechanisms</i>	<ul style="list-style-type: none"> ● To establish financial mechanisms for the management of protected areas and biodiversity conservation ● To prioritize funding opportunity on biodiversity conservation in mitigation and adapting to climate change issues ● To strengthen institutional capacity in accessing funds for biodiversity conservation through establishing training opportunities and attending south to south cooperation spaces.

4.0 Section III: Assessment of Progress towards Each National Target

The assessment of progress towards the National Targets is given in Table 5 below. It uses a five point scale shown below on progress, as well as indication of Level of Confidence (***) based on available evidences at the time of the report drafting.



Moving away from the target (things are getting worse rather than better)



No significant overall progress (overall, we are neither moving towards the target nor away from it)



Progress towards target but an insufficient rate (unless efforts is increased, the target will not be met by the deadline).

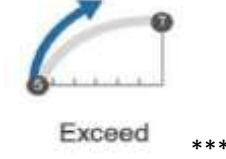




On track to achieve the target (if continued on the current trajectory, target will be achieved by the deadline)



On track to exceed target (target is achieved before the deadline)

Table 7: Assessment of Progress towards achieving the National targets

Objectives/ Strategies	Targets	Progress and Level of confidence	Notes
1.1 Develop and promote sound policy and legal frameworks	1.1.1 Established the National Agriculture Sector Plan by 2015 with full implementation by then, and carry out interim review before 2020		This target was achieved in 2017 by the Ministry of Agriculture and Forestry ⁶ , and implementation has also begun since 2018. Therefore, target has been achieved before deadline.
	1.1.2 National Forest Policy revised and updated		This target is on track to be achieved as they use their Sector Plan and also existing Forest Policy as basis for their forest policy review in progress that was established in 2009 ⁷ . Furthermore, the project <i>SPC/APFNet Project Capacity Building Towards Effective Implementation of Sustainable Forest Management Practices in Fiji, Tonga and Niue</i> completed the foundation work for the forest policy revision. ⁸
	1.1.3 Complete 100% development of National Land Use Plan/Policy by 2015		Financial resources and coordination challenge had delayed the completion of this target, however various project has made their site-specific land use plan, conservation of natural resources and improved management capacity. Some of these projects involved the Invasive Alien Species Project in 2016 ⁹ ; Fanga'uta Stewardship Plan in 2017 ¹⁰ ; establishing of Special Management Areas lead by Fisheries Department ¹¹ ; Tonga IW-R2R Project ¹² ; Marine Spatial Plan project

⁶ Tonga Forest Sector Plan 2017: https://drive.google.com/file/d/1UubgiibGmjda020m7BU5Gw_9MXcLIWo7/view?usp=sharing

⁷ Tonga Forest Policy 2009: <https://www.lse.ac.uk/GranthamInstitute/wp-content/uploads/laws/4756.pdf>





⁸ Options for strengthening regulatory framework for sustainable management of the forest and tree resources of Tonga Feb 2016: https://drive.google.com/file/d/0B_FF6NUWmJr1dkdIUupfVFBFTmM/view

⁹ Terminal Report of IAS Project 2017 highlighting successes of the project: <https://drive.google.com/file/d/1QzpLRPIRGbvEIEOPPnziXuL-gPFccJTj/view?usp=sharing>

¹⁰ Fanga'uta Stewardship Plan 2017: https://drive.google.com/file/d/1jfu58q_wBC-gv_ZuW6dxx9Xs5EtTh6bQ/view?usp=sharing

¹¹ Tonga SMA Report 2020: https://drive.google.com/file/d/1xTCUsWwEbckaa42Oht9RWM9x_okz9A3Y/view?usp=sharing

¹² Tonga IW-R2R project with SPC: <https://www.pacific-r2r.org/partners/member-countries/tonga>

			since 2015 ¹³ , Coastal Protection Measures with GCCA ¹⁴ are but a few to acknowledge.
1.2 That the Forest Act is revised and that the corresponding regulations are being revised and developed concurrently. <i>[Promote and develop robust MAFFF Legal and Policy Settings]</i>	1.2.1 MAFFF, in collaborations with regional partners secure funding and TA to complete revision of Forest Act by mid-2015; Planning and implementation of the revision works be completed by June 2016	 Achieve ***	The Agriculture Sector Plan 2016-2020 developed by the Ministry of Agriculture and Forestry (MAFF) has a section on funding opportunities and donor to support with their funding request with regional partners.
1.3 To engage each Member of Parliament in respective constituencies on biodiversity activities in each area. <i>[Enhance and encourage political support towards forest ecosystems development]</i>	1.3.1 Involve MPs as leaders in biodiversity development in respective constituencies & Identify and support biodiversity advocate politicians to lead community developments by 2020	 Achieve ***	This is currently being implemented through having the Standing Committee in the Parliament for Environment and Climate Change related matters, who in turn share at Parliament meeting updates received. MPs are engaged in new development on biodiversity and are encouraged to participate in national consultation carried out such as in 2018 with ocean plan.
1.4 Develop and sustain sound capacity building processes	1.4.1 To provide at least 10 formal degree programs (post grad programs included) in biodiversity and related fields by 2020	 Achieve ***	In the past 5 years, staff from relevant stakeholders were able to participate in various scholarship programs involving environment and climate change sectors. ¹⁵
	1.4.2 To ensure that appropriate levels of technical knowledge are being delivered to communities by 2020	 Progress **	As reflected in the Annual reports of the Environment ¹⁶ , Agriculture and Forestry, Climate Change, Lands and Survey, Fisheries ¹⁷ and Tourism various training on specific technical knowledge is shared with the communities.





¹³ Marine Spatial Plan project in Tonga with ocean planning: http://macbio-pacific.info/wp-content/uploads/2018/04/TO_MSP_Process_Brief_V7_May2018.pdf

¹⁴ Coastal Protection Measures project with GCCA 2014-2019: <https://www.pacificclimatechange.net/sites/default/files/documents/2.%20Tonga%20PDD.pdf>

¹⁵ List of scholarships awardees in 2018: <https://matangitonga.to/2018/12/08/37-tongans-receive-australian-scholarships-2019>

¹⁶ MEIDECC Annual Report 2018/2019: https://drive.google.com/file/d/1zKzLoGijJxaAYKhUcj_RD8yewDU8xyIJ/view?usp=sharing

¹⁷ Fisheries Annual Report 2015/2016: <https://drive.google.com/file/d/1dhRFQoHIDAZIRCWXmECqrr8kUxABlupU/view?usp=sharing>

	1.4.3 To increase engagement of local leaders in leading biodiversity initiatives to ensure full community participation, sustainability and community ownership by 2020.		This was well achieved as monitored in the various conservation programs implemented during 2014-2018 projects. One of those projects is the Fanga'uta Lagoon R2R Project which had catered various spaces that engaged local leaders in leading biodiversity initiatives. ¹⁸
1.5 To introduce biodiversity values into primary and secondary school's syllabus [Ensure that educational values and processes are being promoted and mainstreamed]	1.5.1 Step up efforts in mainstreaming biodiversity values (most probably in considerations of related environment and climate change related values) into school syllabus with 50% to be achieved by 2020.		With regards to ensuring biodiversity is mainstreamed to the Ministry of Education syllabus, this is not reflected in their recent Corporate Plan ¹⁹ and their Tonga Education Policy Framework. ²⁰ However in their Annual Report for 2013 ²¹ , they had align some activities of the senior students with the climate change related values and they had attended many climate related trainings and meetings. However, the communication and awareness programs carried out by the various projects have engaged schools in raising awareness on environment and climate change related values.
	1.5.2 Provide financial support to produce and disseminate appropriate media tools to enhance public awareness, education, and sense of ownership of any forestry biodiversity development initiatives by 2020.		According to MAFF Corporate Plan 2014-2017 ²² , they had reflected in their key indicators the need to improve media tools and increase public awareness through establishing more awareness activities. This is reflected in some of the projects that involved Forestry department such as the FLC-R2R program in 2014-2018, and their Corporate Plan of 2018-2023 ²³ greater attention to improving this target in the Forestry Division.
1.6 To promote public and private partnership aiming at involving all relevant stakeholders in Forestry Ecosystem development	1.6.1 By 2020 to establish a National Biodiversity PPP in action Group (NBPPG) to lead and provide policy role. To establish also a village or district level PPP sub-groups to drive community level initiatives and inform the national level.		The Agriculture Sector Plan of 2016-2020 ²⁴ clearly advise the establishment of Forestry District Council in local governance setting and a clear management structure informs the flow of information and decision-making process from grassroot to national level.

¹⁸ FLC-R2R Quarter 2 Newsletter 2016: <https://drive.google.com/file/d/1N8GGgnXLKu5vvgax7JCaifruOmZM3ubV/view?usp=sharing>

¹⁹ MET Corporate Plan 2017-2020: <https://drive.google.com/file/d/1-Uuo0RkevUMa5jirKqUV4E4vw81ulytm/view?usp=sharing>





²⁰ Tonga Education Policy Framework 2004-2019: <https://uil.unesco.org/fileadmin/keydocuments/LifelongLearning/en/tonga-2004-abstract-III-policy.pdf>

²¹ MET Annual Report 2013: <https://drive.google.com/file/d/1nkBGHaCCY7WvC1II0JJuE61n1UGKgwnN/view?usp=sharing>

²² MAFF Corporate Plan 2014-2017: <https://drive.google.com/file/d/1LX-IDT6a9kbq4BRBZA3d8fj-Ju1shLDY/view?usp=sharing>

²³ MAFF Corporate Plan 2018-2023: https://drive.google.com/file/d/1Mlo3-V97_nUe9U4BiH69J2tkECWcU80X/view?usp=sharing

²⁴ Tonga Agriculture Sector Plan 2016-2020: https://drive.google.com/file/d/1NgMqSnTCQZi0r6hfv46_WBdCYaOcFngU/view?usp=sharing

<p>1.7 To have all the forest resources in the whole of Tonga surveyed (for the first time) and published. <i>[Promote and update appropriate forest ecosystems resources assessment and documentation to determine accurate statistics to guide policy development decisions].</i></p>	<p>1.7.1 National Inventory on Forest Ecosystem fully implemented by 2020.</p>	 <p>Progress **</p>	<p>Agriculture Sector completed a census report in 2015²⁵, in which a sub-section is dedicated to forestry count in Tonga and this is also reflected as a pending activity in the Management Plan for Forest²⁶ and Tree Ecosystem in Tonga. However as to date there is no further update since 2015 of a national inventory to be completed as of yet.</p>
<p>1.8 To have a PMU responsible for securing and management of funds necessary to implement designated tasks [ACTIVELY AND ADEQUATELY SECURE FUND AND FINANCIAL MECHANISMS]</p>	<p>1.8.1 Department of Environment establishes finance PMU that is responsible for biodiversity financial management and mobilization & Secure external funding sources, potentially available for both short and long-term to finance biodiversity activities by 2020.</p>	 <p>Achieve ***</p>	<p>The Biodiversity division of the Department of Environment had been staffed in 2018 and are actively responsible for sourcing funds at the same time managing the various biodiversity projects. The Department is currently pursuing a Trust Fund for Environment, although the Trust Fund for Climate Change is already established and running. This is reflected in the Annual Report for MEIDECC 2018/2019.</p>
<p>1.9 To have all the reserved/ remaining forest ecosystems identified, declared conservation areas, and managed appropriately [APPROPRIATELY CONSERVE THE REMAINING AS WELL AS VULNERABLE FOREST ECOSYSTEM RESOURCES]</p>	<p>1.9.1 By 2020 The National Park Management plan is revised; Increase the contribution of national parks in foreign earning through tourism activities like camping and sightseeing activities; Install signage and visitor guides to provide in-depth education for locals and visitors alike;</p>	 <p>Progress ***</p>	<p>In 2014 a survey²⁷ was carried out at the National Park of 'Eua which informs the current status of 'Eua park and also of Vava'uta BIORAP report²⁸ informing the status of Mt. Talau reserve. These two national parks have management plan reflected in the National Invasive Species Strategy and Action Plan 2013-2020 (NISSAP)²⁹ and also in the Management Plan for Forest and Tree Ecosystem in Tonga. This currently monitored by the Department of Environment and also the Department of Forest annually.</p>
<p>1.10 To have deforested area (on public and private lands) reforested immediately [ACTIVELY REPLENISH AND RESTORE LOST FOREST ECOSYSTEMS]</p>	<p>1.10.1 By 2020 Enforces M&E of the Tonga Forest Product reforestation programs to ensure that the demanded replanting is done according to MOA with the government</p>	 <p>Achieve ***</p>	<p>In 2015-2017 the Department of Forestry as well as the Department of Environment supported the wide range tree planting programs under the Ridge to Reef program at Fanga'uta Lagoon catchment in which they had planted more 10,000 seedlings in its M&E activities. This is captured in both Ministries</p>




²⁵ Tonga National Agricultural Census Report 2015: <https://drive.google.com/file/d/1Honph85R7PySUo-pZ1FAHpwE-TSNuI6b/view?usp=sharing>

²⁶ Management Plan for Forest and Tree Resources 2017: https://drive.google.com/file/d/1UubgiibGmjda020m7BU5Gw_9MXcLIWo7/view?usp=sharing

²⁷ 'Eua Park Survey Report 2014: <https://drive.google.com/file/d/1GezRX2IG6Emgi3r72ajaNpNeShEgP2qk/view?usp=sharing>

²⁸ Vava'uta BIORAP Report 2014: https://drive.google.com/file/d/1AopSPZFihx4EYTajQqsXs5P9_oNNnEJ/view?usp=sharing

²⁹ National Invasive Species Strategy and Action Plan 2013-2020: <https://drive.google.com/file/d/1unJuul-lwCaRUI3I9kCs1WdhF70JDenz/view?usp=sharing>

			annual report and also at the Fanga'uta Lagoon status report of 2015 ³⁰ and Status Report 2016. ³¹
1.11 To have clear and practical frameworks for implementing set actions [PROMOTE SOUND WATER RESOURCES MANAGEMENT SYSTEMS]	1.11.1 By 2020 Formulate watershed management strategies for Tonga with specific watershed management work plan to suit different geological sites;		Tonga Natural Resources department ³² under the Ministry of Lands and Survey actively implement clear strategies that monitor watershed management and conservation in Tonga effectively. Furthermore, the R2R-FLC project in 2014-2018 actively applied the Ridge to Reef approach in the development of the Stewardship Plan for the Fanga'uta catchment at the mainland under the Department of Environment. The Department of Climate Change project for Coastal Protection Measures ³³ mentioned above successfully completed trialed this in the eastern areas of Tongatapu in which series of training was carried out in 2015-2018 with GCCA on management of natural resources and watershed management.
1.12 To have appropriate policy guidelines endorsed by Cabinet for stakeholder's information and use [PROMOTE SUSTAINABLE UTILIZATION OF THE FOREST RESOURCES]	1.12.1 To establish a business plans for commercial forest operations for Tonga by 2020; 'Eua Forest management committee term of reference and composition established; Enforce 'Code of practice for forest harvesting'.		Forestry Department for Tonga actively monitor this by following closely the Code of Practice for harvesting Eua Forest Plantation ³⁴ and Code of Practice for Sustainable Management of the Forests and Tree Resources ³⁵ in Tonga which it is monitored closely against Tonga Forest Sector Plan of 2017.
1.13 To have necessary research and extension works implemented. [CARRY OUT STRATEGIC APPROPRIATE RESEARCH AND EXTENSION]	1.13 Promote traditional Tongan farming systems in rural and vulnerable communities with minimum mechanization and use of agri-chemicals by 2020.		Ministry of Agriculture actively promote the Tongan farming system ³⁶ in their Corporate Plan as well as their Sector Plan. About 95% of all total agriculture household in Tonga practise agro-forestry farming as

³⁰ Fanga'uta Status Report 2015: <https://drive.google.com/file/d/138y9Q4F8xO2lavmc5sIQIMQQ0zWq1vPT/view?usp=sharing>

³¹ Fanga'uta Status Report 2016: <https://drive.google.com/file/d/1xNCjJ0jdGoilr30Dz8I6IXNjiHqLKbe/view?usp=sharing>



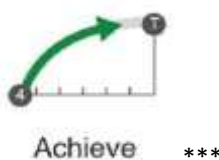
³² Tonga Coastal Resource Management Section: <https://www.naturalresources.gov.to/our-programmes/coastal-resources-management-section/coastal-resources-management-section>

³³ Launching of the Coastal Protection Project 2016: http://www.mic.gov.to/index.php?option=com_content&view=article&id=5628:-coastal-protection-project-opened-in-tonga

³⁴ 'Eua Code for harvesting practice for Forest Plantation 2009: <http://mafff.we.bs/wp-content/uploads/2016/05/Eua-Code.pdf>

³⁵ Code of Practice for Sustainable Management of Forests and Tree Resources in Tonga 2010: <http://mafff.we.bs/wp-content/uploads/2016/05/Code-of-Practice-for-the-Sustainable-Management-of-the-Forests-and-Tree-Resources-of-Tonga.pdf>

³⁶ Reflection on Tongan Traditional Farming System 2015: https://www.unesco-ichcap.org/eng/ek/sub10/pdf_down/03-2.%20Traditional%20Tongan%20Farming%20System%20Past%20and%20Present.pdf

			reflected in FAO Report 2017 of the State of Tonga's Biodiversity for Food and Agriculture. ³⁷
2.1 Conservation and protection of marine and coastal ecosystem: 2.1a) To expand the existing network of protected areas to effectively conserve major coastal and marine habitats of biological and socio-economic value.	<p>2.1.1 A 50% increase in the total area of marine ecosystem under conservation management in 10 years.</p> <p>2.1.2 30% of Marine Managed Areas are established and fully implemented by 2030.</p>		As to date there is increased achievement in Tonga with regards to establishing marine protected areas at local to national level. The National Fisheries Sector Plan 2016 – 2024 ³⁸ was developed collaboratively by National government, Non-governmental organizations, and communities. In this plan it provides a framework for the sustainable fisheries and conservation management at inshore through the use of the Special Management Area approach ³⁹ and offshore marine environment. Similarly, the Department of Environment is currently leading the coordination of securing the 30% of Tonga's EEZ through multi-stakeholders support of its Ocean 7 Technical Working Group planned aimed for end of 2020 through the Marine Spatial Plan ⁴⁰ program since 2015.
2.1a) To expand the existing network of protected areas to effectively conserve major coastal and marine habitats of biological and socio-economic value. (Marine conservation areas) [FURTHER EXPAND THE EXISTING NETWORK OF PROTECTED AREAS TO EFFECTIVELY CONSERVE MAJOR COASTAL AND MARINE ECOSYSTEMS AS WELL AS HABITATS OF BIOLOGICAL AND SOCIO-ECONOMIC VALUE.]	2.1.a.1 By 2020, Tonga has established and implemented an ocean-wide policy and marine and coastal spatial planning framework.		Tonga is progressing positively to achieving this through the establishment of its Marine Spatial Plan for the Kingdom, in which drafting of the ocean-wide policy will take place in the endorsement of the Marine Spatial Plan for Tonga Ocean Management Areas in 2020.
	2.1.a.2 By 2020, a financial mechanism and legal framework is established to support enforcement and compliance work for protected areas.		The Marine Spatial Program under the Department of Environment of the Ministry of Environment has completed the draft of legal framework for Tonga's Ocean Management Areas ⁴¹ at the same time is working with Ocean 5, Waitt Institute Foundation's support with on exploring possible financial mechanism for Tonga. In the meantime with IUCN support through Compliance Optimization project, it is to enhance compliance and enforcement work for protected areas from the




³⁷ FAO Country Report 2017: The State of Tonga's Biodiversity for Food and Agriculture: <http://www.fao.org/3/CA3503EN/ca3503en.pdf>

³⁸ Tonga Fisheries Sector Plan 2016-2024: https://drive.google.com/file/d/1xTCUsWwEbckaa42Oht9RWM9x_okz9A3Y/view?usp=sharing

³⁹ Tonga SMA Report 2020: https://drive.google.com/file/d/1xTCUsWwEbckaa42Oht9RWM9x_okz9A3Y/view?usp=sharing

⁴⁰ Tonga Cabinet Decision #246 on Marine Spatial Plan: <https://drive.google.com/file/d/1oR-OxAYXmxF8BiRjDcFmivEMWoeGy6p/view?usp=sharing>






⁴¹ Tonga Marine Spatial Plan 2020 progress: <https://drive.google.com/file/d/1xdfE3OmNgZ8m2slGGHS3RNvuLQCoUss/view?usp=sharing>

			Ocean Management Areas established via the Marine Spatial Plan.
2.1b) Promote innovative use of economic incentives	2.1.b.1 By 2020, marine and coastal ecosystems areas mainstreamed into related sectoral plans and the National Strategic Development Plan		Marine Environment Economic Valuation report ⁴² for Tonga's EEZ was completed in 2018 through the collaborative support of IUCN MACBIO Program with SPREP/GIZ in the implementation of the Marine Spatial Plan program under the Department of Environment. This resource now is being used widely as reference for other strategic plans in the Kingdom.
	2.1.b.2 By 2020, a well-established agreed guidelines and procedures used nationally for managing of Marine Conservation and Protected Area.		Tonga has used the Special Management Area strategy under the Ministry of Fisheries alluded to earlier in this section with the target to engage all coastal communities in Tonga. It has now reached more than 40 communities involved in this program. Through the Strengthening of Protected Area Program ⁴³ funded by the Ministry of Environment for Italy, they have supported the Department of Environment in Tonga in drafting national guidelines and framework for better management of the marine protected areas currently being pursued legally. Furthermore, the Marine Spatial Plan program shared earlier has established the Ocean Management Areas Plan that is to be finalized at the end of 2020 to guide and inform nationally use of these protected areas.
2.1b) Promote innovative use of economic incentives	2.1.b.3 By 2020, well establish studies and researches undertaken to assess and document and assign estimated value of goods and services of biodiversity and ecosystem		The nation wide valuation report was completed for Tonga's marine environment in 2018 through the MACBIO program with the Marine Spatial Plan program as alluded to in the previous targets. Furthermore, the Review of Special Management Areas in Tonga ⁴⁴ in 2017 funded via FAO informs of Tonga's success with community sustainable fisheries approach and its uses in Tonga.

⁴² Tonga National Marine Ecosystem Service Valuation Report 2018: <https://drive.google.com/file/d/1xdfE3OmNgZ8m2sIGGHS3RNvuLQCoUss/view?usp=sharing>

⁴³ Annual Report for Strengthening Protected Area Management program in Tonga 2019: <https://drive.google.com/file/d/1z9hKNXRdRPWjp-FvjQphJpwnHop-LdSF/view?usp=sharing>




⁴⁴ A Review of SMA in Tonga, FAO 2017: <https://drive.google.com/file/d/1L2dZn0g1i-0bBNLISe0ZxVDQ1XCzkP6W/view?usp=sharing>




2.2 (1) Capacity building and technological transfer and development <i>[Strengthen the National Capacity to Manage Marine and Coastal Biodiversity]</i>	2.2.1.1 By 2020, a overall 30% increase and improvement of the level of environmental skills and knowledge of this target group		Tonga has increased technical capacities and support through the close collaboration of the various regional and international organisation: IUCN, Ocean 5, Waitt Institute, SPREP, GIZ, GCCA which is reflected in the Annual Reports of the Ministry of Environment 2017-2018 ⁴⁵ and Department of Environment Report of 2016 ⁴⁶ .
	2.2.1.2 By 2020, at least 50% improvement in the capacity of this target sector		This target is progressing positively to be achieved through the Marine Spatial Plan program progress ⁴⁷ in which strengthening institutional capacity is currently taking place as the Kingdom embraces the development of the Ocean Management Plan for the country, and encouraging integrated multi-stakeholder approaches to ensure collective management of Tonga’s marine and coastal environment.
	2.2.1.3 By 2020, established agreed methods for mitigating impacts on coastal marine areas based on lessons learnt, knowledge, and experience, to be approved to used nationwide.		The Special Management Area program approach through the Fisheries Department in Tonga has been successful, as well as the monitoring efforts to enhance enforcement of protected areas in Tonga has become now the expected norms for the Kingdom. The case studies in Section II of this report highlights some of the lesson learnt and best practised applied on this.
	2.2.1.4 By 2020, appropriate agreed mainstreaming program implemented at national level.		This is currently being met with having a National Environment Coordinating Committee comprised of multi-stakeholders CEO at policy decision-making level. All environmental and climate change related matters are discussed and approved at this body prior Cabinet level.
	2.2.1.5 By 2027, meet international hydrographic mapping requirements		Through the Marine Spatial Program collaborative efforts and national and international organisations in bringing awareness on the needed Ocean Management Plan for Tonga such maps and data sets are being developed as part of its activities to be finalized in 2020.

⁴⁵ MEIDECC Annual Report 2017-2018: https://drive.google.com/file/d/1AbpXlgi0YKY1OvEdvidBW7YcVfi_TXeA/view?usp=sharing

⁴⁶ Tonga Department of Environment Annual Report 2015-2016: https://drive.google.com/file/d/1cRD5Xdwhf_oZeHmgLpQB_QIsG_C0J5zA/view?usp=sharing

⁴⁷ Marine Spatial Plan program progress update 2020: https://drive.google.com/file/d/1_aLMRgx002pnjiBG2OWI_maqIMSu0eaH/view?usp=sharing

2.2 (2): Capacity building and technological transfer and development <i>[Strengthen the capacity of national focal point and operational focal points for implementing multilateral environment agreements.]</i>	2.2.2.1 By 2020, at least 30% increase in resources made available from various donor agencies towards conservation activities.	 Achieve ***	Tonga has gained available resources to alleviate its conservation burden from a wide range of international and regional community but not limited to are: SPREP, IUCN, GIZ, Ocean 5, WAITT Foundation, UNDP, FAO, GEF, GCCA, UNEP, ADB, KNFC, Ministry of Environment for Italy, etc. This is reflected through the various project-based programs established between 2015-2018. However, there is still opportunity for greater assistance from Tonga’s international community to support its efforts on conservation. This can be referred to in the Ministry’s Annual report 2015-2018.
	2.2.2.2 By 2020, further 30% increase in technical support and appropriate activities to strengthen required capacity.	 Achieve ***	Through the various project-based programs implemented in Tonga during the 2015-2018, greater increased of trainings and technical support is noted to have take place and also engaging educational institute in the region to enable greater participation from Tonga. Furthermore, the use of online and webinar training allowed greater participation from relevant sectors in Tonga, even with financial resources is limited to allow physical participation. Furthermore the CBD various programs allowed for these technical support to take place with participants attending from Tonga in this reporting period. This can be referred to in the Ministry Annual Reports between 2015-2018.
2.2 (2): Capacity building and technological transfer and development <i>[Strengthen the capacity of national focal point and operational focal points for implementing multilateral environment agreements.]</i>	2.2.2.3 By 2020, 50% improvement in this area for the target groups through activities such as workshops, trainings, etc.	 Progress ***	This is an ongoing endeavor for the Department of Environment as reflected in its past annual reports, of which the various project-based programs are assisting greatly in this area with increased number of trained staff with negotiation skills at national level. However, much reliance of this is from external funding due to conflicting priorities for the Ministry with equally important areas of focus.

2.3 Minimise direct pressures on Marine and Coastal Biodiversity and promote sustainable use. <i>[Promote use of environmentally sound practices to minimise impacts on marine and coastal resources.]</i>	2.3.1 By 2018, all Deep-Sea Mining, Coastal Sand Mining and related activities are in full compliance with EIA requirements.		Tonga is positively enforcing its Environment Impact Assessment requirements ⁴⁸ in which it informs and guide all users of the marine environment to comply expectations. Furthermore, in the annual reports of the Ministry of Environment listing of the ongoing tracking of EIA activities completed between 2015-2018. However, consistency in application of the EIA of which the law equally applies to all still need further strengthening.
	2.3.2 By 2018, Identify at least 50% of important damaged habitats and ecosystem that need rehabilitation and restoration. By 2020, Develop and implement a monitoring and evaluation system for rehabilitation activities (to monitor progress and improvement).		Tonga has actively pursued this target positively in this reporting term, of which the following assessments reports inform the selected areas for ongoing rehabilitation program of coastal and marine habitats and ecosystems as well as successful monitoring and evaluation approaches: Marine Ecosystem Health Monitoring Program 2016 ⁴⁹ ; Marine Monitoring of Neiafu Harbour and Outer Islands of the Vava'u Archipelago 2018 ⁵⁰ ; Tonga socio-environmental spatial layers for marine ecosystem management 2020 ⁵¹ ; Community-based marine reserve (Special Management Areas) ⁵² ; and also the National Marine Ecosystem Service Valuation Summary of 2018 ⁵³ .
2.4: Public awareness and education <i>[Foster Public support for Coastal and Marine Conservation efforts and Sustainable Use]</i>	2.4.1 By 2020, 20% increase in effectiveness of community-based activities such as SMA and similar projects in promoting biodiversity.		Tonga is trekking successfully in this target of which more than 40+ communities in the Kingdom who have taken on the community-based marine reserve approach to promote conservation and sustainable use of the coastal environment.

⁴⁸ Tonga's Environment Impact Assessment Act: <https://drive.google.com/file/d/12taMsBwFpG4goMRLXDKsYixO6E8kANvW/view?usp=sharing>




⁴⁹ Marine Ecosystem Health Monitoring Program 2016: <https://tonga-data.sprep.org/system/files/Draft%20Vava%27u%20Ecosystem%20monitoring%20Report%202016.pdf>

⁵⁰ Marine Monitoring of the Neiafu Harbour and Outer Islands of the Vava'u Archipelago 2018: https://tonga-data.sprep.org/system/files/FINAL%202018_Marine%20Monitoring%20of%20Neiafu%20Harbour%20and%20Outer%20Islands_0.pdf

⁵¹ Tonga socio-environmental spatial layers for marine ecosystem management 2020: https://drive.google.com/drive/u/1/folders/1Cghff6JBco5GHCTicSujDchYb5t_Fc7a

⁵² Predicting impact to assess the efficacy of community-based marine reserve design: https://drive.google.com/drive/u/1/folders/1Cghff6JBco5GHCTicSujDchYb5t_Fc7a

⁵³ Tonga National Marine Ecosystem Service Valuation Summary 2018: https://drive.google.com/drive/u/1/folders/1Cghff6JBco5GHCTicSujDchYb5t_Fc7a

			This is reflected in Tonga Special Management Area Report of 2020 ⁵⁴ .
2.4: Public awareness and education <i>[Foster Public support for Coastal and Marine Conservation efforts and Sustainable Use]</i>	2.4.2 By 2020, complete review and update and put in appropriate place all national legislations and policies related to Biodiversity.		Through the Marine Spatial Program under the Department of Environment and supported by MACBIO program, this is one of the activities already underway to submit a Bill on ocean management by 2020 as well as review of all national legislations and policies ⁵⁵ related in 2016.
	2.4.3 Financial and human resources for government institutions have increased by 20% for conservation, protection and sustainable use of natural resources.		Through the various climate resilience and conservation projects in 2015-2018 as previously shared, this has contributed to increasing number of human resources engaged in government institutions for biodiversity conservation, protection and sustainable management. Also it is reflected in the Government priority for 2019-2022 ⁵⁶ they have mainstreamed this into their development plans.
2.5: Information, research and monitoring <i>[To promote scientific research and regular monitoring of critical marine ecosystems, and the proper management of scientific data]</i>	2.5.1 By 2020, documentation of all available information from assessment of tested instruments on marine and coastal management in Tonga and the neighboring countries		The followings are various assessment instruments used successfully on marine and coastal management in Tonga as previously mentioned in earlier targets: Marine Ecosystem Health Monitoring Program 2016, Marine Monitoring of Neiafu Harbour and Outer Islands of the Vava'u Archipelago 2018; Tonga socio-environmental spatial layers for marine ecosystem management 2020; Community-based marine reserve (Special Management Areas); Tongatapu Integrated Coastal Management 2016 ⁵⁷ ; Status of sea cucumbers in Tonga 2016 ⁵⁸ , Demographic assessment of exploited coastal finfish ⁵⁹ ; and also

⁵⁴ Tonga SMA Report 2020: https://drive.google.com/drive/u/1/folders/1Cghff6JBco5GHCTlcSujDchYb5t_Fc7a




⁵⁵ Review of Legislations and Policies relating to the Use and Management of Ocean 2016: https://drive.google.com/file/d/1-22WmR_BaOH0-9CicBoMIIUITICOWd4W/view?usp=sharing

⁵⁶ Tonga Government Priorities 2019-2022: https://drive.google.com/file/d/153AnqYP_ArnkcPZCEbli8BnQel5b65n8/view?usp=sharing





⁵⁷ Tongatapu Integrated Coastal Management, Principle, Case Studies and Lesson Learned 2016: <https://tonga-data.sprep.org/system/files/Tonga%20Integrated%20Coastal%20Management%202016.pdf>

⁵⁸ The status of sea cucumbers in the Kingdom of Tonga in 2016: https://tonga-data.sprep.org/system/files/Moore_17_sea_cucumber_tonga.pdf




⁵⁹ Demographic assessment of exploited coastal finfish species of Tongatapu, Tonga 2016: https://tonga-data.sprep.org/system/files/Moore_16_Demographic_assessment_coastal_finfish_Tonga.pdf

			the National Marine Ecosystem Service Valuation Summary of 2018.
	2.5.2 At least a 30% progression on this by 2030, with a baseline from 2015.		This is currently in progress, however there are limited traditional practises for biodiversity coservation and environmental protection for marine observed, except for that in 2009 ⁶⁰ . This will be a focus in the coming plan for 2030.
2.5: Information, research and monitoring <i>[To promote scientific research and regular monitoring of critical marine ecosystems, and the proper management of scientific data]</i>	<p>2.5.3 Identify invasive species and pathways in critical sites, both native and alien and assess impacts to ecosystems and biodiversity by 2017.</p> <p>2.5.4 By 2020, identify and implement prevention, control, or eradication measures on invasive species</p>		Tonga has developed its National Invasive Species Strategic Action Plan of 2013-2020 of which threats to marine biodiversity is included with proposed assessment tool that it had used. However, not much work has been done in this reporting period on marine invasive species for Tonga, except monitoring of the crown of thorns population in Tonga however this is not an introduced species to Tonga, but due to its dense population at time, it is considered invasive in kind and hence the monitoring program introduced in the Department of Environment annual activities which is reflected in the Ministry's annual reports between 2015-2018.
2.6 Sustainable Management of Coastal Marine and Terrestrial Ecosystems <i>[Application of GIS for improvement in control of loss of critical coastal marine ecosystems.]</i>	<p>2.6.1 By 2020, Capacity of GIS for monitoring coastal marine ecosystems are improved and;</p> <p>2.6.2 60% of coastal marine ecosystems are monitored and status of depletion are identified</p>		This is a working progress with the GIS office, IUCN is assisting with Tonga in provision of the marine maps development through the Marine Spatial Plan project under the Department of Environment. That project is forecasted to be completed in 2020, and then until then the maps developed will be passed on to the GIS office. However, during the monitoring of the coastal marine ecosystems in Tonga in this reporting period, the GIS

⁶⁰Women of the coral gardens 2009: https://tonga-data.sprep.org/system/files/Trad25_02_Malm.pdf




		 <p>Progress ***</p>	<p>team is involved throughout the process and are closely engaged in the capacity building process.</p> <p>As for 2.6.2 targets this targeted is currently in working progress in Tonga. Not all marine ecosystems are capably monitored, but inshore selected hotspots at Tongatapu, Vava’u, Ha’apai and in ‘Eua are being monitored but this does not covered all of Tonga’s EEZ, hopefully with the completion of the Marine Spatial Plan in Tonga with provided implementation plan that this target will be achieved in due time.</p>
	<p>2.6.3 By 2020 a GIS system for mapping of coastal habitats such as seaweeds is established.</p>	 <p>Achieve ***</p>	<p>This is achieved through the Marine Spatial Program project under the Department of Environment, with the support of the MacBio program under IUCN to have completed a Tonga Atlas⁶¹ for Tonga’s marine ecosystems in 2019.</p>
	<p>2.6.4 By 2020 capacity of GIS for monitoring coastal marine ecosystems are improved and 100% of coastal terrestrial ecosystems such as mangrove ecosystems are monitored and status of changes over time are identified</p>	 <p>Progress ***</p>	<p>This is at working progress during the reporting period, to achieve 100% of coastal mangrove ecosystems being monitored in Tonga. At the meantime adhoc programs are taking place with various projects under Department of Environment, Climate Change, Forestry and Civil Society who are assisting with monitoring of mangroves ecosystems. GIS capacity to monitor coastal marine ecosystems, is progressing very well through the support of the Marine Spatial Plan program in Tonga.</p>
<p>3.1 To reinforce conservation of genetic resources valuable as food sources, promote good agricultural practices which contribute towards the preservation of genetic diversity and the reduction of pollution especially by linking agricultural</p>	<p>3.1.a.1 Developed a National Database for Agricultural genetic resources</p>	 <p>Achieve ***</p>	<p>This was achieved in 2015 in which a full national agricultural baseline survey was completed and made available through the</p>

⁶¹ Tonga Atlas, 2019: <https://drive.google.com/file/d/1gOwb30TT7TrKrAUfDS8d51iPa18QqSeh/view?usp=sharing>

support to ecological criteria, establish agriculture-environmental measures, promote trade policies which encourage respect for biodiversity, etc. <i>(a) To conserve the farm genetic resources</i>			Tonga Statistics Department website ⁶² in their joint efforts with the Ministry of Agriculture to inform the current baseline in Tonga. This was sponsored by FAO to complete this task.
	3.1.a.2 Arrest the erosion of genetic diversity with communal partnership	 Achieve ***	FAO released a report of Tonga's State of Biodiversity for Food and Agriculture in 2017 which informs national to local level participation in the conservation of agricultural genetic resources with many best practises of experiences recorded in Tonga. This is in addition to the agriculture census completed in Tonga to inform baseline for Tonga. Also during this reporting period various project-based programs targetting addressing the loss of genetic diversity in Tonga which has been shared in previous targets.
	3.1.a.3 Increase the diversity of farm genetic resource by at least 3% per cent annually	 Achieve ***	This is achieved in reference to Tonga's agricultural census report done in 2015 as previously mentioned in target 1.7.1 of this report and also in target 3.1.a.2 on Tonga's Country Report from FAO.
3.1 <i>(b) To conserve the Agricultural Ecosystem Services</i>	3.1.b.1 Resilience of Agricultural Ecosystem Services increased by at least 2% annually	 Progress ***	Due to series of tropical cyclones in the period of 2014-2018 this has affected the efforts to increase annually resiliency of agricultural ecosystems, however the Ministry of Agriculture and Forestry has been very innovative in their strategies to develop this area further in Tonga. This is found in their Annual Report of 2017-2018 ⁶³ .

⁶² Tonga Statistics Department website, 2016: <https://tongastats.gov.to/census/agriculture-census/>

⁶³ MAFF Annual Report, 2017-2018: <https://drive.google.com/file/d/1vbhHBg3LDaKWPSUWji4EwxvE-7LWtQee/view?usp=sharing>





3.1 (c) To conserve the Bio-diverse Agricultural Landscapes	3.1.c.1 Biodiversity of Agricultural landscapes increase by at least 2% annually	 Progress ***	As per previously shared in target 3.1.b.1 the agricultural landscapes remains the same since 2016-2018 with regards to agricultural landscapes, however there greater funds was invested into increased land preparations to combat post cyclones impacts in Tonga. You can refer to the MAFFF Annual Report in 2016-2017. ⁶⁴
	3.1.c.2 By 2020, - An improved monitoring GIS system is established for monitoring Land Use and Land Cover Changes	 Achieve ***	The GIS office has demonstrated increased capacity with mapping developing to monitor Land Use and Land Cover changes, in which some of this is observed in the Country profile section of this report.
3.1 (c) To conserve the Bio-diverse Agricultural Landscapes	3.1.c.3 Design an institutional framework for agriculture that allows for monitoring of major sustainability areas	 Achieve ***	This is achieved as reflected in the FAO Country Profile Report for Tonga, 2017. ⁶⁵ Furthermore, the continued efforts of Tonga in this reflected in the Ministry of Agriculture Annual Report of 2014 ⁶⁶ , 2015-2016 ⁶⁷ , 2016-2017, and 2017-2018.

⁶⁴ MAFF Annual Report, 2016-2017: https://drive.google.com/file/d/1Zgg-Pj2LMOmFVjPx_4SOvAdX8rt_d2aD/view?usp=sharing

⁶⁵ FAO Country Report 2017: The State of Tonga's Biodiversity for Food and Agriculture: <http://www.fao.org/3/CA3503EN/ca3503en.pdf>





⁶⁶ MAFFF Annual Report 2014: <https://drive.google.com/file/d/1LX-IDT6a9kbq4BRBZA3d8fj-Ju1shLDY/view?usp=sharing>

⁶⁷ MAFFF Annual Report 2015-2016: https://drive.google.com/file/d/1tPHa_1rj8HqRnOVkVWlywnKOWrP4UVui/view?usp=sharing

<p>4.1 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. [4.1.1 TO SET UP AN ENABLING ENVIRONMENT FOR SYSTEMATIC AND SCIENTIFIC RESEARCH AND MONITORING FOR PRIORITY SPECIES.]</p>	<p>4.1.1.1 By 2020, an Environment portal and information management system for biodiversity will be established.</p>		<p>This target is in progress to be achieved, the Environment portal⁶⁸ was established through the Inform Project in collaboration with SPREP, GEF, UNEP, SPC and Pacific Data Hub in 2018, before that the Ridge to Reef project funded via GEF5-UNDP had also sponsored a biodiversity portal that was accessible only for the monitoring of Tongatapu main land in 2017, and this is currently under review at the moment.</p>
	<p>4.1.1.2 To complete a baseline survey for the whole of Tonga, by 2020.</p>		<p>In the period of 2014-2018 much of the various research and baseline surveys carried out is reflected in the previous targets. Most recently is the Status of Environment Report 2020 which informs the latest information of Tonga.⁶⁹These reports are to be used as the most recent baseline and updated information for Tonga.</p>
<p>4.2.1: PRIORITISE THE SPECIES UNDER THE IUCN'S RED LIST OF ENDANGERED SPECIES THAT ARE CRITICALLY THREATENED OR ENDANGERED.</p>	<p>4.2.1.1 By 2021, Complete 25% of BIORAP surveys for Ha'apai, 'Eua, Niua and Tongatapu island groups.</p>		<p>This is currently on track with various smaller scales monitoring surveys as mentioned in previous targets has taken place between 2014-2018 and continue to be so in 2019-2020.</p>
	<p>4.2.1.2 By 2024, the implementation of the Malau Species Recovery Plan should be completed and no longer threatened.</p>		<p>Through the GEF6-IAS project, the implementaiton of the Malau Species Recovery Plan is one of its activities currently pursued. The project is running until 2024 which will then inform progress of this target. However in this reporting period, there hasn't been any further review since the 5th National Report.</p>





⁶⁸ Tonga Environment Data Portal 2018: <https://tonga-data.sprep.org>

⁶⁹ Tonga Status of Environment Report, 2020: <https://drive.google.com/file/d/12djielhY7HGmFKSsKq2naYwd7w2wTsnR/view?usp=sharing>





	4.2.1.3 Implement and enforce CITES by 2020	 Achieve ***	Tonga successfully acceded to CITES on the 20th October 2016 with capacity building on enforcement assisted by the regional organisation SPREP in 2019. ⁷⁰
	4.2.1.4 By 2025, management plans for all protected areas would be developed and fully implemented.	 Achieve ***	With increased capacity in the Department of Environment, Fisheries and Forestry additional management plans for protected areas have increased in 2014-2018. This was noted for the establishment of the Fanga'uta Stewardship Plan, the community based marine protected areas plans (Special Management Area) as previously alluded to in earlier targets.
	4.2.1.5 By 2020, 10% of a national botanical garden will be established.	 Progress ***	This target is in working progress, however greater resources is needed to ensure the achievement of this has taken place. In the meantime, the Ministry of Tourism is leading the implementation of this activity with established collaboration with the local communities. Details of this is shared in the previous section.
4.3 - Sustainable use and management of terrestrial species. [4.3.1 – DEVELOP REPLANTING PROGRAMMES AND EXPLORE EX-SITU MEASURES INCLUDING HERBARIA, GENE BANKS OR SEED ORCHARDS FOR PRIORITY SPECIES.]	4.3.1.1 By 2020 Toloa rainforest would have established a national herbarium for educational and eco-tourism purposes	 Progress ***	This target is currently in progress with great collaboration with Tupou College (Toloa) in the effort of maintaining Toloa rainforest. However there isn't a national herbarium set up yet at Toloa, but focus is on setting up nursery and maintaining it in order to replace endemic species within the rainforest that are affected by invasive species. The IAS program under the Department of Environment coordinates this effort in collaboration with Forestry Department. The National Herbarium for Tonga ⁷¹ is located at the Ministry of Agriculture and Forestry Research Station at Vaini.






⁷⁰ SPREP news 2019: <https://www.sprep.org/news/first-national-cites-workshop-held-in-tonga>

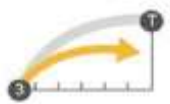



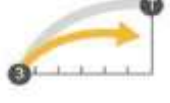
⁷¹ Consortium of Pacific Herbaria-Tonga National Herbarium (TON) 2015: <https://serv.biokic.asu.edu/pacific/portal/collections/misc/collprofiles.php?collid=8>





	4.3.1.2 By 2020, 60% of threatened flora will be recovered		Between 2015-2018, varied project-based programs implemented by the national agencies such as Environment, Climate Change, Forestry, Agriculture and Civil Society NGOs as well as communities have engaged in many tree public tree planting activities. However, only some of these tree planting addressed replanting of threatened flora as per referred to later section of this report.
4.3 - Sustainable use and management of terrestrial species. [4.3.1 – DEVELOP REPLANTING PROGRAMMES AND EXPLORE EX-SITU MEASURES INCLUDING HERBARIA, GENE BANKS OR SEED ORCHARDS FOR PRIORITY SPECIES.]	4.3.1.3 By 2020, 10% in developing a research lab to be operational for genetic modification		This is currently being pursued through the GEF6-IAS program in Tonga to improve the Vaini Research Station. Furthermore, the Department of Forestry under MAFF is actively implementing tree improvement methods on selected species for genetic make-up improvement, that is shown on their Sector Plan and Annual Report between 2015-2018.
	4.3.1.4 By 2020, the production of seedlings for priority species would be increased by 50%.		As shared in MAFF Annual Report ⁷² seedling production for the year was over 22, 000 seedlings. However the mortality rate for the seedlings is of 23% when pass over to communities, which still required further capacity building at grass root level. Also noted, that much of the seedlings produced focused on fruit trees and coconuts and with limited stock available for native forest species.
4.4 Public Awareness and Education. [4.4.1 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	4.4.1.1 By 2020, more public awareness materials will be fully distributed throughout Tonga		There has been greater development in achieving this targets with regards to raising awareness outreach programs established in relevant national sectors plans, and reflected in their annual reports as previously alluded to before in the earlier targets of similar needs. This is observed to have been led by Ministry of Education, Environment, Climate Change, Internal Affairs, Agriculture, Forestry. Also examples of this at grassroot level is led by NGO as per shared in earlier case studies of this report.






⁷² MAFF Annual Report 2016-2017: https://drive.google.com/file/d/1Zgg-Pj2LMOmFVjPx_450vAdX8rt_d2aD/view?usp=sharing




PUBLIC SUPPORT FOR SPECIES CONSERVATION OBJECTIVES.]	4.4.1.2 By 2020, 80% of Tonga would understand the importance of rare and endemic species as part of Tongan heritage.		This is working progress at the time, although per annum about 9-10% of the total population of the country is being reached in this outreach as per advised in the various national sector's annual reports, however, to reach all 80% of the total population it is gradually heading in the right direction through various outreach campaigns carried out by the sectors outreach programs.
	4.4.1.3 By 2025, 80% of Tonga would have access to awareness materials on protected areas.		Through the Marine Spatial Plan national consultations, the Tonga Ridge to Reef outreach campaigns, Environment Day outreach programs, Mangroves outreach are some but not all of the various conservation efforts in which they widely distribute awareness materials on concerning protected areas in Tonga. This is progressing very positively.
4.4 Public Awareness and Education. [4.4.1]	4.4.1.1 By 2020, ERIC would be operational for the public.		This target is in current working progress of which the project proposal for Environment Research and Information Center (ERIC) is currently in draft as well as consultations with potential donors for such initiatives has begun. Although it may not be completed by 2020, but with financial availability this may be possible in post 2020.
4.5 - Capacity Building. [4.5.1 TO STRENGTHEN THE TECHNICAL, MANAGEMENT AND RESEARCH KNOWLEDGE AND SKILLS OF LOCAL SCIENTISTS AND RESEARCHERS, AND THE CAPACITY OF RESPONSIBLE AGENCIES AND ORGANIZATIONS TO EFFECTIVELY IMPLEMENT RESEARCH PROGRAMMES SUPPORTING THE PROTECTION, CONSERVATION AND SUSTAINABLE MANAGEMENT OF TONGA'S PRIORITY SPECIES.]	4.5.1.1.1 By 2020, 80% of local staff would be trained by relevant regional expertise.		The regional agencies have been very accommodating in providing the space and resources to assist senior officers of the department and of relevant national stakeholders to participate in institutional capacity training space, covering from project management training, funding accessibility, proposal writings, monitoring and evaluation frameworks, regional monitoring tools, GIS and mapping capacity building, sharing of best practises in conservation (south to south cooperation) are some of the many training opportunities offered in this reporting period. Some of the resources were either funded by projects or directly by the various regions engaged. Lastly some were available as designated short term training course by the multi-lateral partners of Tonga and have local offices in country.



5.1 A strong legal policy framework for invasive species management. <i>[Appropriate legislation, policies, protocols and procedures are in place and operating, to underpin the effective management of invasive species].</i>	5.1.1 By 2018, laws addressing invasive species management will be reviewed.	 Progress ***	This is in working progress, following the GEF4-IAS project, the biosecurity bill was drafted however due to limited funding this was not completed in time in 2017. The next phase in GEF6-IAS it is looking to complete this task.
	5.1.2 Appropriate legislation, policies, protocols and procedures are in place and operating, to underpin the effective management of invasive species	 Progress ***	This is similar stage to 5.1.1 target, review of all legislations and policies concerning IAS will be completed in the upcoming GEF6-IAS program. However the most recent update concerning invasive related regulations were completed in 2016 such as the Noxious Weed Act, Plant Quarantine Act, Declaration of Parks and Reserce, Rhinoceros Bettle Act
5.2 Increased capacity for invasive species management through strengthened institutions, skills, infrastructure, technical support, information management, networks and exchanges required to manage invasive species effectively	5.2.1 Invasive species activities are coordinated through a national network by 2020	 Achieve ***	This target is achieved through the establishment of the GEF6-IAS project in ensuring the NISSAP developed for 2014-2020 is fully ipmlemented.
	5.2.2 Tonga’s invasive species management facilities and equipment are reviewed and improved.	 Progress ***	This is in progress with the GEF6-IAS project in which the facilities is target to Vaini Research Station, and also at the Environment Department. Other local NGO such as VEPA are assisted with the appropriate tools to assist in the IAS management at the respective island groups they are at.
	5.2.3 By 2025, quarantine staff are trained to identify and respond to invasive species	 Achieve ***	This is now a routine practise at national level led by the Quarantine Office, as well as support from the IAS program in the Department of Environment. This is ongoing in order to counter the issue of high staff turn over.




<p>5.3 Strengthened procedures for management control of invasive species. <i>[Systems are in place to generate baseline information on the status and distribution of invasive species, detect changes, including range changes and emerging impacts.]</i></p>	<p>5.3.1 Surveys or monitoring systems are implemented to document the status and/or impact of invasive and native biodiversity in marine and terrestrial sites (including protected areas), include in databases by 2020</p>	 <p>Progress ***</p>	<p>There is increasing surveys carried out and completed in this reporting period, in which some of those results in Fisheries, Agriculture, Forestry, Ecosystem based are reported in the previous sections. It is also noted that there is increased institutional capacity with more local staff able to carry out the various monitoring program with greater accompaniment needed for report development.</p>
<p>5.3 Strengthened procedures for management control of invasive species. <i>[Systems are in place to generate baseline information on the status and distribution of invasive species, detect changes, including range changes and emerging impacts.]</i></p>	<p>5.3.2 Prioritize invasive species identified by 2020.</p>	 <p>Achieve ***</p>	<p>This is reflected in the NISSAP of 2014-2020, and this plan is currently implemented. Furthermore, IAS is included in the NBSAF working strategy.</p>
	<p>5.3.3 Inspection and treatment procedures are improved to reduce the risk of new invasive species threats to Tonga and between islands in Tonga.</p>	 <p>Achieve ***</p>	<p>This is ongoing with the support of the GEF6-IAS in which support is provided to strengthen procedures particularly to the key stakeholders responsible for biosecurity, and monitoring of IAS at ports, island groups and at national level. However, ongoing training is required to ensure Tonga is updated on any new invasive species that may come to Tonga such as the issue of mongoose stowaway in shipping containers that came from the Pacific in 2018.</p>
	<p>5.3.4 Inter-agency cooperation established by 2020. ERP drafted & endorsed</p>	 <p>Achieve ***</p>	<p>Biosecurity mechanism is in place and enforced successfully in Tonga in which it is lead by the Ministry of Agriculture (Quarantine Division) with support from the Police, Justice, Environment, to mention a few.</p>
	<p>5.3.5 By 2020, baseline studies have been completed and management actions using native species implemented in selected sites</p>	 <p>Progress ***</p>	<p>This target is currently in progress to finish establishing the baseline for all of Tonga. With the GEF6-IAS project this will cover national level and also follow up on hotspots identified from the previous projects for monitoring of IS.</p>

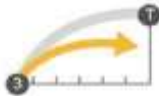

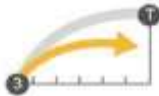
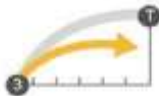
<p>5.4 Communicate the benefits of invasive species management to stakeholders</p>	<p>5.4.1 Government support for invasive species management is improved and the importance of IS environmental, social, and economic impacts is more widely understood.</p> <p>5.4.2 All activities maximise community involvement in planning, implementation, and monitoring as appropriate.</p>	 <p>Achieve ***</p>	<p>Tonga has a comprehensive IAS Management Plan (NISSAP) currently in operation. It has clearly identified selected monitoring sites for IAS, and this programs had successfully been implemented since the last reporting period. The GEF6-IAS project is continuing the review and implementation of Tonga’s NISSAP until 2024. It has established IS Management coordination mechanism in place to technically review, oversee and monitor progress in this area. Furthermore, it has engaged selected communities with IS concerns or preservation of rainforests in Tongatapu and Vava’u. Effective collaboration has been established between national sectors as well as with local NGOs.</p>
<p>5.4 Communicate the benefits of invasive species management to stakeholders</p>	<p>5.4.3 The impact of priority invasive species on biodiversity, economies, livelihoods, and health are widely understood and actions to manage and reduce them are supported</p>	 <p>Progress ***</p>	<p>Ongoing outreach programs and awareness initiatives is carried out annually to ensure public understand the impact of IS. This is done by Agriculture, Forestry, Environment and Fisheries n collaboration with other key stakeholders.</p>
<p>6.1 Attain development through integrated community efforts</p>	<p>6.1.1 By 2020, percentage 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 benefits</p>	 <p>Progress ***</p>	<p>Target is in on track to achieve this by the time frame, as more and more communities in Tonga are engaged in the Special Management Area program lead by Fisheries and supported by Enviornment, Climate Change, Health and other related NGOs in encouraging more communities to be involved in the community-based management approach of their coastal communities. Examples of this is shared in the earlier sections.</p>
<p>6.1 Attain development through integrated community efforts</p>	<p>6.1.2 By 2020, percentage is achieved to improve the management of existing parks and reserves and, consistent with the integrated land use plan, to expand the conservation area network to cover a representative sample of all major terrestrial ecosystems.</p>	 <p>Achieve ***</p>	<p>For this reporting period more than 18 protected areas at national and community level is in place although a few areas is still without a management plan to monitor these areas. At the community level though, all have established management plans to monitor their marine protected areas.</p>

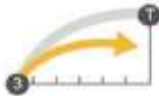
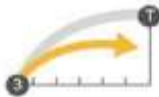
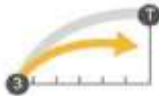


	6.1.3 By 2020, percentage is achieved for Better formulation and implementation of outer island and rural development programs through local communities	 <p>Achieve ***</p>	As noted in the previous sections, there is increasing women's development group that are participation in sustainable use of biodiversity such as gardening, mangroves/tree replanting, sustainable fisheries and the likes. Some good practises is shared in the earlier sections.
6.1 Attain development through integrated community efforts	6.1.4 Improving gender equality by implementing the government's gender development policy with percentage being achieved by 2020	 <p>Progress ***</p>	There is increasing project-based programs in Tonga that gender analysis has become mandatory approach in the implementation of their programs. This is also reflected in the reporting received from the various national stakeholders as per shared in earlier sections.
	6.1.5 Improve Services for the elderly and other vulnerable groups, including investigation of the potential private sector role with percentage being achieved by 2020	 <p>Progress ***</p>	Through the coordination of clustering groups in Tonga, services to assist elderly and vulnerable groups is progressing positively. This is led by activities of the Disaster Management under the Ministry. As with gender all project-based programs are encouraged to reflect gender analysis in their approach, and this is also reflected in the various reports and annual reports of the Ministry.
6.1 Attain development through integrated community efforts	6.1.6 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 programs, including community economic development and the consideration of a National Youth Service with percentage being achieved by 2020	 <p>Achieve ***</p>	The trajetory of activities carried out by the various national sectors, advise that this target will be achieved. This is reflected in the numerous training spaces provided for community-based managed areas, mangroves rehabilitation, climate change resiliency program, alternative livelihoods, etc are some of the various themes covered in these training spaces. The participation of youths are a priority from communities, as well as including NGO targeted to youths to engage.
	6.1.7 By 2020 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.	 <p>Achieve ***</p>	There is increasing number of communities invovled in sustainable community protected area governance approaches such as the use of the SMA as mentioned in previous section. This has been very sucessful with increasing number of plans adopted. This has increased from 12 in 2015 to over 40 after 2018. Furthermore, through the GEF-SGP and the Green Climate Fund more and more communities are

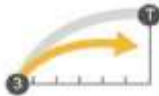





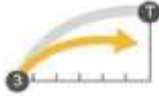
	<ul style="list-style-type: none"> ✓ Intensify the replication, up scaling or mainstreaming of climate change mitigation adaptation initiatives that have been successfully tested and practically applied at the local level, in national development priorities and plans ✓ Sustainable frameworks in place for implementing local climate change activities that are linked to market mechanisms, policy interventions or Tonga Govt development priorities 		<p>participating in climate change adaptations initiatives as reflected in the annual reports. The ecosystem resiliency and approach to mitigate climate impacts is reflected in most national sectors plans in which there is greater unity of approach and vision.</p>
<p>6.1 Attain development through integrated community efforts</p>	<p>6.1.8 Greater Valuing Tonga’s cultural traditions within an evolving culture with certain percentage achieved by 2020.</p>		<p>There is ongoing effort in the Ministry with Education and Academia with regards to documenting traditional knowledge and to guide ABS protocols. In the meantime, there are local researchs already taken place in the past on traditional knowledge, and it is the hope with scholarship opportunities in the support of multi-stakeholders this will further develop the achievement of this national target.</p>
	<p>6.1.9 Ensuring sustainable use of the environment, by enforcing Environmental Impact Assessments (EIAs), and strengthen the national capability for environmental management to create incentives for limiting the use of resources and production of waste by 2022.</p>		<p>Enforcing EIA is currently implemented effectively in Tonga and the EIA office as well Environment Committee approves the various development requests accordingly. The office also effectively monitor the progress of development and direct advise necessary to ensure proper environmental management do take place. As to the limiting the production of waste and sustainable use of resources, there is increasing community-based initiatives on waste management, sustable use of crops and fisheries in which are shared in the annual reports of the Ministry and also in earlier sections of this report.</p>
<p>6.1 Attain development through integrated community efforts</p>	<p>6.1.10 Promote and facilitate the use of renewable energy and energy efficient technologies at household and institutional levels. Train artisans, install demonstrations and provide subsidies with some achievements by 2020</p>		<p>Tonga is implementing this already with its Tonga Energy Roadmap which is to be completed by 2020. At the moment, it is on track with its efforts on renewable energy which is also reflected in the Ministry’s annual report.</p>




<p>7.1 To prevent illegal access to and lawful exploitation of Tonga's genetic access. (Access to Genetic resources)</p>	<p>7.1.1 Tonga's genetic resources are fully protected from unlawful exploitation</p> <p><i>[A legal framework and the organizational capacity to regulate access and prevent the unlawful exploitation of Tonga's genetic resources is 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.]</i></p>		<p>Through close support of the Quarantine Division of Agriculture, Department of Environment, Department of Fisheries, Education Office, Ports Services and other relevant stakeholders in the enforcement of biosecurity, CITES procedures efforts in this target is progressing gradually. With clear legal instruments in place (as previously shared in other sections) this manage the access of Tonga's genetic resources.</p>
<p>7.2 To ensure the fair and equitable sharing of benefits generated from the use of genetic resources. (Fair and equitable Sharing of Benefits) <i>[Formal mechanisms for benefit sharing that are fair and equitable should be developed. More importantly, to safeguard the interests of holders of traditional knowledge and owners of resources involved in bioprospecting, procedures for negotiations should provide for the involvement of competent legal representation provided by the Government.]</i></p>	<p>7.2.1 Local owners of resources and Traditional Ecological (TEK) are receiving equitable share of benefits</p>		<p>This is an area in greater need for financial assistance in Tonga to strengthen management of TEK data. As there is increase scientific knowledge collected in Tonga, there is greater needs for coordinated effort and consistency in managing TEK with the use of genetic resources in Tonga. Adhoc reports are shared from local NGOs, or available from research studies done by individuals.</p>





<p>7.3 To prevent the loss of traditional ecological knowledge (TEK) (Traditional practices & ecological knowledge) [Traditional ecological knowledge needs to be documented by directly engaging custodians and holders of traditional knowledge. Key knowledge areas are those related to traditional medicines, resource harvesting and management practices. This knowledge should be promoted where they are environmentally friendly for wider use, particularly in place of other modern methods that may not be ecologically sound.]</p>	<p>7.3.1 Traditional ecological knowledge (TEK) is documented, protected from unlawful use and where appropriated promoted</p>		<p>Tonga acceded to the Nagoya Protocol after this reporting period, however relevant regulations in place on biosecurity and research at such environment is currently in place.</p>
<p>7.3 To prevent the loss of traditional ecological knowledge (TEK) (Traditional practices & ecological knowledge) [Traditional ecological knowledge needs to be documented by directly engaging custodians and holders of traditional knowledge. Key knowledge areas are those related to traditional medicines, resource harvesting and management practices. This knowledge should be promoted where they are environmentally friendly for wider use, particularly in place of other modern methods that may not be ecologically sound.]</p>	<p>7.3.2 Traditional ecological knowledge (TEK) is documented, protected from unlawful use and where appropriated promoted</p>		<p>This a working progress with some of the efforts in this area is reflected in the ministry's activity reports and annual reports. Furthermore, they do document as well the permits with which research study pursue to document traditional knowledge in Tonga. Now with the Tonga Environment Portal in place, all published TEK available to the Ministry will be shared in that space.</p>
<p>7.4 To raise public awareness and understanding of the importance of Tonga's genetic biodiversity resources and Traditional Ecological Knowledge (TEK) (Public Awareness and Education) [A range of media types should be employed to raise public awareness and understanding. Success stories of progress made by other countries.]</p>	<p>7.4.1 Tongans have pride in their natural heritage, are well informed about their TEK and supportive of efforts to protect them</p>		<p>Through annual outreach campaigns carried out by Department of Environment and Climate Change, Fisheries, Tourism, Agriculture/Forestry and relevant stakeholders - public awareness is key in the success of implementing the NBSAF and JNAP2 framework for Tonga. Outreach strategy includes national consultations, school visits, training programs, citizen science program, TV/Radio programs, tree planting, Tonga Masani campaigns, coastal clean up are some of the various activities in support of this target in this reporting period. Much of the details are reflected in the sectors annual reports as shared previously.</p>






<p>7.4 To raise public awareness and understanding of the importance of Tonga’s genetic biodiversity resources and Traditional Ecological Knowledge (TEK) (Public Awareness and Education) <i>[A range of media types should be employed to raise public awareness and understanding. Success stories of progress made by other countries.]</i></p>	<p>7.4.2 Tongans have pride in their natural heritage, are well informed about their TEK and supportive of efforts to protect them</p>	 <p>Progress ***</p>	<p>Similarly as reflected in 7.4.1 target achievements, additional are the efforts of Ministry of Education and Training, Tourism and Educational universities of the region that Tonga has access to supports this targets closely. The TEK resources collected and published are results of tertiary students research or educational institute who provides central depository of resources on TEK. Efforts are also made by the national stakeholders to document TEK available; however this is usually done as project-based programs due funding availability to coordinate consistently national efforts.</p>
<p>8.1 Increased national collaboration among sectors for the sustainable use and management of biodiversity in Tonga. <i>[STRENGTHEN POLICY AND LEGISLATIVE FRAMEWORK FOR SUSTAINABLE USE AND MANAGEMENT OF BIODIVERSITY IN TONGA]</i></p>	<p>8.1.1 Compliance and Enforcement legislations and policies take into account biodiversity and livelihood</p>	 <p>Achieve</p>	<p>This is actively being implemented in Tonga, although developments taking place annually varies from year to year from minor to major development. However all complying to completing the EIA requirements and adhering to the Environment Act. There is also the Parks and Reserve Act that informs the protected areas in Tonga, the Fisheries Act which monitor the implementation of the community management approach to sustainable fisheries. Lastly is the Forest Act to mention a few, but there are more legislations in place to support biodiversity and securing livelihoods.</p>
	<p>8.1.2 By 2025, biodiversity is mainstreamed into corporate sector plans</p>	 <p>Progress ***</p>	<p>Since the Tonga Strategic Development Framework II advises in Pillar 5 for Natural Resources and Environment Inputs, most corporate plans have reflected this synergy in their sector plans, particularly Fisheries, Agriculture, Forestry, Environment, Energy a some to note.</p>
<p>8.1 Increased national collaboration among sectors for the sustainable use and management of biodiversity in Tonga.</p>	<p>8.1.3 By 2020, protected area network expanded and representative, with functional corridors</p>	 <p>Progress ***</p>	<p>Protected area network has been established through the implementation of the Marine Spatial Plan in order to direct way forward to development of management plans. This includes technical committees and coordinating committees at national level.</p>






	8.1.4 Established budget guideline for protected area by 2020	 Progress ***	This is working progress to be completed, however these efforts are reflected in the ocean planning process (Marine Spatial Plan program), the invasive alien program, the mangroves rehabilitation work and the marine protected area programs. All these programs are collaborating to inform their annual budget to support the various lines of work they share on protected areas.
8.2 integrated land-use planning and management	8.2.1 By 2025, land use plans completed, Land-use policy completed by 2019	 Progress ***	This target is yet to be achieved, work is currently in progress with this effort (as per reflected in the annual reports) for Environment. The Fanga'uta Stewardship Plan established in 2018 informs the land use distributio for the catchment area at Fanga'uta Lagoon of Tongatapu, however this is yet to be achieved at nation wide level.
	8.2.2 Complete GIS and Lidar surveys of all outer islands by 2027; Complete hydrological surveys for water-use management by 2027	 Progress ***	At the GIS Unit office, this is progressing positively and will be achieved by the target timeframe.
8.3 Strengthened awareness, communication and knowledge management for biodiversity <i>[Communicate the goals and approach of Tonga's NBSAP]</i>	8.3.1 Established and maintain protected areas, including marine areas, for priority species and livelihood	 Achieve ***	The protected areas at marine environment this is progressing very successfully in which management plans for each of the identified protected areas, is currently being pursued. Not all
	8.3.2 Established communication strategy on good practices and sustainable used of biodiversity	 Achieve ***	This has been achieved for the various project-based programs under the Department of Environment during this reporting period, such as the Marine Spattial Program, the Ridge to Reef Program, the Invasive program as well as the Environment communication strategy.





	8.3.3 Best practices guidelines are produced and distributed	 Progress ***	This was done accordingly to the various programs running during this reporting period in which their best practises was shared at various forums, however no specifid guidelines were produced yet, but just the sharing of learning gained from the biodiversity practises implemented in Tonga.
8.3 Strengthened awareness, communication and knowledge management for biodiversity	8.3.4 National Clearing House mechanism established by 2025.	 Achieve ***	Tonga was able to establish its Tonga Environment Portal at national level at the end of 2018, and this allows for widely distribution of data and information related to biodiversity.
	8.3.5 National environmental database established by 2025	 Achieve ***	
	8.3.6 Synergistic implementation through the NBSAP, by 2027 Agreement by CBD and other biodiversity MEA COPs for synergistic reporting	 Achieve ***	This is completed for the Sixth National Report for this reporting period, although it is after 2018. Furthermore, Tonga had attended all biodiversity related training related to MEA COPs to ensure synergy of reporting.
8.4 Strengthened mechanisms for ecosystem-based management, adaptation and mitigation	8.4.1 National target for sustainable energy growth is achieved	 Achieve ***	This is on track with the progress of Tonga’s Energy Road Map strategy to be achieved. The roadmap will be completed in 2020, and will be included in the next reporting period.
	8.4.2 By 2027, implement through NBSAP to contribute to NDCs	 Achieve ***	Target 8 in JNAP2 reflects Ecosystem resilience in which NBSAF targets is links to reflect monitoring of its goals. Furthermore, the biodiversity related goals has also been reflected in Tonga’s National determined contribution (NDC) for Climate Change and also for coming period.
	8.4.3 Established national coastal management plan including economic development	 Progress ***	The Ridge to Reef program for Fanga’uta catchment successfully completed a stewardship plan for the catchment area, however this is yet to be done at a national level for the whole island of Tongatapu and also the Kingdom. This is still in working progress with negotiation for funding opportunity to complete this activity.

	<p>8.4.4. Species and ecosystem resilience to climate change is documented</p> <p>8.4.5 Sector plans incorporate ecosystem-based solutions</p>		<p>With JNAP2 monitoring and evaluation framework implemented, the ecosystem resilience update is shared annually with them. Furthermore, most of the sector plans have incorporated ecosystem-based approach or biodiversity related goals in their plans.</p>
<p>8.5 Mainstream biodiversity into cross-sectoral community planning and management</p>	<p>8.5.1 By 2020, mainstream biodiversity into community development plans</p>		<p>In 2018, Community Development Plan lead under the Ministry of Internal Affairs, had completed local plan for each community for the whole kingdom. Environmental/biodiversity priorities is listed average priorities for the communities, whilst water accessibility and food security are first priorities. However, communities with biodiversity hotspots (mangroves coverage) in Tongatapu and Vava'u, biodiversity related issues are part of their priorities of work and focus. In the JNAP2, ecosystem resilience is listed as one of its targets , in which it is closely mointored in its M&E framework that recently came into effect after 2018. Details success on this can be found on the annual reports for Ministry of Environment in this reporting period.</p> <p>However communities engaged in the community-based marine reserve program (SMA) they successfully do complete development of community management plans for sustainable fisheries and managing of their coastal reserve. This has been a successful practise that in 2015 there were 12 and after 2018 (in this reporting period) is has reached more than 40+ communities engaged. In the Fisheries Sector Plan the aim is to engage as many communities as possible as shared in the previous section.</p>
	<p>8.5.2 By 2025, effective implementation of EIA tools and other development controls</p>		<p>Tonga is heading in the right diretion of progress in this area, with greater attention given to enforcement of EIA procedures, however the challenges is ensuring that all development work carried out by public does adheres to the EIA regulations. This is reported in details in the Ministry of Environment annual report.</p>

	8.5.3 By 2020, communities are engaged in all planning, implementation and monitoring for biodiversity management, including information collection	 Achieve ***	Through the Marine Spatial Plan program under the Department of Environment and the Special Management Area under the Ministry of Fisheries, this has successfully achieved. Nation wide consultation has taken place for the ocean planning for the country, and also for the establishment of the SMAs in Tonga. These coastal communities are engaged very closely in planning, implementation of their management plans as well as monitoring the status of their biodiversity of their designated area. Some of the progress in this has been shared in previous section of this report.
	8.5.4 Commitment to cross-sector implementation of NBSAP by 2020	 Achieve ***	Through the JNAP2 implementation and monitoring there is consistent cross-sector implementation, in which Target 8 is of Ecosystem resilience. The NBSAF/NBSAP strengthening of synergies and cross sectoral management is actively taking place as well. This is reflected in detail in the Ministry of Environment annual reports during this reporting period.
9.1 To ensure the through and comprehensive assessment of technical, managerial and administrative capacity for implementing biodiversity conservation within Tonga's line ministries and all conservation organisations. (Assessment of biodiversity conservation capacities)	9.1.1 By 2020, a National Capacity Self-Assessment (NCSA) tool will be in use.	 Progress ***	Thus far this target completion is gradually developing, as to date for this reporting period the NCSA completed were for the UN Convention of Combating Desertification in 2007, and NCSA for the UN Forum of Climate Change; and also Tonga's draft on National Capacity Building Action Plan for Environmental Management (Draft) – February 2008. In the last reporting period Tonga had completed this but yet to review it for this reporting period.
	9.1.2 By 2020, a capacity building programme would be implemented	 Progress ***	In the related NCSA already mentioned above, linking to Environment there are some local capacity building that the Department of Environment has responded to in strengthening institutional capacity. This is reflected in its Annual reports of this reporting period.

9.2 To inform all interested organisations of potential funding sources for biodiversity conservation and of donors funding requirements. (Collation and dissemination of donor related information) <i>[Information on current and potential funding sources and their requirements for assistance should be readily accessible to all potential implementers of the NBSAP to facilitate access and solicitation of funds and other forms of assistance.]</i>	9.2.1 By 2025, a donor database would be established for potential investors of the NBSAP	 Progress ***	This is ongoing effort in the follow up by the department of Environment and also reflected in their Annual Management Plan and Sector Plans. They continue to update donor listing available, as for the database this is currently a working progress as recently Tonga Environment Portal was recently established after 2018.
	9.2.2 By 2020, Tonga would be the recipient of many donor funding for NBSAP implementation	 Progress ***	This is currently working progress in which some draft proposals on conservation in progress. Furthermore, the Green Climate Fund is also a mean of which interested proposals on biodiversity is being pursued. Other donors with offices accessible locally is being consulted for funding opportunity.
	9.2.3 By 2020, 80 percent of Tonga will understand the funding schemes for conservation activities	 Progress ***	During this reporting period, various spaces at national level, local and at regional have been utilized for informing stakeholders and communities of funding opportunities. This has also been the case for the GCF schemes, GEF-SGP in which conservation activities can be considered.
9.3 To strengthen the capacity of key stakeholders in planning and implementing fund raising strategies and in managing conservation funds. (Capacity building in conservation fundraising and management) <i>[Formal training in proposal writing and fund-raising planning should be provided for all local implementing organizations, including NGOs, to enhance their</i>	9.3.1 By 2020, NGOs, Government and private sector would have annual trainings for proposal writing	 Progress ***	Capacity building on proposal writings were carried out in this reporting period by the Ministry with funding from the GCCA program in 2018-19 and also project management training. Similar trainings were sponsored and carried out by other national sectors with project-based training programs. This can be referred to in the annual reports for the national sectors.
	9.3.2 By 2020, local implementing organizations will have all the skills and networking for conservation programme implementation	 Achieve ***	This is a strength in engaging local organisation participation in all these sponsored trainings, there is increased capacity in their participation as well as no. of proposal writings submitted to the various funding schemes. To name some of these local NGOs are Vava'u Environment Program Association, Tonga Community Development Trust of Tonga, Civil Society Forum of Tonga, Tonga National Youth Congress, etc.



<p><i>capacity to attract donor funding to biodiversity conservation in Tonga.]</i></p>	<p>9.3.3 By 2020, online portals will be updated regularly for donors to observe local progress on conservation activities</p>		<p>Tonga Environment website have been up and running through the Tonga Ridge to Reef project under the Department since 2017, with social media page also maintained. And in 2018 the Tonga Environment Portal was launched to facilitate widely sharing on conservation activities. However the portal for the GCF funding scheme has been in implementation during this reporting period.</p>
	<p>9.3.4 Promote donor requirement and proceeding for accessing funds</p>		<p>There is training held annually to promote donor requirement for accessing funds, and this is widely attend from national sectors and local NGOs. Furthermore, ongoing consultation takes place with embassy offices in Tonga to consult about possible funding opportunities on conservation initiatives. Details of such spaces is reflected in the Ministry of Environment annual reports between 2015-2018.</p>
<p>9.4 To generate local funding sources for biodiversity conservation. (Economic tools and instruments for conservations funding) <i>[Although funding biodiversity conservation is likely to be sourced from external funding partners, local funding should also be encouraged. A number of mechanisms can be investigated for their feasibility to generate conservation funding.]</i></p>	<p>9.4.1 By 2020, an Environment Trust Fund will be established.</p>		<p>This target is working progress, efforts are being pursued annually by the Department of Environment with relevant stakeholders to confirm arrangement. However there is high possibility that this target will be achieve within the timeframe pursued.</p>
	<p>9.4.2 By 2025, the Environment Trust fund will be sustainably able to support eco-tourism projects</p>		<p>Consultation with relevant stakeholders in establishing this target is taking place more actively, and this is relected in the corporate plans beyond 2018 for the Minsitry reflecting the government's effort to secure such initiatives towards conservation.</p>
<p>9.5 To further strengthen effective partnerships with key local and international organizations to support the implementation of biodiversity conservation programmes.</p>	<p>9.5.1 By 2020, an Environment Conservation award will be an annual event given out during Environment Week.</p>		<p>The Department of Environment provides conservation awards annually during the observation of Environment Day in June to the public for their involvement in various outreach activities such as artistic competition to display conservation efforts, school quizzes, village clean up and tree planting campaigns are some of the efforts towards this target. This is now a successful example that other departments of the Ministry adopt such practises for the</p>




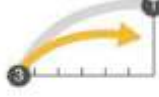
<p><i>[Similarly, many international conservation organizations should be targeted and partnerships developed. Many are useful sources of conservation information, technical expertise and sometimes of funding. Often, close partnerships with some of these organizations can leverage new partnerships and donors, and their support and involvement can provide a useful leverage for major international donors.]</i></p>			<p>international observance of other programs related to environment day.</p>
	<p>9.5.2 By 2020, NGO representatives will be part of the National Environment Coordinating Committees for decision making</p>		<p>This is currently taking place with the various Coordinating Committee for Environment related projects, such as the Marine Spatial Program, the Invasive Aliens Program, the Ridge to Reef programs, Minamata initial Assessment program to name a few. The rotating membership in the National Environment and Climate Change Coordinating Committees for the various project-base programs provide the opportunity to encourage participation of NGO representatives actively,</p>
	<p>9.5.3 By 2020, national policies would have been developed with extensive involvement of private sector and community consultations.</p>		<p>The working document of the NBSAF, as well as the JNAP2, the various Sector Plans, provides informative sections in support of actively involving private sectors and communities in the implementation of the conservation programs. This has been alluded to in previous sections already of this report.</p>
	<p>9.5.4 By 2020, the network with private sector and NGOs with government sectors will be well established.</p>		<p>This network already exists for the National Coordinating Committee for the Environment activities and this is effectively running. When a project-based program convene it provide the resources to invite selected private sectors and NGOs relevant to their specific programs to join this network accordingly;. This is also reflected in the annual reports of the Ministry of Environment and also of other sector annual reports.</p>
	<p>9.5.5 By 2020, networking with international bodies will be strengthened for partnership in achieving the Aichi targets</p>		<p>The partnership relationship fostered in this reporting period has grown tremendously especially in partnership with conservation initiatives such as with ecosystems rehabilitation, ocean planning, invasive species monitoring, coastal protection, etc. This includes the Council of Regional Organisation in the Pacific (CROP) agencies such as SPREP, IUCN, SPC, etc.</p>




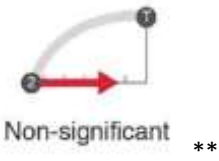
5.0 Section IV: Describe the national contribution to the achievement of each global ABT

This section provides brief update on Tonga’s contributions towards the Aichi Biodiversity Targets of which much of the activities and measures discussed in the previous sections with reference to the national targets and activities implemented in Tonga’s NBSAF. This also informs various SDGs it supports and the status of ABT implementation in Tonga. The references of national targets contributing to ABT and SDGs are in Tables 2,4 and 7 and is also reflected in Table 8 below.





Table 8: Aichi Biodiversity Targets and National Contributions





Aichi Biodiversity Targets/Sub-targets	Tonga’s contribution to this target	How it supports SDGs	Status of ABT implementation in Tonga
Strategic Goal A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society			
 <p>Awareness of biodiversity values</p> <p>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.</p>	<p>Tonga’s NBSAF contributes to this target in the following national targets shared in previous sections: 1.3.1, 1.4, 1.5, 1.6, 1.10,1.13, 2.2(1), 2.4, 4.4, 6.1, 7.3 and 7.4</p> <p>There is greater efforts in Tonga to bring more awareness to the public as mentioned in the activities/targets above generally through established outreach programs, national consultations completed on biodiversity related issues and establishing appropriate coordination mechanisms as platforms for information sharing/data gathering.</p>	<p>SDG4: Quality Education</p> <p>- In the national targets relevant to ABT1 this also supports the efforts for SDF4 as mentioned in the national targets/activities in Table 2, 4 and 7 of this report.</p> <p>SDG12: Responsible consumption and production</p> <p>- with regards to managing domestic waste and recycling this is still a working progress for Tonga.</p>	 <p>Achieve **</p> <p>During this reporting period, there has been tremendous increase in the communication strategy to include all levels of society. People are aware of biodiversity values and steps to take, however this is not consistent to the total population of the country.</p>





 <p>Integration of biodiversity values</p> <p>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.</p>	<p>Tonga’s NBSAF contributes to this target in the following national targets shared in previous sections: 1.1, 1.2, 1.3, 1.4, 1.6.1, 1.7.1, 1.11.1, 1.12.1, 6.1.1, 6.1.3, 6.1.6</p>	<p>In pursuing ABT 2 the following SDGs being supported by those efforts:</p> <p>SDG 1: No Poverty, particularly target 1.4.</p> <p>SDG 8: Decent work and economic growth, particularly targets 8.4 and 8.9</p> <p>SDG 9: Industry, Innovation and Infrastructure particularly target 9.1 and 9.4</p> <p>SDG 11: Sustainable cities and communities particularly targets 11.3, 11.7</p> <p>SDG 14: Life Below Water, particularly addressing targets 14.4 and 14.7</p> <p>SDG15: Life on Land, particularly target 15.9</p>	 <p>Achieve **</p> <p>Although this reflected at national, regional and at community development plans but the utilization of biodiversity values at every day business as usual is still a working progress.</p>
 <p>Negative and positive incentives</p> <p>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.</p>	<p>Tonga’s NBSAF contributes to this target in the following national targets shared in previous sections: 6.1.1, 6.1.2, 6.1.10.</p>	<p>In pursuing ABT 3 the following SDG is being supported by those efforts:</p> <p>SDG14: Life Below Water, particularly addressing targets 14.4, 14.6.</p>	 <p>Progress ***</p> <p>Although there is increased participation from the local communities based on available information from project-based programs that engage communities but it is not enough to evaluate national progress of achievement.</p>





 <p>Sustainable production and consumption</p> <p>By 2020, at the latest, Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for SPC and have kept the impacts of use of natural resources well within safe ecological limits.</p>	<p>Tonga’s NBSAF contributes to this target in the following national targets shared in previous sections: 1.1, 1.2, 1.4, 2.4, 6.1.4, 6.1.6, 8.4, 8.5</p>	<p>In pursuing ABT 4 the following SDG is being supported by those efforts:</p> <p>SDG 2:Zero Hunger, particularly target 2.4</p> <p>SDG 8: Decent work and economic growth, particularly targets 8.4 and 8.9</p> <p>SDG 9: Industry, Innovation and Infrastructure particularly targets 9.1 and 9.4</p> <p>SDG11: Sustainable cities and communities particularly target 11.4</p> <p>SDG14: Life Below Water, particularly addressing targets 14.4, 14.6 and 14.7</p> <p>SDG15: Life on Land, particularly targets 15.1, 15.2 and 15.9</p>	 <p>This target is in progress however the demand to have stakeholders at all levels achieve this is still a target yet to be achieved. That being said, there are many national targets well in progress that address this ABT and SDG.</p>
<p>Strategic Goal B: Reduce the direct pressures on biodiversity and promote sustainable use</p>			
 <p>Rate of loss at least halved</p> <p>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.</p>	<p>Tonga’s NBSAF contributes to this target in the following national targets shared in previous sections: 6.1</p>	<p>In pursuing ABT 5 the following SDG is being supported by those efforts:</p> <p>SDG 7: - 7.1</p> <p>SDG13: - 13.1</p> <p>SDG14: - 14.5</p> <p>SDG15: - 15.1, 15.2, 15.3, 15.5</p> <p>- about 6500ha of woodland forest remains in Tonga</p> <p>- 21 ha of degraded forest remain at Toloa Rainforest, TBU⁷³</p>	 <p>There are not that many national targets listed to achieve this ABT, however on the one being identified this is a huge venture to half rate of loss by 2020, and</p>




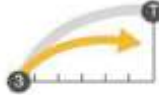
⁷³ Tonga Status of the Environment Report (2019): <https://www.environment.gov.to/wp-content/uploads/2020/06/Tonga-SOE-digital.pdf>

			therefore progress may not meet expected timeframe. However, existing programs from national sectors, civil societies/NGO and communities are currently implemented to reduce loss of natural habitats.
 Fisheries are sustainably managed 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.	Tonga's NBSAF contributes to this target in the following national targets shared in previous sections: 6.1.2,	In pursuing ABT 6 the following SDG is being supported by those efforts: SDG1: - 1.4, 1.5 SDG2: - 2.1, 2.2 SDG8: - 8.4 SDG12: - 12.2 SDG14: - 14.2, 14.4, 14.7 SDG15:- 15.1, 15.2, 15.9	 This is well managed and monitored through the Fisheries and Environment program as shared in the previous sections. The community-based approaches has successfully been introduced and implemented in Tonga as previously alluded to in the case studies of the previous sections.
 Sustainable agriculture By 2020, areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.	Tonga's NBSAF contributes to this target in the following national targets shared in previous sections: 1.1, 1.2, 1.6, 1.10, 1.13, 3.1, 3.1(b), 3.1(c), 6.1.2, 6.1.9,	In pursuing ABT 7 the following SDG is being supported by those efforts: SDG1: - 1.4, 1.5 SDG2: - 2.1, 2.4, 2.5 SDG7: - 7.1 SDG8: - 8.4 SDG12: - 12.2	 This is well achieved as reflected in the Agriculture Sector Plans, Forestry/Fisheries and Environment Management Plans, as well as the Annual reports for Agriculture, Forestry, Fisheries and Environment.





		SDG14: - 14.4, 14.7 SDG15: - 15.1, 15.2	
 Pollution is not detrimental By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.	Tonga's NBSAF contributes to this target in the following national targets shared in previous sections: 3.1.(c), 6.1.9	In pursuing ABT 8 the following SDG is being supported by those efforts: SDG3: - 3.9 SDG6: - 6.3 SDG9: - 9.4 SDG10: - 10.1 SDG11: - 11.6 SDG12: - 12.2 SDG14: - 14.1	 <p>Progress ***</p> <p>This is currently being implemented and closely monitored by the Agriculture, Forestry, Environment, Health and Geology Departments. Furthermore, the project-based programs enable greater number of community-based approaches to trial good practises on waste management, susustainabe use of crops, livestock and fisheries.</p>
 Invasive controlled By 2020, invasive alien species (IAS) 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.	Tonga's NBSAF contributes to this target in the following national targets shared in previous sections: 2.3.1, 2.5, 5.1, 5.2, 5.3	In pursuing ABT 9 the following SDG is being supported by those efforts: SDG15: - 15.8	 <p>Achieve ***</p> <p>The GEF5/GEF6-IAS projects greatly assist this effort in Tonga with ehancing institutional capacity, as well as strenghtening compliance. Fisheries, Quarantine, Environment and local NGOs has supported this target very closely in this reporting period, as per reflected in their various sector plans and annual reports.</p>






 <p>Pressures on vulnerable ecosystems minimized</p> <p>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.</p>	<p>Tonga’s NBSAF contributes to this target in the following national targets shared in previous sections:</p> <p>8.1, 8.2, 8.4</p>	<p>In pursuing ABT 10 the following SDG is being supported by those efforts:</p> <p>SDG 13: Climate Action particularly target 13.1</p> <ul style="list-style-type: none"> - Tonga is monitoring 7 meteorological stations since 2017 to be inform of physical climate characteristics - Tonga continue to implement the National Climate Change Policy of 2006 and recently established the Tonga Climate Policy for 2018-2035. <p>SDG14: - 14.3</p>	 <p>Tonga contributes to this target by strengthening related legislative frameworks, protected areas network and coordination mechanisms between sectors, as well as sourcing funds to assist with biodiversity management and conservation efforts. It had pursued nation wide ocean management plan although this will be achieved in 2020. Co-implementation of the NBSAF, JNAP2, TERM and related Sector/Management Plans these efforts are ongoing.</p>
<p>Strategic Goal C: To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity</p>			
 <p>Protected areas (17%, 10%) effectively</p> <p>By 2020, at least 17% of terrestrial and inland water areas and 10% 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.</p>	<p>In achieving this ABT the following national targets and activities were implemented under the NBSAF in this reporting period: 2.1.a.1A, 2.1.b, 2.6, 4.2.1, 6.1, 8.1, 8.3.</p> <p>Status of efforts with protected areas is reflected in Section 4.4 of this report.</p>	<p>The following SDG targets is being contributed to in the efforts to achieve the ABT 11: SDG6: Clean Water and Sanitation particularly 6.4, 6.5, 6.6</p> <p>SDG11: Sustainable cities and communities particularly target 11.4</p> <p>SDG14: Life Below Water, particularly addressing target 14.2, 14.5</p> <p>SDG15: Life on Land, particularly target 15.1, 15.4</p>	 <p>With regards to achieving 10% of coastal and marine areas, Tonga is on track to achieve this in its targets of designating 30% of its total EEZ as marine protected areas. As for the 17% of terrestrial and inland water areas conserved, this is still a working progress for Tonga, as it had only secure about 16% thus far of terrestrial areas.</p>



 <p>Extinctions prevented, status improved</p> <p>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.</p>	<p>Tonga’s NBSAF contributes to this target in the following national targets shared in previous sections:</p> <p>1.7, 4.1, 4.2.1</p>	<p>In pursuing ABT 12 the following SDG is being supported by those efforts:</p> <p>DG14: - 14.4</p> <p>SDG15: - 15.5</p>	 <p>Tonga has a recovery plan for Polynesian megapode 2014-2024, however in the previous 5th National Report the latest update was provided in it, as no further review was done in this reporting period. It has established in 2018 with the assistance of regional organisation to set up Tonga Environment Portal to document data and information on species, protected areas. It is currently pursuing developing of management plans for each of the protected areas designated in Tonga.</p>
 <p>Genetic diversity maintained</p> <p>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.</p>	<p>Tonga’s NBSAF contributes to this target in the following national targets shared in previous sections:</p> <p>3.1(a)-(c), 4.3, 7.1,</p>	<p>In pursuing ABT 13 the following SDG is being supported by those efforts:</p> <p>SDG2: - 2.1, 2.2, 2.5</p> <p>SDG3: - 3.9</p>	 <p>This is currently being pursued by national sectors such as Agriculture, Forestry, Fisheries, Environment, to ensure genetic diversity is maintained. Other project-based programs such as the GEF6-IAS program assists with improving the Vaini Research Station for such purpose. All these Sector Plans and Annual Reports between 2015-2018 informs their gradual progress in support of this target.</p>
<p>Strategic Goal D: Enhance the benefits to all from biodiversity and ecosystem services</p>			

 <p>Essential ecosystem services restored</p> <p>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.</p>	<ul style="list-style-type: none"> - Ministry of LNRS monitors all ground water in Tonga; whilst MoH implements policies and programs to improve access to clean water and better sanitation - Tonga enforce its Water Board Act of 2016 to ensure water access to all Tongan islands - Under the NBSAF the following targets in Table 2 contributes to it: 2.1.a.1, 3.1.b.1, 3.1.c, 4.1, 4.2.1, 4.3.1.3, 6.1, 	<p>In pursuing ABT 14 the following SDG is being supported by those efforts:</p> <p>SDG1: 1.5 SDG3: 3.9 SDG5: 5.1, 5.5 SDG6: 6.4, 6.5, 6.6 SDG7: 7.1, 7.2 SDG8: 8.4, 8.9 SDG9: 9.1, 9.4 SDG13: 13.1 SDG14: 14.7 SDG15: 15.9</p>	 <p>Achieve **</p> <p>Water access to the population is not an issue however the quality of water is in a working progress for the country as responsible sectors are working on improving services. About 77.9% of the population has access to water with regular monitoring of water quality by national sectors,</p>
 <p>Resilience enhanced, ecosystems restored</p> <p>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.</p>	<p>Tonga uses the following framework to ensure ecosystem resiliency:</p> <ul style="list-style-type: none"> - Joint National Action Plan (JNAP2) focusing on building climate resiliency to combat climate change - National Biodiversity Strategic Action Framework (NBSAF) focusing on biodiversity resiliency which reflected contribution towards this ABT through national targets 2.1, 2.3, 4.3, 6.1, 8.4 and 8.5, 	<p>In pursuing ABT 15 the following SDG is being supported by those efforts:</p> <p>SDG6: 6.4, 6.5, 6.5 SDG9: 9.1, 9.4 SDG10: 10.1, 10.2 SDG11: 11.5 SDG13: 13.1, 13.2 SDG14: 14.2 SDG15: 15.1, 15.2, 15.3, 15.4, SDG 13: Climate Action</p> <ul style="list-style-type: none"> - Tonga has reduced its GHG emissions due large carbon sinks incurring a net reduction in CO2 valuation⁷⁴ - Tonga was in full compliance with the Montreal Protocol of 0 ODP tonnes consumption since 2001. 	 <p>Progress ***</p> <p>Still in working progress for Tonga as it strives to achieve the 15% of national degraded ecosystems restored.</p>

⁷⁴ Tonga-Status of Environment Report, 2019

		<p>- Tonga is monitoring 7 meteorological stations since 2017 to be inform of physical climate characteristics</p> <p>- Tonga continue to implement the National Climate Change Policy of 2006 and recently established the Tonga Climate Policy for 2018-2035.</p>	
 <p>Nagoya Protocol operational</p> <p>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.</p>	<p>Tonga’s NBSAF contributes to this target in the following national targets shared in previous sections:</p> <p>5.4, 7.1, 7.2, 7.4,</p>	<p>In pursuing ABT 16 the following SDG is being supported by those efforts:</p> <p>SDG3: 3.9</p> <p>SDG8: 8.4</p> <p>SDG15: 15.6</p>	 <p>Although Tonga was not yet a party during this reporting period, it recently acceded to it after 2018 reporting period. However, 4 of Tonga’s national targets contributes to this ABT as described in previous sections.</p>
Strategic Goal E: Enhance implementation through participatory planning, knowledge management and capacity building			
 <p>NBSAP adopted, commenced</p> <p>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.</p>	<p>Tonga revised its NBSAF in 2014 of which is a working document has been in used for this reporting period in 2015-2018, and it has been in implementation. It will further revision its NBSAF in 2025. The following national targets shared in previous sections:</p> <p>1.1, 1.2, 2.1(a), 2.1(b), 8.1, 8.2, 8.3, 8.5, 9.1</p>	<p>In pursuing ABT 17 the following SDG is being supported by those efforts:</p> <p>SDG5: 5.1, 5.5</p> <p>SDG14: 14.7</p> <p>SDG16: 16.4, 16.7</p> <p>SDG17: 17.9, 17.14</p> <p>SDG 13: Climate Change</p> <p>- Tonga continue to implement the National Climate Change Policy of 2006 and recently established the Tonga Climate Policy for 2018-2035.</p>	 <p>Completed already in this reporting period with its NBSAF 2018-2025 working strategy, it has also drafted its National Environment Management strategy,</p>

 <p>Traditional knowledge integrated</p> <p>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.</p>	<p>Tonga’s NBSAF contributes to this target in the following national targets shared in previous sections:</p> <p>1.10, 1.11, 1.12, 2.5, 5.4, 6.1.8, 6.1.9, 7.3.1, 7.4.1, 8.5.1,</p>	<p>In pursuing ABT 18 the following SDG is being supported by those efforts:</p> <p>SDG2: 2.5 SDG3: 3.9 SDG5: 5.5 SDG10: 10.1, 10.2</p>	  <p>Tonga is heading in the right direction with this target, efforts are being pursued at national level, and supported closely by educational institutions with allocation of research study for TEK. Furthermore, TEK is integrated in the Sector Plans for Forestry, Agriculture, Environment, Fisheries, Climate Change and Education to mention some of the sectors. The local NGOs are also very active in this efforts, as previously alluded to in the case studies provided in this report.</p>
 <p>Knowledge improved, shared, transferred</p> <p>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.</p>	<p>Tonga’s NBSAF contributes to this target in the following national targets shared in previous sections:</p> <p>2.2(1)-(2), 2.5, 4.1, 4.4, 8.1-8.5</p>	<p>In pursuing ABT 19 the following SDG is being supported by those efforts:</p> <p>SDG4: 4.7 SDG7: 7.1, 7.2 SDG9: 9.4 SDG12: 12.2, 12.8</p>	 <p>Greater development in the area of science and knowledge is recorded in Tonga as insitutional capacity has been increasing in this reporting period. There are more implementation and monitoring programs currently implemented by the various</p>

		<p>SDG14: 14.4</p> <p>SDG17: 17.6, 17.7, 17.18</p>	<p>national stakeholders that is also clearly reflected in their annual/survey reports completed as previously alluded to in previous sections. That being said, the establishment of the Tonga Environment Portal through the Inform Project supports the effort of providing a central depository for such data/information to be shared widely. Furthermore, various training programs, and outreach programs are also supporting spaces for new knowledge and surveys results are shared with the public and relevant stakeholders engaged.</p>
<p> Resource mobilization increased</p> <p>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 resources needs assessments to be developed and reported by Parties.</p>	<p>Tonga’s NBSAF contributes to this target in the following national targets shared in previous sections:</p> <p>1.2.1, 1.3.1, 1.5.2, 1.8.1, 2.1.a.3, 2.2.2.1, 9.1.1, 9.2, 9.4, 9.5</p>	<p>In pursuing ABT 20 the following SDG is being supported by those efforts:</p> <p>SDG10: 10.1, 10.2</p> <p>SDG17: 17.3</p>	<p> Achieve ***</p> <p>There is increasing number of foreign organisation who are active in biodiversity conservation work in Tonga who supports this effort. Furthermore there is the Green Climate Fund, the Climate Change Trust Fund, GEF Small Grand Fund as funding opportuniites for Tonga. Furthermore, current embassies in Tonga some have conservation funds as opportunity to implement biodiversity targets. With the current pursuit of ocean planning in Tonga, the Marine Spatial Plan is also pursuing ocean financing to support efforts implementation of nation wide marine proteted areas.</p>

6.0 Section IV: National Biodiversity Profile

6.1 Forest Ecosystems

The forest ecosystem in Tonga is very important and beneficial for local, national and international levels. We obtain many products from the trees of forests. The maintenance of robust ecosystems like forests benefits biodiversity and serves as an important tool for both climate change mitigation through carbon sequestration and climate change adaptation.

According to the latest Tonga State of Environment (SoE) Report (2018), there is approximately 4000 ha of natural hardwood forest remains in Tonga, mostly on uninhabited islands, and steep or otherwise inaccessible areas. This total includes 1000 ha of forest on Ha'apai Island and 450 ha in the 'Eua National Park on 'Eua Island (FAO, 2016).

Only 21 hectares of degraded forest remain on Tongatapu at the Toloa Rainforest Reserve. Forest types in Tonga include mangrove and coastal swamps, coastal and littoral forest, tropical lowland and upland rainforest, and tropical lowland and secondary forest (FAO, 2016). Secondary forest, the result of previous land clearing or cyclone disturbance, is the dominant forest type in Tonga and comprises a mix of native and introduced plant species (FAO, 2016).

In the Vava'u group forest cover has declined over the last few centuries from nearly 100% to about 10% (Atherton et al. 2014). Remnants of mature forest are still present in some areas that are too steep or rocky for cultivation, including steep coastal slopes and inland scarps and knolls, and on some of the smaller cliff bound islands (Atherton et al. 2014). Areas of mature native forest have also persisted on some of the small, low, southern islands (e.g. Maninita and Taula), and in some more gently sloping parts of 'Uta Vava'u, including coastal terraces and beach flats in the vicinity of Utula'aina Point and Vai-utu-kakau.

Clearing forest for agricultural activities is one of the negative impacts caused by agriculture development. Loss to biodiversity is a major concern as few traditional crop species are being found on small islands. Commercial farming, including kava, clears land containing these precious crop species and has led to their decline. Prolonged drought also reduced agro-biodiversity. These events highlight the need for a sustainable development pathway to preserve biodiversity in the face of climate change, while trying to satisfy economic demands from limited resources.

6.1.1 Mangroves/Coastal Forests

According to the Tonga's State of Environment (SoE) Report (2018) Tonga's total mangroves coverages across the country is less than 18km², in which 13.19km² is found mainly at Tongatapu island mostly at Fanga'uta Lagoon whilst Vava'u Island covers only 3.7km² of mangroves forest (SPREP, 2019). In comparison to the total land coverages for Tonga, mangroves forest only covers about 3% of the total land area for Tonga. You can refer to this in the Table below and the map of mangroves distribution in Tongatapu.

Table 9: Estimated mangroves and wetlands cover in Tonga (Forestry Division of MAFF, 2017)

Land class	Area%	Island Groups					Total
		Tongatapu	Vava'u	'Eua	Ha'apai	Niuas	
Mangroves and wetlands	ha	1,319	373	0	0	76	1768
	%	5	3	0	0	1	3

Mangroves perform variety of ecosystem services in the country such as coastal protection, carbon sequestration and habitats for many species. They are homes to variety of fish, crab, shellfish and mollusc species (SOE Report, SPREP, 2019). In valuation cost of its benefits, mangroves covers about \$11.7-\$19.5 million pa'anga for coastal protection, whilst for carbon sequestration mangroves in Tonga contributes to globally is estimated to 1.4 million pa'anga per annum (Salcone J and et al. 2015). Due to increase land demand and unsustainable development activities at coastal area, there is continue decrease of mangroves forest as reflected in Tongatapu area.



Figure 20: Mangroves in Tongatapu (Source: Department of Environment, 2019)\

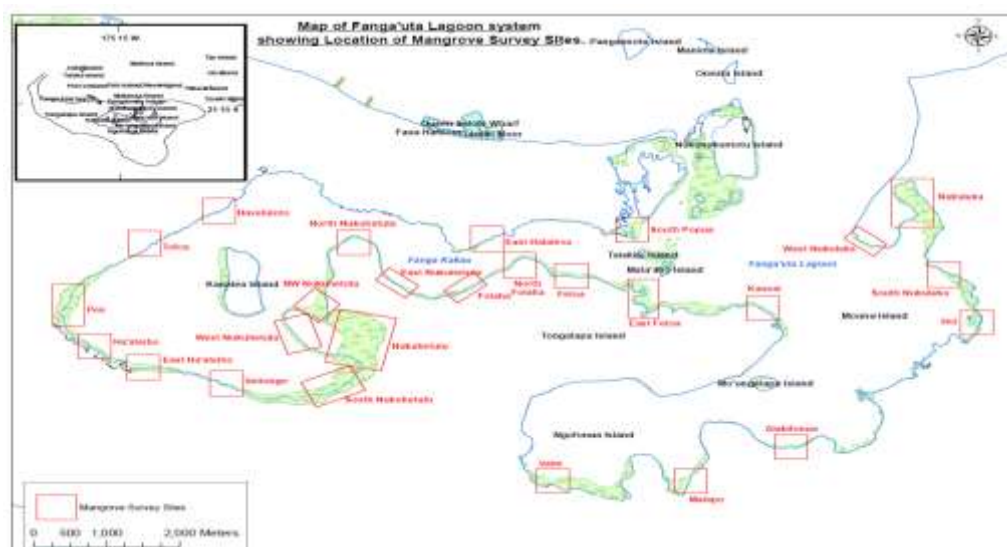


Figure 21: Mangroves Survey Sites conducted in 2016 on behalf of the Ridge-to-Reef Project, identifying the existing mangrove clusters to prioritise as conservation sites around Fanga'uta and Fangakakau Lagoon. (Source: GIS Section, MLNRt, 2016)

6.2 Marine Resources

Tongan fisheries have long provided a variety of socio-economic benefits to Tonga, such as sustenance, employment, and food security. However, unsustainable fishing practices can compromise biodiversity, as well as the long-term well-being of the environment and the communities who depend on them. In order to ensure that these benefits persist, it is important to protect and promote healthy marine ecosystems by avoiding destructive fishing practices, managing illegal fishing, recovering depleted stocks, and preventing overfishing.

Inshore commercial fisheries have the potential to produce a wide variety of popular seafood items, but some important fish populations are over-exploited. Inshore commercial fisheries are defined as fishing along inshore environments with the primary motive to sell the catch. An open access fisheries management regime coupled with an increasing human population, improved fishing gear, and destructive fishing practices have resulted in most reef and lagoon fisheries being moderately to seriously over-exploit.

A wide range of harvested species support subsistence livelihoods of local communities and small-scale commercial fisheries. The entire catch is mainly harvested from the reefs and lagoons with only minor quantities of coastal pelagic fish harvested. These fisheries are heavily exploited, and many are depleted with significant declines in fish density, biodiversity, and size (Government of Tonga, 2015). The majority of the catches occurred in the Ha'apai group followed by Tongatapu then Vava'u. The total catch changed from year to year with the maximum occurring in Ha'apai in 2014.

Overfishing is the principal cause of depletion of fish stocks, though destructive practices (such as sand/ coral mining, mangrove cutting) and pollution also contributes to habitat degradation, leading to the decline in catch rates and catches (Government of Tonga, 2015). A few commercial fisheries have already virtually collapsed, like *bêche-de-mer* and mullet. At the same time, some species are close to extinction, like coconut crabs and devil clams (Government of Tonga, 2015). Giant clams, octopus and cockles form a significant part of the subsistence diet. The population of inshore finfish has become scarcer for the Tongatapu market with fishing efforts ranging further afield. Recently, there was a tripling of the amount of fish originating from Ha'apai between 1994 and 1995, which was highlighted in the dataset between 2011 and 2018.

The fishing communities have no preferential access to adjacent resources and recently have had to introduce Special Management Areas (SMAs) to cope with pressures applied by commercial fisheries. Planning for sustainable coastal and inshore fisheries can benefit from accurate data monitoring that determines the numbers of fishermen, vessels, catches and species. Meanwhile, for the outer island communities heavily dependent on fisheries, the priority requirements may not be directly related to fisheries but to cultural purposes.

Tonga has progressed significantly since 2006 with respect to Fish Habitat Reserve area coverage in coastal areas. At the end of 2018, Tonga had conserved around 19.9% of its waters through SMAs, and 3.3% through Fish Habitat Reserve or no take areas. The total number of SMAs being established throughout Tonga is 40. Tonga has engaged broadly with partners and stakeholders in making progress toward the target and expanding the SMA network in Tonga.

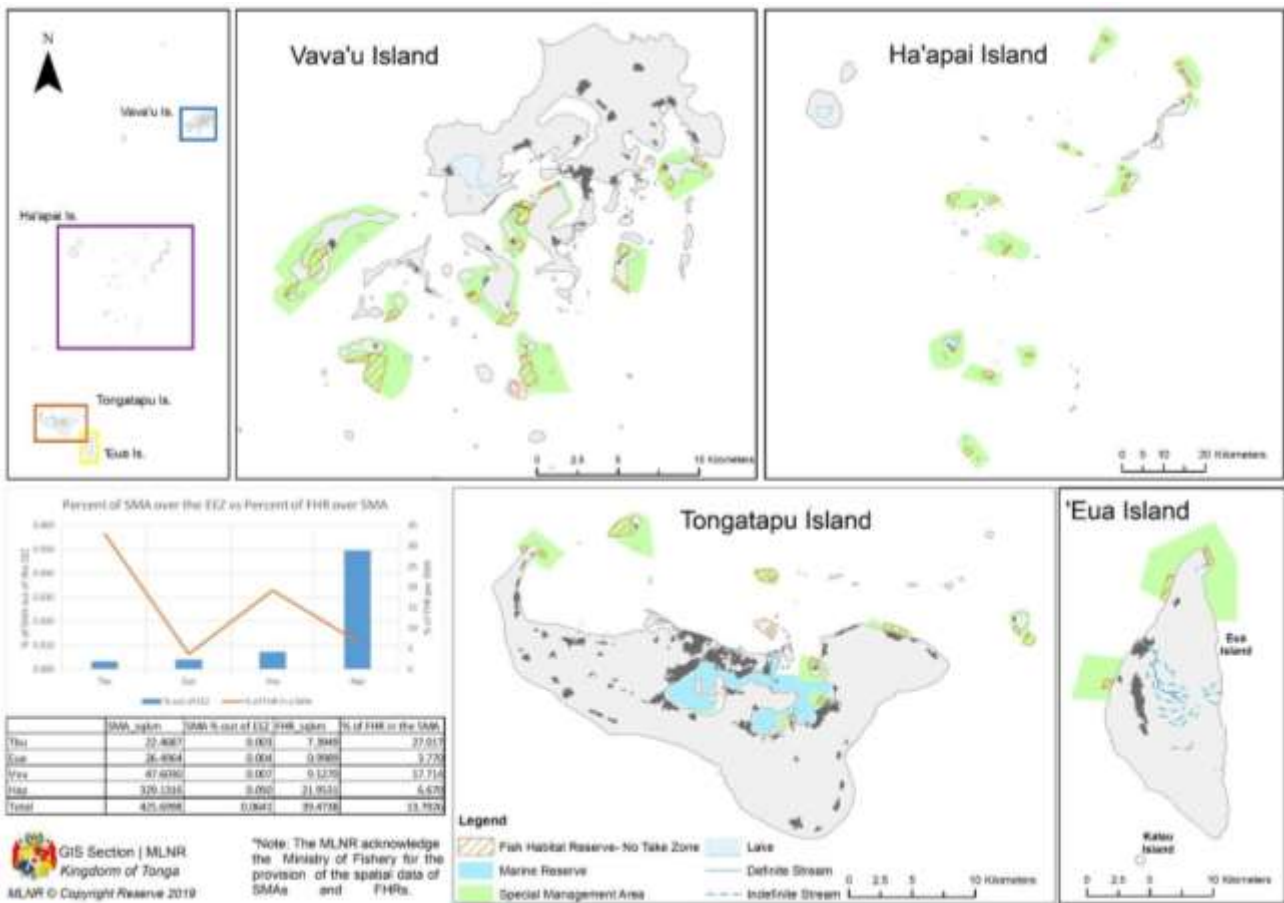


Figure 22: This depicts the geographical distribution of SMAs and FHRs in Tonga.

The total percentage of SMAs covers about 0.06% of Tonga’s EEZ, and about 13.79% of SMAs are taken up by FHR given that two FHRs, Pangaimotu (Tbu) and ‘Eueiki (Vvu) are not situated in an SMA. It is seen that Ha’apai has the most marine area dedicated for SMAs yet the percentage of FHR is less compared to Vava’u and Tongatapu island group. Note that the Marine Reserve is not included in the SMAs.

The Fisheries Sector Plan has identified several obstacles and challenges with respect to the availability of resources to support SMA establishment, implementation and monitoring. Challenges include: measurable targets in the plans, financial means to achieve the targets, monitoring of progress, and adaptation to changes. Most of the SMAs being established have reported gaps in managing their SMAs and also identified limited or unavailable resources, capacity, and technical knowledge. Further, SMAs identified a lack of inventory and monitoring aspects of their SMAs. Other obstacles identified included limited staff at the Ministry of Fisheries. Tonga is committed to collaborating with coastal communities in identifying important areas for conservation (no take zones) within the SMA boundaries, and aiding in establishment, implementation, and monitoring.

There are challenges currently faced by the SMAs. It has been raised that overfishing is prevalent within SMAs on all species. Inadequate rules adopted for rebuilding fish stocks as communities market increasing proportions of their catches to generate cash income (Government of Tonga, 2015). Pressure from commercial fisheries can be too much for local communities to cope with. These issues highlight that there is a need to develop non-fisheries related economic opportunities to alleviate pressure on the SMAs and at the same time, meet community financial demands. Other inshore fisheries such as octopus and anadara (cockles) need to be

included in management plans. Monitoring is enforced by both the Department of Fisheries and communities, but lack of resources (funds and staff) can hinder this work.

6.3 Coral Reefs

According to the most recent wide research done in Tonga during this reporting period, the status of Tonga’s coral reefs reflected varying conditions in each of its islands group. Vava’u island group was found to be with the poorest conditions in coral reefs whilst Ha’apai Island group was at average of 21% and Tongatapu at the highest best of coral reefs at average of 25%.⁷⁵ It is concluded from this study that there has been large coral bleaching events occurring at areas of limited regular flushing of oceanic cool waters as well as poor water quality from inland lagoons that resulted in the degrading coral reefs.

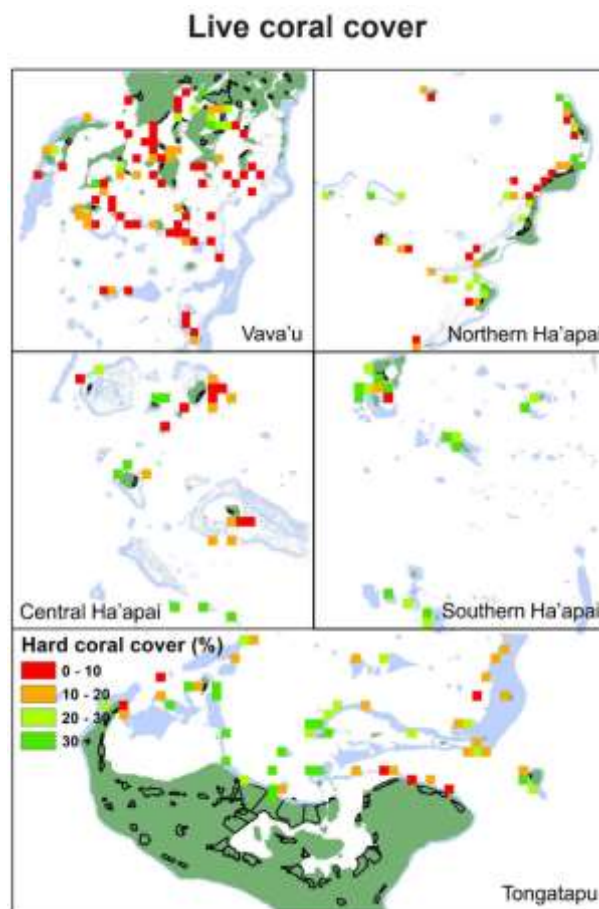


Figure 23: Distribution of coral reefs in Tongatapu, Vava’u and Ha’apai. [Source: Smallhorn-West P., Sheehan J., Rodriguez-Troncoso A., Malimali S., Halafihi T., Mailau S., Le’ota A., Ceccarelli D., Stone K., Pressey B., Jones G. (2020) Kingdom of Tonga Special Management Area report 2020. Page 9]

⁷⁵ 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 p.

6.4 Protected Areas

In addition to the protected areas inside the community based marine protected areas or better known as the Special Management Areas (SMAs), there are other protected areas already gazetted in which there are 18 altogether as reflected in the given map below during this reporting period from 2014-2018, and as previously shared in earlier sections there are 28 SMAs established in 2017. At the same time there are 90+ offshore marine protected areas and that is currently being pursued in the Marine Spatial Plan project under the Department of Environment in order to meet Tonga's national commitment of protecting 30% of its EEZ, the results of this endeavours will be shared in the next reporting period.

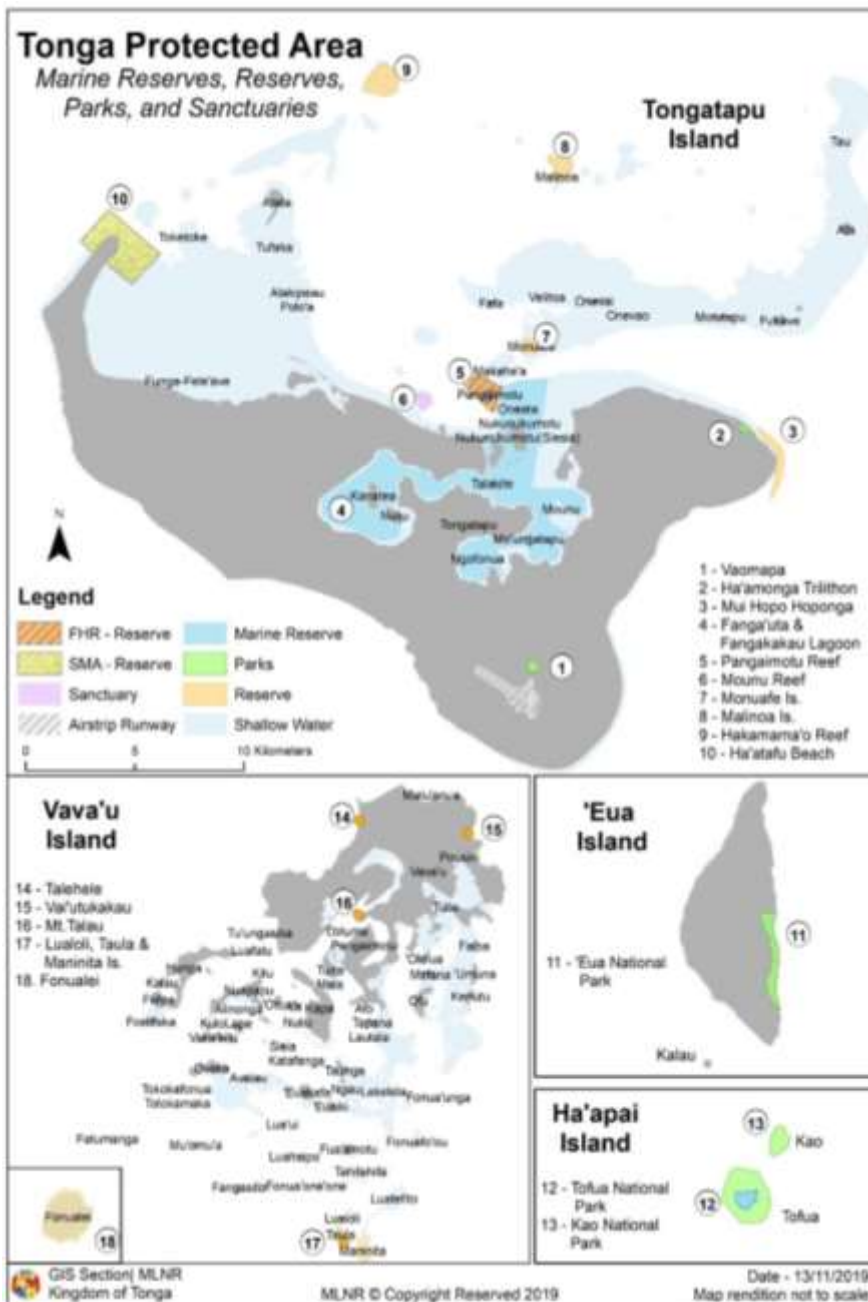


Figure 24: Shows the Protected Areas for Tonga.

In total, there is 1 Marine Reserve, 1 Sanctuary, 5 Parks and 11 Reserves. Two of the 11 reserves is an SMA (SMA-Reserve) and a FHR (FHR-Reserve). Most recently the Parks for Ha’apai was established in 2001 while Vava’u was established around 2014. Some of the parks are referenced as ‘paper-park’ due to the ineffective of enforcing compliances in these protected sites however, this is currently being pursued under the MSP to strengthen these marine protected areas already established.

6.5 Agro-biodiversity

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. Farmers basically manage agricultural biodiversity, 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.

Currently, most of Tonga’s agro-biodiversity stocks are at large with its dominant farming populations, where majority, about 70% of the populations (2015 Agricultural Census Report), are involved with agriculture and farming activities. Although most of the crop varieties were managed through farming practices for the purpose of food security by all households, it tends to have a mechanism system in securing and managing of agro-biodiversity throughout the Kingdom since it was inhabited. (Ministry of Agriculture, 2019)

Some of the agricultural practices that affect agro-biodiversity include; 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; and over-exploitation of ground waters for agriculture. (NBSAF, 2018)

The introduction of food crops into Tonga were dated back to the early settlers who may have brought the root crops with them, such as yams, cassava and sweet potatoes to start a new life (Ministry of Agriculture, 2019). These new introduced food crops become well adept into their new environment throughout many years where they evolved to adapt all the diverse environmental selection phases throughout their existence. These new crop varieties become the preferences of the population according to their current tolerances to various climatic stresses and acceptability as food, based on their various characters.

The following table is a summary of the most cultivated root crops in Tonga in all island groups.

Table 10: Areas (acres) of the five most cultivated annual root crops in Tonga and in various island groups (Source: 2015 Agricultural Census Report)

ISLAND GROUP	CASSAVA	YAM	XANTHOSOMA TARO	SWEET POTATOES	SWAMP TARO
Tongatapu	8,160	4,248	1,956	1,408	1,216
Vava’u	800	585	248	154	130
Ha’apai	815	197	136	127	70
’Eua	291	163	161	166	155
Niuas	143	121	65	46	56
TOTAL (acres)	10,208	5,315	2,565	1,901	1,627

The Tonga agro-biodiversity was formed and based on what the dominant Tongan Polynesian populations farmers are growing, which had an obvious preference to five major root crops, particularly, of yams (*Dioscorea spp.*), cocoyam taro (*Xanthosoma sagittifolium*), swamp taro (*Colocasia esculenta*), sweet potato (*Ipomoea batatas*), cassava (*Manihot esculenta*), and giant taro (*Alocasia machorrhiza*), which is now realized to be very popular in using as food source.

With perennial crops, most of these are grown more than a year and can be repeatedly harvests either from the mother plant or from suckers. Crops under this category may include the banana family of the *Musa spp.*, and they are designated as cultivated and cooking bananas. The cultivated ripening bananas, although it can be cooked as green banana, consists mainly of the Cavendish type and was a one time national high value commercial export crop in the past few decades as it is a perfect banana for ripening purpose, while the cooking bananas, which considered to be a different species and always refers as green bananas, show to have diverse varieties and were mainly consume as cooking bananas. These include the plantain, long and short ladyfinger types and some other green banana types. However, there are other agricultural perennial crops, which are very significant, not only as food source but also for Tongan social and traditional use, which have significant values. These include pineapples, kava, vanilla, paper mulberry, and pandanus, as summarized below in the table.

Table 11: Areas (acres) for some significant high value perennial crops for Tonga and in various island groups (Source: 2015 Agricultural Census Report)

ISLAND GROUP	Kava	Vanilla	Pineapple	Paper Mulberry	Pandanus
Tongatapu	141	159	208	587	9
Vava'u	805	341	226	5	8
Ha'apai	7	6	7	92	23
'Eua	249	104	9	73	1
Niuas	55	22	3	2	37
TOTAL (acres)	1,257	632	453	759	78

Obviously from this table, the differences in cropping areas for the various island groups can be essentially dictated by each crop's favourable environmental conditions, as determined by each islands' geographical location, land profile, and soil textures. This is dictated mainly by each island group soil texture, temperature and rainfall conditions. The high rainfall and more humid conditions in Vava'u, together with its warm and high volcanic soil texture explain the higher areas of kava, vanilla and pineapple than all other island groups. It thus indicates that Vava'u offers the most favourable environmental conditions that these crops can really adapt to, while the high areas of land dedicated to paper mulberry in Tongatapu and Ha'apai indicate its values in these low-lying coral islands than in other island groups. Similarly, with pandanus in the Niuas and the Ha'apai group, although they are comparatively small in landmass, but they top the Table for the pandanus areas, which indicate how importance is weaving, and handicraft productions are in these island groups than in the other island groups.

In terms of fruit trees, there are various tropical fruit trees and nut species that can be reported in Tonga, which were long-time considered as native fruit trees and can be found in some other Asian and Pacific

countries. These include coconuts, avocados, oranges, soursop, mandarin, custard apples, cashew nuts, cattapa nuts, tamarind, etc.

6.5.1 ROOT CROPS

Root crops are the dominant staple food sources for most Tongans, and these are cultivated through tilling the land and directly planted into the soil. Most of these root crops are all propagated vegetatively by cuttings, suckers, sticks and setts, none are propagated by seeds.

Most of the indigenous species/varieties and breeds were lowest in abundance in Tongatapu but higher with distance to the outer islands. In contrast, most of the new foreign species/varieties and breeds were highest in abundance in Tongatapu but lower with distance to the outer islands. Therefore, vanishing rate of the indigenous crops and livestock's genetic resources occurs mostly in Tongatapu than in outer island groups. Various reasons for this occurrence were:

- There is more specialized commercial farming in Tongatapu than in outer islands, both for local and export markets, where lower production cost but higher yield species/varieties are highly preferred, and therefore directed farmers to select few specific varieties that match their objectives;
- There is a high demand for specialize export market for specific exotic species/varieties such as in squash for Delica, Ebisu, and K-7 varieties; in watermelon for Sugar Belle, Summerfun, and Seedless varieties, and for Swamp Taro; the Pink or Niue variety, and in Yam; the variety Lose with lower production cost and higher yield;
- Access to new varieties/breeds with superior characteristics, such as longer harvest period, as in Manioke Fisi, which is up to 3 years but still maintain its good edible quality; the continuous and unseasonal fruiting characters, as in Lady Fingers (Pata Kolosi), which fruits all throughout the year with no seasonal fruiting;
- Access to new livestock breeds such the Duroc/Large White pig breed with larger sizes and higher litter production and the Fantastic sheep breed.

Therefore, it is of paramount importance to rectify these differences as a national strategy for conservation of the indigenous crop species and livestock breeds.

6.5.2 YAM (*Dioscorea spp.*) 'UFI:

There are 6 main yam species currently recorded in Tonga, which are the *D. alata* (main long type edible yam – 'ufi), *D. esculenta* (sweet yam – 'ufilei), with various local variety names, *D. rotundata* (Lose), *D. pentaphylla* (Lena), *D. nummularia* ('Ufi Palai), and the *D. bulbifera* (hoi) which has aerial tubers and regarded inedible and have no food value. Yam (*D. alata*) is considered one of the most important root crops that have national cultural values which make it one of the most expensive root crops in Tonga that have significant prospective economic values. It is the most common grown and diverse yam types.

6.5.2.1 *Dioscorea alata* ('Ufi): In the Tongan classifications, the *D. alata* types can be further classified into 2 more categories as 'Ufi Tokamu'a (Early yam) and 'Ufi Tokamui (Late yam) based mainly on their planting season. The 'Ufi Tokamu'a consists mainly of the long tuber varieties and are mainly grow in the main season. However, the 'Ufi Tokamui are mainly the round shape varieties and are all grown in the late yam season. As indicates by their names, the 'Ufi Tokamu'a always grown in the right yam

season, ahead of the 'Ufi Tokamui season, while the 'Ufi Tokamui is always at the late planting season, towards the end of the yam season. There is a big disadvantage of *D. alata* amongst other yam species because of its susceptibility to Anthracnose disease, which confirm and thus require special attention.

Although there were 101 main yam varieties that have been thoroughly reported in the Technical Report # 1 of the Tonga Biodiversity Stocktaking Report in 2004, there are few yam varieties that needs update of this comprehensive report. This includes the new variety *Pita*, which is now quite common with farmers in growing and preferences due to some preferred characteristics. Furthermore, this new yam variety has been the result of a breeding program with selections carried out throughout the breeding program before it was finally selected and declare a new variety.

6.5.2.2 For *D. esculenta* ('Ufilei): Its common name of Sweet yam derived from its sweet taste characteristics. Although it is considered a minor food crops, they are mainly grown in the northern islands of the Niua and Vava'u for the purpose of food security. Their small leaves and thorny small vines make it a good performer in drought periods. They are very good crops for drought resistance, resistant against Anthracnose disease, and can be stored for longer periods.

Currently, there is little commercial developments with this crop although there's potential for developments as baby foods and exploring its nutrition values. There are 12 varieties that have been reported, which are strictly under farmers' control, but some are now considered being threatened for extinction due to complete ignorance and climatic change impact.

6.5.2.3 *D. rotundata* (Lose): This yam species was recently introduced, and it has high commercial values that trigger it become one of the most exportable root crops. Its drought tolerance characteristics and resistance against Anthracnose diseases have been desirable values for its popularity amongst growers and farmers. Likewise, its simpleness in management and harvesting makes it commercially viable and desirable by farmers.

6.5.2.4 *D. pentaphylla* (Lena), *D. nummularia* ('Ufi palai): These two yam species are reported to be mainly in isolated locations with less human propagation. Although edible, they are less propagated and heavily dependent on natural factors. It is currently rated as being considered threatened and needs special care for its rehabilitation.

6.5.3 Giant Taro (*Alocasia machorrhiza*) Kape: *Alocasia machorrhiza* is a very important crop species in Tonga, particularly in time of festivities where these food-crops are very important because of its large tubers, which can be easily prepared to cater for large populated or crowded people. Usually during celebrity occasions of weddings, funerals, and church festivals, these giant taros are often preferred. Its long storage and non-perishable characters are favoured amongst other food crops and it's a good candidate during famine times.



Figure 25: Top left picture is the *D. esculenta* (sweet yam – ‘ufilei) with its entwining vine and spacious leaf structure; in contrast with its fellow genus *D. alata* in the top middle picture. The top middle right picture is the *Alocasia machorrhiza* tuber in comparison to the *D. alata* tubers at the right end picture.

The main variety that is commonly grown is the *kape hina*, although the *fohenga ‘uli* and *fohenga enga* are also common but to a lesser extent. The variety *kape hina* is highly grown and is now exports, but merely the *fohenga ‘uli* and *fohenga enga* need extra care for their existence to maintain. However, there are other lesser used varieties, like *kape ‘uli*, *kape fulai*, *kape talo*, and *kape vai* that may raise major concerns for their current existence and may require special attention to maintain them.



Figure 26: Left picture is the most common Giant taro variety *kape hina* and the heavy side-suckers may explain its successful than its companions, the *kape ‘uli* in the middle and *fohenga ‘uli* variety on the right. Note the erect forms of the leaves in the *fohenga ‘uli* variety in contrast to the forms in *kape hina* and *kape ‘uli*.

6.5.3.1 Swamp Taro (*Colocasia esculenta*): Talo Tonga

Swamp taro is a very common food crops throughout the Pacific and has attracted special regional attentions for its development. Since the devastation of Samoa’s taro industry by the epidemic Taro Leaf Blight (*Phytophthora colocasiae*) (TLB) disease in 1993, there have been some regional projects dedicated for its development and shared within the region. Tonga has been credited with some new introduced varieties under this taro breeding program to upgrade its current swamp taro genetic stocks. There are 16 main varieties that are currently recorded but those new introduced taro germplasms are still at trial stage and yet to be declared as new varieties.



Figure 27: Left picture at the foreground show *Colocasia esculenta* (swamp taro, lau'ila) broad leaf structure in a mixed cropping with *Alocasia machorrhiza*, at the background, while at the left picture show the tubers and its prices at the local market.

Swamp taro is one of the main export crops and considered highly manageable, however, only those less grown varieties and species may raise concern for their current existence as to maintain.

6.5.3.2 Cocoyam (*Xanthosoma sagittifolium*): Talo Futuna

Although there are various species found under this *Xanthosoma* genus in the island group, the only species that are being used for food is the *X. sagittifolium*. There are many ornamental species under this genus with some that considered to be used for food at times of famine. This genus is strong and highly tolerable against many environmental conditions. They can survive in harsh environmental conditions and its itchy qualities may repel insects and disease pathogens that may render it resistance against many pests and diseases.



Figure 28: Left picture is the edible tubers of Cocoyam selling at the local market with the cocoyam plants at the plantation area together with banana crops at the background on the right

Cocoyam is a daily food supplements for many Tongan households and sometimes export to overseas countries where Tongans are residing. Although there have been 8 varieties reported to have been cultivated and recorded, it is merely 3 varieties that are commonly grown nowadays. These are the *talo kula*, *talo mahele 'uli*, and *talo futuna*. The other 5 varieties are in the endangered stage and may require special attention for their revitalisations. The less developments with this crop type may explain its ignorance and can raise concerns over the existence of the other varieties.

6.5.4 Sweet Potatoes (*Ipomoea batatas*): Kumala

Sweet potato is one of the main food crops that widely preferred over other root crops due to its short time turn over, sweet taste, softness, and manageable. Most sweet potato varieties are within 3- 5 months from planting to harvest and it is a good crop, together with corn, for disaster relief operations.

There have been special projects for its developments through breeding programs because it is very easy to cross pollinate since they can bear flowers and produce seeds. There were few varieties recorded in Tonga but was recently developed and improved with new introduced varieties. Although 39 varieties have been recorded in Tonga in 2004 but some have been reported as being lost at that time which could be aggravated up to now due to strict preferences of some varieties compared to others. There was not much work with sweet potatoes so far being done now after the sweet potato screening project was finished but require immediate work as to follow up in screening new varieties.

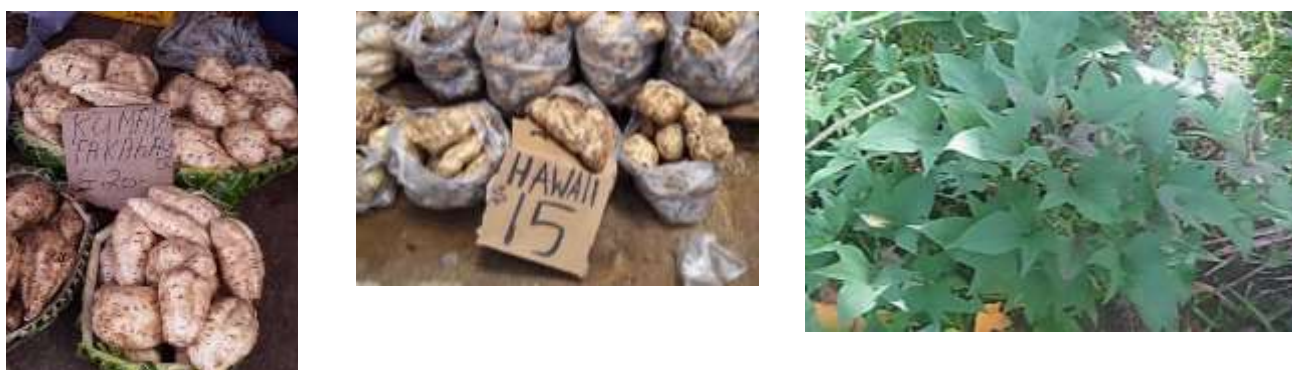


Figure 29: The sweet potato variety *Melefakahau* on the left, the *Hauai'i* variety in the middle and a picture of a *kumala* plant on the right

Currently, the variety *Hauai'i* dominate the local market supply, together with the variety *Siale*, *Melefakahau* and *Kaloti*. However, the variety *Siale* are further subdivided into *Siale kula*, *Siale hina*, and *Siale lau'ila*.

6.5.5 Cassava (*Manihot esculenta*): Manioke

Cassava is the most common household consuming food. In the above table, areas for cassava cropping, compared to other root crops, dominates all island groups, which indicate how importance is cassava to every Tongan households. Its favourable qualities were based on the simpleness of its management, tolerance to wide range of climatic conditions, and high yield productions. It is one of the main export crops that Tonga currently trade overseas.

Despite the 13 varieties already reported in the 2004 reports of Tonga's agrobiodiversity, where 2 have been reported as being endangered at the time, this number can be intensified after long years of strict attachments to few favourable varieties. This has been aggravated by the monopolising impact of commercialisation where only the required variety is recommended for mass production while the other varieties remain with the hands of few subsistence farmers. The most common varieties are the *Manioke Fisi*, *Manioke engeenga* and *Mataki'eua*. The varieties *Leka* and *Lepa*, which have both sub-varieties of *kula* and *hina*; *Falaoa*, *Tano'a* and *Manioke koka'anga* all need special attention for its cultivation and conservation.



Figure 30: The morphological variations for 3 varieties of *Manihot esculenta* as indicated by their leaf forms and growth structure

New cassava cultivars were introduced includes VRS-ME#1 (originated from Peru), VRS-ME#2 (originated from Chile), VRS-ME#3 (originated from Peru), VRS-ME#4 (originated from Fiji), and VRS-ME#5 (sourced from CePaCT, SPC Fiji). All these cassava cultivars were brought into VRS in July 2011 via tissue culture materials for evaluations.

6.5.6 Banana Crops (*Musa* spp.): Fusi

Banana crops are major food crops in Oceania and most tropical countries of the Caribbean and Africa. It has great diversity that show great variations in its forms and fruits where some are found to be wild species and have no fruits while few types bear fruits and are edible. The fruits are either eaten fresh by cooking or some are only eaten fresh when at the ripening stage. It is assumed that these banana varieties were all derived from the seeded species of *M. acuminata* and *M. balbisiana* and were classified into its ploidy level. In Tonga, there are 3 main clear categories of the Banana crops but has different varieties recorded. These 3 main types are:

- i. Type AAB (*Musa balbisiana*): Hopa
- ii. Type ABB: Bluggoe types: Pata
- iii. Type AAA: Cavendish types: Siaine

6.5.6.1 Cooking Bananas (*Musa balbisiana*): Hopa

The cooking bananas are makeup of a wide range of banana types that are mainly use for cooking when green, although it can also be eaten fresh when ripe. They are totally look different from the other two types in terms of physical structure and morphological appearances. Also, it has several characters that make it an advantage over its fellow species as being a good tolerant to some of the tropical diseases and climatic conditions it can bear.

In Tonga, it has been reported with 17 varieties and it is mainly grown in farmer's plantations according to their own requirements and favourite varieties. Most of these cooking bananas are grown in mixed cropping with yam plantations. These cooking bananas are very good food for diabetic patients as they lack much starch content and considered to be a very healthy food supplement.



Figure 31: The cooking banana, *Musa balbisiana* (plantain - hopa) in the left and Bluggoe var. *Pata Tonga* in the middle and the ripe bluggoe var. *Pata kolosi* in the right

6.5.6.2 Bluggoe Bananas (Type AAB): Pata

This banana hybrid is quite common in Tonga although it is rarely commercially grown. However, this special type is a good famine crop reserve as it is very tough against much harsh environmental condition and considered an invasive type. Once it is planted, it produced so much suckers that eventually bear fruits to keep an on-going and continuous fruiting. Another advantage feature of this type is that it shows no seasonal fruiting habits as other types may show.

There are 5 varieties that have been reported in Tonga but there are some new introduced varieties, including the *pata kolosi*, which is the result of a hybrid crossings, which become very popular due to its sweet taste and structure.

6.5.6.3 Cavendish Bananas (Type AAA): Siaine

The Cavendish bananas is considered the main banana types in Tonga which is mostly and favourably grown by the highest percentage of farmers. This banana type has been grown commercially in the past and tends to dominate the banana farming. It became one of Tonga's top export crop until it eventually struck by this epidemic *bunchy top* and *black leaf streak* diseases that drastically brought down this national industry during the 1970s. Its susceptibility tends to turn the tide to look for other resistant varieties to maintain variations within the banana types.

This Cavendish banana is the ripening type, but it can also use for cooking while it is still green. It is the most favourite ripening banana type but have some disadvantages due to its susceptibility to some epidemic crop disease and heavily vulnerable to various environmental factors.

6.6 Species conservation

Tonga's vision for biological diversity and natural resources is to protect, conserve and enrich these resources to be enjoyed by present and future generations. Species provide an important function to the maintenance of our biodiversity, as seen with the pollination and dispersal of seedlings. Species at risk include forest plants, agro-biodiversity, marine species, birds, animals and so forth.

The maintenance of robust ecosystems like forests benefits biodiversity and serves 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, awareness campaigns and measures limiting the trade of threatened species, monitoring of the status of some species and biological surveys to identify the diversity of life in Tonga. (NBSAF, 2018)

6.6.1 Birds distribution in Tonga

As reflected in the Fifth National Report of 2014, Tonga is home to 20 species of terrestrial and sea birds in which many of the birds are found in Vava’u and Tongatapu island groups. According to the Land Bird Observation in 2014 for Vava’u in the BIORAP report, it advised that Vava’u has the highest variety of bird species observed. As for Tongatapu, a Status Report of Fanga’uta Lagoon survey in 2016 reflected that the lagoon is not globally or regionally significant for birdlife but that it has the capacity to hold a significant proportion of Tonga’s wetland birds. At this particular survey it has sighted 11 different bird species at 29 sites over a spread of 3 days (Aholahi, H and et al. 2017). It was interesting to note that over 200 birds species were observed at the lagoon area of Tongatapu with mostly crested tern were sighted in that survey period. The figures below provide supporting snap shot to the discussion on birds.

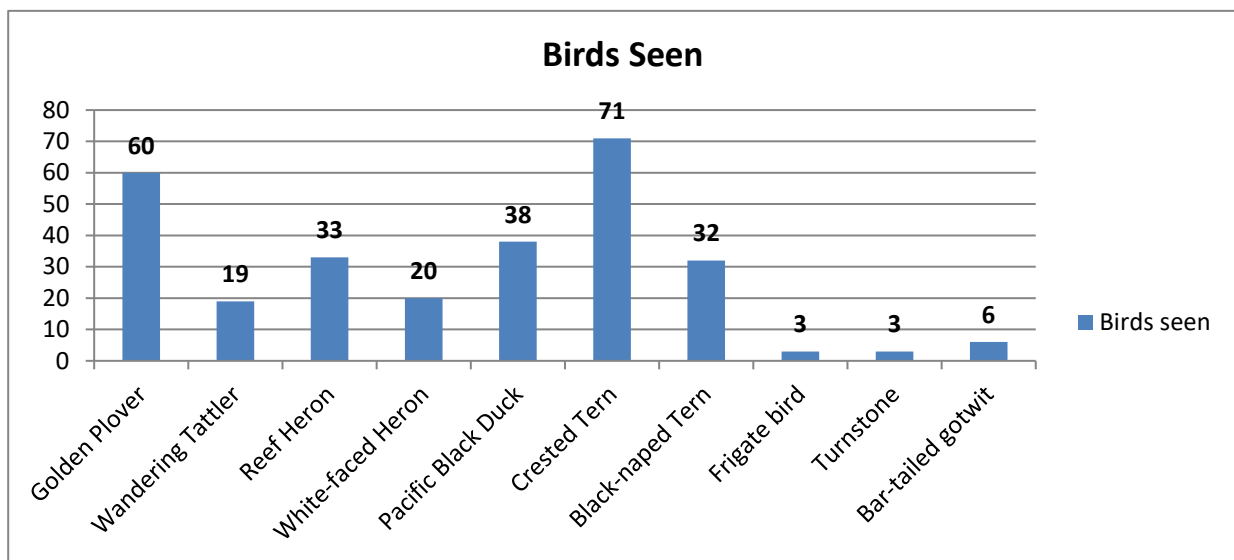


Figure 32: Coastal birds distribution found at Fanga’uta Lagoon from Tonga R2R project (2016) survey of Fanga’uta Status Report (FSR). A total Source: Adapted from FSR, 2017.

6.6.1.1 Bird Photos

The followings are some of the birds photos sited through the Fanga’uta Status Report in 2016-2017 at the Fanga’uta Lagoon Catchment during this reporting period from the Ridge to Reef project funded by GEF/UNDP.



Figure 33: Source: Adapted from Fanga'uta Status Report, 2017.

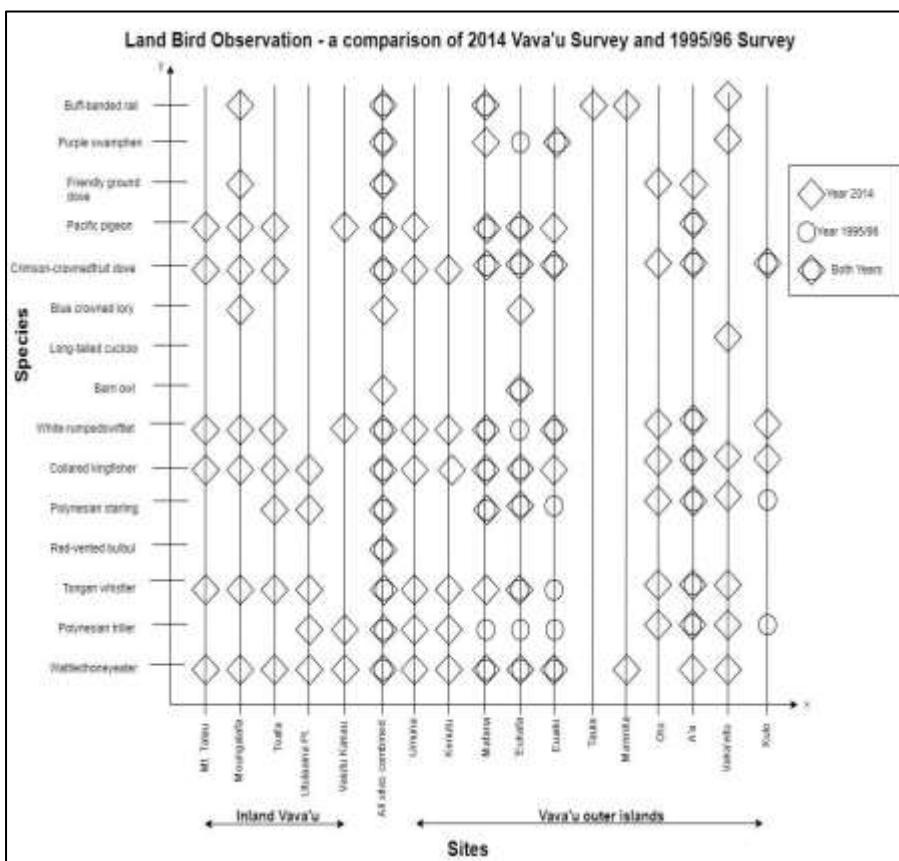
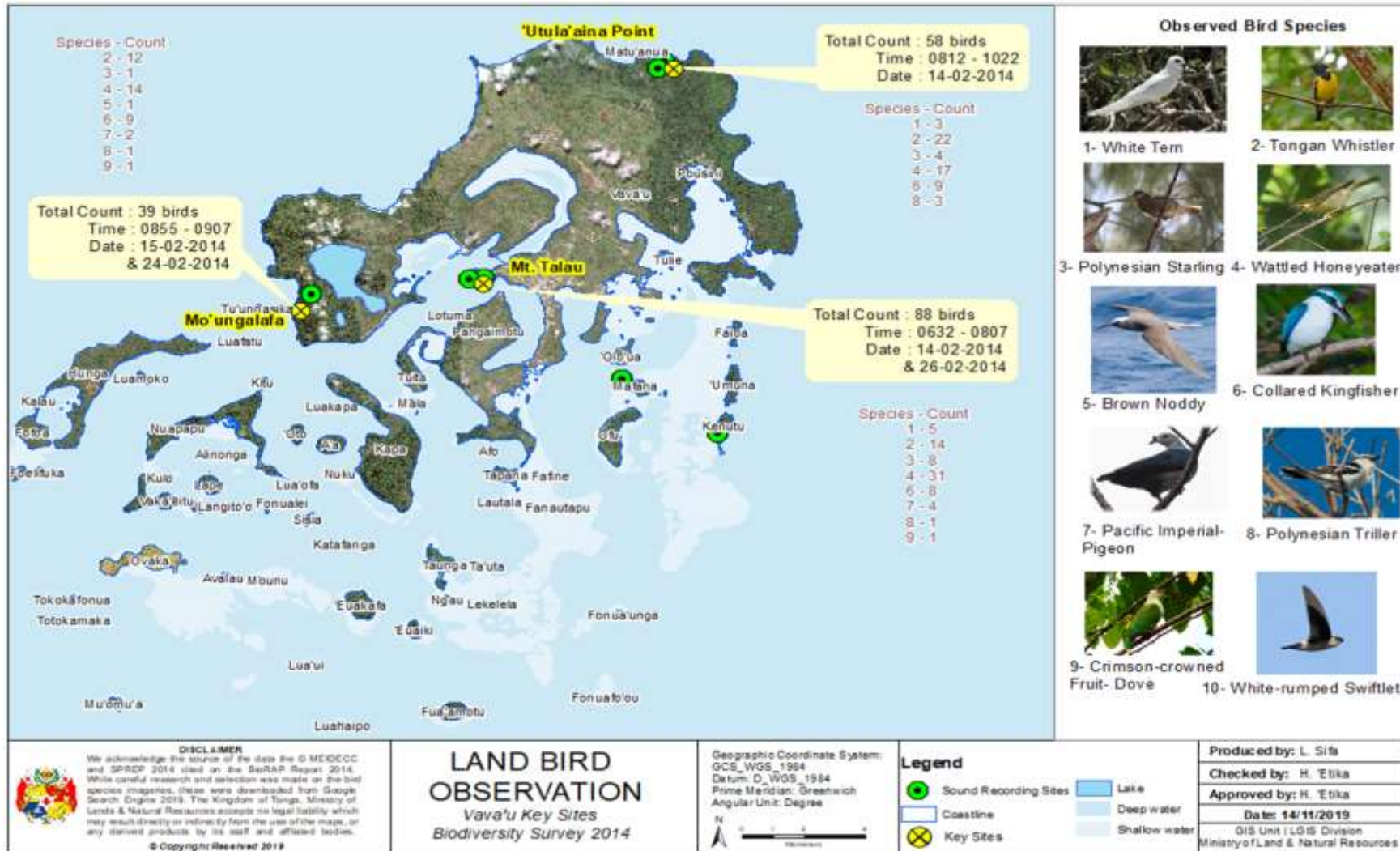


Figure 34: A graph diagram of Land Bird Observation comparing 2014 survey (BioRAP 2014) against the 1995/96 survey by Steadman et al. (1999) as cited by BioRAP (2014). The graph information was extracted from Table 4.1 of the BioRAP, 2014 and drawn into a graph like diagram by GIS Section, MLNR, 2019. Mo'ungalafa (9) and Vaka'eitu (8) Vava'u pose with the highest variety of species recently observed (2014) while other outer islands for instance 'Euakafa, Mafana and A'a shows little change as similar bird species are again observed since 1995/96.

Figure 35: Land Bird Observation made during the Biodiversity Survey in 2014, perhaps this is the most recent record of bird observation for Tonga. Data were plotted by the GIS Section, MLNR 2019 using Table 4.2 and 4.3 of the BioRAP Report 2014.



6.7 Threats and Pressures of Pollution on Biodiversity

6.7.1 Heavy metals

The main threats to human health from heavy metals are usually associated with exposure to lead, cadmium and mercury. These heavy metals are persistent contaminants which cannot be destroyed nor destroyed and tend to accumulate in the atmosphere, land and coastal environment. The general population of Tonga is highly exposed to heavy metals (methyl mercury) *via* consumption of seafood. Previous studies have suggested trace metals contamination in seashells and sediments from the Fanga'uta Lagoon; however, the concentration of heavy metals does not pose a significant to human health. Further study is required to monitor such incident.

Cadmium compounds are mainly used in re-chargeable nickel-cadmium batteries. Cadmium emissions have been estimated to increase since cadmium-containing products are rarely re-cycled but dumped together with household waste. Therefore, it is vital to take precautionary measures to reduce cadmium exposure in the general population in-order to minimize the risk to human health.

Tongans are exposed to lead from air and food. During the last century, lead emissions to air have caused considerable pollution, mainly due to lead emissions from petrol. However, lead in petrol has dramatically declined over the last decades, thereby reducing environmental exposure. The public should also be made aware of glazed food containers, which may leach lead into food.

6.7.2 Pesticides

The use of pesticides is still a common practice to enhance agricultural production in the Kingdom. It is known that over 98% of sprayed insecticides and 95% of herbicides reach a destination other than their target species, including non-target species, air, water, bottom sediments, and food. Inappropriate usage of pesticides has contributed to the increase in pest resistance, killing the natural enemies of pests and increase risk to human health. In the past five (5) years, the Ministry has received numerous complaints regarding pesticides contamination on unintended land and water when sprayed aerially, allowed to run off fields, or leaked from storage tanks or inappropriately discarded. Continuous use of pesticides on intended application area can also affect the soil texture, its ability to retain water and the amount of organic matter contained in it, resulting in a poor crop production.

Import of agricultural chemicals has been increasing over the years and is expected to continue to increase. Effort has been made to reduce the amount of pesticides imported but the lack of appropriate legislation has resulted otherwise.

6.7.3 Litter

Litter is still a serious environmental issue in Tonga, which causes harm to humans, and biodiversity in many ways. Litter threatens human health through water, soil contamination and air pollution. Animal life is threatened through entanglement, suffocation and ingestion and destruction of habitats. It is widely recognized that littering causes visual pollution with negative effects on tourism and general aesthetics. To address the problems associated with littering, the government of Tonga enacted the Waste Management Act in 2005 and followed by the enactment of the Hazardous Waste and Chemicals Act in 2010 and the Litter and Waste Control Regulation 2016 and, which requires an approach to the proper management and potentially hazardous materials and chemicals.

6.7.4 Solid Waste

Solid waste is a major concern in Tonga. Plastic bags threaten marine life, chemicals threaten plants and wildlife and pollute freshwater with the runoff affecting the marine environment. This is a direct threat to biodiversity and can have an adverse impact on human health. Components of solid waste management such as recycling, commercial and household composting, rehabilitation of landfills and waste-to-energy initiatives have been implemented in Tongatapu and Vava'u Islands. The lack of appropriate landfill in Ha'apai, 'Eua and the two Niuas makes it difficult to properly managed solid waste in those Islands.

6.7.5 Petroleum

Petroleum is a major threat because it is toxic to almost all forms of life. Petroleum is mainly used in Tonga for transportation, heating for homes and commercial activities. Due to the toxicity of petroleum, it is known to have caused cancer and birth defects amongst humans and lethal to fish, birds and mammals when ingested or absorbed through gills, plumage or fur, interfere with respiratory systems, smother communities, habitats and bathing beaches, taint seafood and contaminate water supplies.

Oils spill from ships is not a serious issue in Tonga. Ships wrecks, accidental leakage of oils from ships as well as Oil tanker accident have reported in Tonga during the last few years but considered a minor incident.

Waste oil is an issue in Tonga because of the lack of facility to properly store and dispose of such waste.

According to the Marine and Ports, Petroleum companies can only store and dispose of waste oil from their clients. This procedure does not apply to non-clients. Waste oil from vehicles can drip into streets and roads, contaminating soil and drinking water and storm water runoff carries waste oil into the sea, poisoning marine life.

6.7.6 POPs

Persistent organic pollutants (POPs) are organic compounds that are toxic, persistent, bio-accumulate, long-range transport and deposition, and to have adverse environmental and human health effects. Many POPs were used in Tonga as pesticides; others are used in industrial processes such as power stations. Majority of the POPs are created by humans either intentionally or by-products (POPs dioxins and furans) (see below Table).

Table 12: Persistent Organic Pollutants (POPs) in Tonga (Source: National Implementation Plan (NIP), 2009)

No	Name of POPs	Levels of POPs
1	DDTs	792 ng/g fat
2	PCBs	7.28 ng/g fat
3	HCB	5.7 ng/g fat
4	Chlordane	2.2 ng/g fat
5	Dieldrin	1.1 ng/g fat
6	PCDDs	27 pg/g fat
7	PCDFs	0.2 pg/g fat

The known source of POPs chemical PCBs in Tonga is the transformer oil. Transformers at the Popua Power station contained 1000 liters of PCB oil and it is possible that it might have leaked to the nearby coastal marine environment.

It was estimated that the annual release of Dioxins and Furans was 24.3g TEQ which was mainly from uncontrolled combustion processes such as burning waste at the landfill, domestic waste burning, accidental fire, agricultural burning etc.

6.7.7 Nutrients

Over supply of nutrients in the environment can cause excessive plant and algae growth. Eutrophication, as this process is called, may cause imbalances in population numbers and other nutrients that can be harmful to certain species. For example, excessive algal growth reduces oxygen available for fish to breathe. Causes include water pollution from sewage and runoffs from agricultural lands.

The public consultations conducted in 2013, indicated an increase in sea grasses in Ha'atafu, Tongatapu and mangroves in Holeva, Vava'u and a decline in stony corals were to some extent attributed to eutrophication from urban nutrient run-off. However, the Fanga'uta Status Report of 2016 advised that

6.7.8 Sedimentation

Excessive sediment loads continues to bury benthic communities and threaten sensitive habitats such as coral reefs, mangroves, sea grass beds, and rocky substrates especially in Tefisi, Vava'u and 'Ohonua, 'Eua and in Fanga'uta Lagoon catchment area. Sources of sedimentation include construction activities, forestry operations, agricultural practices, dredging activities, and coastal erosion.

6.7.9 Sewage

Classes of sewage include sanitary, commercial, industrial, agricultural and surface run-off. Sewage that is not properly treated before discharging to the environment can cause varieties of concerns. Surface run-off from land or un-point source may carry sewage into the coastal environment. Pathogens from sewage can cause human health problems through exposure via swimming or through contaminated shellfish. Suspended solids also affect the photosynthetic process in the coastal environment nutrient inputs, which may result in algal bloom.

Environmental effects associated with domestic sewage discharges are generally local and concentrated in areas with high coastal population. Domestic sewage discharges in Tonga are considered one of the most significant threats to coastal environments such as Fanga'uta Lagoon areas in Tongatapu and Neiafu Harbour areas in Vava'u.

There are currently two-sewage treatment facility in Tongatapu, one located at Tapuhia Landfill (both for domestic and commercial sewage) and the other one at Liahona High School.

6.7.10 Responses to Pollution

6.7.10.1 Institutional, policy and regulatory framework

Relevant legislative functions and responsibilities for protection of biodiversity from pollution are vested in different institutions (Appendix 4). Similar to other natural resources in Tonga, protection of biodiversity is fragmented among several government agencies. Agencies that have responsibilities and roles to play in the biodiversity areas are the Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communications; Ministry of Agriculture, Food, Forestry, Ministry of Fisheries, Ministry of Lands and Natural Resources, Ministry of Infrastructure and Ministry of Commerce, Consumer, Trade, Innovation and Labour.

Decision-making and implementation is also fragmented and lacks coordination. The Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communications coordinates policy making regarding all environmental issues. The Ministry of Lands and Natural Resources coordinates policy making regarding land, coastal area, sea beds and natural resources, however, the imports and exports of pesticides and management of forestry in Tonga are the responsibility of the Ministry of Agriculture, Food, Forestry, while the control, development and management of fisheries resources are the responsibility of the Ministry of Fisheries. Other government agencies, such as the Ministry of Foreign Affairs, Ministry of Finance and National Planning and Prime Minister's Office, are key agencies for setting national priorities, coordination and negotiations at the national and international level.

Currently, there is no umbrella legislation in Tonga that manages the protection of biodiversity from pollution. The existing legislations prescribe procedures for the management of some pollutants and penalties to deter non-compliance, but due to the lack of appropriate regulations, scientific research and monitoring on the impacts of pollution on biodiversity, and the lack of enforcement, it is difficult to ensure compliance and prosecute non-compliance.

Policy decisions approved by Cabinet or Privy Council also determine the mandate of each Ministry/Department. There are over 20 legislations containing provisions of environmental importance. However, despite the good intentions of the legislation, law enforcement has been difficult due to the lack of finance, equipment and manpower for implementation and enforcement. On the other hand, most of the legislation that has provisions for environmental protection and conservation are outdated and in need of revision.

6.7.10.2. Relevant international commitments and obligations

Tonga is a party to several international Conventions related to pollution control and management (see Annex 2).

6.7.10.3 Regional and National Committees

The committees listed on Table 2.2 have been established by Cabinet direction with the role of coordinating development programs.

Table 13: National committees coordinating development programs

NAME OF COMMITTEE	EFFECTIVE DATE
National Public Health Advisory Committee	1996
'Eua Development Committee	
Cabinet Waste Management Committee	2006
Chemical Infrastructure Management Committee	2002
Coordination Committee for Environmental Projects	2005
National Monitoring Committee	1998
National Disaster Management Committee	2004
Parks Authority	1996
National Chemical Profile	1999
Environmental Assessment Committee	2003
National Ozone Advisory	2004
Cabinet Committee on Climate Change	2007
National Landscaping Committee	2016

7.0 Mechanism for Monitoring and Reviewing Implementation

The Department of Environment under the Ministry of Environment and Climate Change is the responsible agency for monitoring and implementing the NBSAF for Tonga. A Coordinating Committee for Environment is established at national level mainly to oversee all related environmental and climate change affairs in the country. Furthermore, it has established its Tonga Environment Data Portal through regional assistance with SPREP in which various biodiversity related data are made available, and this is a result of the Clearing House Mechanism target in Tonga NBSAF.

With regards to Monitoring and Evaluation, Tonga follows closely the indicators advised in its NBSAF to ensure its achieve its national vision and goals. Its Technical Worknig Group provide technical support to its to the National Coordinating Committee who meets according to various project-based programs to be informed of development and needs. The latest updates and results is advised to the Environment Standing Committee of the Parliament for Tonga in which the Minister for Environment, briefs and informs all members of Parliament when the House of Parliament is in session. All new developments with environmental concerns is advised to the Cabinet for their consideration and approvals.

Furthermore some of the national sectors have their national strategy implementation plans which were mentioned in earlier sections of this report, that has goals and objectives link to ecosystem resiliency which is also monitored and reported through their programs and annual reports.

8,0 References

- Aholahi, H., Aleamotu'a, P., Butler, D.J., Etika, H., Faka'osi, T., Hamani, S., Helu, T.M., Hokafonu, T.F., Kaly, U., Kautoke, R.A., Manu, V.T., Matoto, A.L. & Ma'u, P. (2017). *Status of Fanga'uta lagoon in 2016*. Report for United Nations Development Programme (UNDP), 42pp. Department of Environment, MEIDECC. Nuku'alofa, Tonga.
<https://drive.google.com/file/d/1xNCjJ0djdGoilr30Dz8I6lXNjiHqLKbe/view>
- Atherton, J. (2014, October). *Operational plan: Toloa rainforest restoration project 2014-2020*.
https://drive.google.com/file/d/1mp5H0gMKCLrNALV0OKGbpq29udX4_bk/view?usp=sharing
- Atherton, J., & McKenna, S. (eds.). (2014, October). Ministry of Environment, Energy, Climate Change, Disaster Management, Meteorology, Information and Communication and Secretariat of the Pacific Regional Environment Programme, *Rapid biodiversity assessment of the Vava'u archipelago*, Kingdom of Tonga. SPREP. Apia, Samoa. 356pp.
https://drive.google.com/file/d/1AopSXPZFihx4EYTajQqsXs5P9_oNNnEJ/view?usp=sharing
- Bio, A., Bastos, L., Granja, H., Pinho, J. L., Concalves, J. A., Henriques, R., . . . Rodrigues, D. (2015). Methods for coastal monitoring and erosion risk assessment: Two Portuguese case studies. *Journal for Integrated Coastal Zone Management*, 47-63.
- Catherwood, V. & Levine, V. (2004, April). *Tonga education policy framework 2004-2019*.
http://planipolis.iiep.unesco.org/sites/planipolis/files/ressources/tonga_final-draft_policy_framework_2004-2019.pdf
- Department of Consortium of Pacific Herbaria, University of Hawaii. (2015). *Tonga National Herbarium (TON)*. <https://serv.biokic.asu.edu/pacific/portal/collections/misc/collprofiles.php?collid=8>
- Environmental Impact Assessment Act 2016* (CAP47.04) s.3.7. (Tonga).
<https://drive.google.com/file/d/12taMsBwFpG4goMRLXDKsYixO6E8kANvW/view?usp=sharing>
(Tonga env Portal)
- Evaluation Office of United Nations Environment. (2017, March). *Terminal evaluation of united nations environment project: Prevention, control and management of invasive alien species in the Pacific Islands*.
https://www.sprep.org/sites/default/files/documents/publications/3664_2017_terminal_evaluation%20un_environment_project_prevention_control_management_is_pacific_0.pdf
- Fa'u, S., Fotu, T., Helu, T.M., Hokafonu, T.H., Kaly, U., Kara, P., Kato, V., Kautoke, R. A., Kula, T., Kupu, I.F., Malimali, S., Manu, V.T., Matoto, A.L., Ma'u, P., Talia'uli, A., & Taufua, S.T. (2015). *Status of fanga'uta lagoon in 2015: Report for United Nations Development Programme*, Department of Environment, Nuku'alofa, Tonga.
<https://drive.google.com/file/d/138y9Q4F8xO2lavmc5sIQIMQQ0zWq1vPT/view?usp=sharing>
- Fonua, P. (2018, December 8) 37 Tongans receive Australian scholarships for 2019. *Matangi Tonga online*
<https://matangitonga.to/2018/12/08/37-tongans-receive-australian-scholarships-2019>

Food and Agriculture Organization of the United Nations. (2016). *Forests and forestry sector Tonga*.
<http://www.fao.org/forestry/country/57478/en/ton/>

Forests Act 2016 (CAP.44.04)s.2.3 (Tonga).

<https://drive.google.com/file/d/1bc3LzBJAGTmC4CNvrHR3wvjYQZ8ml0kR/view?usp=sharing>

Fotu S. & Hokafonu, T. (2016). Tonga ridge to reef: Integrated management plan for fanga'uta lagoon catchment area. Newsletter Vol 2 (2) Department of Environment, Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communications.
<https://drive.google.com/file/d/1N8GGgnXLKu5vvgax7JCaifruOmZM3ubV/view>

Gassner P., Westerveld L., Fonua E., Takau L., Matoto A. L., Kula T., Macmillan-Lawler M., Davey K., Baker E., Clark M., Kaitu'u J., Wendt H. & Fernandes L. (2019). *Marine atlas: Maximizing benefits for Tonga*. MACBIO (GIZ/IUCN/SPREP): Suva, Fiji. 84pp.
<https://drive.google.com/file/d/1gOwb30TT7TrKrAUfDS8d51iPa18QqSeh/view>

Geological Information System Unit, 2019, Ministry of Lands and Natural Resources, Tonga

Gillet, R. D. (1997). Cause of Coastal Erosion in Pacific Island Nations. *Coastal Education and Research Foundation, Inc*, 173-204.

Gillet, R. (2017, April). A review of special management areas in Tonga, Food and Agriculture Organization of the United Nations, *Fisheries and Aquaculture Circular SAP/ C1137 (En)*.
<http://www.fao.org/3/a-i7278e.pdf>

Government of Tonga. (2010, June). *Tonga energy road map 2010 – 2020*.

<https://drive.google.com/file/d/1CJWK3XVkfT441TM3GN43D1fqPKv3RDM/view?usp=sharing>

Khan, Z. (2016, October). *Launching of the coastal protection project 2016*. Ministry of Information and Communications, Tonga.
http://www.mic.gov.to/index.php?option=com_content&view=article&id=5628:-coastal-protection-project-opened-in-tonga

Kitekei'aho, F. (1993). *Monitoring Coastal Changes on Tongatapu*. Suva, Secretariat of the South Pacific (Technical Report)

Leanne. M. (2019, June) *First national CITES workshop held in Tonga*, Secretariat of the Pacific Regional Environment Programme news. <https://www.sprep.org/news/first-national-cites-workshop-held-in-tonga>

Malm, T. (2009, July). Women of the coral gardens, the significance of marine gathering in Tonga, Secretariat of the Pacific Community, *Traditional Marine Resources Management and Knowledge Information Bulletin #25*. https://tongadata.sprep.org/system/files/Trad25_02_Malm.pdf

Ministry of Agriculture Food and Forests. (2016). *Annual Report 2015-16*.

https://drive.google.com/file/d/1tPHa_1rj8HqRnOVkVWlywnK0WrP4UVui/view?usp=sharing

Ministry of Agriculture Food and Forests. (2017). *Annual Report 2016-17*.

https://drive.google.com/file/d/1Zgg-Pj2LMOmFVjPx_4SovAdX8rt_d2aD/view

Ministry of Agriculture Food and Forests. (2018). *Annual Report, 2017-2018*.

<https://drive.google.com/file/d/1vbhHBg3LDAKWPSUWji4EwxvE7LwtQee/view?usp=sharing>

Ministry of Agriculture Food and Forests. (2014). *Corporate plan and budget 2014/15-2016/17*.

<https://drive.google.com/file/d/1LX-IDT6a9kbq4BRBZA3d8fJu1shLDY/view?usp=sharing>

Ministry of Agriculture Food and Forests. (2020). *Corporate plan and budget 2020/21 – 2022/23*.

https://drive.google.com/file/d/1Mlo3V97_nUe9U4BiH69J2tkECWcU80X/view?usp=sharing

Ministry of Agriculture, Food and Forestry. (2009, December). *National forest policy for Tonga*.

<https://www.lse.ac.uk/GranthamInstitute/wp-content/uploads/laws/4756.pdf>

Ministry of Agriculture, Food, Forestry and Fisheries and Secretariat for the Pacific Community. (2009).

Code of harvesting practice for the 'Eua forestry plantations 2009. <http://mafff.we.bs/wp-content/uploads/2016/05/Eua-Code.pdf>

Ministry of Agriculture, Food, Forestry and Fisheries. (2016). *Tonga agriculture sector plan 2016-*

2020. https://drive.google.com/file/d/1NgMqSnTCQZJ0r6hfv46_WbdCYaOcFnqU/view?usp=sharing

Ministry of Agriculture, Food, Forestry and Fisheries and Tonga Statistics Department and Food and Agriculture Organization of the United Nations. (2015, December). *Tonga national agricultural census main report*. <https://drive.google.com/file/d/1Honph85R7PySUo-pZ1FAHpWE-TSNuI6b/view?usp=sharing>

Ministry of Education and Training. (2017). *Corporate plan and budget 2017-2020*.

<https://drive.google.com/file/d/10uo0RkevUMa5jJrKqUV4E4wv81uIytm/view?usp=sharing>

Ministry of Education and Training. (2013). *Report for the ministry of education and training 2013*.

<https://drive.google.com/file/d/1nkBGHaCCY7WvC1IIOJJuE61n1UGKgwnN/view?usp=sharing>

Ministry of Education. (2004). *Tonga education policy framework 2004 – 2019*.

<https://uil.unesco.org/fileadmin/keydocuments/LifelongLearning/en/tonga-2004-abstract-III-policy.pdf>

Ministry of Environment and Climate Change. (2009). *A national implementation plan for the Stockholm*

Convention on persistent organic pollutants, Tonga. <https://www.informe.org/en/tonga-national-implementation-plan>

Ministry of Finance and National Planning. (2015, May). *Tonga strategic development framework II (2015-2025) A more progressive Tonga: Enhancing our inheritance*.

<https://drive.google.com/file/d/1ZyS4Vs3VslzKmyo9SyBD4GSw0SZOCcsr/view?usp=sharing>

Ministry of Fisheries. (2016). *Annual report fiscal year 2015/2016*.

<https://drive.google.com/file/d/1dhrFQoHIDAZIRCWXmECqrr8kUxABLupU/view?usp=sharing>

- Ministry of Fisheries. (2019). *Annual report 2019*. Nukualofa, Tonga
- Ministry of Fisheries. (2020). *Tonga fisheries sector plan: Tonga special managed areas report*.
https://drive.google.com/file/d/1xTCUsWwEbckaa42OhT9RWM9x_okz9A3Y/view?usp=sharing
- Ministry of Fisheries and Pacific Islands Forum Fishing Agency. (2013, November). *Tonga national plan of action shark plan (2014-2016)*.
<https://drive.google.com/file/d/12ztcQTDVRxuiTDpygKlZLrsRUyMmgqd/view?usp=sharing>
- Ministry of Infrastructure. (2016). *Revised corporate plan 2016-2018*.
<https://drive.google.com/file/d/1Zb7OLzWquL2fssV8GRuCLrkSIR1Edm/view?usp=sharing>
- Ministry of Lands Environment, Climate Change and Natural Resources. (2013). *Field surveys to complete the permanent vegetation plots on 'Eua national park 2013*.
<https://drive.google.com/file/d/1GezRX2IG6Emgi3r72ajaNpNeShEgP2qk/view?usp=sharing>
- Ministry of Lands, Environment, Climate Change and Natural Resources. (2014). *Tonga national invasive species strategy and action plan (2014-2020)*. <https://drive.google.com/file/d/1unJuul-IwCaRU1319kCs1WdhF70JDenz/view?usp=sharing>
- Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communications. (2019, July). *Annual report for the minister: Fiscal year 2017-2018*.
https://drive.google.com/file/d/1AbpXIgi0YKY1OvEdvjdBW7YcVfi_TXeA/view?usp=sharing
- Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communications. (2019, October). *Minister's annual report: Fiscal year 2018-2019*.
https://drive.google.com/file/d/1zKzLoGiJjxaAYKhUcj_RD8yewDU8xyIJ/view?usp=sharing
- Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communications. (2016, March). *Corporate plan and budget 2016-2019*.
<https://drive.google.com/file/d/1Gi5bYHIQiqAezkePPG1TVdFHWSg9IAre/view?usp=sharing>
- Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communications. (2019, January). *Corporate plan and budget 2019/20 – 2021/22*. <https://drive.google.com/file/d/1O5FN6zVR1uxu8kkvP6wTTrxUhwaAIA0o/view?usp=sharing>
- Moore, B., Bossernelle, P., Mailau, S., Vi, S., Fonua, S., Havea, T., & Malimali, S. (2017). *The status of sea cucumbers in the Kingdom of Tonga in 2016*, Secretariat of the Pacific Community, Noumea, New Caledonia and Ministry of Fisheries, Government of Tonga.
https://tongadata.sprep.org/system/files/Moore_17_sea_cucumber_tonga.pdf
- Moore, B., & Malimali, S. (2016). *Demographic assessment of exploited coastal finfish species of Tongatapu*, Secretariat of the Pacific Community, Noumea New Caledonia and Fisheries Department, Ministry of Agriculture, Food, Forest and Fisheries, Government of Tonga.
https://tongadata.sprep.org/system/files/Moore_16_Demographic_assessment_coastal_fish_Tonga.pdf

- Muldoon, J., Bing, R., Fonua, E., Fernandez, L. (2016, March). *Review of legislation, policies, strategies and plans relating to the use of management of the ocean of Tonga: Marine and coastal biodiversity management in Pacific Island Countries, MACBIO Project*.
https://drive.google.com/file/d/122WmR_BaOH09CiCB0MIIUITIC0Wd4W/view?usp=sharing
- Pole, F. S. (2015) *Traditional Tongan farming system: Past and present*. https://www.unesco-ichcap.org/eng/ek/sub10/pdf_down/032.%20Traditional%20Tongan%20Farming%20System%20Past%20and%20Present.pdf
- Salcone, J., Tupou-Taufa, S., Brander, L., Fernandes, L., Fonua, E., Matoto, L., Leport, G., Pascal, N., Seidl, A., Tuivai, L., & Wendt, H. (2015). *National marine ecosystem service evaluation: Summary report Tonga*. https://drive.google.com/drive/u/1/folders/1Cghff6JBco5GHCTIcSujDchYb5t_Fc7a
- Secretariat for the Pacific Community. (2020). *Tonga international waters-ridge to reef project*.
<https://www.pacific-r2r.org/partners/member-countries/tonga>
- Secretariat for the Pacific Community and the Government of the Kingdom of Tonga. (2014). *Global climate change alliance: Pacific small island states project design document*.<https://www.pacificclimatechange.net/sites/default/files/documents/2.%20Tonga%20PDD.pdf>
- Secretariat for the Pacific Community and Ministry for Primary Industries. (2017, June). *Tonga marine aquarium fishery management and development plan 2017-2019*.
https://drive.google.com/file/d/1wJiHZ_zR-hopcm0ESUPTrszub0bvAkQ/view?usp=sharing
- Secretariat of the Pacific Regional Environment Programme. (2014, February). *Rapid biodiversity assessment Vava'u group – Kingdom of Tonga: Synthesis report key findings and recommendations*.
<https://drive.google.com/file/d/1V8WaGx9MTRf3RN20T0WqXWq-8wuluNEP/view?usp=sharing>
- Secretariat of the Pacific Regional Environment Programme and Kingdom of Tonga. (2019). *Tonga state of environment report, 2018*, Apia, Samoa. <https://www.environment.gov.to/wp-content/uploads/2020/06/Tonga-SOE-digital.pdf>
- Secretariat for the Pacific Environment Programme. Tonga Environment Data Portal. Environmental Information for Decision Making. (2018). *Datasets*. <https://tonga-data.sprep.org>
- Smallhorn-West, P. (2020). *Assessing the impact of coral reef community management in the Kingdom of Tonga* [unpublished Doctor of Philosophy thesis]. James Cook University.
<https://drive.google.com/file/d/1IWdy3SAAtO87Z87Q7OeEERsgXhc8CAYi/view?usp=sharing>
- Smallhorn-West P.F., Bridge, T.C.L., Malimali, S., Pressey, R.L., & Jones, G.P. (2018). Predicting impact to assess the efficacy of community-based marine reserve design. *Conservation Letters*. 2018;e12602.
<https://doi.org/10.1111/conl.12602>

- Smallhorn-West, P.F., Gordon, S.E., Dempsey, A.C., Purkis, S. J., Malimali, S., Halafihi, T., Southgate, P. C., Bridge, T. C. L., Pressey, R. L., & Jones, G. P. (2019). *Tongan socio-environmental spatial layers for marine ecosystem management*. [dataset]. PANGAEA. <https://doi.org/10.1594/PANGAEA.904800>
- Smallhorn-West, P., Sheehan, J., Rodriguez-Troncoso, A. P., Malimali, S., Halafihi, T., Aisea, L., Mailau, S., Le'ota, A., Ceccarelli, D., Stone, K., Pressey, B. & Jones, G. (2020). *Special management area report 2020*. https://drive.google.com/drive/u/1/folders/1Cghff6JBco5GHCTIcSujDchYb5t_Fc7a
- Tatafu, L. (Director, Narrator and Editor) Ulakai, S. (Director and Editor) & Veikoso, E. (Producer). (2020). *Tonga marine spatial plan 2020 progress* [video recording] <https://drive.google.com/file/d/1xdfE3OmNgZ8m2slGGHS3RNvuLQCoUss/view?usp=sharing>
- Tonga. Coastal Resources Division, Ministry of Lands, Environment and Natural Resources. (2016). *Tongatapu integrated coastal management, principle, case studies and lesson learned*. <https://tongadata.sprep.org/system/files/Tonga%20Integrated%20Coastal%20Management%202016.pdf>
- Tonga. Department of Climate Change. Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communication. (2018, May). *Joint national action plan 2 for climate change and disaster risk management 2018-2028*. https://drive.google.com/file/d/1YL9kirzUVMn4cYt_P0e8WeCM0U4BpGR/view?usp=sharing
- Tonga. Department of Climate Change. Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communication. (2015, December). *Intended nationally determined contributions: Towards achieving the objective of the United Nations Framework Convention on Climate Change*. <https://drive.google.com/file/d/1zXx4MZ1VoR8k0GfhZY74xYYzqgMTzPGM/view?usp=sharing>
- Tonga. Department of Climate Change. Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communication. (2019, December). *Third national communication on climate change report, Tonga*. https://www4.unfccc.int/sites/SubmissionsStaging/NationalReports/Documents/158047_Tonga-NC3-1-Final%20TNC%20Report_December%202019.pdf
- Tonga. Department of Environment. Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communication. (2014, March). *Kingdom of Tonga's fifth national report to the convention on biological diversity*. <https://drive.google.com/file/d/1t8Qd506qxjdb3EHBAgPRmLCQigzOrly/view?usp=sharing>
- Tonga. Department of Environment. Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communication. (2017). *Fanga 'uta Stewardship Plan: A healthy lagoon reflects a healthy land and people*. https://drive.google.com/file/d/1swN_B77Hh6OOS0xDliE1wGwOr2xsWEK/view?usp=sharing

- Tonga. Department of Environment. Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communication. (2016). *Integrated Island Biodiversity Project: Marine Ecosystem Health Monitoring Program 2016*
<https://tongadata.sprep.org/system/files/Draft%20Vava%27u%20Ecosystem%20monitoring%20Report%202016.pdf>
- Tonga. Department of Environment. Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communication. (2018). *Marine Monitoring of the Neiafu Harbour and Outer Islands of the Vava'u Archipelago*.
<https://drive.google.com/file/d/1g7OI9MOLuMpdS1ojQyA8gAt7BoFLc8NQ/view>
- Tonga. Department of Environment. Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communication. (2020, March). *Tonga cabinet decision #246: Draft map of ocean management areas for Tonga: Marine spatial plan*
<https://drive.google.com/file/d/1oROxAyXmxF8BiRjDcfMiVEMWoeEgY6p/view?usp=sharing>
- Tonga. Department of Environment. Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communication. (2018). *Draft National biodiversity strategy and action framework to 2030*.
https://drive.google.com/file/d/1Mkat4_qRazAQ0qeSrraplLzm9Qjhg4U/view?usp=sharing
- Tonga. Department of Environment. Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communication. (2018, May). *Marine spatial planning: The oceans 7 process in Tonga*.
http://macbiopacific.info/wpcontent/uploads/2018/04/TO_MSP_Process_Brief_V7_May2018.pdf
- Tonga. Department of Environment. Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communication. (2019). *Annual progress report for strengthening protected area management project in Tonga 2019*.
<https://drive.google.com/file/d/1z9hKNXRdRPWjp-FvjQphJpwnHopLdSF/view?usp=sharing>
- Tonga. Department of Environment. Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communication. (2015). *Annual Report 2015-2016*.
https://drive.google.com/file/d/1cRD5Xdwhf_oZeHmgLpQB_QIsG_C0J5zA/view?usp=sharing
- Tonga. Forestry Division. Ministry of Agriculture, Food Forestry and Fisheries. (2010). *Code of practice for sustainable management of forests and tree resources in Tonga 2010*. <http://mafff.we.bs/wp-content/uploads/2016/05/Code-of-Practice-for-the-Sustainable-Management-of-the-Forests-and-Tree-Resources-of-Tonga.pdf>
- Tonga. Forestry Division. Ministry of Agriculture, Food and Forestry. (2017). *Management plan for the forests and tree resources of Tonga 2017*.
https://drive.google.com/file/d/1UubgiibGmjda020m7BU5Gw_9MXcLIWo7/view?usp=sharing
- Tonga. Natural Resources Division. Ministry of Lands and Natural Resources. (2020). *Coastal resources management section*. <https://www.naturalresources.gov.to/our-programmes/coastal-resources-management-section/coastal-resources-management-section>

- Tonga. Prime Minister's Office. (2019). *Kingdom of Tonga voluntary national review 2019*. Nuku'alofa, Tonga.
https://sustainabledevelopment.un.org/content/documents/23588Kingdom_of_Tonga_Voluntary_National_Review_2019_Report_web.pdf
- Tonga. Prime Minister's Office. (2019, January). *Government Priority Setting 2019/2020 – 2021/22*. Nuku'alofa Tonga.
https://drive.google.com/file/d/153AnqYP_ArnkcPZCEbli8BnQeI5b65n8/view?usp=sharing
- Tonga. Statistics Department. (2016). *Agriculture Census*. <https://tongastats.gov.to/census/agriculture-census/>
- Tonga. Statistics Department. (2015). *Better Data Better Lives 2015*. <https://tongastats.gov.to/>
- Tonga. Statistics Department. (2016). *Population Statistics*. <https://tongastats.gov.to/statistics/population-statistics/>
- Vainikolo, E.L.C. (n.d). *Food and Agriculture Organization of the United Nations: Country Report: The State of Tonga's Biodiversity for Food and Agriculture*.
<http://www.fao.org/3/CA3503EN/ca3503en.pdf>
- Wilkinson, G. (2016, February). *Options for strengthening regulatory framework for sustainable management of the forest and tree resources of Tonga*.
https://drive.google.com/file/d/0B_FF6NUWmJr1dkdIUnpfVFBFTmM/view

Annexes

Annex 1: Maps of Tourist Sites in Tonga



Figure 2.17: Tourist map of Tongatapu depicted the historical and significant sites which attract tourists.



Figure 2.18: Tourist map of Nuku'alofa area, the capital of Tongatapu, illustrating relevant public service facility's locations for convenience of the tourists (LGIS, MLNR 2019).



Figure 2.19: This depicts the historical and significant sites exist at Pangai Ha'apai to reflect activities been undertaken to attract and meet tourists' aspirations.

Figure 2.20: Tourist map of Vava'u group, with relevant scenic sites and available public services for tourists.



Figure 2.21: shows the tourist map of Niuafu'ou and Niuatoputapu Island with its attractive tourist sites.



Figure 2.22: shows the tourist map of Niuafu'ou and Niuatoputapu Island with its attractive tourist sites

Annex 2: International Conventions relevant to Pollution Control and Management

Table 2.1 International Conventions relevant to Pollution Control and Management

INTERNATIONAL AGREEMENT	DATE SIGNED	DATE RATIFIED/ACCEDED	ROLE OF MINISTRY
Waigani Convention	16 September 1995	22 May 2002	Focal Point
Marine Pollution Convention		1 May 1996	Co-implementing Agency with Marine & Ports
United Nations Convention on Biological Diversity		19 May 1998	IA
United Nations Framework Convention on Climate Change		20 July 1998	IA
Kyoto Protocol		January 2008	IA
United Nations Convention to Combat Desertification		20 July 1998	IA
Vienna Convention for Protection on Ozone Layer		29 July 1998	IA
Montreal Protocol		29 July 1998	IA
London Amendment		26 November 2003	IA
Copenhagen Amendment		26 November 2003	IA
Beijing Amendment		26 November 2003	IA
Montreal Amendment		26 November 2003	IA
Stockholm Convention on Persistent Organic Pollutants	22 May 2002	9 September 2009	National Focal Point
Protocol to the Convention on the Prevention of Marine Pollution by Dumping Wastes and other Matters		18 September 2003	Co-implementing Agency with Marine & Ports
Cartagena Protocol on Biosafety		18 September 2003	IA, Competent Authority, Clearing House Mechanism
Basel Convention		26 March 2010	IA
Rotterdam Convention		31 March 2010	IA

Minamata Convention		22 October 2018	IA
---------------------	--	-----------------	----

List of Figures and Tables

i. Figures:

Figure 1: Map of the Kingdom of Tonga. (Source: GIS Section, MLNR, 2019)	14
Figure 2: The extent of the Kingdom of Tonga, showing island groups where status, threats and trends of Biodiversity are clearly identified and illustrated in this Report. (Source: MLNR, 2019)	16
Figure 3: Land-use around Fanga'uta lagoon in the main island of Tongatapu (Source: MLNR, 2019)	19
Figure 4: Summary of Actions and Measures distribution in the 9 Thematic Areas of Tonga's NBSAF40	
Figure 5: Types of measurements and actions implemented under the Thematic areas of Tonga's NBSAF	41
Figure 6: National measurements matching Aichi Biodiversity targets.....	41
Figure 7: National targets linking to SDGs.....	42
Figure 8: The Special Management Network by end of 2018	44
Figure 9: Overall impact of Tonga's SMA program on reef fish (Source: Ministry of Fisheries)	46
Figure 10: Overall impact of Tonga's SMA program on reef fish (Source: Ministry of Fisheries)	46
Figure 11: TNYC farm projects, Tongatapu	48
Figure 12: From L-R; Green Grant workshop in Nukujleka village with Vai ko Sia group on their integrated project on SMA alternative livelihood project; Country program Straetgy for GEF SGP Operational phase 7 workshop; and SMA Environment of Women dialogues	49
Figure 13: These are pictures from various villages and island groups in Tonga during the 'Tonga Masani' national cleaning up program of the Ministry of Tourism	51
Figure 14: Top left: Keyhole vegetable gardens. Top middle: Innovative use of coconut husks on reclaimed allotments with limited fertile soil; Top right: plastic gardening- recycling waste to garden food. Bottom: aerial view of project site in wetlands	52
<i>Figure 15: Left- Monitoring manual for FL catchment area in 2016; R- The Fanga'uta Stewardship Plan gazetted in 2017 with an Action Plan for 2018-2022</i>	<i>54</i>
Figure 16: Stories taken from Tonga's R2R/UNDP Newsletter of 2015, 2nd Quarter	54
Figure 17: Tree planting at Toloa Rainforest with seedling selections, Tonga R2R, 2016	55
Figure 18: Environment's Day activities, 2016 taken by R2R Project	56

Figure 19: MSP consultation in 2018, Department of Environment	56
Figure 20: Mangroves in Tongatapu (Source: Department of Environment, 2019)\.....	153
Figure 21: Mangroves Survey Sites conducted in 2016 on behalf of the Ridge-to-Reef Project, identifying the existing mangrove clusters to prioritise as conservation sites around Fanga'uta and Fangakakau Lagoon. (Source: GIS Section, MLNRT, 2016).....	153
Figure 22: This depicts the geographical distribution of SMAs and FHRs in Tonga.	155
Figure 23: Distribution of coral reefs in Tongatapu, Vava'u and Ha'apai. [Source: 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. Page 9] 156	
Figure 24: Shows the Protected Areas for Tonga	157
Figure 25: Top left picture is the <i>D. esculenta</i> (sweet yam – 'ufilei) with its entwining vine and spacious leaf structure; in contrast with its fellow genus <i>D. alata</i> in the top middle picture. The top middle right picture is the <i>Alocasia machorrhiza</i> tuber in comparison to the <i>D. alata</i> tubers at the right end picture.	162
Figure 26: Left picture is the most common Giant taro variety kape hina and the heavy side-suckers may explain its successful than its companions, the kape 'uli in the middle and fohenga 'uli variety on the right. Note the erect forms of the leaves in the fohenga 'uli variety in contrast to the forms in kape hina and kape 'uli.	162
Figure 27: Left picture at the foreground show <i>Colocasia esculenta</i> (swamp taro, lau'ila) broad leaf structure in a mixed cropping with <i>Alocasia machorrhiza</i> , at the background, while at the left picture show the tubers and its prices at the local market.	163
Figure 28: Left picture is the edible tubers of Cocoyam selling at the local market with the cocoyam plants at the plantation area together with banana crops at the background on the right.....	163
Figure 29: The sweet potato variety Melefakahau on the left, the Hauai'i variety in the middle and a picture of a kumala plant on the right	164
Figure 30: The morphological variations for 3 varieties of <i>Manihot esculenta</i> as indicated by their leaf forms and growth structure	165
Figure 31: The cooking banana, <i>Musa balbisiana</i> (plantain - hopa) in the left and Bluggoe var. Pata Tonga in the middle and the ripe bluggoe var. Pata kolosi in the right.....	166
Figure 32: Coastal birds distribution found at Fanga'uta Lagoon from Tonga R2R project (2016) survey of Fanga'uta Status Report (FSR). A total Source: Adapted from FSR, 2017.	167
Figure 33: Source: Adapted from Fanga'uta Status Report, 2017.	168

Figure 34: A graph diagram of Land Bird Observation comparing 2014 survey (BioRAP 2014) against the 1995/96 survey by Steadman et al.(1999) as cited by BioRAP (2014). The graph information was extracted from Table 4.1 of the BioRAP, 2014 and drawn into a graph like diagram by GIS Section, MLNR, 2019. Mo’ungalafa (9) and Vaka’eitu (8) Vava’u pose with the highest variety of species recently observed (2014) while other outer islands for instance ‘Euakafa, Mafana and A’a shows little change as similar bird species are again observed since 1995/96. 168

Figure 35: Land Bird Observation made during the Biodiversity Survey in 2014, perhaps this is the most recent record of bird observation for Tonga. Data were plotted by the GIS Section, MLNR 2019 using Table 4.2 and 4.3 of the BioRAP Report 2014. 169

ii. Tables

Table 1: Summative Thematic Areas and number of National strategies and targets	20
Table 2: Tonga targets: Tonga National Biodiversity Strategy Action Framework (NBSAF) 2018 – 2025	23
Table 3: Summary of National targets implementation progress and effectiveness.	42
Table 4: Effectiveness of Implemented Measures to meet Tonga's National targets	57
.Table 5: The obstacles and capacity needs identified under each thematic areas	102
Table 6: Recommendations under each thematic areas	104
Table 7: Assessment of Progress towards achieving the National targets	107
Table 8: Aichi Biodiversity Targets and National Contributions	141
Table 9: Estimated mangroves and wetlands cover in Tonga (Forestry Division of MAFFF, 2017) ...	153
Table 10: Areas (acres) of the five most cultivated annual root crops in Tonga and in various island groups (Source: 2015 Agricultural Census Report)	158
Table 11: Areas (acres) for some significant high value perennial crops for Tonga and in various island groups (Source: 2015 Agricultural Census Report)	159
Table 12: Persistent Organic Pollutants (POPs) in Tonga (Source: National Implementation Plan (NIP), 2009).....	171



THE REPORT OF THE
GOVERNMENT OF TONGA,
YEAR 2014-2018.

DEPARTMENT OF ENVIRONMENT
MINISTRY OF MEIDECC,
NUKU'ALOFA TONGA